Alcohol screening and simple advice in emergency care
-staffs’ attitudes and injured patients’ drinking pattern

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Cover picture/illustration: Each glass is a standard glass containing 12 grams of alcohol. The glasses are illustrations from questionnaires used in the studies in this thesis and elsewhere.

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ABSTRACT

Background: About 800,000 people are risky drinkers in Sweden and the alcohol consumption has increased around 30% during the last 6 years. In order to counteract the negative effects of drinking there is a need to implement preventive measures at various levels in society. One place where risky drinkers could be identified is the healthcare setting. More than 10% of the visits at emergency departments and 20% of the injuries have been found to be alcohol-related. So far, very few risky drinkers attending emergency departments receive advice about sensible drinking although there is good research evidence of the efficacy of such advice. Aim: The main aim was to explore the effects of a simple alcohol preventive routine in emergency care on staffs’ attitudes towards alcohol prevention and injury patients’ drinking pattern. Material and methods: A screening and simple advice routine was introduced at the emergency department of Motala County hospital. The staffs’ attitudes were explored by interviews with 12 staff members before the introduction and in 6 follow-up interviews after a year. All the triage staffs’ attitudes were also measured by a questionnaire before the start of the routine and after 6 months. During the first 6 months of the routine 878 injury patients between 16 and 70 completed an alcohol screening questionnaire. During the next 6 months 647 patients received written advice about sensible drinking after having completed the screening questionnaire. A total of 619 patients included in the 12 months study period were followed-up by telephone interview and changes in drinking pattern were analyzed. After a further 6 months of intervention a total of 2151 patients had been completing the questionnaire during the total study period of 18 months. The association between drinking pattern and different injury variables was analyzed in order to identify special risk groups and situations. Results: The staff was generally positive to alcohol prevention before the routine started and it was completed as intended. After 6 months of screening the staffs’ role legitimacy and perceived skills had increased. Despite of a further positive change in attitudes towards alcohol prevention the staff was uncertain after the study period whether emergency departments are appropriate settings for alcohol prevention. A total of 9% of the women and 31% of the men attending the emergency department for an injury were defined as risky drinkers. One single item in the questionnaire, concerning frequency of heavy episodic drinking, identified the majority of risky drinkers. In the cohort of patients,
who was only screened, 34% was no longer engaged in heavy episodic drinking after 6 months and in the cohort that received written advice in addition to the screening the proportion was 25%. The latter group also increased readiness to change by 14%. The proportion of risky drinkers was higher among injury patients, 21% compared to 15% in the general population in the cathment area. This was mostly explained by a higher proportion of young men in the study group. When drinking pattern was compared, both risky and non-risky drinkers proved to be significantly more likely than abstainers to be injured in amusement locations, parks, lakes or seas and during play or other recreational activities, when controlling for age and sex. Nine percent of the injury patients reported that they believed that their injury was related to alcohol. Half of this group was non risky-drinkers. **Conclusions:** The triage staff performed the intervention as agreed, and in some aspects, which could facilitate further development of alcohol preventive measures, their attitudes changed positively. However, it appears difficult to expect alcohol preventive measures to involve more of the staff’s time than the routine tried, and other practical solutions have to be evaluated. A question about frequency of heavy episodic drinking identified the majority of risky drinkers and could be used as a single screening question. There was a reasonable reduction in heavy episodic drinking among the injury patients. The lack of a control group makes it difficult to fully explain whether this change is a result of the injury per se, the screening and the written advice procedure or a natural fluctuation in the patients’ drinking pattern. More studies are needed in order to establish the minimal levels of intervention in routine care that is accepted by the staff, and has a reasonable effect on risky drinkers’ alcohol consumption.

**Keywords:** Emergency department, alcohol prevention, screening, simple advice, staff, attitudes, injury

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LIST OF PAPERS

The thesis is based on the following papers, which will be referred to in the text by their Roman numerals:


II  Nordqvist, C., Johansson, K., Lindqvist, K., Bendtsen, P. Attitude changes among emergency care staff after conducting routine alcohol screening. Addictive Behaviors available online 26 May 2005

III  Nordqvist, C., Johansson, K., Bendtsen, P. Routine screening for risky alcohol consumption at an emergency department using the AUDIT-C questionnaire. Drug and Alcohol Dependence 2004; 74: (1) 71-75


V  Nordqvist, C., Holmqvist, M., Nilsen, P., Bendtsen, P., Lindqvist, K. Usual drinking pattern and non-fatal injury among patients seeking medical care. Submitted to Public Health

The papers are printed with permission from the publishers.

The project was approved by the Ethics Committee of Linköping University, Dnr: 01-060.
CONCEPTS USED IN THIS THESIS

Alcohol abuse is continued use of alcohol despite a failure to fulfil duties because of drinking, and/or putting oneself or others into dangerous situations while drinking.

Alcohol dependence is continued use of alcohol despite negative health effects, failure to stop drinking, periods with a lot of time spent on drinking, experiencing tolerance and abstinence and ignoring important activities because of drinking.

Brief alcohol intervention is a relatively new concept and includes a number of different approaches that aim to support drinkers in reducing consumption. The duration is often 5–20 minutes.

Drinking-in-the-event is used for alcohol consumption shortly, often less than six hours, before an accident.

Emergency care staff are physicians, trained nurses, assistant nurses and medical secretaries.

Harmful drinking is drinking above the recommended limit and experience of physical, social or psychological harm without meeting the criteria for dependence.

Nurses includes trained nurses and assistant nurses.

Primary prevention of alcohol problems is measures to prevent drinking at all or above recommended levels in order to prevent the negative effects of alcohol, for example giving information to young people in schools and increasing taxes on alcohol.

Risky drinking is weekly (volume) consumption and/or heavy episodic drinking (several drinks consumed at one occasion) above recommended levels. Hazardous drinking is often used synonymous with risky drinking. Other terms used to describe this drinking pattern are problem drinking and excessive drinking.
**Concepts**

*Screening* is a test method to rapidly identify a medical condition or risk factor. The method can be biological, technical or questions. The goal in alcohol screening is detection of risky drinking as early as possible in order to address the problem.

*Secondary prevention of alcohol problems* is measures to support risky drinkers to reduce drinking to a level below risky drinking. Secondary prevention mostly includes screening.

*Sensible drinking* is drinking below recommended risk levels.

*Simple advice* is a short form of brief intervention consisting mainly on feedback on consumption.

*Standard glass* is a concept to facilitate calculations of alcohol consumption. A standard glass contains a certain amount of pure alcohol, in Sweden 12 grams, which is equivalent to one can of medium-strong beer “folköl” (50 cl), one bottle (33 cl) of strong beer or cider, one glass of wine (15 cl), strong wine (8 cl) or one schnapps (4 cl). A standard glass is defined differently in different countries with regard to the amount of alcohol.

*Tertiary prevention of alcohol problems* is measures to support persons who are alcohol abusers or have developed dependence, to reduce or stop drinking in order to limit further adverse effects due to drinking.

*Triage staff* in this thesis are trained nurses, assistant nurses and medical secretaries working at the reception desk in the emergency department.
BACKGROUND

Introduction

The negative effects of drinking alcohol, such as ill health and social problems, have long been well known. There is also extensive research evidence supporting a correlation between alcohol consumption and ill health mostly on long-term medical conditions and, to a certain extent, on negative social consequences of drinking (Gutjahr et al., 2001; Rehm et al., 2003b). Primary care has been considered an appropriate setting for preventive measures for these adverse effects related to risky drinking.

In recent years, there has been increased focus on the acute negative health effects of risky alcohol consumption. There is strong research evidence that alcohol is a major risk factor for unintentional injuries, such as motor vehicular crashes, falls, cuts and bruises, as well as for intentional injuries such as suicide and violence (Borges et al., 2004b; Cherpitel et al., 2004b). To date, studies from different countries have paid more attention to fatal injuries, especially motor vehicle crashes, compared to non-fatal injuries. However, there is inconsistency concerning the magnitude of alcohol’s role in injuries. Injury has been estimated to be associated with recent intake of alcohol in 18–53% of non-fatal injuries in North America (D’Onfrio et al., 2001; Dunn et al., 1997; Hingston and Howland, 1993) and in 6–34% of cases in Sweden (Romelsjö, 1995). About 28% of fatal injuries in Sweden are related to drinking (Sjögren et al., 2000).

Since a substantial number of patients seek emergency care for non-fatal injuries, this setting has been suggested as an appropriate arena for alcohol preventive measures (Charalambous, 2002; D’Onfrio et al., 2001; Hungerford and Pollock, 2003; Romelsjö et al., 1993).

So far there is a lack of studies from Sweden concerning the role of alcohol in non-fatal unintentional injuries treated in emergency care. In one of the few previous studies physicians estimated alcohol, based on clinical judgement or questions to the patient, to be a contributing factor in 10% of the visits. (Romelsjö et al., 1993)

A considerable amount of studies deal with injuries associated to drinking-in-the-event, (Barnett et al., 1998; Cherpitel, 1996; Cherpitel et al., 2004b; Gentilello et al., 1999; Raffle, 1989; Roche et al., 2001) as judged by staff or
patients, simply by asking the patient about drinking-in-the-event or by blood or breath alcohol measurement. Only a few studies have evaluated a causal relationship in a stricter epidemiological manner (Borges et al., 2004a; Borges et al., 2004b). Less studied is how a person’s usual drinking pattern is associated with risk of injury occurrence, for instance factors like drinking environment, frequency of drinking, frequency of heavy episodic drinking (several drinks consumed at one occasion), choice of beverage and reasons for drinking (Bondy, 1996; Cherpitel et al., 2003).

This thesis discusses the association between usual drinking pattern and different aspects of injuries presented at an emergency department. The main focus is on the feasibility of implementing a simple brief intervention routine into an emergency department, in order to prevent future injuries related to heavy episodic drinking.

Two parallel processes are thus at stake: emergency care staffs’ readiness to participate in a simple intervention as a new routine and injury patients’ readiness to change drinking habits and actual change after the intervention.

The results in this thesis are based on data from an attempt to implement and integrate brief alcohol intervention into the routines of the emergency department in Motala hospital in Sweden.

Usage of alcohol

Alcohol has been consumed in human societies at least as long as history has been recorded. Fermented drinks were prepared within households all over the world. With European colonialism new forms of beverages were introduced and alcohol also became an industrial commodity available at any time and virtually any place. This process continues along with globalisation (Room et al., 2005).

Today, alcohol is officially forbidden in a number of countries, but in most parts of the world drinking is common when people meet. In many situations and arenas, offering a drink is considered almost compulsory as it is deeply integrated into traditions and ceremonies. In fact, drinking alcohol is more linked to social interaction than many other health-relevant behaviours, for instance smoking (Rehm et al., 1996a).

Two basic typologies of drinking can be distinguished: regularity of drinking and extent of drunkenness (Room and Makela, 2000). In the Mediterranean countries, alcohol is to a great extent part of everyday life and associated with meals. Drinking is thus regular. However, in most cultures in the world,
alcohol is used to achieve intoxication, in religious or social contexts. In Sweden, heavy episodic drinking has a long tradition as a mean of escaping from everyday gloominess, a stressful working situation or problems in life. Drinking behaviour is also cultural (Room, 2001). For example, it is often socially allowed in Sweden to behave differently during drinking, but in nearby Germany people are supposed to behave as they usually do even if they have been drinking (Heldmark, 2005). As well as drinking per se, a person’s behaviour while drinking and how other people are influenced are aspects to consider when studying the effects of drinking (Rehm et al., 1996a).

Drinking limits and drinking pattern

Sensible drinking limits
To facilitate comparison of alcohol consumption between countries, the World Health Organization (WHO) has suggested the use of standard glasses with a certain amount of 100% alcohol. In Sweden, a standard glass contains 12 grams of pure, 100%, alcohol. This is equivalent to a can (50 cl) of medium-strong beer, “folköl”, one bottle (33 cl) of strong beer or cider, one glass (15 cl) of wine, a small glass (8 cl) of strong wine or one schnapps or a drink with spirits (4 cl). A manual about Brief intervention, published by the WHO, has an identical definition of standard glass (Babor and Higgins-Biddle, 2001). However, the alcohol content of a standard glass differs between countries; for example from 6 grams in Austria, 8 grams in Great Britain, 14 grams in the United States of America to 20 grams in Japan. This disparity makes comparisons somewhat more difficult (ILSI, 1999).

There is inconsistency between countries and studies, not only concerning the alcohol content of a standard glass, but also with regard to the recommended drinking limits. However, it is possible to distinguish a trend towards lower limits according to new research evidence. For example in 1996 in a cross-national study by the WHO, the limits for risky drinking were set twice as high as they are today, at 225 grams of alcohol per week for women and 350 for men, which is 19 standard glasses of 12 grams for women and 29 for men (WHO and brief intervention study group, 1996). A recent recommendation from the National Institute on Alcohol Abuse and Alcoholism set a maximum of 98 grams of alcohol for women and 196 grams for men per week, or 7 American standard glasses for women and 14 for men (NIAAA, 2005). In Sweden, the limit for risky weekly volume consumption has been set at 110 grams for women and 170 for men equivalent to 9 Swedish
standard glasses for women and 14 for men (Andréasson and Graffman, 2002). Similar limits have also been recommended in the Great Britain (British Medical Association, 1995).

The dose–response relationship between drinking and a number of chronic alcohol-related diseases is still not sufficiently documented (Corrao et al., 2004). However, health problems are positively associated with the total alcohol dose over time for a number of diseases, such as liver diseases, certain cancers and heart diseases (Corrao et al., 2004; Gutjahr et al., 2001). The threshold effect varies with disease, sex and age but elevated relative risk for a number of diseases can be seen at levels lower than those normally recommended in a number of countries (White et al., 2002). Thus, there are arguments for even lower limits for risky drinking. According to a proposed acceptable daily intake of alcohol of 0.1 gram per kilogram body weight, a Swedish study stated that less than 110 grams of alcohol per week for men and 80 for women can be consumed with hardly any risk, as long as the whole quantity is not drunk at the same occasion (Rydberg et al., 1993). These low limits have been used in recent Swedish studies (Bergman and Källmén, 2003; Hermansson et al., 2002). Since the risk of adverse effects of drinking could be considered to begin at these levels, we chose to use them in our studies. The amounts are equivalent to 9 standard glasses for men and 7 for women per week. Lower limits for women are motivated not only by a generally lower body weight than men, but also by the fact that women have lower level of body water which leads to a higher level of blood alcohol after drinking.

**Drinking pattern**

To understand the negative effects of drinking, it is not sufficient to study the quantity of alcohol consumed; drinking pattern is important for the consequences of drinking. Drinking pattern deals with variations in drinking, such as frequency of drinking, heavy episodic drinking, drinking settings, drinking partners, activities while drinking, and other circumstances associated with drinking (Rehm et al., 1996b Bondy, 1996; Cherpitel et al., 2003).

In the last 10 years the importance of drinking pattern has been emphasized in alcohol research (Rehm et al., 2003c; Room et al., 2005). One means of conceptualising drinking pattern for analysis is to measure the frequency of heavy episodic drinking. Initially the cut-off for heavy episodic drinking was set at six standard glasses or more at a single occasion, for instance during one evening (WHO and brief intervention study group, 1996). In Sweden six standard glasses contain 72 grams of alcohol and the limit has been the
commonly used in Sweden for both sexes (Bergman and Källmén, 2002; Bergman and Källmén, 2003). In most recent studies, different levels for men and women are suggested; five glasses or more for men and four or more for women (Dawson and Room, 2000). In those studies, a standard glass often contains 14 grams of alcohol, which is equivalent to six respective five glasses of 12 grams.

Using lower heavy episodic drinking limits for women has been contradicted. Although women get a higher effect in blood alcohol, they do not seem to get into more trouble (Dawson and Room, 2000).

Positive aspects of drinking

Most people who use alcohol experience the positive effects of sensible drinking. The association of drinking with socialising with others and as a change from everyday life can be seen as health-promoting effects of alcohol.

People have long imagined that a small amount of alcohol is healthy: wine in countries where that type of alcohol consumption dominates and schnapps where spirit drinking is common, as in Sweden. Commonly wine has been associated with positive effects on cardiovascular disease, and recently, research has confirmed this protective effect of alcohol. In a meta-analysis the dose–response relationship was found to be J-shaped with a maximum positive effect at 20 grams of alcohol per day, corresponding to one and a half standard glasses. Up to 72 grams of alcohol a day, or six standard glasses, was still significantly protective, while 89 grams a day had significant negative consequences. For a number of other diseases, for instance cancer, the negative effects of drinking appear at 25 grams of alcohol a day, equivalent to two standard glasses (Corrao et al., 2004). The positive effects of drinking seem to be valid only for persons over 50 years of age, particularly men, and only if one or two glasses are drunk regularly, every day. The type of alcohol beverage consumed does not influence the positive health effects as far as we know (Andréasson and Allebeck, 2005).

Negative aspects of drinking

The health effects of drinking are merely negative (Andréasson and Allebeck, 2005; Bondy, 1996; Härstedt et al., 2005). For instance, a study from the U.S.
showed an almost linear relationship between the average amounts of alcohol consumed and total mortality for men under the age of 45 (Babor et al., 2003).

Recognition of problems related to alcohol consumption is nothing new. Ancient texts, whether from China, Palestine or Greece, appreciate the social and health problems caused by drinking. During the last 30 years scientific interest in alcohol problems have accelerated, however, and our understanding of the relationship between drinking and specific disorders, as well as the complexity of drinking-related problems have improved (Room et al., 2005).

Apart from the negative medical effects for the drinking individual, alcohol can also affect other persons causing social harm (Rehm et al., 1996b) and high-risk behaviour, for instance unsafe sex and the use of other psychoactive drugs (Babor et al., 2003). The social consequences of drinking are even more difficult to measure than medical problems, and the social impact of drinking is not included in the negative effects of drinking described below. The social sphere has even been called “the forgotten dimension” of alcohol-related negative consequences (Klingermann and Gmel, 2001).

**Risk factor for ill health and death**

Previous studies on the adverse effects of alcohol have mainly focused upon alcohol-related mortality rates rather than on morbidity, and even the total negative effects are often reported as mortality. In an attempt to estimate the global burden of disease, the WHO started the project Global Burden of Disease (GBD) in 1992, in order to make the first global and regional combined estimates of diseases and injuries (Murray and Lopez, 1996). GBD summarised the burden of premature mortality and disability in Disability Adjusted Life Years (DAILYs) which is a measure of the days lost in a person’s predicted length of life because of disability and death due to a certain disease. According to the GBD, alcohol is the fifth greatest global risk factor for disease, impairment and death, with 3.2% of deaths and 4% of DAILYs in 2000; this is five times more than internationally controlled drugs (Rehm et al., 2003c). The global burden of alcohol varies from 1.3% in the poorest countries with low consumption to 12.1% in the former European socialist countries (Room et al., 2005). In Europe, alcohol is the third greatest risk factor, with 10% of the total burden of disease. Only tobacco and high blood pressure are more negative for the populations’ health (Ezzati et al., 2002).
Ill health
Alcohol can damage nearly every organ in the body. There are about 60 diagnoses that can be related to drinking (Härstedt et al., 2005; Rehm et al., 2003a; WHO, 2004). Thus, injuries, together with neuropsychiatric conditions, are the most common reason for ill health caused by drinking. Other diseases attributed to drinking are cancers, liver cirrhoses and diabetes. (Rehm et al., 2003a; Rehm et al., 2003b). Cardiovascular diseases are also attributed to drinking, at levels over six standard glasses a day. Table 1 shows the distribution of disease conditions within the DALYs that are due to drinking.

Table 1. Global burden of disease (DALYs in 1000’s) attributable to alcohol by major disease categories for year 2000 adapted from Rehm (2003) (Rehm et al., 2003b).

<table>
<thead>
<tr>
<th>Disease conditions</th>
<th>DALYs</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditions arising during the prenatal period</td>
<td>123</td>
<td>0.21</td>
</tr>
<tr>
<td>Cancers</td>
<td>4201</td>
<td>7.20</td>
</tr>
<tr>
<td>Neuropsychiatric conditions</td>
<td>21904</td>
<td>37.56</td>
</tr>
<tr>
<td>Cardiovascular disease</td>
<td>3983</td>
<td>6.83</td>
</tr>
<tr>
<td>Other non-communicable diseases (diabetes, liver cirrhosis)</td>
<td>4555</td>
<td>7.81</td>
</tr>
<tr>
<td>Unintentional injuries</td>
<td>16495</td>
<td>28.28</td>
</tr>
<tr>
<td>Intentional injuries</td>
<td>7062</td>
<td>12.11</td>
</tr>
<tr>
<td>Alcohol-related disease burden all causes (DAYLs)</td>
<td>58323</td>
<td>100.00</td>
</tr>
</tbody>
</table>

It is difficult to estimate the extent of suffering due to the negative medical consequences of drinking. Ideology and resources for care vary with time and modifies the calculations of burden of decease. One illustration of the burden of alcohol on ill health in Sweden could be that in 2002, there were 43,758 medical intakes with alcohol-related diagnosis. Of these, 11,500 were people admitted to hospital for the first time due to drinking (CAN, 2004a).

Death
In terms of mortality, alcohol is estimated to have caused 3.2% of the total deaths in the world in 2000. That corresponds to about 1.8 million people. (Andréasson and Allebeck, 2005; WHO, 2004). Looking at the total mortality in Sweden, 3.5% is reported to be due to drinking. Alcohol is involved in 10.5% of the deaths in people up to the age of 70, and in 25% of deaths in the 20–49 age group. If the protective aspects of drinking are taken into account, the net negative effect for persons up to age 70 is between 7% and 10.5%. For people aged 20–49, the net negative effect is 23–25% (Sjögren et al., 2001). Similar numbers have been reported by the Swedish National Board of Health and
Background

Welfare (Socialstyrelsen, 2005). In Sweden, about 2000 people die annually due to diseases in which alcohol is a contributing or underlying cause (CAN, 2004a; Socialstyrelsen, 2005). If alcohol-related injury and suicide are added, the number of deaths is close to 3500 persons per year, (Andréasson and Allebeck, 2005; Sjögren et al., 2001) or even between 5000 and 7000 according to another source (CAN, 2004b).

Health consequences of drinking pattern

A number of negative health consequences of drinking, such as cancers, are mainly related to long-term use and in most cases with the average volume intake. Those consequences are fairly stable cross-culturally. Acute consequences of drinking, mostly fatal and non-fatal injuries, vary more, since drinking patterns vary between cultures (Gutjahr et al., 2001).

Injuries

Worldwide, 40% of all injuries, fatal and non-fatal, (28% are unintentional and 12% intentional injuries) are estimated to be attributed to alcohol (Rehm et al., 2001) while the estimation for Sweden is 20% (Andréasson and Allebeck, 2005). Injury includes consequences of both accidents (unintentional injury), and violence and suicide (intentional injury). Since injury is the largest category in table 1, heavy episodic drinking seems to be an important adverse drinking pattern. Looking only at mortality caused by alcohol, 46% is related to injuries (32% unintentional and 14% intentional) globally (Rehm et al., 2003c).

Approximately 5% of all deaths in Sweden are due to injuries (Räddningsverket, 2005). Of the nearly 5000 fatal injuries in Sweden, 30% are estimated to be alcohol-related. Of the unintentional injuries 20%, and of the intentional, 35% are estimated to be alcohol related (Sjögren et al., 2000). This means that approximately 1500 persons per year die in unintentional and intentional accidents due to drinking in Sweden.

One reason for the increased risk of an accident leading to an injury during heavy episodic drinking is the negative effect of alcohol on psychomotor behaviour. Thus, even for low or normal drinking men, mortality has proved to double for those who occasionally had been drinking heavy episodic. There is evidence that heavy episodic drinking increases the risk of motor accidents, especially single vehicle accidents at night (Babor et al., 2003). For every 0.2 permillage (equivalent to 1–2 standard glasses) of increase in blood alcohol level, the risk of a fatal traffic accident is doubled (Andréasson and Allebeck, 2005).
2005). In a worldwide estimation by the WHO 37-43% of all road injuries, were estimated to be alcohol related (WHO, 2000). The upper level concerns fatal injuries (Dill et al., 2004). In Sweden about 6% of motor vehicle drivers injured or killed were under the influence of drugs, mostly alcohol, and for fatal injuries only, the proportion was 20%, in 2000–2002 (Forsman and Gustafsson, 2004).

The second most common alcohol-related cause of injury is falls; 15–35% are estimated to be due to drinking (WHO, 2000).

Violence
The capacity to solve problems is impaired by drinking (Room et al., 2005; Rossow, 1996), which, apart from injuries, can also cause social problems. A number of studies have shown that violence is casually linked to drinking and especially heavy episodic drinking (Lenke, 1990; Rossow, 2001) even though the causality often is difficult to establish. In Sweden, in the middle of the 1990s 75% of all violent crimes were estimated to be alcohol-related. About 70–80% of all offenders and 40–50% of the victims of police reported crimes were under the influence of alcohol at the time of the incident (CAN, 2004a; Swedish government 2000). One example where a drinking victim is at risk is intimate partner violence. In a study from the U.S., a woman who neither smoked nor engaged in alcohol abuse had a 10% probability of suffering intimate partner violence in the preceding 12 months. If she was abusing alcohol, her predicted risk was doubled (Gerber et al., 2005). In Sweden, more than 16,000 intimate partner violence crimes are reported yearly (Socialstyrelsen, 2005).

Drinking patterns are cultural and thus so are the consequences. In Western Europe, homicide has been shown to increase twofold in the northern countries compared to the south for each extra litre of alcohol consumed per capita (Lenke, 1990; Rossow, 2001). Thus, in Sweden with a drinking pattern of heavy episodic drinking, alcohol is involved in homicides and assaults to a higher extent than in France, for instance, where drinking is more frequent but in lower amounts (Andréasson and Allebeck, 2005; Rossow, 1996).

Alcohol has proved to be attributed to about 45% of all suicides in Sweden, most common among alcohol dependent persons and often associated with depression (Berglund and Öjehagen, 2005).
Demographic differences in drinking

Women consume between one-fifth and one-third of the alcohol drunk in most industrialised countries, reflected in a ten times higher total mortality due to alcohol in the world among men compared to women (Andréasson and Allebeck, 2005; WHO, 2004).

In Sweden men consume more alcohol than women in all age groups, and 17% of the men and 9% of the women are reported to be risky drinkers (Socialstyrelsen, 2005). In another study 15% of the men and 7% of the women were risky drinkers with regards to weekly consumption. The study also showed an increase in the proportion of risky drinkers, especially among the women (Bergman and Källmén, 2003).

The drinking pattern is also distinct; women drink heavy episodic to a lesser extent than men. In developing countries, these differences are even greater than in industrialised countries (Babor et al., 2003).

Young adults drink comparably more than older people, and in most societies there is concern about young persons’ drinking (Babor et al., 2003; Bendtsen et al., 2005). The differences in consumption between men and women are still greater in older age groups in Sweden but are diminishing (Bergman and Källmén, 2003; Socialstyrelsen, 2005).

The frequency of heavy episodic drinking in Sweden has increased with a concentration at weekends, especially among women (Swedish government, 2000). Heavy episodic drinking is reported to occur at least twice a month among one-third of the men aged 18–29 years; the corresponding figure for young women is one-fifth. Overall, 38% of the men and 25% of the women in this age group are estimated to be risky drinkers in Sweden (Socialstyrelsen, 2005).

There are encouraging developments among Swedish young people however. Drinking has decreased among 16-year-old boys and the increase among 16-year-old girls has stopped (Härstedt et al., 2005).

A consequence of the levelling out in drinking between men and women is, that despite the total decrease in alcohol-related mortality, alcohol-related mortality among women older than 45, and also among men over 65 has increased. Among the 2000 deaths with an alcohol-related diagnosis in 2002, around 400 were women (Socialstyrelsen, 2005). In alcohol-related accidents, twice as many men than women are killed (Andréasson and Allebeck, 2005; Sjögren et al., 2000).

Earlier differences in drinking between rural and urban populations have levelled out (Swedish government, 2000) but a high level of urbanisation has
been proved to be associated with increased hospital admission for alcohol abuse (Sundqvist and Frank, 2004).

**Drinking trends**

Drinking fluctuates in different parts of the world, and following the trends is important for developing preventive measures, and, for example, distributing relevant information to the population.

Alcohol consumption per capita (persons 15 and older) seems to have decreased between 1970 and 1995 in many high consumption countries, such as France, Italy, Portugal, Argentina, Chile, Canada and USA. The downward trend for the European countries mentioned above now seems to be levelling out however.

Instead, in some medium consumption countries, drinking has increased, for example, in Japan, Finland and Denmark. Also in China, Philippines and Vietnam as well as in Indonesia and Thailand, consumption has increased. Presently, a number of countries in Eastern Europe, followed by most countries in Latin America, have the highest percentage of reported ill health attributed to alcohol (Babor et al., 2003).

In addition to the levelling out in quantities consumed between countries, there is a levelling out in the type of alcohol consumed, so while wine drinking dominates, beer and spirits are becoming more popular and in beer and spirit drinking countries there is an increase in wine drinking (CAN, 2004a).

Heavy episodic drinking is increasing in many countries, for example, in India, Mexico, Nigeria, Ireland, England, Denmark, Finland and Russia (Babor et al., 2003). In Sweden, the number of heavy episodic drinking occasions has increased by 40% since 1998 (Andréasson and Allebeck, 2005)

**In Sweden**

Registered alcohol sales in Sweden after the second world war were low, compared to most other countries with an average corresponding to about four litres of pure (=100%) alcohol per citizen 15 years and older (Leifman, 2005). As in most West European countries, sales increased dramatically until the middle of the 1970s. In Sweden, registered sales were 7.7 litres per person in 1976 due to legalisation of the sale of medium–strong beer (mellanöl) in grocery shops. When the permission to sell beer in grocery shops was abandoned, and restricted to special retail shops (Systembolaget, 2004),
alcohol sales decreased in all age groups, until 1998 when the registered sales were 5.9 litres per citizen aged 15 years and older (Swedish government, 2000). Since 1998, registered sales have been continuously increasing. Until 1996/1997, non-registered alcohol, that is imported from travelling and home distillation, was not considered in the official statistics, but since then the total consumption has been estimated. Estimation of the total consumption was equivalent to 8.2 litres of pure alcohol for persons 15 years and older in 1998 and 8.4 litres in 2000 (Swedish government 2000). In 2002 consumption was estimated to be 9.9 litres per person and year (Leifman and Gustafsson, 2003) and in 2004 the figure was 10.5 litres (Andréasson and Allebeck, 2005). Thus alcohol consumption increased by 28% between 1998 and 2004.

Approximately 10% of the population consumes half of the amount of alcohol (Swedish government 2000). In numbers, about 800,000 people in Sweden are risky drinkers (Socialstyrelsen, 2005) and, of these, about 300,000 are alcohol-dependent (Andréasson, 2002).

Despite the increase in total consumption, alcohol-related mortality has decreased by one-third since the beginning of the 1980s probably because of the decrease in spirit drinking (Socialstyrelsen, 2005). However, the statistics cover only up to 2002 (Räddningsverket, 2004). With more recent data the results would probably be different, reflecting the negative consequences of the increased drinking in recent years. Looking at the south of Sweden, which is geographically closer to the cheaper markets in Denmark and Germany, there was a 40% increase in alcohol-related mortality between the periods 1987–1990 and 1999–2002 (Härstedt et al., 2005). There are also reports of an increase in the total number of deaths due to injury from 1996 to 2001 (Räddningsverket, 2005).

Since alcohol consumption has been increasing over the last seven years, an increase in alcohol-related ill health can be expected. This calls for effective preventive measures. Since the most damaging drinking pattern, heavy episodic drinking has become more common, a suitable arena for prevention should be emergency care.

**Societal costs**

A fairly uncertain proportion of the societal resources in Sweden are used for alcohol-related problems. Overall, alcohol was estimated to cost around 150 billion SEK in 2000 (Johnson, 2000). Alcohol is estimated to cause between 5% and 7% of the total health care costs (Andréasson, 1992; Swedish government
2000). This was equivalent to 6 billion SEK at the beginning of the 1990s. (Andréasson, 1992; CAN, 2004a).

In addition, alcohol contributes to costs within the social security system but the share is uncertain. Probably a much greater part than the official 1.2% of the new disability pensions granted in 2002 was for persons dependent on alcohol. Alcohol is also an underlying cause in many cases of reported sickness absence (Upmark, 1999).

An American study showed the cost-effectiveness of brief interventions for trauma patients. For each patient screened the net cost saving was 89 US dollars and for each patient offered intervention 330 US dollars; so for every dollar spent, 3.81 dollars were saved (Gentilello et al., 2005). A Swedish review study reports that one out of ten risky drinking persons who receive simple advice reduce drinking to non-risky levels (Berglund et al, 2001). Such results have been shown to be cost effective in another Swedish study (Lindholm, 1998). The results for alcohol interventions can be compared with those, for example, for prevention of heart disease because of high blood pressure; 128 patients have to be treated for 5 years with medicine in order to prevent one heart condition (Berglund et al. 2001).

**Prevention**

Different public health strategies have had a remarkable effect on the health of people throughout the world during the last 100 years. Life expectancy has increased dramatically. Since epidemics of infectious diseases have receded, the health risks associated with life style are more prominent as a cause of mortality and morbidity (Svanström, 2003). One such life style health risk is alcohol consumption. Due to the increase in alcohol consumption in Sweden, the health risks associated with drinking is becoming proportionally more important.

Preventive work can be performed from different perspectives. Primary prevention aims to obstruct drinking above risky limits and is primarily population based. Secondary prevention aims to limit the adverse effects, through reduced drinking, if a person is already a risky drinker. It can be population based as well as individual. If a person is already addictive to alcohol, tertiary prevention measures are used; these are individual therapies (Leifman, 2005).

Alcohol policy, described below, is primarily primary preventive, but has secondary preventive perspectives. Screening and brief intervention, described
after alcohol policy, is mainly a secondary prevention. Tertiary prevention for persons with established alcohol dependence is a matter for specialised health care and is not referred to in this thesis.

Primary prevention

Alcohol policy is one method of minimizing the life style problem of risky alcohol consumption, which affects both health and social welfare. The purpose of alcohol policy is, for example, to influence the drinking pattern, the drinking environment and the health services available to treat problem drinkers. The government’s National Plan of Action expresses the aim of the Swedish alcohol policy as working towards reducing medical and social damage caused by drinking. The intention is that some areas in life should be alcohol free: pregnancy, childhood, traffic and worksites (Swedish government, 2000).

High price and restricted availability
A powerful tool that have long been used in Sweden and worldwide in the control of alcohol-related problems are government taxes and high prices on alcohol.

The effect of the tax strategy depends on the price elasticity of alcohol beverages and the actions of producers, distributors and sellers. In addition, the citizens’ financial resources as well as the possibilities for smuggling and home-distilling, are relevant for the price elasticity. It seems that an increase in the total price of alcohol reduces consumption in all age groups (Chaloupka et al., 2002). Positive effects have been found among young people with a reduction in driving while under the influence of alcohol and accordingly a reduction in traffic accidents (Babor et al., 2003). Research also shows that an increase in the price of alcohol reduces the number of crimes of abuse and robbery (Chaloupka et al., 2002).

Regulations on where, when and to whom alcohol is sold are also a common means of restricting drinking. Even total prohibition against trading in alcohol exists in some Muslim countries, for example, Saudi Arabia and Iran, as well as in various First Nations, native American and aboriginal societies (d’Abbs and Togni, 2000).

Partial prohibition or restrictions for special groups, such as young people, and special conditions, such as pregnancy, are more common. There is evidence that higher age limits for buying alcohol beverages are related to
fewer attendances at hospitals due to alcohol-related injuries (Babor et al., 2003).

Until recently, Swedish alcohol policy was characterized by these two methods: high prices and restricted selling. Since Sweden joined the European Union in 1995, these measures have become less powerful due to the EU regulations. Taxes have been reduced in nearby countries and also in Sweden and the Swedish Alcohol Retailing Monopoly has longer opening hours than before, including Saturday opening. A study showed that consumption increased by 3.6% when alcohol retail shops began Saturday opening in Sweden (Norström, 2005).

Despite an increase in private importation of alcohol over the last five years the Retailing Monopoly reported increased sales between 1999 and 2003. In 2004 there was a 9% reduction however. (Systembolaget, 2004) At the same time, between 2003 and 2004, the private import increased by 20% (Härstedt et al., 2005). During the first seven months of 2005 the private import was reduced by 13% compared to 2004. During the same period the Retailing Monopoly saw an 2.3% increase in the alcohol sale (Systembolaget, 2004). One conclusion so far could be that private importation has stabilized and that the Retailing Monopoly still is an important source of alcohol sales. Half (49% in year 2003) of the alcohol consumed in Sweden is sold at the Retailing Monopoly, a share that has been fairly stable since 1996 (Systembolaget, 2004).

Education and advertising
There are other alcohol policy measures that have proven to be partially effective. One method to keep drinking levels down is to educate bar staff in responsible beverage service. This education focuses on attitudes, knowledge and praxis (Toomey et al., 1998). Research from Sweden shows good results on staff knowledge and attitudes and lower blood alcohol concentration levels among guests (Babor et al., 2003; Wallin and Andreasson, 2004).

In Australia, New Zealand and some European countries, Random Breath Tests are used to prevent drinking and driving. A review of 23 studies found that with such tests the number of fatal accidents decreased by between 13 and 36% (Shults et al., 2001).

Legislation and self-regulation of alcohol advertising exists in several countries. Where advertising is allowed, it is often high quality advertising, oriented especially towards young television and internet consumers, communicating a picture of drinking as glamorous and rather risk free that is hard to fight. In most non-industrialised countries the assets of the alcohol industry are higher than BNP. Public service announcements to contradict the
picture have not been able to compete, but there is still a lack of research on how these campaigns are perceived. One way that seems effective is media education for young people. General education about alcohol and other drugs for young people, such as programs in schools, do not seem to have any effect (Room et al., 2005).

Responsibility for the Swedish alcohol policy
There are numerous bodies, on different levels, working on prevention of alcohol problems in Sweden. The responsibility of the different players is summarised in the governments’ Plan of Action to prevent alcohol damages (Swedish government, 2000). On a national level there is the Alcohol Committee (Alkoholkommittén), The National Public Health Institute (Statens folkhälsoinstitut) and The National Board of Health and Welfare. The County Administrative Boards (länsstyrelserna) work on a regional level and the municipalities at the local level. Many voluntary organisations try to change opinions in order to prevent alcohol-related harm. One example is the Central Alliance for Alcohol and Narcotics Information (Centralförbundet för alcohol- och narkotikaupplysning) which has a good foundation in research.

Summary of the effects
The most cost effective approach to reducing excessive alcohol consumption and thus alcohol-related harm has proven to be multiple policies from the following strategies: increase in alcohol prices; reducing the availability of alcohol; and measures against drunk driving and under age drinking (Babor et al., 2003; Swedish government, 2000). All of these strategies have been studied in a limited number of countries, however, with the exception of taxes on alcohol which has been more widely studied (Andréasson and Allebeck, 2005; Babor et al., 2003). Also education to restaurant staff has showed to be effective in Sweden (Wallin and Andreasson, 2004).

Secondary prevention
Since the governmental control of price and availability has now become less powerful in Sweden, individuals are expected to take more responsibility for their drinking and to be able to do so and they need information about sensible drinking habits (Johansson, 2005). One natural arena for providing information and support is health care. According to the Swedish health care
law (SFS, 1982), health care includes both treatment and prevention of disease or injury.

Most resources for treatment for drinking problems are invested in persons with severe problems, such as dependence, but alcohol related problems could be described on a continuous scale of severity, from emerging problems to alcohol dependence. The majority of risky drinkers are not dependent. (Anderson, 1993). In order to manage the different types of alcohol related problems a number of alcohol interventions have emerged. One study identified 40 therapies for treating alcohol problems (Miller et al., 1995). The present text describes brief intervention, a method that is secondary preventive and thus mostly suitable for non-dependent persons. The majority of risky drinkers in Sweden and elsewhere never seek treatment for their drinking. One reason might be that they do not experience any problems. Another reason could be that they fear being labelled “alcoholics”. This is a reason to approach them in a non-confrontational way (Sobell et al., 2002). Simple methods, realistic to implement into routine care, would increase the possibility of reaching a greater share of these risky drinkers who are likely to respond well to non-intensive, brief, self-change interventions (Sobell et al., 2002; Miller and Rollnick, 1991) aimed at supporting them in changing their drinking behaviour.

Before brief intervention could be offered an initial screening is necessary.

**Screening for risky drinking**

Alcohol screening in this thesis categorises people into non-risky or risky drinkers. In general, screening has been defined as the skilful use of empirically based procedures for identifying individuals with alcohol-related problems or those who are at risk for such difficulties. A specific alcohol-related diagnosis is not the purpose of screening (Connors and Volk, 2005).

There are several biochemical tests to detect excessive alcohol consumption. Since those methods are better for detecting regular, very heavy drinking than heavy episodic drinking or risky drinking at an early stage, they are not considered here (Aertgeerts et al., 2001; Cornigrave et al., 2003; Fiellin et al., 2000; Johansson, 2005) as the focus of this thesis is on risky drinkers at an early stage. All the biological markers have a 20-40% sensitivity for detecting risky drinking (Cornigrave et al., 2003). For the purpose of finding risky drinkers, self-reported consumption has been shown to be more feasible (Cherpitel, 1993; Fiellin et al., 2000). There are many alcohol screening questionnaires. The most commonly used questionnaire at the moment is the AUDIT, the Alcohol Use Disorders Identification Test.
Background

**AUDIT**, developed by the WHO, was mainly constructed for use in primary care and to be suitable for different cultures (Bergman and Källmén, 2002; Saunders et al., 1993). The AUDIT was translated into Swedish by Bergman et al. (Bergman et al., 1998) and has been used in different Swedish settings. The AUDIT contains 10 questions about present consumption, heavy episodic drinking, signs of dependence and harmful consumption. Each question is coded from 0 to 4 and all the response options are summed up to a total score between 0 and 40. A cut-off for risky drinking is often set by a score of 8 but 10 has also been used. A lower limit for women, 6, has been tried, which increased the share of females defined as risky drinkers from 5.1% to 10.6% in a Swedish study (Bergman and Källmén, 2000). It has also proved to be equally appropriate for men and women (Aertgeerts et al., 2001). In a review of studies from primary care, the AUDIT was found to be the most effective instrument in identifying at-risk, hazardous or harmful drinkers. For at risk or harmful levels, the sensitivity was 51–59% and the specificity was 91–96% (Fiellin et al., 2000).

**AUDIT-C** consists of the first three AUDIT questions, about current volume consumption and heavy episodic drinking. The cut-off score is normally set at 5 for risky drinking (Bush et al., 1998; Gual et al., 2002). The sensitivity of the AUDIT-C has been found to be 54–98% and the specificity 57–93% (Fiellin et al., 2000).

**AUDIT-3** is the third AUDIT question, about heavy episodic drinking. In a study 79% of the risky drinkers were identified by the AUDIT 3 (Bush et al., 1998). The use of a similar single question: “On any single occasion during the past 3 months, have you had more than 5 drinks containing alcohol?” has been evaluated. A sensitivity of 62% and a specificity of 93% was found for detecting problem drinkers (Fiellin et al., 2000; Taj et al., 1998). In a study conducted in emergency care, the single alcohol question was “When was the last time you had X drinks in one day?”, where X=5 for men and 4 for women. The sensitivity and the specificity was 86% for finding recent hazardous drinking and current alcohol use disorders (Williams and Vinson, 2001). Used in the full AUDIT, AUDIT-3 has proved to explain 59% of the variations in the total scores (Bergman and Källmén, 2002; Bergman and Källmén, 2003).

**CAGE**, the Cut down, Annoyed, Guilty, Eye opener test consists of four questions about life-time alcohol abuse and/or dependence. Thus, it does not distinguish between active and past problem drinking (Ewing, 1984). The CAGE is less and less used. The sensitivity for risky drinking has been found to be 14% in one study and 84% in another and the specificity 95–97% (Fiellin et al., 2000).
MAST, the Michigan Alcoholism Screening Test consists of 24 questions about control over drinking, expressed worries about drinking, feelings of guilt after drinking and problems related to drinking. The test has been evaluated as an instrument for abuse and/or dependence rather than risky drinking (Rumpf et al., 2002).

There is a trend towards shorter instruments. (Bush et al., 1998; Wallace, 2001). For instance, the American National Institute on Alcohol Abuse and Alcoholism recommends the AUDIT 3 as a single screening question (NIAAA, 2005).

Assessment
After screening, further assessments among those screened positively may be needed in order to discover signs of alcohol abuse or dependence (Connors and Volk, 2005). Further assessment has in particular been recommended for persons with high scores in the full AUDIT but also for high drinking levels in AUDIT-C since this increase the probability for a diagnosis of abuse or dependence (Babor and Higgins-Biddle, 2001). If abuse or dependence is discovered, referral to a specialist is recommended.

Brief intervention
Brief alcohol intervention is a relatively new concept aimed at supporting risky drinkers to reduce drinking to sensible levels. During the last decades, various interventions have been performed and evaluated under the name brief intervention. Time duration during a visit has varied between 5 and 20 minutes in different interventions and the number of visits has been between 1 and 5 (Berglund et al., 2001; Bien et al., 1993; Kahan et al., 1995; Moyer et al., 2002; Wilk et al., 1997). The description below refers to the WHO’s manual for use in primary care and describes an ideal situation for brief intervention (Babor and Higgins-Biddle, 2001). In the manual, brief intervention is described as secondary preventive measures, used in combination with identification by screening, to motivate hazardous and harmful drinkers to change their drinking behaviour. Brief intervention is also a way to facilitate referral of alcohol-dependent persons to specialised treatment. The measures are adapted to the shortage of time in health care. In the manual there are descriptions of interventions for different levels of alcohol consumption.

After screening, most persons are found to be low-risk drinkers. Even so, they are recommended to receive alcohol education to create a general awareness of alcohol risks, which might serve a preventive purpose and could be useful for persons who underreported their consumption in the screening.
Those persons who report consumption over the risky drinking limit are suggested to receive simple advice. Together, the person and a health care worker go through a brochure about sensible drinking. The aim is that the patient establishes a goal to change their drinking behaviour. The brief intervention should meet the person’s level of current readiness to change. Generally, a fundamental, respectful and emphatic attitude from the health care worker is crucial for the impact of a brief intervention. The locus of power and control is with the patient (Dunn et al., 1997).

Persons drinking even more, at a harmful level, in addition to the simple advice as above, receive brief counselling and continued monitoring. A self-help booklet should also be handed out. The practitioner of brief counselling should continue to provide support, feedback and assistance in achieving realistic goals.

Dependent drinkers are not the target group for brief interventions and should be referred to a specialist.

The levels of activity in screening and brief interventions are illustrated in figure 1. Two different levels of brief interventions can be distinguished. One level is very brief, or minimal interventions consisting of simple but structured advice, taking only a few (five) minutes to deliver. This could be called simple advice. The other level of brief intervention is more intensive, taking between 20 and 30 minutes to deliver and often involving a few repeat sessions. This could be called brief counselling (Heather, 1995).

Figure 1. Illustration of the normal procedure in screening and brief intervention as described in (Babor and Higgins-Biddle, 2001). The shaded squares are the parts used in the present thesis.

The shaded squares in figure 1 are the steps used in the studies in this thesis: screening and simple advice. In most cases, these steps are the ones used in other studies too, even though the simple advice is normally more extensive.
than in the present work where the simple advice was only written advice about sensible drinking limits.

Written advice
Self-help materials (or bibliotherapy) are often used in connection with simple advice and brief counselling and can be described as any therapeutic intervention that an individual can read and implement (Apodaca and Miller, 2003). The effects of simple written advice will be described after the effects of more extended brief interventions.

Effects of brief interventions
In several review studies and meta-analyses, screening and brief interventions in primary health care have proved to be as effective as more extensive interventions, with reductions in alcohol consumption of 20–30% in the intervention groups and 10–20% in the control groups (Bertholet et al., 2005; Bien et al., 1993; Kahan et al., 1995; Moyer et al., 2002; Wilk et al., 1997; Berglund et al., 2001). In a study from different health care settings in eight countries, the WHO Brief Intervention Study Group found that 20 minutes of brief counselling did not add any effect in reduced drinking among patients compared to 5 minutes of simple advice and a self-help pamphlet after a 20-minute health interview. Among the women also the health interview had a positive effect and the simple advice and self-help pamphlet did not add much to the effect (WHO and brief intervention study group, 1996). According to one meta-analysis, however, very brief interventions was not effective for men nor women and more extended interventions only for women (Poikolainen, 1999). There is a need to study further which elements and conditions are effective, in order to avoid inefficient forms of intervention. The generally positive evidence, and the shortage of time in health care, are good reasons for trying a short intervention, as screening and simple advice.

Effects of screening and simple advice
Most brief intervention studies have used screening and written self-help materials for the control group. However, a few studies have tried to evaluate the effect of screening and/or self-help written materials among risky drinkers who are identified through screening and have not requested any help. The results have been mixed (Apodaca and Miller, 2003). In a study where patients were screened by means of a structured interview, both the intervention group, who received one session of counselling from a nurse and self-help
material and a control group who did not receive counselling or self-help material reduced weekly alcohol consumption by 50% at a 12 months follow-up. The intervention group also reduced alcohol-related problems (Chick et al., 1985). Another study showed that women had reduced drinking at a 12 months follow-up independently of advice session and self-help materials while the intervention had a positive effect in reduced drinking among men (Anderson and Scott, 1992).

The effects of written material might be better for persons seeking help than for patients identified by screening however (Apodaca and Miller, 2003).

**In Sweden**
Various forms of brief alcohol interventions have been performed in primary health care in Sweden. The projects were generally performed by ordinary staff. In Malmö a project was initiated in the mid-1970s. Middle-aged men, who displayed an increased level of liver enzymes after health screening and were also risky drinkers, were included in the study. Half of the study population were just informed about their increased level of liver enzymes, while the other half were also invited to a further assessment and brief intervention by a physician. A long-term follow-up of mortality showed that 12.7% of the men had died; 48% of the deaths were alcohol-related. In the intervention group, 10.4% were dead while 13.9% in the control group had died. The difference was significant. Fewer deaths were alcohol-related in the intervention group (Kristenson et al., 2002). In Gothenburg, patients were screened by AUDIT, liver enzymes and other blood tests. Intervention by motivational interviewing lasting for about 15 minutes was changed to about 5 minutes for persons with higher motivation to change, to save staff time. A brochure with simple advice was delivered by a physician who also asked questions about motivation to change. The results showed acceptance for the intervention among both staff and patients (Eriksson et al., 2000). Another feasibility study in Stockholm was less successful, with a low screening rate, concluding that implementation of secondary prevention methods requires careful adaptation to the reality of the setting (Andréasson et al., 2000). In Linköping, low screening rates were found, due to insufficient practical skills rather than negative attitudes among staff, but screening and simple computerised advice to patients are still going on (Johansson et al., 2002).
Background

Brief alcohol interventions at emergency departments

Until recently, resources for secondary prevention of alcohol problems were concentrated on primary care. There are more than 40 studies performed so far but the studies vary considerably: in screening method, from using three questionnaires to one single question; time required varied between 1 and 20 minutes. Some studies used several questionnaires (up to five) in a further assessment while others did not have any further assessment. A total of 2371 eligible patients were enrolled for intervention at the most; there were 31 in the smallest study. Some interventions contained motivating interviews and one a booster session after one week, while in ours a brochure with simple advice was handed out. Staff time required for intervention varied from a couple of minutes in our study, to between 14 minutes and 3 hours in the others. In our study, 619 persons were followed up; 12 were followed up in the smallest study. Finally, the results varied and there is no evidence that results improved with a higher time investment. In three other studies, where the screening was performed by ordinary staff (Hungerford et al., 2003), the screening did not continue after the study period in two of the studies (Brooker et al., 1999; Krishel, 1996; Wright et al., 1998). In another Swedish study using computerised screening, the screening continues as routine (Karlsson and Bendtsen, 2005). Also other studies have found that screening by touch screens is feasible to implement into emergency departments (Gregor et al., 2003).

In a recent review of brief interventions studies from emergency care settings 10 studies were included. Several methodological issues were apparent from the review. A common finding was that all patients irrespective of type of intervention reduced their drinking after the emergency department visit. It was concluded that screening and the follow-up assessment per se work as a brief intervention since this makes the patient aware of his or her alcohol consumption. Another important finding was that even if the injury patients drinking pattern may return to risky level over time the risk for a repeated alcohol-related injury may be reduced after a brief intervention session (Dill et al., 2004).

In Sweden

In Sweden, there have been three projects concerning alcohol-related visits in emergency departments. In Stockholm, a programme for accident prevention was established in 1988. A medical record sheet was completed at two emergency departments with medical records and injury data based on the
NOMESCO-code including reason for visit, type of activity, type of location, alcohol involvement and code for external cause of injury (E-code). Drinking was found to be a contributory cause of injury in 10.4% of the emergency care visits (Romelsjö et al., 1993). No intervention was offered in this project. Another study also screened patients at two emergency departments in Stockholm. In this study a 30 minutes brief intervention was compared to extended counselling. No significant differences were found between the groups in any consumption measure at 12 months follow-up. However both groups reduced drinking significantly at both 6 and 12 months follow-up. (Forsberg, 2003). In a project in the emergency department in Linköping patients were screened by computer and received simple written advice adjusted to the screening results generated by the computer (Karlsson and Bendtsen, 2005).

**Why brief interventions work**

The key to why brief interventions work seems to be that they motivate and catalyse the individuals’ use of their own resources to bring about self-change (Sobell et al., 2002; Miller and Rollnick, 1991). Thus, self-efficacy; the individual’s belief in the possibility to carry out a task, is essential for motivation to change (Bandura, 1977). Self-efficacy can vary with situations. In situations when drinking is not common, the self-efficacy not to drink may be high, while it may be low in contexts where drinking is central. Environment thus play an important role (Nutbeam and Harris, 1999). It is a fact that most people who change behaviour, for instance stop smoking or reduce drinking, do so without assistance from a therapist (Miller and Rollnick, 1991).

The stages of change described in figure 2, derived from the transtheoretical model of (Prochaska and DiClemente, 1983), give more suggestions as to why simple advice works for health behaviour changes.
According to this model, the individual might not be aware of the need for a change at the time of intervention (pre contemplation). If a person is reluctant to change, information is needed but suggestions on changing behaviour will not have any effect. At the next stage of the process (contemplation), the person is uncertain about how to act. When she/he has moved on to be prepared, there is a possibility of influencing them to change behaviour. The new behaviour then has to be maintained. Relapse is common and the circle may have to be followed several times before the behaviour is changed. These stages are the same whether an individual changes by themselves or in therapy.

**Difficulties with implementation into routine care**

As described above, attempts to prevent problems from drinking are carried out at many levels in society and at various levels of drinking. Health care is a natural arena to reach those persons who are unhealthy because of high alcohol consumption. Especially among injury patients, a great share of the visitors are risky drinkers, which makes emergency departments a proper place for secondary prevention of drinking problems (Raffle, 1989; Barnett et al., 1998; Cherpitel, 1996; Gentilello et al., 1999; Hungerford et al., 2003; Waller et al., 1998).
Even though brief interventions can be simple to accomplish, work well in special projects and have proved to be effective to reduce risky drinking, it has been difficult to implement brief interventions into routine care in Sweden and in other countries (Charalambous, 2002; Hungerford and Pollock, 2003; Hungerford et al., 2003; Peters et al., 1998).

Problems that have been identified in implementation studies are lack of time, staff perception of insufficient competence, brevity of the contact with patients in emergency care settings and hesitation about whether health promotion activities are legitimate clinical duties (Adams et al., 1997; Charalambous, 2002; Danielsson et al., 1999; Graham et al., 2000).

The theory of Diffusion of Innovations helps to explain the difficulties. In the theory, four main elements are identified as follows: an innovation is communicated through certain channels over time among members of a social system. Explained more in detail, an innovation can be an idea, practice or object that is perceived as new (even if it really is not), and the innovation-decision process is an information-seeking activity to reduce uncertainty about advantages and disadvantages of the innovation. An innovation that is perceived to be relatively advantageous, compatible with the norms and values of the social system, not too complex, but trial able and observable concerning its results is more likely to be accepted or will be adapted faster. The communication takes place between an individual (or other unit) for example a mass media channel who possesses new knowledge and another individual (or unit) without the knowledge. Scientific study results seem to be less relevant for an individual than information from other individuals, who are similar in, for example, beliefs, education and socio-economic status. A problem with initiating an innovation is that the presenter and the clients are often different. An ideal situation would be if they were alike in all aspects but knowledge of the innovation (Rogers, 2003).

To overcome the obstacles with implementing screening and brief intervention into emergency care, there is a need to find a method that is sufficiently effective in supporting people to reduce their excessive drinking and yet manageable for the staff. As important as a successful implementation, is to maintain an intervention as routine.

Simple administration of screening and simple advice should be a prerequisite for successful introduction of such an intervention and the effect, as argued above, a prerequisite for implementing it into routine care.

In the business and engineering world Wexelblatt have suggested an algorithm that illustrates the difficulties with accomplishing something cheap,
fast and at the same time good. Only two of those three qualities can occur at the same time, as illustrated in figure 3.

Figure 3. Wexelblatt’s Scheduling Algorithm.

![Figure 3](image)

When developing or implementing a program you may pick any two.

This thesis seeks to provide answers whether it is possible to implement a fast and cheap intervention without having to compromise too much about the effect.
AIM

The main aim of this thesis was to explore the effects of a simple alcohol preventive routine in emergency care on staffs’ attitudes towards alcohol prevention and injury patients’ drinking pattern.

Specific aims of the different studies

- Explore physicians’ views on emergency departments as an arena for alcohol prevention measures and identify obstacles for implementation of such measures into routine care (study I)

- Compare triage staffs’ attitudes to alcohol preventive measures at an emergency department before and after an attempt to implement such a routine and examine the feasibility of implementing preventive measures into routine care (study II)

- Evaluate the usefulness of the alcohol screening instrument AUDIT-C, and calculate the alcohol consumption among injury patients seeking care at an emergency department (study III)

- Compare the effects of two interventions concerning risky drinking among injury patients in emergency care: alcohol screening only, and screening plus simple written advice (study IV)

- Explore the association between emergency care injury patients’ usual drinking patterns and different aspects of injury: environment, activity, cause of injury and diagnosis (study V)
MATERIALS AND METHODS

The setting for the five studies in this thesis was the emergency department of Motala County hospital. Motala is a medium-sized town, with 42,000 inhabitants, situated in the south of Sweden. The hospital serves a population of 80,000. All studies are based on a routine pen and paper alcohol screening and simple written advice procedure among injury patients aged between 16 and 70. The study period was from 1 April 2001 to 30 September 2002. After the study period, the screening and simple advice continued as a daily computerised routine. Studies I and II in the thesis deal with staff attitudes to working with the screening and simple advice procedure, as well as more general attitudes towards secondary prevention of alcohol problems. Studies III, IV and V describe the patients’ alcohol consumption, changes in drinking, and association between drinking pattern and injuries. The patient screening described below is the work frame for all the studies.

Patient screening

Training and discussions with triage staff
All nurses and medical secretaries at the emergency department take turns working in the triage room, where the patients go to register and pay for the visit. Before the screening began, two members of the research group introduced all triage staff, in four groups of about ten persons each, to sensible drinking and secondary prevention of alcohol problems. The meetings lasted for 2 hours and considerable time was allocated to discussion of the screening procedure and the questionnaire to the patients.

During the first 6 months of screening, the author made a short visit to the emergency department every week in order to offer support for the new routine. Members of the research group also visited the emergency department every 6 months to deliver written and verbal feedback to the staff.

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1 In the following text, the word patient is used, since the people were visitors at the emergency department when they were included in the study. Drinking and changing drinking habits is of course something that is done outside the patient role, but the incentive was given in health care when the person was a patient and keeping the same term might avoid confusion. Using the word staff is less complicated. The changing process for the staff is accomplished within their professional role.
on the screening results. Figure 4 shows a time schedule of the screening procedure and data collection on the staffs’ attitudes and patients’ drinking.

Figure 4. Time schedule for the screening routine and data collection. Numbers refer to the studies in this thesis for which the data was collected.

<table>
<thead>
<tr>
<th>Year</th>
<th>Month</th>
<th>Staff data</th>
<th>Patient data</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>March</td>
<td>Training and discussion with triage staff</td>
<td><strong>Cohort A</strong> Screening no advice (III, V)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Baseline interviews with physicians and nurses (I, II)</td>
<td>6 months</td>
</tr>
<tr>
<td></td>
<td>April</td>
<td>Baseline questionnaires to triage staff (II)</td>
<td>Cohort B Screening and simple advice (III, V)</td>
</tr>
<tr>
<td>2002</td>
<td>October</td>
<td>Follow-up questionnaires to triage staff (II)</td>
<td>Cohort A Follow-up interview (IV)</td>
</tr>
<tr>
<td></td>
<td>March</td>
<td>Follow-up interviews with triage staff (II)</td>
<td><strong>Cohort B</strong> Screening (V)</td>
</tr>
<tr>
<td></td>
<td>April</td>
<td>Continued Screening (V)</td>
<td>Cohort B Follow-up interview (IV)</td>
</tr>
<tr>
<td></td>
<td>September</td>
<td>Study period finished but a computerised screening with individual written advice continues as a routine</td>
<td></td>
</tr>
</tbody>
</table>
Screening procedure

Since the 1980s (Lindqvist, 1989), pen and paper injury registration has been ongoing among all injury patients at the emergency department. The triage staff hand out an injury registration form when the patient is registered at the triage desk, or some times later, if the patient arrives in an ambulance. If a patient is too injured, or for another reason is not able to fill out the form, a medical secretary does it later with information from the patients’ journal. The validity of the distributed questionnaires is high, with regard to injury data, but there is no continuous registration of how many who declines to participate or how many of the seriously injured do not get a registration formula (Borgstedt-Risberg and Noorlind Brage, 2003). In 2001, when the screening commenced, 5107 injuries were registered; 6014 injury cases were registered in 2002. (Borgstedt-Risberg and Noorlind Brage, 2003; Borgstedt-Risberg and Noorlind Brage, 2004). From 1 April 2001 to 31 March 2002 there were 3069 persons registered in the age group of this study, 16–70 years. The number includes those injuries registered by staff after the ‘patients visit. Those persons were never reached by the alcohol screening.

The alcohol screening utilised the injury registration procedure and therefore the triage staff handed out the alcohol screening questionnaire at the same time as the injury registration, to all injury patients aged between 16 and 70, except for those who the staff judged to be too seriously injured. After verbal informed consent, patients completed both the questionnaires, normally in the waiting room and returned them to the staff. Concerning the alcohol questionnaire, the procedure took a couple of minutes of the staffs’ time and 1–2 minutes for the patient. No one-to-one feedback on the screening result was offered during the study period. (In the present computerised screening, introduced after the study period, written personal advice generated by the computer is provided to the patients from a printer). After a screening period of 6 months, the staff started to hand out a brochure with simple written advice about sensitive drinking, in addition to the screening questionnaires. The screening instrument and the brochure are described later.
Materials and Methods

Studies I and II: staffs’ attitudes, perceived skills and practice

Before the alcohol screening commenced, in April 2001, the staffs’ attitudes to and perceived skills in secondary prevention of alcohol problems at the emergency department was documented. Study I measures physicians’ views before screening by interview, and study II measures triage staffs’ views by both interview and questionnaire, before and after a period of screening. These are qualitative studies, with a quantitative element in study II. The studies were designed with a phenomenological perspective (Olin Lauritzen and Svenaeus, 2004) in the sense that the goal was to investigate and describe the interviewees’ experiences, as free as possible from preconceived ideas and background theories about causalities (Karlsson, 1993; Spiegelberg, 1975).

Study populations

Study I: Physicians’ baseline perspective

Physicians were not to be directly involved in the screening but the research group considered their attitudes important for the general attitudes in the department. Therefore, from the 30 physicians who were regularly on-call at the emergency department, we asked their department manager to select six interviewees. The selection strategy was to include persons with different amounts of work experience, different specialities as well as both women and men. All physicians approached agreed to participate in the study. Two women and four men, including orthopaedists and surgeons, were interviewed.

Study II: Triage staffs’ baseline perspectives and changes

From 38 triage staff members, the department manager selected two representatives from the different categories of staff (assistant nurses, trained nurses and medical secretaries). Those selected were not known to be especially positive or negative towards alcohol interventions and were not recently employed. One person declined to participate and was replaced with
another with the same occupation. All six interviewees were women because of the sex distribution among staff.

After 12 months of routine alcohol screening, all but two of the same participants were followed-up in a second interview. One person from the first interview set did not want to participate and one no longer worked at the department. They were replaced with two other staff members with the same occupation, similar work experience and experience of the screening and simple advice procedure. The follow-up interviews were conducted in the same way as the baseline interview, except for an additional question about experiences from the screening procedure.

Besides the interviews, the staff attitudes at baseline were measured by a questionnaire, distributed to all the 38 triage staff members.

After 6 months of routine screening, those 29 remaining in the department from the original 38 people answered an identical questionnaire once more, in order to explore changes in attitudes towards working with secondary prevention of alcohol problems.

Data collection by interviews

I conducted all interviews, having previous experience in interviewing, but none working in health care. The interviews took place in an undisturbed room at the interviewees` work place. Before the interview started, the interviewee was asked to consider patients who are risky drinkers but not addicted to alcohol. Risky drinkers, that is, those who drink above recommended levels, with or without alcohol-related symptoms, are the target group for secondary prevention of alcohol problems and thus of interest in this thesis. In the introductory sessions with triage staff, we had introduced the limits for risky drinking in accordance with the brochure that staff was to hand out to the patients during the screening. After verbal informed consent, the interviews were conducted. In study I, they lasted approximately 30 minutes each and in study II, 25 minutes. The interviews were tape-recorded.

In addition to the interview guide described below, the interviewees were free to pose new relevant queries during the interviews. Follow-up questions and questions generated from previous interviews were added when appropriate (Rothe, 2000).
Materials and Methods

Interview guide
A phenomenological approach does not exclude an interview guide. The same guide was used for the baseline interview in both studies I and II. It included open-ended questions about what responsibility the interviewees thought the emergency department has and should have in informing patients about sensible drinking, perceptions about risky drinking, how they felt about asking patients about drinking, whether it was possible within the present organisation to ask such questions and if they believed that patients with risky drinking are able to change their drinking pattern (Appendix A).

Data collection by staff questionnaire
The staff questionnaire was confidential, and contained 11 questions and 14 attitude statements. After three background questions, there were eight questions about previous experience and practice working with alcohol advice. There were questions about perception of emergency care patients’ need for alcohol advice, experience and perceived skills in alcohol prevention work, present practice and whether the emergency department has a responsibility to try to influence patients with risky drinking. Five or six response options were available for each question. The 14 statements explored attitude to working with alcohol information, the perceived importance of such work, and expected reactions on questions about drinking and whether all patients should be asked about drinking. Five response options ranging from “do not agree at all” to “completely agree” were available (Table 3 page 51 in Results) The questionnaire was slightly changed from a questionnaire originally used in primary care (Johansson, 2005). (Appendix B)

Analysis
In descriptions of how to accomplish a phenomenological analysis there are certain steps to follow, although the various descriptions are not identical. The following list is a synthesis of descriptions for analyzing text (Birgerstam, 1999; Colaizzi, 1978; Karlsson, 1993).
- Getting a good grasp of the material
- Extract significant meaning units
- Spell out the meaning of the meaning units including finding implicit horizons
- Organizing the meaning units into clusters of themes
- Writing an exhaustive description including the relationship between the meaning units

The three interview sets, baseline with triage staff, baseline with physicians and follow-up with triage staff, were analysed separately but in the same way. From the steps above, I extracted the following method of analysing the data in studies I and II.

First I listened to the tapes, compared them with the verbatim transcriptions, made changes if there were mistakes in the transcription and read the text several times to become familiar with it.

As suggested by Becker, I then started to write (Becker, 1972). Every data of interest for the study in the first interview became a story. Then data for the story from the second interview was added in the same way, and so on with the other interviews. Each comment kept its interview number to maintain the possibility of checking whether all interviewees had commented on the matter and to see the original context. The story writing worked as a categorisation. In the physicians’ interviews, 16 categories were found and in the triage staff interviews 14; 11 of these categories were used in both studies. During continuous discussions in the research group, we reached an agreement that can be named ‘negotiated consensus’ (Göransson et al., 1998). Study II is a comparison of the results from the baseline and follow-up interviews. The analysis is presented as a surface description (Rothe, 2000), where we used the categories that corresponded to the aim of the study; that is, those that described opinions of, and thoughts about, alcohol prevention, striving to find thoughts and ideas that were mutual among the interviewees.

All answers to the 29 follow-up questionnaires in study II were summarised by SPSS version 11.5 statistical software. We analysed the eight practice and skills questions as frequencies and divided the attitude statements into positive and negative statements by combining answering options. Significant changes before and after 6 months of screening were tested by Wilcoxon’s signed ranks test.

Studies III, IV and V: Patients’ drinking pattern and injuries

Studies III, IV and V are based on quantitative patient and register data.
Study populations

The study population in studies III, IV and V were the screened injury patients. The triage staff commenced baseline screening on 1 April 2001. After 6 months of screening, I commenced telephone follow-up interviews, and continued until October 2002, when all patients from the first 12 months of screening that were possible to follow-up were reached.

In the follow-up interviews, the triage staff reported handing out screening questionnaires to nearly all patients in the target group (injury patients aged 16–70) and according to the official patient register they seemed to reach most of those who were registered as injury during their visit and possible to include in the alcohol screening.

During the first year, the staff handed out 1895 alcohol questionnaires to the injury patients. One hundred and sixty-three patients did not consent to participate, 43 were judged by staff to be unable to fill out the questionnaire, and 168 did not fill out the questionnaire satisfactorily.

After excluding these 374 drop outs, and 191 abstainers, 1330 patients remained and were included in the analysis for study III; 498 were women and 832 were men. During the follow-up interviews four more patients were identified by age and gender and included in study IV.

For study V we used the screening results from an additional 6 months, after the first 12 months; 2782 patients were registered during the 18 months study period. In study V the patient age group was altered to 18–70 years, an adaptation to the population in a study of drinking in the normal population, used as comparison. Of the registered patients, 215 did not consent to participate, 71 were judged by staff to be too ill to fill out the questionnaire, and 345 did not fill out the questionnaire satisfactorily. Thus, 2151 patients were included in study V, 1944 drinkers and 207 abstainers.

Data collection by patients’ screening instrument

A 10-item pen and paper questionnaire beginning with the AUDIT-C (Bush et al., 1998; Gordon et al., 2001; Rumpf et al., 2002), which measures the frequency and quantity of consumption and frequency of heavy episodic drinking, was used as the patient alcohol screening instrument. To facilitate for the patient in filling out the questionnaire, pictures of “standard glasses” were shown in the questionnaire. Each such standard glass contains 12 grams of pure alcohol. Normally AUDIT-C scores are used to evaluate risky
drinking; the five response alternatives are scored 0–4 and the scores for the three questions are added to a total score. After the AUDIT-C, there were an additional seven questions with five answering alternatives that explored satisfaction with drinking habits (from “totally satisfied” to “not satisfied at all”), readiness to change drinking habits (from “never considering” to “daily considering”), actual change during the last year (from “stopped” to “increased considerably”), if the patient thought that the injury was alcohol-related (from “had not been drinking” to “yes, absolutely”), attitude to being asked about drinking (from “very negative” to “very positive”), where the injury took place (town) and last whether the patient agreed to the follow-up telephone interview 6 months later (yes or no). Appendix C shows the questionnaire in Swedish.

In the follow-up almost the same questionnaire was used. The changes were concerning “considering to change” and “actual change”, which was revised from “during the last year” to “during the last 6 months”. A question about whether the patients had read the brochure was also added.

Simple written advice to patients

During the later part of the screening, the staff handed out simple self-help material, a brochure, to the patients along with the screening questionnaire. The brochure was designed to be easy to read, the text was equivalent to one A4 page, and it was folded in three to be easy to put into a bag or pocket. It contained recommended limits for sensible drinking: drink not more than 7 standard glasses (84 gram) of alcohol per week for women and 10 (120 gram) for men; spread the consumption over the week; and have at least 2 days without drinking. Increased risky drinking limits were set at 8–13 glasses per week for women and 11–18 glasses for men; consuming more was described as harmful drinking.

There was space in the brochure where the patient could calculate her or his own alcohol consumption and compare it with the recommendations in the brochure. Also simple advice concerning the benefits of reducing alcohol consumption and how to cut down was provided. The patients were advised to contact their normal primary health care centre if they failed to cut down their drinking despite a desire to do so.
Analysis in studies III, IV and V

There are spans in the response options of the three AUDIT-C questions. Thus, when multiplying question one (“How often do you drink?”) with question two (“How much do you drink on a typical day?”), in order to calculate the weekly volume consumption, the estimations of consumption are rather vague. Thus, a person could drink 2-3 times a week (response option 4 in the first question) and drink 3-4 standard glasses each time (response option 2 in the second question) which results in a consumption between 6 and 12 standard glasses a week.

In order to avoid the ranges we used the precise value in each answering range suggested by Seppä et al. (1995) in the studies III, IV and V (Seppä et al., 1995). For the first question, the response alternatives and stipulated values representing drinking occasions per week, were: never = 0; monthly or less often = 0.25; two to four times a month = 1; two to three times a week = 3; four times or more a week = 5. The response options for the second question, number of drinks, were converted to grams of alcohol, as follows: 1 or 2 drinks = 20 g of pure alcohol; 3 or 4 drinks = 40 g; 5 or 6 drinks = 70 g; 7 to 9 drinks = 100 g; 10 or more drinks = 120 g.

The patients in papers III, IV and V were classified as risky or non-risky drinkers defined as weekly volume consumption above the recommended limit and/or heavy episodic drinking. The cut-off for weekly volume consumption was set to ≥80 gram of pure alcohol for women and ≥110 gram for men and, concerning drinking pattern, heavy episodic drinking was defined as drinking ≥six standard glasses at one occasion at least once a month, valid both for women and men. The limits for risky drinking have been used before in Sweden (Bergman and Källmén, 2002; Hermansson et al., 2002; Rydberg et al., 1993).

The possible variations of weekly alcohol consumption for different AUDIT-C scores are shown in Table 2. The table shows variations in weekly consumption that are realistic at a certain score, considering the score from the third question. For example, to get a score of 4, a person can normally drink one glass a week but every month drink heavy episodic (six glasses at one time). She can also drink four glasses three times a week, never drink heavy episodic, and still get a score of 4.
Table 2. Possible variations in alcohol consumption according to the AUDIT-C at different scores, considering all realistic combinations of responses to questions 1, 2 and 3

<table>
<thead>
<tr>
<th>AUDIT-C score</th>
<th>Corresponding intake of alcohol (standard glasses)</th>
<th>grams/week</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>0.25-0.5</td>
<td>3-6</td>
</tr>
<tr>
<td>2</td>
<td>0.25-2</td>
<td>3-24</td>
</tr>
<tr>
<td>3</td>
<td>0.25-6</td>
<td>3-72</td>
</tr>
<tr>
<td>4</td>
<td>0.5-12</td>
<td>6-144</td>
</tr>
<tr>
<td>5</td>
<td>1.25-18</td>
<td>15-216</td>
</tr>
<tr>
<td>6</td>
<td>1.75-24</td>
<td>21-288</td>
</tr>
<tr>
<td>7</td>
<td>10-24</td>
<td>120-288</td>
</tr>
<tr>
<td>8</td>
<td>5-27</td>
<td>60-324</td>
</tr>
<tr>
<td>9</td>
<td>5-27</td>
<td>60-324</td>
</tr>
<tr>
<td>10</td>
<td>0-36</td>
<td>240-432</td>
</tr>
<tr>
<td>11</td>
<td>0-40</td>
<td>240-480</td>
</tr>
<tr>
<td>12</td>
<td>40</td>
<td>480</td>
</tr>
</tbody>
</table>

Study III: Drinking at baseline and evaluation of AUDIT-C

We calculated the alcohol consumption among the 1330 injury patents screened during the first year using different AUDIT-C cut-offs by SPSS version 11.5.

Study IV: Changes in drinking after intervention

The same study population as in study III was divided into two cohorts. Cohort A comprised those screened during the first six months, when screening was performed without written advice, 771 patients, 491 men (59%) and 280 women. Cohort B comprised the 563 patients, 343 men (61%) and 220 women screened during the following six months, when the brochure with simple written advice was added to the screening.

The study explored the changes in drinking pattern six months after screening at the emergency department by comparing the baseline drinking pattern with the findings in the follow-up interviews in the two cohorts respectively. Also the question about “readiness to change drinking” was analysed. We evaluated four measures of alcohol consumption: frequency of drinking; number of drinks on a typical day; mean weekly alcohol consumption; and frequency of heavy episodic drinking.
A number of 347 persons in cohort A and 251 in cohort B marked “do not agree to follow-up” after completing the screening questionnaire. Lost to follow-up were 65 (15%) of the patients who agreed to follow-up at baseline in cohort A and 52 (17%) in cohort B. Of the persons reached by telephone only two denied interview. The follow-up interview took about 5 minutes to complete. In cohort A, 81 risky drinkers (44%) of the risky drinkers in the cohort at baseline and 278 non-risky drinkers (47%) of the non-risky drinkers at baseline were followed up. Corresponding numbers in cohort B was 40 risky drinkers (32%) and 220 non-risky drinkers (50%) (Figure 5).
Figure 5. Flow diagram of patient screening, and follow-up at six months.

Cohort A

Patients approached
(n=1895)

1079
201
107

Patients screened (baseline)
(n=1334)

771

182 risky drinkers

589 non-risky drinkers

125 risky drinkers

438 non-risky drinkers

89 Did not agree to follow-up*

93 Lost to follow-up

12

81 (44%)**

258

331

65 Did not agree to follow-up*

60

20

186

252

169

84

816

563

278 (47%***)

40 (32%**)

220 (50%)**

* after completing the screening questionnaire
** of risky drinkers at baseline
*** of non-risky drinkers at baseline

SPSS version 11.5 was used to compare data at screening and at 6 months follow-up. Initially, Wilcoxon’s signed rank test and the Mann–Whitney test were used to evaluate if the changes in alcohol consumption were significant. For group comparisons, the chi-squared test or the unpaired t-test was used. Also Paired Samples T-test was used to evaluate if mean volume weekly consumption changed, and confidence intervals were used for changes in heavy episodic drinking.
Study V: Drinking pattern and non-fatal injury

In study V we categorised patients from one and a half year of screening into drinking categories; risky and non-risky drinkers according to the same criteria as in the other studies but we also included abstainers as a third category. By linking and matching the computer files from the alcohol screening and injury registration we compared the drinking categories with injury data.

The injury registration form contained questions about four injury variables; environment, cause of injury, activity and diagnosis. The patients answered questions on the environment and activity when the injury occurred. Staff coded the external cause of injury and diagnosis, according to the International Statistical Classification of Diseases, Injuries and Causes of Death (ICD-10) (Socialstyrelsen, 1997). We also compared the study population with the general population in Motala catchment area. (Borgstedt-Risberg et al., 2004) The question about whether the patient thought that the injury was alcohol-related was also analyzed in this study.

To estimate the relationship between drinking patterns and the injury variables we calculated odds ratios by logistic regression. The answers to the injury variables constituted 28 sub variables. A separate model with one sub variable as the response variable (coded as 1) versus all other sub variables in the category (coded as 0) with drinking pattern as the independent variable was constructed. We compared the risky and non-risky drinkers to abstainers which were used as the reference group. In order to study how age and sex influence the association between drinking patterns and injury variables, multiple logistic regression was used, comprising drinking patterns, age, sex and the previously used response variables. A p-value of <0.05 was considered statistically significant.

Since we found that persons younger than 30 had higher alcohol consumption than persons over 30, two age categories were defined: “younger” was 18–29 years of age and “older” 30 years or more. For comparing proportions from independent samples (study population versus general population, women versus men and younger versus older), we used 95% confidence intervals for the difference between the two proportions. SPSS version 11.5 was used for the statistical calculations.
RESULTS

Study I and II

Attitudes, skills and practice according to interviews in Studies I and II
Study I performed among physicians and study II among triage staff revealed fairly similar results before the screening started. Thus, all categories of staff agreed that alcohol prevention is an important issue and that alcohol is a contributing factor to many injuries. Different institutions or actors in society at large have, according to the interviews, a shared responsibility for alcohol prevention measures, such as the National Board of Health and Welfare, primary health care and schools. Several interviewees even talked about an ethical duty for every individual to inform risky drinkers about possible consequences. Despite this, the emergency department was not perceived by the majority of interviewees to be the right place for secondary prevention of alcohol problems. However, if alcohol preventive measures were to take place at the emergency department anyway, most interviewees suggested another category of staff than their own to perform such work. The resistance towards brief alcohol prevention at the emergency department was contradicted by three doctors who thought this should be done but only in certain situations, not as a routine to everybody.

The nurses and medical secretaries reported at baseline, as well as in the follow-up interviews, that they normally did not ask patients about drinking, not even when they suspected risky consumption. This was despite the presence of factors that should promote discussions about drinking, namely the staff believed that risky drinkers can change their drinking with support from their surroundings and the staff stated that they sometimes would have time for such support. However, it seems that the physicians, more frequently than other staff, ask about drinking habits, even though it was only about once a week. An exception for all categories of staff is when a young person seeks help and risky drinking is suspected, then most staff asks about alcohol consumption.

A clear paradox emerged in the results; staff realise that many injuries are alcohol-related, they work in health care, they believe that everybody in society has a responsibility for alcohol information and yet they think that somebody else should fulfil the task of secondary prevention of alcohol
results

problems. Often mentioned as an explanation among triage staff was fear of possible negative reactions from the patients. Here comes another paradox, the staff feared negative reactions despite the fact that nobody reported any experiences of negative reactions after questions about drinking during their whole tenure. In the physicians’ answers there is another explanation for not asking about drinking in the emergency department: they are trained to cure, not to prevent, and because of lack of time they should concentrate on what they do best.

A reason for the perception among staff that patients could be offended by questions about drinking habits is to be found in the physicians’ interviews. The doctors expected patients to underestimate their drinking levels and even try to hide it. A reason for this belief could be that the physicians think that the patients are ashamed of their high consumption. This would in turn explain the expressed unwillingness among all categories of staff to ask about drinking habits, since it was perceived to intrude into patients’ privacy. A difference was that the triage staff talked about the risk of patients being upset and angry by questions about drinking habits, while the physicians talked about the risk of the patients feeling guilty for causing their own trauma.

Other obstacles perceived for performing secondary prevention were lack of training in preventive work, lack of knowledge on how to define risky drinking, lack of time and perceived low possibility of influencing patients drinking pattern at the short emergency care visit.

The triage staff interviewed (study II) did not reveal any major changes in attitudes or practice at the 12 month follow-up interviews. According to the 6 month questionnaire, several changes were reported however, as seen below.

Attitudes according to the questionnaire in study II
According to the 6 month follow-up questionnaire in study II, embracing nurses and medical secretaries, there were significant changes in five attitude statements and in three of the further questions. These changes are positive in the sense that they could facilitate implementation of alcohol prevention measures into an emergency department. After 6 months of screening, the staff had more confidence in the possibility of influencing patients’ drinking habits, less expectations of negative reactions from patients on questions about drinking, thought to a lesser extent that alcohol is a private matter, that other patients suffer because treatment of alcohol problems take a lot of time and energy and lower demands on signs of high consumption before asking about drinking (Table 3).
Table 3. Number of emergency care staff responses to statements about working with alcohol prevention (percent of staff answers to the specific questions within parentheses).

<table>
<thead>
<tr>
<th>Attitude statements</th>
<th>Number of respondents (%)</th>
<th>( p^b )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before start of routine screening</td>
<td>After 6 months of routine screening</td>
</tr>
<tr>
<td></td>
<td>Agree(^a)</td>
<td>Disagree(^a)</td>
</tr>
<tr>
<td>1. The possibility of influencing the patients’ alcohol habits is small (n=28)</td>
<td>19 (67.8)</td>
<td>1 (3.6)</td>
</tr>
<tr>
<td>2. Most patients react negatively to questions about alcohol habits (n=28)</td>
<td>18 (62.1)</td>
<td>2 (6.8)</td>
</tr>
<tr>
<td>3. Patient’s alcohol consumption is a private matter (n=29)</td>
<td>11 (37.7)</td>
<td>11 (37.9)</td>
</tr>
<tr>
<td>4. Other patients suffer as alcohol problems take a lot of time and energy (n=27)</td>
<td>22 (81.5)</td>
<td>2 (7.4)</td>
</tr>
<tr>
<td>5. Before you ask about the patient’s alcohol habits, there should be signs of high consumption (n=28)</td>
<td>12 (42.8)</td>
<td>6 (21.5)</td>
</tr>
<tr>
<td>6. Trying to influence patients’ alcohol habits is worth the cost and effort that it takes (n=26)</td>
<td>16 (61.5)</td>
<td>3 (11.5)</td>
</tr>
<tr>
<td>7. You should discuss alcohol habits with all patients (n=29)</td>
<td>5 (17.2)</td>
<td>14 (48.3)</td>
</tr>
<tr>
<td>8. The main reason why it is difficult to reach persons with high consumption at an early stage is that they do not want any help (n=28)</td>
<td>16 (57.1)</td>
<td>7 (25.0)</td>
</tr>
<tr>
<td>9. It is rewarding to work with persons with high alcohol consumption (n=28)</td>
<td>0 (0.0)</td>
<td>21 (75.0)</td>
</tr>
<tr>
<td>10. The time and resources in health care are insufficient to care for patients with high alcohol consumption (n=28)</td>
<td>22 (78.5)</td>
<td>3 (10.7)</td>
</tr>
<tr>
<td>11. Anyone can develop alcohol problems (n=27)</td>
<td>22 (81.5)</td>
<td>2 (7.4)</td>
</tr>
<tr>
<td>12. Health care staff are competent enough to detect and to refer patients with serious alcohol problems to adequate care (n=28)</td>
<td>8 (28.6)</td>
<td>11 (39.3)</td>
</tr>
<tr>
<td>13. It is important for health care to reach patients at an early stage (n=29)</td>
<td>29 (100)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>14. My work place has a responsibility to influence patients with high alcohol consumption (n=27)</td>
<td>14 (48.2)</td>
<td>7 (24.1)</td>
</tr>
</tbody>
</table>

\(^a\) “Agree” and “disagree” contains two positive and negative answers, respectively, from which the \( p \) value is calculated. “Uncertain” is not shown.

\(^b\) \( p \) value refers to Wilcoxon’s signed rank test and shows the differences between baseline and follow-up.
According to the items in the questionnaire about experience and practice with alcohol advice, asking about drinking was considered easier, and the perceived ability to explore and influence patients’ drinking habits had improved after 6 months of screening. Yet there was hardly any reported change in practice and the staff still did not think that the emergency department is the right place for alcohol preventive measures.

Study III

As a first step we calculated the proportion of risky drinkers among the patients studied according to AUDIT-C scores. A cut-off score of 3 for women and 4 for men identified 54% and 62%, respectively, as risky drinkers. Raising the cut-off to 4 for women and 5 for men decreased the proportions to 28% and 40%, respectively.

Second, we calculated the precise values of the answers on question one and two stipulated by Seppä et al. (1995) for total weekly alcohol consumption. Only 3% of the women and 7% of the men in the whole study group were then classified as risky drinkers with regard to drinking above the recommended level.

Third, we analysed the third question in the AUDIT-C; 7% of the women and 30% of the men in the whole study group were then classified as risky drinkers with regard to heavy episodic drinking at least once a month.

When the two criteria for risky drinking were summarised, 9% of the women and 31% of the men where categorised as risky drinkers, the majority according to the criteria for heavy episodic drinking. Only 19 persons (2% of the women and 1% of the men) were categorised as risky drinkers solely according to the criteria for risky weekly consumption (Table 4). Thus, only 74% of the men and 32% of the women identified as risky drinkers by the AUDIT-C score system using a cut-off at ≥4 for women and ≥5 for men did actually have risky alcohol consumption.

The study shows that there are considerable problems with false positives, especially among women, when the AUDIT-C score cut-offs are used to identify risky drinkers.

Another important result is that the third question in the AUDIT-C concerning heavy episodic drinking can be used as a single screening question for identifying risky drinkers.
Results

Table 4. Distribution of emergency department trauma patients in four risk groups with regard to weekly alcohol consumption and heavy episodic drinking. Data represent 1330 patients, 498 women and 832 men. Percentages are calculated for women and men separately.

<table>
<thead>
<tr>
<th>Heavy episodic drinking at least once a month</th>
<th>Weekly alcohol consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Non risky level</td>
</tr>
<tr>
<td></td>
<td>Men</td>
</tr>
<tr>
<td>NO</td>
<td>572 (69%)</td>
</tr>
<tr>
<td>YES</td>
<td>198 (24%)</td>
</tr>
</tbody>
</table>

Study IV

At baseline, 182 (24%) of patients in cohort A, who were only screened, and did not get any simple written advice, were classified as risky drinkers, mostly due to heavy episodic drinking. Accordingly, a total of 8% of the men and 2% of the women drank more than the recommended weekly volume limit and 30% of the men and 8% of the women were engaged in heavy episodic drinking at least once a month. Readiness to change drinking habits was stated by 8% of men and 2% of women. In cohort B, who received simple written advice in addition to the screening, 125 (22%) were classified as risky drinkers. A total of 6% of the men and 5% of the women drank more than the recommended weekly volume limit. Heavy episodic drinking was seen in 30% of the men and 6% of the women. Readiness to change drinking habits was stated by 7% of the men and 3% of the women.

In the follow-up analyses men and women were not separated due to the relatively small number of risky drinkers among women.

There were no significant differences within cohorts A or B in any drinking variables or readiness to change at baseline between risky drinkers followed-up and those who declined to participate in the follow-up or were lost to follow-up. Nor among the non-risky drinkers were there any differences within the cohorts.

Comparisons between the cohorts revealed that readiness to change at baseline was higher among risky drinkers reached at follow-up in cohort A, 19% compared to 8% among risky drinkers reached at follow-up in cohort B (non-significant). The mean weekly alcohol consumption at baseline among risky drinkers reached at follow-up in cohort A was 92 grams compared to 106 grams in cohort B (non-significant). All other drinking variables; mean age and
Results

sex distributions were similar at baseline among risky drinkers reached at follow-up when comparing the two cohorts.

Changes in drinking pattern among risky drinkers
As seen in table 5 drinking pattern had changed among the risky drinkers in both cohorts after 6 months of screening. For instance in cohort A, a higher proportion drank less frequent while the number of drinks on a typical day remained the same. In cohort B a higher proportion of the risky drinkers drank more frequent after 6 months but on the other hand a higher proportion had reduced the number of drinks on a typical day.

There was one significant change in drinking pattern in cohort A; among those who had been risky drinkers at baseline, the proportion of heavy episodic drinkers decreased by 34%. Thus, at baseline 76 (94%) of the patients were classified as heavy episodic drinkers compared to 49 (59%) at follow-up. The proportion of patients with risky weekly volume consumption remained the same, 23 (28%) compared to 21 (26%). Patients’ readiness to change their consumption decreased from 15 (19%) to 11 (14%) out of 81 patients.

In cohort B, there were two significant changes among the risky drinkers. Heavy episodic drinking decreased by 25%, reducing the numbers from 37 (92%) to 27 (68%) of those who were risky drinkers at baseline. Also, the number of patients who at least once a month considered changing their alcohol consumption increased close to significant, from 3 (8%) to 9 (22%) out of 40 patients. The number of patients above the recommended limits for risky weekly volume consumption was about the same, 12 (30%) at baseline and 13 (32%) at follow-up out of 40 patients.

Table 5 shows the proportion of persons who changed or did not change drinking pattern six months after screening regarding cohort A and after screening and simple written advice, regarding cohort B.
Table 5. Changes in drinking pattern among risky drinkers after 6 months.

<table>
<thead>
<tr>
<th></th>
<th>More</th>
<th>Alike</th>
<th>Less</th>
</tr>
</thead>
<tbody>
<tr>
<td>(% of risky drinkers in cohort A and B respectively)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cohort A (n=81)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency of drinking</td>
<td>11</td>
<td>69</td>
<td>20</td>
</tr>
<tr>
<td>Numbers of drinks on a typical day</td>
<td>36</td>
<td>28</td>
<td>36</td>
</tr>
<tr>
<td>Mean weekly alcohol consumption</td>
<td>31</td>
<td>20</td>
<td>49</td>
</tr>
<tr>
<td>Individuals above the level for risky weekly consumption *</td>
<td>14</td>
<td>71</td>
<td>15</td>
</tr>
<tr>
<td>Frequency of heavy episodic drinking **</td>
<td>12</td>
<td>49</td>
<td>38</td>
</tr>
<tr>
<td>Readiness to change</td>
<td>16</td>
<td>65</td>
<td>19</td>
</tr>
<tr>
<td><strong>Cohort B (n=40)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency of drinking</td>
<td>18</td>
<td>80</td>
<td>2</td>
</tr>
<tr>
<td>Numbers of drinks on a typical day</td>
<td>15</td>
<td>45</td>
<td>40</td>
</tr>
<tr>
<td>Mean weekly alcohol consumption</td>
<td>28</td>
<td>42</td>
<td>30</td>
</tr>
<tr>
<td>Individuals above the level for risky weekly consumption *</td>
<td>15</td>
<td>72</td>
<td>13</td>
</tr>
<tr>
<td>Frequency of heavy episodic drinking **</td>
<td>8</td>
<td>58</td>
<td>35</td>
</tr>
<tr>
<td>Readiness to change</td>
<td>23</td>
<td>59</td>
<td>18</td>
</tr>
</tbody>
</table>

* Females ≥ 80 g/week; men ≥ 110 g/ week
** Drinking ≥ 6 glasses on one occasion at least once a month.

Changes in drinking pattern among non-risky drinkers
Among those who were non-risky drinkers in cohort A at baseline, significant changes were seen after 6 months in all alcohol consumption measures as well as in readiness to change. Thus, 23 persons (8\%) started to engage in heavy episodic drinking at least once a month and 10 persons (4\%) passed the recommended weekly volume limit. However, readiness to change increased from 2 to 7\%.

Just as among non-risky drinkers in cohort A, all alcohol consumption measures as well as readiness to change, were altered significantly in cohort B, 32 persons (15\%) started to engage in heavy episodic drinking and 11 persons (5\%) in high weekly volume consumption. Readiness to change increased from 2 to 7\%.
Study V

In study V, the study population was larger since the screening period was extended by 6 months compared to studies III and IV. The study population of injury patients was compared to the general population in Motala’s hospital catchment area where the alcohol screening took place. The study population proved to be younger than the general population; 33% were under the age of 30 compared to 16% in the general population. In both populations, a higher share of risky drinkers was found among those aged under 30, but the proportion was higher in the study population; 35% in the study population and 25% in the general population. This higher share of risky drinkers among the youngest and the higher share of this age group in the study population could to a certain extent explain the higher proportion of risky drinkers in the study population, 21% compared to 15% drinking above the recommended levels according to weekly consumption and/or heavy episodic drinking.

In both populations there were three times as many risky drinkers among men as among women, 28% men compared to 10% women in the study population and 23% men compared to 7% women in the general population.

The majority of patients in the study population who were drinking above the recommended weekly volume consumption, 3% of the women and 6% of the men, were also drinking heavy episodic at least once a month. In the study population, 9% of the women and 27% of the men were classified as heavy episodic drinkers.

**Association between injury variables and drinking categories**

We compared the patient’s usual drinking pattern in the categories, risky and non-risky drinkers, with the category, abstainers, as a reference group, with different injury variables: environment, external cause of injury, activity when the injury occurred and diagnosis.

In several injury variables both risky and non-risky drinkers showed similar significant differences compared to abstainers. Risky, as well as non-risky drinkers were more likely to be injured at amusement locations, parks, lakes or seas compared to abstainers. They were also more likely to suffer injury by “other external causes” for example hit by falling object. Both risky and non-risky drinkers had an increased likelihood of being injured during play, hobby or other recreational activities but lower likelihood of suffering an injury during rest, meals or hygiene.

Significant differences that were only seen between risky drinkers and abstainers were that risky drinkers were more likely to be injured during
Results

activities at sports centres compared to abstainers but less likely to be injured at home or in the housing area during house or maintenance work. Risky drinkers were less likely than abstainers to suffer an injury by falling. Risky drinkers had no increased likelihood for any specific diagnosis.

Among non-risky drinkers there was one exclusive significant difference compared to abstainers: an increased likelihood of luxation or distortion.

When we took age and sex into account (Table 6) several significant differences between drinking categories disappeared. Instead, in most cases when risky drinkers had seemed to be more likely to be injured, there was a higher probability for younger persons and men to be included. Also when risky drinkers seemed to be at lower risk than abstainers to sustain a particular injury, there was an increased likelihood for older and women to be included. The numbers in bold type in table 6 point out significant differences between the drinking categories, when age and sex was considered. They also show injury variables where females and older people were more likely to be injured compared to the reference groups, men and younger people (Table 6).

The significant differences between drinking categories that remained when age and sex were considered were an increased likelihood for risky drinkers as well as for non-risky drinkers to be injured in amusement locations, parks, lakes or seas. Both categories were also more likely to be injured during play, or other recreational activities. The differences between risky and non-risky drinkers were not significant. Three differences remained among non-risky drinkers: an increased likelihood to be injured at sports centres, and to suffer luxation or distortion, but a lower likelihood to be injured during rest, meals or hygiene (Table 6).

Considering all women, irrespectively of drinking category, the likelihood of suffering an injury at amusement locations, parks, lakes or seas was higher than for men.

While the above analysis deals with usual drinking patterns, interesting results were also found on self-reported causal relationship between the injury and alcohol-in-the-event. A total of 192 people (i.e. 9% of the study population) reported that they believed that their injury was related to intake of alcohol. Half of this group (52%) had a non-risky usual drinking pattern. Since the non-risky drinkers are the great majority, it has to be noted that this represents 7% (n=99) of all non-risky drinkers who answered the question. Among the risky drinkers, 20% (n=93) thought that the injury was related to drinking.
### Results

Table 6. Drinking category and injury when age and sex are considered. Numbers in bold type show significant differences (p=0.05)

<table>
<thead>
<tr>
<th>Environment</th>
<th>Drinking pattern reference group</th>
<th>sex reference group</th>
<th>age reference group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR (95% CI)</td>
<td>OR (95% CI)</td>
<td>OR (95% CI)</td>
</tr>
<tr>
<td><strong>Non-risky</strong></td>
<td>0.8 (0.5-1.1)</td>
<td>0.8 (0.5-1.3)</td>
<td>2.2 (1.7-2.8)</td>
</tr>
<tr>
<td><strong>Risky</strong></td>
<td>1.8 (1.0-3.2)</td>
<td>0.4 (0.3-0.6)</td>
<td>0.4 (0.2-0.5)</td>
</tr>
<tr>
<td><strong>Home/housing area</strong></td>
<td>1.0 (0.5-2.0)</td>
<td>0.2 (0.1-0.4)</td>
<td>1.1 (0.7-1.5)</td>
</tr>
<tr>
<td><strong>School/public premises</strong></td>
<td>0.8 (0.2-2.0)</td>
<td>1.3 (0.7-2.6)</td>
<td>1.1 (0.5-2.3)</td>
</tr>
<tr>
<td><strong>Shop/trade</strong></td>
<td>0.4 (0.1-1.0)</td>
<td>1.5 (0.7-3.4)</td>
<td>1.8 (0.7-4.5)</td>
</tr>
<tr>
<td><strong>Agriculture/market garden</strong></td>
<td>1.6 (0.5-4.6)</td>
<td>0.5 (0.3-1.0)</td>
<td>2.2 (1.1-4.1)</td>
</tr>
<tr>
<td><strong>Institutional housing</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Amusement locations</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>parks/seas/lakes</strong></td>
<td>4.5 (1.4-14.5)</td>
<td>1.5 (1.0-2.2)</td>
<td>0.8 (0.5-1.1)</td>
</tr>
<tr>
<td><strong>Fall</strong></td>
<td>0.8 (0.5-1.1)</td>
<td>1.8 (1.5-2.3)</td>
<td>1.6 (1.2-2.0)</td>
</tr>
<tr>
<td><strong>Transportation</strong></td>
<td>1.1 (0.7-1.6)</td>
<td>1.0 (0.8-1.4)</td>
<td>0.8 (0.5-1.0)</td>
</tr>
<tr>
<td><strong>Intentional self destructive action</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Violent action from somebody else</strong></td>
<td>1.3 (0.9-1.8)</td>
<td>0.5 (0.4-0.7)</td>
<td>0.8 (0.6-1.0)</td>
</tr>
<tr>
<td><strong>Activity when injury occurred</strong></td>
<td>1.4 (0.9-2.2)</td>
<td>0.7 (0.5-1.0)</td>
<td>0.4 (0.3-0.5)</td>
</tr>
<tr>
<td><strong>Gainful employment/travel to or from work</strong></td>
<td>0.8 (0.5-1.3)</td>
<td>0.5 (0.3-0.6)</td>
<td>1.3 (1.0-1.7)</td>
</tr>
<tr>
<td><strong>Play/hobby/other recreational (leisure) activities</strong></td>
<td>2.4 (1.2-4.6)</td>
<td>1.4 (1.0-1.9)</td>
<td>1.2 (0.8-1.7)</td>
</tr>
<tr>
<td><strong>Housework/ maintenance (repair) work at home/garden</strong></td>
<td>0.8 (0.4-1.3)</td>
<td>1.3 (0.9-1.8)</td>
<td>3.4 (2.2-5.2)</td>
</tr>
<tr>
<td><strong>Rest/sleep/meal/ hygiene</strong></td>
<td>0.3 (0.1-0.8)</td>
<td>1.6 (0.8-3.3)</td>
<td>3.9 (1.3-11.3)</td>
</tr>
<tr>
<td><strong>Doing something else</strong></td>
<td>0.8 (0.5-1.2)</td>
<td>1.7 (1.3-2.2)</td>
<td>1.1 (0.8-1.4)</td>
</tr>
<tr>
<td><strong>Diagnosis</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Luxation and distortion</strong></td>
<td>1.6 (1.1-2.5)</td>
<td>1.4 (1.1-1.8)</td>
<td>0.7 (0.5-0.9)</td>
</tr>
<tr>
<td><strong>Contusion/bruise/injury caused by crushing (squeezing)</strong></td>
<td>0.8 (0.5-1.2)</td>
<td>1.1 (0.9-1.5)</td>
<td>0.7 (0.5-0.9)</td>
</tr>
<tr>
<td><strong>Fracture</strong></td>
<td>0.8 (0.5-1.3)</td>
<td>0.5 (0.3-0.7)</td>
<td>1.3 (1.0-1.7)</td>
</tr>
<tr>
<td><strong>Gaping wound</strong></td>
<td>0.9 (0.6-1.4)</td>
<td>0.5 (0.3-0.7)</td>
<td>1.3 (0.9-1.7)</td>
</tr>
<tr>
<td><strong>Concussion of the brain</strong></td>
<td>0.7 (0.2-2.0)</td>
<td>0.8 (0.3-1.6)</td>
<td>0.6 (0.3-1.3)</td>
</tr>
<tr>
<td><strong>Examination and observation after accident</strong></td>
<td>0.7 (0.0-6.1)</td>
<td>1.2 (0.2-5.6)</td>
<td>0.3 (0.1-1.5)</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>2.9 (0.9-9.4)</td>
<td>0.6 (0.3-1.0)</td>
<td>2.5 (1.3-4.4)</td>
</tr>
</tbody>
</table>

1 The patient has specified another environment in the free line.
2 The patient has specified another activity in the free line.
3 The staff has specified another diagnosis in the free line.

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Concerning illicit drugs and tobacco, all use is considered misuse and a health risk. When it comes to alcohol, it is more complicated. In our society, as well as in most other societies, drinking above certain limits is considered to be risky, whereas drinking below the level is considered non-risky and accepted. The exact limits for when alcohol consumption is risky are difficult to determine since the risk varies with individuals, situations, drinking pattern and gender/sex. Another complicating circumstances when formulating drinking advice is the common positive aura around alcohol, both for moderate drinking having positive health effects on cardiovascular problems and because alcohol and festivity are often synonymous and, accordingly, most people have positive experiences associated with drinking.

Although primary prevention to prevent all drinking above risky levels would be most desirable, it seems difficult to attain for all individuals in society. This increases the importance of secondary prevention of alcohol problems, especially since both the total alcohol consumption and the frequency of heavy episodic drinking has increased recently in Sweden (Swedish government, 2000). The total consumption increase was 28% between 1998 and 2004.

Even though alcohol-related mortality has not yet been reported to increase, probably because of the decrease in spirits drinking (Socialstyrelsen, 2005) or the delay in reporting (Räddningsverket, 2004), the earlier trend of a reduction in deaths due to injuries no longer applies (Heldmark, 2005). This might be a natural consequence of the total increase in drinking. For every litre of increased consumption per capita, the injuries among men have been estimated to increase by 8% (Andréasson and Allebeck, 2005).

According to our studies, the majority of emergency care visitors in Motala who were categorised as risky drinkers, 31% of the men and 9% of the women, were defined according to the criterion for heavy episodic drinking. Heavy episodic drinking is the drinking pattern that has the most adverse effects on health in a short term perspective (Rehm et al., 2003c), with increased risk for accidents, violence or social harm, not only for the person drinking but also for others (Heldmark, 2005). So; even if the greatest part of ill health and death because of drinking arises in men, women and children are also affected by men’s drinking.
Discussion

Finding strategies to prevent risky drinking, and in particular heavy episodic drinking, is a very important part of public health work, but what is the best strategy, arena and method for intervention?

Which prevention strategy to choose?

Presently there is a discussion in Sweden about lowering the taxes on alcohol in order to reduce the private importation of alcohol, which has dramatically increased drinking in the south of Sweden (Härstedt et al., 2005). The question is whether private importation would be sufficiently reduced considering that, as earlier research has shown, the price instrument has proved to be one of the most effective alcohol policy strategies in reducing the consumption of alcohol. There is evidence that increased alcohol taxes not only reduce consumption among risky drinkers but also among abusers (Babor et al., 2003). So a primary preventive low risk strategy can benefit alcohol abusers as well (Rose, 1985).

To invest limited resources in a high number of people, who fairly easily could be motivated to change their drinking habits, rather than on a low number with more serious problems, could be called a low risk strategy according to the prevention paradox (Rose, 1985). The rationale for the paradox is that the majority of alcohol-related problems do occur among the non-risky to moderate consumers due to the fact that their number is so high compared to the risky drinkers. The advantages with low risk strategies are that resources are distributed to a great number of people. From this aspect we used a low risk strategy. On the other hand, secondary prevention of alcohol problems directed towards injury patients at an emergency department could also be considered to be a high-risk strategy. The reason is that young persons, and especially young men, are over-represented among the injury patients at the emergency department and they also have a higher probability of being risky drinkers.

A problem with high-risk strategies, as well as with secondary prevention, is that it does not try to change the underlying causes of the problem; it just tries to change the behaviour of individuals at risk. Trying to change behaviour is a delicate task, since the individual has to break not only his own pattern, but in many cases also to make a break from the behaviour of his peers (Rose, 1985). The theory of reasoned action and planned behaviour, developed by Ajzan and Fishbein tries to explain behaviour that is under voluntary control. Behavioural intentions are supposed to be influenced by attitudes and
subjective norms, that is the individuals beliefs about what significant others think he or she should do, and the wish to comply with those norms (Nutbeam and Harris, 1999).

The drinking culture might be an obstacle for an individual’s willingness to change. A Canadian study found that even if research shows that the great majority of people do consider an intoxicated person to be responsible for his/her behaviour, there is still a belief, or expectation, that intoxication is associated with disinhibited behaviour. This implies a cultural acceptance or at least tolerance for this behavior, which might be used as an excuse by the drinking person, since he/she is aware of these attitudes (Paglia and Room, 1998). A lower level of acceptance would probably have a positive influence on drinking. In our culture, there are also often already more negative reactions towards intoxicated women compared to men. This could be a reason for women to behave differently than men during drinking and explain why drinking women do not get into trouble to the same extent as men (Dawson and Room, 2000).

A solution that fits into our findings and others is a prevention strategy towards the majority of the population, but focused on heavy episodic drinking rather than on mean consumption (Gmel et al., 2001), because the number of heavy drinking occasions has been found to be a stronger predictor of drinking problems than level of consumption (Rehm et al., 1996a). Since heavy episodic drinkers are over-represented at emergency departments, such settings have to be considered appropriate for secondary preventive alcohol interventions.

The emergency department as an arena for prevention

Now and then, many people have difficulties finding the level for sensible alcohol consumption. However, for most individuals who experience negative effects of drinking, it is fairly easy to restore the sensible level. For a considerable number of the people who visit health care, a few words from a health care worker about reducing alcohol consumption might be enough to motivate a change in their drinking behaviour. In paper IV 30% of the heavy episodic drinkers reduced drinking to non-risky levels. Too often, however, as seen in our baseline interviews in papers I and II, an emergency department visit is a missed opportunity for detection of risky drinking and offering advice, since routine alcohol screening, advice or referral to other treatment
are rarely performed in emergency departments (Charalambous, 2002; Hungerford et al. 2003).

A reason for using the emergency department as an arena for alcohol prevention measures is the frequently reported higher rate of risky drinkers among emergency care visitors than in the general population (Barnett et al., 1998; Charalambous, 2002; Romelsjö et al., 1995) and especially among injured patients (Barnett et al., 2003; Cherpitel, 1996; Roche et al., 2001). In our paper V the higher proportion of risky drinkers was fairly modest, 21% compared to 15%. The magnitude of alcohol-related visits at emergency department varies considerable between cultures and settings. More than 10% of the visits (D’Onfrio et al., 2001; Romelsjö et al., 1993) or closer to an average of 20%, according to a recent report covering 12 countries including Sweden (WHO, 2005), is associated with alcohol. In paper V 9% of the patients believed that their injury was alcohol-related.

An alcohol-related visit has also been shown to be an important predictor of continued problem drinking, alcohol-impaired driving and possible premature death (Davidson et al., 1997). The effect of alcohol advice at emergency departments would not only be to prevent future injuries but also to prevent other negative health effects from drinking.

During the last five years, several international conferences have emphasised the importance of detection and advising risky drinkers, see for instance www.nhtsa.dot.gov or www.arg.org. In some states in the USA it is now mandatory to screen for risky drinking among injury patients seeking emergency care (Connecticut General Statutes Public act 1998).

**Injury and drinking pattern**

We found few associations between risky drinking pattern and injury in paper V. Most differences in injury occurrence between drinking categories were explained by age and sex. The typical injury visitors are of young age, and predominately males (Borges et al., 2004a; Borgstedt-Risberg and Noorlind Brage, 2003; Cherpitel, 1994; Cherpitel et al., 2004a). This group are also the most likely to sustain an injury, independently of drinking. Previous research has found that even if a young man is an abstainer he is more likely than an older drinking woman to experience an injury (Treno et al., 1997).

The significant associations between drinking pattern and injury that remained in our analysis after controlling for age and sex were that drinkers, independently of whether they were risky drinkers or not, were more likely to
be injured in amusement locations and had a higher likelihood of sustaining an injury during play, hobby or other recreational activities than abstainers.

It might be that the drinkers injured at amusement locations during recreational activities had been drinking-in-the-event, we have not analysed this association, but 20% of the risky drinkers reported that their injury was alcohol-related compared to 7% of the non-risky drinkers. Drinking in-the-event of an injury has been studied extensively but the relationship between normal drinking pattern and the likelihood of an injury is far less studied (Bondy, 1996; Cherpitel et al., 2003). Still, sufficient evidence exists relating the risk of injury to usual drinking pattern to include this as a confounder when analysing drinking-in-the-event and risk of injury (Watt et al., 2004). Some studies that investigate drinking-in-the-event have reported a higher risk of injury for infrequent drinkers compared to more regular drinkers (Borges et al., 2004a; Cherpitel et al., 2004b). In paper V 52% of the patients reporting an association between drinking and the injury were non-risky drinkers. Of the whole study population, 9% reported an association. That number can be compared to an earlier report of an estimation of 10% alcohol-related injuries in another Swedish emergency department (Romelsjö et al., 1993).

We still do not know the exact magnitude of alcohol’s association with the risk of injury. Also, we lack knowledge about the pathways from drinking-in-the-event to an alcohol-related injury and in particular which confounding factors such as usual drinking pattern and general risk-taking behaviours that might influence these pathways (Roche et al., 2001; Watt et al., 2004).

Since alcohol has been found to be associated with repeated injury (Cherpitel et al., 1995), it seems highly adequate to give drinking advice to younger persons and particularly young men. Drinking advice has also been proved to decrease the risk of repeated injury (Gentilello et al., 1999).

**Discussion**

**Intervention by screening and simple advice**

The AUDIT-C seemed to be a useful tool for identification of risky drinkers, since the proportion found, 21% in paper V, is in accordance with earlier research in another Swedish emergency department where 29% of emergency care patients were identified as risky drinkers by interview (Forsberg, 2000). Self-reporting has been found to be a better predictor of an association between drinking and injury compared to blood alcohol concentration. The reasons are that the injury might have happened long before attending the emergency care department or the person might have been drinking after the
injury. In such cases, blood alcohol concentration is less useful (WHO, 2005). In the present work, one aim was to screen for usual drinking patterns, which makes self-reporting a natural screening method. Another aim was to investigate the possibility of implementing alcohol screening and simple written advice as a routine at an emergency department. Since blood tests have been found to be very difficult to implement in routine care due to legal and ethical problems (WHO, 2005) patients’ self-reporting might work better.

The screening instrument
The complete AUDIT questionnaire with ten questions has been evaluated in several studies and the score system seems to work well concerning the sensitivity and specificity (Bergman and Källmén, 2002; Bergman et al., 1998; Duane and Allen, 2002). One reason why we wanted to try the shorter version of the AUDIT, the AUDIT-C with three questions, was a need to identify the risky drinkers in an even faster and simpler way, following the trend of shorter screening instruments, which should also be simpler to implement into routine care, compared to a more extended instrument.

While the AUDIT is a measure of consumption, problem drinking and dependence, the AUDIT-C only measures consumption. Accordingly, when the AUDIT-C has been evaluated it has been found to perform as well as the AUDIT in measuring heavy drinking but worse in measuring alcohol disorders (Bush et al., 1998).

When we explored the different possible ranges of alcohol consumption for different AUDIT-C scores, we found that, for example, a score of 5 can refer to consumption of between 15 and 216 grams of alcohol per week (or between 1.25 and 18 standard glasses) depending on the ranges in answering options and the score derived from the third question about heavy episodic drinking. Thus, the AUDIT-C scores give very uncertain information about the real volume of drinking, and also about drinking pattern since the scores do not show if a person is included because of volume consumption according to the first two questions or heavy episodic drinking according to the third question.

If staff are to accept a screening instrument, it is important that it is reliable. In settings where only risky drinkers are to be informed about drinking, it is essential not only that the instrument has high sensibility but also high specificity, so that the staff do not have to spend time on people who are false positive. Therefore, according to the results in paper III, it is recommended that the scoring system is abandoned when applying the AUDIT-C and instead consumption is calculated by multiplying the first two questions and noting the result from the third, which is a quick procedure.
The AUDIT-C has been found to have lower sensitivity for women than for men (Aertgeerts et al., 2001). This could be due to the fact that the third question, about heavy episodic drinking, was not sex specific. When the third question was used as a single question with a lower limit for women, four glasses instead of six, at one occasion during the last year, in one study, the sensitivity for women was 0.69 compared to 0.45 in the standard version (Bradley et al., 2003). The American National Institute on Alcohol Abuse and Alcoholism recommends a limit of four standard glasses for women and five for men (NIAAA, 2005) which is equivalent with five respective six Swedish standard glasses. Those limits are supported by most recent research (Dawson et al., 2005; Gmel et al., 2001; Vinson, 2005).

Could the screening procedure be even shorter?
Because of the limited time at emergency care settings, screening with one single question seems advantageous. In paper III all risky drinkers but 2% of the women and 1% of the men were identified by the third AUDIT-C question.

Since heavy episodic drinking is considered to be the most aversive kind of risky drinking, and also constituted the great majority of the risky drinkers in our study population, we recommend using the third AUDIT-C question as a single screening question. A similar single question has also been suggested: “When was the last time you had more than X drinks a day (14 grams)?” with X = 4 drinks for women and X = 5 for men; any time during the past three months is considered to be positive (Vinson, 2005). If the answer is above the risky drinking level, a question about readiness to change could be asked. In case the answer is positive an intervention could take place (Reed et al., 2005) If the question about drinking habits is raised by staff, patients have been shown to be willing to discuss their drinking (Skinner et al., 1985).

Simple advice
After screening, or screening and simple written advice, heavy episodic drinking decreased significantly in our study population. Screening and simple written advice, has previously shown positive results in a meta-analysis (Apodaca and Miller, 2003). This method, or other more extensive brief interventions, can only be appropriate for risky drinkers without dependency problems, which is the case for the great majority of risky drinkers.
Discussion

Readiness to change
In paper IV there were no significant differences in drinking between the two cohorts at baseline and risky drinkers had reduced drinking in the two cohorts at the follow-up. Readiness to change was higher at baseline in cohort A, among the risky drinkers followed-up however, and so also was the actual reduction in drinking. In cohort B a significant increase in readiness to change was seen at follow-up. These results are supported by an earlier study: Readiness to change drinking was found to be common among harmful (and dependent) drinkers at emergency departments. Those patients most ready to change at the baseline measure were more likely to have reduced drinking at follow-up (Reed et al., 2005). However, another study found that drinking level, rather than readiness to change at baseline, predicted change at follow-up (Blume et al., 2005).

In behavioural change it is also important to consider that, according to the self-efficacy theory, change occurs if the patient believes that he or she is capable of changing and that change will be rewarding (Dunn et al., 1997).

The readiness to change drinking is strengthened if the patient perceives the injury to be alcohol-related, which is often the case in emergency departments. Such an occurrence can be described as a “teachable moment” or “window of opportunity” in which the patient may be motivated to reduce drinking (Longabaugh et al., 1995; Watson, 1999; Wright et al., 1998). Thus, two aspects that influence readiness to change are how the patient experiences the aversiveness of the injury and to what extent the patient perceives that drinking caused the accident (Dill et al., 2004; Longabaugh et al., 1995). If the patient does not see a connection between the injury and drinking, a brief intervention may not have an impact on the patients’ motivation to reduce drinking even if he or she is categorised as a risky drinker in a screening. It is thus important to try to make the patient see other areas and previous events in life when drinking might have had negative impact (Longabaugh et al., 1995).

Probably it matters for the result if the patient seeks health care for problems that prove to be alcohol-related and thus increases motivation to change (Apodaca and Miller, 2003).

Changes in patients’ drinking

In the studies in this thesis, risky and non-risky drinkers received the same intervention; only screening or screening plus simple advice. A considerable
number of the risky drinkers reduced their main risky drinking behaviour, namely heavy episodic drinking according to paper IV. In cohort A (only screening) 34%, or 27 patients of those 81 who were risky drinkers at baseline and also reached at follow-up, and in cohort B (screening plus simple advice) 25%, or 10 patients, reduced drinking to sensible limits.

A negative finding was that many of those who were non-risky drinkers at baseline increased their drinking to risky levels. Among the patients in cohort A, 8% or 23 out of 278 non-risky drinkers, started to drink heavy episodic during the 6 month follow-up period, and among the non-risky drinkers in cohort B, 15% or 32 out of 220, started to drink heavy episodic.

So, since the non-risky drinkers constitute the great majority of the emergency care population, there was an increase in the number of heavy episodic drinkers for the whole study population by 18 people from the time of baseline to follow-up. The results concerning the risky drinkers can be compared to the 12% reduction in heavy episodic drinking among risky drinkers in both a standard care group and a brief intervention group (Longabaugh et al., 2001). In other comparable studies risky drinkers reduced their frequency of heavy episodic drinking by 71% (Forsberg et al., 2000), without significant differences between intervention methods, and 64% after a brief negotiating interview (Bernstein et al., 1997). These studies did not include non-risky drinkers.

A positive result is that readiness to change increased close to significant, by 14%, in cohort B, so those persons may have started a behaviour change in accordance with the transtheoretical model (Prochaska and DiClemente, 1983).

The rise in consumption among non-risky drinkers could be an effect of the fact that those people were made aware that they were non-risky drinkers and started to use the margin up to risky drinking. It is more probable that their increase is a result of the common increase in heavy episodic drinking in society or a natural fluctuation of drinking among individuals. If so, it also seems to be worth the effort to intervene among non-risky drinkers, otherwise they might increase their consumption even more. A reason for the increase among non-risky drinkers in our study population, despite the intervention, might have been that the information did not feel relevant for them. Perhaps information for non-risky drinkers should be adapted to their drinking habits. According to the argument above, that non-risky drinkers adapted to the screening questionnaire, the risky drinkers might have noticed on the screening questionnaire that they were risky drinkers and changed, according to the self-change theory (Miller and Rollnick, 1991).
Often the seasonality of social phenomena, such as drinking alcohol, is caused by social factors, but the triggering mechanisms are related to environmental factors like temperature and season. Commercial interests seem to be aware of this since, according to an American study, alcohol advertising expenditure was greatest during the summer (Snyder et al., 2000). In paper IV, those who did not receive written advice reduced their heavy episodic drinking more than those who got advice. Cohort A accounted for their baseline drinking during the summer while cohort B accounted for the winter season. Thus, cohort A was followed up during the winter season and cohort B during the summer. The summer has been found to be a high season for drinking in, for example, Scotland and Sweden (Andréasson and Allebeck, 2005; Uitenbrock, 1996). Seasonality could explain the differences between our cohorts. Another study showed that different phenomena related to alcohol have a clear seasonal rhythm in Estonia. The peak period for phenomena related to beer was in the summer, from June to August, and the low point was during the first months of the year (Silm and Ahas, 2005). Consumption of beer and spirits has proved to lead to more problems than wine drinking. For instance, beer drinkers have been shown to be more likely than others to be involved in alcohol-related accidents, while brandy leads to more emotional and aggressive behaviour (Smart, 1996). We did not ask for type of beverage most preferred among the patients. Since young men were over-represented in the study population, as well as among risky drinkers, it can be assumed that beer and spirits are commonly drunk.

The brochure offered advice rather than more extended cognitive-behavioural strategies. Other research shows that general advice does not have as strong an effect on reduced drinking as descriptions of changing strategies (Apodaca and Miller, 2003). This might contribute to the explanation of the negative results of the simple written advice in the present work. We do not know how many of the patients who received the brochure used it for information and to fill out their own alcohol consumption Thus, another explanation for the negative results of the brochure is that it may not have been much used. In that case, the reduction in heavy episodic drinking among risky drinkers in our paper IV might mainly be due to screening.

Implementation process

Having chosen a high risk strategy (emergency care injury patients), an arena (the emergency department) and a screening instrument (a single question
about heavy episodic drinking) and an intervention method (screening and simple advice) what is left is how to implement the procedure into routine care.

According to our results and others, alcohol advice to a broad population might be possible to implement into routine care if a simple concept is used (Babor and Higgins-Biddle, 2001; Gmel et al., 2001). In emergency departments it is particularly important to find a flexible intervention that can be adapted to the often chaotic situation (Dill et al., 2004).

At the introduction of the screening and simple advice concept we considered the resources within the emergency department, for instance normal work load and time demanded from staff and patients for the intervention. The screening started as planned and continued during the study period.

A very important factor for the fact that the staff started the screening and simple advice procedure was that the department manager was positive about the implementation. Another possible reason is that the idea was presented by two people who were similar to the emergency care staff in important aspects such as gender, age and, to a great extent, level of education. Similarities in such aspects facilitates acceptance according to the theory of diffusion of innovations. Other factors, in accordance with the theory, that probably contributed in the present work were that the routine required a minimum of staff time and that there already was an existing routine at the department for delivering a questionnaire, in which the alcohol screening could be adopted (Rogers, 2003). Also, the research team showed great interest in the staffs’ routine, which might have increased their willingness to continue.

The finding of a routine that seemed possible to implement in emergency care routines is encouraging because of the over-representation of risky drinkers among emergency care visitors. Commonly, studies show that implementing an intervention into routine care, without extra project resources, is a delicate problem. It seems to be especially difficult to accomplish in emergency care, where patient contact is brief and staff time is often limited (Brooker et al., 1999; Charalambous, 2002; Peters et al., 1998). Of the four other studies found where brief intervention was implemented into routine emergency care, three were closed down (Brooker et al., 1999; Krishel, 1996; Wright et al., 1998) and only one continues as a routine, (Karlsson and Bendtsen, 2005) in Sweden.

The staff stated in the interviews that risky drinkers can change drinking, with support from others, which is encouraging. Perhaps they were thinking of a more extended intervention than in the present studies, however. If so,
they might picture a typical risky drinker as the minority who cannot be supported to reduce drinking by a brief intervention. This is probably one explanation for the staffs’ unwillingness to bring up the question about alcohol consumption with patients.

According to the follow-up interviews in paper II, there were no changes in the staffs’ attitude or practice concerning alcohol preventive work. Despite a generally positive attitude towards alcohol prevention, also found in other studies (Waller et al., 1998), the staff reported reluctance to perform more extended brief alcohol preventive work than at present (delivering the questionnaire and the brochure). The staff did believe that other staff, or another department, would be more suitable for further alcohol preventive work. In the interviews, some explanations for the hesitation to expand the preventive work were revealed, and they are probably important to consider in the future. The staff seem to consider drinking habits to be a private matter; such attitudes have been found earlier to be an important barrier for implementation of alcohol preventive measures (Weisner and Matzger, 2003). This may be the reason why the triage staff in our paper II, as in another Swedish study, (Johansson, 2002) expressed the view that they expected negative reactions from patients on alcohol questions, although nobody really had such an experience. On the contrary, research show that patents are positive about such questions (Hungerford et al., 2003). Even emergency care patients from the same county as the study population have proved to be positive and understanding of the need for alcohol questions at the emergency department (Karlsson and Bendtsen, 2005). One explanation for the staffs’ hesitation could be that they picture that patients do not include secondary prevention of alcohol problems in their professional role. According to Berger and Luckmann, individuals get into roles when acts are repeated, roles that others learn to recognise, such as the roles of ‘patient’ and ‘staff’, that people use to understand each other (Bäck-Wiklund, 2003). According to the interviewees, asking about drinking habits is not included in the role as employed at the emergency department. On the other hand, it is easier to see that other staff categories could raise the question with the patients. Thus, the problem seems to be the expectation that staff members believe the patients have of one’s own professional role, and in their communication with the patients, the interviewees try to keep the balance between the staff role and the patient role. In the present studies, the answer to one of the main question in phenomenology “Why does this happen?” could be that the balance is not to be disturbed since the treatment must continue without friction. Despite that, according to the interviews, it is sometimes possible to talk with patients about
drinking and it also happens, at least when adolescents are involved; the interviewees in papers I and II stated that alcohol discussions should not take place at the emergency department. According to phenomenology, the individual is not a prisoner in his or her role but a creator and a confirmatory (Bäck-Wiklund, 2003). We are not only a product of our surroundings according to Husserl, but intentional through our consciousness that is constantly turned to the world around (Bullington, 2004). This indicates that roles can be changed.

In the present case, education for staff could be a way towards change of attitudes as well as practice. One major problem found in the baseline interviews and questionnaires was lack of perceived skills to discuss drinking with patients. After six months of practicing screening, there was a significant improvement in staffs’ perceived skills in performing preventive work and thus a perception of better possibilities to influence patients to reduce their drinking, according to the questionnaires, but still hardly any change in practice. These results can be compared to another Swedish study where nurses receiving more alcohol-related education had more positive attitudes than nurses with less education (Geirsson et al., 2005).

Except for the improvement of perceived skills, the difference in the follow-up questionnaire in paper II compared to baseline was a generally more positive attitude to alcohol preventive measures, but still not towards interventions in emergency care. Also, there were fewer expectations of negative reactions from patients on drinking questions and lower belief that other patients suffer because secondary prevention of alcohol problems takes a lot of time. These changes after a period of screening are encouraging, since positive attitudes among staff are an important prerequisite not only for introducing an intervention but also for implementing it into routine care. There are even study results stating that affect is more important for action than cognition (Morris et al., 2002). The lack of reported changes according to the interviews could be due to the fact that during the interview, the interviewees were referring to their own situation and they imagined a heavier workload upon themselves. In the questionnaire, where there were some positive significant changes in both attitude and practice, the staff might have been reporting more general attitudes.

Physicians are not directly involved in the screening and brief intervention process described in this thesis. Yet their attitudes are important for supporting other staff to take time for alcohol prevention and hopefully, further on, take more part themselves in alcohol prevention among patients. To a great extent the physicians’ attitudes in paper I were similar to the other
staff categories. For instance they also suggested other staff to be more suitable for accomplishing drinking advice. One difference in opinion between staff categories was that while the triage staff talked about the risk of patients being upset and angry by questions about drinking habits, the physicians talked about the risk of the patients feeling guilty for causing their own trauma. This can be interpreted as a difference in view on ones’ own status versus the patient. It has been found in another Swedish study that physicians assessed their role legitimacy for working with alcohol interventions higher than did nurses (Geirsson et al., 2005). Also, it has to be remembered that the results reported here are the physicians’ descriptions of their role within the emergency department. From the interviews it seems as if they discuss drinking more frequently with patients when they are on duty in other departments. Despite this, there is a lack of alcohol diagnoses in the social security register (Upmark, 1999), which indicates that an alcohol diagnosis is perceived as stigmatising by the physicians.

The emergency care staff did what we asked them to do. We do not know what would have happened if we had asked them to participate in a more extended patient intervention. This could have resulted in a total failure to introduce the intervention. The present brief intervention could have been the start of a more extended preventive work performed by the staff. Instead, a computerised screening was implemented and is now a routine at the emergency department. All measures that make problems with alcohol consumption visible, and thus more on the agenda, hopefully facilitate discussions and advice about reducing consumption.

Methodological considerations

The qualitative studies I and II
There might be an ethical advantage of letting somebody outside the research team contact the interviewees. It is probably easier to deny participation to somebody not directly involved in the study. In the present studies the department manager contacted the interviewees.

To sort the texts in the transcribed interviews without coding facilitated the writing, which thus started earlier. This could have restricted a deeper penetration of the material. According to the literature, however, researchers work in different ways with analysis. The phenomenological analysis can be described as a free search for patterns, categories, themes and to construct concepts, which concentrates the findings in the material (Lindgren, 1994).
Others describe a more systematic process in different steps (Colaizzi, 1978). I think there are different methods to find the meaning of what is said in the material and that the work order is not that important. It is inevitable that one goes back to the data for clarifications during the writing and I believe that the analysis can be facilitated by starting to write as early as possible.

There are arguments for benefits if the interviewer prepares before an interview by, for example, analysing academic studies, undertaking preliminary observations and even learning the special vocabulary of the field. Such knowledge could facilitate asking the right questions (Rothe, 2000).

My position was somewhere in between with some background knowledge of results from alcohol research and not having any experience in working in health care. I believe that the lack of experience of the field in fact facilitated me to ask questions. Since the interviewees knew about my background, it was probably natural for them to explain conditions that would otherwise have been considered obvious and maybe never would have been discussed. I had experience of living in Sweden, however, just like all the interviewees. According to Schutz, our everyday knowledge is collectively shared through a mutual culture (Bäck-Wiklund, 2003). Despite the fact that every individual reflects out of his or her own previous understanding, the common experiences gave me the possibility to be able to ask suitable questions and a reasonable possibility of understand the answers. The capacity for mutual understanding between humans has been explained as inter-subjectivity, meaning that we assume that everybody interprets a situation similarly (Karlsson, 1993).

The quantitative studies III, IV and V
It might be that those who were risky drinkers were less inclined to answer the screening questionnaire, which is a problem when a high risk strategy is used (Rose, 1985). In contradiction of this is the fact that we found a higher share of risky drinkers among the emergency care patients than in the general population.

The quantity-frequency questions used in the studies in this thesis are a common method of asking. Another method is the period-specific normal week method. In a Swedish comparison the latter method proved to have a higher validity (Romelsjö et al., 1995). An advantage is that the latter method has a greater possibility of revealing drinking patterns. A disadvantage is that since people might drink seldom but heavy episodic, the reports may go very wrong. Maybe two weeks would cover this dilemma even though there might be recall bias. Stipulated specific values in the answering alternatives for
Discussion

questions one and two were used in our studies to diminish the great variations in possibilities when weekly consumption is calculated. Despite this, the real consumption in our study population might be higher or lower in reality, depending on whether people exaggerate or under-report. The later is most probable.

The decrease in drinking among risky drinkers and the increase among non-risky drinkers might be due to regression to the mean. Risky drinkers are selected due to their relatively high alcohol consumption that in some cases might have been “by chance”. In repeated measurements some of those selected “by chance” might report lower consumption. Perhaps more likely is that parts of the changes are due to a natural fluctuation in the population. A risky drinker is more likely than a non-risky drinker to reduce drinking and vice versa.

The great majority of risky drinkers that we found in the studies were included according to the criteria heavy episodic drinking at least once a month. Lower limits for heavy episodic drinking would have included even more people as risky drinkers in our studies.

A follow-up period of six months as in the present studies might be too short in measuring an intervention. The positive effect may have been diminished after a one year follow-up (Forsberg, 2003).
SUMMARY

Physicians working at the emergency department acknowledge that a substantial number of injuries are related to risky alcohol consumption. Despite of this they lack routines about screening for risky alcohol consumption in the absence of signs of intoxication. The physicians also expressed an uncertainty about how to define and screen for risky alcohol consumption. However, the physicians were generally positive about alcohol interventions in the emergency department although they could not image themselves doing this but preferred that this should be done by special trained staff.

The nursing staff participated in the alcohol screening and simple advice by handing out the questionnaire and collected them after completion. This simple procedure worked well and the staff did not, as they expected, get any negative reactions from the patients. Despite of this the staff did not change their attitudes concerning the role of the emergency department i.e. that the department is not a suitable setting for alcohol prevention due to the short time each patient remains in the premises and the various acute conditions that the patients attend the department for. Still, the nursing staff changed their perceived competence concerning asking about alcohol consumption and their own ability to influence patients to change risky drinking behaviour. Also the nursing staff expressed an increased role legitimacy concerning bringing up the subject with their patients. Despite of these positive changes, after implementing a very minor time consuming procedure, there seems to be substantial barriers to be overcome before the nursing staff in the emergency department could be expected to engage further in alcohol preventive interventions. There is a need for additional organizational support and development of preventive methods before implementation of alcohol preventive measures can be expected to be part of the daily routine in the emergency department.

The screening routine using the AUDIT-C questionnaire identified 31% of the male injury patients as risky drinkers and 9 % of the female patients. The third questions in the AUDIT-C, “frequency of heavy episodic drinking” identified almost all risky drinkers including patients with risky average weekly volume drinking. This suggests that the third question can be used as a single screening question for risky drinking simplifying the screening procedure.
The frequency of heavy episodic drinking decreased significantly, both among patients who were only screened and those who received simple written advice about sensible drinking limits. About 30% of the patients with heavy episodic drinking at least once a month, had changed their drinking pattern to a non risky level at the 6 months follow-up interview. Since the reduction was smaller among those who received simple advice, there seems to be a non neglectable effect of screening per see.

The proportion of risky drinkers among injury patients was higher than in the general population in the catchment area, 21 % among the injury patients compared 15% in the general population. However, this difference was mainly due to the higher proportion of young men in the injury group. When controlling for age and sex, risky drinkers as well as non risky drinkers displayed an increased risk for an injury, compared to abstainers, in amusement locations, parks, lakes or seas, especially during play, hobby or leisure activities. Age and sex out weighted drinking patterns in most other injury variables. Nine percent of the injury patients reported that they believed that their injury could have been related to intake of alcohol. Half of this group were non risky drinkers. It is thus important to notice that a usual non risky drinking pattern is not sufficient to avoid a possible alcohol related injury.
CONCLUSIONS AND FUTURE RESEARCH

Alcohol consumption is increasing in Sweden; this will surely result in more alcohol-related problems. Emergency departments are suitable arenas to reach risky drinkers because of the over-representation of risky drinkers among the visitors.

Due to the special nature of an emergency department an alcohol preventive intervention might have the best possibility to be implemented if it is “cheap and fast” for patients and staff, (according to Wexelblatt’s Scheduling Algorithm on page 31). “Cheap” implies that the intervention does not require extra staff or too much of staffs’ time and “fast” that the patients are able to perform the intervention without disturbing the primary reason for their emergency care visit. According to the present studies, positive attitudes among staff appears to be an essential prerequisite when implementing alcohol preventive measures, in particular a belief that alcohol prevention is important and the recognition that many injuries are alcohol-related.

Some attitudes changed after implementing the screening and written advice procedure, which is important since attitudes are not only to be considered at the start of an implementation but also in the continuation of everyday work. Lack of time and education are on the other hand negative prerequisites that have to be handled continuously, both before and during an implementation. The present routine was seen as a start of a continuous process aiming to develop a routine that is feasible and acceptable for both staff and patients and at the same time effective for supporting risky drinkers to reduce their drinking.

The existing injury registration routine, into which the alcohol intervention was added, surely facilitated the successful completion of the alcohol routine.

Simple written advice seems to be a realistic way to intervene among risky drinkers. The advice is an incentive for the individual to start a self-change process. With as little resources as possible, such simple advice tries to diminish the damage caused by the alcohol industry’s commercial interests and by a long tradition of integration of alcohol in our society. For a person to change behaviour, such as risky drinking, a supporting surrounding is essential; in this case it would mean non-risky drinking. This is a reason why low-risk strategies also are valuable for making the negative aspects of risky drinking visible and thus easier to bring up for discussion.
Cheap and fast are methods supposed to be advantages at the expense of highly effective interventions. In two cohorts of risky drinkers, 34% and 25% reduced their heavy episodic drinking to a level defined as non-risky. This appears as a reasonable effect compared to more extended brief interventions.

Future research should if possible study the effects of screening as such in order to explore whether the effects on injury patients drinking seen in emergency studies is an effect of the injury or the actual screening procedure. There is also a lack of studies on associations between drinking pattern and different aspects of injury. More research where various drinking patterns are taken into account is needed to find effective measures for interventions in order to reduce alcohol-related injuries. A single screening question about heavy episodic drinking seems to identify the majority of risky drinkers and saves time. An alternative is to screen by computers from which the patients also get feed-back.

Qualitative interviews with risky and non-risky injury patients could be one way to gain a deeper understanding on perceptions of risk taking and responsibility for the safety of themselves and others.
ACKNOWLEDGEMENTS

There are so many people who have contributed to the creation of this thesis. First of all: thank you my supervisor Preben Bendtsen, for amazing enthusiasm, energy and positive attitude towards our work. I am impressed by your quickness in reading manuscripts and for always being available for giving advice. I felt confident in your knowledge in the research field of prevention of alcohol problems.

Thank you Kent Lindqvist, my second supervisor, for persuading me into trying to write a thesis. Your argument was just the right for me: The students who are used to work hard for their results are more likely to sustain the efforts of writing a thesis while the cleverest ones sometimes quit when the pressure starts. I have confidently turned to you for advice in different matters during these years, and you have shared your knowledge in injury prevention with me, as well as your experience in how to be in the research world.

I would not have managed the first hard time as a PhD student without support from Kjell Johansson. Thank you for being such a good friend and for sharing your experience in our research field, as a co writer, in critical views on our work and on manuscripts.

Marika Holmqvist and Elisabeth Wilhelm were also co writers as well as statisticians. Marika has besides this, been very helpful in statistical matters during the last year. Several further statisticians have been involved in the analysis: Anders Nordlund, Madeleine Borgstedt-Risberg and Nadine Karlsson. I am very thankful to all of you.

Many thanks to Per Nilsen, my very effective co writer, Tomas Faresjö and Karin Borg, for insightful views on the thesis. Anne Göransson, thank you for comments on the qualitative methodology and for encouragement.

Thank you Kajsa Rothman, for kind guidance in all administrative matters, which too often have been hard for me to understand and Sussanne Larsson for support when the computer acted mysteriously.

Hundreds of emergency care visitors in Motala and the staff at the emergency department contributed with data which made the studies possible. The department managers Agneta Soldan and Håkan Samuelsson were very helpful during the data collection. Thank you all!

Recent members of the research group, Lena Lindhe-Söderlund and Lotta Strömstedt were helpful and nice colleges at the initiation of the work.
All colleges at the department of Social Medicine and Public Health Science have constituted a friendly and supportive base for going through with the work tasks. A solid social base has been especially important during the last half year when the building has been reconstructed. Piles of construction dust, tools and building materials everywhere, drilling until the head vibrates, no water, not much air since there was no functioning ventilation system and the windows were not possible to open since they were covered by construction plastic might have obstructed the efficiency in fulfilling the work tasks a bit.

Quite contrary to the working situation, home life has been calm, my near relatives always being kind and claimless and I am thankful, Martin, for having found a strong love relationship, without disturbing fluctuations.

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REFERENCES


References


riskabla alkoholverkningar (Alcohol drinking habits assessed by the AUDIT test. Reduced maximum levels doubled the number of women with dangerous alcohol drinking) (in Swedish). Läkartidningen 97, 2078-2084.


References


References


References


**Staffs’ interview guide**

- Who is responsible for informing people with risky alcohol consumption about sensitive drinking, before the drinking results in problems?

- What role do you think the emergency department has in identifying and informing persons who have a risky alcohol consumption?

- Are there other sectors that should take responsibility for informing about sensitive drinking?

- In what contexts do staff in your work place discuss alcohol-related issues?

- What do you think people mean when they talk about risky drinking? What do you think?

- How can a person with risky alcohol consumption be identified? - What methods do you use or know about?

- Do you think people should be asked about alcohol habits when they visit the emergency department?
  
  **If yes:**
  - Who should/should not be asked?
  - What staff category should ask?

  **If no:**
  - For what reason should they not be asked?

- Do you usually ask the patients at the emergency department about alcohol habits?
  
  **If yes:**
  - How often do you ask?
  - When was the last time?
  - What makes you ask?
  - How does the patient usually react?

  **If no:**
  - What possibilities do you have to ask?
  - Have you ever asked?
  - How come you do not ask?

- How do you feel when you meet a patient who you assume drinks too much?

- Do you have any routines at the emergency department concerning persons with risky alcohol consumption?

- What else could be done at the emergency department to influence risky alcohol consumers?

- What do you think about the possibilities of people changing alcohol habits by her/himself?

- How often do you think that the injuries at the emergency department are related to drinking?
Din arbetsplats är: _________________ De fyra sista siffrorna i Ditt personnummer är: __________

Var vänlig och kryssa i rutn för det alternativ som passar bäst på frågorna nedan. Endast ett alternativ per fråga/påstående får kryssas i.

Tänk på att frågorna gäller alla patienter som har för hög alkoholkonsumtion och inte enbart de som Du tror är ”alkoholister”.

<table>
<thead>
<tr>
<th>1) Hur gammal är Du?</th>
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<tbody>
<tr>
<td>20-29år</td>
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<table>
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<tr>
<th>2) Vilket är Ditt yrke?</th>
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<tr>
<td>Specialistläkare</td>
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<tr>
<th>3) Hur länge har Du arbetat i Ditt nuvarande yrke?</th>
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<tr>
<th>4) Hur ofta träffar Du patienter i situationer där Du bedömer det möjligt att fråga om alkoholvänorna?</th>
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<tbody>
<tr>
<td>Nästan aldrig</td>
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</table>

<table>
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<tr>
<th>5) Hur stor del av de patienter som Du kommer i kontakt med, tror Du har en så hög alkoholkonsumtion att den borde åtgärdas?</th>
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<tr>
<td>0-5 %</td>
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<th>6) Hur är Dina kunskaper när det gäller metoder för kartläggning av patientens alkoholvänor?</th>
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<tbody>
<tr>
<td>Mycket otillfredsställande</td>
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<tr>
<th>7) Hur svårt/lätt tycker Du att det är att fråga om alkoholvänorna?</th>
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<tbody>
<tr>
<td>Mycket svårt</td>
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<table>
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<tr>
<th>8) Hur är Dina kunskaper när det gäller metoder att påverka patientens alkoholvänor?</th>
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</thead>
<tbody>
<tr>
<td>Mycket otillfredsställande</td>
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<thead>
<tr>
<th>9) Hur stor andel av patienterna frågar Du om alkoholvänorna om Du tror att de har ett samband med hälsoproblemen/skadan?</th>
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<td>Ingen</td>
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<tr>
<th>10) Hur stor andel av patienterna frågar Du om alkoholvänorna om Du inte tror att de har ett samband med hälsoproblemen/skadan?</th>
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<td>Ingen</td>
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<tr>
<th>11) Hur stor andel av patienterna informerar Du om att besvären kan ha samband med alkoholkonsumtionen (avser patienter med misstänkta eller säkert alkoholrelaterade problem)?</th>
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<tbody>
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<td>Ingen</td>
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<tr>
<th>12) Hur stort ansvar tycker Du att Din arbetsplats har, när det gäller att försöka påverka patienter med för hög alkoholkonsumtion?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nästan inget</td>
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</tbody>
</table>
Nu följer några påståenden som vi vill att Du tar ställning till. Ett kryss för varje påstående.

<table>
<thead>
<tr>
<th>Det är väsentligt att nå människor med hög alkoholkonsumtion i ett tidigt skede.</th>
<th>Instämmer inte alls</th>
<th>Instämmer i stort sett inte</th>
<th>Tveksam i stort sett</th>
<th>Instämmer i stort sett</th>
<th>Instämmer helt</th>
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<tr>
<td>Möjligheterna att påverka människors alkoholvänor är små.</td>
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<tr>
<td>Huvudskälet till att det är svårt att nå människor med hög alkoholkonsumtion i ett tidigt skede är att de inte vill ha någon hjälp.</td>
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<tr>
<td>Människors alkoholvänor är deras ensak.</td>
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<tr>
<td>Man bör ta upp och diskutera alkoholvänorna med alla patienter</td>
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<tr>
<td>De flesta patienter reagerar negativt på frågor om deras alkoholvänor.</td>
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<tr>
<td>Det känns givande att arbeta med människor som har för hög alkoholkonsumtion.</td>
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<tr>
<td>Den tid och de resurser som finns inom hälso- och sjukvården räcker inte till för vården av patienter med hög alkoholkonsumtion.</td>
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<tr>
<td>Att försöka påverka patienternas alkoholvänor är värt de kostnader och den arbetsinsats det kräver.</td>
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<tr>
<td>Andra patienter blir lidande då behandling av alkoholproblematik tar mycket tid och kraft.</td>
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<td>Alkoholproblem kan vem som helst utveckla.</td>
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<tr>
<td>Innan man frågar om patientens alkoholvänor, bör det finnas tecken på för hög alkoholkonsumtion.</td>
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<td></td>
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<tr>
<td>Personal inom hälso- och sjukvården har goda kunskaper när det gäller att upptäcka och remittera personer med allvarliga alkoholproblem till rätt vård.</td>
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</table>

TACK FÖR DIN MEDVERKAN!
Här är frågor om dina alkoholvanor.
Vi är tacksamma om Du besvarar frågorna så noggrant och ärligt som möjligt genom att kryssa i det alternativ som gäller för Dig.

I frågorna används ordet glas. Med ett glas menas något av detta:

| 50 cl folköl | 33 cl starköl | 15 cl vin | 8 cl starkvin | 4 cl starksprit |

1. Hur ofta dricker Du alkohol?
   □ Aldrig □ 1 gång i månaden □ 2-4 ggr i månaden □ 2-3 ggr i veckan □ 4 ggr i veckan eller oftare

   Vid aldrig, gå till fråga 10

2. Hur många glas (Se exempel) konsumerar Du på en typisk dag då Du dricker alkohol?
   □ 1-2 stycken □ 3-4 stycken □ 5-6 stycken □ 7-9 stycken □ 10 stycken eller fler

3. Hur ofta dricker Du 6 sådana glas eller mer vid ett och samma tillfälle?
   □ Aldrig □ Mer sällan än en gång i månaden □ Varje månad □ Varje vecka □ Dagligen eller nästan dagligen

4. Är Du näjd med Dina alkoholvanor?
   □ Ja, helt och hållet □ Ja, ganska □ Varken näjd eller missnäjd □ Ganska missnäjd □ Missnäjd

5. Hur ofta har Du under det senaste året funderat på att ändra Dina alkoholvanor?
   □ Aldrig □ Mer sällan än en gång i månaden □ Varje månad □ Varje vecka □ Dagligen eller nästan dagligen

6. Har Du under det senaste året ändrat Dina alkoholvanor?
   □ Ja, jag har slutat helt □ Ja, jag har minskat □ Ingen ändring □ Ja, jag har ökat något □ Ja, jag har ökat mycket

7. Tror Du att Din skada har samband med att Du hade druckit alkohol?
   □ Nej, jag har inte druckit □ Nej, inget samband □ Kanske □ Ja, troligen □ Ja, absolut

8. Vad tycker du om att få frågor om dina alkoholvanor trots att du har sökt vård för något annat?
   □ Mycket negativt □ Ganska negativt □ Varken positivt eller negativt □ Ganska positivt □ Mycket positivt

   □ Ja, det går bra, mitt telefonnummer är: ____________________ □ Nej, det vill jag inte.

10. Var skedde skadan?
    □ Motala □ Boxholm □ Mjölby □ Vadstena □ Ödeshög □ Annan kommun i Östergötland □ Annan ort

Tack för Din medverkan!
Appendix C

Fylls i av personalen:

Skadedelen
 Ifylld av patienten  □  Ifylld med hjälp av personal □  Patienten ville inte fylla i □  Patienten kunde inte fylla i;  □ pga allvarlig skada □ av andra skäl

Alkoholdelen
 Ifylld av patienten  □  Ifylld med hjälp av personal □  Patienten ville inte fylla i □  Patienten kunde inte fylla i;  □ pga allvarlig skada □ av andra skäl

Signatur_________________