Alcohol Treatment in the National Health Service: Challenging the Paradigm

This thesis is submitted in accordance with the requirements of the University of Liverpool for the degree of Doctor of Philosophy by

Kathryn Cobain

January 2009
DECLARATION

This thesis is a result of my own work. The material contained in the thesis has not been presented, either wholly or in part for any other degree or qualification.

_______________________________________________

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Table of Contents

ABSTRACT .............................................................................................................................................. I
ACKNOWLEDGEMENTS ......................................................................................................................... III
ABBREVIATIONS .................................................................................................................................... IV

1. GENERAL INTRODUCTION ........................................................................................................... 3
   1.1 INTRODUCTION .......................................................................................................................... 3
   1.2 ALCOHOL: THE SUBSTANCE ....................................................................................................... 5
   1.3 IDENTIFICATION OF THE ADVERSE EFFECTS OF DRINKING ...................................................... 5
   1.4 HISTORY OF TREATMENT ........................................................................................................ 11
   1.5 ALCOHOL CONSUMPTION AND ITS BURDEN ON SOCIETY .................................................... 14
   1.6 IMPACT OF ALCOHOL ON HEALTH .......................................................................................... 17
   1.7 TERMINOLOGY .......................................................................................................................... 24
   1.8 MODERN DAY TREATMENT PARADIGM ..................................................................................... 26
   1.8.1 PHARMACOLOGICAL TREATMENTS ...................................................................................... 27
   1.8.2 PSYCHO-SOCIAL TREATMENTS .......................................................................................... 29
   1.9 ALCOHOL POLICY DEVELOPMENT ........................................................................................... 38
   1.10 AIMS OF THE STUDIES ............................................................................................................ 39

2. SYSTEMATIC REVIEW: DO PSYCHOSOCIAL INTERVENTIONS DECREASE ALCOHOL CONSUMPTION FOR PATIENTS WITH ALCOHOL DEPENDENCE? 42
   2.1 INTRODUCTION .......................................................................................................................... 42
   2.2 METHODS .................................................................................................................................... 50
   2.2.1 AIMS ......................................................................................................................................... 50
   2.2.2 OBJECTIVE .............................................................................................................................. 50
   2.2.3 SEARCH STRATEGY ................................................................................................................ 50
   2.2.4 INCLUSION AND EXCLUSION CRITERIA .............................................................................. 51
   2.2.5 VALIDITY MEASUREMENT AND DATA ABSTRACTION ......................................................... 52
   2.3 RESULTS ....................................................................................................................................... 54
   2.3.1 STUDY CHARACTERISTICS ..................................................................................................... 55
   2.3.2 DEMOGRAPHICS ..................................................................................................................... 60
   2.3.3 ALCOHOL CONSUMPTION MEASURES ................................................................................... 63
   2.3.4 ALCOHOL DEPENDENCE MEASURES .................................................................................... 63
   2.3.5 TREATMENT ............................................................................................................................ 64
   2.3.6 PROFESSIONAL DELIVERING THE TREATMENT ................................................................ 69
   2.3.7 CO-THERAPIES (PHARMACOLOGICAL DETOXIFICATION) ..................................................... 69
   2.3.8 PHYSICAL HEALTH ASSESSMENT .......................................................................................... 70
   2.3.9 OUTCOME MEASURES ............................................................................................................ 72
   2.4 DISCUSSION .................................................................................................................................. 78

3. PATIENTS VIEWS ON 24 HOUR LICENSING: A QUALITATIVE STUDY ............... 86
   3.1 INTRODUCTION .......................................................................................................................... 86
   3.2 METHODS ..................................................................................................................................... 92
   3.2.1 AIM .......................................................................................................................................... 92
# 4. ALCOHOL LIVER DISEASE AT THE ROYAL LIVERPOOL UNIVERSITY HOSPITAL: A SEVEN YEAR AUDIT

4.1 INTRODUCTION ........................................... 109
4.2 METHODS ............................................... 115
4.2.1 AIM ..................................................... 115
4.2.2 OBJECTIVES ........................................... 115
4.2.3 DESIGN ............................................... 115
4.2.3.5 ETHICAL APPROVAL .............................. 117
4.3 RESULTS ................................................... 119
4.3.1 ALCOHOL LIVER DISEASE ......................... 119
4.3.2 COMPARISON DATA .................................. 124
4.4 DISCUSSION .............................................. 127

# 5. AN OBSERVATIONAL STUDY OF NUTRITIONAL RISK IN HEAVY DRINKERS

5.1 INTRODUCTION ........................................... 133
5.2 METHODS ............................................... 137
5.2.1 AIM ..................................................... 137
5.2.2 OBJECTIVES ........................................... 137
5.2.3 DESIGN ............................................... 137
5.2.4 PATIENTS .............................................. 137
5.2.5 EXCLUSION CRITERIA ................................ 138
5.2.6 SAMPLE SIZE ........................................ 138
5.2.7 MEASURES USED TO ASSESS ALCOHOL USE AND MALNUTRITION ... 139
5.2.8 BIOCHEMICAL ASSESSMENT OF NUTRITIONAL DEFICIENCY .......... 139
5.2.9 ETHICAL APPROVAL .................................. 141
5.2.10 RESEARCH AND DEVELOPMENT APPROVAL .................... 141
5.2.11 STATISTICAL ANALYSIS ............................. 141
5.3 RESULTS ................................................... 143
5.3.1 GENDER AND AGE OF THE PATIENT POPULATION .......... 143
5.3.2 MEDICAL MORBIDITY OF PATIENTS .................. 143
5.3.3 ALCOHOL CONSUMPTION ................................ 146
5.3.4 MALNUTRITION INDICATORS ......................... 147
5.3.5 DIFFERENCES BETWEEN PATIENTS WITH AND WITHOUT FOLLOW UP ... 151
5.3.6 AGE AND GENDER OF THE FOLLOW UP POPULATION ............. 152
5.3.7 ANTHROPOMETRIC MEASURES AT FOLLOW UP ................ 152
5.3.8 BIOCHEMICAL MEASURES AT BASELINE AND FOLLOW-UP .......... 153
5.3.9 THIAMINE TREATMENT ................................ 155
5.3.10 BIOCHEMICAL DISEASE INDICATORS ..................... 157
List of Tables

Table 1.1 Terminologies across time 4
Table 1.2 Jellinek’s typologies of Alcoholism 10
Table 1.3 Increased risk of ill-health to harmful drinkers. Source Department of Health Safe, Sensible, Social (2007) 18
Table 1.4 Prochaska and DiClemente stages of change theory (1984) 31
Table 2.1 Edwards and Gross alcohol dependence classification 44
Table 2.2 Alcohol dependence classification 45
Table 2.3 What’s in a standard drink? 48
Table 2.4 Extraction features 52
Table 2.5 Methodological quality 53
Table 2.6 Selected studies 55
Table 2.7 Study characteristics 56
Table 2.8 Patient characteristics 61
Table 2.9 Treatment setting, duration and the professional delivering the treatment 67
Table 2.10 Co-therapies (pharmacological detoxification) 71
Table 2.11 Primary outcome measures reported results 74
Table 3.1 Allocation to study group 93
Table 3.2 Group characteristics 96
Table 3.3 Overall responses to questions 98
Table 4.1 International Statistical Classification of diseases codes used by Leon and McCambridge (2006) 112
Table 4.2 Incidence of Alcohol Liver Disease 119
Table 4.3 Length of stay of all disease groups 126
Table 5.1 Primary reason for hospital presentation of the 100 patients in the study 144
Table 5.2 Biochemical disease markers at baseline 145
Table 5.3 biochemical nutritional measures at baseline 150
Table 5.4 Sensitivity and specificity of MUST as compared to biochemical nutritional element deficiencies 151
Table 5.5 Odds ratios between MUST and biochemical nutritional element deficiencies 151
Table 5.6 Biochemical measures change from baseline to follow-up 155
Table 5.7 Differences between baseline and follow up thiamine levels according to compliance category 157
Table 5.8 Liver function measures from baseline to follow up 158
Table 6.1 Demographics at baseline assessment  180
Table 6.2 Presenting Complaint  182
Table 6.3 Medical co-morbidities of patients in intervention and control groups  183
Table 6.4 Alcohol consumption baseline assessment  184
Table 6.5 Intervention group difference between baseline assessment and follow up on alcohol measures  187
Table 6.6 Control group differences for alcohol measures at follow up  188
Table 6.7 Type of alcohol being consumed by patients in intervention and control groups at follow up.  190
Table 6.8 Differences in health utilization  191

**List of Figures**

Figure 1.1 A moral and physical thermometer. Source Lettsom (1789), cited in Berrios (1995)  9
Figure 1.2 William Hogarth A Rakes Progress 1735. Engraving. The British Museum London, UK. 12
Figure 1.3 Alcohol consumption 1900-2000. Source British Beer and Pub association Statistical Handbook (2001)  15
Figure 1.4 The cost of alcohol-related harm. Source Interim analytical report of the national alcohol harm reduction strategy (2003)  16
Figure 1.5 Alcohol affects on the human body. Source, Australian Government at www.nt.gov.au  17
Figure 1.6 Alcohol Attributable conditions. Source: Centre for Public Health Liverpool John Moore’s University Alcohol Attributable Fractions (AAF)  19
Figure 1.7 Alcohol-related hospital episode statistics. Source: The Information centre (2006) Hospital episode statistics.  20
Figure 1.8 Alcohol-related death rates by sex, United Kingdom, 1991-2006  21
Figure 1.9 Translator of national units to international comparison  23
Figure 1.10 Alcoholics Anonymous twelve steps  37
Figure 1.11 Alcohol problem matched to treatment. Source national audit office report (2008)  37
Figure 2.1 Jellinek Curve  43
Figure 2.2 Inclusion of studies for systematic review  54
Figure 2.3 Gender distributions of studies included in the systematic review  60
Figure 2.4 Validated tool used for assessment of alcohol dependence  64
Figure 2.5 Treatment modalities of included studies  66
Figure 4.1 J-Shaped Curve  110
Figure 4.2 Mortality rates from cirrhosis in Europe. Adapted from Leon & McCambridge (2006)  111
Figure 4.3 Office of National Statistics death rates from all alcohol-related causes  112
Figure 4.4 Gender distribution of patients with alcoholic liver disease
Figure 4.5 Percentage of the Alcohol Liver Disease cases over and under 40
Figure 4.6 Male and Females percentages under and over 40 years of age
Figure 4.7 Alcohol Liver Disease Mortality
Figure 4.8 Alcohol Liver Disease deaths under and over 40
Figure 4.9 Incidence in all disease groups
Figure 4.10 hospital episode comparisons
Figure 5.1 Age category by gender
Figure 5.2 Gamma Glutamyl Transferase at baseline
Figure 5.3 Alcohol Use Disorder Identification Test (AUDIT) score spread
Figure 5.4 Severity of Alcohol Dependence Questionnaire category at baseline
Figure 5.5 Malnutrition Universal Screening Tool
Figure 5.6 Malnutrition Universal Screening Tool risk category at baseline
Figure 5.7 Biochemical nutritional measures at baseline
Figure 5.8 Gender and Age category
Figure 5.9 Malnutrition Universal Screening Tool risk changes from baseline to follow-up
Figure 5.10 Change in biochemical nutritional elements from baseline to follow-up
Figure 5.11 Thiamine compliance
Figure 5.12 Gamma Glutamyl Transferase category from baseline to follow-up
Figure 6.1 Data collection pathway
Figure 6.2 Brief Intervention treatment structure (Bien et al, 2003)
Figure 6.3 Age category at baseline assessment
Figure 6.4 Severity of Alcohol Dependence Questionnaire category at baseline assessment
Figure 6.5 Type of alcohol being consumed by patients at baseline assessment
Figure 6.6 Category of dependence change from the baseline assessment to follow-up in the intervention group
Figure 6.7 SADQ score from baseline assessment to follow-up
Figure 6.8 Daily units from baseline assessment to follow-up
Abstract

Between 3 and 6% of the population in England are dependent on alcohol. However, only 5.6% access treatment per annum. A significant proportion of patients presenting with alcohol dependence do so via a GP or hospital emergency department (ED). It is therefore important to consider presentation within these settings as an opportunity for alcohol specific treatment.

The objectives of this thesis were to determine several inter-related questions: (a) what needs to be done to respond to non-treatment seekers? (b) Who are the treatment seekers? (c) Who is best placed to deliver treatment, and in what setting? (d) What constitutes effective treatment for this patient group? Investigations were undertaken in Liverpool in a large University Hospital Trust. The research was undertaken in a well-established nurse-led service that provides care across the primary and secondary care boundaries for patients that present anywhere along the continuum of alcohol problems. The experimental studies investigated the evidence for treatment effectiveness, as well as investigations of general health, well-being and perceptions of heavy drinkers. Lastly an intervention study was conducted to investigate if this well established dedicated nurse intervention was impacting on the outcomes of alcohol-dependent patients.

Through a process of systematic review, 11 randomized controlled trials were identified. Heterogeneity within and between studies was significant. In the majority of the studies, medical co-morbidity was used as exclusion criterion for recruitment and was neglected as a variable in outcomes in most studies. Importantly it emerged that all treatments showed similar effectiveness with complexity of the intervention and treatment setting having little bearing on success.

A qualitative study of 30 patients (10 sensible drinkers, 10 hazardous/harmful drinkers and 10 dependent drinkers) provided valuable insight into the attitudes of patients regarding the possibility of round-the-clock availability of alcohol. Most patients felt that extended licensing hours would not affect their drinking behaviour but were more concerned about other members of the community, in particular the young. The dominance of ambivalence highlighted in this study is not an unknown concept and indeed has been highlighted in both national and international studies. Ambivalence to drinking in general may help to explain why rates of screening and uptake of minimal and brief intervention are very poor in the UK.

A clinical audit of ALD showed that many affected patients were young, particularly females. However, there was no overall increase in the incidence of ALD over the years. There is a need to develop methodologies so that surveillance of this potentially enormous problem can be accurately quantified both locally and nationally and can thereby inform accurate service development and longer term accuracy in targeted public health outcomes.
An observational study into the nutritional status of heavy drinkers (N=100) found that contrary to previous studies, there was no evidence for thiamine deficiency in this population. Nevertheless, according to the Malnutrition Universal Screening Tool (MUST), 42% of the study population were at high risk of malnutrition, and patients with a high MUST risk score were 5 times more likely to be zinc or selenium deficient. Deficiencies of zinc, selenium and copper were observed in 76%, 20%, and 8% of patients, respectively, while 5% of patients had a low prealbumin. There was a significant improvement in the MUST score (p=0.01) at 6-months follow-up but there were no significant changes in the nutritional biochemical measures.

A cohort study comparing hospitals with and without dedicated nurse intervention showed that the majority of alcohol-dependent patients (88%; N=200) attending hospital had a medical co-morbidity. Interestingly, there was no correlation between outcome measures and the level of severity of dependence or physical co-morbidity. The patients receiving brief interventions in the hospital with the alcohol service showed significant decreases in alcohol consumption (p=0.0001), AUDIT score (p=0.0001), and SADQ (p=0.0001) when compared to patients in the hospital without dedicated nurse intervention. They also had significantly shorter length of stays in hospital (p=0.001) and less ED visits (p=0.023).

In conclusion, this thesis has demonstrated that there is a need to more accurately assess risk and status in those drinking heavily. We need to provide treatments that challenge ambivalence, particularly with regard to the level of harm. While most forms of treatment are currently restricted to specialist settings, and exclude many patients, for example those with co-morbidities, the evidence presented in the thesis suggest that such treatments should be more widely available, including in acute hospitals. These interventions may not need to be highly complex and could be delivered by any healthcare professional with appropriate training. The cohort study highlights the possible utility of such an approach, but wider uptake of this in the NHS will probably require randomised evidence.
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### Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AA</td>
<td>Alcoholics Anonymous</td>
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<tr>
<td>ADS</td>
<td>Alcohol Dependence Syndrome</td>
</tr>
<tr>
<td>APA</td>
<td>American Psychiatric Association</td>
</tr>
<tr>
<td>ASI</td>
<td>Addiction Severity Index</td>
</tr>
<tr>
<td>AUDIT</td>
<td>Alcohol Use Disorders Identification Test</td>
</tr>
<tr>
<td>BI</td>
<td>Brief Intervention</td>
</tr>
<tr>
<td>BSCT</td>
<td>Behaviour Self Control Training</td>
</tr>
<tr>
<td>CBT</td>
<td>Cognitive Behavioural Therapy</td>
</tr>
<tr>
<td>CCTR</td>
<td>Cochrane Clinical Trials Register</td>
</tr>
<tr>
<td>CRA</td>
<td>Community Reinforcement Approach</td>
</tr>
<tr>
<td>CST</td>
<td>Coping Skills Training</td>
</tr>
<tr>
<td>DARE</td>
<td>Database of Abstracts of Reviews of Effectiveness</td>
</tr>
<tr>
<td>DH</td>
<td>Department of Health</td>
</tr>
<tr>
<td>DSM</td>
<td>Diagnostic &amp; Statistical Manual of Mental Disorders</td>
</tr>
<tr>
<td>ED</td>
<td>Emergency Department</td>
</tr>
<tr>
<td>ICD</td>
<td>International Statistical Classification of Diseases</td>
</tr>
<tr>
<td>LDQ</td>
<td>Leeds Dependence Questionnaire</td>
</tr>
<tr>
<td>MATCH</td>
<td>Matching Alcoholism Treatments to Client Heterogeneity</td>
</tr>
<tr>
<td>MET</td>
<td>Motivational Enhancement Therapy</td>
</tr>
<tr>
<td>MI</td>
<td>Motivational Interviewing</td>
</tr>
<tr>
<td>MOCE</td>
<td>Moderation-Orientated Cue Exposure</td>
</tr>
<tr>
<td>MUST</td>
<td>Malnutrition Universal Screening Tool</td>
</tr>
<tr>
<td>NFA</td>
<td>No Fixed Abode</td>
</tr>
<tr>
<td>NHS</td>
<td>National Health Service</td>
</tr>
<tr>
<td>NDRL</td>
<td>Non Directive Reflective Listening</td>
</tr>
<tr>
<td>Acronym</td>
<td>Full Form</td>
</tr>
<tr>
<td>---------</td>
<td>-----------</td>
</tr>
<tr>
<td>ONS</td>
<td>Office of National Statistics</td>
</tr>
<tr>
<td>RCT</td>
<td>Randomized Controlled Trial</td>
</tr>
<tr>
<td>RLBUHT</td>
<td>Royal Liverpool &amp; Broadgreen University Hospital Trust</td>
</tr>
<tr>
<td>SADQ</td>
<td>Severity of Alcohol Dependence Questionnaire</td>
</tr>
<tr>
<td>SBNT</td>
<td>Social Behaviour Network Therapy</td>
</tr>
<tr>
<td>TLFB</td>
<td>Time Line Follow Back</td>
</tr>
<tr>
<td>TSF</td>
<td>Twelve Step Facilitation</td>
</tr>
<tr>
<td>UK</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>UKATT</td>
<td>United Kingdom Alcohol Treatment Trial</td>
</tr>
<tr>
<td>USA</td>
<td>United States of America</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organisation</td>
</tr>
</tbody>
</table>
Chapter One

General Introduction
1. General Introduction

1.1 Introduction

1.2 Alcohol the substance

1.3 Identification of the adverse effects of drinking

1.4 History of treatment

1.5 Alcohol consumption and its burden on society

1.6 Impact of alcohol on health

1.7 Terminology

1.8 Modern day treatment paradigm

1.8.1 Pharmacological treatments

1.8.2 Psycho-Social treatments

1.9 Alcohol policy development

1.10 Aims of the studies
1. General Introduction

1.1 Introduction

Alcohol is a substance used throughout the world for its social properties. However, such use is not exclusive, and alcohol therefore results in both positive and negative impacts on economies, societies and traditions (Department of Health 2004). The negative impacts of alcohol are well documented and include physical, psychological and social harms (Anderson et al. 1993; Department of Health 2004; Room et al. 2005; Anderson 2006). A central theme throughout this thesis will be to examine both novel and traditional treatment responses to the physical and psychological harms caused by alcohol. This is important, as treatment seems to be failing to make any significant difference to the scale and degree of harm; it may therefore be timely to re-think treatment approaches.

It is clear that providing effective accessible treatment is essential. Indeed, recent studies have suggested that alcohol treatment has both short and long-term economic benefits, with reported estimates that for every £1 spent on alcohol treatment, the public sector saves £5 (UKATT 2005).

In order to gain an understanding of what is happening now, it is imperative to examine the past. An historical context of treatment can help us to understand the evolution of ideas, and beliefs that have framed and informed treatment paradigms. However, in doing this there are issues of mixed terminology. This makes it difficult to translate past descriptors of both drinking behaviour and treatment into the present, Table 1.1 below demonstrates some of these.
## Table 1.1 Terminologies across time

<table>
<thead>
<tr>
<th>Archaic/historic term</th>
<th>first use</th>
<th>Modern terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dipsomaniac</td>
<td>1843</td>
<td>Alcoholic</td>
</tr>
<tr>
<td>Chronic Intemperance</td>
<td>c.1800</td>
<td>Alcohol dependent</td>
</tr>
<tr>
<td>Intemperance</td>
<td>c.1800</td>
<td>Heavy drinker</td>
</tr>
<tr>
<td>Alcoholism</td>
<td>1852</td>
<td>Harmful drinker</td>
</tr>
<tr>
<td>Alcoholisimus</td>
<td>c.1840</td>
<td>Hazardous drinker</td>
</tr>
<tr>
<td>Pathological drunkenness</td>
<td></td>
<td>Risky drinker</td>
</tr>
<tr>
<td>Inebriety</td>
<td>1447</td>
<td>Intoxication</td>
</tr>
<tr>
<td>Dronke</td>
<td>1386</td>
<td>Drunk</td>
</tr>
<tr>
<td>Drunk</td>
<td>1852</td>
<td>Under the influence</td>
</tr>
<tr>
<td>Drunkard</td>
<td>1530</td>
<td>Toxic effect of alcohol</td>
</tr>
<tr>
<td>Mania a potu</td>
<td>1890</td>
<td>Delirium Tremens</td>
</tr>
<tr>
<td>Alcohol withdrawal delirium</td>
<td>1813</td>
<td>Acute Alcohol Withdrawal</td>
</tr>
<tr>
<td>Temperance</td>
<td>1340</td>
<td>Sensible</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Safe</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moderation</td>
</tr>
<tr>
<td>Temperance</td>
<td>c.1800</td>
<td>Abstinence</td>
</tr>
<tr>
<td>Mania</td>
<td>c.1400</td>
<td>Mental health problems</td>
</tr>
</tbody>
</table>

### Measures

| Glass | 1225 | Units      |
| Jar   | 1421 | Standard Drink |
| Gil   | 1275 |            |
| Dram  | 1373 |            |
| Bowl  | c.1205 |            |
1.2 Alcohol: the substance

Alcohol is a toxicological substance which has had many and varied uses throughout history: in religion, worship, nutrition and also for its medicinal, antiseptic, and analgesic properties. Indeed, the word alcohol was introduced into the English language around 1543 originating from the Arabic word: جلخول, “al-kuhul”, meaning finely divided. There are many different alcohols; however the one to which we usually refer when talking about alcohol consumption is ethanol. It is a colourless, volatile liquid with a mild odour. Ethanol’s chemical formula was determined by Swiss chemist Nicolas-Théodore de Saussure in 1808 and its chemical formula, \( \text{C}_2\text{H}_5\text{OH} \), was later published by Scottish chemist Archibald Scott Couper in 1858. It is obtained through the fermentation or distillation of sugars; the first examples were the use of honey fermented with water to create mead and the natural fermentation of grapes to wine. Indeed, ancient Greeks have written of alcohol in antiquity, Dionysus, the god of wine and pleasure, was first a “honey-lord”, and then a god worshipped for the cultivation of the vine. Although used as a ‘stimulant’ it is known to be the most potent and widely used central nervous system depressant in the western world; it is also the second most used drug in the world, topped only by caffeine (Hanson 2005).

1.3 Identification of the adverse effects of drinking

Alcohol has always been recognised as having a significant impact on the health of the public; it has in more recent times been described as one of the top public health issues in the developed world (Room et al. 2005; Anderson 2006). The problems
related to alcohol have created recent media interest on a number of levels. Firstly, there has been a focus on the increasing impact of alcohol liver disease (ALD) in the population as a result of heavy drinking, in particular, the rates in young women (Chief Medical Officer 2001; Williams 2008). Secondly, there has been a growing focus and concern on alcohol consumption related to crime and violence, the costs of which are estimated at £7.2 billion per year (Department of Health 2004). Until relatively recently, the wider medical profession paid little attention to alcohol and its effects on health and well-being, negating their concerns to psychiatric and psychological colleagues (Glatt 1967). However, this has changed in recent times and indeed the Royal College of Physicians responded by forming an expert committee, which led to the production of the first generalist response to this problem (Royal College of Physicians 2001). This has led to increasing interest within the wider profession and has resulted in increased influence of physicians in policy making and public perception. Historically, such influencers and commentators were religious figures, poets and philosophers. Indeed, Max Glatt a physician and one of the noted pioneers in alcohol treatment noted that historically, problems associated with drinking receive little attention from the medical community, who view it as a social problem, and therefore not within their sphere of influence (Glatt 1967; Glatt 1977).

However, Hippocrates, the father of modern medicine recorded in his writings of around 400 BC that drinking high levels of wine could bring on tremors. Furthermore, the Greek philosopher, Aristotle had recorded the ill effects of sudden withdrawal of wine in heavy drinkers, and had also cautioned that drinking could be harmful during pregnancy (O'Brien 1980). Nevertheless, as time continued, excessive use of
alcohol was common particularly throughout Northern Europe, including Britain, during the Middle Ages. However, during this time levels of alcohol consumption could be considered to be adaptive as they were related to pollution of water sources, meaning that the only safe liquid to drink was alcohol as its production is a process of purification. By the late 15th Century, the Roman physician Celsus described the consequences of drinking as ‘disease’. This could be regarded as the early establishment of the medical model of alcohol-related problems.

Yet again in the 16th Century, polluted city water supplies led to an increase in the consumption of gin which was recognized as having dramatic effects on health. In the 17th Century, Bishop Thomas Wilson referred to habitual drunkenness as a ‘disease’ (Porter 1985). It was also during this century that Thomas Willis, an English physician, recognised that alcohol had an impact on cognitive function reporting that ‘stupidity, moroseness or foolishness’ was caused by ‘frequent drunkenness and surfeiting’ and could lead to cognitive deficiency (Berrios 1987). The 18th century was also categorised by the extensive drinking habits of the population (Richardson 1931). In this century, a Scottish physician, George Cheyne (1733) forthrightly described his own excess use of ‘wine and spirituous liquors’; and described that with time and age his consumption gradually abated. This could be considered to be a seminal description of drinking along a continuum, or it could demonstrate natural recovery. Additionally, in London between 1734 and 1749 there were increases in hospital admissions which were reported to be due to the melancholic consequences of gin (Monkton 1736). This led to increasing recognition by doctors of the addictive and other harmful effects of alcohol. Furthermore, it is thought to be the catalyst for the recognition of this problem by Government in the 1729 Gin Act, which stated that
gin was leading to the destruction of health. Likewise, John Coakley Lettsom a physician of the 18\textsuperscript{th} century provided the seminal description of the clinical course of what is now recognised as alcoholic cirrhosis and alcoholic neuropathy. Unusually, he reported the development of what he described as ‘compulsion’ and ‘attachment’ to alcohol which we would now recognize as psychological dependence (Rix 1976). Lettsom is also known for using the analogy of a thermometer to contrast the tendencies of different liquors to promote ‘temperance’ or ‘intemperance’ (Figure 1.1). The likeness to the thermometer was thought to be borrowed from his colleague Benjamin Rush, who was a writer and founding father of the United States of America (USA), who published the influential work “An inquiry into the Effects of Harmful Spirits upon the Human Body and Mind”. Indeed, Rush is known for advocating controls on the availability of alcoholic beverages, and is also known for proposing an ‘asylum for drunkards’. In a less serious mood, Rush included in his classification of phobia the categories of rum phobia (‘a very rare distemper’) and of home phobia, which belongs to all those men who prefer a tavern, to home life. Interestingly, the \textit{moral and physical thermometer} utilised by Rush and Lettsom makes it clear that the restrained use of wine or beer was portrayed as beneficial while the consumption of spirits was depicted as ‘wicked’. This is in someway similar to the contemporary findings of the J shaped curve, asserting that alcohol is good for health as abstainers die earlier than consumers (Corrao et al. 1999; Corrao et al. 2004). There is also a contemporarily emergent hypothesis that the type of alcohol consumed is related to increased susceptibility to Alcoholic Liver Disease (ALD) (Roizen et al. 1999; Stokkeland et al. 2006; Stokkeland et al. 2008). Consistent with this, there may be a decreased risk of ALD when most of the alcohol is consumed as wine (Becker et al. 2002).
Although it is clear that there has been an emerging paradigm throughout history of alcohol’s potential to affect health, it was not until the nineteenth century that the physician Thomas Trotter, in his book “An Essay on Drunkenness” (1804) firmly declared that excessive drinking was a ‘disease’. In this essay, he unmistakably described tolerance, abstinence tremors, drinking to relieve withdrawal distress, the introduction of anxiety and depression termed as ‘ill-grounded fears’, and
General Introduction

‘melancholia’, impotence and foetal damage. Furthermore, he also identified that over half of sudden deaths occurred whilst intoxicated. Interestingly, he attributed this to self-combustion from the effect of being literally full of alcohol, which we know now not to be the case. He is also known for his sympathetic approach to treatment, and for the introduction of the concept of drinking safely. Subsequently in 1849, the Swedish physician Magnus Huss attempted to systematically classify the physical symptoms of alcohol dependence, describing these as a ‘syndrome of alcoholisimus’; he further classified individuals who could not refrain from drinking as ‘dipsomaniacs’.

Although this paradigm remained dominant for the next 100 years, there were conflicting descriptions and a lack of clarity regarding the manifestations of drinking behaviour. This was until E.M. Jellinek began the modern study of alcoholism as a disease (Jellinek 1952). The so-called Jellinek curve is derived from Jellinek’s classification of the ‘5 different typologies of alcoholism’ (Table 1.2).

Table 1.2 Jellinek’s typologies of Alcoholism

<table>
<thead>
<tr>
<th>Typology</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpha alcoholism</td>
<td>The earliest stage of the disease, manifesting the purely psychological continual dependence on the effects of alcohol to relieve bodily or emotional pain. Drinking creates social and personal problems. Jellinek argued that they have not lost control, and as a consequence, do not have a &quot;disease&quot;.</td>
</tr>
<tr>
<td>Beta alcoholism</td>
<td>Polyneuropathy or cirrhosis of the liver from alcohol without physical or psychological dependence. These are the heavy drinkers that drink a lot, almost very day. They do not have physical addiction and do not suffer withdrawal symptoms. This group do not have a &quot;disease&quot;.</td>
</tr>
<tr>
<td>Gamma alcoholism</td>
<td>Involving acquired tissue tolerance, physical dependence, and loss of control. They by Jellinek’s classification have a &quot;disease&quot;.</td>
</tr>
<tr>
<td>Delta alcoholism</td>
<td>as in Gamma alcoholism, but with inability to abstain, instead of loss of control</td>
</tr>
<tr>
<td>Epsilon alcoholism</td>
<td>The most advanced stage of the disease, manifesting as dipsomania, or periodic alcoholism.</td>
</tr>
</tbody>
</table>
1.4 History of Treatment

The seminal origins of alcohol treatment in the United Kingdom (UK) are thought to originate in the ‘Asylum’. Indeed, ‘bedlam’ which was one of the first asylums in England was depicted by William Hogarth (Figure 1.2): it was latterly known as Bethlehem Hospital and contemporarily exists today as the Bethlem Royal Hospital. The emergence of a paradigm for alcohol as a causative factor in mental health problems that developed was that alcohol had the potential to cause ‘madness’. Indeed, William Battie a physician and author of a lengthy book on mental illness in 1758 (Battie 1758) stated that the ‘bottle’ (alcohol) caused ‘continual insanity’. Additionally, Sir Alexander Morison a physician at the Bethlehem Hospital wrote:

“Intermittent mania, and palsy, are frequent effects of drunkenness, as well as that species of temporary insanity which has denominated delirium tremens, or Mania a Potu, and it is said that cases of Dementia not infrequently occur amongst the Russians from the abuse of intoxicating drinks.”

(Sir Alexander Morison, 1848)

However, it is important to put this statement in an historical context: this was just prior to the commencement of the ‘Crimean’ war in 1854, and could therefore in part be related to some anti Russian feeling.
Figure 1.2 William Hogarth A Rakes Progress 1735. Engraving. The British Museum, London, UK.
The confusion illustrated by Morison over ‘mania a potu’ or what we would now call Delirium Tremens had persisted until fairly recent times when the concept of ‘pathological drunkenness’ was largely discredited (Coid 1979; Madden 1984).

The concept of delirium tremens is probably one of the most over-used terms in the treatment of patients with alcohol dependence, often referred to as DTs. It needs to be stated that it is both a ‘medical emergency’ and one of the most severe complications of alcohol withdrawal. Interestingly, the condition had been partially recognised since classical times (Leibowitz 1967). However, the first medical writings of DTs appeared in 1813 when Samuel Pearson a physician published his ‘Observations on Brain Fever’ in the Edinburgh Medical and Surgical Journal. It was a concept that was to receive much interest and debate believed to be due to a fascination of the time with the ‘supernatural’. The symptoms included intense hallucinations such as visions of insects, snakes or rats (or stereotypically, pink elephants or tiny figures). Other symptoms include confusion, disorientation and agitation and fever, tachycardia, and hypertension. These hallucinations are distinct from those of schizophrenia, as they are primarily visual, but the condition has also been found to be associated with tactile hallucinations. It is known to occur in 5-10% of alcohol-dependent individuals and carries up to 5% mortality with treatment, and up to 35% mortality without treatment (Soyka 2008). However, it is often confused with alcoholic hallucinosis, which does not carry a significant mortality risk, and occurs in approximately 20% of hospitalized alcohol-dependent patients.
1.5 Alcohol consumption and its burden on society

There is now a considerable body of opinion supporting the view that alcohol, in 'sensible' amounts, can be of benefit to health and general well-being (Chick 1998; German and Walzem 2000; Romeo et al. 2007). Nevertheless, due to the complexity of confounding factors in disease causation, such as diet, smoking, and general lifestyle, the level of overall benefit from alcohol has yet to be established (Agarwal 2002). On the other hand, alcohol has been shown to be causally related to more than 60 different medical conditions (Rehm et al. 2003; Department of Health 2007).

Indeed, the European region has the highest alcohol consumption in the World (WHO 2001). The UK falls within the mid-range for levels of alcohol consumption when compared to the rest of Europe, with 28% of men and 14% of women drinking above sensible limits (Department of Health 1995). Alcohol consumption is the third ranked risk to health, leaving it just below smoking and blood pressure. It accounts for 4% of disease burden and 9% of Disability Adjusted Life Years (DALYs) (Rehm et al. 2003). Additionally, 7% of men and 3% of women in England are heavy drinkers with an average of 3.6% of the population in England having a dependence on alcohol (Drummond et al. 2005). National alcohol consumption levels are measured in the UK by two different methodologies;

1) Her Majesty's Revenue and Customs (HMRC), provides data based on sales of alcohol from excise duties and tax figures. However, this method has been criticized as it does not take into account alcohol bought elsewhere in the European Union, or made at home.
2) National drinking surveys, which are said to give more ‘quality’ information, have been utilized since the 1970s in the UK, in an attempt to gain a clearer picture of the drinking trends of the nation. For example, alcohol use variables appeared in the General Household Survey in 1978 and this use has evolved continuously since then.

Using the HMRC methodology, it can be seen in Figure 1.3 that alcohol consumption in the UK has seen a steady increase since the early 1900s, with the exception of a marked reduction during both the First and Second world wars, and a levelling off in the 1980s (British Beer and Pub Association 2001).

![Figure 1.3 Alcohol consumption 1900-2000. Source British Beer and Pub Association Statistical Handbook (2001)](source: BBPA Statistical Handbook (2001))
It is difficult to quantify the individual costs to families and individuals who have alcohol-related problems. However, it has been estimated that alcohol costs society around £20 billion per year, in crime and disorder, loss of productivity and healthcare provision (Figure 1.4) (Department of Health 2004). This amount has been recently reported as £25.1 billion per year in updated statistics (Department of Health 2008). Furthermore, it has been estimated that almost 1 million children in England live with a parent who is dependent on alcohol (Department of Health 2004). The subsequent consequences for these children and their parents may include negative social conditions such as poverty, domestic violence, neglect, isolation and insecurity (Velleman and Orford 1990; Velleman and Orford 1993). Also, alcohol is known to impact on mental well-being in that it has been implicated in around 1,000 suicides a year (Rehm et al. 2003).

Figure 1.4 The cost of alcohol-related harm. Source Interim analytical report of the national alcohol harm reduction strategy (2003)
1.6 Impact of Alcohol on Health

Alcohol is well recognised as having systemic effects on the body involving all body systems (Figure 1.5). Indeed, it has long been known that alcohol consumption is responsible for increased illness and death (Pearl 1926). Heavy alcohol consumption either directly causes or contributes to a wide range of serious health problems and accidents that necessitate consumption of health care.

![The Long Term Health Effects Of Alcohol](image)

Figure 1.5 Alcohol affects on the human body. Source, Australian Government at www.nt.gov.au
There are many health problems in which alcohol is known to significantly increase risk: these include hypertension, stroke, coronary heart disease, pancreatitis and liver disease (Table 1.3).

Table 1.3 Increased risk of ill-health to harmful drinkers. Source Department of Health Safe, Sensible, Social (2007)

<table>
<thead>
<tr>
<th>Medical condition</th>
<th>Male risk</th>
<th>Female risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension</td>
<td>X4</td>
<td>X2</td>
</tr>
<tr>
<td>Stroke</td>
<td>X2</td>
<td>X4</td>
</tr>
<tr>
<td>Coronary Heart Disease</td>
<td>X1.7</td>
<td>X1.3</td>
</tr>
<tr>
<td>Pancreatitis</td>
<td>X3</td>
<td>X2</td>
</tr>
<tr>
<td>Liver disease</td>
<td>X13</td>
<td>X13</td>
</tr>
</tbody>
</table>

Evidence suggests that rates of diseases associated with alcohol are increasing. Indeed a disease with an Alcohol Attributable Factor (AAF) of 1, Alcohol Liver Disease (ALD), killed 4,160 people in 2005, which was an increase of around 20% on 2001 figures (Figure 1.6) (Department of Health 2007). Indeed, for most of these health-related problems there is a direct dose-response relation to the volume of alcohol consumed, with the risk known to increase with higher volume. However, this relationship varies between diseases and the relationship between alcohol and health outcomes has been shown to be both complex and multidimensional.
## General Introduction

**Alcohol-attributable conditions.** Source: Centre for Public Health Liverpool John Moore's University Alcohol Attributable Fractions (AAF)

<table>
<thead>
<tr>
<th>Condition</th>
<th>ICD10 code(s)</th>
<th>Sources(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol-induced pseudo-Cushing's syndrome</td>
<td>E24.4</td>
<td>Corrao et al., 2004</td>
</tr>
<tr>
<td>Mental and behavioural disorders due to use of alcohol</td>
<td>F10</td>
<td></td>
</tr>
<tr>
<td>Degeneration of nervous system due to alcohol</td>
<td>G31.2</td>
<td></td>
</tr>
<tr>
<td>Alcoholic polyneuropathy</td>
<td>G62.1</td>
<td></td>
</tr>
<tr>
<td>Alcoholic myopathy</td>
<td>G72.1</td>
<td></td>
</tr>
<tr>
<td>Alcoholic cardiomyopathy</td>
<td>I42.6</td>
<td></td>
</tr>
<tr>
<td>Alcoholic gastritis</td>
<td>K29.2</td>
<td></td>
</tr>
<tr>
<td>Alcohol liver disease</td>
<td>K70</td>
<td></td>
</tr>
<tr>
<td>Chronic pancreatitis (alcohol induced)</td>
<td>K86.0</td>
<td></td>
</tr>
<tr>
<td>Ethanol poisoning</td>
<td>T51.0</td>
<td></td>
</tr>
<tr>
<td>Methanol poisoning</td>
<td>T51.1</td>
<td></td>
</tr>
<tr>
<td>Toxic effect of alcohol, unspecified</td>
<td>T51.9</td>
<td></td>
</tr>
<tr>
<td>Accidental poisoning by and exposure to alcohol</td>
<td>X45</td>
<td></td>
</tr>
</tbody>
</table>

**Partly attributable - chronic conditions**

<table>
<thead>
<tr>
<th>Condition</th>
<th>ICD10 code(s)</th>
<th>Sources(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malignant neoplasm of lip, oral cavity and pharynx</td>
<td>C30-C14</td>
<td>Corrao et al., 2004</td>
</tr>
<tr>
<td>Malignant neoplasm of oesophagus</td>
<td>C15</td>
<td>Corrao et al., 2004</td>
</tr>
<tr>
<td>Malignant neoplasm of colon</td>
<td>C18</td>
<td>Corrao et al., 2004</td>
</tr>
<tr>
<td>Malignant neoplasm of rectum</td>
<td>C20</td>
<td>Corrao et al., 2004</td>
</tr>
<tr>
<td>Malignant neoplasm of liver and intrahepatic bile ducts</td>
<td>C22</td>
<td>Corrao et al., 2004</td>
</tr>
<tr>
<td>Malignant neoplasm of larynx</td>
<td>C32</td>
<td>Corrao et al., 2004</td>
</tr>
<tr>
<td>Malignant neoplasm of breast</td>
<td>D50</td>
<td>Hamajima et al., 2002</td>
</tr>
<tr>
<td>Diabetes mellitus (type II)</td>
<td>E11</td>
<td>Gutjahr et al., 2001</td>
</tr>
<tr>
<td>Epilepsy and Status epilepticus</td>
<td>G40-G41</td>
<td>Rehm et al., 2004</td>
</tr>
<tr>
<td>Hypertensive diseases</td>
<td>I10-I15</td>
<td>Corrao et al., 2004</td>
</tr>
<tr>
<td>Ischaemic heart disease</td>
<td>I20-I25</td>
<td>Corrao et al., 2004</td>
</tr>
<tr>
<td>Cardiac arrhythmias</td>
<td>I47-I48</td>
<td>Gutjahr et al., 2001</td>
</tr>
<tr>
<td>Heart failure</td>
<td>I50-I51</td>
<td>Single et al., 1996</td>
</tr>
<tr>
<td>Haemorrhagic stroke</td>
<td>I60-I62, I69.0-I69.2</td>
<td>Corrao et al., 2004</td>
</tr>
<tr>
<td>Ischaemic stroke</td>
<td>I63-I68, I69.3-I69.4</td>
<td>Corrao et al., 2004</td>
</tr>
<tr>
<td>Oesophageal varices</td>
<td>I85</td>
<td>Corrao et al., 2004</td>
</tr>
<tr>
<td>Gastro-oesophageal varices/haemorrhage syndrome</td>
<td>K22.6</td>
<td>English et al., 1996</td>
</tr>
<tr>
<td>Unspecified liver disease</td>
<td>K73, K74</td>
<td>Corrao et al., 2004</td>
</tr>
<tr>
<td>Cholelithiasis</td>
<td>K80</td>
<td>Gutjahr et al., 2001</td>
</tr>
<tr>
<td>Acute and chronic pancreatitis</td>
<td>K85, K56.1</td>
<td>Corrao et al., 2004</td>
</tr>
<tr>
<td>Psoriasis</td>
<td>L40 excluding L40.5</td>
<td>Gutjahr et al., 2001</td>
</tr>
<tr>
<td>Spontaneous abortion</td>
<td>O03</td>
<td>Gutjahr et al., 2001</td>
</tr>
</tbody>
</table>

**Partly attributable - acute conditions**

<table>
<thead>
<tr>
<th>Condition</th>
<th>ICD10 code(s)</th>
<th>Sources(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road traffic accidents - non-pedestrian</td>
<td>§</td>
<td>Ridolfo &amp; Stevenson 2001</td>
</tr>
<tr>
<td>Pedestrian traffic accidents</td>
<td>§§</td>
<td>Ridolfo &amp; Stevenson 2001</td>
</tr>
<tr>
<td>Water transport accidents</td>
<td>V50-V94</td>
<td>Single et al., 1996</td>
</tr>
<tr>
<td>Airspace transport accidents</td>
<td>V95-V97</td>
<td>Single et al., 1996</td>
</tr>
<tr>
<td>Fall injuries</td>
<td>W00-W19</td>
<td>Ridolfo &amp; Stevenson 2001</td>
</tr>
<tr>
<td>Work machine injuries</td>
<td>W24-W31</td>
<td>English et al., 1996</td>
</tr>
<tr>
<td>Firearms injuries</td>
<td>W32-W34</td>
<td>Single et al., 1996</td>
</tr>
<tr>
<td>Drowning</td>
<td>W65-W74</td>
<td>English et al., 1996</td>
</tr>
<tr>
<td>Inhalation of gastric contents/Inhalation of ingestion of food causing obstruction of the respiratory tract</td>
<td>W78, W79</td>
<td>Single et al., 1996</td>
</tr>
<tr>
<td>Fire injuries</td>
<td>X00-X09</td>
<td>Single et al., 1996</td>
</tr>
<tr>
<td>Accidental excessive cold</td>
<td>X31</td>
<td>Single et al., 1996</td>
</tr>
<tr>
<td>Intentional self-harm/Event of undetermined intent</td>
<td>X60-X64, Y10-Y34</td>
<td>English et al., 1995</td>
</tr>
<tr>
<td>Assault</td>
<td>X86-Y09</td>
<td>Single et al., 1996</td>
</tr>
</tbody>
</table>

NB: English et al's (1995) AAFs are estimated based on the risk of medium/high risk consumption versus low risk consumption.

§ V12-V14 (.3 -.9), V19.4-V19.6, V19.9, V20-V28 (.3 -.9), V29-V79 (.4 -.9), V80.3-V80.5, V81.1, V82.1, V82.9, V83-V86 (0 -.3), V87.0-V87.9, V89.2, V89.3, V89.9
§§ V02-V04 (.1 -.9), V06.1, V09.2, V09.3

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**Figure 1.6 Alcohol Attributable conditions.** Source: Centre for Public Health Liverpool John Moore’s University Alcohol Attributable Fractions (AAF)
Additionally, in 2006/07, there were almost 1 million NHS hospital admissions in England with either a primary or secondary diagnosis related to alcohol, which accounts for around 6% of all hospital admissions and has increased by almost 71% since 2002/03 (Figure 1.7).

![Graph showing hospital admissions trend]


**Figure 1.7 Alcohol-related hospital episode statistics. Source: The Information centre (2006) Hospital episode statistics.**

The percentage of alcohol-related attendances to Emergency Departments (EDs) has been shown to be between 12% to 28% (Pirmohamed et al. 2000; Hadida et al. 2001), with between 7% to 40% of all hospital in-patient episodes being directly attributable to alcohol (Quinn and Johnston 1976; Jariwalla and Adams 1979; Lockhart et al. 1986; Taylor et al. 1986; McKnight et al. 1995; Canning et al. 1999; Pirmohamed et al. 2000). This consequently leads to a heavy burden being placed on ED resources and therefore the capacity to meet government targets on waiting times.
Furthermore, heavy alcohol consumption can be fatal, contributing to sudden death through acute poisoning or accidents while people are intoxicated, as well as deaths due to long-term heavy drinking. The alcohol-related death rate in the UK rose from 12.9 deaths per 100,000 of the population in 2005 to 13.4 deaths per 100,000 in 2006 (Figure 1.8). This rate has almost doubled from 6.9 deaths per 100,000 of the population in 1991. In 2006, the male alcohol-related death rate of 18.3 deaths per 100,000 of the population was more than twice the female alcohol-related death rate of 8.8 deaths per 100,000 of the population.

![Figure 1.8 Alcohol-related death rates by sex, United Kingdom, 1991-2006](image)

Therefore, as there is unanimous support for the idea that an ‘excess’ of alcohol is harmful, and there is also some evidence for longevity related to ‘sensible’ or ‘reasonable’ drinking; the difficult decision is to determine what is ‘reasonable’ or ‘sensible’? This prompts the questions:

- How much alcohol do people consume?
- How should it be measured?
Particularly, how can it be measured in such a way that results are comparable?

With no overall world-wide guidance, countries set their ‘own standards’. It is currently possible to identify 16 countries which have (between them) set 10 different values (Figure 1.9). For example, drinks are usually referred to as standard drinks or units, with the terminology used interchangeably (Kerr et al., 2005, Martin and Nirenberg, 1991, Lemmens, 1994). Standard drinks range anywhere from around 8 grammes of alcohol in the UK to nearly 20 grammes of alcohol in Japan (Lemmens, 1994, Turner, 1990, Miller et al., 1991). This also poses a difficulty for research on treatment outcomes as different methodologies and nomenclature affect the comparability of research outcomes internationally.
<table>
<thead>
<tr>
<th>Country</th>
<th>Authority</th>
<th>Unit (g)</th>
<th>Max g/day</th>
<th>Max g/wk</th>
<th>Max g/day</th>
<th>Max g/wk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>National Health and Medical Research Council</td>
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<td>40</td>
<td>20</td>
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<td></td>
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<td>Austria</td>
<td>Bundesministerium für Gesundheit und Konsumenschutz</td>
<td>12</td>
<td>252</td>
<td>168</td>
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<td></td>
</tr>
<tr>
<td>Czech Republic</td>
<td>National Institute of Public Health</td>
<td>24</td>
<td>16</td>
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<tr>
<td>Denmark</td>
<td>Sundhedssstyrelsen</td>
<td>12</td>
<td>252</td>
<td>168</td>
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<td>Finland</td>
<td>Oy ALKO AB</td>
<td>11</td>
<td>161</td>
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<tr>
<td>France</td>
<td>Academy of Medicine</td>
<td>12</td>
<td>60</td>
<td>36</td>
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<td>Ireland</td>
<td>Department of Health</td>
<td>8</td>
<td>24</td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td>Ministero della Sanita</td>
<td>10</td>
<td>40</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Japan</td>
<td>Ministry of Health and Welfare</td>
<td>19.75</td>
<td>39.5</td>
<td>-</td>
<td>-</td>
<td></td>
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<td>New Zealand</td>
<td>Alcohol Advisory Council</td>
<td>10</td>
<td>210</td>
<td>140</td>
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</tr>
<tr>
<td>Portugal</td>
<td>Conselho Nacional de Alimentacao e Nutricao (CNAN)</td>
<td>14</td>
<td>37</td>
<td>18.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Romania</td>
<td>Health Ministry</td>
<td>32.5</td>
<td>17.3</td>
<td>10.8</td>
<td>10.8</td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td>Ministry of Health and Consumption</td>
<td>10</td>
<td>30</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sweden</td>
<td>Systembolaget</td>
<td>126</td>
<td>95</td>
<td>47</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>United Kingdom</td>
<td>Department of Health</td>
<td>8</td>
<td>32</td>
<td>24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>United States</td>
<td>Departments of Agriculture/Health and Human Services</td>
<td>14</td>
<td>28</td>
<td>14</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 1.9 Translator of national units to international comparison
1.7 Terminology

The terminology of alcohol consumption is complex and differs nationally, internationally and across studies. However, there is a consensus that it is essential to measure alcohol consumption using a reliable method (UKATT, 2005, Miller and Wilbourne, 2002, MATCH, 1997, Shand, 2003, Slattery, 2003, Raistrick et al., 2006). This complexity and confusion also exists in reference to categorisation of levels of drinking. This is important as the categories are often utilised to match to the type of treatment required and to survey the nation in relation the extent of the problem. Unsurprisingly, confusion also exists within healthcare, healthcare professionals and most importantly, with the general public. In recognition of this and in an attempt to (a) tackle alcohol consumption increases and, (b) simplify health care messages, the Department of Health launched a £2 million campaign “Know Your Limits”. This was in recognition of the significant confusion, and was an attempt to help individuals consume alcohol at levels of lower risk. Similarly this concept of drinking sensibly forms part of the title of the newly revised alcohol strategy ‘safe sensible social’ (Department of Health 2007). The terminology ‘sensible’ has been used to categorize ‘healthy drinking’. Indeed, there is some debate as to what level is actually ‘safe’ and to what pattern or way alcohol should be consumed to prevent health harm. It is generally understood that ‘sensible’ drinking refers to a man drinking 3-4 units five days per week, or a woman drinking 2-3 units five days per week (21 and 14 units respectively) (Department of Health 1995).

There have been many attempts to classify drinking behaviour. Although this is an evolving process, the following represent some of the contemporary examples:
• **Sensible drinking:** refers to a man drinking 3 and 4 units five days per week, and a woman drinking 2 and 3 units five days per week (21 and 14 units, respectively) (Department of Health 1995).

• **Hazardous drinking:** people drinking above recognised ‘sensible’ levels but not yet experiencing harm. The General Household Survey (GHS) defines this as drinking between 22 and 50 units per week for men and between 15 and 35 units per week for women.

• **Harmful drinking:** people drinking above ‘sensible’ levels and experiencing harm. The GHS define this as drinking more than 50 units per week for men and more than 35 units per week for women.

• **Alcohol dependence:** people drinking above ‘sensible’ levels and experiencing harm and symptoms of dependence. This is a well described concept and has many classification and diagnostic tools from which to describe its presence. The classification tools include International Classification of Diseases (ICD-10), and Diagnostic and Statistical Manual of Mental Disorders (DSMIV), while diagnostic tools include the Severity of Alcohol Dependence Questionnaire (SADQ), and the Leeds Dependence Questionnaire (LDQ).

• **Binge drinking:** this is a concept worth mentioning as it is both measured by the GHS and it has had much recent attention from the media. The GHS defines this as drinking more than 8 units in one day in the past week for men and 6 units or more for women.
1.8 Modern day treatment paradigm

The term ‘treatment’ has multiple connotations. It is defined as “the application of medicines, surgery, psychotherapy etc., to a patient or to a disease or symptom”. Within alcohol treatment the term ‘treatment’ is used interchangeably with ‘intervention’ which is defined as “to take a decisive or an intrusive role (in) in order to determine events or their outcome”.

The aim of this thesis is to examine treatment paradigms developed to respond to and treat alcohol dependent patients. The aims of such treatments are to overcome physical and psychological dependence to alcohol. Subsequently, a range of treatments have been developed to deal with both the physical and psychological symptoms of alcohol dependence, which are focused on:

(a) managing physiological symptoms of the alcohol withdrawal syndrome (AWS) and other physical-related symptoms,

(b) dealing with the psychological and social problems associated with drinking (Berglund 2003; Department of Health 2005).

Therefore, treatments available for alcohol dependence can be broadly divided into two groups: pharmacological and psycho-social.
1.8.1 Pharmacological Treatments

Early detection and prompt initiation of treatment is crucial when treating a patient who is alcohol dependent as physical symptoms of AWS can progress to delirium tremens, which has been shown to be fatal in 15-35% of untreated patients (Soyka 2008). If untreated, death may result from respiratory and cardiovascular collapse or cardiac arrhythmias. The patients that are most at risk of DTs are those with a high temperature (>104°F/39.9°C), tachycardia, dehydration and an associated illness (e.g. pneumonia or pancreatitis), general debility or where the diagnosis is delayed. It is worth stating that appropriate management reduces mortality to around 5% (Soyka 2008). In most cases, AWS is uncomplicated and it has been recommended that it is managed with oral benzodiazepines, usually chlordiazepoxide, as they have a significant supporting evidence base (Mayo-Smith 1997; Williams and McBride 1998).

Furthermore, a variety of pharmacological treatments are used to help ameliorate the side effects of alcohol cessation such as craving; these include naltrexone, and acamprosate. The efficacy of these anti-craving agents is limited, and the mechanisms of action are unclear. However, it has been shown that their effectiveness is enhanced when used in conjunction with psychological treatments such as cognitive behavioural therapy (CBT) and counselling (Paille et al. 1995; Whitworth et al. 1996; Mason 2003). Indeed, these treatments are only recommended to be used in conjunction with psycho-social treatment (Brewer and Streel 2003; Raistrick et al. 2006). Therefore, their use remains limited (Kranzler et
al. 1999), mainly as a consequence of physician scepticism about their effectiveness (Mark et al. 2003; Mark and Swait 2003).

Additionally, thiamine deficiency has been reported to be commonplace in heavy drinkers, the potential consequences of which are severe and potentially lead on to Wernicke’s Encephalopathy (WE). Indeed, the signs and symptoms of WE are difficult to detect and often difficult to differentiate from both withdrawal and intoxication. They include confusion, ataxia, impaired consciousness, and in some patients ophthalmoplegia (Harper and Kril 1985; Harper et al. 2003). Importantly, if treated, this condition is reversible, but it can lead to death or a progression to Korsakoff’s psychosis (KP) if not treated. The consequences of KP are far reaching as the debilitating consequences of memory loss alone can require the patient remaining in supported care for the rest of their life. Therefore it is recommended that all in-patient alcohol withdrawal treatment should include thiamine replacement therapy (Cook C.C. and Thomson A. D. 1997; Cook and Thomson 1997; Thomson 2000; Royal College of Physicians 2001). Clearly, ensuring that heavy drinkers do not become thiamine deficient constitutes the best prophylactic strategy. For example, a study in Australia demonstrated a 40% reduction in the incidence of acute WE and KP in the six years following the introduction of thiamine-enriched bread (Harper et al. 1998). Conversely, where this policy was implemented in Scotland, paradoxical increases in WE were reported suggesting that mass fortification may not necessarily be effective in all cases (Ramayya and Jauhar 1997; Thomson 2000).
1.8.2 Psycho-Social Treatments

In addition and often in conjunction with various pharmacological treatments, there are many and varied treatments to support behavioural change (Miller and Wilbourne 2002; Raistrick et al. 2006). There is considerable heterogeneity amongst the psycho-social treatments that are offered. These treatments have their basis within the ‘psycho-social paradigm’ and make use of varying psychological and social theories, mainly formulated by psychologists. They have the common feature that they all arise out of a recognition of an individual’s need to make a behaviour change (Stiles et al. 1986). Interestingly, all treatments appear to work, and indeed appear to perform equally well (Miller and Wilbourne 2002; Watts and Serrano-Garcia 2003; Raistrick et al. 2006). In reality, this is the case for a broad range of psycho-social treatments for a broad range of conditions (Stiles et al. 1986). It has not been established what the essential ingredient of treatment is. However there are three elements that all treatments possess: (a) setting, (b) clinician, and (c) motivation.

**a) Setting** The setting in which treatment is delivered varies, and the treatments delivered vary between settings (Raistrick et al. 2006). It is known that only 5.6% of alcohol-dependent individuals ever present to specialist settings (Drummond et al. 2005). However, we know that patients frequently present to primary and secondary care settings where treatments are often delivered in an ad-hoc and unstructured way. Setting therefore also determines the ‘type’ of patient that presents. For example, in attending tertiary settings, patients are consistently ‘treatment seeking’ for their alcohol problem and this may have implications for their motivation to participate and succeed in treatment.
b) **Clinician** The availability of a trained clinician, with the skills to deliver dedicated alcohol treatments is an essential component of the overall treatment for alcohol-dependent individuals. The clinician, often referred to as the ‘therapist’ delivering the treatment, is known to be an important element of psycho-social treatment effectiveness. Indeed, there is accumulating evidence suggesting that some clinicians achieve better results than others, with a meta-analysis finding that around 9% of the variance in treatment effectiveness is accounted for by clinician characteristics (Christoph and Mintz, 1991). This phenomenon is often attributed to therapeutic alliance. Indeed, it has been found that the strength of the alliance is related to motivational change.

c) **Motivation** appears to be a theme running through both concepts (a) and (b) in that patients presenting to different settings have different levels of motivation, and different settings have different clinicians, with therapeutic alliance being described as strongly related to motivation. Indeed motivation is a much used, but notoriously difficult construct to measure. Attempts to measure this construct have its origins within the Trans Theoretical Model (TTM) of two psychologists, Prochaska and DiClemente, and use the concepts of a series of ‘stages of change’ which need to be passed through (Table 1.4). Subsequently, measures of ‘readiness to change’ have been produced in attempts to access this construct (Rollnick et al. 1992). It is a widely used model, but also a widely criticized model as it was not only developed comparatively quickly, because it ticked so many boxes as far as knowledge was concerned, it was also used for a wide-range of behaviours including alcohol, smoking, and diabetes. It has therefore become an “all things to all men” model.
Table 1.4 Prochaska and DiClemente stages of change theory (1984)

<table>
<thead>
<tr>
<th>Pre-contemplation</th>
<th>A stage where people do not identify that they have a problem, and are not thinking about change. Others or external agents may perceive that there is a problem but is not internalised by the individual.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contemplation</td>
<td>A stage where someone begins to weigh up the pros and cons of their behaviour, thinking about whether there may be a problem or not and whether change is either necessary or desirable.</td>
</tr>
<tr>
<td>Decision</td>
<td>A stage where someone decides to do something to change their behaviour. A point at which there is a conscious decision to do something.</td>
</tr>
<tr>
<td>Action</td>
<td>The process of actively doing something. The person chooses a strategy for change and pursues it, taking steps to put their decision into action.</td>
</tr>
<tr>
<td>Maintenance</td>
<td>A stage of actively working on and maintaining change strategies. This is a stage of conscious effort and attention to sustain change strategies</td>
</tr>
<tr>
<td>Termination</td>
<td>A stage where behaviour change is so complete that they have reached a stage of “zero temptation and a 100% self-efficacy”. This means the individual has complete confidence that they can maintain that behaviour forever and in any situation.</td>
</tr>
</tbody>
</table>

Available psychosocial treatments range from the very brief to those increasing in duration and intensity. It is also worth stating here that there is debate as to what actually ‘brief’ and ‘intensive’ means. For example, the Department of Health (DH) treatment review classes Motivational Enhancement Therapy (MET) as a ‘more intensive’ treatment, although this is regarded as a ‘Brief’ treatment when utilised in both the UKATT and MATCH trials (MATCH 1997; UKATT 2005). This issue of nomenclature makes the evidence considerably more difficult to interpret. For example, the Mesa Grande concluded that Brief interventions (BIs) were ranked in pole position amongst other psycho-social treatments, but this was a heterogeneous selection of Brief Interventions (Miller and Wilbourne 2002). Indeed, there is now an emerging fashion to call brief interventions of more than 20 minutes an ‘Extended Brief Intervention’. This begs the case how long is a piece of string? What actually is ‘brief’? This problem exists within the whole range of psycho-social treatments.
provided, as duration and intensity of treatment are not clearly defined within psychosocial models and therefore clear definitions of treatment are absent (Sobell et al. 1987; Miller and Wilbourne 2002). Indeed, comparisons across studies are further complicated by the fact that in various cases, treatments with different names appear to be describing the same treatment; conversely, treatments with similar names are like chalk and cheese. Ultimately, this results in considerable confusion between clinicians as to which treatment is likely to be most appropriate. Undeniably, this phenomenon, so-called the ‘equivalence of outcomes’ has been highlighted as a confounder in several recent well resourced reviews (Miller and Wilbourne 2002; Berglund 2003; Shand 2003; Slattery 2003; Raistrick et al. 2006) and is evident within the general psycho-social treatment area (Stiles et al. 1986; Shapiro et al. 1989).

1.8.2.1 Brief Treatments

Brief treatments are Motivational Enhancement Therapy (MET) and Brief Interventions (BI).

**Brief Interventions (BI)** BIs were developed historically in the 1990s in recognition that there was limited availability of treatments for individuals at the lower end of the continuum. Consequently, these ‘Interventions’ are described as being best suited to hazardous and problem drinkers and have received little testing in alcohol dependence (Heather 1995). They are ranked number one in the Mesa-Grande (Miller and Wilbourne 2002). Evidence for the effectiveness of BIs in primary care settings is robust (Moyer et al. 2002). Additionally, two studies (Chick et al. 1985;
McManus et al. 2003) conducted on medical wards in general hospitals have shown reductions in alcohol consumption at 6 month follow-up. However, a recent review concluded that the evidence for their effectiveness in achieving an overall reduction in alcohol consumption, when delivered in a general hospital setting was inconclusive (Emmen et al. 2004). Nevertheless, there is growing evidence that they represent potentially effective modes of treatment for alcohol-dependent individuals (Guth et al. 2008). This challenges the view of ‘matching’ patients to treatment as regards the severity of the problem, i.e. more complex problems = more intensive treatment. A commonly utilised strategy for the delivery of BI’s is provided within the FRAMES acronym, which refers to Feedback, Responsibility, Advice, Menu, Empathy and Self-efficacy (Bien et al. 1993). The strengths of this have been shown to help patients review their problems, take responsibility for change in drinking, and provide options for changes, in an empathic way that reinforces the patients’ self-efficacy (Miller and Rollnick 1991; O’Connor and Schottenfeld 1998). Furthermore, BI can be delivered to both male and female adults of all ages and studies have shown them to be effective in many health care settings (Miller and Wilbourne 2002; Moyer et al. 2002; Moyer et al. 2002; Finney et al. 2003; Swearingen et al. 2003).

**Motivational Enhancement Therapy (MET)** is a relatively modern treatment that is ranked in second place in the Mesa-Grande (Miller and Wilbourne 2002). The treatment is based on a set of principles known as Motivational Interviewing (MI), which is a client centred treatment that was developed by two psychologists Miller and Rollnick in 1991. It presents a deviation from the psychologist Carl Rogers (Rogerian) ‘client-centred therapy’, in that it uses direction, thereby enabling
clinicians to influence change by exploring and resolving ambivalence. It has four key elements.

1) Express empathy;

2) Develop discrepancy;

3) Roll with resistance; and

4) Support self-efficacy.

1.8.2.2 Longer intensity treatments

Longer intensity treatments, which also have a feature of time limitation, are: Cognitive Behavioural Therapy (CBT), Community Reinforcement Approach (CRA); Coping Skills Training (CST) and Moderation-Orientated Cue Exposure (MOCE). There are however many more and this list is not exhaustive.

Cognitive behavioural therapy (CBT) roots can be traced to the development of behaviour therapy in the early 20th century, and later developments of cognitive theory in 1960s. It is an approach that aims to influence problematic and dysfunctional emotions, behaviours and cognitions through a goal-oriented, systematic procedure. CBT itself is as an umbrella term for therapies that share a theoretical basis in both behaviouristic learning theory and cognitive psychology. It is limited in duration and intensity and is a ‘prescriptive’ model. Yet similarly to all psycho-social approaches, therapeutic techniques vary according to the particular approach. Usually treatment involves keeping a diary of significant events and associated feelings, thoughts and behaviours, questioning and testing cognitions, assumptions, evaluations and beliefs that might be unhelpful and unrealistic. This
allows the individual to, gradually face activities which may have been avoided and through this try out new ways of behaving and reacting.

**Coping Skills Training (CST)** is also a form of CBT and includes such techniques as ‘relapse prevention’ and social skills training. It gives the patient a battery of ‘tried out’ cognitive tools when presented with a situation. This allows the development of coping strategies to high risk situations; for example, walking past the pub.

**Moderation-Orientated Cue Exposure (MOCE)** is based primarily around behavioural learning according to the classical conditioning theories of Pavlov, whereby environmental cues provoke behavioural responses. The treatment itself is an adaptation of cue exposure treatment (CET) for alcohol dependence and is specifically designed to train moderation of alcohol consumption. Cue exposure treatment exerts therapeutic effects by means of unreinforced exposures to these cues; for example, extinction in an effort to reduce conditioned responses associated with the motivation to drink. The treatment involves systematically exposing patients to cues, such as the sight and smell of their preferred beverage, without being allowed to consume the beverage.

**Community Reinforcement Approach (CRA)** The Community Reinforcement Approach (CRA) was originally developed by Hunt and Azrin in 1973. It is a broad-spectrum behavioural program for treating both drug and alcohol problems, and in many ways, it can be seen as a form of CBT. It is ranked third in the Mesa-Grande (Miller and Wilbourne 2002). It encompasses a wide-range of initiatives and techniques associated with a balance of psychological and social support, including provision of housing for homeless individuals. There is a considerable range of research on this approach in inpatient, out-patient and
homeless settings. It is by nature a fairly ‘unstructured’ approach with many elements. It therefore has similar problems as other psycho-social treatments as the approach differs significantly between studies.

1.8.2.3 Most Intensive Treatments

Examples of some of the most intensive treatments are Social Behavioural Network Therapy (SBNT), and Twelve Step Facilitation (TSF).

**Social Behavioural Network Therapy (SBNT)** is a relatively new therapy developed by psychologist Alex Copello in 2002. It is believed to have CRA as one of its major influences. The emphasis is very much on extensively accessing and utilising the patient’s social networks as the belief is that these are central to the success of treatment.

**Twelve Step Facilitation (TSF)** is the therapeutic name that has developed out of Alcoholics Anonymous (AA) activities. The therapy is based around supporting and bolstering the patient’s involvement with AA groups to progress through the twelve-steps (Figure 1.10). This therapy is viewed as a long-term or even lifetime therapy, whereby the individual needs to admit that they are ‘powerless’ over alcohol and this is a ‘disease’. It originates in America in 1935 and is heavily abstinence based.
Figure 1.10 Alcoholics Anonymous twelve steps

It can be seen through these treatment examples that there are many commonalities and differences both within and between the treatment models. It is clear that there are also some underlying assumptions that specific treatments are appropriate for specific individuals with specific problems (Figure 1.11). However, this has not been robustly tested.

Figure 1.11 Alcohol problem matched to treatment. Source national Audit office report (2008)
1.9 Alcohol Policy Development

For effective policies to be developed we need data, evidence and guidance. The UK has a structured centralized health care system built around a central principle of locally provided services (Department of Health 2000). In reality this has led to financial control being handed over to Primary Care Trusts (PCTs) who commission local services. This commissioning structure is designed to respond to and meet the needs of the local community. Recently a framework called World Class Commissioning (Department of Health 2007) has been provided to reflect that services need to be commissioned in a structured evidence-based way. Thus, the opportunity exists to take a step back from the way that services have been commissioned historically, allowing placement of services where there is likely to be a greater need. In terms of alcohol policy, there have been a plethora of documents within the last eight years that have attempted to tackle the growing problem of alcohol misuse. In 2001, the Royal College of Physicians produced a report called ‘Alcohol. Can the NHS afford it?’ (Royal College of Physicians 2001). In this report, the burden of alcohol misuse to the NHS was detailed and there were also some good suggestions as to how this problem may be tackled, including interventions delivered by an Alcohol Specialist Nurse (ASN) in the general hospital. This report was followed by the first Alcohol Harm Reduction Strategy in 2004 (Department of Health 2004). This strategy was long awaited but was regrettably focused on the crime and disorder agenda related to alcohol, and was lacking in terms of treatment guidance. Just before this strategy was published, the Government decided to change licensing policy to make alcohol more available in society. This was met with considerable anxiety from both health and police services (HM 2003). Alongside alcohol-specific policy guidance published at this time, the white paper on ‘Choosing
health’ (2004) (Department of Health 2004) brought up alcohol as a mainstream issue for healthcare. Further to this, the Department of Health produced guidelines on ‘Alcohol Misuse Interventions’ (2005) (Department of Health 2005) in an attempt to give guidance on a robust response to the problem. Some valuable statistics were also published on the extent of the problem and the provision of treatment in the Alcohol Needs Assessment Research Project (ANARP) (2005) (Drummond et al. 2005). This was followed by both an extensive treatment review from the Department of Health (2006) (Raistrick et al. 2006) finding that all treatments work. In the same year, Models of Care for Alcohol Misusers (MoCAM) (DH 2006) was published, which describes a specific framework for the treatment of heavy drinkers, in an attempt to standardize treatment delivery. Unfortunately even though MoCAM was much needed, it has had little impact. At the end of the day, it failed to do ‘what it said on the tin’!

1.10 Aims of the studies

There are many and varied treatments for alcohol-related problems. The aim of this thesis was to systematically assess the effectiveness of established treatments for alcohol-related problems and to establish whether the current paradigm was now appropriate for patients presenting to a range of healthcare settings in the North West of England. Additionally, a model using an Alcohol Specialist Nurse (ASN) has been in use within Liverpool not only for hazardous and harmful drinkers, but also for dependent drinkers. This thesis set out to establish the effectiveness of this approach for these patients as compared to a control group.
Chapter Two

Do Psychosocial Treatments Decrease Alcohol Consumption for Patients with Alcohol Dependence?
A Systematic Review
2. Systematic Review: Do Psychosocial Interventions Decrease Alcohol Consumption for Patients with Alcohol Dependence?

2.1 Introduction

2.2 Methods

2.2.1 Aim

2.2.2 Objective

2.2.3 Search strategy

2.2.4 Inclusion and exclusion criteria

2.2.5 Validity measurement and data abstraction

2.3 Results

2.3.1 Study characteristics

2.3.2 Demographics

2.3.3 Alcohol consumption measures

2.3.4 Alcohol dependence measures

2.3.5 Treatment

2.3.6 Professional delivering treatment

2.3.7 Co-therapies

2.3.8 Physical health assessment

2.3.9 Outcome measures

2.4 Discussion
2. Systematic Review: Do Psychosocial Interventions Decrease Alcohol Consumption for Patients with Alcohol Dependence?

2.1 Introduction

The prevalence of alcohol dependence varies across the world. Several studies have demonstrated a strong relationship between the estimated per adult total consumption within a country and the estimated rate of alcohol dependence (Room et al. 1996; Rehm and Eschmann 2002). A recent study in England estimated the prevalence to be 3.6% of the total adult population (16 to 64) (Drummond et al. 2005). This is comparable with the reported figure of between 4 to 6% in the United States of America (Caetano and Tam 1995; Grant 1997; Caetano and Cunradi 2002). However, it is worthy of note that the definition of what is an adult differs between studies, i.e. USA 18 years plus, United Kingdom 16 years plus. The condition is more prevalent in males, but it has recently been reported, that the gender gap may be closing (Caetano and Cunradi 2002; Keyes et al. 2008).

The compulsive use of alcohol has been given the descriptor of ‘Alcoholism’ and has been recognized as a disease of addiction since the late 18\textsuperscript{th} century (Li et al. 2007). Compulsion has further been described as a loss of control over alcohol intake, formalized as an ‘alcohol disease syndrome’ by the American physician Benjamin Rush in 1797. In 1804, the British physician Thomas Trotter defined the habit of habitual drunkenness as a ‘disease of the mind’ alluding to the presence of a psychological element of dependence (Li et al. 2007). Subsequently in 1849, the Swedish physician Magnus Huss attempted to systematically classify the physical
symptoms of alcohol dependence, describing these as a ‘syndrome of alcoholisimus’; he further classified individuals who could not refrain from drinking as ‘dipsomaniacs’.

Although this paradigm remained dominant for the next 100 years, there were conflicting descriptions and lack of clarity regarding the manifestations of drinking behaviour. This was until E.M. Jellinek began the modern study of alcoholism as a disease (Jellinek 1952). The so-called Jellinek curve (Figure 2.1) is derived from Jellinek’s classification of the ‘5 different typologies of alcoholism’.

![Figure 2.1 Jellinek Curve](image)

Edwards and Gross (1967) further described this disease-concept, and attempted to reconcile research findings and clinical knowledge and introduced the term ‘Alcohol Dependence Syndrome’. The syndrome consisted of seven elements which exist in degree and give the syndrome a range of severities and flexibility in progression (Table 2.1) (Edwards and Gross 1976; Caetano 1996).
Soon after Edwards and Gross had proposed their definition of the alcohol dependence syndrome, an attempt was made by the American Psychiatric Association (APA) to formalise diagnoses by the introduction of diagnostic criteria for alcohol dependence in their third edition of their Diagnostic and Statistical Manual of Mental Disorders (DSM III) (APA 1980) (Appendix 1).

These criteria have been embedded within subsequent tools, which are now widely utilized to classify or diagnose the presence of the alcohol dependence syndrome. The main tools used for classification are versions of the International Statistical Classification of Diseases (ICD) (Appendix 2) and the Diagnostic and Statistical Manual of Mental Disorders (DSM) (Appendix 1). These two tools provide details such as presence or absence of the syndrome. The tools used for clinical diagnosis are the Leeds Dependence Questionnaire (LDQ) (Raistrick et al. et al. 1994), and the Severity of Alcohol Dependence Questionnaire (SADQ) (Stockwell et al. 1979). These tools assist in providing actual levels of dependence (Li et al. 2007) (Table 2.2).
### Table 2.2 Alcohol dependence classification

1. **Diagnostic and Statistical Manual of Mental Disorders (DSM),** a diagnostic and statistical manual of the American Psychiatric Association (APA). This is a manual of mental disorders derived from operationally defined research criteria by American Psychiatric Association (APA) of which alcohol dependence became one in version III and has remained a feature within subsequent versions.

2. **International Classification of Mental and Behavioural Disorders (ICD),** In this tool the manifestation of Alcohol Withdrawal syndrome which is often the first indication of alcohol-dependency is actually incorporated into the construct of the diagnostic criteria for alcohol dependence syndrome. It is thought to be more ‘clinician friendly’

3. **The Severity of Alcohol Dependence Questionnaire (SADQ),** measures the severity of dependence on a 0 to 60 point scale, a score of 30 or more indicating severe dependence (Stockwell et al. 1979; Stockwell et al. 1983). This questionnaire can be administered prior to any manifestation of symptoms. It is therefore a useful tool in the implementation of prophylactic treatment.

4. **Leeds Dependency Questionnaire (LDQ) (Raistrick et al. 1994)** is a 10-item questionnaire designed to measure dependence to a variety of substances. The LDQ measures the same phenomena as defined in ICD-10, which itself is very similar to DSM-III-R.

Therefore diagnosing the presence of alcohol dependence is a complex process, which may add to the complexity in identifying the most appropriate treatment.

Although there now exists a robust framework for the classification and the diagnosis of alcohol dependence, definitions of drinking behaviour themselves vary widely in the research literature. Terms such as ‘alcoholic’, ‘problem drinker’ and ‘dependence’ are used interchangeably, sometimes within the same study (Sobell et al. 1987; Sobell et al. 2003). This makes accessing appropriate studies problematic for the clinician seeking evidence on which to base treatment. This is due to apparently different terms which may be referring to the same population of patients, or indeed the same terms can refer to very different patient populations.
There is a wide variety of clinical therapies available for the treatment of alcohol dependence, ranging from the psychosocial to the pharmacological, or indeed a combination. Pharmacology treatment research has predominated in two distinct areas:

1) Pharmacology to mitigate the physiological symptoms of the alcohol withdrawal syndrome (AWS), such as benzodiazepines (Mayo-Smith 1997).

2) Adjunct therapy aimed at reducing craving. Included in this category are drugs such as acamprosate and naltrexone (Miller and Wilbourne 2002; Mason 2005; Feeney et al. 2006; Donovan et al. 2008).

It is important to note that where adjunct treatments are advised, there always accompanies a cautionary note for supportive psychosocial treatment to be given alongside (Miller and Wilbourne 2002; Scott et al. 2005).

The available psychosocial treatments range from the very brief to those increasing in duration and intensity:

a. Brief treatments are Motivational Enhancement Therapy (MET) and Brief Interventions (BI).

b. Longer intensity treatments, which also have a feature of time limitation, are: Cognitive Behavioural Therapy (CBT); Community Reinforcement Approach (CRA); Coping Skills Training (CST); Moderation-Orientated Cue Exposure (MOCE); Behavioural Self-Control Training (BSCT) and Non Directive Reflective Listening (NDRL).
c. The most intensive are treatments such as Social Behavioural Network Therapy (SBNT), Twelve Step Facilitation (TSF) are based on the Alcoholics Anonymous model (AA), and various types of counselling.

Although the conceptual frameworks for the treatments are well described, the methods for delivery are less robust. It is therefore difficult for the clinician to know what works best in what setting, and therefore who is best placed to deliver the treatment (Miller and Wilbourne 2002). Therefore, determining the active element of the treatment is both problematic and complex. Furthermore, the lack of robust implementation frameworks within these treatments has led to some confusion as to the time and duration required for efficacy and effectiveness.

The predominant settings for psychosocial treatments are usually within specialist services, with patients who are actively seeking treatment (Miller and Wilbourne 2002; Drummond et al. 2005). Almost exclusively, such treatments are delivered by clinical and counselling psychologists, and require complicated referral systems (Miller and Wilbourne 2002). This usually excludes patients not seeking treatment and those presenting to acute care settings, such as general hospitals (Owens et al. 2005; Patton et al. 2007). Thus, the emergent body of research that originates in this setting, excludes what has been demonstrated to be a more difficult patient-group particularly in terms of engagement (Department of Health 2005; Raistrick et al. 2006).
There is a consensus that the most valid primary outcome measure of the effectiveness of a given treatment is that of alcohol consumption (MATCH 1997; Miller and Wilbourne 2002; Shand 2003; Slattery 2003; UKATT 2005; Raistrick et al. 2006). However, differences in the classification of alcohol consumption vary worldwide. For example, drinks are usually referred to as standard drinks or units, with the terminology used interchangeably (Martin and Nirenberg 1991; Lemmens 1994; Kerr et al. 2005). Standard drinks range anywhere from around 8 grammes of alcohol in the United Kingdom to nearly 20 grammes of alcohol in Japan (Table 2.3) (Turner 1990; Miller et al. 1991; Lemmens 1994). Not surprisingly there is debate on the effect of this variability in the reporting of alcohol content and the subsequent confusion this creates in the area of alcohol research (Turner 1990; Lemmens 1994; Dawson and Room 2000; Dawson 2003).

Table 2.3 What’s in a standard drink?

<table>
<thead>
<tr>
<th>Country</th>
<th>Grams</th>
<th>Millilitres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>19.75</td>
<td>25.0</td>
</tr>
<tr>
<td>Hungary</td>
<td>17</td>
<td>21.5</td>
</tr>
<tr>
<td>Portugal</td>
<td>14</td>
<td>17.7</td>
</tr>
<tr>
<td>USA</td>
<td>14</td>
<td>17.7</td>
</tr>
<tr>
<td>Canada</td>
<td>13.5</td>
<td>17.1</td>
</tr>
<tr>
<td>Denmark</td>
<td>12</td>
<td>15.2</td>
</tr>
<tr>
<td>France</td>
<td>12</td>
<td>15.2</td>
</tr>
<tr>
<td>Finland</td>
<td>11</td>
<td>13.9</td>
</tr>
<tr>
<td>Ireland</td>
<td>10</td>
<td>12.7</td>
</tr>
<tr>
<td>Australia</td>
<td>10</td>
<td>12.7</td>
</tr>
<tr>
<td>New Zealand</td>
<td>10</td>
<td>12.7</td>
</tr>
<tr>
<td>Spain</td>
<td>10</td>
<td>12.7</td>
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<tr>
<td>Italy</td>
<td>10</td>
<td>12.7</td>
</tr>
<tr>
<td>Netherlands</td>
<td>9.9</td>
<td>12.5</td>
</tr>
<tr>
<td>Iceland</td>
<td>9.5</td>
<td>12.0</td>
</tr>
<tr>
<td>UK</td>
<td>7.9</td>
<td>10</td>
</tr>
</tbody>
</table>
The issues outlined above, have clearly introduced confusion when interpreting the results of studies that have been conducted to determine the effectiveness of treatments. A tested and reliable method to attempt to make sense of evidence is the process of systematic review. The aim of this approach is to systematically examine evidence and to come to conclusions about the effectiveness of various treatments, or interventions described for a particular condition.

Systematic reviews of the effectiveness of treatments in alcohol dependence have focused on two different areas:

1) The pharmacological management of alcohol withdrawal; and
2) The pharmacological use of adjunct therapies such as opiate antagonists.

To date, there has been no systematic review of the range of psychosocial treatment effectiveness for dependent drinkers. However, there has been one centred on Twelve Step Facilitation (TSF) (Ferri et al. 2006), which concluded that TSF helps to reduce alcohol consumption to a similar extent as other treatments.
2.2 Methods

2.2.1 Aims

The aims of the systematic review were as follows:

1. What treatments are effective in reducing alcohol consumption?
2. Does the setting for treatment affect the outcomes of these treatments?
3. Are outcomes affected by the professional who delivers the treatment?

2.2.2 Objective

The main objective of the review was to determine the relative effectiveness of psychosocial treatments, in either reduction or cessation of alcohol consumption, for alcohol-dependent patients.

2.2.3 Search Strategy

The search incorporated a number of strategies. The search terms for electronic databases included a combination of index terms (e.g. treatment and alcohol dependence) and free text words (e.g. alcohol and counselling). Electronic searches included the following databases and covered the period 1995 to December 2007: MEDLINE, EMBASE, Cochrane Trials Register (CCTR), Cochrane Database of Systematic Reviews, Database of Abstracts of Reviews of Effectiveness (DARE), PSYINFO and CINAHL.

Searching was limited to English language reports. Searching of reference lists of included studies and hand searching of recent issues relating to substance misuse /
healthcare journals, including Alcohol Alcoholism, BMJ, Lancet, Drug and Alcohol Dependence, Addiction, Addictive Behaviours, Journal of Consulting and Clinical Psychology, JAMA and New England Journal of Medicine was also undertaken.

2.2.4 Inclusion and Exclusion Criteria

The identified citations were assessed for inclusion in two stages. All the titles and abstracts retrieved were screened for potential relevance. Full text copies of the selected papers were obtained and assessed. Studies were considered eligible for inclusion if:

- patients were randomized to the treatment group;
- the dominant treatment was psychosocial;
- the patients were adults with alcohol dependence; and
- included an outcome measure of alcohol consumption.

Studies were excluded if they:

- Reported primary pharmacological treatments, if they did not use a defined standardised measure of alcohol dependence; and
- if they were mainly on adolescents, currently pregnant patients, or patients with mental health problems

These points are summarized in Table 2.4.
### Table 2.4 Extraction features

<table>
<thead>
<tr>
<th>Study design</th>
<th>Randomised Controlled Trial (RCT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>Patients with diagnosed alcohol dependence via a validated measure</td>
</tr>
<tr>
<td>Treatments</td>
<td>Primarily psychosocial treatments</td>
</tr>
<tr>
<td>Comparator</td>
<td>Other psychosocial treatments</td>
</tr>
<tr>
<td></td>
<td>No treatment</td>
</tr>
<tr>
<td>Primary Outcome</td>
<td>Alcohol Consumption</td>
</tr>
<tr>
<td>Exclusion criteria</td>
<td>Non-Randomized Controlled Trials</td>
</tr>
<tr>
<td></td>
<td>Main IV Pharmacological</td>
</tr>
<tr>
<td></td>
<td>Interim data only</td>
</tr>
<tr>
<td></td>
<td>No measurable classification of alcohol dependence</td>
</tr>
<tr>
<td></td>
<td>Studies mainly on adolescents participants</td>
</tr>
<tr>
<td></td>
<td>Studies on pregnant women</td>
</tr>
</tbody>
</table>

#### 2.2.5 Validity measurement and data abstraction

The quality of studies was assessed using the York framework (Table 2.5). For each trial, we assessed the randomisation process, criteria for alcohol dependence diagnosis, the blinding of those assessing outcomes, stated outcome measures and the loss to follow up. Data were extracted into pre-tested data extraction forms by one reviewer and was cross checked by a second researcher. Data extracted included the number and type of patients, the type of treatment, duration, setting, treating professional and the outcome measures, all using a standardised form. No studies were excluded on the basis of methodological quality. Six trials reported blind assessment of outcome.
### Systematic Review

#### Table 2.5 Methodological quality of studies assessed using the York framework

<table>
<thead>
<tr>
<th>Study</th>
<th>Randomization clearly described</th>
<th>Allocation Concealed</th>
<th>Number Randomized Stated</th>
<th>Baseline Comparability Presented</th>
<th>Baseline Comparability Achieved</th>
<th>Eligibility Criteria Specified</th>
<th>Co-Treatments Identified</th>
<th>Outcome assessors blinded to treatment allocation</th>
<th>Treatment administrators blinded to treatment</th>
<th>Patient blinded to treatment</th>
<th>Success of blinding assessed</th>
<th>80% of patients included in final analysis</th>
<th>Withdrawal reasons stated</th>
<th>Intention to Treat Analysis Included</th>
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<tbody>
<tr>
<td>Alwyn et al 2004</td>
<td>X</td>
<td>X</td>
<td>√</td>
<td>X</td>
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<td>√</td>
<td>NS</td>
<td>X</td>
</tr>
<tr>
<td>Burtscheidt et al 2001</td>
<td>X</td>
<td>X</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
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<td>√</td>
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<td>X</td>
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<tr>
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<td>√</td>
<td>√</td>
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<td>NS</td>
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<td>√</td>
<td>NS</td>
<td>X</td>
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<tr>
<td>Groenbaek et al 2006</td>
<td>√</td>
<td>X</td>
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<td>√</td>
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<td>X</td>
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<td>John et al 2003</td>
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<td>X</td>
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<td>X</td>
<td>√</td>
<td>√</td>
<td>NS</td>
<td>NS</td>
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<td>NS</td>
<td>X</td>
<td>√</td>
<td>NS</td>
<td>√</td>
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<tr>
<td>Match 1998</td>
<td>√</td>
<td>√</td>
<td>√</td>
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<td>√</td>
<td>√</td>
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</tr>
<tr>
<td>Saitz et al 2007</td>
<td>√</td>
<td>X</td>
<td>√</td>
<td>√</td>
<td>X</td>
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<td>√</td>
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<td>NS</td>
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<td>√</td>
<td>NS</td>
<td>X</td>
</tr>
<tr>
<td>Smith et al 1998</td>
<td>X</td>
<td>X</td>
<td>√</td>
<td>X</td>
<td>√</td>
<td>√</td>
<td>X</td>
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<td>√</td>
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<tr>
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<td>X</td>
<td>X</td>
<td>√</td>
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<td>X</td>
<td>X</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
</tbody>
</table>

#### Table Legend

- ✓ = Yes
- X = No
- NS = Not Stated

53
2.3 Results

Figure 2.2 summarises the process for inclusion of studies. Overall, 251 articles were identified. This was reduced to 110 after screening abstracts and keywords for study design. An additional 99 articles were rejected because the treatment was not mainly psychosocial (11 trials), they were not randomized (4), no defined measure of alcohol dependence was used (29), patients had alcohol problems and not dependence (34) or they were on patients with mixed alcohol and drug dependencies (21). This left 11 studies to be included in the systematic review.

![Figure 2.2 Inclusion of studies for systematic review](image-url)
2.3.1 Study characteristics

Trials included in the systematic review are shown in Table 2.6. The general characteristics of the trials included are presented in Table 2.7. There was wide variability in the;

a) populations studied;

b) duration of the study;

c) treatments used;

d) duration of the treatment; and

e) professionals who delivered the treatment.

Table 2.6 Selected studies

<table>
<thead>
<tr>
<th>Study</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Alwyn et al. 2004</td>
<td>The addition of a psychological intervention to a home detoxification programme</td>
</tr>
<tr>
<td>7. Saitz et al. 2007</td>
<td>Brief Intervention for medical inpatients with unhealthy alcohol use.</td>
</tr>
<tr>
<td>8. Sellman et al. 2001</td>
<td>A randomized controlled trial of motivational enhancement therapy (MET) for mild to moderate alcohol dependence.</td>
</tr>
<tr>
<td>10. UKATT 2005</td>
<td>Effectiveness of treatment for alcohol problems: findings of the randomised UK alcohol treatment trial (UKATT).</td>
</tr>
</tbody>
</table>
### Table 2.7 Study characteristics

<table>
<thead>
<tr>
<th>Study Author</th>
<th>Alcohol Dependence Assessment Criteria</th>
<th>Primary outcome</th>
<th>Country And number of centre(s)</th>
<th>Inclusion Criteria Utilised</th>
<th>Treatment(s)</th>
<th>Post Treatment Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alwyn et al. 2004</td>
<td>➢ Severity of Alcohol Dependence Questionnaire (SADQ)</td>
<td>Reduction in alcohol consumption</td>
<td>Multicentre (4), UK</td>
<td>➢ No history of withdrawal fits&lt;br&gt;➢ No history of epilepsy&lt;br&gt;➢ No severe physical or psychological disorders&lt;br&gt;➢ Stable address</td>
<td>(1) Usual Care&lt;br&gt;(2) Usual Care + Psychological approach</td>
<td>➢ 3 months&lt;br&gt;➢ 12 months</td>
</tr>
<tr>
<td>Burtscheidt et al 2001</td>
<td>➢ Diagnostic and Statistical Manual of Mental Disorders (DSM)&lt;br&gt;➢ International Statistical Classification of Diseases (ICD-10)</td>
<td>Reduction in alcohol consumption</td>
<td>Single centre, Germany</td>
<td>➢ 25-60 years old&lt;br&gt;➢ DSM or ICD 10 diagnosis of alcohol dependence&lt;br&gt;➢ Consuming alcohol in an addictive manner in last 6 months prior to inpatient treatment</td>
<td>(1) Coping Skills Therapy&lt;br&gt;(2) Cognitive Behavioural Therapy&lt;br&gt;(3) Standard Treatment</td>
<td>➢ 6 months</td>
</tr>
<tr>
<td>Dawe et al 2002</td>
<td>➢ SADQ-C</td>
<td>Reduction in alcohol consumption</td>
<td>Single centre, Australia</td>
<td>➢ ≥15 on SADQ&lt;br&gt;➢ No current dependence on other drugs&lt;br&gt;➢ Not pregnant&lt;br&gt;➢ No current psychotic, bipolar or depressive disorder</td>
<td>(1) Moderation Orientated Cue Exposure (MOCE)&lt;br&gt;(2) Behavioural Self Control Training (BSCT)</td>
<td>➢ 8 months</td>
</tr>
<tr>
<td>Study Author</td>
<td>Alcohol Dependence Assess Criteria</td>
<td>Primary outcome</td>
<td>Location(s) And centre(s)</td>
<td>Inclusion Criteria Utilised</td>
<td>Treatment(s)</td>
<td>Follow-up</td>
</tr>
<tr>
<td>------------------</td>
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<td>----------------------------------</td>
<td>--------------------------------</td>
<td>----------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Gronbaek et al 2007</td>
<td>➢ ICD</td>
<td>Reduction in alcohol consumption</td>
<td>Multicentre (2), Denmark</td>
<td>➢ 18 years plus ➢ No psychosis ➢ No cognitive impairment ➢ Alcohol main problem ➢ Of Danish origin</td>
<td>(1) Minnesota day clinic treatment (2) Normal public alcohol treatment</td>
<td>➢ 12 months</td>
</tr>
<tr>
<td>John et al 2003</td>
<td>➢ ICD</td>
<td>Reduction in alcohol consumption</td>
<td>Single centre, Germany</td>
<td>➢ ICD diagnosis of alcohol dependence ➢ 21-65 years old ➢ Not longer than 6 months No Fixed Abode (NFA) ➢ Living in a place able to attend self help groups</td>
<td>(1) Individual Counselling (IC) (2) Group Treatment (GT)</td>
<td>➢ 6 months (2) 12 months</td>
</tr>
<tr>
<td>Project Match 1997</td>
<td>➢ DSM</td>
<td>Reduction in alcohol consumption</td>
<td>Multicentre (9), USA</td>
<td>➢ DSM diagnosis ➢ 18 years plus ➢ 6th grade reading ability ➢ drinking in prior 3 months</td>
<td>(1) Motivational Enhancement Therapy (MET) (2) Twelve Step Facilitation (TSF) (3) Cognitive Behavioural Therapy (CBT)</td>
<td>➢ 3 months (2) 6 months (3) 12 months (3) 15 months</td>
</tr>
<tr>
<td>Study Author</td>
<td>Alcohol Dependence Assess Criteria</td>
<td>Primary outcome</td>
<td>Location(s) And centre(s)</td>
<td>Inclusion Criteria Utilised</td>
<td>Treatment(s)</td>
<td>Follow-up</td>
</tr>
<tr>
<td>--------------</td>
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<td>-----------</td>
</tr>
</tbody>
</table>
| Saitz et al 2007 | DSM                              | Reduction in alcohol consumption | Single centre, USA       | ➢ Drinking ≥ 14 drinks per week or ≥5 or more drinks per occasion.  
➤ Female drinking ≥ 11 drinks per week or 4 ≥ drinks per occasion.  
➤ No plans to move in next 12 months.  
➤ Mini mental state score 21 plus | (1) Brief Intervention (BI)  
(2) Non treatment control (CT) | ➢ 12 months |
| Sellman et al. 2001 | DSM                              | Reduction in alcohol consumption | Single centre, New Zealand | ➢ DSM diagnosis  
➤ Not severe alcohol dependence  
➤ No medical or psychiatric conditions  
➤ Able to give informed consent | (1) Non Directive reflective Listening (NDRL)  
(2) Motivational Enhancement Therapy (MET)  
(3) No Further Counselling (NFC) | ➢ 6 months |
| Smith et al. | DSM                              | Reduction in alcohol consumption | Single centre, USA       | ➢ No drug problem  
➤ No evidence of psychosis  
➤ Able to supply names of 2 collaterals | (1) Community Reinforcement Approach (CRA)  
(2) Standard Treatment (STD) | ➢ 2 months  
 ➢ 4 months  
 ➢ 9 months  
 ➢ 12 months |
<table>
<thead>
<tr>
<th>Study Author</th>
<th>Alcohol Dependence Assess Criteria</th>
<th>Primary outcome</th>
<th>Location(s) And centre(s)</th>
<th>Inclusion Criteria Utilised</th>
<th>Treatment(s)</th>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>UKATT 2005</td>
<td>Leeds Dependence Questionnaire (LDQ)</td>
<td>Reduction in alcohol consumption</td>
<td>Multicentre (?), UK</td>
<td>16 years plus, Able to read and write, Able to name a contact, No psychosis, Stable accommodation</td>
<td>Motivational Enhancement Therapy (MET), Social Behaviour Network Therapy (SBNT)</td>
<td>➢ 3 months, ➢ 12 months</td>
</tr>
<tr>
<td>Weithmann et al. 2005</td>
<td>ICD</td>
<td>Reduction in alcohol consumption</td>
<td>Single centre, Germany</td>
<td>Alcohol dependence, Live in commuting distance, Not NFA, Able to speak German, Able to name a collateral, No mental retardation</td>
<td>Standard Inpatient (IP), Day hospital treatment (DH)</td>
<td>➢ 3 months, ➢ 6 months, ➢ 9 months, ➢ 12 months</td>
</tr>
</tbody>
</table>
The number of patients included in the eleven studies was 3893, the range being 72-1726. The range of patients allocated to specific treatments was 36-575. Only one trial randomised patients to a no-treatment control group (Saitz et al. 2007), while all other trials compared, defined modalities of psychosocial treatments against another treatment. All studies clearly stated their inclusion criteria.

2.3.2 Demographics

The main demographic measures are shown in Table 2.8. Ten of the eleven studies presented information on age; UKATT was the only study not to report age-specific data. Nine studies reported means which ranged from 38-45 years, while six studies stated the age range. Gender distribution was described in all but one study (UKATT, 2005), the proportion of females included ranged from 14 to 42% female (Figure 2.3). Six studies reported the participants’ employment status with employment of participants ranging from 9 to 54%.

Figure 2.3 Gender distributions of studies included in the systematic review
### Systematic Review

#### Table 2.8 Patient characteristics

<table>
<thead>
<tr>
<th>Study</th>
<th>Number allocated to each treatment group (N=)</th>
<th>Total Study Number</th>
<th>Age, Mean (SD)</th>
<th>Gender (%Male)</th>
<th>Employed (%)</th>
<th>Lost to follow up (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alwyn et al. 2004</td>
<td>I. Usual treatment (45)</td>
<td>91</td>
<td>43 (10.16)</td>
<td>59</td>
<td>Not Stated</td>
<td>14</td>
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<tr>
<td></td>
<td>II. Usual Treatment plus Psychological Approach (46)</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Burtscheidt et al. 2001</td>
<td>I. Coping Skills Therapy (CST) (40)</td>
<td>120</td>
<td>42.4 (7.4)</td>
<td>70</td>
<td>61</td>
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<td></td>
<td>II. Cognitive Behavioural Therapy (CBT) (40)</td>
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<td></td>
<td>III. Standard Treatment (STD) (40)</td>
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<tr>
<td>Dawe et al. 2002</td>
<td>I. Moderation Oriented Cue Exposure (MOCE) (50)</td>
<td>100</td>
<td>41.8 (10)</td>
<td>61</td>
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<td></td>
<td>II. Behavioural Self Control Training (BSCT) (50)</td>
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<tr>
<td>Gronbaek et al. 2006</td>
<td>I. Minnesota day clinic treatment (74)</td>
<td>148</td>
<td>42 (9)</td>
<td>77.7</td>
<td>Not Stated</td>
<td>13</td>
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<tr>
<td></td>
<td>II. Normal public alcohol treatment (74)</td>
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<td></td>
</tr>
<tr>
<td>John et al. 2003</td>
<td>I. Individual Counselling (IC) (161)</td>
<td>322</td>
<td>Not Stated</td>
<td>72</td>
<td>46</td>
<td>41</td>
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<td></td>
<td>II. Group Treatment (GT) (161)</td>
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<tr>
<td>Match 1997</td>
<td>I. Motivational Enhancement Therapy (MET) (NS)</td>
<td>1726</td>
<td>38.9 (10.7)</td>
<td>76</td>
<td>49.5</td>
<td>10</td>
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<td></td>
<td>II. Twelve Step Facilitation (TSF) (NS)</td>
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<tr>
<td></td>
<td>III. Cognitive Behavioural Therapy (CBT) (NS)</td>
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</table>
## Systematic Review

<table>
<thead>
<tr>
<th>Study</th>
<th>Number allocated to each treatment group (N=)</th>
<th>Total Study Number</th>
<th>Age, Mean (SD) years</th>
<th>Gender (%Male)</th>
<th>Employed (%)</th>
<th>Lost to follow up (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saitz et al. 2007</td>
<td>I. Brief intervention (BI) (132)</td>
<td>261</td>
<td>44 (10)</td>
<td>71</td>
<td>27</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>II. No treatment control (CT) (129)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sellman et al. 2001</td>
<td>I. Non Directive Reflective Listening (NDRL) (40)</td>
<td>122</td>
<td>35.7 (Not Stated)</td>
<td>57.4</td>
<td>Not Stated</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>II. Motivational Enhancement Therapy (MET) (42)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>III. No Further Counselling (NFC) (40)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smith et al 1998</td>
<td>I. Community Reinforcement Approach (CRA) (45)</td>
<td>87</td>
<td>38.0 (9.4)</td>
<td>86</td>
<td>9</td>
<td>25.4</td>
</tr>
<tr>
<td></td>
<td>II. Standard Treatment (STD) (42)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UKATT 2005</td>
<td>I. Motivational Enhancement Therapy (MET) (NS)</td>
<td>742</td>
<td>Not Stated</td>
<td>Not Stated</td>
<td>Not Stated</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>II. Social Behaviour Network Therapy (SBNT) (NS)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weithmann et al. 2005</td>
<td>I. Standard Inpatient treatment (IP) (54)</td>
<td>109</td>
<td>44 (9)</td>
<td>82</td>
<td>54</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>II. Day Hospital treatment (DH) (55)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2.3.3 Alcohol consumption measures

The alcohol consumption measures utilised at baseline and follow up are presented in Table 2.11. Nine studies reported a baseline measure of alcohol consumption (MATCH 1997; Smith et al. 1998; Sellman et al. 2001; Dawe et al. 2002; Alwyn et al. 2004; UKATT 2005; Weithmann and Hoffmann 2005; Gronbaek and Nielsen 2007; Saitz et al. 2007). Measures used for calculating alcohol consumption were, Time Line Follow Back (TLFB) (Sobell 1995), and Form 90 (Tonigan et al. 1997). Both these measures use prompts for patients to remember alcohol consumption retrospectively, usually after the last ninety days. They enable generation of values such as standard drinks per drinking day (DDD) and percentage of day’s abstinent (%DA) within a defined retrospective time period. Two studies presented baseline qualitative drinking information, using a variety of terms such as age of onset of problems, prior detoxifications and years of alcohol abuse. They did not present actual measures of overall baseline alcohol consumption (Burtscheidt et al. 2001; John et al. 2003).

2.3.4 Alcohol dependence measures

All studies used a standardised form for measurement of alcohol dependence (Figure 2.4). Five studies utilised a version of the Diagnostic and Statistical Manual of Mental Disorders (DSM III-IVR) (MATCH 1997; Smith et al. 1998; Burtscheidt et al. 2001; Sellman et al. 2001; Saitz et al. 2007), three used International Statistical Classification of Diseases ICD-10 criteria (John et al. 2003; UKATT 2005; Weithmann and Hoffmann 2005; Gronbaek and Nielsen 2007), one the Severity of
Alcohol Dependence Questionnaire Version C (SADQ-C) (Dawe et al. 2002), one the Severity of Alcohol Dependence Questionnaire (SADQ) (Alwyn et al. 2004) and one used the Leeds Dependence Questionnaire (LDQ) (UKATT, 2005)

Figure 2.4 Validated tool used for assessment of alcohol dependence

2.3.5 Treatment

Table 2.9 and Figure 2.5 shows the variety of treatment types and duration across and within studies.

- Saitz et al. (2007) offered a brief 30 minute one-time treatment based on motivational counselling compared to a no treatment control group in a general hospital setting in the USA.

- Three studies offered Motivational Enhancement Therapy (MET): Sellman et al. (2001), based in the USA, used 8 x 50 minute sessions over 6 weeks; MATCH, (1997) which was also in the USA, used 4 x 50 minute sessions,
while the UKATT, (2005), based in the UK, used 3 x 50 minute sessions over an 8-12 week period.

- Two studies used Twelve-Step Facilitation (TSF), MATCH (1997) and Gronbaek et al. (2007), the latter being based in Germany. This comprised 7.5 hours a day, 5 days a week for 6-8 weeks plus compulsory Alcoholics Anonymous (AA) attendance.

- MATCH, (1997) and Burtscheidt et al., (2001) used Coping Skills Therapy (CST). In MATCH (1997), this was 12 x 50 minute sessions, while in Burtscheidt et al., (2001) this was 26 x 100 minute sessions over a 6 month period.

- Smith et al., (1999) used a Community Reinforcement Approach (CRA) which is a culmination of a range of psychological and social methods to aid recovery. The numbers of treatment sessions are described within the paper as variable and occur over a period of 3 weeks.

- Non Directive Reflective Listening (NDRL) was used by Sellman et al., (2001) and consisted of 8 x 50 minute sessions over a 6 week period.

- Dawe et al., 2002 based in Australia used Moderation Orientated Cue Exposure (MOCE) in 8 x 33-40 minute sessions. As a comparator, Dawe et al., (2002) also utilised Behaviour self control therapy (BSCT) which similarly consisted of 8 x 33-40 minute sessions.

- John et al., (2003) used 3 individual counselling sessions of 40 minute sessions, compared to group treatment stated as 14 days plus 4 outpatient groups with no specific duration mentioned.
Alwyn et al., (2004) based in the UK looked at detoxification with two different forms of support: one group had 5 x 30 minute unstructured sessions, whereas the other group had 5 x 30 minute sessions which were psychologically structured.

Weithmann et al., (2005) based in Germany, looked at similar mixed therapy treatment in different settings of inpatient versus day hospital treatment.

There was little variability in treatment setting, because all but one were based within specialist services.

Figure 2.5 Treatment modalities of included studies
### Systematic Review

#### Table 2.9 Treatment setting, duration and the professional delivering the treatment

<table>
<thead>
<tr>
<th>Study</th>
<th>Setting</th>
<th>Treatment(s)</th>
<th>Planned Number of Treatment Sessions</th>
<th>Duration of each treatment session</th>
<th>Professional delivering treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alwyn et al. 2004</td>
<td>Specialist Alcohol Service</td>
<td>I. Usual treatment</td>
<td>I. 5</td>
<td>I. 30 minutes</td>
<td>Psychiatric nurses</td>
</tr>
<tr>
<td></td>
<td></td>
<td>II. Usual Treatment plus Psychological Approach</td>
<td>II. 5</td>
<td>II. 30 minutes</td>
<td></td>
</tr>
<tr>
<td>Burtscheidt et al. 2001, 2002</td>
<td>General Psychiatric Service</td>
<td>I. Coping Skills Therapy</td>
<td>I. 26</td>
<td>I. 100 minutes</td>
<td>Psychologist</td>
</tr>
<tr>
<td></td>
<td></td>
<td>II. Cognitive Behavioural Therapy</td>
<td>II. 26</td>
<td>II. 100 minutes</td>
<td>And ward staff</td>
</tr>
<tr>
<td></td>
<td></td>
<td>III. Standard Treatment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dawe et al. 2002</td>
<td>Specialist Alcohol Service</td>
<td>I. Moderation Orientated Cue Exposure</td>
<td>I. 8</td>
<td>I. 33-40 minutes</td>
<td>Psychologist</td>
</tr>
<tr>
<td></td>
<td></td>
<td>II. Behavioural Self Control Training</td>
<td>II. 8</td>
<td>II. 33-40 minutes</td>
<td></td>
</tr>
<tr>
<td>Gronbaek et al. 2007</td>
<td>Specialist Alcohol Service</td>
<td>I. Minnesota day clinic treatment</td>
<td>I. 30-50</td>
<td>I. 7.5 hours</td>
<td>Psychiatrists</td>
</tr>
<tr>
<td></td>
<td></td>
<td>II. Normal public alcohol treatment</td>
<td>II. 1-4</td>
<td>II. 1 hour</td>
<td>Psychiatric Nurses Psychologists</td>
</tr>
<tr>
<td>John et al. 2003</td>
<td>General Psychiatric Service</td>
<td>I. Individual Counselling</td>
<td>I. 3</td>
<td>I. 40 minutes</td>
<td>Psychologist</td>
</tr>
<tr>
<td></td>
<td></td>
<td>II. Group Treatment</td>
<td>II. 18</td>
<td>II. Not stated</td>
<td></td>
</tr>
<tr>
<td>Match 1997</td>
<td>Specialist Alcohol Service</td>
<td>I. Motivational Enhancement Therapy</td>
<td>I. 4</td>
<td>I. 50 minutes</td>
<td>Specially trained clinicians</td>
</tr>
<tr>
<td></td>
<td></td>
<td>II. Twelve Step Facilitation</td>
<td>II. 12</td>
<td>II. 50 minutes</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>III. Cognitive Behavioural Therapy</td>
<td>III. 12</td>
<td>III. 50 minutes</td>
<td></td>
</tr>
</tbody>
</table>
## Systematic Review

<table>
<thead>
<tr>
<th>Study</th>
<th>Setting</th>
<th>Treatment(s)</th>
<th>Number of Treatment Sessions</th>
<th>Duration of each treatment session</th>
<th>Professional delivering treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saitz et al. 2007</td>
<td>General Hospital</td>
<td>I. Brief intervention</td>
<td>I. 1</td>
<td>I. 30 minutes</td>
<td>Clinical and Counselling Psychology Students</td>
</tr>
<tr>
<td></td>
<td></td>
<td>II. No treatment control</td>
<td>II. 0</td>
<td>II. 0</td>
<td></td>
</tr>
<tr>
<td>Sellman et al. 2001</td>
<td>Specialist Alcohol Service</td>
<td>I. Non Directive Reflective Listening</td>
<td>I. 8</td>
<td>I. 50 minutes</td>
<td>Psychiatrist</td>
</tr>
<tr>
<td></td>
<td></td>
<td>II. Motivational Enhancement Therapy</td>
<td>II. 8</td>
<td>II. 50 minutes</td>
<td>Clinical Psychologist</td>
</tr>
<tr>
<td></td>
<td></td>
<td>III. No Further Counselling</td>
<td>III. 4</td>
<td>III. 50 minutes</td>
<td></td>
</tr>
<tr>
<td>Smith et al. 1998</td>
<td>Homeless persons shelter</td>
<td>I. Community Reinforcement Approach</td>
<td>I. Not Stated - vague description</td>
<td>I. Not Stated</td>
<td>Clinical Psychology grad students</td>
</tr>
<tr>
<td></td>
<td></td>
<td>II. Standard Treatment</td>
<td>II. Not Stated - vague description</td>
<td>II. Not Stated</td>
<td>Counsellor with MSc</td>
</tr>
<tr>
<td>UKATT 2005</td>
<td>Specialist Alcohol Service</td>
<td>I. Motivational Enhancement Therapy</td>
<td>I. 3</td>
<td>I. 50 minutes</td>
<td>Not Stated</td>
</tr>
<tr>
<td></td>
<td></td>
<td>II. Social Behaviour Network Therapy</td>
<td>II. 8</td>
<td>II. 50 minutes</td>
<td>States fully trained to deliver different treatments</td>
</tr>
<tr>
<td>Weithmann et al. 2005</td>
<td>General Psychiatric Service</td>
<td>I. Standard Inpatient treatment</td>
<td>I. 25</td>
<td>I. 7.5 hours</td>
<td>Psychiatrists</td>
</tr>
<tr>
<td></td>
<td></td>
<td>II. Day Hospital treatment</td>
<td>II. 26</td>
<td>II. 7.5 hours</td>
<td>Social workers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Psychologist</td>
</tr>
</tbody>
</table>
2.3.6 Professional delivering the treatment

Table 2.9, shows that all but one of the studies (Dawe et al., 2002) described the individuals involved in the delivery of treatment. In three studies, they were described as therapists, but qualifications were not specified (Sellman et al., 2001, MATCH, 1997, UKATT, 2005). In four of the studies, the treating professionals were either clinical or counselling psychologists. They were either fully qualified or in training (John et al., 2003, Smith et al. 1998, Saitz et al., 2007, Burtscheidt et al. 2001), while one study used a psychiatric nurse (Alwyn et al., 2004). Two used a range of health care professionals (Gronbaek et al., 2007, Weithmann et al., 2005). One study stated that the main treating professional was a recovering ‘alcoholic’ (Gronbaek et al., 2007). Another study used a master's level counsellor for one group (Smith et al., 1998).

2.3.7 Co-therapies (pharmacological detoxification)

Table 2.10 shows the wide variety of approaches to medical detoxification for the participants of the studies. Seven studies stated that they assessed whether the patient required pharmacological detoxification to mitigate symptoms of Alcohol Withdrawal Syndrome (AWS) (Alwyn et al. 2004; Burtscheidt et al. 2001; Gronbaek et al. 2006., John et al. 2003.; Match, 1997; Sellman et al. 2001; UKATT, 2005; Weithmann et al. 2005). Of these seven studies, three provided medical detoxification alongside the psychosocial treatment (Alwyn et al. 2004; Gronbaek et al. 2006, and John et al. 2003). Four further studies randomized after medical detoxification had been completed (Burtscheidt et al. 2001; Match, 1997; UKATT, 2005; Weithmann et al. 2005). Of the other four studies, two did not discuss the
assessment or treatment of alcohol withdrawal (Saitz et al., 2007 and Smith et al. 2001). One other study assessed for features of AWS, and if they had symptoms lasting longer than 24 hours, they were excluded from the study (Sellman et al., 2001). Finally, one study was on controlled drinking approaches; therefore the patients continued to drink as part of treatment (Dawe et al., 2002).

### 2.3.8 Physical health assessment

Table 2.11 shows how studies documented the physical health status of participants and measurement of biochemical liver enzymes. Three of the eleven studies reported assessing the participant’s physical health status (Dawe et al 2002; Saitz et al 2007, and UKATT 2005), while one of these studies used physical health status as a secondary outcome measure (UKATT, 2005). Five of the studies used liver function at baseline (Burtscheidt et al 2001; MATCH, 1997; Sellman et al 2001; Smith et al 1998 and UKATT, 2005). Of this five, 3 used liver enzymes as a secondary outcome measure (Burtscheidt et al. 2001; MATCH, 1997 and UKATT, 2005). In one study, up to a third of their study population were current drug users (Saitz et al. 2007).
### Table 2.10 Co-therapies (pharmacological detoxification)

<table>
<thead>
<tr>
<th>Study</th>
<th>Assessed as to whether pharmacological detoxification required</th>
<th>When Pharmacological detoxification took place</th>
<th>Pharmacological detoxification took place</th>
<th>Any Biochemical measures used to assess liver function</th>
<th>Physical Health Assessed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alwyn et al. 2004</td>
<td>Yes</td>
<td>Alongside</td>
<td></td>
<td>Not Stated</td>
<td>Excludes on withdrawal fits, or severe psychological or physiological disease.</td>
</tr>
<tr>
<td>Burtscheidt et al. 2001</td>
<td>Yes</td>
<td>Before randomization</td>
<td></td>
<td>Gamma Glutamyl Transferase</td>
<td>Excludes schizophrenia and somatic diseases.</td>
</tr>
<tr>
<td>Dawe et al. 2002</td>
<td>Not Applicable</td>
<td>Controlled drinking</td>
<td></td>
<td>Not Stated</td>
<td>Medical assessment to ensure no medical contraindications to moderate drinking.</td>
</tr>
<tr>
<td>Gronbaek et al. 2006</td>
<td>Yes</td>
<td>Alongside</td>
<td></td>
<td>Not Stated</td>
<td>Excludes psychotic illness</td>
</tr>
<tr>
<td>John et al. 2003</td>
<td>Yes</td>
<td>Alongside</td>
<td></td>
<td>Not Stated</td>
<td>Had to be free of severe withdrawal symptoms</td>
</tr>
<tr>
<td>Match 1997</td>
<td>Yes</td>
<td>Before randomization</td>
<td></td>
<td>Yes Gamma Glutamyl Transferase</td>
<td>Not Stated</td>
</tr>
<tr>
<td>Saltz et al. 2007</td>
<td>NS</td>
<td>Not Stated</td>
<td></td>
<td>Not Stated</td>
<td>Included list of medical diagnoses. Note 25-33% had used heroin or cocaine in last 30 days</td>
</tr>
<tr>
<td>Sellman et al. 2001</td>
<td>Yes, excluded if had symptoms of Alcohol Withdrawal Syndrome lasting longer than 24 hours</td>
<td>Not Applicable</td>
<td></td>
<td>Gamma Glutamyl Transpeptidase. If it was three times normal patients were excluded.</td>
<td>Excluded if had any alcohol withdrawal symptoms lasting over 24 hours</td>
</tr>
<tr>
<td>Smith et al. 1998</td>
<td>Not Stated</td>
<td>Not Stated</td>
<td></td>
<td>Gamma Glutamyl Transpeptidase</td>
<td>assessed whether medically fit to take disulfiram</td>
</tr>
<tr>
<td>UKATT 2005</td>
<td>Yes</td>
<td>Between screening and recruitment</td>
<td></td>
<td>Gamma Glutamyl Transferase</td>
<td>Yes SF-36 physical health component and health related quality of life both secondary outcome measures</td>
</tr>
<tr>
<td>Weithman et al. 2005</td>
<td>Yes</td>
<td>Before randomization</td>
<td></td>
<td>Not Stated</td>
<td>Excludes on major psychiatric or medical problem</td>
</tr>
</tbody>
</table>
2.3.9 Outcome measures

Data were examined to test feasibility to perform a meta-analysis on outcome measures. However, as there existed extensive heterogeneity within and between studies for baseline data and outcome measures. Therefore any conversion of data would have led to potentially meaningless or misleading information.

Primary outcome measures

Table 2.7 shows consistency amongst all trials in that their main stated treatment aim was reduction in alcohol consumption. As shown in Table 2.11, the studies included used a variety of measures to demonstrate the outcome. Seven studies used the same measures at baseline and follow up (Dawe et al., 2002; Gronbaek et al., 2007; Match, 1997; Sellman et al., 2001; Smith et al., 1998; UKATT, 2005 and Weithmann et al., 2005). Four studies used different measures to quantify alcohol consumption behaviour at baseline and then at follow up (Alwyn et al., 2004; Burtscheidt et al., 2001; John et al., 2003 and Saitz et al., 2007).

Table 2.11 shows the results of the primary outcome measure of the included studies where they were available. Of the studies presenting the same measures at baseline and follow up, three of them presented data in a group allocation format (Dawe et al.; 2002; Gronbaek et al., 2007, and Sellman et al., 2001). These three studies used consistent measures between and within groups. All showed a significant improvement in alcohol consumption behaviour from baseline to follow up within groups. Statistical significance was stated by two studies (Sellman et al. (2001) and Dawe et al (2002) as being (p<0.001) and (p<0.01) respectively. Some differences
between groups were noted by other studies: Gronbaek et al. (2006) showed improved abstinence in the Minnesota group (p=0.043) and in Sellman et al. (2001), unequivocal heavy drinking (drinking 10 plus standard drinks more than 6 times) was lower in the MET group (p=0.04). Of the four other studies that used the same measures, one of the studies provided data as summative for all three treatment groups both at baseline and follow up (Match, 1997). There was, however, a significant improvement in alcohol consumption behaviour from baseline to follow up, but this was not presented in terms of statistical significance. UKATT (2005) and Smith et al., (1998), presented baseline data as a summative group, with follow up data broken down by treatment group. They both showed an improvement in alcohol consumption measures. But UKATT (2005) did not present this in terms of statistical significance. In the study by Smith et al. (1998), all participants improved in relation to the number of drinks per week (p<.0001), drink days per week (p<.0001), and in mean standard ethanol content per week (SEC) (p<.0001). There were no differences between treatment groups in UKATT, (2005). In the study by Smith et al. (1998) those having CRA had less mean standard ethanol content (SEC) (p=.034) and less drink days per week (p=.015). Weithmann et al., (2005), did the opposite, by presenting data broken down by treatment group at baseline and then summative data for all treatment groups at follow up. They also showed a significant improvement in alcohol consumption measures within groups but not between groups; there was an increase in both groups in ‘percentage days abstinent’ (%DA) (p<.0001) and a decrease in average amount of ‘drinks per drinking day’ (DDD) (p<.0001).
<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment groups</th>
<th>Significance within groups at follow up</th>
<th>Significance between groups at follow up</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alwyn et al. 2004</td>
<td>I. Usual treatment</td>
<td>➢ Statement made saying both groups improved across alcohol consumption measures</td>
<td>➢ Drinks per drinking day, (p=0.012) (3 months), (p=0.005) (12 months)</td>
<td>➢ Difference statistically significant and in favour of the group with a psychological therapy addition. ➢ There is no baseline group differences to compare with</td>
</tr>
<tr>
<td></td>
<td>II. Usual Treatment plus Psychological Approach</td>
<td></td>
<td>➢ Days abstinent, (p=0.001) (3 months), (p=0.004) (12 months)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>➢ Total alcohol units, (p=0.005) (3 months), (p=0.002) (12 months)</td>
<td></td>
</tr>
<tr>
<td>Burtscheidt et al. 2001</td>
<td>I. Coping Skills Therapy</td>
<td>Not Stated</td>
<td>Not Stated</td>
<td>➢ Different measures used from baseline to follow up ➢ Stated no differences between groups at follow up</td>
</tr>
<tr>
<td></td>
<td>II. Cognitive Behavioural Therapy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>III. Standard Treatment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dawe et al. 2002</td>
<td>I. Moderation Orientated Cue Exposure</td>
<td>➢ Significant decrease in total standard daily units, (p&lt;0.01)</td>
<td>➢ States no significant differences between groups</td>
<td>➢ Drinking 7≥SDU on any one drinking occasion post treatment was still the case in 66% ♂ and 32% ♀</td>
</tr>
<tr>
<td></td>
<td>II. Behavioural Self Control Training</td>
<td>➢ Significant decrease in Mean number of drinks per day, (p&lt;0.01)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>➢ Significant decrease in total number of days drinking in 90 day period, (p&lt;0.01)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>➢ Significant decrease in heavy drinking, (p&lt;0.01)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Systematic Review**

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment groups</th>
<th>Significance within groups at follow up</th>
<th>Significance between groups at follow up</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gronbaek et al. 2006</td>
<td>I. Minnesota day clinic treatment</td>
<td>➢ Reports that alcohol consumption reduced, however not reported in terms of statistical significance</td>
<td>➢ Abstinence Minnesota group performed statistically better, (p=0.043)</td>
<td>➢ Significant number dropped out of treatment, 43% in Group 1 and 55% in Group 2</td>
</tr>
<tr>
<td></td>
<td>II. Normal public alcohol treatment</td>
<td></td>
<td>➢ Drinking less than 4 units per day, (p=0.116) not significant</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>➢ Mean alcohol intake per day, (p=0.250) not significant</td>
<td></td>
</tr>
<tr>
<td>John et al. 2003</td>
<td>I. Individual Counselling</td>
<td>Not Stated</td>
<td>Not stated</td>
<td>➢ Not able to draw inferences different measures used at baseline and follow up</td>
</tr>
<tr>
<td></td>
<td>II. Group Treatment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Match 1997</td>
<td>I. Motivational Enhancement Therapy</td>
<td>➢ Study reports improvement in percentage day’s abstinent (%DA) from baseline to follow up.</td>
<td>➢ Study reports a statistical difference, (p&lt;0.001) after data transformations for percentage days abstinent in the Twelve Step Facilitation group in the Aftercare Arm</td>
<td>➢ Very difficult to read, did lots of transformations of the data</td>
</tr>
<tr>
<td></td>
<td>II. Twelve Step Facilitation</td>
<td>➢ These are not presented in terms of statistical significance in terms of percentages only</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>III. Cognitive Behavioural Therapy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saitz et al. 2007</td>
<td>I. Brief intervention</td>
<td>➢ States number of drinks per day decreased in both groups</td>
<td>➢ States no significant differences between groups</td>
<td></td>
</tr>
</tbody>
</table>
## Systematic Review

<table>
<thead>
<tr>
<th>Study</th>
<th>Treatment groups</th>
<th>Significance within groups at follow up</th>
<th>Significance between groups at follow up</th>
<th>Comments</th>
</tr>
</thead>
</table>
| Sellman et al. 2001 | I. Non Directive Reflective Listening  
                    II. Motivational Enhancement Therapy  
                    III. No Further Counselling            | ➢ Those drinking 10+ standard drinks more than 6 times decreased significantly, (p<0.001)               | ➢ Unequivocal heavy drinking significantly lower in MET group, (p=0.04)                                     | ➢ Those breaking national guidelines still 71.3%.
|                  |                                        |                                                                                                        |                                                                                                         | ➢ Only significant differences presented                                 |
| Smith et al. 1998 | I. Community Reinforcement Approach  
                    II. Standard Treatment                  | ➢ Number of drinks per week,(p<0.0001)                                                                   | ➢ Community Reinforcement Approach improved statistically better on SEC’s, (p=0.0034)                    | ➢                                                                                                                                   |
|                  |                                        | ➢ Drink days per week, (p<0.0001)                                                                        | ➢ Community Reinforcement Approach improved statistically better on Drink days per week, (p=0.0146)     | ➢                                                                                                                                   |
|                  |                                        | ➢ Mean Standard Ethanol Content per week,(p<0.0001)                                                       |                                                                                                         | ➢                                                                                                                                   |
| UKATT 2005       | I. Motivational Enhancement Therapy  
                    II. Social Behaviour Network Therapy            | ➢ States both groups improved no statistical significance presented                                      | ➢ States no significant differences not presented                                                       | ➢ Interestingly log GGT was an outcome measure and there was no reduction in this |
| Weithman et al. 2005 | I. Standard Inpatient treatment  
                    II. Day Hospital treatment                | ➢ Percentage days abstinent increased significantly, (p<0.0001)                                           | ➢ States no differences between treatments                                                                | ➢                                                                                                                                   |
Secondary outcome measures

Three studies used alcohol dependence as a measured outcome; two used a version of the Severity of Alcohol dependence Questionnaire (SADQ, SADQ-C) and one used the Leeds Dependence Questionnaire (LDQ).

A wide variety of secondary outcome measures were used, mainly based on lifestyle measures such as Alcohol Problems Questionnaire (APQ, 3), Addiction Severity Index (ASI, 1) (Gronbaek et al., 2007), Drinkers Inventory of Consequences (DrINC, 1), social satisfaction, (1), craving (1) and impaired control (1). One study looked at measures of general health and quality of life (UKATT, 2005). Two studies used biochemical measures such as liver function or Carbohydrate Deficient Transferrin (CDT) (MATCH, 1997 and Burtscheidt et al., 2001).
2.4 Discussion

Within healthcare, it is axiomatic that treatment is based on robust clinical evidence that can demonstrate effectiveness. To enable clinicians to make appropriate treatment recommendations for their patients, such evidence needs to be readily available and unambiguous. Unfortunately this is often not the case, and there exists an enormous body of conflicting data. A tested and reliable method to attempt to make sense of these data is the process of systematic review, the aim being to draw useful conclusions as to the effectiveness of treatment.

As this review was focused on an alcohol dependent population, the method of diagnosis of dependence is of paramount importance. As the study populations were often presented as heterogeneous alcohol-dependent samples, it became therefore difficult to determine the level of dependence of individuals within studies, if the most appropriate treatment was being prescribed. Lack of assessment of level or severity of dependence was surprising as there is a perceived wisdom in the area of alcohol treatment that higher levels of dependency require treatments of greater intensity (Shand 2003; Slattery 2003; Department of Health 2004; Department of Health 2005; Drummond et al. 2005; Raistrick et al. 2006). This is of relevance as this population is heterogeneous ranging from those who require no pharmacology to those requiring in-patient structured medically managed detoxification. Clearly this is important as it is well established that the severity of dependence is a determinant of the probability of successful outcome (McLellan et al. 1994; Moos et al. 2000; Bottlender M. & Soyka M 2005).
Indeed treating this population as homogeneous further increases the chance for selection bias. Social factors such as, having transport to treatment centres, access to stable housing and having a collateral contact, represent well known strong positive prognostic factors for patients seeking and succeeding in treatment. This selection bias was a feature of all studies (Humphreys and Weisner 2000; Moos and Moos 2004; Dawson et al. 2006; Moos and Moos 2006; Dennis and Scott 2007; Dennis et al. 2007; Li et al. 2007). Conversely, negative predictors of patients seeking and succeeding in treatment such as mental and physical health problems were used as exclusion criteria within studies (Rounsaville et al. 1987; Room et al. 2005; Mannelli and Pae 2007; Mojtabai and Singh 2007). Compounding this problem is the necessity for pharmacological management of Alcohol Withdrawal Syndrome (AWS), which would constitute an important co-therapy. The studies however were inconsistent in their methodology for assessing the need for detoxification, and in some cases, failed to report whether patients had such treatment. Several of the studies reported pharmacological treatment for AWS; however, this was often given in conjunction with the psychosocial treatment. Furthermore, some studies performed this treatment prior to randomization to a psychosocial treatment group. This has implications for both the transferability of the research findings to clinical practice, and the potential to introduce further research bias in the allocation of patients to treatment groups (Penberthy et al. 2007). It could be argued that patients are more likely to engage and succeed in treatment that they view as supplementary, as opposed to distinct psychosocial treatment. Further compounding this there could be an element of selection bias, as those who failed to complete the first arm of treatment will by default be excluded from randomization.
The importance of physical health as a determinant of successful outcome was neglected by all studies. Needless to say, this population have an increased risk of medical co-morbidity, such as cardiac disease, liver disease and nutritional deficiencies. It is well documented that in psychiatric services, the patient's physical health receives little attention or assessment (Rigby and Oswald 1987; Gournay 1996; Department of Health 2004; Department of Health 2006). It can therefore be likely that in such settings, physical health will be neglected. It does appear that treatment is designed in accordance with the overall treatment setting or is dependent on the therapist/clinician, and does not meet the holistic needs of the patient. Specialist alcohol services based within psychiatric services predominated as the treatment setting and as such a ‘disease of the mind’ is considered the ‘norm’ (Li et al. 2007).

All patients presenting to this setting are by definition ‘treatment seeking’ and have recognized that they have a problem (Moyer et al. 2002; Moyer et al. 2002). It is known that this patient group has a higher level of motivation to take part and succeed in treatment (Bischof et al. 2000; Staines et al. 2003; Rochat et al. 2004; Cox et al. 2007; Dyson 2007). Motivational theory was employed in many treatments within this review and within alcohol treatment trials as it is seen as a central psychological construct to successful treatment. Therefore, patients who present themselves for treatment represent a ‘highly motivated’ and self selected group and this is an important confounding factor that needs to be assessed in future trials. Furthermore, the professional group that predominates across all the treatment trials is that of clinical psychologists. This in itself can present some difficulties in access to treatment and necessitates complicated referral systems and usually long waiting
lists. Also studies did not control for the effect of therapist and therefore the phenomenon of ‘therapeutic alliance’, which is the reality that some ‘therapists’ are more effective than others and attain better patient outcomes was not addressed (Ritter et al. 2002; Raistrick et al. 2006).

The treatment modality presented several levels of difficulty in this review as it was unclear from treatment definitions what methodology was being employed. There seemed to be an approach of ‘throw everything at it’ and something will stick, a concept highlighted by Miller in his Mesagrande (Miller and Wilbourne 2002). Compounding this is that neither duration of treatment or treatment intensity affected the outcome. Duration and intensity of treatment are not clearly defined in the psychosocial model and comprehensible definitions of treatment are lacking (Sobell et al. 1987; Miller and Wilbourne 2002). Indeed, comparisons across studies are further complicated by the fact that in various cases, treatments with different names appear to be describing the same treatment; conversely, treatments with similar names were very different. This will result in uncertainty between clinicians as to which treatment is likely to be most appropriate. Indeed, this has been highlighted as a confounder in several recent well resourced reviews (Miller and Wilbourne 2002; Berglund 2003; Shand 2003; Slattery 2003; Raistrick et al. 2006) and is evident within the general psychosocial treatment area (Stiles et al. 1986; Shapiro et al. 1989).

There were also a number of methodological weaknesses that leave the studies open to interpretation and challenge. Of note, none of the studies reported statistical
power to justify their sample size. This is especially pertinent in this review as the largest study MATCH (MATCH, 1997), would have been expected to show a difference, but none was observed. This may have been due to the enormous number of hypotheses tested and analyses performed, which leads to a false positive often referred to as a type I error (Moyer et al. 2001; Cutler and Fishbain 2005). Additionally, the methods and procedures to perform randomization were not well described; a well documented feature that seems to persist in alcohol treatment trials (Sobell et al. 1987; Breslin and Sobell 1999; Ferri et al. 2006).

Therefore, confidence in reporting differences between trials is limited. It is also of interest and significance that studies fail to account for the phenomenon of natural recovery. It is well recognized that a percentage of patients will spontaneously remit from alcohol dependence in the absence of treatment (Sobell et al. 1996; Bischof et al. 2000; Sobell et al. 2000; Bischof et al. 2003). Unfortunately, it is not possible to ascertain if the reported treatment effect is reduced by this phenomenon. Although methodological quality in alcohol trials has been scrutinized and found to be deficient, reports that trials from Europe are of a higher quality (Miller and Wilbourne 2002), were not substantiated by this review.

Equivalence of outcomes for all treatments was observed within the studies and has been well documented in the alcohol and psychosocial literature generally (Stiles et al. 1986; Shapiro et al. 1989). This has also been observed in adjunct pharmacotherapy trials combining pharmacology and psychosocial treatment even when inactive placebos are used (Anton et al. 2006). However although all studies
had the aim of reducing alcohol consumption, an ‘apples and oranges’ approach to the measurement of alcohol consumption both between and within studies, presented significant difficulties in drawing any reliable conclusions. This was due to the diversity of tools used to determine drinking behaviour, the lack of baseline data in several studies and differing measures used at baseline and follow up. Indeed, this is one of the commonest complaints in the alcohol treatment literature, from clinicians and researchers alike, with constant calls to standardize measures to achieve consistency across studies, which would allow valid clinical decisions to be made (Sobell et al. 1987).

In conclusion, treatment outcomes when compared across studies were equivocal, with no one treatment modality emerging as showing superior effectiveness. Furthermore, from a clinical perspective, the elements of treatment that formulate the evidence for commissioning such as guidance on where treatment takes place, who delivers treatment, and what treatment modality should be utilised are lacking within studies. It is therefore clear from the evidence that there is a need for more standardization and also for researchers to develop a common nomenclature and outcome measures.
Chapter Three

Patient views on 24 hour licensing:
A Qualitative Study
3. Patients views on 24 hour licensing: A qualitative study

3.1 Introduction

3.2 Methods

3.2.1 Aim

3.2.2 Objectives

3.2.3 Design

3.3 Results

3.3.1 Demographics

3.3.2 Data coding

3.3.3 Theme emergence

3.3.4 Overriding themes

3.4 Discussion
3. Patients views on 24 hour licensing: A qualitative study

3.1 Introduction

A formal announcement of the first intention in 40 years to review the Alcohol Licensing system in England and Wales was presented to Parliament in April 2000. The impetus for this white paper was to reduce crime and disorder, and the drinking patterns associated with fixed closing times of licensed premises. A further stated aim was to increase people’s freedom and choice about where and when they consume alcohol, in accordance with alcohol availability in other European nations.

To control the price and availability of alcohol, the UK Government has used a variety of legislative means throughout history. The predominant price control utilized was that of taxation, one the earliest examples being taxation on ale by Henry III in 1266 (Greenaway 2003). However, historical commentators have been unable to provide evidence for the effectiveness of this measure. A subsequent tax measure introduced within the 1736 Gin Act was reported to cause significant public unrest resulting in rioting in the streets of London and was thus abolished in 1742. This led the government of the day to rethink legislation, replacing taxation measures with restrictive availability measures in the form of licensing legislation; the Gin Act of 1757 was the first attempt by the English government to impose such restrictions (Greenaway 2003). Indeed, licensing legislation became the predominant measure to control alcohol availability and was extended in the intoxicating Liquor Licensing Bill of 1871 by restricting the times that alcohol was available for sale (Webb 1903).
This form of licensing legislation survived until November 2005, when the government implemented the Licensing Act 2003 (HM 2003). This Act has two main operational differences from pre-existing licensing laws, as follows:

1. The abolition of universal “permitted hours” for the sale of alcohol, thus making it possible on application to sell alcohol 24 hours a day.

2. The responsibility of Licensing was devolved from the Home Office to the Department of Culture, Media and Sport (DCMS). Therefore, all types of licenses became the responsibility of councils as opposed to magistrates.

The Licensing Act (2003) is described as having four main aims:

a) to reduce crime and disorder;

b) to encourage tourism;

c) to reduce alcohol misuse; and

d) to encourage self-sufficient rural communities.

Much of the rationale for the changes to this legislation has stemmed from a belief that encouraging more ‘European’ access will result in more ‘European’ drinking styles. The hypothesis is that this would lead to a reduction in binge-drinking and alcohol-related crime. The basis for such a position is unclear; it is of note that there is no element of public health impact assessment within this Act. Perhaps this omission has led to both the Scottish and Northern Irish governments to review their legislation, and incorporate public health as a specific objective.
The predominant legislative method to control the availability of alcohol across the world is the use of licensing laws. We have international evidence from Australia, New Zealand and Iceland as to the impact that liberalizing the Licensing law had on a number of indices such as crime, disorder and health. In relation to crime, there were increases in late night assaults, disorder and drink driving (Chikritzhs and Stockwell 2006; Huckle et al. 2006). Overall consumption also increased along with the levels of intoxication. Additionally, there was an increase in both emergency admissions to hospital and alcohol-related mortality. In the UK, a “mixed picture” is emerging as to the impact that the change in legislation has had (Department of Culture Media and Sport 2008). A recent government evaluation published in March 2008 found that although overall crime and alcohol consumption have fallen since 2003, there has been an increase in alcohol-related violence in the early hours of the morning (Department of Culture Media and Sport 2008DCMS 2008). However the picture remains confused with conflicting evidence. It has also been found that alcohol related attendances have gone up at one hospital (Newton et al. 2007), and the London Ambulance Service has reported a 2% increase in alcohol-related callouts (London Ambulance Service 2006). Conversely, other studies have reported that there has been no increase in police incidents, A&E attendances and crime and disorder generally (Bellis 2006; Babb 2007; Helasoja et al. 2007).

Clearly there are differences in drinking behaviours between countries of where, when and what alcohol is consumed. In an attempt to describe and categorize drinking behaviours, commentators and social scientists present several paradigms. One such paradigm is the presence of ‘Wet and Dry’ cultures (Levine 1992; Bloomfield et al. 2003). ‘Wet’ cultures are those observed in mostly southern
European countries, where alcohol is integrated into daily life, is widely available and there are low rates of abstinence. Other features of these cultures include a significant proportion of alcohol being consumed alongside meals, and this is more likely to be wine (Bloomfield et al. 2003). Conversely, in ‘Dry’ cultures, which have been observed in Scandinavia, UK, USA and Canada, are described as having controlled access to alcohol, higher levels of abstinence and levels of consumption that are more likely to result in intoxication (Bloomfield et al. 2003).

International comparisons of alcohol consumption are difficult, as the methodology utilized to measure consumption differs from country to country and within studies (WHO 2001; Leifman 2002; WHO 2004; Anderson 2006). However, data show that Europe is one of the heaviest drinking regions of the world, consuming on average 11 litres of pure alcohol per adult per year (UK, 11.8, Spain, 11.7, France, 11.4, Italy, 8.0), with around 55 million adults drinking at harmful levels. However, total yearly alcohol consumption is a poor measure of drinking behaviour and its related consequences. Therefore, although UK consumption does not differ from many European countries, the drinking patterns seem to differ greatly. In the UK, it has been reported that people have less drinking occasions per week, i.e. they consume more on each of these occasions than their European counterparts (Leifman 2002; WHO 2004). This drinking on more than one occasion has led to the greater harms seen in the UK, even though there is no difference in overall consumption. Unfortunately, there is also some evidence that consumption patterns throughout Europe are converging. For example, in 1988 in France, males had on average 6.5 drinking occasions per week, but by 2000 this had reportedly decreased to 4.1
drinking occasions per week, a figure very similar to that of the UK (Hupkens et al. 1993).

There has been much recent media focus on the new ‘culture’ of ‘binge drinking’ among young people, with particular emphasis on the crime and disorder caused by this pattern of drinking (Deacon 2008). Binge drinking is not a ‘novel’ concept. Descriptions of binge drinking go as far back as the Vikings (Edward 2000) (MCM 2004). It is known that this pattern of drinking is the preferred behaviour in young people both internationally as well as nationally (Harrington 2000; Richardson 2003; Helasoja et al. 2007), particularly amongst young males (Kuntsche et al. 2004; de Visser and Smith 2007). However recent media attention has focused on 35-55 year olds, who also ‘binge drink’ (Goddard 2006).

Definitions of binge drinking are inconsistent and there is no nationally or internationally agreed definition. There are currently two definitions of binge drinking that predominate in the literature;

1. Drinking defined in alcohol unitary terms; drinking twice the Government’s upper daily limits, which is 6 units plus for a female, and 8 units plus for a male one occasion (Department of Health 2004).

2. A more subjective definition of whether a person feels intoxicated during a drinking occasion (Makela et al. 2001; Gill et al. 2007).
The change in licensing laws in 2005 received a significant amount of media attention, mostly of a negative nature, in that it would lead to widespread destruction and drunkenness. There was no formal survey of the general public’s perception as to the impact that this change in legislation would bring to England and Wales. A very important group of drinkers who could potentially be affected by this legislation are patients currently receiving treatment for alcohol or non-alcohol related problems or diseases. We know that 12% of attendances at A&E and 6% of admissions are due to alcohol-related causes and it is also known that this increases at peak times such as Friday and Saturday nights which are considered peak trading nights for the night time economy (Pirmohamed et al. 2000). The question however remains as to whether patients will change their drinking behaviour as a result of increased availability and what they think will be the net result of legislation change. Therefore, in this study, attempts have been made to gain a unique insight into the perceptions of a clinical population who drink alcohol.
3.2 Methods

3.2.1 Aim

The overall aim of this study was to determine patient’s perceptions about the impact that changes in the licensing law will have on themselves and their communities.

3.2.2 Objectives

1. Do patients feel that the Licensing Act (2003) will cause them to increase their own alcohol consumption?

2. Do patients feel that the Licensing Act (2003) will cause other people to increase their alcohol consumption?

3. Do patients feel that there will be any consequences of the Licensing Act (2003) on them?

4. Do patients feel that there will be any consequences of the Licensing Act (2003) on other people?

3.2.3 Design

Analysis was undertaken using a qualitative approach with semi-structured face to face interviews. These were undertaken in the Royal Liverpool and Broadgreen NHS Trust (RLBUHT) between July 2005 and September 2005, prior to the implementation of the act in November 2005.
3.2.3.1 Patients

Patients attending the hospital were assessed by the Alcohol Lifestyles Team. They were approached by the researcher and the study was explained. Subsequently they were provided with a patient information leaflet (PIL) and given 48 hours to think about their participation in the study. If they agreed to take part in the study they were asked to sign a consent form. Each patient received the usual screening process that they would undergo as part of their normal clinical care. The structure was as follows:

1. Alcohol Use Disorders Identification test (AUDIT) (Saunders et al. 1993)

2. Quantity and frequency measures of alcohol consumption (Units per day, drinking days per week and type of alcohol consumed)

3. Severity of Alcohol Dependence Questionnaire (SADQ) (Stockwell et al. 1979)

Patients were allocated to groups dependent on their drinking behaviour as described in Table 3.1.

Table 3.1 Allocation to study group

<table>
<thead>
<tr>
<th>Group</th>
<th>Type</th>
<th>AUDIT</th>
<th>SADQ</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Non Hazardous</td>
<td>Less than 8</td>
<td>Nil</td>
<td>Male = less than or equal to 21</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>F= Less than or equal to 14</td>
</tr>
<tr>
<td>2</td>
<td>Hazardous/ Harmful</td>
<td>Greater than</td>
<td>Nil</td>
<td>Not Applicable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or equal to 8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>and less than 16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Dependent</td>
<td>Greater than</td>
<td>Positive</td>
<td>Not Applicable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.2.3.2 Sample size

Utilising a standard quantitative approach to this study was considered to increase the potential for greater numbers and therefore a greater range of population responses. However, as there were no previous studies on which could be used to inform such a design, coupled with limitations of time, the methodological aspects were not taken forward. Therefore, the rationale for sample size selection was in the spirit of ‘purposeful sampling’. Thus the sample should be no larger than is necessary to reach thematic saturation. The population should be as inclusive as possible, and thus patients were selected according to the following:

- Age
- Ethnicity
- Gender
- Socio economic background

This generated a total study population of 30 patients, with 10 patients in each of the three groups.

3.2.3.3 Ethical Approval

Ethical approval was obtained from the Liverpool Research Ethics Committee (LREC); reference number 05/Q1505/28.
3.2.3.4 Research and Development Approval

This study was registered with the research and development department of The Royal Liverpool and Broadgreen NHS Trust (project R&D number 3014) and was given full sponsorship from the Trust who arranged independent peer review of the study.

3.2.3.5 Interviews

Following written consent, semi-structured interviews were conducted in the outpatient clinic in a private room; all interviews were audio taped using a dictaphone. The schedule was open ended, and the interviewer followed up other issues that were raised by the participants (See Appendix 3). Interviews lasted between 20-30 minutes and were then immediately transcribed and analyzed with the help of the QSR NVivo computer package to ensure that the sample was 'purposeful'. Recruitment for the study ceased when no new themes were emerging.
3.3 Results

3.3.1 Demographics

There was equal distribution between the groups (Table 3.2), with 10 patients in each drinking behaviour group. Gender distribution was approximately equal within groups.

<table>
<thead>
<tr>
<th>Group</th>
<th>Drinking Category</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (N=10)</td>
<td>Non Hazardous</td>
<td>5 (50%)</td>
<td>5 (50%)</td>
</tr>
<tr>
<td>2 (N=10)</td>
<td>Hazardous</td>
<td>5 (50%)</td>
<td>5 (50%)</td>
</tr>
<tr>
<td>3 (N=10)</td>
<td>Dependence</td>
<td>6 (60%)</td>
<td>4 (40%)</td>
</tr>
</tbody>
</table>

3.3.2 Data Coding

Analysis was ongoing throughout the fieldwork. Patient interviews that had been taped were typed out in full and read as typed text for accuracy and face validity. The technique of narrative analysis, which is the reading and re-reading of text in a cyclical pattern, was employed with the assistance of the qualitative computer package QSR NVivo to aid theme extraction.
3.3.3 Theme Emergence

The overall responses in each of the groups are shown in Table 3.3 as a total sample. Their views as to whether the new law would have any impact can be divided into six areas:

1. On their own lives
2. On their own alcohol consumption
3. On their families’ lives
4. On their families’ alcohol consumption
5. On other peoples’ lives
6. On other peoples’ alcohol consumption

There was general consistency across the groups; however, there were a few notable differences, there were no differences for gender. Group 3, dependent drinkers, were more likely than the other two groups to feel that the Licensing Act 2003 would have an impact on their alcohol consumption. Forty percent of this group felt that there would be a potential change in their alcohol consumption. About 20% of the patients in Group 2, hazardous/ harmful drinkers felt that this also had the potential to impact on their alcohol consumption. Conversely none of Group 1 patients, sensible drinkers, felt there would be any impact on their alcohol consumption behaviour. All of the sensible drinkers felt it would impact on the alcohol consumption behaviour of other people, whereas 70% of Group 3, dependent drinkers felt that it would impact on the alcohol consumption behaviour of other people. Overall, as a total group, 20% felt that the Licensing Act 2003 would affect themselves and their drinking patterns, with around 90% feeling that it was more likely to affect others, and other people’s alcohol consumption.
### Table 3.3 Overall responses to questions

<table>
<thead>
<tr>
<th></th>
<th>Group 1</th>
<th></th>
<th>Group 2</th>
<th></th>
<th>Group 3</th>
<th></th>
<th>Totals</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No Hazardous Drinkers</td>
<td></td>
<td>Hazardous and Harmful Drinkers</td>
<td></td>
<td>Dependent Drinkers</td>
<td></td>
<td>N=30</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N=10</td>
<td></td>
<td>N=10</td>
<td></td>
<td>N=10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Will</td>
<td>Won’t</td>
<td>Unsure</td>
<td>Will</td>
<td>Won’t</td>
<td>Unsure</td>
<td>Will</td>
<td>Won’t</td>
<td>Unsure</td>
</tr>
<tr>
<td>1. Affect Themselves</td>
<td>1(10%)</td>
<td>9(90%)</td>
<td>-</td>
<td>2(20%)</td>
<td>8(80%)</td>
<td>-</td>
<td>3(30%)</td>
<td>7(70%)</td>
</tr>
<tr>
<td>2. Affect Their Drinking</td>
<td>-</td>
<td>10(100%)</td>
<td>-</td>
<td>2(20%)</td>
<td>6(60%)</td>
<td>2(20%)</td>
<td>4(40%)</td>
<td>4(40%)</td>
</tr>
<tr>
<td>3. Affect Families</td>
<td>-</td>
<td>7(70%)</td>
<td>3(30%)</td>
<td>1(10%)</td>
<td>7(70%)</td>
<td>2(20%)</td>
<td>-</td>
<td>7(70%)</td>
</tr>
<tr>
<td>4. Affect Families Drinking</td>
<td>2(20%)</td>
<td>7(70%)</td>
<td>1(10%)</td>
<td>2(20%)</td>
<td>8(80%)</td>
<td>-</td>
<td>1(10%)</td>
<td>9(90%)</td>
</tr>
<tr>
<td>5. Affect Others</td>
<td>9(90%)</td>
<td>-</td>
<td>1(10%)</td>
<td>9(90%)</td>
<td>1(10%)</td>
<td>-</td>
<td>9(90%)</td>
<td>-</td>
</tr>
<tr>
<td>6. Affect Others Drinking</td>
<td>10(100%)</td>
<td>-</td>
<td>-</td>
<td>9(90%)</td>
<td>1(10%)</td>
<td>-</td>
<td>7(70%)</td>
<td>3(30%)</td>
</tr>
</tbody>
</table>
3.3.4 Overriding Themes

There were four main themes that emerged through the interviews:

1. Ambivalence;
2. Concern for young people;
3. Concern about crime and disorder; and
4. A belief that consumption would increase.

Ambivalence

Participants largely did not feel that the increased availability of alcohol would impact on their own drinking patterns; however dependent patients were more likely to express the view that it could potentially affect their alcohol consumption.

“I will drink a lot more......If you know that you can like go and get it cheaper from anywhere at any time. So there’ll be nothing limiting me and it will be causing problems as I’ll not be able to stop.” (Male, 54, Dependence)

“Well if I run out of drink, I’ll just be able to go out and get more, even in the middle of the night......So there’ll be nothing stopping me.” (Female, 42, Dependence)

The reasons why increased availability of alcohol would not affect their drinking patterns, particularly in the hazardous/harmful and dependent drinkers, were that they recognized that they had a problem and were actively seeking help from the Lifestyles Team. Others felt it would not affect them because they had very established routines in regard to their alcohol consumption behaviour. It was more likely for patients in the non-hazardous group to mention limiting factors such as
looking after children and going to work as reasons that it would not impact on their alcohol consumption.

Most participants felt that increased availability of alcohol would have an impact on others within their communities. Some felt there would be an initial increase in drinking in the build up to Christmas with the novelty of longer opening hours.

“Well initially it will make it more readily available for them, but they’ll soon get fed up won’t they?” (Male, 45, Sensible)

Some participants felt that it might encourage a more relaxed attitude to alcohol and drinking generally. However, paradoxically concern was also expressed as to whether this European drinking style was culturally appropriate for England.

“I know our culture isn’t a culture that can take on board the type of culture that allows these drinking hours, that’s for sure.” (Female, 62, Dependence)

**Young People**

Many participants mentioned young people as a distinct group who were potentially vulnerable because of increased availability of alcohol, with particular reference to a “binge drinking” culture.

“Our youths don’t sit outside having a mellow evening drinking, they drink standing at the bar, getting drunk.” (Male, 54, dependence)
Some participants also expressed a perception that the contemporary choice of beverage had changed, with young people consuming designer drinks and shots. It was also highlighted that alcohol was comparatively inexpensive and therefore more readily affordable.

“Well in my day you could only have one or two because your money ran out, it is not like that now.” (Male, 91, Sensible)

**Crime and Disorder**

Many participants expressed the belief that increasing the availability of alcohol would mean an escalation of public disturbance. They also felt that this would lead to the need for more policing at later hours.

“There’s loads of trouble on the streets at the minute… but 3, 4 or 5 in the morning the police are going to be scarce on the streets so I just don’t know what will happen then.” (Male, 54, dependence)

The potential for increased crime and disorder was mentioned particularly in reference to the potential for alcohol to provoke violent incidents.

“Cos obviously alcohol makes some people violent, disturbances, so on and so forth, it could get quite heavy.” (Male, Hazardous, 54)

Special concern was expressed for areas densely populated with licensed premises.

“Big crowds of pubs, and where you get crowds of people who are drinking alcohol, you’re going to get trouble.” (Female, sensible, 30)
There was also mention that extended drinking hours had the potential to create more noise, disturbing peoples sleep, in particular, those that have to get up for work the next day.

**Increase Consumption**

Most patients felt that increasing the availability of alcohol would not lead to an increase in overall alcohol consumption. However, a few of the dependent drinkers felt that their alcohol consumption would increase as a direct result of it increased availability;

“I will probably drink a lot more.” *(Male, 60, dependence)*
3.4 Discussion

To date, there has been no public engagement as to the potential impact of the recent Licensing Act on drinking behaviour. In the absence of this knowledge, the UK government formed an assumption that relaxing licensing law and increasing alcohol availability would be supported by the public. The ‘spin’ placed on the benefits of this legislation were centred on an assertion that it would lead to a reduction in crime and disorder, a reduction in binge drinking and would increase public choice and freedom around alcohol consumption.

However, as this study has shown, the assumptions made may have been false. A number of themes arose from this study, the presence of ambivalence being the most dominant. This is hardly surprising as the UK government expresses very ambivalent attitudes to alcohol. Drinking is often presented as a necessary social lubricant, which if taken in a more European style can improve quality of lives. This notion is fully supported and indeed advocated by the multi-million pound drinks industry. Conversely, media images of alcohol's negative impact on health, crime, and social disorder are also supported by the same government.

Perhaps, we should not be surprised by this ambivalent attitude as alcohol itself has complex effects on human lives. For example, we clearly know that alcohol has numerous adverse psychological and physiological effects (Cameron et al. 2003). However, it is also known to have beneficial protective effects on the cardiovascular system, when taken at low levels. Worryingly, it is known that ambivalent attitudes are generally negative predictors of behaviour (Armitage 2003; Conner et al. 2003).
Clearly ambivalence is a predominant attitude not only within this study but generally, and there is a need for it to be addressed in social marketing campaigns aimed at attitudinal or motivational change.

This study population was most concerned about the apparent ‘binge drinking’ phenomenon in Britain today, with young people being consistently cited as the group that was felt to be vulnerable to this pattern of drinking (Harrington 2000; Richardson 2003). This sample felt that binge drinking was related to a number of environmental issues, for example, the culture of vertical drinking and the relatively low price of alcohol. Due to young people’s financial resources being limited, it is thought that their alcohol consumption is particularly “price elastic” and sensitive (Edwards et al. 1994; French et al. 2006). Many health professionals welcomed the recent increases in tax on alcohol (Budget, March 2008). Although consumption in the young may be sensitive to price changes, we clearly have no idea as to how elastic the price is for the rest of the population. It could be argued that the price increase was moderate and therefore is unlikely to impact on behaviour.

Increased availability of alcohol has previously been shown to increase pressure on police services (Chikritzhs and Stockwell 2006). Although there is a lack of consistency in the emergent evidence in the UK, this study showed that patients felt this was a major concern. However, as this legislation received much negative press at the time from the media, we cannot state for sure whether this opinion is because of media influence or due to ‘real-life’ experience. Generally public views are heavily influenced by the media, and this is an important feature which needs further investigation.
Licensing Legislation

The Act did not mention health or public impact assessment. The impact of the act on healthcare services has also been ‘mixed’. One A&E department study showed an increase in alcohol related attendances and violence (Newton et al. 2007). On the other hand, there have been study results that have shown decreases in alcohol-related violence, one of these local to our patient population in Merseyside, and another study based in Wales (Bellis 2006; Sivarajasingam 2007). However, it is worthy of note that the decrease of 15% in alcohol-related violence in the local study by Bellis et al., (2006) is in fact confounded by the corresponding implementation of a policing and enforcement campaign during the same time period.

Interestingly there were no major differences in attitudes between the different types of drinking groups. An important feature was that those most at risk, i.e. dependent drinkers, seemed immune to changes in legislation, this suggests that legislation may be too late for those that have already been harmed by alcohol and who have very established drinking patterns. This highlights the absolute need for legislation to be effective at the very beginning of the drinking continuum as once harmed, legislative measures have very little impact leaving healthcare to intervene when problems arise. The danger of this act is whether it will increase the passage of drinkers across the continuum from sensible to dependent. Only time will tell.

In conclusion, this study provides valuable insight into the attitudes and expectations of individuals as to the importance they perceived of alcohol availability to have as a drinking behaviour control. Of most concern was the dominance of ambivalence in individual perceptions of drinking behaviour. This is not an unknown concept and indeed has been highlighted in both national and international studies. Ambivalence
to drinking in general may help to explain why rates of screening and uptake of minimal and brief intervention are very poor in the UK. It is therefore imperative that the presence of this attitude is addressed by health care professionals in the design and development of strategies aimed at reducing overall alcohol consumption.
Chapter Four

Alcohol Liver Disease at the Royal Liverpool University Hospital:
A Seven year Audit
4. Alcohol Liver Disease at the Royal Liverpool University Hospital: A Seven Year Audit

4.1 Introduction

4.2 Methods

4.2.1 Aim

4.2.2 Objectives

4.2.3 Design

4.3 Results

4.3.1 Alcohol Liver Disease

4.3.2 Comparison data

4.4 Discussion
4. Alcohol Liver Disease at the Royal Liverpool University Hospital: A seven year Audit

4.1 Introduction

Alcohol is the single most contributory factor in deaths due to liver disease (Mandayam et al. 2004; Thomson et al. 2008). Additionally, in the UK, alcohol is a direct cause of 8,758 deaths each year and this increasing trend has been observed for both males and females (ONS 2008). The health care costs associated with these deaths are substantial, estimated to be between £1.6 and £3 billion per annum (Royal College of Physicians 2001; Department of Health 2004). In 2001, the Chief Medical Officer Sir Liam Donaldson highlighted that death rates and hospital admissions from cirrhosis were increasing. Of note, the report emphasized concerns over increases in alcohol liver disease (ALD) particularly in younger people and in females. Therefore ALD represents a major burden to the NHS and is unsurprisingly attracting increased scrutiny (CMO 2001).

The health harms associated with alcohol have been well established for over eighty years. Indeed, Raymond Pearl, in his book ‘Alcohol and Longevity’, provided the first scientific evidence of relative harms related to levels of alcohol consumption (Pearl 1926). The relationship is often shown graphically as a shallow U-shaped mortality curve, often referred to as a J-shaped curve (Figure 4.1). Subsequently, this relationship has been a common finding within epidemiological studies (Shaper 1990; Corrao et al. 2000; Corrao and Arico 2000). Furthermore, the correlation between alcohol consumption in a population and death from liver disease is well established. Surprisingly, there still remain difficulties in establishing the incidence of ALD-related morbidity and mortality.
Additionally, it is noteworthy that although the international mortality from liver cirrhosis has been declining since the 1970's, the rates in England have trebled in the same decades (Figure 4.2) (Leon and McCambridge 2006; Bosetti et al. 2007). Indeed, in continental Europe, previously an area of high mortality rates, there has been a decrease of 30% (Leon and McCambridge 2006). However, these data must be interpreted with some caution as they appear to be based upon inexact coding criteria. For example, Leon & McCambridge showed a 70% increase in cirrhosis in England & Wales based on the International Statistical Classification of Diseases (ICD) coding (Leon and McCambridge 2006).
Figure 4.2 Mortality rates from cirrhosis in Europe. Adapted from Leon & McCambridge (2006)
When examining the codes utilized in this paper it is clear that: a) ICD-10 criteria differ over the study and are therefore not directly comparable, and b) these codes include both alcohol-specific and non-alcohol related diseases (Table 4.1).

### Table 4.1 International Statistical Classification of diseases codes used by Leon and McCambridge (2006)

<table>
<thead>
<tr>
<th>ICD Version</th>
<th>Codes Used</th>
<th>Descriptor</th>
<th>Alcohol Specific</th>
<th>Cirrhosis Specific</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICD-7</td>
<td>A105</td>
<td>Cirrhosis of the liver</td>
<td>X</td>
<td>√</td>
</tr>
<tr>
<td>ICD-8</td>
<td>571</td>
<td>Cirrhosis of the liver</td>
<td>X</td>
<td>√</td>
</tr>
<tr>
<td>ICD-9</td>
<td>571</td>
<td>Chronic liver disease</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cirrhosis of the liver</td>
<td>X</td>
<td>√</td>
</tr>
<tr>
<td>ICD-10</td>
<td>K70</td>
<td>Alcoholic Liver Disease</td>
<td>√</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>K73</td>
<td>Chronic hepatitis</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>K74</td>
<td>Cirrhosis and fibrosis of the liver</td>
<td>X</td>
<td>√</td>
</tr>
</tbody>
</table>

Nevertheless, when multiple data sets are utilized, it is evident that all cause alcohol-related mortality, and specifically mortality from ALD is increasing in the UK. Both the World Health Organization (WHO) and the Office for National Statistics (ONS) mortality data clearly demonstrate this increasing trend (Figure 4.3).

![Figure 4.3 Office of National Statistics death rates from all alcohol-related causes](image-url)
ALD is a complex and heterogeneous condition that is known to present along a continuum of severity, from asymptomatic increases in liver enzymes to end-organ failure. Further, compounding this is a paucity of evidence as to who is more likely to develop this disease and what level of alcohol consumption is required for the development of the disease. This leads to confusing and conflicting evidence. For example, it has been reported in various studies that there is a close dose-response relationship between alcohol intake and the risk of ALD (Lelbach 1975; Klatsky et al. 1993; Day 1997). However, only a relatively small proportion of individuals that have a high alcohol intake will develop ALD, one population study finding a frequency of 4.2% in adults consuming 60g or more alcohol per day (Bellentani et al. 1997). Further, it has been hypothesized that there is a genetic susceptibility to the development of ALD (Whitfield et al. 2004). Females have also been identified as being at increased risk at lower levels of alcohol consumption, and of greater severity at a younger age (Morgan and Sherlock 1977; Tuyns and Pequignot 1984; Saunders and Latt 1993; Becker et al. 1996). Additionally, there is an emergent hypothesis that the development of ALD is associated with the type of alcohol consumed, i.e. spirit drinkers have been found to be more susceptible to ALD (Roizen et al. 1999; Stokkeland et al. 2006; Stokkeland et al. 2008). Consistent with this, there may be a decreased risk of ALD when most of the alcohol is consumed as wine (Becker et al. 2002). However, this contradicts the assertions of Leon and McCambridge (2006) that in countries where the predominant consumption is that of wine, a decrease in consumption may have led to a decrease in liver cirrhosis.

A major confounder in the interpretation of epidemiological studies is the way in which alcoholic liver disease morbidity and mortality are recorded, with national
coding practices varying from one country to another (Leifman 2002; Ramstedt 2003; Anderson 2006). Of most concern are the cultural and social constraints that potentially lead to a less robust coding in the interests of a perceived need to protect patients and their families. For example, one study in Canada has estimated that 65% of recorded deaths from non-alcoholic cirrhosis of the liver were in fact due to alcohol (Ramstedt 2003). Furthermore, this is an even greater problem within hospital ICD episode data in the UK, which have been demonstrated to have inaccuracy rates of 20% to 30% (Poikolainen 1983; Simpura and Poikolainen 1983; Ballaro et al. 2000; Khwaja et al. 2002). Nevertheless, ICD-10 and ONS data are the only epidemiological resources readily available to most researchers.

Although national and international data are available, we do not have locally specific data for our patient population. This is important given that the North West has been identified as having the highest percentage of hazardous drinkers (Drummond et al. 2005), and is ranked as number 1 in the table for alcohol-related hospital episodes (2865 per 100,000 population) (NHS 2008). Because of this hospital-coded data was utilized to establish the incidence of ALD within the Royal Liverpool and Broadgreen NHS Trust with the aim of comparing demographic characteristics against national data sets. Clearly, it is important to establish a robust data set on which to inform the strategic planning for targeted services.
4.2 Methods

4.2.1 Aim

The aim of the study was to determine the frequency of admissions related to ALD in an inner-city University Teaching Hospital over a seven-year period.

4.2.2 Objectives

1. Determine age specific rate during the period 1999-2006 for ALD.
2. Determine gender specific rate during the period 1999-2006 for ALD.
3. Compare the incidence of ALD-related admissions with admissions for myocardial infarction (MI) and primary biliary cirrhosis (PBC).

4.2.3 Design

Retrospective Audit of ICD-10 coded data.

4.2.3.1 Setting

The Royal Liverpool and Broadgreen University Hospital NHS Trust (RLBUHT).

4.2.3.2 Time period

The study included all available hospital coded data from January 1999 to December 2006.
4.2.3.3 Data extraction

**International Statistical Classification Diseases (ICD) codes**

Hospital coded data were searched from 1\textsuperscript{st} January 1999 to 31\textsuperscript{st} December 2006 for the following ICD-10 codes:

- Alcohol Liver Disease (ICD-10 codes K70.0 to K70.9)
- Primary Biliary Cirrhosis (ICD-code K74.3)
- Myocardial Infarction (ICD-10 codes I21.0 to I21.9)

**Data accuracy**

A strategy was developed in order to avoid as many clinical coding errors as possible:

- For ALD cases having a length of stay of 0 days (i.e. ED attendance), the case notes were reviewed to ensure accuracy of clinical coding.
- The local Myocardial Infarction (MI) treatment protocol requires a stay of >2 days for a suspected MI case (Appendix 4). Therefore, all cases which had a length of hospital stay <3 days were excluded from any further analysis, as it was determined that cases had been incorrectly coded. To validate this 10% of cases electronic records were reviewed.
Data management

All data were extracted on to an excel datasheet and held on a password protected database at the Royal Liverpool University Hospital. All data were anonymised, and extracted on to an SPSS database for analysis. Cases were coded from all patient episodes and their first episode during the period under study was noted and described as their first incident case. Each of their subsequent episodes were coded in the relevant years. Each chronic disease code number was used as the numerator and all cause medical admissions as the denominator for the years 1999 to 2006.

4.2.3.5 Ethical Approval

The methodology of the study was submitted to the chair of the Ethics Committee to determine whether this study required formal approval or could be considered an audit. He was happy to approve the study as an audit.

4.2.3.6 Mortality data

A request was submitted to the Office of National Statistics (ONS), geographical mortality section to obtain mortality data for Liverpool from Alcohol Liver Disease (ICD-10 codes K70.0 to K70.9) as the numerator and all cause deaths as the denominator for the years 1999 to 2006.
4.2.3.7 Statistical Analysis

After testing for whether the data were normally distributed, 95% Confidence Intervals (CI) were calculated for the differences between means, or medians as appropriate. Data were analyzed as follows:

**Numerical data**

- Analysis of the differences for disease groups was performed by the Mann Whitney test or unpaired t-test.

**Categorical data**

- \( \chi^2 \) test was used

A \( p \leq 0.05 \) was considered as being statistically significant. All statistical analyses were performed using the SPSS statistical package.
4.3 Results

4.3.1 Alcohol Liver Disease

During the period January 1st 1999 to 31st December 2006, a total of 1,423 patients were admitted to the Royal Liverpool and Broadgreen NHS Trust (RLBUHT) with a new diagnosis of ALD. Fifty-six of these cases had a median length of stay of 0 and were therefore subjected to a case note review to ensure accuracy of the clinical coding. All cases were found to have valid diagnosis of ALD in their medical case notes.

Alcohol Liver Disease Incidence

Between 1999 and 2006, total medical inpatient admissions rose by 11.8%. ALD cases represented 0.9% of admissions for the total time period. Although actual numbers of cases fluctuated from year to year, there was no appreciable change in incidence (Table 4.2).

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Medical Admissions</th>
<th>Number ALD Cases</th>
<th>Male ALD Cases</th>
<th>Female ALD Cases</th>
<th>ALD as a Percentage of Medical Admissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>18,476</td>
<td>209</td>
<td>145</td>
<td>64</td>
<td>1.1</td>
</tr>
<tr>
<td>2000</td>
<td>17,563</td>
<td>180</td>
<td>123</td>
<td>57</td>
<td>1.0</td>
</tr>
<tr>
<td>2001</td>
<td>17,993</td>
<td>163</td>
<td>116</td>
<td>47</td>
<td>0.9</td>
</tr>
<tr>
<td>2002</td>
<td>19,562</td>
<td>152</td>
<td>105</td>
<td>47</td>
<td>0.7</td>
</tr>
<tr>
<td>2003</td>
<td>20,898</td>
<td>148</td>
<td>95</td>
<td>53</td>
<td>0.7</td>
</tr>
<tr>
<td>2004</td>
<td>20,477</td>
<td>164</td>
<td>103</td>
<td>61</td>
<td>0.8</td>
</tr>
<tr>
<td>2005</td>
<td>20,493</td>
<td>206</td>
<td>133</td>
<td>73</td>
<td>1.0</td>
</tr>
<tr>
<td>2006</td>
<td>20,658</td>
<td>201</td>
<td>150</td>
<td>51</td>
<td>1.0</td>
</tr>
</tbody>
</table>
Alcohol Liver Disease

Alcohol Liver Disease demographics

Gender

Males accounted for 68.2% of the overall ALD population. There was little change in the proportion of males to females over time, Male: Female proportion's varied from of 64:36 to 75:25 (Figure 4.4). Females had a median age of 50 years (IQR 42.50-60.0), with the male median age being 52 years (IQR 44.0-61.0). This difference was not significant (p=0.7).

Figure 4.4 Gender distribution of patients with alcoholic liver disease

Age

During the period under study, there was an increase in the proportion of patients under the age of 40 with ALD (Figure 4.5). The proportion of patients with ALD under the age of 40 did not show a difference year on year, however, there was a trend
towards an increase in those under 40 years old but this did not reach statistical significance.

![Figure 4.5. Percentage of the Alcohol Liver Disease cases over and under 40](image)

The change in proportion of patients under 40 years old was mainly driven by males. The proportions of female patients under 40 years was haphazard and no upward trend was demonstrated (Figure 4.6).
Figure 4.6 Male and Females percentages under and over 40 years of age
Alcohol Liver Disease length of stay

ALD patients had a total length of stay of 37,819 day. The median stay for each patient was 15 days (IQR 6.0-34.0 days). Females had a higher median length of stay of 19 days (IQR 7.0-37.50) in comparison to males (14 days IQR 6.0-32.3, p=0.002).

Alcohol Liver Disease mortality

All cause mortality decreased by 15.7% in Liverpool from 1999 to 2006; for males this represented a 15.3% decrease and for females a 16.1% decrease. In contrast ALD deaths increased by 0.6%; this increase in males (0.8%) was higher than females (0.3%) (Figure 4.7).

Figure 4.7. Alcohol Liver Disease Mortality
Death mainly seen in those over 40 years and was seen in all years and across both genders (Figure 4.8).

![Figure 4.8 Alcohol Liver Disease deaths under and over 40](image)

### 4.3.2 Comparison data

#### Incidence comparisons

Of the diseases compared, MI has the highest incidence (1.9 %). However there has been a considerable decrease in incidence from 3.1% to 1.9% since 2000 (Figure 4.9). For PBC the numbers were small and therefore difficult to determine as useful trends. In contrast to MI, ALD incidence seems to have remained stable.
Demographics comparisons

Age / Gender

ALD was a predominantly a male disease, with the ratio of males to females being 3:1, this remained unchanged across the time period studied. MI has an M: F ratio of 1:1, which has also remained stable across the period under study. ALD had a greater percentage of cases in the younger age categories and also had the lowest median age in all years for both genders. The overall median age was significantly lower in ALD patients than in patients presenting with MI, (p<0.0001).

Hospital length of stay comparisons

ALD patients had a significantly, (p<0.0001) longer length of stay than MI patients (Table 4.3).
Table 4.3 Length of stay of all disease groups

<table>
<thead>
<tr>
<th>Disease group</th>
<th>Sum Length of Stay</th>
<th>Median</th>
<th>Inter Quartile Range</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALD</td>
<td>37,819</td>
<td>15</td>
<td>6-34</td>
<td>1-260</td>
</tr>
<tr>
<td>PBC</td>
<td>1,052</td>
<td>9.5</td>
<td>3-24</td>
<td>1-119</td>
</tr>
<tr>
<td>MI</td>
<td>73,111</td>
<td>10</td>
<td>6-19</td>
<td>3-365</td>
</tr>
</tbody>
</table>

Hospital Episodes Comparisons

Hospital episodes for ALD have increased by 60% since 1999, whilst episodes for MI have increased by 5% over the same time period (Figure 4.10).

Figure 4.10 Hospital episode comparisons
Alcohol Liver Disease

4.4 Discussion

Alcohol-related morbidity and mortality has been reported as showing an increasing trend nationally (Plant 1997; ONS 2008). Therefore, health services are under increasing pressure to respond to, and plan for, this ever increasing burden. This is of particular importance as it has been reported that the people developing Alcohol Liver Disease (ALD) are getting younger, which is of major concern as the ALD population is already significantly younger than that of other chronic disease groups (Thomson et al. 2008). Furthermore, recent attention has concentrated on the increased vulnerability of young women, not least due to evidence that they are drinking more, and at a younger age (Williams 2006; Williams 2008). Therefore, this study was devised to investigate if this worrying drinking trend was beginning to manifest into an increase in the incidence for ALD at the Royal Liverpool and Broadgreen NHS Trust (RLBUHT), and if by comparing this data to two other chronic diseases this could further inform the health issues and priorities for our population.

It was therefore surprising to discover that the incidence of ALD appears to have remained stable within the RLBUHT for the previous seven years. Nevertheless, we must not under estimate this burden as on average this equates to one new case every other day. Furthermore, each new case is likely to present to hospital on at least one occasion per year, the average days spent in hospital being 15 which is clearly significant. However, our data are contradictory to national reports which have suggested an increase in incidence. There are several reasons why this might be the case. Firstly, there are no national data for the incidence of ALD. Secondly, national data report hospital episodes, which although are increasing can be affected
by changes in clinical pathways for the management of ALD, and therefore indicate the burden for hospital services rather than a trend toward increases in new cases. Indeed, the national data and data from this audit are similar in that they both show a 60% increase in hospital episodes for ALD (Thomson et al. 2008). Another explanation may be that our audit does not have adequate power to show a small increase in incidence.

However, comparison of the ALD data with Myocardial Infarction (MI), showed significant differences. There was a decrease in the incidence of MI, and stabilization in hospital episodes for MI. This can of course be attributed to successful prevention technology (Chauhan 2007; Torjesen 2007), which has been given high priority within government targets (National service Framework for Coronary Heart Disease). Perhaps of greater significance is the finding that although the incidence of MI is between 1 and 2% higher than that of ALD, the total inpatient bed days for these patients’ accounts for over 50% of MI total bed days. Furthermore ALD cases had a significantly higher median length of stay. Consequently, ALD is placing a disproportionate burden on hospital based care on the NHS. Although this audit was not able to demonstrate an increasing incidence in hospital admissions, we did identify cause for concern in increased local mortality. However, within Liverpool there has been no increase in the percentage of younger people dying from ALD. Thus, our data are unable to support the national intelligence that reports; a) both deaths and admissions to hospital are increasing at a dramatic rate, and b) that both ALD deaths and admissions are getting younger. This may reflect a lack of power in our audit. However, when compared to MI the ALD population was significantly younger. Thus, the potential for over stretching the
capacity for health and social care providers within the not to distant future is a matter for concern.

The way in which national data are recorded and reported may be a factor in the data discrepancies identified in this study. Firstly, clinical coding was shown in this audit to be inaccurate and, indeed other studies (Ballaro et al. 2000; Khwaja et al. 2002) have highlighted this problem. The presence of disease was valid and accurate, but the incidence was difficult to establish as data for first diagnosis was inaccurate for 9% of MI cases, which has a dedicated code for acute diagnosis. However, there is no specific code for first diagnosis of ALD and as such it was difficult to extract first diagnosis data without specific audit methodology which included case note review. Given this limitation, any data from national sources has to be interpreted with caution: particularly since this information is utilized by health services to evaluate the impact of policies and initiatives. Furthermore, there exists a paradox for underreporting of alcohol-related diagnoses (Poikolainen 1983; Simpura and Poikolainen 1983; Grant 1993; Pakriev et al. 1998), which would clearly benefit from redesign of the ICD coding methodology.

It is interesting that one of the major contemporary studies to have contributed to the evidence for increases in mortality from cirrhosis has been utilized to support increases in ALD (Leon and McCambridge 2006; Thomson et al. 2008). However, it is important to note that non alcohol-specific clinical codes were attributed to death from ‘cirrhosis’ in this study. Nationally and internationally, this should raise concern as ICD codes which are used and generally accepted clearly have their limitations.
Revisions of ICD from 7 through to 10 make it very difficult to apply the same criteria over time, and therefore compare data over time. For example the ICD-7 and 8 codes used directly relate to cirrhosis, whereas ICD-9 begins to include chronic liver disease as well, with ICD-10 codes including the whole spectrum of liver diseases. Furthermore, steatohepatitis of non-alcohol causation, perhaps due to obesity, was included within the Leon data (Williams 2006).

There are a number of limitations of this study, which have been mentioned above. Nevertheless, it does provide an indication of the burden posed by ALD, the age and gender balance. Furthermore, by comparing data from other chronic diseases it was possible to estimate how different health policies have resulted in a changing trend with MI, but not with ALD. Even though an overall increase was not identified, ALD appears in a worryingly young age group, which was particularly the case for females. This may be related to the size of our population database, but also to the limitation of coding. There is a need to develop methodologies so that surveillance of this potentially enormous problem can be accurately quantified both locally and nationally and can thereby inform accurate service development and longer term accuracy in targeted public health outcomes.
Chapter Five

An observational study of Nutritional Risk in Heavy Drinkers
5. An observational study of nutritional risk in heavy drinkers

5.1 Introduction

5.2 Methods

5.2.1 Aim

5.2.2 Objectives

5.2.3 Design

5.2.4 Patients

5.2.5 Exclusion criteria

5.2.6 Sample Size

5.2.7 Measures used to assess alcohol use and malnutrition

5.2.8 Biochemical assessment of nutritional deficiency

5.2.9 Ethical approval

5.2.10 Research and development approval

5.2.11 Statistical Analysis

5.3 Results

5.3.1 Gender and age of the patient population

5.3.2 Medical Morbidity of patients

5.3.3 Alcohol consumption

5.3.4 Malnutrition Indicators

5.3.5 Differences between patients with and without follow up

5.3.6 Age and gender of the follow up population

5.3.7 Anthropometric measures at follow up

5.3.8 Biochemical measures at baseline and follow-up

5.3.9 Thiamine treatment

5.3.10 Biochemical disease indicators

5.3.11 Alcohol dependence

5.4 Discussion
5. An observational study of nutritional risk in heavy drinkers

5.1 Introduction

There are several expert commentaries that identify heavy drinkers as being at increased risk of malnutrition (Santolaria et al. 2000; Lieber 2003). However, there is a paucity of original clinical research in this area. Furthermore, there is inconsistency in the definition of malnutrition, which is reflected in the wide range of reported prevalence in hospital patients and the wider community, which vary from 9% to 55% and 6% to 12%, respectively (McWhirter and Pennington 1994; Edington and Pimprapa Kon 1997; Edington et al. 1999; Hanger et al. 1999). It is important to note that defining a population at risk of malnutrition is problematic and has attracted criticism because rather narrow methods have often been employed (Goldsmith et al. 1983; Morgan and Levine 1988).

However, the National Institute for Health and Clinical Excellence (NICE) have provided a framework for diagnosis of malnutrition as either: ‘Having a body mass index (BMI) of less than 18.5, unintentional weight loss greater than 10% in the last three to six months, a BMI of less than 20 coupled with unintentional weight loss greater than 5% within the last three to six months’ (NICE 2006). Alternatively, the British Association of Parenteral and Enteral Nutrition (BAPEN) have developed a screening tool to alert clinicians of the risk of malnutrition in individual patients. The Malnutrition Universal Screening Tool (MUST) provides a composite risk score based on (a) Body Mass Index (BMI), (b) unintentional weight loss, and (c) acute disease effect. The validity and reliability of the MUST tool has not been reported within the
Nutritional Status

heavy drinking population; however, the validity and reliability of the MUST tool has been reported in a small number of studies, mainly in elderly care (Stratton et al. 2004; Stratton et al. 2006). It is perhaps unfortunate that universal acceptance of this methodology has not been achieved, especially since several commentators report the use of ad hoc approaches to the diagnosis of malnutrition based solely on clinical observations (McLaren and Green 1998; Jones et al. 2004; Jones 2004). Clearly, malnutrition is a potentially serious complication of illness, which is associated with increased morbidity, mortality and hospital admission (McWhirter and Pennington 1994; Silk and Wians 1994; Chima et al. 1997; Hanger et al. 1999; Thomas et al. 2002; Lazarus and Hamlyn 2005). This is reflected in the significantly higher prevalence of malnutrition in hospitalized patients when compared to the general population. Thus, it is important to note at the outset that it is difficult to accurately predict the level of risk in any given population such as heavy drinkers.

It is widely reported that heavy drinkers are at increased risk of thiamine deficiency, and indeed malnutrition (Thomson 1978; Thomson et al. 1987; Thomson 2000; Royal-College-of-Physicians 2001; Thomson and Marshall 2006; Sechi and Serra 2007; Thomson et al. 2008). The reported prevalence of thiamine deficiency ranges from 30% to 80% (Hell et al. 1976; Morgan 1982; Brown et al. 1983; Thomson et al. 1987). Deficiency in thiamine is an important clinical consideration as the most serious complication Wernicke’s Encephalopathy (WE) has been found in 1% of the general hospital population, and in 12% of hospitalized alcohol-dependent patients (Torvik et al. 1982). Additionally, Butterworth and Thomson have highlighted that alcohol dependent patients, with no clinical signs of WE were subsequently found to be thiamine deficient (Thomson et al. 1987; Butterworth et al.). They therefore
advocate thiamine treatment in alcohol-dependent patients. However, the studies on which these observations are based show bias in the population sample with over-representation of heavy drinkers who were also suffering chronic ill-health, poor living conditions, and little social support, all of which would independently contribute to malnutrition. Furthermore, some studies are based on patients who present with WE, and as such are clinically biased (Thomson and Cook 1997; Cook et al. 1998). Conversely, several studies suggest that thiamine deficiency is uncommon, when there are no organic complications (Camilo et al. 1981; Bunout et al. 1983; Morgan and Levine 1988; Urbano-Marquez et al. 1989; Nicolas et al. 1993). It is of note that Dancy et al. (1984) found a prevalence of 8.7% in a study of patients with alcohol liver disease (ALD). Subsequent to this, Baines et al. (1988) found that only 4% of patients who did not have ALD had thiamine levels below the reference range. Furthermore, there may be reasonable cause to challenge the findings of older studies as they often used more indirect methods to determine thiamine levels (Dancy 1984).

It is important to note that blood tests for thiamine levels are expensive and often not available prior to the implementation of preventative treatment regimes (Baines et al. 1988; Sgouros et al. 2004). Conversely, oral thiamine therapy is inexpensive and clinically safe and often given empirically, with no prior assessment of deficiency. When patients with known alcohol-related diagnoses are admitted to hospital, the current advice is to treat with oral or parenteral thiamine as appropriate (British National Formulary (BNF)). Further, the BNF has recently revised its view on the administration of intravenous pabrinex concluding that the risk of anaphylaxis should not preclude its use, particularly in those with symptoms or those at risk of WE (BNF
Nutritional Status

2008). From reports to the Committee on Safety of Medicines, the incidence of anaphylactic reactions to injectable thiamine preparations has been quoted as 4 per million pairs of intravenous ampoules and 1 per 5 million intramuscular ampoules (Cook and Thomson 1997). However, Cook advises that parenteral administration should be the mode of delivery in all patients admitted to hospital with alcohol withdrawal (Cook and Thomson 1997). The assumption therefore is that all patients in alcohol withdrawal are malnourished and as such are likely to be thiamine deficient. As discussed earlier, this has no basis in the evidence available.

Thus, the evidence to support clinical advice remains confusing and inconsistent. Indeed, the prevalence of malnutrition in heavy drinkers is unknown, as is the presence of thiamine deficiency. Therefore, this study was devised to determine if patients were at risk of malnutrition, and if so, if that risk translated into any measured presence of thiamine deficiency.
5.2 Methods

5.2.1 Aim

Determine the prevalence of malnutrition in heavy drinkers.

5.2.2 Objectives

1. To determine prevalence of malnutrition risk in heavy drinkers
2. To determine the prevalence of thiamine deficiency in a heavy drinking population attending hospital.
3. To observe if thiamine levels change with replacement therapy.

5.2.3 Design

The design was an observational prospective pilot study undertaken at the Royal Liverpool and Broadgreen NHS Trust (RLBUHT) between June 2006 and August 2006.

5.2.4 Patients

Patients attending the hospital for assessment by the Alcohol Specialist Nurse (ASN), and scoring ≥ 16 on the Alcohol Use Disorders Identification Test (AUDIT), were approached. The study was explained to the patient and they were given a patient information leaflet (PIL). If they agreed to take part in the study, blood samples were obtained prior to the commencement of oral or parenteral vitamin treatment. Each patient had a full assessment, including all clinical questionnaires and biochemical investigations, as per usual clinical care. In addition, they also had
a blood sample taken for thiamine, selenium, zinc, copper, and prealbumin and a further sample at 3 months post treatment with thiamine supplementation. Compliance with oral thiamine therapy was measured using a self-report compliance tool (Appendix 5).

5.2.5 Exclusion criteria

The following patients were excluded:

1. Patients unable to give informed consent.
2. Pregnant patients.
3. Patients known to be intravenous drug users.
4. Patients who had received oral or parenteral thiamine in the 3 months prior to study recruitment.

5.2.6 Sample Size

Since this was a pilot observational study and there were no previous publications from which to perform a sample size calculation, on consultation with a statistician it was deemed appropriate that the number of patients should be approximately 25 times the number of explanatory variables to be included in the analysis. The main variables for analysis in explaining nutritional risk, as determined by the MUST, were thiamine, zinc, selenium, copper, and prealbumin. One hundred patients were recruited in total.
5.2.7 Measures used to assess alcohol use and malnutrition

A variety of measures were used to determine (a) drinking behaviour and (b) malnutrition.

a) Alcohol use measures

The following measures of consumption and dependence were used to classify alcohol consumption behaviour:

1. Alcohol Use Disorders Identification Test (AUDIT).
2. The Severity of Alcohol Dependence Questionnaire (SADQ).
3. Quantity frequency measures: The number of units of alcohol drunk on each drinking day, with each unit being equivalent to 8 grammes of pure alcohol and the number of drink days each week.

b) Malnutrition measures

1. The Malnutrition Universal Screening Tool (MUST) is an integrated risk assessment tool, which includes BMI, unplanned weight loss, and acute disease effect.
2. Biochemical measures.

5.2.8 Biochemical assessment of nutritional deficiency

All assessments were undertaken in the Department of Clinical Chemistry at the Royal Liverpool University Hospital (RLUH).
**Nutritional Status**

**Thiamine**

Thiamine measurements were performed by high performance liquid chromatography (HPLC) (Lynch and Young 2000). The co-efficient of variation for this method was 5.2% and 6.7% at concentrations of 240 nmol/L and 62.5 nmol/L respectively. The limit of quantification was 15 nmol/L.

**Zinc**

Zinc measurements were performed by inductively coupled mass spectrometry (ICPMS) (Szpunar et al. 1997). The co-efficient of variation for this method was 3.2% and 4.1% at concentrations of 39.4 mmol/L and 13.0 mmol/L respectively. The limit of quantification was 0.5 mmol/L.

**Selenium**

Selenium measurements were performed by inductively coupled mass spectrometry (ICPMS) (Szpunar et al. 1997). The co-efficient of variation for this method was 6.2% and 7.9% at concentrations of 3.82 mmol/L and 1.0 mmol/L respectively. The limit of quantification was 0.2 mmol/L.

**Copper**

Copper measurements were performed by inductively coupled mass spectrometry (ICPMS) (Szpunar et al. 1997). The co-efficient of variation for this method was 3.1% and 3.3% at concentrations of 15.0 mmol/L and 44.0 mmol/L respectively. The limit of quantification was 0.2 mmol/L.

**Prealbumin**

Prealbumin measurements were performed by spectrometry (Sachs and Bernstein 1986). The co-efficient of variation for this method was 2.9% and 3.9% at...
concentrations of 0.51g/L and 0.18g/L respectively. The limit of quantification was 0.03 g /L.

5.2.9 Ethical approval

Ethical approval was obtained from the Liverpool Research Ethics Committee (LREC), (LREC reference number 06/Q1505/16). Each patient gave their informed consent to take part in the study.

5.2.10 Research and development approval

This study was registered with the Research and Development Department of The Royal Liverpool and Broadgreen NHS Trust (project R&D number 3252). It was given full sponsorship by the Trust who arranged independent peer review of the study.

5.2.11 Statistical Analysis

As appropriate, after utilizing the Kolmogorov-Smirnov test for determination of whether the data were normally distributed, the following tests were applied. For data that were normally distributed, 95% Confidence Intervals (CI) were calculated for the differences between means. For non-normally distributed data, median
Nutritional Status

differences are presented with Inter Quartile Range (IQR). Data were analyzed as follows:

**Numerical data**

- Differences for baseline data in group attending and not attending 12 week follow up were analysed by the Mann Whitney test or unpaired t-test.

- Differences between baseline and follow up data were analyzed by the Wilcoxon signed ranks test or the paired t test.

**Categorical data**

- Binary logistic regression was used to determine the relationship between the nutritional element deficiency and nutritional risk as measured by the MUST. This was expressed as an odds ratio with 95% CI.

- For matched pair data, McNemar’s test was used.

- For unpaired data, the $\chi^2$ test was used.

A $p \leq 0.05$ was considered as being statistically significant. All statistical analyses were performed using the SPSS statistical package.
5.3 Results

5.3.1 Gender and age of the patient population

One hundred patients were recruited to the study during a 12-week period. The population was predominantly male (75%), and median age was 46.0 years (IQR 38-54). There were no differences in the median age between males and females (Figure 5.1). The age range of patients recruited was 18 to 72 years (IQR 38.0 to 54.0).

![Figure 5.1 Age category by gender](image)

5.3.2 Medical Morbidity of patients

The most common primary reason for attending hospital was for the treatment of alcohol withdrawal symptoms (46%) (Table 5.1)
Table 5.1 Primary reason for hospital presentation of the 100 patients in the study

<table>
<thead>
<tr>
<th>Medical hospital reason for attending</th>
<th>Number of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol Withdrawal Syndrome</td>
<td>46</td>
</tr>
<tr>
<td>Feeling Unwell no medical morbidity</td>
<td>12</td>
</tr>
<tr>
<td>Alcohol Liver Disease</td>
<td>7</td>
</tr>
<tr>
<td>Cardiac</td>
<td>5</td>
</tr>
<tr>
<td>Pancreatitis</td>
<td>4</td>
</tr>
<tr>
<td>Depression</td>
<td>4</td>
</tr>
<tr>
<td>Cerebral Vascular Accident</td>
<td>3</td>
</tr>
<tr>
<td>GI Bleed</td>
<td>3</td>
</tr>
<tr>
<td>Assault</td>
<td>2</td>
</tr>
<tr>
<td>Gastro Intestinal Disorder</td>
<td>2</td>
</tr>
<tr>
<td>Epilepsy</td>
<td>2</td>
</tr>
<tr>
<td>TB</td>
<td>1</td>
</tr>
<tr>
<td>Asthma</td>
<td>1</td>
</tr>
<tr>
<td>Diabetes</td>
<td>1</td>
</tr>
<tr>
<td>Endocarditis</td>
<td>1</td>
</tr>
</tbody>
</table>

At least 40% of the patients had co-morbid illnesses, and 7% had a diagnosis of alcohol liver disease. There were 41% of patients at baseline that had an abnormal Mean Corpuscular Volume (MCV). There were 5% (N=5) who had a raised urea and 3% (N=3) had a raised Creatinine (Table 5.2).
Table 5.2 Biochemical disease markers at baseline

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
<th>Normal range</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCV</td>
<td>97.31</td>
<td>7.13</td>
<td>80-120.50</td>
<td>80.0-100.0fl</td>
</tr>
<tr>
<td>Urea</td>
<td>3.72</td>
<td>2.70</td>
<td>1-21.9</td>
<td>2.5-7.0nmol/l</td>
</tr>
<tr>
<td>Creatinine</td>
<td>71.28</td>
<td>25.9</td>
<td>39-242</td>
<td>50-130µmol/l</td>
</tr>
<tr>
<td>ALT</td>
<td>66.21</td>
<td>78.43</td>
<td>9-524</td>
<td>&lt;35U/l</td>
</tr>
<tr>
<td>ALP</td>
<td>107.61</td>
<td>65.07</td>
<td>37-544</td>
<td>35-125 U/l</td>
</tr>
<tr>
<td>GGT</td>
<td>274.24</td>
<td>390.46</td>
<td>13-2737</td>
<td>♂ &lt;50U/l</td>
</tr>
<tr>
<td></td>
<td>193.16</td>
<td>261.91</td>
<td>12-1101</td>
<td>♀ &lt;35U/l</td>
</tr>
<tr>
<td>Bilirubin</td>
<td>29.1</td>
<td>56.95</td>
<td>2-469</td>
<td>2-17µmol/l</td>
</tr>
</tbody>
</table>

Among this group of patients, 79% had a raised Gamma-Glutamyl Transferase (GGT), of which 46% had a value three times maximum (Figure 5.2). Alanine transaminase (ALT) was raised in 65% of patients. Alkaline Phosphatase (ALP) was raised in 27% of patients. About 44% of patients had a raised Bilirubin at baseline. Only 7% of these patients had a diagnosis of Alcohol Liver Disease (ALD).
5.3.3 Alcohol consumption

**Quantity Frequency Measures**

Drinking patterns in this population at baseline showed that 92% of patients were drinking daily, 62% drinking ≥20 alcohol units per day, which is equivalent to ≥160 grammes of alcohol. Units consumed on a daily basis ranged from 5 to 140 (IQR 13.25 to 30).

**Alcohol Use Disorder Identification Test (AUDIT)**

An AUDIT score ≥ 16 was used to determine heavy drinking with 39% (N=39) of patients scoring 40, which is the maximum score (Figure 5.3).

![Figure 5.3 Alcohol Use Disorder Identification Test (AUDIT) score spread](image_url)
Nutritional Status

Alcohol Dependence

The Severity of Alcohol Dependence Questionnaire (SADQ) revealed 85% (N=85) of patients to be alcohol dependent with 64% scoring ≥30 indicative of severe dependence and 21% scoring in the mild to moderate range of the questionnaire (<30) (Stockwell et al. 1979) (Figure 5.4). There was no lower cut off score for SADQ, as any score on this tool is indicative of dependence. The median age of dependent patients was 46.0 years (IQR 38-54), with a similar median age for non-dependent patients (46.0 years; IQR 32-55).

![Figure 5.4 Severity of Alcohol Dependence Questionnaire category at baseline](image)

5.3.4 Malnutrition Indicators

Both anthropometric and biochemical measures were used to indicate malnutrition.

Anthropometric measures

The mean BMI score of this population was 24.2 (SD 4.67) with a range from 12.5-42.6 (normal range 20-25); 15 patients had a BMI of less than 20, with 6 of those having a BMI of 18.5 or less. The Malnutrition Universal Screening tool
Nutritional Status

(MUST) incorporates BMI within its scoring system and gives a composite risk score. The tool generates a score from zero to six which provides categorical data for risk as can be seen in Figure 5.5. It can be seen from Figure 5.6 that 51% of the study population were at low risk of malnutrition.

Figure 5.5 Malnutrition Universal Screening Tool
Nutritional Status

Figure 5.6 Malnutrition Universal Screening Tool risk category at baseline

Biochemical nutritional measures

Biochemical nutritional elements measured at baseline are shown in Table 5.3. The only element consistently below the normal reference range was zinc. No patients were thiamine deficient (Figure 5.7). However, 76% had deficiency of zinc, 20% of selenium, 8% of copper and 5% had a prealbumin level below the normal range.

Figure 5.7 Biochemical nutritional measures at baseline
Table 5.3 Biochemical nutritional measures at baseline

<table>
<thead>
<tr>
<th>Element</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
<th>Reference Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thiamine</td>
<td>145.35</td>
<td>40.0</td>
<td>66-254</td>
<td>66-200nmol/l</td>
</tr>
<tr>
<td>Zinc</td>
<td>10.29</td>
<td>2.79</td>
<td>3.47-17.90</td>
<td>12-25µmol/l</td>
</tr>
<tr>
<td>Selenium</td>
<td>0.81</td>
<td>0.251</td>
<td>0.20-1.52</td>
<td>0.6-1.5µmol/l</td>
</tr>
<tr>
<td>Copper</td>
<td>16.25</td>
<td>3.55</td>
<td>9-26.3</td>
<td>12-25µmol/l</td>
</tr>
<tr>
<td>Prealbumin</td>
<td>0.249</td>
<td>0.099</td>
<td>0.02-0.49</td>
<td>0.15-0.4g/l</td>
</tr>
<tr>
<td>Albumin</td>
<td>40.51</td>
<td>11.23</td>
<td>18.0-132.00</td>
<td>34-45g/l</td>
</tr>
<tr>
<td>Magnesium</td>
<td>0.72</td>
<td>0.115</td>
<td>0.38-0.96</td>
<td>0.75-1.00nmol</td>
</tr>
<tr>
<td>Potassium</td>
<td>3.59</td>
<td>0.44</td>
<td>2.50-4.50</td>
<td>3.5-5.0nmol/l</td>
</tr>
<tr>
<td>Calcium</td>
<td>2.35</td>
<td>0.128</td>
<td>1.80-2.74</td>
<td>2.2-2.6nmol/l</td>
</tr>
<tr>
<td>Sodium</td>
<td>136.59</td>
<td>4.01</td>
<td>123-145</td>
<td>135-145nmol/l</td>
</tr>
<tr>
<td>Folate</td>
<td>5.54</td>
<td>3.10</td>
<td>1.0-17.40</td>
<td>3-10µg/l</td>
</tr>
<tr>
<td>B12</td>
<td>431</td>
<td>324</td>
<td>96-1500</td>
<td>140-990ng/l</td>
</tr>
</tbody>
</table>

Malnutrition risk related to biochemical deficiency

In order to assess the reliability of MUST to detect nutritional biochemical deficiency at baseline, we calculated the sensitivity and specificity. This showed that MUST had some degree of sensitivity and specificity to detect zinc deficiency ($\chi^2=8.59$, p=0.0034) and selenium deficiency ($\chi^2=7.86$, p=0.005), but the test characteristics overall were relatively unimpressive (Table 5.4)
Table 5.4  Sensitivity and specificity of MUST as compared to biochemical nutritional element deficiencies

<table>
<thead>
<tr>
<th></th>
<th>Thiamine</th>
<th>Zinc</th>
<th>Selenium</th>
<th>Copper</th>
<th>Prealbumin</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sensitivity</strong></td>
<td>Not Applicable</td>
<td>58%</td>
<td>80%</td>
<td>60%</td>
<td>62%</td>
</tr>
<tr>
<td><strong>Specificity</strong></td>
<td>51%</td>
<td>79.2%</td>
<td>58%</td>
<td>55%</td>
<td>51%</td>
</tr>
</tbody>
</table>

Again, this was reflected in the odds ratios of the ability to detect a biochemical deficiency of zinc and selenium (Table 5.5).

Table 5.5  Odds ratios between MUST and biochemical nutritional element deficiencies

<table>
<thead>
<tr>
<th></th>
<th>Zinc</th>
<th>Selenium</th>
<th>Copper</th>
<th>Prealbumin</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Odds Ratio</strong></td>
<td>5.225</td>
<td>5.576</td>
<td>1.809</td>
<td>1.742</td>
</tr>
</tbody>
</table>

95% Confidence Interval

|       | 1.76 to 15.46 | 1.708 to 18.20 | 1.765 to 15.46 | 0.393 to 7.730 |

**Significance (p)**

|       | 0.003          | 0.004            | 0.207             | 0.465             |

5.3.5 Differences between patients with and without follow up

Follow up was attempted with all 100 patients twelve weeks after baseline assessment and commencement of thiamine supplementation. After two letters and two follow-up telephone calls, patients were considered to be lost to follow-up. Forty-eight patients were successfully followed up. There were no significant differences for baseline data between those followed up and those not followed up. Therefore
those patients that were followed up were representative of the total group of patients recruited.

5.3.6 Age and gender of the follow up population

The follow up sample population was predominantly male (75%; N=36). The median age was 47 years, range being 22-72 years (IQR 38.25- 55.0). There were no differences for males and females (Figure 5.8)

![Gender and Age category](image)

**Figure 5.8 Gender and Age category**

5.3.7 Anthropometric measures at follow up

There were no differences for mean Body Mass Index (BMI) score from baseline to follow-up. The BMI at baseline was 24.2 (SD 4.67, range 12.5-42.6), while it was 25.4 (SD 5.42, range 13.70 to 42.4) at follow-up.
The Malnutrition Universal Screening Tool (MUST) score (Figure 5.9) showed a significant reduction ($\chi^2 = 6.57, p=0.01; 95\% \text{ CI } 1.16 - 3.24$) in malnutrition risk from baseline to follow-up.

![Graph showing the change in risk from baseline to follow-up](graph.png)

**Figure 5.9** Malnutrition Universal Screening Tool risk changes from baseline to follow-up

### 5.3.8 Biochemical measures at baseline and follow-up

There were no significant differences between biochemical measures at baseline and follow-up, differences were only tested for those that were followed-up (N=48) (Figure 5.10 & Table 5.6).
Figure 5.10 Change in biochemical nutritional elements from baseline to follow-up
Table 5.6 Biochemical measures change from baseline to follow-up

<table>
<thead>
<tr>
<th>Element</th>
<th>Baseline Mean</th>
<th>Follow up Mean</th>
<th>Mean difference</th>
<th>Significance</th>
<th>95% Confidence Interval of difference</th>
<th>Reference Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thiamine</td>
<td>145.66</td>
<td>134.45</td>
<td>11.20</td>
<td>0.145</td>
<td>-4.00 to 26.42</td>
<td>66-200nmol/l</td>
</tr>
<tr>
<td>Zinc</td>
<td>9.78</td>
<td>10.51</td>
<td>-0.723</td>
<td>0.052</td>
<td>-1.45 to 0.005</td>
<td>12-25µmol/l</td>
</tr>
<tr>
<td>Selenium</td>
<td>0.786</td>
<td>0.770</td>
<td>0.157</td>
<td>0.395</td>
<td>-0.021 to 0.052</td>
<td>0.6-1.5µmol/l</td>
</tr>
<tr>
<td>Copper</td>
<td>15.85</td>
<td>16.35</td>
<td>-0.496</td>
<td>0.291</td>
<td>-1.43 to 0.438</td>
<td>12-25µmol/l</td>
</tr>
<tr>
<td>Prealbumin</td>
<td>0.235</td>
<td>0.239</td>
<td>-0.004</td>
<td>0.690</td>
<td>-0.025 to 0.168</td>
<td>0.15-0.4g/l</td>
</tr>
<tr>
<td>Albumin</td>
<td>38.95</td>
<td>40.16</td>
<td>-1.20</td>
<td>0.173</td>
<td>-2.96 to 0.549</td>
<td>34-45g/l</td>
</tr>
<tr>
<td>Magnesium</td>
<td>0.720</td>
<td>0.797</td>
<td>-0.768</td>
<td>0.221</td>
<td>-0.201 to 0.048</td>
<td>0.75-1.00nmol</td>
</tr>
<tr>
<td>Potassium</td>
<td>3.60</td>
<td>3.65</td>
<td>-0.574</td>
<td>0.528</td>
<td>-0.239 to 0.124</td>
<td>3.5-5.0nmol/l</td>
</tr>
<tr>
<td>Calcium</td>
<td>2.35</td>
<td>2.36</td>
<td>-0.006</td>
<td>0.774</td>
<td>-0.511 to 0.038</td>
<td>2.2-2.6nmol/l</td>
</tr>
<tr>
<td>Sodium</td>
<td>133.80</td>
<td>137.21</td>
<td>-3.40</td>
<td>0.139</td>
<td>-7.95 to 1.144</td>
<td>135-145nmol/l</td>
</tr>
<tr>
<td>Folate</td>
<td>5.02</td>
<td>5.66</td>
<td>-0.64</td>
<td>0.225</td>
<td>-1.62 to 0.332</td>
<td>3-10µg/l</td>
</tr>
<tr>
<td>B12</td>
<td>418.50</td>
<td>369.27</td>
<td>49.22</td>
<td>0.134</td>
<td>-15.68 to 114.14</td>
<td>140-990ng/l</td>
</tr>
</tbody>
</table>

5.3.9 Thiamine treatment

At baseline, 99% of patients received thiamine supplementation. Parenteral thiamine was prescribed in 70% (N=70) of patients, oral in 29% (N=29). None of the patients had received thiamine in the 12 weeks preceding recruitment which was assessed using 2 methods: (a) case note review, and (b) self report questionnaire.
At follow up, compliance with prescribed thiamine was measured utilizing (a) self report questionnaire, and (b) case note review.

Patients were grouped into one of three groups based on both methods to indicate whether they were taking thiamine regularly, sometimes or never (Figure 5.11)

Figure 5.11 Thiamine compliance

There were no significant differences for those followed up ($p = 0.5$; 95% CI -4.00 to 26.42) for whole blood thiamine levels between baseline and follow-up. There were also no differences for thiamine levels between baseline and follow-up when patients were divided into compliance groups (Table 5.7)
Table 5.7 Differences between baseline and follow up thiamine levels according to compliance category

<table>
<thead>
<tr>
<th>Taking thiamine</th>
<th>Thiamine Level</th>
<th>Significance (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Baseline (Range)</td>
<td>Mean Follow-up (Range)</td>
</tr>
<tr>
<td>Regularly</td>
<td>149.71 (79-252)</td>
<td>133.03 (79-256)</td>
</tr>
<tr>
<td>Sometimes</td>
<td>140.45 (92-191)</td>
<td>126.63 (93-175)</td>
</tr>
<tr>
<td>Never</td>
<td>139.44 (99-187)</td>
<td>148.44 (91-248)</td>
</tr>
</tbody>
</table>

5.3.10 Biochemical disease indicators

Patients improved physically from baseline to follow-up; 75% of patients had a normal MCV compared to 58% of patients at baseline (N=48), which was significant ($\chi^2 = 4.01$, p=0.045; 95% CI 1.014 - 3.281). Measures of liver function improved between baseline and follow-up (N=48); 85.4% of patients had a Bilirubin within the normal reference range, a 29% increase from baseline ($\chi^2 = 5.82$, p=0.01; 95% CI of 0.28 - 0.88). At follow up, 60% of patients had a normal ALT, a 25% increase from baseline (Table 5.8). GGT improved significantly with 23% of patients having a GGT within normal reference range at follow-up, an increase of 8% ($\chi^2 = 16.11$, p<0.0001; 95% CI 1.881 - 8.040). Further, the percentage of patients who had a GGT of $\geq 3$ times of normal decreased by 21% from baseline to follow-up (Figure 5.12).
### Table 5.8 Liver function measures from baseline to follow up

<table>
<thead>
<tr>
<th></th>
<th>Median Baseline (IQR)</th>
<th>Median Follow up (IQR)</th>
<th>Significance (p)</th>
<th>Normal range</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALT</td>
<td>44 (23.25-77.75)</td>
<td>24.5 (15.25-47.75)</td>
<td>0.0005</td>
<td>&lt;35U/l</td>
</tr>
<tr>
<td>ALP</td>
<td>91.5 (70.50-123.75)</td>
<td>94.0 (70.00-106.25)</td>
<td>0.284</td>
<td>35-125 U/l</td>
</tr>
<tr>
<td>GGT</td>
<td>137.0 (62.0-300)</td>
<td>119.50 (58.0-230.50)</td>
<td>0.043</td>
<td>♂ &lt;50U/l</td>
</tr>
<tr>
<td></td>
<td>58.0 (31-313)</td>
<td>37.0 (28.7-195)</td>
<td>0.045</td>
<td>♀ &lt;35U/l</td>
</tr>
<tr>
<td>Bilirubin</td>
<td>15.00 (8.25-25.75)</td>
<td>11.0 (7.0-15.0)</td>
<td>0.0005</td>
<td>2-17µmol/l</td>
</tr>
</tbody>
</table>

**Figure 5.12** Gamma Glutamyl Transferase category from baseline to follow-up
5.3.11 Alcohol dependence

The presence of alcohol dependence as measured by the Severity of Alcohol Dependence Questionnaire (SADQ) decreased significantly (p<0.0001) between baseline (median 40; IQR 20-48) and follow-up (median 20; IQR 20-41.5).
5.4 Discussion

The patients under investigation represent a clinical population undergoing dedicated treatment from an Alcohol Specialist Nurse (ASN). They were heavy drinkers, 62% of whom were consuming in excess of 20 units of alcohol per day, with 92% drinking on a daily basis. Additionally, 84% had evidence of liver dysfunction. Therefore, this group of patients can be considered to be in a predetermined high risk category according to the following factors: a) hospitalization, b) heavy drinking; and c) preexisting evidence of chronic disease. Even though anthropometric measures indicated significant risk of malnutrition, in this population biochemical measures failed to determine its presence.

The main nutritional risk in this population has previously been identified as thiamine deficiency (Thomson et al. 1970; Thomson 1978; Thomson et al. 1991; Cook and Thomson 1997; Cook and Thomson 1997; Thomson and Cook 1997; Cook et al. 1998; Cook 2000; Thomson 2000; Thomson et al. 2002). Although thiamine deficiency carries a significant risk, the presence of malnutrition based on other deficiencies is of equal clinical importance. Utilising the Malnutrition Universal Screening Tool (MUST) which is reported as having a sensitivity of 61% and a specificity of 76%, our expectation based on previous studies was that this population would indeed be at risk, and have evidence of malnutrition. However, our findings identified only 42% of patients as at risk of malnutrition and only 15% with a Body Mass Index (BMI) that would contribute to a high MUST score. However, it was interesting to find that 76% of patients in this study were found to have a low zinc level. Previous studies have shown that 30-50% of heavy drinkers have low zinc
Nutritional status

levels (Menzano and Carlen 1994; Navarro et al. 1994). Caution needs to be applied with this finding as zinc measurement is less reliable if a patient has recently eaten (Shenkin and Fell 1986); this was not controlled for in this study as it would have been impractical particularly on follow-up. Therefore this may account for the higher prevalence of zinc deficiency found in our patients. Zinc levels can also change as an acute disease response measure (Shenkin 1995). It would therefore have been useful to have a C-reactive protein (CRP) measure at the same time but this was not available. However, it would be reasonable to assume that since other acute disease markers such as prealbumin, albumin and selenium where mostly within normal limits that low levels of zinc were most likely due to malnutrition rather than an acute disease response.

Given the nature of our patients, it was unexpected that we did not find any patient with thiamine deficiency. Importantly, this study differed in its methodology to other research studies in that symptoms of Wernicke’s Encephalopathy (WE) formed part of the exclusion criteria. Thus unlike Thomson and Cook’s studies (Thomson et al. 1987), none of these patients had any clinical signs of WE.

Therefore, identifying thiamine deficiency in such a heterogeneous population of heavy drinkers is perhaps more complex than would first appear. Thus, the treatment of heavy drinkers with thiamine supplementation remains empirical. Indeed, 99% of patients in this study received thiamine supplementation post assessment: 29% orally, and 70% parenterally. It needs to be stated that oral supplementation is an inexpensive, non-invasive and as such, a pragmatic solution to the prevention of WE. On the contrary, parenteral supplementation is relatively
Nutritional status

expensive, is uncomfortable for patients, is time consuming and carries a risk of anaphylaxis (Stephen et al. 1992; Leung et al. 1993; Fernandez et al. 1997; Morinville et al. 1998; Johri et al. 2000). Indeed, there are confusing recommendations around the type of supplementation that should be prescribed. In recognition of this, the British National Formulary (BNF 2008) has reviewed its advice that parenteral administration should be limited to extreme cases, and now recommends its use in all suspected cases of WE. Further, there are several national protocols that encourage it use, not least the protocol supported by the only manufacturer of parenteral thiamine in the UK. It has therefore been widely adopted in hospitals, particularly for patients undergoing alcohol detoxification (Cook 2000). Indeed, this was the case amongst this patient group as 70% were prescribed parenteral thiamine following assessment.

This study was unable to determine any factors that may have predisposed these patients to what appears to be low nutritional risk. Previous studies have suggested the protective effects of beer drinking as thiamine is maintained in the brewing process (Thomson and Marshall 2006). Nevertheless, other factors may also have contributed, such as diet for example, decreases in the prevalence of Wernicke-Korsakoff Syndrome (WKS) in Australia have been attributed to bread being fortified with thiamine (Harper et al. 1998). Contrary to this, it has been reported that in the East End of Glasgow there has been an increase in incidence of Korsakoff Psychosis despite thiamine supplementation in bread in the United Kingdom (UK) since the 1940’s (Ramayya and Jauhar 1997; Thomson 2000). Further, when the relationship between risk and biochemical deficiency was explored, patients at high risk of
malnutrition as identified by their MUST score, were five times more likely to be deficient in zinc or selenium than their low risk counterparts.

At follow-up, malnutrition risk category had significantly improved. However, a limitation of using MUST for this purpose is that 33% of the score is determined on acute disease effect, which would likely be absent on follow-up assessment within the community. This study is not representative of the UK as a whole, as it was conducted on a small clinical sample in Liverpool. Also, the sample size was small due to the paucity of research studies on which to base power calculation, thus the number of measures was limited.

In conclusion we were unable to establish the presence of measureable nutritional deficiency in this previously identified high risk population. Another conclusion may be that the prevalence of nutritional deficiency has been over-estimated, or at least older studies may not be relevant to current clinical populations as general population nutrition may have improved over time. Additionally we would question the reliability of the MUST screening tool within this population. Clearly there is need for a larger multi-centre trial to establish the true risk of malnutrition in this patient population.
Chapter Six

6 The efficacy of brief interventions for dependent drinkers: A prospective cohort study

6.1 Introduction

6.2 Methods

6.2.1 Aim

6.2.2 Objectives

6.2.3 Design

6.2.4 Patients

6.2.5 Inclusion criteria

6.2.6 Exclusion criteria

6.2.7 Sample size

6.2.8 Intervention group

6.2.9 Control group

6.2.10 Measures of alcohol consumption and healthcare utilisation

6.2.11 Ethical approval

6.2.12 Research and development approval

6.2.13 Statistical analysis

6.3 Results

6.3.1 Baseline assessment

6.3.2 Six-month follow-up assessment data

6.3.2.1 Intervention group

6.3.2.2 Control group

6.3.3 Group differences at follow up

6.3.3.1 Alcohol measures

6.3.3.2 Healthcare utilization

6.4 Discussion
Brief Interventions


6.1 Introduction

Alcohol dependence is a major problem within the United Kingdom (UK). In England, it has been estimated that it affects 3% of the population (Drummond et al. 2005), which leads to significant medical and psychiatric morbidity (Department of Health 2007). Of particular concern is that this condition is more prevalent in areas of higher deprivation which universally are recognized as marginalized populations experiencing a variety of health inequalities (WHO 2008). Most importantly, it has been reported that only 5.6% of alcohol-dependent individuals access specialist treatment per annum, and 36% of which self refer (Drummond et al. 2005). It is therefore reasonable to assume that only a small percentage of alcohol-dependent individuals ever receive a diagnosis (Atkinson et al. 2003). This raises an important question: is self motivation the most important determinant in successfully accessing and completing treatment? (Rochat et al. 2004; Wells et al. 2007). Thus, it is important to determine what interventions are available for those who do not seek treatment, and how do we motivate people to engage in treatment. There is a professional consensus that treatment-seeking indicates treatment readiness (Raistrick et al. 2006). To this end, there has been reasonable criticism that alcohol treatment clinical trials are ‘exclusionist’ and recruit ‘pure’ patients, i.e. non-complex non-co-morbid rather than typical patients (Blanco et. al. 2008). Therefore, most research probably excludes what has been demonstrated to be a more difficult patient group in terms of engagement (Miller and Wilbourne 2002; Department of Health 2005; Raistrick et al. 2006). People who are alcohol dependent are more likely to have experienced health problems leading to frequent attendance at acute
hospitals, particularly Emergency Departments (EDs) (Pirmohamed et al. 2000; Department of Health 2006; Department of Health 2007). Therefore it would seem both sensible and practical to ensure that this setting is utilised as a major access point for treatment. Clearly, the healthcare setting can be considered as one of the main determinants of treatment effectiveness (Chapter 2, Systematic Review) (Miller and Wilbourne 2002; Drummond et al. 2005).

The dominant paradigm of psycho-social interventions for alcohol dependence can lead to resistance in uptake by certain groups of patients as it may be perceived as stigmatizing, i.e. the patients are labelled as having ‘a mental health problem’ (Falk 1996). Therefore treatments have focused on homogeneous alcohol-dependent populations, which leads to under-representation of the more heterogeneous problems associated with alcohol dependence. Treatment effects and conclusions from research also need to be interpreted with care. Furthermore, in a ‘real world’ settings such as General Practice surgeries and EDs, where patients are likely to present, treatments need to have currency and validity to the setting.

Therefore we are presented with the complex problem of:

a) How do we identify those individuals that have alcohol dependence?

b) How do we engage with such individuals to provide effective treatment options?

c) How do we ensure equity of access to treatment?

d) How do we match patient treatments to patient need?

Overall, it is surprising that for those patients who are dependent on alcohol, timely pragmatic interventions have received little research focus. This is mainly due to
Brief Interventions

professional consensus, and historical perspectives that more complex problems, i.e. alcohol dependence, should be matched to more intensive treatments, such as psycho-social based therapy. Furthermore, the assessment of the effectiveness of treatment is a complex issue in itself, particularly since between 12 to 35% of patients recover spontaneously from alcohol dependence in the absence of treatment: a phenomenon known as ‘natural recovery’ (Sobell et al. 1996; Bischof et al. 2000; Sobell et al. 2000; Bischof et al. 2003). It has also been established that interventions which are both similar and different from each other perform equally as well when compared (Miller and Wilbourne 2002; Raistrick et al. 2006). Furthermore, and almost exclusively, such treatments are delivered by clinical and counselling psychologists, and thus require complicated referral systems, and long waiting times to treatment (Miller and Wilbourne 2002).

Providing structure in the development of, and commissioning for, alcohol services is clearly a priority that is essential to responsive service development. Alcohol services remain ‘Cinderella’ services in contrast to drug treatment services. This gap has recently been acknowledged by government, which has led to a concerted effort to focus on service development, extending the range of provisions available, and improving access (Department of Health 2007).

Our previous work has led us to consider whether we now need to develop treatments for alcohol-related problems in different settings and utilise less traditional approaches. As shown in chapter 2, most interventions are undertaken in tertiary care settings, and largely in the absence of a non-treatment control group. This lack of comparative data therefore does not exclude the possibility that (a) all treatments...
are ineffective (in view of the lack of a no non-treatment control group), and (b) brief treatments may be as effective as more intensive treatments. Furthermore, service evaluation of a nurse-led intervention for hazardous/harmful and dependent drinkers showed that there were reduced hospital attendances, decreased length of stay and that patients were happy to receive this intervention (Owens 2004).

Brief treatments are effective for hazardous and harmful drinkers; more recent evidence also suggest that BI may also be effective for alcohol-dependent patients (Chick et al. 1985; Bien et al. 1993; Kahan et al. 1995; Fleming et al. 1997; McManus et al. 2003; Smith et al. 2003; Emmen et al. 2004; Bertholet et al. 2005; Guth et al. 2008). However, Brief Interventions (BI) have yet to be systematically tested in acute hospitals for dependent drinkers (Smith 1996; Huntley et al. 2001; Patton et al. 2005; Touquet and Paton 2006). BIs vary in their nature with most forms being ‘brief’ and often conducted only once. It can thus be argued that when brief interventions are administered on several occasions as part of a treatment plan, the interventions become extended.

In this study, we report the results of a cohort study which has evaluated outcomes after delivery of BI in two hospitals, one which has a well-developed alcohol service, and compare with a hospital without an alcohol service, and therefore no implementation of any form of intervention.
6.2 Methods

6.2.1 Aim

To establish if brief interventions delivered to alcohol-dependent patients in an acute care setting are effective in reducing alcohol consumption and dependence.

6.2.2 Objectives

1. Determine whether BI reduces overall alcohol consumption.
2. Determine whether BI reduces alcohol dependence.
3. Establish whether patients receiving BI have a reduced length of stay in hospital.
4. Determine whether patients receiving BI have a reduction in ED attendance.

6.2.3 Design

The design was a prospective cohort intervention study undertaken at the Royal Liverpool and Broadgreen University Hospital NHS Trust (RLBUHT), with North Cheshire NHS Trust (NCH) as a control site. Recruitment occurred simultaneously at both sites between March 2007 and September 2007.
6.2.4 Patients

Patient recruitment and assessment procedures were similar in both NHS Trusts. The only difference was that patients at North Cheshire did not receive any Brief Interventions or clinical follow up by the Alcohol Specialist Nurse (ASN). Patients were attending hospital for a variety of reasons that may or may not have been related to alcohol. Those patients who were drinking heavily were approached by the ASN and the study explained, with the patient being given a patient information leaflet (PIL). If the patient agreed to take part in the study, they were asked to consent and recruited to the study. Each patient had a full assessment, including all clinical questionnaires (Appendix 6).

6.2.5 Inclusion Criteria

1. Patients with a score ≥16 on the Alcohol Use Disorders Identification Test (AUDIT).

2. A positive Severity of Alcohol Dependence Questionnaire (SADQ) score.

6.2.6 Exclusion Criteria

1. Patients known to be intravenous drug users.

2. Patients unable to give informed consent.

3. Patients who were pregnant.

4. Patients under 18 years of age.
Brief Interventions

Assessed as AUDIT ≥16 and SADQ +VE

TREATMENT

FULL ASSESSMENT PLUS Brief Interventions

6 MONTH FOLLOW-UP

SADQ AUDIT QUANTITY FREQUENCY HEALTHCARE UTILISATION

CONTROL

FULL ASSESSMENT PLUS Normal Clinical Care

6 MONTH FOLLOW-UP

SADQ AUDIT QUANTITY FREQUENCY HEALTHCARE UTILISATION

Figure 6.1 Data collection pathway
6.2.7 Sample Size

Based on a previous observational study (Chapter 5) of heavy drinkers receiving Brief Interventions (BI's), it was expected that at least 55% of such patients would display a decrease in Severity of Alcohol Dependence Questionnaire (SADQ) score between baseline and 12 weeks’ follow-up. Another confounder in this area of research is the phenomenon of natural recovery (NR). The natural recovery rate in the control group was expected to be no more than 25% (the literature ranges from 12% with a treatment population up to 35% within a general lifetime population) (Weisner et al. 2003; Bischof et al. 2005). The phenomenon of natural recovery could also be described as regression to the mean. A method to compensate for this would be to ensure that both intervention and control populations are matched for baseline data within a randomized Controlled Trial (RCT). However, within this study in order to detect this difference between the groups (55% versus 25%) with 90% power at the 5% significance level, approximately 50 patients were required in each group. In order to allow for an estimated 50% drop out rate (observed in the previous study in similar patients), 100 patients were thus recruited in each group.

6.2.8 Intervention group

Interventions were delivered by an Alcohol Specialist Nurse (ASN). The ASNs have a dedicated competency framework developed in accordance with Drug and Alcohol National Occupational Standards (DANOS) and the Knowledge and Skills Framework (KSF). Additionally, they have monthly clinical supervision and regular
Brief Interventions

training updates. Within the intervention group the ASN delivered Brief Interventions (BI) based on the FRAMES approach (Bien et al. 1993) (Figure 6.2). This is a commonly utilised strategy for the delivery of Brief Interventions (BI) and refers to Feedback, Responsibility, Advice, Menu, Empathy and Self-efficacy. The strengths of the FRAMES approach have been shown to help patients review their problems, take responsibility for a change in their drinking, and provide options for change, in an empathic way that reinforces the patient's self-efficacy (Miller and Rollnick 1991; O'Connor and Schottenfeld 1998). This form of treatment has been used at the RLBUHT for the past seven years and has become integral to care delivery for all heavy drinkers. The most important element intrinsic to this model is the exploration of the patients' perceptions of the link between their alcohol consumption and their ED attendance/hospital admission with an appropriate emphasis on the potential association. For initial assessments patients were identified by Emergency Department (ED) data, and where seen either in the ED or an acute medical ward. There were no established maximum number of treatment sessions; assessment and brief interventions took place on each occasion. Treatment sessions were negotiated with the patient and tailored to individual patient needs by the ASN.
Feedback (From Nurse to Patient)
- Personal risk or impairment concerned with co-morbid diagnosis (e.g. alcohol liver disease)
- Drinking (Quantity and Frequency) utilising drink diary
- Blood results
- Nutrition (Diet/ Vitamins/hydration/BMI)

Responsibility
- Patients are encouraged to take responsibility for their own health behaviours and given information to empower their choices for change.

Advice
- On how to cut to cut down or abstain.

Menu
- Alternative options for changing drinking behaviour, setting a target; agreeing goals of reduction.

Empathic interviewing
- Listening reflectively avoiding cajoling or confronting; understanding the patients situation and their barriers or perceived barriers to change.

Self efficacy
- An interviewing style which enhances peoples' belief in their ability to change

Figure 6.2 Brief Intervention treatment structure (Bien et al, 2003)

6.2.9 Control group

In the non-intervention group at NCT, each patient had a full assessment by the same ASN that completed assessments at intervention hospital. Likewise for initial assessments patients were identified by Emergency Department (ED) data, and where seen either in the ED or an acute medical ward. The control group did not have access to any dedicated materials such as advice leaflets and did not receive any feedback from the ASN regarding their drinking behaviour. This included all clinical questionnaires which were exactly the same as those completed at the intervention hospital site. Patients received normal clinical care, in that they were not
seen again by the ASN. Follow-up at 6 months post assessment was conducted by telephone.

6.2.10 Measures of alcohol consumption and healthcare utilisation

6.2.10.1 Alcohol use measures

The following measures of consumption and dependence were used to classify alcohol consumption behaviour.

Alcohol Use Disorders Identification Test (AUDIT)

The AUDIT questionnaire consists of ten questions aimed at eliciting alcohol consumption, drinking behaviour and alcohol-related problems. The aim is to detect hazardous and at-risk drinkers, and is scored on a scale of 0 to 40, a score of 8 or more indicating the requirement for further intervention, and the likelihood of experiencing social problems from drinking (Conigrave et al. 1995). Although this tool was not specifically designed to detect alcohol dependence, it has been postulated that a score of 16 plus is indicative of probable dependence on alcohol (Drummond et al. 2005). The authors of the questionnaire have shown that it takes just two minutes to administer, with a sensitivity of 92% and specificity of 94% in detecting hazardous drinkers (Saunders et al. 1993; Bohn et al. 1995; MacKenzie et al. 1996; Allen et al. 1997; Bradley et al. 1998; Aertgeerts et al. 2000), which is higher than any other tool or biochemical marker (Barry and Fleming 1993; Bradley et al. 1998; Aertgeerts et al. 2001; Aertgeerts et al. 2002).
The Severity of Alcohol Dependence Questionnaire (SADQ)

The Severity of Alcohol Dependence Questionnaire (SADQ) measures the severity of dependence on a 0 to 60 point scale, a score of 30 or above indicating severe dependence (Stockwell et al. 1979; Stockwell et al. 1983). It can be administered prior to any manifestation of symptoms. A score from 1 to 29 indicates mild to moderate alcohol dependence.

Quantity Frequency measures

Patients were asked to self-report their daily alcohol consumption and the number of days on which they consumed alcohol with the help of retrospective and prospective drink diaries. From this, the ASN was able to calculate the number of units drunk per drink day, with each unit being equivalent to 8 grammes of pure alcohol.

6.2.10.2 Healthcare utilisation

Measures of healthcare utilisation were collected to ascertain if the intervention had any impact which may be important economically. These were:

1. Total length of stay in the 6 month follow-up period; and
2. Total ED attendance in the 6 months follow-up period.
6.2.11 Ethical approval

Ethical approval was sought and attained from the Liverpool Research Ethics Committee (LREC). LREC reference number 06/Q1505/126. Site specific approval was also gained from the Cheshire Research Ethics Committee (CREC).

6.2.12 Research and development approval

This study was registered with the Research and Development Department at The Royal Liverpool and Broadgreen NHS Trust (project R&D number 3349) and was given full sponsorship from the Trust who arranged independent peer review for the study. The study was also registered with the Research and Development Department at North Cheshire Hospitals NHS Trust (reference NCH 07/008).

6.2.13 Statistical analysis

As appropriate, after utilizing the Kolmogorov-Smirnov test for determination of whether the data were normally distributed, the following tests were applied. For data that were normally distributed, 95% Confidence Intervals (CI) were calculated for the differences between means. For non-normally distributed data, median differences are presented with Inter Quartile Range (IQR). Data were analyzed as follows:
Numerical data

- In order to detect differences between baseline data in groups that were able to be followed up and those not able to be followed up at 6 months, and also to test for both baseline and follow up differences between the two hospital groups, analysis was performed by the Mann Whitney test or the unpaired t test, as appropriate.

- For detection of differences within hospital groups between baseline and follow up data, analysis was performed by the Wilcoxon signed ranks test or the paired t test, as appropriate.

Categorical data

- For matched pair data, McNemar’s test was used

- For unpaired data, a χ² test was used

A p ≤ 0.05 was considered as being statistically significant. All statistical analyses were performed using the SPSS statistical package Version 16.
6.3 Results

6.3.1 Baseline Assessment

6.3.1.1 Demographics

There were a total of 200 patients recruited during the study period, 100 in each group. In the intervention group, 76% were male while in the control group, 66% were male. In the intervention group, the median age of males was 44 years (IQR 36-51), and for females it was 48.50 years (IQR 42.75-55.0). In the control group, median ages were 47.50 (IQR 39-58) for males and 42 years (IQR 34.50-52.25) for females (Table 6.1). Male patients in the intervention group were significantly younger than male patients in the control group (p= 0.03; 95% CI -8.79 to -0.052). Females were significantly older in the intervention group (p=0.03; 95% CI 0.73 to 12.10). There were no overall differences between groups for mean age. Similarly, age category at baseline assessment is similar across groups (Figure 6.3).

Table 6.1 Demographics at baseline assessment

<table>
<thead>
<tr>
<th></th>
<th>Intervention (%)</th>
<th>Control (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>24</td>
<td>34</td>
</tr>
<tr>
<td>White British</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>No Fixed Abode</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>Single</td>
<td>58</td>
<td>36</td>
</tr>
<tr>
<td>Lives Alone</td>
<td>45</td>
<td>52</td>
</tr>
<tr>
<td>Employed</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td>Smokes</td>
<td>83</td>
<td>67</td>
</tr>
</tbody>
</table>
6.3.1.2 Reason for presentation

The reasons for presentation to hospital were reasonably similar across the groups (Table 6.2). Of the 200 patients, 14% presented for management of acute alcohol withdrawal. The main reason for presentation was gastrointestinal problems (30%). The only difference between the two groups was that more patients within the control sample presented to hospital with mental health problems such as overdose or self-harm behaviours than the intervention group ($\chi^2 = 3.76; p=0.05$).
Within both groups, there was evidence for significant ill health; 88 % of patients had a previous or current medical co-morbidity, ranging from acute organ failure to chronic disease. Additionally, 51% of patients had two or more medical co-morbidities (range 0-4) (Table 6.3).
**Table 6.3 Medical co-morbidities of patients in intervention and control groups**

<table>
<thead>
<tr>
<th>Category</th>
<th>Intervention N</th>
<th>Control N</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALD</td>
<td>14</td>
<td>18</td>
</tr>
<tr>
<td>Hepatitis C</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Pancreatitis</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>Duodenal ulcer</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Hiatus hernia</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Irritable bowel</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td><strong>Gastrointestinal (Total)</strong></td>
<td>34 (29%)</td>
<td>25 (24%)</td>
</tr>
<tr>
<td>Angina</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Hypertension</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Hypercholesteremia</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Previous MI &amp; IHD</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>CVA</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td><strong>Cardiovascular (Total)</strong></td>
<td>27 (23.5%)</td>
<td>26 (24%)</td>
</tr>
<tr>
<td>Depression</td>
<td>28</td>
<td>21</td>
</tr>
<tr>
<td>Manic depression</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Schizophrenia</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td><strong>Mental Health (Total)</strong></td>
<td>30 (26%)</td>
<td>22 (20%)</td>
</tr>
<tr>
<td>Epilepsy</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Migraines</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Glaucoma</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Homer’s syndrome</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Gout</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Neurological (Total)</strong></td>
<td>11 (8.4%)</td>
<td>11 (10.1%)</td>
</tr>
<tr>
<td>Asthma</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>COPD/ Bronchitis</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td><strong>Respiratory (Total)</strong></td>
<td>10 (8.5%)</td>
<td>15 (14%)</td>
</tr>
<tr>
<td>Arthritis / Osteoporosis</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>Chronic back pain</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Musculoskeletal (Total)</strong></td>
<td>3 (2.5%)</td>
<td>10 (9%)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>7 (5.9%)</td>
<td>5 (4.6%)</td>
</tr>
<tr>
<td><strong>Others (Total)</strong></td>
<td>2 (2%)</td>
<td>1 (1%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>117 (100%)</td>
<td>109 (100%)</td>
</tr>
</tbody>
</table>
6.3.1.3 Alcohol consumption

The majority of patients were drinking daily (90% in the Intervention group, 84% in the control group). Patients in the intervention group (Median 36.00; IQR 28.50-40.00) had significantly higher (p=0.0001) AUDIT scores than patients in the control group (Median 30.00; IQR 25.25-34.00). There were no other differences between groups at baseline assessment for other measures of alcohol consumption (Table 6.4).

<table>
<thead>
<tr>
<th></th>
<th>Intervention (N=100)</th>
<th>Control (N=100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units per day</td>
<td>Median 24.00 Mode 40.00 IQR 14.00-34.25</td>
<td>Median 20.00 Mode 20.00 IQR 12.00-30.75</td>
</tr>
<tr>
<td></td>
<td>AUDIT 36.00 Mode 40.00 IQR 28.00-40.00</td>
<td>AUDIT 30.00 Mode 29.00 IQR 25.25-34.00</td>
</tr>
<tr>
<td></td>
<td>SADQ 42.50 Mode 48.00 IQR 38.00-52.00</td>
<td>SADQ 46.00 Mode 37.00 IQR 37.25-55.50</td>
</tr>
</tbody>
</table>

Alcohol Dependence

There were no differences in the severity of alcohol dependence between the groups; 72% of the intervention group had a Severity of Alcohol Dependence Questionnaire (SADQ) score which was indicative of severe dependence (Scoring ≥30), compared to 65% of patients in the control group ($\chi^2 = 0.83; p=0.36$) (Figure 6.4).
At baseline, 36% of the patients in the intervention group and 44% of the patients in the control group were consuming spirits as their primary drink of choice (Figure 6.5).

Figure 6.4 Severity of Alcohol Dependence Questionnaire category at baseline assessment

Figure 6.5 Type of alcohol being consumed by patients at baseline assessment
6.3.2 Six month follow-up assessment data

Follow-up was attempted with all 200 recruited patients 6 months after their original assessments. After two letters and two follow-up telephone calls (where a telephone number was available), patients were considered to be lost to follow up. In the intervention group, 48% of patients could be contacted at 6 months; 2% were dead and 50% were unable to be contacted. In the control group, 50% patients could be contacted; 7% were dead, 2% were in prison and 41% were unable to be contacted.

6.3.2.1 Intervention group

Patients in the intervention group received a minimum of one brief intervention. Those patients who were able to be followed up received significantly more BIs (p=0.0001), with a median of three brief interventions (IQR 1-6); than those who were unable to be followed up received a median of one intervention (IQR 1-2).

Alcohol measures at follow up in the intervention group

Alcohol consumption was significantly reduced (p=0.0001). Patients scored significantly lower on the AUDIT screen (p= 0.0001), and had a significantly lower SADQ score (p=0.0001). The intervention group patients were also drinking on significantly fewer days (p 0.0001) (Table 6.5).
Table 6.5 Intervention group difference between baseline assessment and follow-up on alcohol measures

<table>
<thead>
<tr>
<th></th>
<th>Median Baseline</th>
<th>Median Follow-up</th>
<th>IQR Baseline</th>
<th>IQR Follow-up</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N=48</td>
<td>N=48</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Units per day</td>
<td>20.00</td>
<td>5.00</td>
<td>14.00-29.50</td>
<td>00.00-10.75</td>
<td>0.0001</td>
</tr>
<tr>
<td>AUDIT</td>
<td>36.00</td>
<td>10.50</td>
<td>28.00-38.75</td>
<td>00.00-22.50</td>
<td>0.0001</td>
</tr>
<tr>
<td>SADQ</td>
<td>40.00</td>
<td>00.00</td>
<td>23.50-48.00</td>
<td>00.00-21.50</td>
<td>0.0001</td>
</tr>
<tr>
<td>Drink Days</td>
<td>7.00</td>
<td>7.00</td>
<td>7.00-7.00</td>
<td>00.00-7.00</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

The severity of alcohol dependence was reduced in 77% (N=37) of patients. At 6 month follow-up, 56.2% (N=27) reduced their dependence category to zero, with 36.9% (N=19) reporting total abstinence. Of those patients who remained dependent, 20.8% (N=10) had reduced their dependence category from severe to mild/moderate. In total, 16.6% (N=8) remained severely dependent, while 6.2% (N=3) remained mild/moderately dependent. There were no cases where the dependence category worsened (Figure 6.6).

Figure 6.6 Category of dependence change from the baseline assessment to follow-up in the intervention group
6.3.2.2 Control Group

Alcohol consumption was significantly reduced ($p=0.03$). Patients also scored significantly lower on the AUDIT screen ($p=0.003$), and had significantly lower SADQ scores ($p=0.005$). They were also drinking on significantly fewer days, ($p=0.007$) (Table 6.6).

Table 6.6 Control group differences for alcohol measures at follow up

<table>
<thead>
<tr>
<th>Measure</th>
<th>Median Baseline N=50</th>
<th>Median Follow up N=50</th>
<th>IQR Baseline</th>
<th>IQR Follow-up</th>
<th>Significance P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units per day</td>
<td>21.00</td>
<td>19.00</td>
<td>12.00-33.00</td>
<td>9.50-32.75</td>
<td>0.03</td>
</tr>
<tr>
<td>AUDIT</td>
<td>29.50</td>
<td>29.00</td>
<td>24.00-34.00</td>
<td>18.25-33.25</td>
<td>0.003</td>
</tr>
<tr>
<td>SADQ</td>
<td>37.00</td>
<td>32.50</td>
<td>25.25-50.25</td>
<td>12.00-50.25</td>
<td>0.005</td>
</tr>
<tr>
<td>Drink Days</td>
<td>7.00</td>
<td>7.00</td>
<td>7.00-7.00</td>
<td>4.75-7.00</td>
<td>0.007</td>
</tr>
</tbody>
</table>

The severity of alcohol dependence was reduced in 20% (N=10) of patients, none of whom reported total abstinence. Of those patients who remained dependent, none reduced their dependence category from severe to mild/moderate. In total, 54% (N=27) of patients remained severely dependent, while 24% (N=12) remained mild/moderately dependent. The dependence category worsened in one patient.
6.3.3 Group Differences at Follow-up

6.3.3.1 Alcohol Measures

At follow-up, alcohol consumption and alcohol assessment measures were significantly improved in the intervention compared to the control group. Patients in the intervention group (median 0.00; IQR 0.00-21.50) were significantly (p=0.0001) less likely than the control group (median 32.50; IQR 12.00-50.25) to have measureable features of alcohol dependence based on the SADQ score (Figure 6.7).

![Figure 6.7 SADQ score from baseline assessment to follow-up](image)

There was a significant difference (p=0.0001) in the daily consumption of alcohol with the intervention group consuming significantly less alcohol (median 5.00; IQR 0.00-10.75) than the control group (median 19.00; IQR 9.50-32.75) (Figure 6.8).
In the intervention group, 39.6% of patients were abstinent from alcohol at follow up. Consumption of spirits had reduced for both groups, with patients more likely to be consuming normal strength beer in both groups (Table 6.7).

**Table 6.7** Type of alcohol being consumed by patients in intervention and control groups at follow-up

<table>
<thead>
<tr>
<th>Alcohol Consuming</th>
<th>Intervention (%)</th>
<th>Control (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nil</td>
<td>39.6</td>
<td>0</td>
</tr>
<tr>
<td>Spirits</td>
<td>10.4</td>
<td>28</td>
</tr>
<tr>
<td>Beer (4-5.4% ABV)</td>
<td>25</td>
<td>22</td>
</tr>
<tr>
<td>Cider (4-5.4% ABV)</td>
<td>6.3</td>
<td>4</td>
</tr>
<tr>
<td>Strong Larger (&gt;5.4% ABV)</td>
<td>4.2</td>
<td>6</td>
</tr>
<tr>
<td>Strong Cider (&gt;5.4% ABV)</td>
<td>2.1</td>
<td>20</td>
</tr>
<tr>
<td>Wine</td>
<td>12.5</td>
<td>4</td>
</tr>
<tr>
<td>Sherry</td>
<td>0</td>
<td>16</td>
</tr>
</tbody>
</table>
6.3.3.2 Healthcare Utilization

Patients in the intervention group spent significantly (p=0.0001) less time in hospital when measured in total days (109 days compared to 236 in the control group). Similarly, ED attendances were significantly reduced (p= 0.025) in the intervention group, a total of 34 attendances compared to 91 attendances in the control group (Table 6.8).

Table 6.8 Differences in health utilization

<table>
<thead>
<tr>
<th></th>
<th>Intervention (N=48)</th>
<th>Control (N=50)</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Median (IQR)</td>
<td>Median (IQR)</td>
<td></td>
</tr>
<tr>
<td><strong>ED attendances</strong></td>
<td>0 (0-1)</td>
<td>1 (0-2)</td>
<td>0.025</td>
</tr>
<tr>
<td><strong>months post</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Length of stay</strong></td>
<td>0 (0-0)</td>
<td>2 (0-6)</td>
<td>0.0001</td>
</tr>
<tr>
<td><strong>months post</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
6.4 Discussion

Literature about the duration of treatment as a determinant of effectiveness of alcohol treatment for dependent drinkers is inconclusive (Miller and Wilbourne 2002; Raistrick et al. 2006). There has been a paucity of research that utilizes non-treatment control groups. There is therefore a reasonable uncertainty in the interpretation of the results of such studies. The problem occurs when specialist treatment settings are utilised for research, as patients presenting to these settings are treatment seeking and treatment expectant. This makes it an ethical challenge to provide non-treatment control samples within studies (Raistrick et al. 2006). However, alcohol dependent patients frequently present to primary and acute health care settings (Cherpitel 1988; Maio et al. 1997; Fortney et al. 1999; Reid et al. 1999; Coder et al. 2008), where both identification of, and treatment for, alcohol-related problems is either absent or ad hoc. There exists an opportunity to ethically design non-treatment control studies within acute services. We were therefore able to design such a study to test the effectiveness of one form of alcohol treatment, Brief Intervention (BI) against a non-treatment control (usual clinical care). We utilized two naturally occurring groups: one group at a hospital that provides BI and one in which this intervention is not available, thereby enabling a comparison. These groups were reasonably matched with both presenting with co-morbid conditions and were seeking treatment for a health-related problem.

The dominant paradigm asserts that non-treatment seeking patients are ‘non treatment ready’ (Raistrick et al. 2006; Assanangkornchai and Srisurapanont 2007; Freyer-Adam et al. 2008) and therefore require motivating toward treatment or the
Brief Interventions

provision of more complex (stronger) treatments. However, we found that patients in the treatment group improved significantly when compared to the non-treatment group. It is important to state that we also controlled for the phenomenon of natural recovery in the power calculation. Indeed, consistent with the literature, we found that 20% of the control group patients improved without treatment (Bischof et al. 2000; Bischof et al. 2003).

It is widely accepted and has been demonstrated in several research studies (Miller and Wilbourne 2002; Moyer et al. 2002; Raistrick et al. 2006) that the level of alcohol dependence is the dominant determinant of outcome. There is an assertion that only mild to moderately dependent patients will benefit from briefer treatments. Our findings however show that at six-months post treatment, 49% of severely dependent patients were no longer dependent and 40% were abstinent. There was also no correlation between the level of dependence and improvement ($\chi^2=0, p=0.99$). This is very encouraging. Furthermore, only 23% of patients did not improve. For measures of alcohol dependence, the results were highly significant when compared to controls ($p=0.0001$). Similarly, on measures of alcohol consumption, there were significant improvements in the treatment group when compared to controls ($p=0.0001$). It is difficult to compare results from other studies because of the heterogeneity of alcohol consumption outcome measures that have been used, as shown in the systematic review (Chapter 2).

From these data, we are confident in asserting that acute hospitals could be an ideal setting in which to both identify and treat alcohol dependent patients (Owens et al.
Brief Interventions

2005; Patton et al. 2007). A key component is the ability to provide follow-up within either an out-patient or primary care setting. Therefore, there could be some debate around whether these interventions are truly brief as the number of follow-up appointments was not pre-determined. They could therefore be conceptualized as a more extended form of BI. If these extended brief treatments are indeed effective particularly in those not necessarily seeking treatment, this presents a tremendous opportunity to a) reduce the burden to health care services, b) improve treatment quality, c) improve treatment equity, and potentially d) improve patient outcomes and functionality. This component of a planned follow-up is the essential ingredient that augments the treatment from a BI. Therefore, it remains difficult to compare our results from those of similar design. For example, Saitz utilized BI on a one occasion basis, and perhaps not unsurprisingly was unable to demonstrate differences between treatment and control groups (Saitz et al. 2007).

The seminal literature described BI as “Generally restricted to four or fewer sessions, each session lasting from a few minutes to one hour, and is designed to be conducted by health professionals who do not specialize in addictions treatment.” (Heather 1989; Bien et al. 1993). Unfortunately, the sample size was insufficient to determine the optimal number of treatments, and consequently it becomes an imperative to design a study with sufficient power to enable this calculation. However, we were able to demonstrate significant improvements with a median of 3 treatment sessions of 20 minute duration. Our interventions also differed from previous studies in two distinct ways. Firstly, they were timely in nature, being delivered at the point of presentation, the potential limitations of which have been discussed earlier. Secondly, they were delivered by a nurse. Indeed, the fact that
this intervention was delivered effectively by nurses with no extensive training in any psycho-social method is of particular interest. There is an emergent literature that demonstrates that treatment by nurses may be highly cost-effective (Hillman et al. 2001; Frich 2003). Furthermore, as nurses are both the largest and therefore most readily available workforce, and willing to undertake training in this area (Owens et al. 2000). They are potentially an untapped and underutilized resource that could have a major impact on availability and accessibility for the treatment of alcohol-dependent patients, particularly in A&E settings, where the primary reason for presentation is for treatment of a related health problem.

It is not surprising that the patients presenting to this setting were in poor health; 88% had previous or current medical co-morbidity, with 51% having two or more medical co-morbidities. Unfortunately, there is a paucity of literature on which to compare our population as co-morbidity often features as an exclusion criteria from participation in research trials. Nevertheless, this study failed to find a relationship between co-morbidity and treatment outcome ($\chi^2=0$, $p>0.999$). This raises a question as to why sick patients in need of treatment are excluded from alcohol treatment trials. Perhaps it is that traditional alcohol treatment settings are inappropriate for such patients. If this is the case, then surely there is a need to provide alternatives (Gossop et al. 2007). Also of concern is the assertion that patients in traditional psychiatric settings are more likely to have physical health problems that are either unidentified or neglected (Department of Health 2006; Gossop et al. 2007).
As this population had significant health problems, it would be expected that they would be heavy consumers of health care. Indeed, this was the case for both the treatment and control groups. However, when compared to controls the treatment group utilised significantly less healthcare facilities; length of stay in hospital was significantly less, \((p=0.0001)\) as were ED attendances \((p=0.023)\).

These are promising results; however there remain some major limitations to the study generalizability, and therefore interpretation of the results. Firstly, in terms of treatment effect, whilst therapist was controlled for, the treatment setting could not be. This has to be considered as clinical practice differed according to hospital site. The treatment group site had a well established service, with clinical protocols and a programme of staff awareness training. Secondly, even though, levels of alcohol dependence, alcohol consumption, age, sex and employment status were similar for both populations at baseline assessment, as the setting was geographically twenty miles apart it cannot be completely established that the populations are in fact comparable. Lastly, the sample size was such that we were unable to determine the optimal number of treatment sessions, or control for extraneous variables. Clearly, these results could have happened by chance and therefore it would be useful to establish if these interventions are effective in one population using the method of a Randomized Controlled Trial (RCT).

In conclusion, there would appear to be sufficient evidence generated by this study to suggest that BI delivered by a dedicated alcohol specialist nurse for non-treatment seeking alcohol dependent individuals are effective. Furthermore, the ED is an ideal
setting for identification of, and implementation of treatment for alcohol-dependent patients, who although having significant medical co-morbidity responded well to treatment (Touquet and Brown 2006). The findings of this study could be utilized to inform and influence the commissioning for development of alcohol specific services. This chapter does not seek to place a value or comparison between psycho-social treatments and BI. It does however seek to establish that there exist; both the need for, and the justification to provide effective alternatives.
Chapter Seven

Concluding Discussion
7. Concluding discussion

Introduction

Despite recent concerted and structured efforts by the UK government to address the increasing burden of alcohol-related problems (Department of Health 2004; Department of Health 2004; Department of Health 2005; Department of Health 2006; Raistrick et al. 2006; Department of Health 2007), confusion around how this can best be done prevails. Of particular concern is the inequity of treatment for alcohol-dependent individuals. Treatment remains ad-hoc, often empirical, and woefully inadequate. A treatment effectiveness review showed that there is a scarcity of research in this area with most of the research being limited to tertiary settings (Fleming and Manwell 1999; Department of Health 2005; Raistrick et al. 2006). Although the recently revised Department of Health (DH) alcohol strategy, (Department of Health 2007) concluded that there has to be a system to ensure equitable, responsive and effective treatments, much work still needs to be done. This may in part be a consequence of the dominance of the psycho-social paradigm which places extended treatments in specialist settings as a central tenet for the treatment of alcohol dependence. Thus, although there is a 30-year literature supporting the effectiveness of psycho-social treatment, it needs to be remembered that only 5.6% of alcohol-dependent people ever access treatment (Drummond et al. 2005).

Given this state of affairs, the aim of this thesis was to determine:

- Who are the treatment seekers?
- What needs to be done to respond to non-treatment seekers?
- In what setting and who is best placed to deliver the treatment?
Perhaps most importantly the investigations in this thesis were designed with a common theme to better understand alcohol treatment and to determine the most effective treatments for this patient group.

**Summary of Main Findings**

Determining what the most effective treatment for alcohol dependent individuals was the first consideration in the development of this thesis. However, the expectation that this would emerge through a systematic review of the literature proved erroneous. From the literature (Chapter 2) a confusing and conflicting picture emerged resulting from lack of standardization of nomenclature. Thus, we were not able to show any significant differences between different treatment modalities.

During the period for investigation of this thesis, the UK government introduced changes in its licensing legislation and as a direct consequence probably increased alcohol availability. The impetus for this change was a notion that European drinking styles could be achieved through accordance with European availability. However, it was unclear was the views of the British public would be on the impact of this change. We therefore designed a pragmatic study in a clinical population to see if we could provide some insight into the expectations and opinions of individuals with a range of drinking behaviours (Chapter 3). It became strongly evident that the dominant perception was that of ambivalence.

The Chief Medical Officer for England in 2001 highlighted that death rates and hospital admissions from cirrhosis of the liver were increasing and alcohol was heavily contributing to this increase. We therefore investigated whether if we could
demonstrate this trend in our local population (Chapter 4). It was perhaps surprising that our data did not seem to concur with national trends and we were unable to establish a trend for an overall increase in ALD. However, we did establish that there was a shift towards younger age groups being affected together with an increase in female cases.

There is a widely held notion that heavy drinkers are at increased risk of malnutrition, the most harmful consequences of which results from a deficiency in thiamine. A twenty year literature exists for the high prevalence of thiamine deficiency in this population. Therefore, we investigated the prevalence of thiamine deficiency and nutritional status in a clinical sample within our hospital trust (Chapter 5). Firstly, we found that there were inconsistencies in the definition of malnutrition due to lack of standardization in both the biochemical and anthropometric measures used. We therefore applied a comprehensive method to measure (a) nutritional risk as determined by Malnutrition Universal Screening Tool (MUST) and (b) nutritional status measured by a range of nutritional biochemical markers. Although we were able to show some evidence of nutritional deficiency, specifically zinc and selenium, we were unable to show any evidence of thiamine deficiency, which has been the focus of much attention with the introduction of parenteral therapy nationally in all patients thought to be at risk of Wernicke’s Encephalopathy (WE).

The previous chapters in this thesis were able to provide evidence for what patients thought about drinking and its risks, what treatments were available and their effectiveness, and some of the resulting harms. Given the limitations of the treatments currently available and the haphazard nature in which they are
administered, I undertook an assessment of the effectiveness of a structured intervention with non-treatment seeking alcohol dependent patients in an acute care setting. The approach utilized was that of brief interventions (BI) by an Alcohol Specialist Nurse (ASN) (Chapter 6). This study was able to generate sufficient evidence that this approach is effective with the study findings being used as a platform for further much needed research in this area.

Limitations
There are a number of limitations both within and across this doctoral thesis. Clearly, limitations to individual study design are often pre-determined by practicalities; for example, if it had been feasible, the main intervention study (Chapter 6) would have been conducted as a Randomized Controlled Trial (RCT). There were also other limitations within the individual experimental chapters that need to be highlighted here. Although the systematic review (Chapter 2) generated some very interesting and useful data a major limitation was the inability to perform a meta-analysis. This was due to extensive heterogeneity within and between studies and therefore any conversion of data would have potentially been meaningless or even misleading. Within the licensing study (Chapter 3), the major limitation was that we were only able to sample a small, perhaps non-representative group of patients and therefore the findings are not generalizable. Nevertheless, I used a conventional qualitative approach where there was saturation of themes. In the future, this chapter needs to be followed up by a quantitative survey of attitudes with the questionnaire design being based on the results of the qualitative study.
The lack of generalizable data also emerged within the nutritional status study (Chapter 5). This was due to several important limitations: firstly, due to the application of a local protocol to give all heavy drinkers thiamine supplementation it was difficult to find cases and therefore the study was vulnerable to selection bias; secondly, as the method for measuring blood thiamine levels has changed over time, it was difficult to establish a meaningful comparison with previous data; and thirdly, the study was not representative of the UK population as a whole as it was conducted on a small clinical sample within Liverpool. Lastly, due to a paucity of research studies on which to base power calculations the sample size was limited. Nevertheless, this was an exploratory study which has provided some interesting findings which can be used to undertake further larger studies. Within the Alcohol Liver Disease (ALD) Chapter (Chapter 4) there were a number of important limitations: firstly, the way in which national data are coded and reported led to discrepancies within the dataset; secondly, the incidence was difficult to establish within the local data sets, and thirdly, data within published studies were inconsistent. Therefore, the findings have to be interpreted with caution. The main experimental intervention chapter to test the efficacy of BI (Chapter 6), although providing some very promising results, did however have limitations. Firstly, in terms of treatment effect, whilst the therapist was controlled for, the treatment setting could not be. This has to be considered as clinical practice differed according to hospital site. The treatment group site had a well established service, with clinical protocols and a programme of staff awareness training. Secondly, even though levels of alcohol dependence, alcohol consumption, age, sex and employment status were similar for both populations at baseline assessment, this does not mean that they were completely comparable, and I cannot exclude concealed sources of bias. Lastly, the
sample size was such that I was unable to determine the optimal number of treatment sessions, or control for extraneous variables. Clearly, these results could have been due to chance. The next step clearly has to be the determination of whether this intervention is effective using Randomized Controlled Trial (RCT) methodology.

Discussion relating to the literature

A decisive variable when measuring treatment effectiveness is the level of alcohol consumption before and after treatment. However, when reviewing the evidence, a somewhat ‘apples and oranges’ approach predominated in both the categorisation of patients for inclusion, and indeed the methods for reporting alcohol consumption measures. Furthermore, when trying to establish meaningful relationships between studies, an important finding of the systematic review (Chapter 2) was that alcohol was measured differently from country to country and study to study. For example, one standard drink in the UK is equivalent to 8 grammes of alcohol, whereas in the USA, which produces the majority of research and literature in this area, a unit is 10 grammes. Consequently, even if the same tool, such as Time Line Follow Back (TLFB) (Sobell 1995), is used between studies, generalizability is compromised. Indeed, even when attempts are made to unify data across studies for meta-analysis, the reliability is somewhat ‘lost in translation’ (Emmen et al. 2004). In utilizing literature to inform research design in this thesis, all efforts were made to ensure accuracy of reported differences between times through use of consistent measures, for example, quantity frequency measures as assessed by a drink diary and the Alcohol Use Disorders Identification Test (AUDIT) (Saunders et al. 1993).
Alcohol is drunk by over 90% of the British population (Department of Health 2004). It is heavily entrenched in our cultural tradition, playing a significant role in many recreational activities and indeed in our economy. However, alcohol consumption represents a paradox which leads to ambiguity in messages received by the public. Drinking to excess has negative connotations, for example the perception that people are ‘out of control’ or have a ‘moral weakness’ (Vogt 1984; To and Vega 2006) (Qualitative study; Chapter 3). Conversely, the J-shaped curve asserts that alcohol is good for health as abstainers die earlier than consumers (Corrao et al. 1999; Corrao et al. 2004). This paradox is one of the reasons for the high levels of ambivalence that were found in the qualitative study (Chapter 3), where participants assessed their own behaviour as ‘normal’, while drinking by others was seen as a ‘problem’. These levels of ambivalence give a valuable insight into attitudes generally. Indeed, ambivalence is not an unknown concept within the literature and has been highlighted in both national and international studies, being found amongst patients, public and health-care professionals (Conner and Sparks P. 2002; Lock et al. 2002; Armitage 2003; Cameron C.A. Stritzke W.G. Durkin K. 2003). These attitudes may help to explain why rates of screening and uptake of minimal and brief intervention are very poor in the UK (Owens 2004; Owens et al. 2005; Patton et al. 2007). It is therefore a key concept to consider when developing ‘user friendly’ interventions. Interestingly, 28% of people in the North West drink hazardously or harmfully, 4% are dependent; therefore 68% must be ‘sensible drinkers’ which may include some abstainers (Drummond et al. 2005). However, in the hospital setting, whilst it was not a problem to recruit hazardous and dependent drinkers in the qualitative study (Chapter 3), it posed somewhat of a hunt for a ‘needle in a haystack’ to find these ‘sensible drinkers’. This was perhaps not surprising as it is known that
20 to 30% of patients admitted to hospital have alcohol implicated in their attendance (Pirmohamed et al. 2000; Royal College of Physicians 2001; Kouimtsidis et al. 2003). Perhaps, as many clinicians suspect, those we identify may actually represent the tip of a growing iceberg.

Prior to designing the clinical experimental studies in this thesis (Chapter 5 and Chapter 6), it was crucial to investigate what the literature reported as being the most effective treatment for alcohol-dependent individuals. What emerged from this systematic review (Chapter 2) was the existence of confounding phenomenon that complicates the selection of the most appropriate evidence. Firstly, equivalence of outcomes was observed, which is actually common in psycho-social treatment for a range of conditions (Stiles et al. 1986; Shapiro et al. 1989). Therefore it was not possible to easily compare the results with other clinical studies. This was compounded by the dominance of a lack of standardized nomenclature; for example some treatments had similar descriptors, but were delivering different treatments, and on the other hand some had completely different names but were actually broadly similar. Thus, even though three studies included in the systematic review (Chapter 2) were called Motivational Enhancement Therapy (MET), they were all different in content and timings (MATCH 1997; Sellman et al. 2001; UKATT 2005). This makes it impossible to isolate the active ingredient in any given approach. It is clear from the systematic review that there is a need for more standardization, and a need for researchers to develop a common language. This lack of standardization was not exclusive to therapies; it also emerged when investigating the incidence and prevalence of alcohol-related conditions. Disease specific epidemiological data are often derived from the use of International Classification of Diseases (ICD) coding.
system. However, inaccuracies with these data are well recorded (Ballaro et al. 2000; Khwaja et al. 2002). Indeed in the liver audit (Chapter 3) inaccuracies of at least 9% were found, which is consistent with other studies which have found inaccuracies ranging from between 6 and 30% (Ballaro et al. 2000; Khwaja et al. 2002). Therefore some caution is required in the interpretation of, and comparisons for, utilizing these data in estimating treatment requirements.

For many years there has been an emergence of data relating ill-health to alcohol-consumption. What is less definitive is the actual percentage of heavy drinkers presenting to health services that have suffered significant ill-health due to their drinking. In the cohort study (Chapter 6), we demonstrated that 88% of patients across both control and intervention groups had co-morbid health problems, with 51% of patients having more than one co-morbid health problem. Additionally, it was shown from both the observational and cohort studies (Chapter 5 and 6) that patients with alcohol dependence present with a variety of physical problems, the most prevalent being gastro-intestinal, cardiovascular and mental health disorders, which is in accordance with published evidence (Chick 1994; Gerke et al. 1997; Chick 1998; Department of Health 2007). Many misconceptions have shaped the belief systems of health care professionals which in turn have shaped how they respond to alcohol-related ill-health. One example is the belief that contrary to all the evidence, once a patient is identified as being alcohol dependent with significant organ damage, there is little that can, or even should be done (Aalto et al. 2001). Almost conversely there is a widely held yet little evidenced belief, that patients who drink heavily are malnourished and thiamine deficient. This is in part due to the previous categorisation of alcohol dependent individuals as a homogenous population of street
Concluding Discussion

drinking, homeless “alcoholics”. This was particularly the case for the seminal studies undertaken on thiamine deficiency in alcohol dependence (Thomson et al. 1970; Thomson et al. 1987; Thomson and Cook 1997). However, the studies in this thesis show that this category of patient accounts for less than 2% of identified alcohol-dependent patients. Interestingly, and in accordance with Sgouros et al. (Sgouros et al. 2004), our pilot observational study (Chapter 5) failed to establish any evidence for thiamine deficiency in this patient population. Indeed, it seemed to show that the major risk that heavy drinkers’ had in terms of nutritional risk was due to malabsorption syndrome diagnosed by the presence of low levels of zinc.

There has been increasing focus on the rise in rates of Alcohol Liver Disease (ALD) in the UK, and the corresponding decreasing rates in the rest of Europe (Leon and McCambridge 2006). ALD is perhaps the most attributable alcohol-related co-morbidity, with an Alcohol Attributable Fraction (AAF) of 1 (Single et al. 2000; Jones 2008). Indeed, the trends are worrying in that they clearly demonstrate a rise in incidence in females, and indeed in younger age groups. It can be seen from the ALD audit (Chapter 4) that these patients are significantly younger than those in any other chronic disease group (Chief Medical Officer 2001). However, we failed to show the increase in incidence that has been described in national trends, but did show an upward trend for younger age groups, particularly in females. It may indicate, as some commentators have suggested, that the current drinking trends (for example, ‘binge drinking’) are indeed storing up trouble for the future (Williams 2008).
If this is the case, it is imperative that health care professionals are equal to the task of identifying risky drinking to prevent future harm, but perhaps most importantly are aware of, or able to provide timely and effective treatments. Unfortunately, there is a paucity of literature evidence regarding the effectiveness of treatments in ‘real world’ settings. This is imperative to sort out. For example, in the systematic review (Chapter 2), there was a predominance of mental health as the preferred setting. Thus it was predictable that a high proportion of those delivering the actual treatment were mental health professionals. Indeed, this was the case even in the one study that took place in an acute medical setting, which employed a dedicated psychologist (Saitz et al. 2007). Therefore, it appears to be the case that the paradigm shapes both treatment setting and clinician. However, in the BI cohort study (Chapter 6) as in other studies (Hillman et al. 2001; Royal College of Physicians 2001; McManus et al. 2003; Department of Health 2005; Department of Health 2007), it was found that dedicated alcohol specialist nurses (ASN), who were generalists, with minimal training in psycho-social therapies, were able to make a positive impact on patients’ outcomes, at least equivalent to those reported for intensive talking therapies.

Setting often dictates the level of physical co-morbidity in presenting patients. Indeed, the first presentation in individuals with alcohol dependence is most likely to be to an emergency department (ED) or to a general practitioner (GP) (Royal College of Physicians 2001; Saitz et al. 2006). As alcohol dependence is often part of a more complex health problem, such patients are likely to require medical management of these co-morbid physical health problems (Saitz et al. 2006). In considering this, perhaps we are presented with one of the reasons why such patients do not readily access specialist treatment services - because it is in a setting that is ill equipped to provide complex medical interventions (Rigby and Oswald...
Concluding Discussion

1987; Gournay 1996; Department of Health 2004; Department of Health 2006). Thus, patients are invariably presented with a perplexing decision; if clinicians separate health consequences of drinking from treatment for drinking, the individual is unlikely to easily connect the two. This is surprising as the mainstay of all psycho-social treatment is indeed to help individuals acknowledge and accept the role of drinking in their sequelae of health-related problems. The intervention study (Chapter 6) has this as a central tenant and thus may be why BI might be effective in the treatment of alcohol dependence. In the systematic review (Chapter 2), there was only one study that utilised a general hospital setting (Saitz et al. 2007). Indeed, this study reported the current medical diagnosis of the participants; however, lifetime co-morbidity was only contained in the characteristics table which showed that across the groups, participants had a median score of one co-morbidity. Furthermore, generalists have traditionally conveyed their role in treating the symptoms of alcohol dependence to psychiatric professionals (Hapke et al. 1998; Kouimtsidis et al. 2003; Chen et al. 2004). Indeed, within general healthcare settings, there pervades a belief that the management of these symptoms requires psychiatric expertise, which as demonstrated in chapter 6 is often not the case.

A dominant concept reported in studies is that co-morbidity and level of dependence are strong determinants of success in outcome (Adamson et al. 2008). In the BI cohort study, (Chapter 6) although I established that the patients had significant medical co-morbidities, it was also clear that this was not a determinant of successful outcome. This clearly challenges the view that patients with alcohol dependence are poor candidates for BI and that only by ‘matching’ to intensive psycho-social treatment can we expect success (Lee and Moore 2008). This study also failed to
establish a relationship between degree of severity of dependence and successful outcome. In support of the findings in chapter 6, it has been shown that individuals with alcohol dependence who are treated at the point of need experience better treatment related outcomes than those who either delay seeking, or are not offered help, when presenting for the treatment of associated conditions (Timko et al. 1999; Timko et al. 2000; Weisner et al. 2003). It also needs to be stated that patients presenting to generalist health settings are unlikely to have presented seeking treatment for their alcohol problem, whereas in the tertiary psychiatric setting, patients are presenting for and indeed expectant of, direct treatment to help them stop drinking. There is a need to provide a spectrum of treatments in a variety of settings for patients. In order to achieve this, there needs to be widespread recognition that this is a heterogeneous group of patients with homogenous outcome expectations based on reduced alcohol consumption. Indeed the cohort study (Chapter 6) establishes that it is both feasible and effective to deliver such interventions in EDs and general hospital wards, with this setting being effective for both the identification of and treatment for alcohol-dependent patients. Furthermore, it has been stated that such patients are unlikely to be ‘treatment ready’, the hypothesis being that they lack motivation to participate and engage in treatment (Connors et al. 1997; Connors et al. 2000). It has been hypothesized that patients not seeking treatment are likely to have been in a motivational stage of ‘pre-contemplation’ as determined by the stages of change model, as they have not even considered needing treatment for their alcohol problem (Prochaska and DiClemente 1983). Indeed, it has been found that 80% of people when faced with change are not ready for action (Walton et al. 2008). This pivotal and much used theory of motivation dictates that several stages must be passed through before change
occurs. However, high levels of ambivalence seen in the qualitative study (Chapter 3) are suggestive of a stage of ‘contemplation’. Furthermore, there is evidence that alcohol injury and attendance at hospital can act as an important ingredient (Walton et al. 2008). Paradoxically, if it was a major ingredient, we would have expected that patients in the control group of the cohort study (Chapter 6) would have improved similarly to those in the experimental group. However, in the cohort study (Chapter 6), 20% of patients in the control group improved without treatment, which could be ‘natural recovery’. The concept of motivation is important as considerable value judgements are placed on whether someone is “motivated enough” or in deciphering who is “more motivated”, the patient themselves, a significant other, or perhaps even the clinician(s) involved in their care. Indeed the concept is very much alive in day-to-day practice and research, as seen in the systematic review (Chapter 2).

The aim of treatment is mainly but not exclusively stated to be reduction in alcohol consumption (Systematic Review, Chapter 2). The methods to achieve these aims are many and varied as discussed above. Perhaps of most importance to patients, their clinicians and health commissioners, is that there would appear to be good evidence that less intensive, less costly and more pragmatic approaches are available and effective (BI Cohort Study, Chapter 6) (Guth et al. 2008). Unfortunately outcomes cannot be directly compared to any other treatment studies as measurement techniques vary considerably (see systematic review in Chapter 2). Therefore, there is a need for further pragmatic studies to be done both within specialist and non-specialist settings, with patients who are motivated and those that are less so.
Implications for research and practice

This thesis has generated some very useful and previously unreported findings. The need for standardization within the language used to describe both treatment modalities and outcome measures within and across research studies emerged as a major finding (Chapter 2). Such standardization would increase the potential for researchers to make comparisons between studies and therefore enable meaningful and applicable recommendations to practice. Being able to demonstrate the prevalence of ambivalence (Chapter 3) around drinking behaviours has the potential to inform researchers as to barriers to patient involvement in clinical studies, and give insight to clinicians as to perceptual barriers that may exist within the therapeutic relationship. One of the major challenges within any research design is ensuring the reliability of data collection methods and subsequent interpretation. This thesis (Chapter 4) was able to demonstrate inherent inaccuracies in local and national disease prevalence data therefore researchers need to interpret data with caution. It is disappointing for a researcher to undertake a clinical investigation that produces inconclusive results (Chapter 5). However, from the inconclusive results within the nutritional chapter emerged some very useful learning: There is a need to design a study that can produce reliable and generalizable findings to inform clinical decision making. Although the BI study was able to demonstrate some very positive insight into treatment delivery for alcohol dependent patients, the overall benefit of this investigation was to inform the need for, and design of, a RCT.
Conclusion

In conclusion, the paradigm that pervades in the treatment of alcohol dependence is setting specific and is thereby exclusionist. It is limiting to patients who are not presenting to these services, or indeed refuse referral due to either previous failure or fear of engagement. I suppose this is an important distinction as many patients simply will not engage due to stigma associated with that setting (Gomberg 1988; Falk 1996; To and Vega 2006; Dyson 2007). This thesis has detailed how this paradigm needs to ‘shift’ to enable more equitable access to treatment for all patients with alcohol problems. As can be seen throughout this thesis, medical co-morbidity is often a reason for patients attending hospital. Conversely, it is also a much used exclusion in research studies. Thereby the emergent evidence is un-related to the majority of people presenting to acute services with dependence on alcohol, either known or elicited. Thus, BI delivered to non-treatment seeking alcohol-dependent patients in an acute medical setting, were effective in reducing alcohol dependence and alcohol consumption (Chapter 6), despite levels of co-morbidity and dependence. Furthermore, levels of ambivalence amongst patients and staff need to be explored in order that pragmatic user-friendly interventions are designed. This would help to inform accurate service development and longer term accuracy in targeted public health outcomes. Given the increasing health care and societal burden associated with alcohol misuse, it is important that we adopt pragmatic, wide ranging approaches that can help these patients, and avoid the long term morbidity and mortality that is prevalent in patients who go on to become alcohol dependent.
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References


References


Appendix 1

DSM IV Classification of Alcohol Dependence Criteria
DSM IV Classification of Alcohol Dependence Criteria

A maladaptive pattern of alcohol use, leading to clinically significant impairment or distress, as manifested by three or more of the following seven criteria, occurring at any time in the same 12-month period:

1. Tolerance, as defined by either of the following:
   - A need for markedly increased amounts of alcohol to achieve intoxication or desired effect.
   - Markedly diminished effect with continued use of the same amount of alcohol.

2. Withdrawal, as defined by either of the following:
   - The characteristic withdrawal syndrome for alcohol (refer to DSM-IV for further details).
   - Alcohol is taken to relieve or avoid withdrawal symptoms.

3. Alcohol is often taken in larger amounts or over a longer period than was intended.

4. There is a persistent desire or there are unsuccessful efforts to cut down or control alcohol use.

5. A great deal of time is spent in activities necessary to obtain alcohol, use alcohol or recover from its effects.

6. Important social, occupational, or recreational activities are given up or reduced because of alcohol use.

7. Alcohol 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 alcohol (e.g., continued drinking despite recognition that an ulcer was made worse by alcohol consumption).
Appendix 2

ICD-10 (F10.2) Alcohol Dependence Syndrome
ICD-10 (F10.2) Alcohol Dependence Syndrome

A cluster of physiological, behavioural, and cognitive phenomena in which the use of alcohol takes on a much higher priority for a given individual than other behaviours that once had greater value. A central descriptive characteristic of the dependence syndrome is the desire (often strong, sometimes overpowering) to take alcohol. There may be evidence that return to alcohol use after a period of abstinence leads to a more rapid reappearance of other features of the syndrome than occurs with nondependent individuals.

Diagnostic Guidelines

A definite diagnosis of dependence should usually be made only if three or more of the following have been experienced or exhibited at some time during the previous year:

(a) A strong desire or sense of compulsion to take alcohol;

(b) Difficulties in controlling alcohol-taking behaviour in terms of its onset, termination, or levels of use;

(c) a physiological withdrawal state when alcohol use has ceased or been reduced, as evidenced by: the characteristic withdrawal syndrome for alcohol; or use of the alcohol with the intention of relieving or avoiding withdrawal symptoms;

(d) Evidence of tolerance, such that increased doses of alcohol are required in order to achieve effects originally produced by lower doses (clear examples of this are found in alcohol-dependent individuals who may take daily doses sufficient to incapacitate or kill non-tolerant users);
(e) Progressive neglect of alternative pleasures or interests because of alcohol use, increased amount of time necessary to obtain or take alcohol or to recover from its effects;

(f) Persisting with alcohol use despite clear evidence of overtly harmful consequences, such as harm to the liver through excessive drinking; efforts should be made to determine that the user was actually, or could be expected to be, aware of the nature and extent of the harm.

Narrowing of the personal repertoire of patterns of alcohol use has also been described as a characteristic feature (e.g. a tendency to drink alcoholic drinks in the same way on weekdays and weekends, regardless of social constraints that determine appropriate drinking behaviour).

It is an essential characteristic of the dependence syndrome that either alcohol taking or a desire to take alcohol should be present; the subjective awareness of compulsion to use alcohol is most commonly seen during attempts to stop or control alcohol use.

Includes:

* chronic alcoholism
Appendix 3

Qualitative Interview Schedule
Qualitative Interview Schedule

1. How do you think the changes in availability of alcohol will affect yourself?
2. How do you think changes in availability of alcohol will affect your drinking patterns?
3. How do you think changes in availability of alcohol will affect your family?
4. How do you think changes in availability of alcohol will affect your family's drinking patterns?
5. How do you think changes in availability of alcohol will affect others around you and your community?
6. How do you think changes in availability of alcohol will affect the drinking patterns of others?
Appendix 4

Integrated care pathway for suspected acute coronary syndrome
INTEGRATED CARE PATHWAY FOR SUSPECTED ACUTE CORONARY SYNDROME

A Care Pathway is intended as a guide to treatment and an aid to documenting patient progress. Of course, practitioners are free to exercise their own professional judgement, however any alteration to the practice identified within this ICP should noted as a variance on the progress notes.

CONSULTANT: NAMED NURSE:

INSTRUCTIONS FOR USE

1. All patients who present with cardiac sounding chest pain who have evidence of Myocardial Infarction or suspected Acute Coronary Syndrome should be commenced on this pathway.
2. **All patients with cardiac sounding chest pain must have an ECG within 10 minutes of arrival.**
3. If the ECG is inconclusive it should be repeated 15 minutes later.
4. All patients with cardiac sounding chest pain should be considered for **Aspirin 300 mg** on admission.
5. All patients with cardiac sounding chest pain and **ST Elevation or LBBB** should be considered for **Thrombolysis immediately** on arrival.
6. If admission to Thrombolysis time is more than 30 minutes please document reason.

**N.B. Please make reference to the above as necessary.**

**ALL PERSONNEL COMPLETING THE CARE PATHWAY PLEASE SIGN BELOW**

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Overview of Suspected Acute Coronary Syndrome Pathway

Arrival in ED/HEC/AMU

Initial nursing Assessment

ECG

Alert ED Dr and CPN

Clinical Assessment by ED Dr or CPN

RESUS (STEMI) → ED/HEC (NSTEACS)

Thrombolysis Protocol

NSTEACS Protocol

CCU/HEC

Low Risk <3
- Basic Drugs
- Consider non invasive Ix if appropriate

High Risk 3-6
- Basic Drugs
- Clopidogrel
- Consider IP or early OP Coronary Angiogram

Very High Risk >6
- Basic Drugs
- Clopidogrel
- Consider GP11b/111a
- IP Coronary Angiography @RLUHT
- Basic Drugs
- Clopidogrel
- Consider GP11b/111a
- IP Coronary Angiography @CTC

7B/7X

© RLUHT

Page 2

Macintosh HD:Users:gillyrothomes:Desktop:SUSPECTED ACUTE
**THROMBOLYSIS PROTOCOL (cont.)**

**OBSERVATIONS**

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<tr>
<td>Blood pressure</td>
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<td>Heart Rhythm</td>
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Informed consent must be obtained before undertaking thrombolysis. The following information is the least that should be given. You should word it in such a way that the individual patient is likely to understand.

"From the results of your examination and ECG heart trace, it is clear / almost certain that you are having a heart attack.

This means that a blood clot has blocked one of the arteries in your heart. The longer the blockage remains the greater the damage to your heart.

We need to dissolve the clot as soon as we can so that we can reduce the amount of damage that it is doing to your heart. In order to do this we need to give you a clot-busting drug as soon as possible. The drug itself carries a few risks.

For example if you have an ulcer there is a small chance that this may bleed. There is a small chance that bleeding may occur in other places and a small risk of stroke, but the benefits of having the drug far outweigh the risks and I strongly recommend that you have it.

Are there any questions that you would like to ask?

Do I have your consent to give the drug?  Yes ☐   No ☐

Doctor signature .............................. Chest pain nurse signature.............................

If the patient requires information you may choose to share with them that the overall incidence of intra-cranial haemorrhage following thrombolysis is in the region of 0.75% (range 0.26% - 2.17% dependant on certain risk factors).
Appendix 5

Thiamine compliance tool
Thiamine compliance tool

Thiamine Treatment

1. Never
   -

2. Yes, but not in last 12 weeks
   -

3. Yes in last 12 weeks
   -

Compliance (self reported)

1. Never
   -

2. Sometimes
   -

3. Regularly
   -

In hospital treatment (Between baseline and follow up)

1. No
   -

2. Yes
   -
   If so
   1. Parenteral
      -

Oral
-
Appendix 6

Alcohol Lifestyles Team assessment tool
### Personal details:

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<tr>
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Confidentiality / Patient contact issues (i.e. can messages be left): ...........................................................................................................  

**Own home** □  **Hostel** □  **NFA** □  **Lives with** ...........................................................................................................  

**Criminal Justice Involvement** ...........................................................................................................  

**Marital Status** ...........................................................................................................  

**Details of dependent children** ...........................................................................................................  

**Next of Kin details** ...........................................................................................................  

**Employment status** ...........................................................................................................  

**GP details** ...........................................................................................................  

**Telephone number** ...........................................................................................................  

**Date of assessment** ______ / ______ / ______  

**Assessed by** ...........................................................................................................  

**Source of referral** ...........................................................................................................  

**Date of referral** ______ / ______ / ______

### Assessment of alcohol use:

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<tr>
<td>NODD</td>
<td>...........................................................................................................</td>
</tr>
<tr>
<td>Daily Units</td>
<td>...........................................................................................................</td>
</tr>
<tr>
<td>Lifestyles</td>
<td>...........................................................................................................</td>
</tr>
<tr>
<td>Description</td>
<td>...........................................................................................................</td>
</tr>
</tbody>
</table>
**Health Assessment:**

<table>
<thead>
<tr>
<th>Primary Reason for admission</th>
<th>Admissions date</th>
<th>Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Primary reason for referral</th>
<th>Number of previous admissions (dates)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weight</th>
<th>BP</th>
<th>Heart rate</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Physical symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nutritional needs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Medical conditions / chronic diseases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Medication</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Any known allergies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

**Risk Assessment:**

- [ ] Child / Adult Protection issues
- [ ] There is a risk of self-harm / suicide risk
- [ ] Patient is currently injecting drugs
- [ ] Patient has psychiatric problems that are likely to require treatment
- [ ] There is a concern that the patient may represent a safety threat to others
- [ ] Disclosures

**Appointment date** 

<table>
<thead>
<tr>
<th>Appointment date</th>
<th>Time</th>
<th>Clinic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Appointment card given to patient</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Letter to be posted to patient</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Patient given prescription chloridiazopoxide</th>
<th>next prescription due</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Yes</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-----</td>
</tr>
<tr>
<td>Have you had any accidents over the past year?</td>
<td></td>
</tr>
<tr>
<td>If yes how did it occur?</td>
<td></td>
</tr>
<tr>
<td>Where did it occur?</td>
<td></td>
</tr>
<tr>
<td>Had you drunk alcohol that day?</td>
<td></td>
</tr>
<tr>
<td>Have you:</td>
<td></td>
</tr>
<tr>
<td>* had time off work due to hangover?</td>
<td>Yes</td>
</tr>
<tr>
<td>* had time off work due to illness caused by drinking?</td>
<td>Yes</td>
</tr>
<tr>
<td>* been in trouble with the police due to drinking?</td>
<td>Yes</td>
</tr>
<tr>
<td>* been assaulted whilst drinking?</td>
<td>Yes</td>
</tr>
<tr>
<td>* got into a fight whilst drunk?</td>
<td>Yes</td>
</tr>
<tr>
<td>* had money problems due to spending too much on alcohol?</td>
<td>Yes</td>
</tr>
<tr>
<td>* had a member of your family leave home?</td>
<td>Yes</td>
</tr>
<tr>
<td>* had any children taken into care?</td>
<td>Yes</td>
</tr>
<tr>
<td>* have you experienced family problems as a result of drinking?</td>
<td>Yes</td>
</tr>
<tr>
<td>* do you think involving your family in your treatment would help?</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Does your families reaction include</strong>: (please tick)</td>
<td></td>
</tr>
<tr>
<td>Arguments</td>
<td></td>
</tr>
<tr>
<td>Worrying excessively</td>
<td></td>
</tr>
<tr>
<td>Violence</td>
<td></td>
</tr>
<tr>
<td>Tearfulness / upset</td>
<td></td>
</tr>
<tr>
<td>Practical advice</td>
<td></td>
</tr>
<tr>
<td>Critical / hostile comments</td>
<td></td>
</tr>
<tr>
<td>Nagging</td>
<td></td>
</tr>
<tr>
<td>Support / warmth</td>
<td></td>
</tr>
<tr>
<td>Avoidance</td>
<td></td>
</tr>
<tr>
<td>Encouragement to get help</td>
<td></td>
</tr>
<tr>
<td>Making decisions for you</td>
<td></td>
</tr>
</tbody>
</table>

---

xviii
Severity of Alcohol Dependence Questionnaire (SADQC)

Please answer all questions. We would like to know about the last three months. Please fill in the month and year.

Month ................................................ Year ................................................

We would like to know more about your drinking during this time and during the other periods when your drinking experience was similar. We want to know how often you experienced certain feelings. Please reply to each statement by putting a circle found Never, Almost Never, Sometimes, Often or Nearly Always after each question.

Please indicate below the physical symptoms that you have experienced the day after drinking alcohol.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I wake up feeling sweaty</td>
<td>Never / Almost Never</td>
<td>Sometimes</td>
<td>Often</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2. My hands shake first thing in the morning</td>
<td>Never / Almost Never</td>
<td>Sometimes</td>
<td>Often</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3. My whole body shakes violently first thing in the morning if I don’t have a drink</td>
<td>Never / Almost Never</td>
<td>Sometimes</td>
<td>Often</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4. I wake up absolutely drenched in sweat</td>
<td>Never / Almost Never</td>
<td>Sometimes</td>
<td>Often</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

The following statements refer to moods and states of mind you may have experienced first thing in the morning during these periods of heavy drinking.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5. I dread waking up in the morning</td>
<td>Never / Almost Never</td>
<td>Sometimes</td>
<td>Often</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>6. I am frightened of meeting people first thing in the morning</td>
<td>Never / Almost Never</td>
<td>Sometimes</td>
<td>Often</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7. I feel at the edge of despair when I first wake up</td>
<td>Never / Almost Never</td>
<td>Sometimes</td>
<td>Often</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>8. I feel very frightened when I first wake up</td>
<td>Never / Almost Never</td>
<td>Sometimes</td>
<td>Often</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>
The following statements refer to morning drinking habits during the recent periods when you were drinking heavily, and periods like it.

9. **I like to have a morning drink**
   
<table>
<thead>
<tr>
<th>Never / Almost Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Nearly Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

10. **I always gulp my first few morning drinks as quickly as possible**

<table>
<thead>
<tr>
<th>Never / Almost Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Nearly Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

11. **I drink in the morning to get rid of the shakes**

<table>
<thead>
<tr>
<th>Never / Almost Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Nearly Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

12. **I have a very strong craving for a drink when I wake up**

<table>
<thead>
<tr>
<th>Never / Almost Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Nearly Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

The following statements refer to degree of alcohol consumption during the recent period of heavy drinking and periods like it.

13. **I drink more than a quarter bottle of spirits a day (4 doubles or 1 bottle of wine or 4 pints of lager/beer)**

<table>
<thead>
<tr>
<th>Never / Almost Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Nearly Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

14. **I drink more than half a bottle of spirits per day (or 2 bottles of wine or 8 pints of lager/beer)**

<table>
<thead>
<tr>
<th>Never / Almost Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Nearly Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

15. **I drink more than one bottle of spirits per day (or 4 bottles of wine or 15 pints of lager/beer)**

<table>
<thead>
<tr>
<th>Never / Almost Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Nearly Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

16. **I drink more than two bottles of spirits per day (or 8 bottles of wine or 30 pints of lager/beer)**

<table>
<thead>
<tr>
<th>Never / Almost Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Nearly Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
Imagine the following situation:

(a) You have hardly drunk any alcohol
(b) You then drink heavily for two days

How would you feel the morning after those two days of heavy drinking?

<table>
<thead>
<tr>
<th></th>
<th>Never / Almost Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Nearly Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.</td>
<td><strong>I would start to sweat</strong></td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>18.</td>
<td><strong>My hands would shake</strong></td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>19.</td>
<td><strong>My body would shake</strong></td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>20.</td>
<td><strong>I would be craving for a drink</strong></td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

**Total Score** .............................................
*(A total score of -30 indicates a mild to moderate dependence, 30+ indicates severe dependence)*

Thank you for completing this form
Audit (Alcohol Use Disorders Identified Test) Questionnaire

One unit of alcohol is: 1/2 pint of average strength beer/lager or one small glass of wine or one single measure of spirits. - Note: a can of high strength beer/lager may contain 3-4 units.

1. **How often do you have a drink containing alcohol?**  ..........
   0 = never, 1 = monthly or less, 2 = 2-4 times per week, 4 = 4 or more times per week

2. **How many units of alcohol do you drink on a typical day when you are drinking?**  ..........  
   0 = 1 or 2, 1 = 3 or 4, 2 = 5 or 6, 3 = 7 or 8 or 9, 4 = 10 or more

3. **How often do you drink 6 or more units of alcohol on one occasion?**  ..........  
   0 = never, 1 = monthly or less, 2 = 2-4 times per week, 4 = 4 or more times per week

4. **How often during the last year have you found that you were not able to start drinking once you had started?**  ..........  
   0 = never, 1 = monthly or less, 2 = 2-4 times per week, 4 = 4 or more times per week

5. **How often during the last year have you failed to do what was normally expected from you because of drinking?**  ..........  
   0 = never, 1 = monthly or less, 2 = 2-4 times per week, 4 = 4 or more times per week

6. **How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?**  ..........  
   0 = never, 1 = monthly or less, 2 = 2-4 times per week, 4 = 4 or more times per week

7. **How often during the last year have you had a feeling of guilt or remorse after drinking?**  ..........  
   0 = never, 1 = monthly or less, 2 = 2-4 times per week, 4 = 4 or more times per week

8. **How often during the last year have you been unable to remember what happened the night before because you had been drinking?**  ..........  
   0 = never, 1 = monthly or less, 2 = 2-4 times per week, 4 = 4 or more times per week

9. **Have you or someone else been injured as a result of your drinking?**  ..........  
   0 = never, 1 = monthly or less, 2 = 2-4 times per week, 4 = 4 or more times per week

10. **Has a relative or friend or another health worker been concerned about your drinking or suggested you cut down?**  ..........  
    0 = never, 1 = monthly or less, 2 = 2-4 times per week, 4 = 4 or more times per week

Record total or specific items here  .................... If total over 8, alcohol use disorder very likely.