

# Alcohol-specific activity in hospitals in England

*Research report*

*Claire Currie, Alisha Davies, Ian Blunt, Cono Ariti and Martin Bardsley*

December 2015

## About this report

Alcohol-related harm is placing increasing demands on the NHS. At a time when unprecedented efficiencies need to be made by the NHS and local authorities, preventative action must be taken seriously. This analysis explores trends in alcohol-specific activity in hospitals due to alcohol poisoning and alcohol-related inpatient admissions by looking at six years of hospital activity data in England. The analysis also explores the use of hospital services before and after a diagnosis of alcohol-related liver disease and highlights opportunities for preventative action to reduce future alcohol-related harm in England.

## Acknowledgements

We wish to thank the following people who kindly peer reviewed this report and commented on earlier analyses: Professor Chris Drummond (Professor of Addiction Psychiatry, King's College London), Dr Kieran Moriarty (Consultant Physician & Gastroenterologist, Royal Bolton Hospital), Clare Perkins (Head of Risk Factors Intelligence, Public Health England), Sacha Wyke (Public Health England), Iain Armstrong (Alcohol Programme Manager, Public Health England), Clive Henn (Senior Alcohol Advisor, Public Health England), Professor Nick Sheron (University of Southampton) and Dr Andrew Furber (Director of Public Health, Wakefield Council).

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## Executive summary

Alcohol-related harm is a long-standing problem that is placing increasing demands on the NHS. At a time when unprecedented efficiencies need to be made by the NHS and local authorities, preventative action must be taken seriously. This analysis explores trends in alcohol-specific activity in hospitals in England. The analysis also explores the use of hospital services before and after a diagnosis of alcohol-related liver disease (ARLD) and highlights opportunities for preventative action in this setting to reduce future alcohol-related harm in England.

### Increasing alcohol-related burden on England's hospitals

- From 2008/09 to 2013/14, A&E attendance rates likely to be due to alcohol poisoning doubled, from 72.7 per 100,000 population to 148.8 per 100,000 population (a 104.6% increase).
- From 2005/06 to 2013/14, inpatient admissions specific to alcohol increased by 63.6%: there was a 143.3% increase in elective admissions (from 45.5 per 100,000 population to 110.8 per 100,000 population) and a 53.9% increase in emergency admissions (from 374.9 per 100,000 population to 577.1 per 100,000 population). In 2013/14, approximately 1 in 20 emergency admissions and 1 in 120 elective admissions were for alcohol-specific conditions (although they may not have been the primary cause for admission in all cases).

### Higher rates in specific groups

- Three in four of those who attended A&E due to likely alcohol poisoning arrived by ambulance. One in three were subsequently admitted to hospital overnight, in comparison to one in five of those attending A&E for other reasons. This places potentially avoidable strain on ambulance trusts, A&E and hospital services.
- The highest rates of alcohol-related emergency admissions were seen in men and in the older age groups. In 2013/14, the highest rates of emergency admission were found in 45–64-year-old men (1,126.0 per 100,000 population). This may reflect the chronicity of alcohol-related diagnoses and the contribution of alcohol to many long-term conditions that are more prevalent in older age groups.
- A&E attendance rates that are likely to be due to alcohol poisoning and hospital emergency admissions specific to alcohol were three to four times higher in the poorest fifth of the population. This difference has been consistent over the past five years – a finding supported by other studies.

### Opportunities to intervene

- There is a need to capitalise on the 'teachable moment': 90% of those who attended A&E for likely alcohol poisoning and 72% of those who had an alcohol-specific emergency admission only attended hospital (in any setting) once in 2013/14.

- Three quarters of those diagnosed with ARLD during 2009/10 had contact with hospital services in the year before diagnosis. Before ARLD diagnosis, approximately 30–45% of emergency admissions in this group were known to be specifically related to alcohol.
- This presents an opportunity to identify issues of alcohol dependency, and to provide specialist advice and onward referral, which may prevent progression to ARLD.

#### Need for specialist alcohol services

- Alcohol-related harms pose a long-standing challenge to the NHS and approximately 73% of hospitals (deemed to be of an appropriate size) have some form of alcohol service. The Government's recent announcement of cuts to public health budgets in local authorities raises concerns over the sustainability of funding for local alcohol services. Currently, a large proportion of hospital alcohol services is funded through local authority public health budgets. The NHS has committed to illness prevention in the Five Year Forward View. It is likely to become increasingly necessary for the NHS to invest in preventative services rather than these being delivered through local authority public health teams. Demonstrating local need and the value of local alcohol services will strengthen the case for continued investment.

#### Need for population measures

- The Government must consider population-based approaches to reducing alcohol-related harms, through increased taxation, minimum unit pricing, restricting availability and limiting marketing and advertising. These could have a strong impact at the population level, to the benefit of public health and the health care system.

#### Need for collaboration

- While alcohol is a cause of avoidable demand on the NHS, hospitals alone cannot tackle this issue. Action to reduce harmful alcohol use requires a collaborative effort, involving GPs, community pharmacists, the police, education and licensing authorities.



# 1. Background

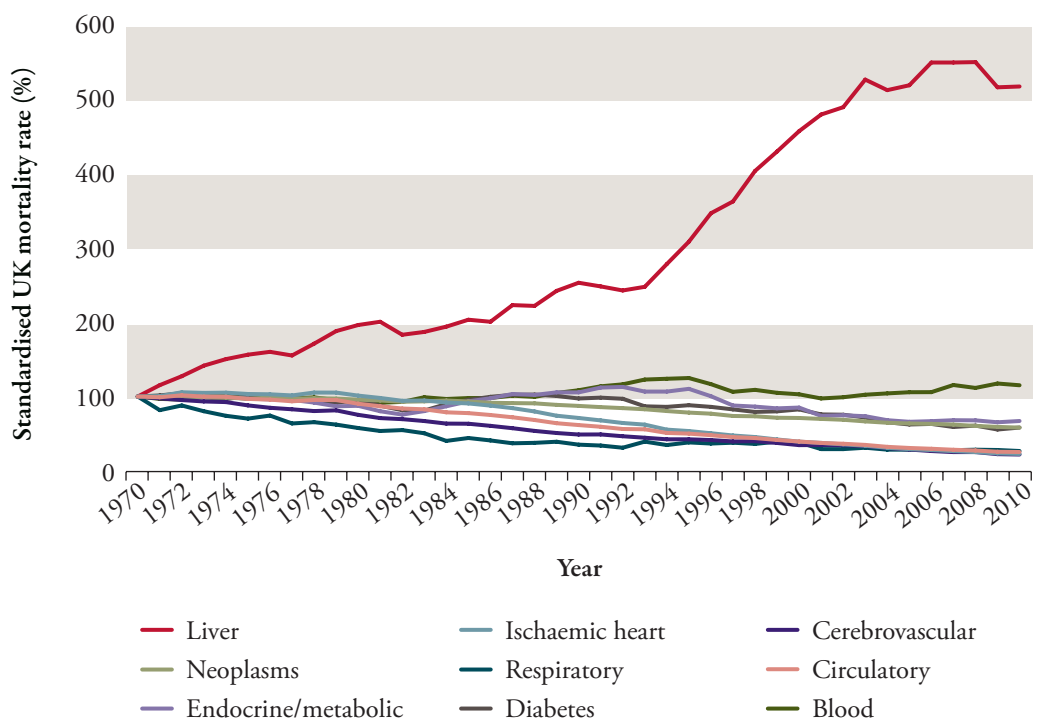
Alcohol misuse costs the UK economy an estimated £7.3 billion per year. In England alone, estimates suggest that over 15,000 people die from alcohol-related illnesses each year (Home Office, 2013).

## Why is alcohol an important issue?

Harmful alcohol consumption has a significant detrimental effect on health, including memory loss, liver disease, cancers, gastrointestinal disorders, heart disease and death (PHE, no date a). The wider consequences of alcohol consumption, which include crime, violence and the breakdown of relationships, can also have a detrimental effect on health (University of Stirling and others, 2013).

Levels of alcohol consumption in the UK are above the Organisation for Economic Co-operation and Development (OECD) average (OECD, 2015) and death from liver disease is now a leading cause of premature death in the UK (PHE, no date b). Since the 1970s, deaths from liver disease have increased by over 400% in the UK (see Figure 1.1), whereas deaths from severe alcohol-related liver damage have reduced in most other European countries (Williams and others, 2014).

Figure 1.1: Standardised UK mortality rate data (aged 0–64) from the European Health For All Database (HFA-DB), normalised to 100% in 1970, and subsequent trends



Source: Williams and others (2014). Figure kindly provided by Professor Nick Sheron, University of Southampton.

## Alcohol strategy

Across the four countries of the UK there are differences in the strategies used to reduce alcohol-related harm, and these have been implemented with varying degrees of success. For example, in Scotland, a comprehensive alcohol strategy was implemented in 2009 (The Scottish Government, 2009), addressing alcohol availability and affordability, drinking behaviours and supportive services. This has been effective and downward trends in alcohol-related harm in Scotland are evident, but rates remain persistently higher than those in England and Wales (Beeston and others, 2013). In England, a cross-government alcohol strategy was launched in 2012 by the-then Coalition Government, which aimed to reduce the costs and societal problems attributed to irresponsible and excessive drinking by tackling harmful drinking, alcohol-fuelled crime and alcohol-related deaths (HM Government, 2012).

The strategy:

- set out actions for local areas to support individuals in changing their behaviour
- set out nationally led action on the availability, advertising and marketing of alcohol
- encouraged the alcohol industry to follow best practice to help everyone drink responsibly.

The strategy also committed to introducing minimum unit pricing but this has since been delayed, as it has been said that there is insufficient evidence to suggest that it would be an effective method of reducing the harms associated with problem drinking without penalising responsible drinkers (Woodhouse and others, 2015). Therefore, while progress has been made on some of these areas, more work needs to be done to reduce alcohol-related harm at individual and societal levels.

In summary, alcohol places a significant burden on the health system. The UK now has the highest premature mortality rate due to liver disease across many European countries, alcohol-related deaths are increasing and hospital admissions attributable to alcohol are also increasing – all of which are preventable through cost-effective interventions. In 2014, PHE identified harmful drinking as one of its seven priority areas (PHE, 2014b). More recently, the Five Year Forward View called for a radical upgrade in prevention and highlighted the role of the NHS in delivering this (NHS England, 2014). Yet challenges in health and local government budgets threaten the sustainability of preventative services, including those specific to alcohol.

## Alcohol-related burden to the NHS

The costs to the NHS of alcohol-related harm arise from a number of areas. For example, up to 35% of all Accident & Emergency (A&E) attendance and ambulance costs may be alcohol related, increasing to 70% of A&E attendances at peak times on the weekends (between midnight and 5am) (PHE, no date a). In 2013/14, over a million hospital admissions were as a consequence of an alcohol-related diagnosis, and this figure is increasing (HSCIC, 2015a). The effect is not only evident in hospital care, with 22 to 35% of GP visits estimated to be related to alcohol (DH, 2008).

The true impact of alcohol on the health service is likely to be higher than this, as care provided to address the direct or indirect consequences of alcohol consumption is difficult to ascertain. For many mental and physical health conditions, alcohol may be one contributing factor yet it is not recorded in hospital data. To try to better estimate

*all activity* related to alcohol, the Centre for Public Health has developed a statistical method to calculate the proportion of specific diagnoses that can be attributed to alcohol and has applied this to inpatient hospital admissions (HSCIC, 2015a). The information is available at local authority level and is one way of assessing the overall contribution of alcohol to inpatient hospital admissions at a population level. However, aside from hospital data, routine administrative data are not nationally available for the wider health system (e.g. the ambulance service, primary care and community care).

### Specialist services for people who drink alcohol at harmful levels

In England in 2013, approximately 18% of men and 13% of women drank at a level considered to be putting them at increased risk of harm,<sup>1</sup> and 5% and 3% respectively drank at a level considered to be posing a high risk to their health<sup>2</sup> (HSCIC, 2015a).

Despite high levels of activity, only 2% of NHS expenditure on alcohol-related harm is currently spent on specialist alcohol services (NICE, 2011a). The National Institute for Health and Care Excellence (NICE) recommends that chief executives of NHS hospitals and local authorities prioritise the prevention of alcohol-use disorders as an ‘invest-to-save measure’, arguing that ‘there is evidence that people with alcohol dependence cost the NHS twice as much as other people who drink alcohol’ (NICE, 2011a). Opportunistic screening tools – e.g. the Alcohol Use Disorders Identification Test (AUDIT) and the Fast Alcohol Screening Test (FAST) – alongside delivery of brief advice or interventions<sup>3</sup> to people identified as being at risk are known to be cost-effective (NICE, 2010).

NICE also recommends commissioning hospital alcohol workers to assess and manage individuals who drink alcohol at harmful levels (NICE, 2011a), such as hospital alcohol teams or community in-reach teams (Moriarty and others, 2010, 2014; Williams and others, 2014), both promoted by Public Health England (PHE) (PHE, 2014a). Between 2007 and 2013, the number of hospitals providing specialist care for alcohol using patients increased. A survey in 2013 by PHE found that 73% (139/191) of district general hospitals (deemed to be an appropriate size to merit a team) had some form of alcohol service, but the extent of the services available are highly variable (PHE, 2014a).

The longer-term sustainability of specialist services for alcohol and wider health promotion to address alcohol consumption is of concern. Despite the recognised cost-effectiveness of alcohol services, provision of support is dependent on local funding and presents a financial challenge across NHS and local authority budgets (NHS England, 2012). In England, following the Health and Social Care Act, the responsibility for commissioning alcohol misuse services was transferred to local government with clinical commissioning groups responsible for commissioning health care which may include alcohol health workers within a healthcare settings. Within local authorities, many directors of public health are working to commission alcohol services effectively (NICE, 2011a) within a shrinking public health budget (HM Treasury, 2015). Within clinical commissioning groups, the picture is mixed; a small survey of 35 clinical

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1. Defined as between 21 and 50 units per week for men and between 14 and 35 units per week for women.

2. Defined as greater than 50 units for men and 35 units for women.

3. Examples are available in ‘Clarifying brief interventions’ at [www.alcohollearningcentre.org.uk/topics/browse/briefadvice/](http://www.alcohollearningcentre.org.uk/topics/browse/briefadvice/).

commissioning groups in 2014-15 found that only 20% commissioned alcohol services (Alcohol Concern, 2015), and PHE's survey of alcohol care in England's hospitals, across 129 acute trusts with known services, found that clinical commissioning groups were involved in the funding of only 30% of such services (2013-14 figures) (PHE, 2014a).

The aims of this study were to describe alcohol-related hospital activity in England and examine patterns of hospital activity in patients before and after diagnosis with alcohol-related liver disease (ARLD) – representing a group of patients with chronic alcohol-related harm. Specifically, we sought to answer the following questions:

- How have the patterns of alcohol-related hospital activity in England changed over recent years? Are there demographic, socioeconomic or regional differences in the trends?
- How does the patterns of hospital activity change before and after ARLD diagnosis in England?

## 2. Methods

The analysis was mainly based on Hospital Episode Statistics (HES) – a national database that covers all NHS-funded hospital care in England and includes anonymised patient-level records of hospital activity. Pseudonymised patient records within HES are available to the research team at the Nuffield Trust under the Health and Social Care Information Centre (HSCIC) agreement NIC-342809-H1V7F. The HES data analysed in this study covered the period April 2003 to March 2014.

### Examining patterns of alcohol-related hospital activity in England

All analysis using HES was limited to patients aged 15–100 years and resident in England. We would usually only focus on adult services but as alcohol-related harm is an important issue for teenagers, we did not want to overlook those aged 15–18 years.

#### A&E attendances

A&E attendance data involve a clinical coding system whereby presenting symptoms are ascribed to a category representing a body system or type of injury (HSCIC, no date). Alcohol-related A&E activity is difficult to determine and commonly only one clinical reason for attendance is recorded in A&E data (approximately 88% of records; see Appendix 2). ‘Poisoning – other, including alcohol’ may include other reasons for poisoning, but it is the most specific clinical reason for attendance due to alcohol captured in A&E data. This reason focuses on attendances as a result of binge drinking and excludes most of the attendances due to, or exacerbated by, prolonged heavy drinking. Also, data on this will not capture all cases where short- or long-term alcohol use is a contributing factor, for example in falls and injuries, and may also be recorded for some A&E attendances unrelated to alcohol.

Another category – social problems – includes alcoholism although this cannot itself be isolated. The ‘social problems’ category was not included in this analysis as we considered that it would also record individuals presenting due to a broad range of problems unrelated to alcohol, including older people who are unable to cope alone.

A&E HES data began in 2007/08 and attendances were very sparsely recorded in this year. Data quality issues are also a concern in subsequent years, with both attendances and clinical reason for attendance being incompletely recorded (see Appendix 2) (Blunt, 2014). Therefore, in this report, analysis of alcohol-related A&E attendances covers the period 2008/09 to 2014/15. The rates presented have taken account of incomplete recording of attendances and reasons for attendance.

In summary, alcohol-related A&E attendances were identified as those recorded at major A&E (type 1) departments with a recorded reason for attendance of ‘poisoning – other, including alcohol’ (code 144). We refer to this definition as alcohol poisoning. Nonetheless, care should be taken when interpreting the findings as this measure is unlikely to include all A&E attendances related to alcohol poisoning, and may include some attendances which are not related to alcohol.

### Inpatient activity (emergency and elective)

We used the PHE-defined diagnostic (ICD-10) code list to identify individual inpatient activity specific to alcohol (see Appendix 1) (PHE, 2015a). For each hospital episode recorded in HES there is a primary diagnosis (i.e. the main reason for the admission) and up to 19 secondary diagnoses (i.e. diagnoses contributing to the admission or co-morbidities). We also examined the reason for admission where an alcohol-specific condition had been recorded in the hospital admission (as a primary or secondary diagnosis). We also stratified hospital inpatient activity into emergency and elective (planned) events. We included finished admission episodes between 2005/06 and 2013/14.

### Outpatient activity

ICD-10 diagnostic codes are also recorded in outpatient HES and therefore the same list of diagnostic codes can be applied to outpatient data as that used for inpatient data. For each outpatient appointment, a primary diagnosis and up to 13 secondary diagnoses are recorded. However, these diagnosis fields are poorly completed in outpatient HES data and use of the fields to assess alcohol-specific activity is unreliable. Therefore, we have not sought to describe alcohol-related outpatient activity over time, but we have explored total outpatient activity in the comparison of hospital activity in the ARLD patient group.

## Examining patterns of hospital activity in a cohort of patients with alcohol-related liver disease

ARLD takes several years of harmful alcohol use to develop and encouraging abstinence from alcohol is a mainstay of treatment at any stage of the disease (Hazeldine and others, 2015). We wanted to gain a understanding of the patterns of hospital activity in those who develop ARLD, before and after diagnosis, compared to the background level of hospital use among the population with no recorded alcohol-specific activity.

We defined a cohort of individuals aged 15–100 years who had a ‘first’ recorded diagnosis (as a primary or secondary diagnosis) of ARLD (ICD-10 code K70) during 2009/10 in inpatient or outpatient HES. By ‘first’ recorded diagnosis we mean individuals who had a diagnosis of ARLD during 2009/10 and had not had ARLD recorded in previous inpatient or outpatient activity from 2003/04 onwards (as this was the earliest that we had access to HES records for). We used both inpatient and outpatient datasets to define the cohort as we considered that a diagnosis of ARLD may require investigations to be undertaken in a hospital setting, although an inpatient admission may not always be required. We used the admission date (inpatient data) or appointment date (outpatient data) of the first recorded ARLD diagnosis as a proxy for the date of diagnosis. We used this index date to define hospital activity in the years leading up to and after diagnosis.

We defined a comparator cohort in the same way as the ARLD cohort but for individuals with no alcohol-specific activity prior to the defined index date identified using primary or secondary diagnoses from 2003/04. Alcohol-specific activity was identified using the ICD-10 code list defined by PHE (see Appendix 1). The index date in the comparator cohort was the first admission date (inpatient data) or appointment date (outpatient data) for that individual during 2009/10. We used this index date to define hospital activity in the years leading up to and after this time point.

Hospital activity was compared between the ARLD and comparator cohorts for six years before the index date and four years after the index date. Hospital activity captured in the year before the index date includes the index admission. Hospital activity comprised *all* emergency and elective inpatient activity, outpatient appointments and A&E attendances. In both the ARLD and comparator cohorts, patients who died during the follow-up period were excluded from the analysis as it is known that hospital activity increases towards the end of life (Bardsley and others, 2010), and we did not want to include end-of-life activity in the comparison of hospital activity before and after ARLD diagnosis. We were only able to identify in-hospital deaths and not individuals who may have died after leaving hospital for the last time.

For emergency and elective inpatient activity, we also looked at the proportion of activity that was alcohol related. This was defined as the proportion of activity where an 'alcohol-specific' code was recorded as either a primary or a secondary diagnosis.

### Statistical methods

In describing the pattern of alcohol-related hospital activity, we present the findings as directly age- and sex-standardised rates per 100,000 of the mid-year England population. The population of England was taken to be the Office for National Statistics' population estimate for each year from 2005 to 2013 (ONS, no date).

Patterns of hospital use in the ARLD and comparator cohorts are presented as directly age-, sex- and deprivation-standardised rates using the same method but with the comparator cohort as the reference population. The rates are presented per 1,000 of the population.

We calculated deprivation quintiles from the Index of Multiple Deprivation 2010 lower super output area scores (CLG, 2011) by assigning these to the lower super output area of the patient's residence, as recorded in HES.

### Key limitations

A key limitation of this study, and others using hospital data to ascertain the burden of alcohol-specific activity, is the poor recording of alcohol in routine hospital administrative datasets. As a result, activity levels related to alcohol may be underestimated in this report.

In the ARLD comparative analysis, the comparator population was selected from the hospital dataset, and as such may include patients who have an alcohol-related condition that is not recorded within the hospital system. By including these patients within the comparator cohort, this may overestimate the difference between the two groups.

## 3. Results

### How have the patterns of alcohol-related hospital activity in the English population changed over recent years?

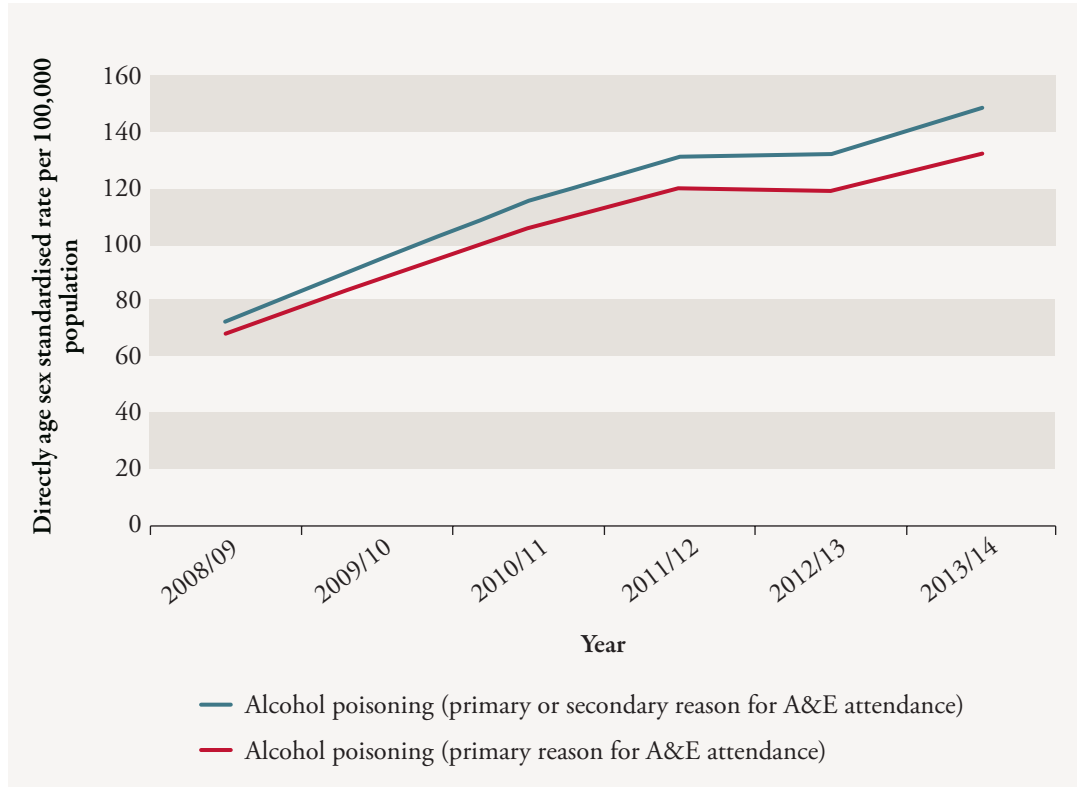
#### A&E attendances likely to be due to alcohol poisoning

Alcohol-related A&E activity is difficult to determine as only one clinical reason for attendance is recorded in A&E data. Therefore, although alcohol may have been a contributing factor towards A&E attendance (e.g. in falls and injuries), this will be poorly recorded in the hospital data.

One approach is to count attendances likely to be due to ‘alcohol poisoning’ – the most specific clinical reason coded in the hospital A&E data related to alcohol. However, this largely reflects attendances as a result of binge drinking and excludes most A&E activity due to, or exacerbated by, prolonged heavy drinking.

In England, A&E attendances for likely alcohol poisoning (recorded as a primary or secondary reason for attendance) doubled over the six-year period between 2008/09 and 2013/14, from 72.7 per 100,000 population to 148.8 per 100,000 population – a 104.6% increase (see Figure 3.1). In 2013/14 there were 65,882 A&E attendances (by 54,541

Figure 3.1: Directly age- and sex-standardised rates of A&E attendances where alcohol poisoning has been recorded, per 100,000 population, 2008/09 to 2013/14



Source: HES



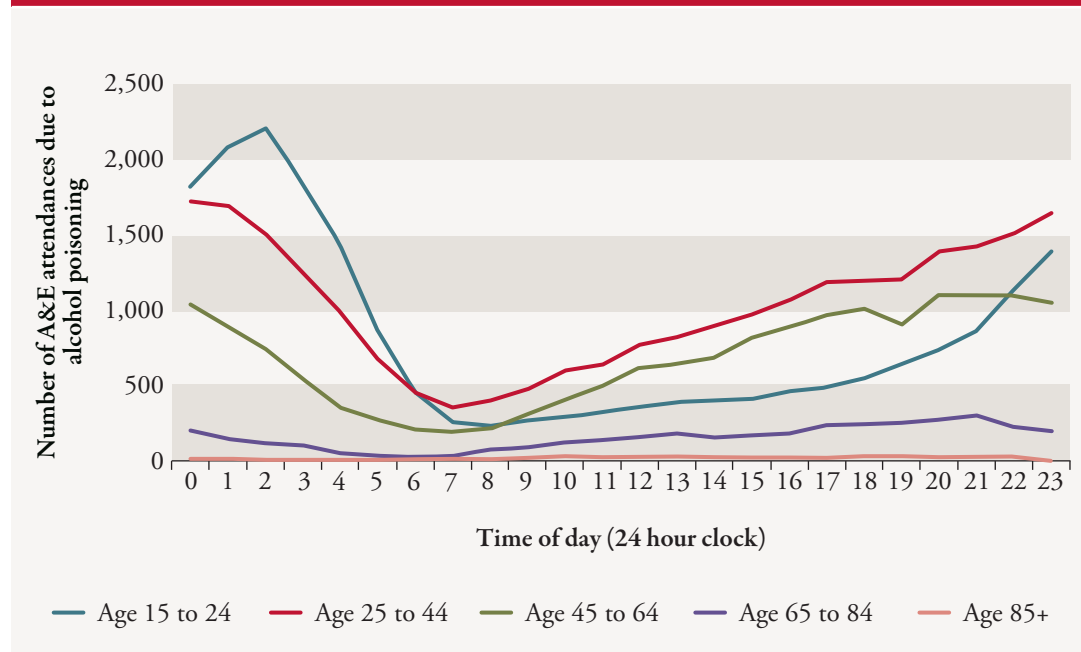
individuals) likely to have been for alcohol poisoning. This activity only accounted for 0.5% of all A&E attendances in 2013/14 (65,882 out of 14.2 million), but as highlighted above, this is only a very specific consequence of alcohol-related harm.

The majority of individuals who attended A&E in 2013/14 with poisoning due to alcohol recorded did so, only once in that year (89.5% or 48,833 out of 54,541). However, there was some evidence to suggest that the proportion of patients who were repeatedly attending A&E for likely alcohol poisoning had increased over the time period: the proportion of people who had more than five A&E attendances for likely alcohol poisoning increased from 0.3% (90 out of 29,333) in 2008/09 to 0.8% (415 out of 54,541) in 2013/14.

### Arrival at A&E and outcome

In 2013/14, over 50% of all A&E attendances likely to be due to alcohol poisoning were over Friday, Saturday and Sunday (51.1% or 33,653 out of 65,882). Across the week, A&E attendances likely to be due to alcohol poisoning increased throughout the evening and peaked between midnight and 2am before reducing to its lowest level at about 7am (see Figure 3.2). The highest volume of attendances in the early hours of the morning was seen in younger age groups, particularly those aged 15–24 years.

**Figure 3.2: Number of A&E attendances likely to be due to alcohol poisoning by age group and time of day, 2013/14**



Source: HES

In 2013/14, three quarters of A&E attendances likely to be due to alcohol poisoning arrived by ambulance (75.1% or 49,505 out of 65,882). The greatest volume of ambulance arrivals were for those aged 15–24 (14,593 in 2013/14).

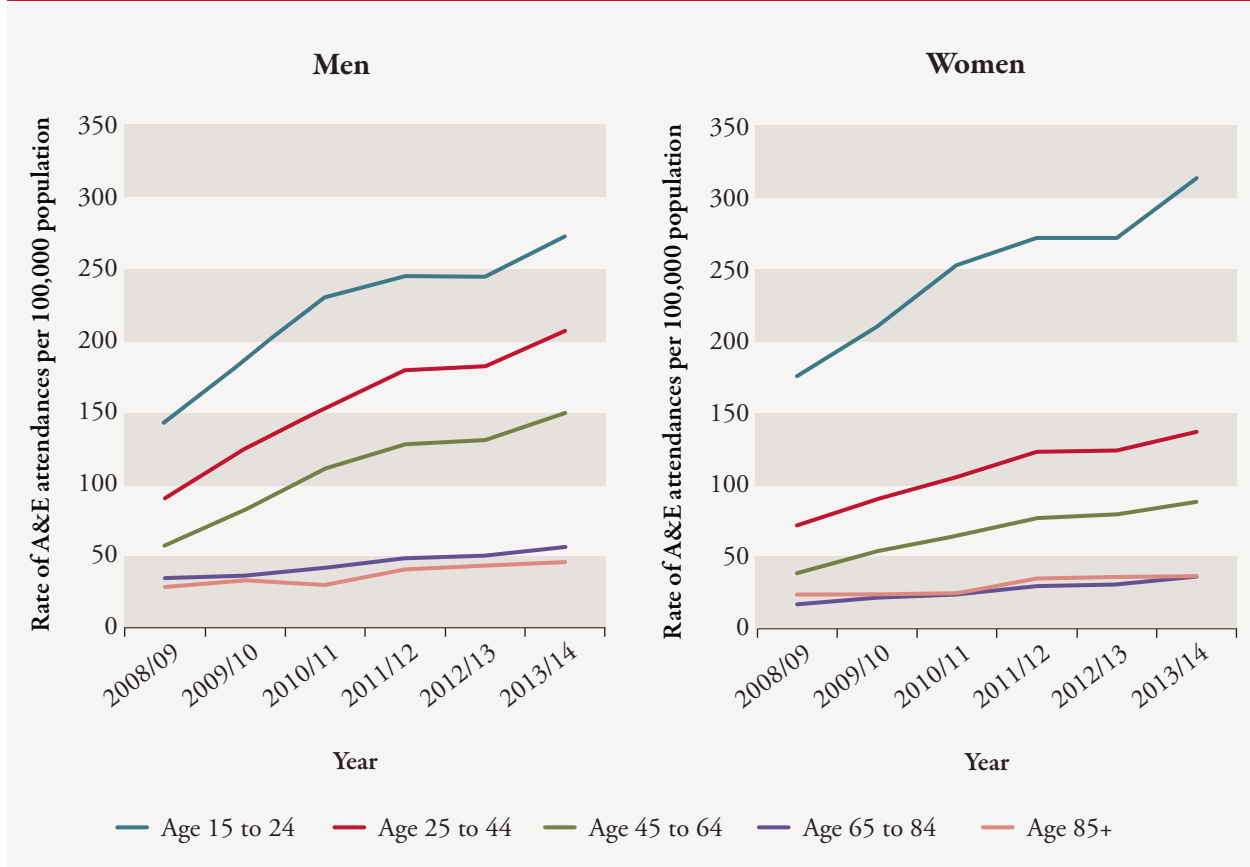
In 2013/14, a third of people attending A&E for likely alcohol poisoning were admitted for inpatient care (34.1% or 22,462 out of 65,882). This was higher than the overall admission rate following A&E attendance (20.9%) (HSCIC, 2015c). Although

15- to 24-year-olds made up the group with the greatest volume of A&E attendances likely to be due to alcohol poisoning, they had the lowest level of admissions. The proportion admitted to hospital following an A&E attendance related to alcohol poisoning was higher among the older age groups (from 38.7% of admissions among those aged 60–64 years to 50.9% of admissions among those aged over 85 years). This may reflect the complex health and care needs of patients in the older age groups.

### Characteristics of those presenting to A&E

Over the study period, A&E attendance rates likely to be due to alcohol poisoning increased across all age groups for men and women. In 2013/14, the highest rates were found in the 15–19 and 20–24 age groups but differences between men and women were identified (see Figure 3.3). The A&E attendance rate was slightly higher among women in the 15–24 age group (313.4 per 100,000 women compared with 272.7 per 100,000 men). Within the narrower age range of 15–19 years, A&E attendance rates due to alcohol poisoning were 37.9% higher in women (357.6 per 1000,000 population) compared to men (259.4 per 100,000 population). In all other age categories, A&E attendances were higher among men.

Figure 3.3: Directly age- and sex-standardised rates of A&E attendances likely to be due to alcohol poisoning, per 100,000 population, 2008/09 to 2013/14



Source: HES

**Table 3.1: Directly age- and sex-standardised rates of A&E attendances likely to be due to alcohol poisoning, per 100,000 population, by deprivation quintile in England (based on the Index of Multiple Deprivation), 2008/09 to 2013/14**

Year	Quintile 1 (least deprived)	Quintile 2	Quintile 3	Quintile 4	Quintile 5 (most deprived)	Relative gap highest:lowest
2008/09	11.1	12.0	14.6	17.9	17.1	1.53
2009/10	10.4	13.1	16.7	23.9	30.6	2.94
2010/11	10.7	14.1	20.3	27.4	42.9	4.00
2011/12	12.9	16.0	22.5	32.2	47.8	3.72
2012/13	12.4	16.6	23.4	31.9	48.0	3.86
2013/14	14.6	19.5	25.9	35.8	53.0	3.64

Source: HES

Marked differences by deprivation were also found. In 2013/14, A&E attendance rates likely to be due to alcohol poisoning were three and a half times higher among those living in the 20% most deprived areas compared with those living in the 20% least deprived (see Table 3.1). Between 2008/09 and 2013/14 the gap increased, indicating widening inequalities in A&E attendance likely to be due to alcohol poisoning.

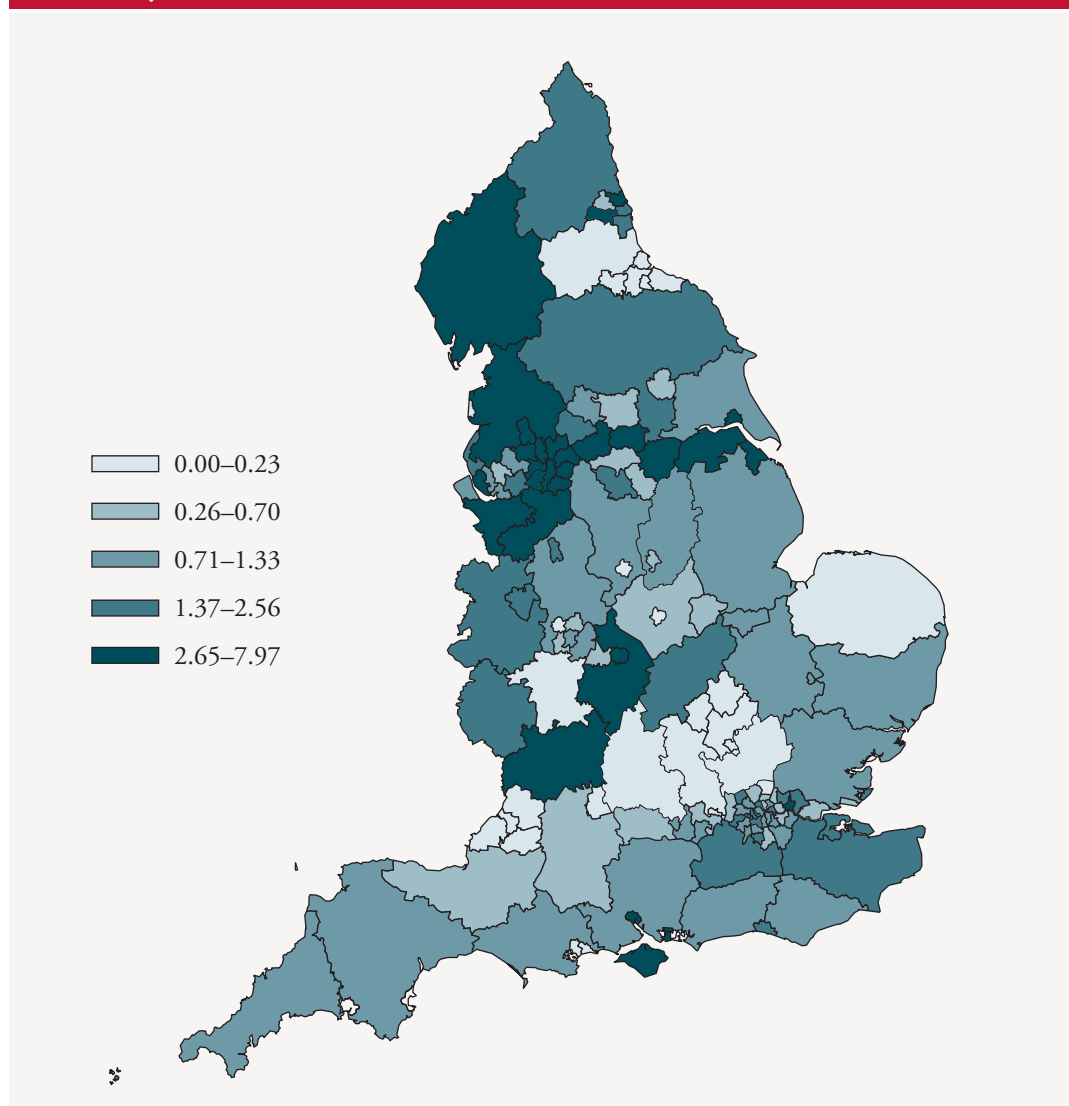
### Geographical distribution

At local authority level there was variation in A&E attendance rates likely to be due to alcohol poisoning, with higher rates generally seen in the north of England in 2013/14 (see Figure 3.4, page 18).

### Key points

- The recording of alcohol consumption in data on A&E attendance likely to be due to alcohol poisoning captures only a very specific consequence of harmful alcohol use, which involves a small proportion of overall A&E activity (approximately 0.5%). However, this potentially avoidable activity presents stark challenges for the NHS.
- From 2008/09 to 2013/14, the A&E attendance rate due to alcohol poisoning in England approximately doubled, from 72.7 per 100,000 population to 148.8 per 100,000 population.
- Of those attending A&E due to alcohol poisoning, around 75% arrived by ambulance and around 34% were subsequently admitted.
- There were marked demographic differences, with higher rates of A&E attendances due to alcohol poisoning in the 15–24 age groups, particularly young women, and those living in more deprived areas. The gap in alcohol-related harm experienced in the most and least deprived groups is increasing.

Figure 3.4: Directly age- and sex-standardised rates of A&E attendances likely to be due to alcohol poisoning, per 1,000 population, by local authority area, 2013/14



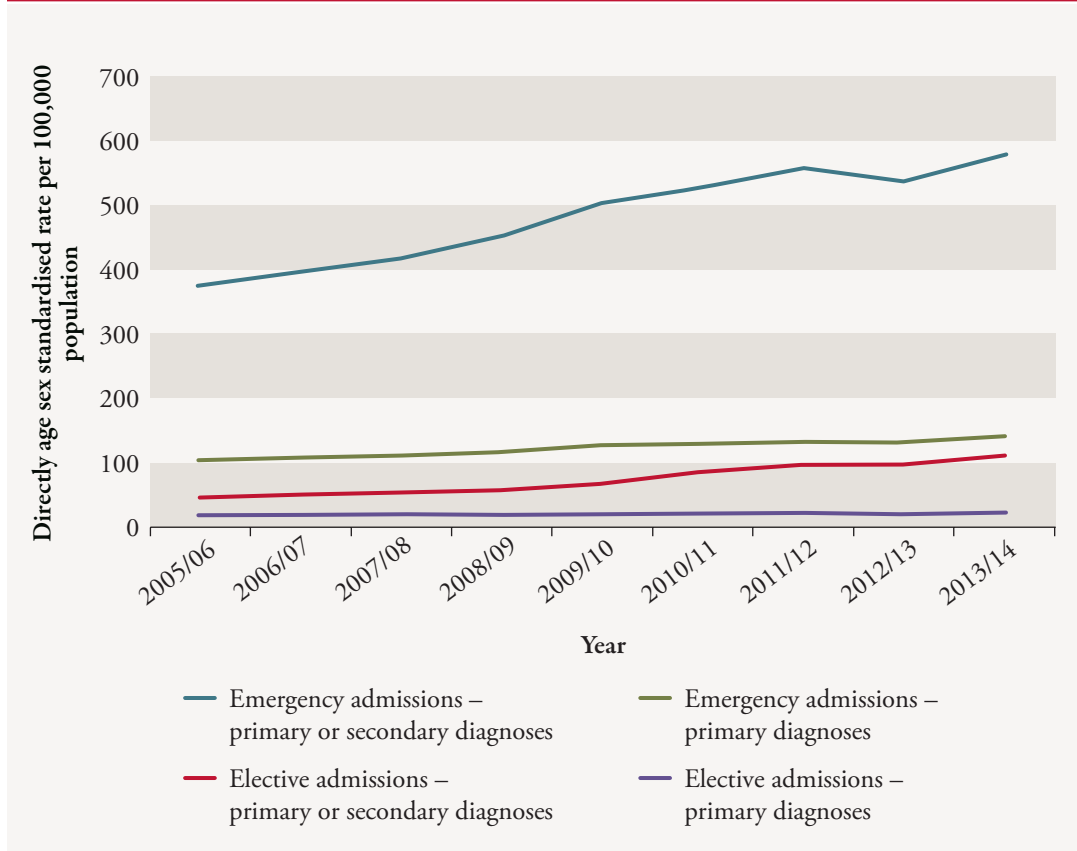
Source: HES

### Alcohol-specific inpatient activity

Over the nine-year period between 2005/06 and 2013/14 in England, alcohol-specific emergency admissions (primary and secondary diagnosis) increased by 53.9%, from 374.9 per 100,000 population to 577.1 per 100,000 population (see Figure 3.5, page 19). Over the same time period, alcohol-specific elective admissions (primary and secondary diagnoses) also increased substantially, from 45.5 per 100,000 population to 110.8 per 100,000 population (a 143.3% increase). The overall increase (emergency and elective) in alcohol-specific inpatient admissions was 63.6%, with emergency admissions accounting for the majority (83.9%).

Including hospital admissions where the alcohol-specific condition was recorded as a secondary diagnosis (see Figure 3.5) means that any changes over time may, in part, be due to improvements in the recording of hospital administrative data and increasing recognition of conditions related to alcohol.

**Figure 3.5: Directly age- and sex-standardised rates of alcohol-related inpatient admissions, per 100,000 population, 2005/06 to 2013/14**



Source: HES

In 2013/14, approximately 1 in 20 (4.7% or 255,567 out of 5.4 million) emergency and 1 in 120 (0.8% or 49,053 out of 5.8 million) elective admissions were for alcohol-specific diagnoses (primary and secondary diagnoses). If only the primary diagnosis is considered, then the figures are lower, accounting for 1.2% (62,285 out of 5.4 million) emergency admissions and 0.2% (9,424 out of 5.8 million) elective admissions over the same period.

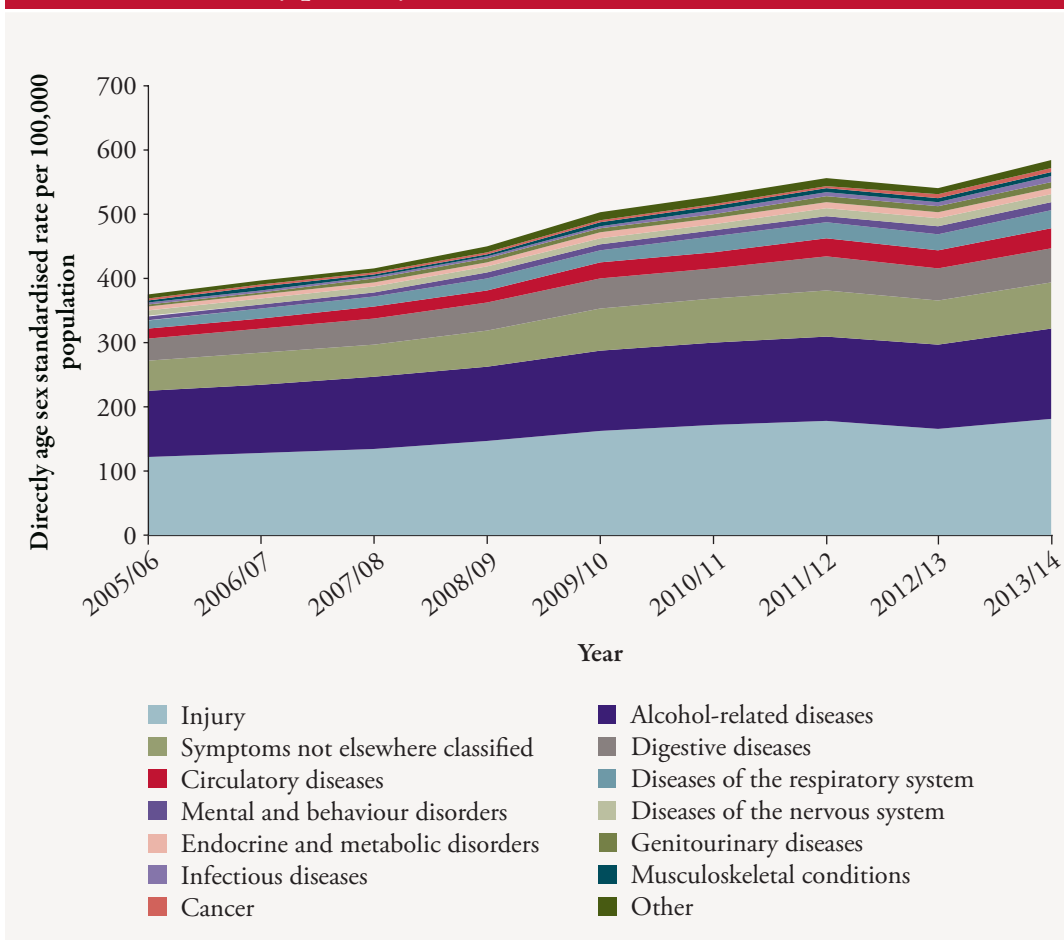
In 2013/14, 71.9% (113,900 out of 158,523) of individuals who had an alcohol-specific emergency admission were only admitted once under an emergency related to alcohol. However, there was some evidence to suggest that the proportion of patients who were repeatedly admitted for alcohol-related emergency care had increased. In 2005/06, 1.8% of patients (2,038 out of 111,221) had more than five alcohol-related emergency admissions, increasing to 2.7% (4,223 out of 158,523) in 2013/14.

#### Reason for admission

For elective admissions, alcohol-related diagnoses were the most common primary reason for admission (19.2%), followed by digestive system disorders (15.6%) and cancer diagnoses (10.5%) (2013/14 figures).

For emergency admissions due to alcohol, injury was the most common primary reason, accounting for nearly a third (30.9%) of admissions, followed by alcohol-related diagnoses (24.0%), 'symptoms not elsewhere classified' (12.5%) and digestive system disorders (9.1%) (2013/14 figures) (see Figure 3.6, page 20).

**Figure 3.6: Directly age- and sex-standardised alcohol specific emergency admission rates, by primary reason for admission, 2005/06 to 2013/14**



Source: HES

### Length of stay

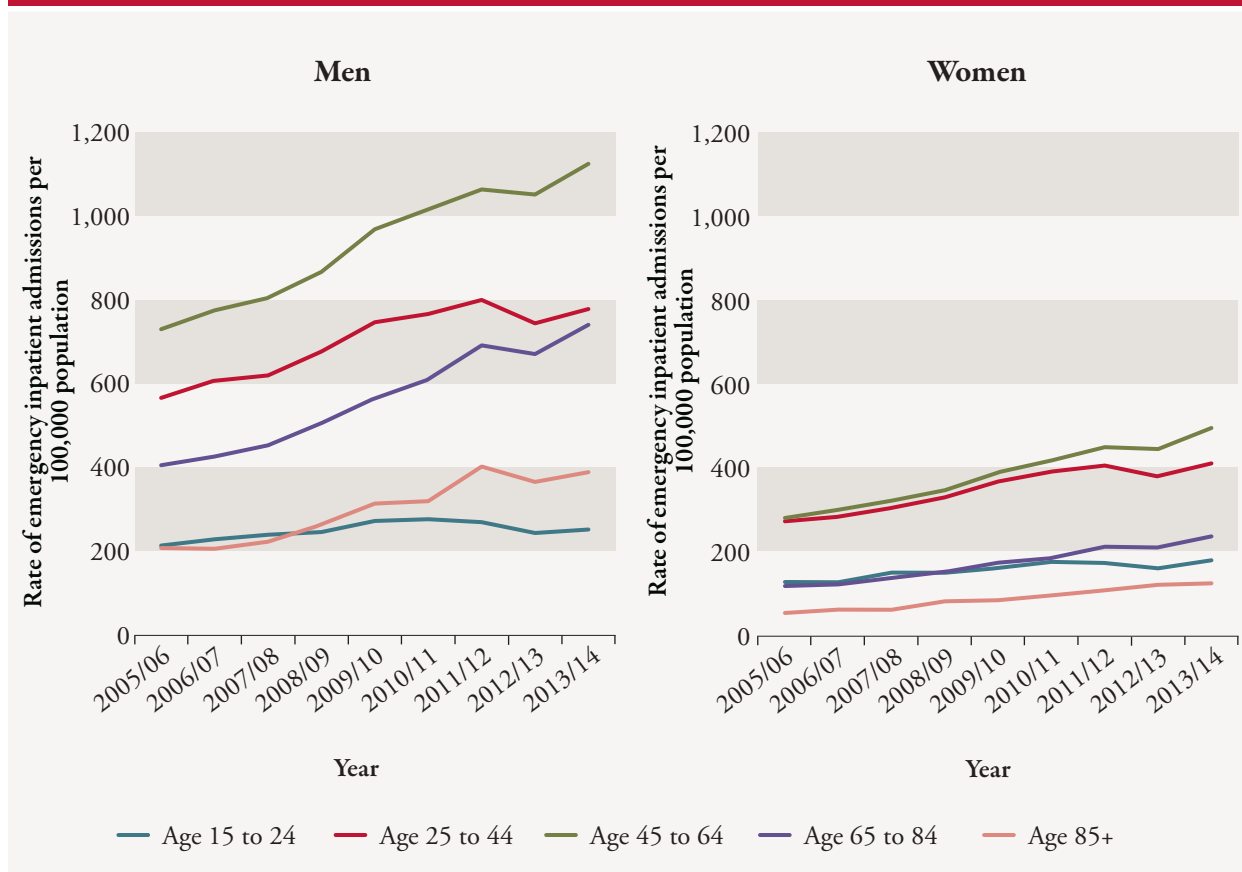
The average length of stay for alcohol-related emergency admissions reduced by 1.1 days between 2005/06 and 2013/14 – from 6.7 days to 5.6 days. For elective admissions, the average length of stay decreased by 2.2 days over the same time period – from 6.6 days to 4.4 days.

### Characteristics of those admitted

The emergency admission rates for alcohol-specific conditions increased in all age groups over time, for men and women. The rates were consistently higher in men compared with women, across all age groups (see Figure 3.7). In 2013/14, the highest rates of emergency admission were found in the 45–64 age group for both men (1,126.0 per 100,000 population) and women (496.5 per 100,000 population). For elective admissions, the highest rates were again seen in the 45–64 age group for both men (297.4 per 100,000 population) and women (113.3 per 100,000 population).

In 2013/14, rates of alcohol-specific emergency admissions were four times higher among those living in the 20% most deprived areas compared with those living in the 20% least deprived areas (Table 3.2). In contrast to the pattern of alcohol poisoning, the gap

Figure 3.7: Directly age- and sex-standardised rates of alcohol-specific emergency admissions (primary or secondary diagnosis), per 100,000 population, 2005/06 to 2013/14



Source: HES

Table 3.2: Directly age- and sex-standardised rates of alcohol-specific emergency admissions (primary or secondary diagnosis), per 100,000 population, by deprivation quintile in England (based on the Index of Multiple Deprivation), 2005/06 to 2013/14

Year	Quintile 1 (least deprived)	Quintile 2	Quintile 3	Quintile 4	Quintile 5 (most deprived)	Relative gap highest:lowest
2005/06	30.7	41.6	58.0	87.4	151.6	4.9
2006/07	32.2	44.0	60.1	91.8	163.8	5.1
2007/08	34.9	47.2	64.5	97.4	169.5	4.9
2008/09	37.5	50.7	70.5	106.3	183.2	4.9
2009/10	42.9	56.6	78.2	118.5	203.4	4.7
2010/11	44.8	59.8	83.2	124.9	213.0	4.8
2011/12	47.9	64.6	89.0	133.6	220.6	4.6
2012/13	46.7	63.5	87.4	127.9	206.9	4.4
2013/14	51.8	69.6	95.6	136.4	219.0	4.2

Source: HES

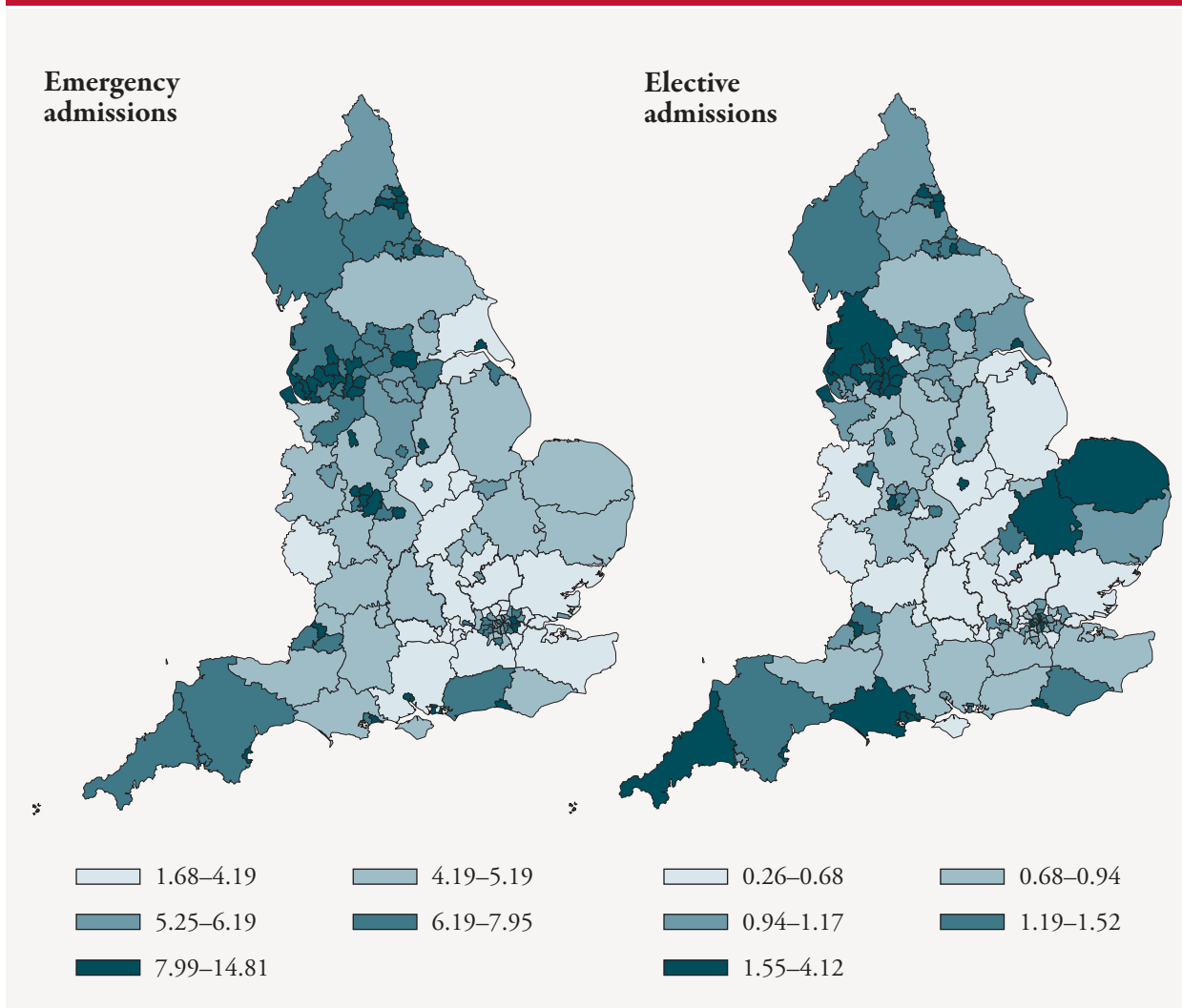
in the alcohol-related emergency admission rate between the most deprived and least deprived areas decreased over the period 2008/09 to 2013/14, showing signs of reducing inequalities. The pattern was the same for elective admissions.

### Geographical distribution

At local authority level, there was variation in the rate of emergency and elective admissions for alcohol-related conditions recorded as a primary or secondary diagnosis (see Figure 3.8). For emergency admissions, there appeared to be higher rates in the north of England and also some urban areas. For elective admissions, variation was widespread, with higher rates in the north but also in the east and south west of England.

These geographical differences are likely to reflect a range of factors, including local patterns of alcohol consumption, the provision of hospital services in local areas and the threshold to admit patients in different hospitals.

**Figure 3.8: Directly age- and sex-standardised rates of alcohol-specific admissions (primary or secondary diagnosis), per 1,000 population, by local authority, 2013/14**



Source: HES



**Key points**

- From 2005/06 to 2013/14, alcohol-related inpatient admissions (emergency and elective) increased by 63.6%. Emergency admissions accounted for the majority of all alcohol-related inpatient stays (83.9%).
- In 2013/14, approximately 1 in 20 emergency admissions in England were related to alcohol (primary or secondary diagnosis). Injury was the most common reason for an emergency admission attributed to alcohol.
- From 2005/06 to 2013/14, the average length of stay for an emergency and elective admission specific to alcohol reduced by 1.1 days and 2.2 days, respectively. However, there was also a small increase in the proportion of patients having repeat admissions specific to alcohol over that time.
- There were marked demographic differences among those having alcohol-related inpatient admissions and those who presented to A&E with alcohol poisoning. Higher rates of alcohol-related emergency admissions were seen in men and in people in the 45–64 age group. This contrasts with much younger age groups who had the highest rates of A&E attendance due to alcohol poisoning. This may be due to the chronicity of alcoholism, which leads to many of the alcohol-related diagnoses included in our definition of alcohol-related inpatient admissions.
- As with A&E attendances, there were much higher rates of alcohol-specific inpatient admissions with increasing levels of deprivation. However, there was evidence to suggest that inequalities for inpatient admissions (both emergency and elective) had declined over time.

**How do the patterns of hospital activity change before and after ARLD diagnosis?****What is ARLD?**

ARLD is a silent disease, which can take over 10 years to develop, resulting in the majority of cases presenting as an emergency. However, the underlying alcohol dependency is ‘rarely silent and it is vital clinicians intervene early to change harmful behaviour’ (Hazeldine and others, 2015). Identification of hazardous drinking and early intervention are recommended by NICE (2011b) and in ARLD may support improvements in survival (Hazeldine and others, 2015). Yet, recent reports have highlighted concerns of missed opportunities in primary and secondary care to identify harmful drinking and provide supportive care (NCEPOD, 2013).

We wanted to assess the frequency with which patients who went on to develop ARLD were presenting to hospital before and after their diagnosis. This is important because high levels of activity prior to diagnosis may reflect opportunities for earlier intervention, and activity after diagnosis may provide an indication of how their care is then managed. By examining the total activity over time, this also provides an indicator of the additional resources required for patients with ARLD.

To do this, we identified a cohort of patients aged 15–100 who were diagnosed with ARLD (ICD-10 code K70) in 2009/10, and a similarly aged comparator group who had no history of alcohol-related hospital activity. We then compared hospital activity (A&E attendance, inpatient admissions and outpatient appointments) between the ARLD and comparator groups prior to the diagnosis year (from 2003/04 to 2009/10) and four years after diagnosis (2009/10 to 2013/14).

We identified 14,598 patients, aged 15–100, who were first diagnosed with ARLD in 2009/10 (see Table 3.3). Of these, 9,379 (64.2%) were alive four years after their date of diagnosis in 2009/10 (which we termed the index date) and comprised the ARLD cohort in this study.

**Table 3.3: Process for defining the alcohol-related liver disease (ARLD) cohort**

Description	Number excluded	Number remaining
Individuals with ARLD recorded in 2009/10	–	27,450
Exclude previous alcohol-specific activity (2003/04 to index date)	12,334	15,116
Exclude where age is less than 15 or over 100 or not resident in England	518	14,598
Died within four years of the index date	5,219	9,379
<b>Final cohort</b>		<b>9,379</b>

Source: HES

We also identified 17,905,645 patients, aged 15–100, who had no record of alcohol-related hospital activity from 2003/04 to 2009/10 (see Table 3.4). Of these, 17,133,007 (95.7%) were alive four years after their first hospital contact in 2009/10 (which we termed the index date) and comprised the comparator cohort.

**Table 3.4: Process for defining the comparator cohort**

Description	Number excluded	Number remaining
Individuals with no alcohol-specific activity recorded between 2003/04 and 2009/10	–	22,121,584
Exclude where age is less than 15 or over 100 or not resident in England	4,215,939	17,905,645
Died before four years after the index date	772,638	17,133,007
<b>Final cohort</b>		<b>17,133,007</b>

Source: HES

### Characteristics of the ARLD and comparator cohorts

A greater proportion of the ARLD cohort were male and in the most deprived quintile (see Table 3.5). The ARLD cohort was also younger (with a mean age of 49.4 compared with a mean age of 52.1 in the comparator cohort). Ethnicity was not known for the majority of individuals in either cohort.

**Table 3.5: Demographic characteristics of the alcohol-related liver disease (ARLD) and comparator cohorts**

Characteristics	ARLD cohort ( <i>n</i> = 9,379)	Comparator cohort ( <i>n</i> = 17,133,007)	<i>p</i> value
Male	70.6%	43.1%	<.0001
Mean age (years)	49.4 (SD 20.1)	52.1 (SD 12.6)	<.0001
Age range (years)	15–100	15–100	
Resident in most deprived quintile of Index of Multiple Deprivation	35.0%	21.2%	<.0001
White British ethnicity	7.0%	2.3%	<.0001
Unknown ethnicity	84.2%	93.8%	<.0001

Note: *p* values = Chi-squared test for proportions and t-test for difference in mean age.

Source: HES

## Hospital activity

### Overall

Although the ARLD cohort was much smaller than the comparator group, the ARLD cohort placed a high demand on hospital services (see Figures 3.9 and 3.10). Across all 10 years of follow-up, higher rates were observed across inpatient, outpatient and A&E activity in the ARLD cohort. Outpatient appointments accounted for the highest level of activity in both the ARLD and comparator cohorts. Hospital activity was highest in both cohorts in the year prior to the index date, and is expected as individuals were defined as being part of the cohort by virtue of having hospital activity in this year.

### Planned activity: elective admissions and outpatient appointments

Elective admissions increased in the years before ARLD diagnosis, from 261 per 1,000 population at six years before diagnosis to 549 per 1,000 population two years before diagnosis. Following the ARLD diagnosis, the rate of elective admissions decreased to 431 per 1,000 population at four years after the index date.

Over the 10-year follow-up period, the elective admission rate was 1.5 times higher in the ARLD cohort compared with the comparator group.

Outpatient appointments increased in the years before ARLD diagnosis, from 2,001 appointments per 1,000 population at six years before diagnosis, to 3,574 per 1,000 population two years before diagnosis. Following ARLD diagnosis the rate of outpatient appointments declined, reaching 2,839 per 1,000 population at four years after the index date.

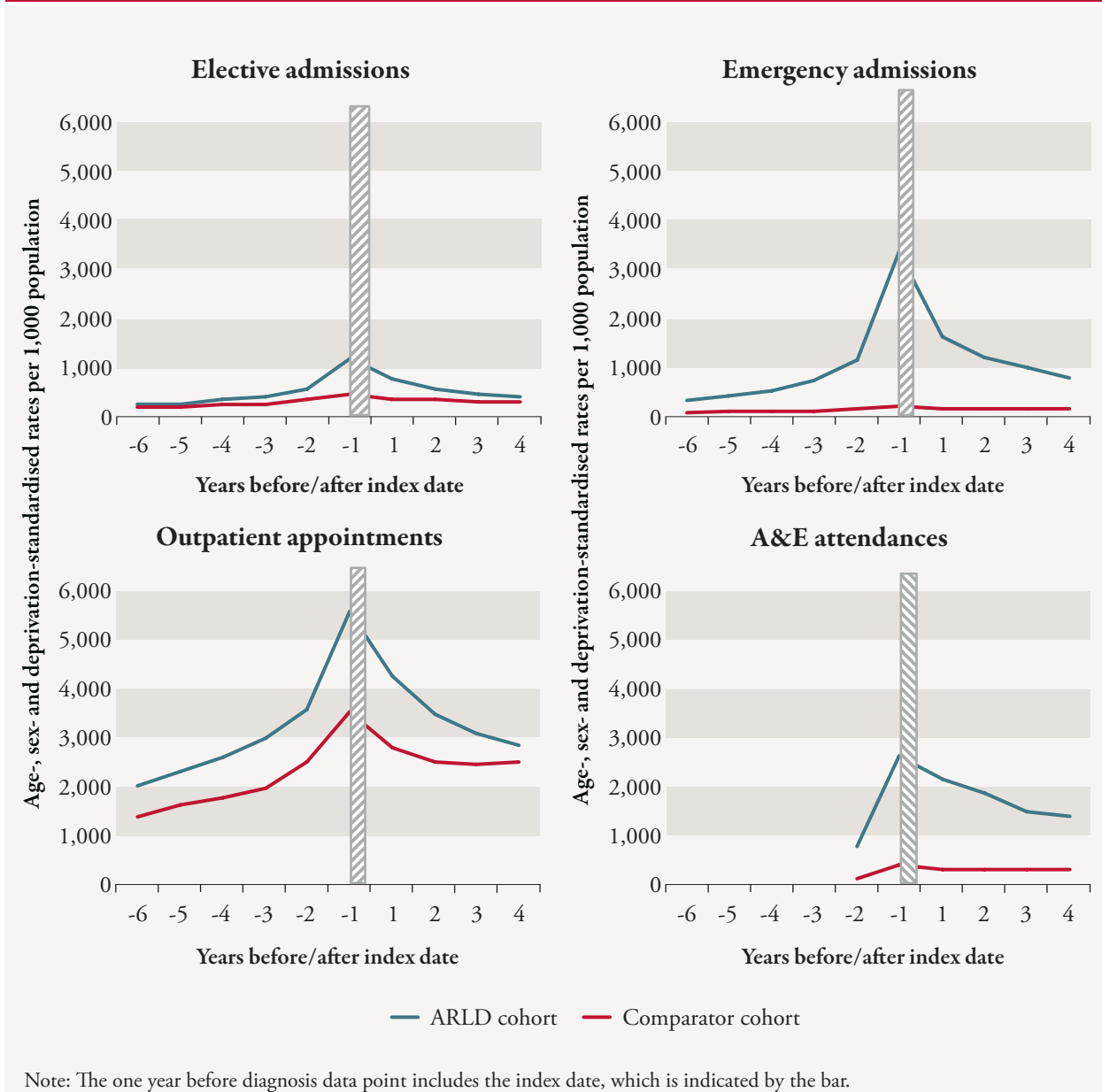
In the years leading up to a diagnosis, outpatient activity in the ARLD group was approximately 1.5 times higher than it was in the comparator group. At four years after diagnosis, the difference decreased to 1.1 times that of the comparator group, perhaps indicating a return to activity levels of the comparator group, representing better management of the ARLD population.

### Emergency activity: emergency admissions and A&E attendances

Emergency admissions increased in the years before ARLD diagnosis, from 337 admissions per 1,000 population at six years before diagnosis, to 1,166 per 1,000 population two years before diagnosis. Following ARLD diagnosis, the rate of emergency admissions declined to 782 per 1,000 at four years after diagnosis.

Over the 10-year follow-up period, the emergency admission rate was, on average, seven times higher in the ARLD cohort compared with the comparator group. At six years before ARLD diagnosis and four years after diagnosis, the emergency admissions rate

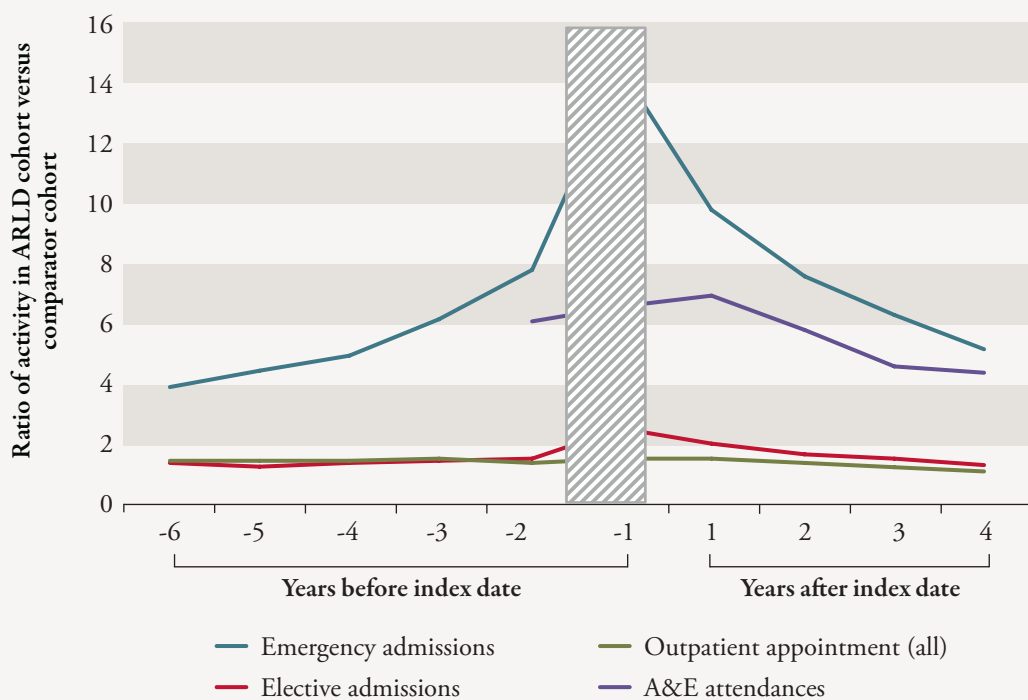
**Figure 3.9: Comparison of hospital activity in the alcohol-related liver disease (ARLD) cohort versus the comparator cohort from six years before the index date to four years after the index date, directly age-, sex- and deprivation-standardised rates per 1,000 population (index date 2009/10)**



remained approximately four times higher in the ARLD group compared with the comparator group.

Increasing trends in hospital admissions for the ARLD cohort may reflect improvements in recording liver disease specific to alcohol, or improved recording of the chronic condition in those diagnosed, in subsequent admissions. To explore this, we examined changes in recording diagnosed ARLD, or ARLD as a secondary diagnosis, over time. The results suggested that trends in admissions due to ARLD did not appear to be due to improved coding of alcohol-related conditions (see Appendix 2). Nonetheless, awareness of changes in coding practices is a key methodological issue when examining hospital activity data for an analysis of alcohol-specific activity.

Figure 3.10: Ratio of standardised rates of activity in the alcohol-related liver disease (ARLD) cohort compared with the comparator cohort from six years before the index date to four years after the index date (index date 2009/10)



Note: The one year before diagnosis data point includes the index date, which is indicated by the bar.

Source: HES

A&E attendance was also markedly higher in the ARLD cohort. Two years before ARLD diagnosis, the rate of A&E attendances was 779 per 1,000 population – approximately six times higher than that of the comparator group. At four years post ARLD diagnosis, A&E attendances remained over four times that of the comparator group. This consistent pattern of higher levels of emergency hospital care may reflect the complex physical and mental health needs of this population.

**Table 3.6: Number and proportion of the ARLD cohort having hospital contact (for any reason) in the year before diagnosis according to hospital event type**

	In the year before diagnosis <i>n</i> = 9,379			
	At least one of hospital event types (n, %)		1 or 2 contacts with hospital services (n, %)	
<b>A&amp;E attendances</b>	3,172	33.8%	2,151	22.9%
<b>Inpatient admissions<sup>1</sup></b>	4,517	48.2%	3,105	33.1%
Emergency admissions	3,516	37.5%	2,571	27.4%
Elective admissions	1,900	20.3%	1,659	17.7%
<b>Outpatient appointments</b>	5,448	58.1%	2,515	26.8%
<b>Any hospital event</b>	<b>7,230</b>	<b>77.1%</b>	<b>2,396</b>	<b>25.6%</b>

1. Inpatient admissions include number of ARLD patients who had an emergency admission or an elective admission.

Source: HES

### Hospital service use before ARLD diagnosis: opportunities for intervention?

While many other services outside hospitals have a role in preventing alcohol-related harm, during the year before diagnosis, approximately four in five (77.1%) individuals in the study had contact with hospital services in any setting (see Table 3.6, page 28). These contacts represent potential opportunities to intervene in supporting individuals to abstain from alcohol. However, during the year before diagnosis, approximately one in four (25.6%) had only one or two contacts with hospital services. This highlights the importance of recognising when harmful drinking is occurring and taking action at every occasion in order to potentially prevent further alcohol-related harm.

While the largest proportion (58.1%) had contact with outpatient services in the year before diagnosis, this represents a small proportion of the overall volume of individuals using outpatient services.

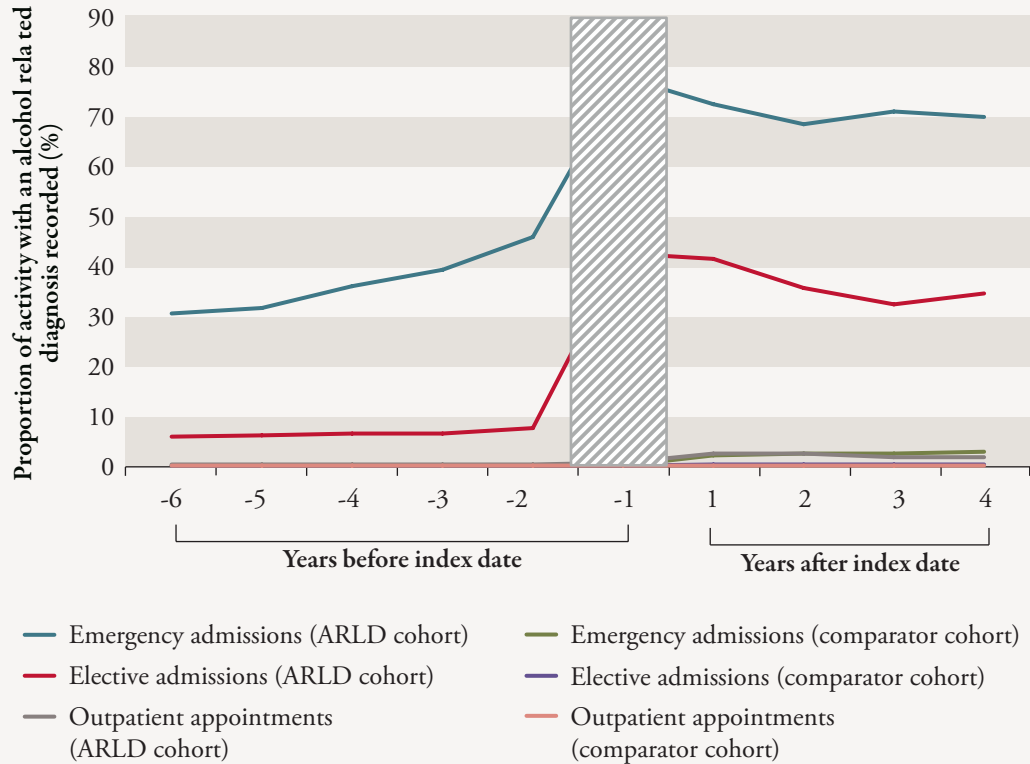
### Alcohol-related hospital activity

Our analysis suggests that there may be opportunities for prevention among individuals who are in contact with acute services who go on to develop ARLD. Patients may come into contact with acute care for many reasons, so we wanted to explore the proportion of activity in the ARLD group where they had presented to hospital for a condition specific to alcohol, *before* diagnosis of ARLD.

Our definition of alcohol-related inpatient activity captures only alcohol-specific diagnoses and so does not capture where drinking behaviour has been recognised as a problem for an individual but where they have not been diagnosed with an alcohol-related condition.

In the follow-up period from six years to two years before ARLD diagnosis, 30 to 45% of emergency admissions in these patients were alcohol related (see Figure 3.11). This represents potential opportunities for the health service to intervene, providing brief advice, which may lead to preventing a diagnosis of ARLD (Hazeldine and others, 2015).

Figure 3.11: Proportion of any activity among the alcohol-related liver disease (ARLD) and comparator cohorts where an alcohol-related diagnosis was recorded from six years before the index date to four years after the index date (index date 2009/10)



Note: The one year before diagnosis data point includes the index date, which is indicated by the bar.

Source: HES

In the year after diagnosis of ARLD, 72.7% of all emergency admissions had alcohol-specific activity recorded. Ideally, all admissions after a diagnosis of ARLD should have ARLD recognised as a co-morbidity to ensure that all the needs of the patient are being appropriately managed, unless the patient has recovered to the extent that this diagnosis is no longer relevant.

Less than 10% of planned inpatient (elective) activity was recorded as alcohol related in the year leading up to ARLD diagnosis. Recording of alcohol in hospital activity post ARLD diagnosis decreased over time, from 41.6% at one year to 34.6% at four years post diagnosis. Again, ideally, all elective admissions after a diagnosis of ARLD should have ARLD recognised as a co-morbidity.

For outpatient activity among the ARLD cohort, a very small proportion had an alcohol-related diagnosis coded, reflecting the poor coding of diagnoses in the outpatient dataset.

### Key points

- Recording of alcohol-related conditions in hospital data was poor, even for those patients with a known ARLD diagnosis. This raises the question of whether patients are holistically assessed when they present to hospital and consequently whether opportunities for supporting these people appropriately are being identified.
- Consistently higher rates of emergency and planned care were found in the ARLD cohort than in the comparator cohort. The additional burden was seen particularly in unplanned activity – A&E attendances and emergency admissions.
- In the two years before diagnosis, the ARLD cohort had 1.5 times more outpatient activity, 1.5 times more elective admissions, 6.5 times more A&E attendances and 7.8 times more emergency admissions, compared with the general population.
- Higher levels of hospital activity in patients diagnosed with ARLD were evident for several years before the diagnosis, and remained for several years after the diagnosis, compared with the general population. This reflects the complexity of this condition and the higher needs of the patients who have it.
- In those who were diagnosed with ARLD in 2009/10, 30 to 45% of their emergency admissions in the years prior to the diagnosis were related to alcohol. This may present opportunities for early identification of risk behaviour and intervention to prevent future alcohol-related harm.



## 4. Discussion

The aims of this study were to explore trends in patterns of alcohol-related hospital activity in England from 2005/06 to 2013/14, and to examine opportunities for intervention in acute care settings in those with chronic alcohol-related harm. We did this by looking at patterns of alcohol-related hospital activity among the general population, and among a specific group of patients with a chronic long-term alcohol-specific diagnosis – ARLD. This is the first study to explore patterns of health care use before and after diagnosis with ARLD, and to identify the extent to which there is the potential for early identification of risk behaviour and intervention in acute care settings.

### Main findings

#### Alcohol-related hospital activity is increasing

This study found increasing levels of hospital activity for two indicators of alcohol-related harm: alcohol poisoning and alcohol-specific inpatient admissions. Over the six-year period from 2008/09 to 2013/14, A&E attendance likely to be due to alcohol poisoning doubled, from 72.7 per 100,000 population to 148.8 per 100,000 population (a 104.6% increase). The rate of inpatient admissions specific to alcohol increased by 34.8% during this period (with a 92.5% increase in elective admissions and a 27.4% increase in emergency admissions). In 2013/14, approximately 1 in 20 emergency admissions and 1 in 120 elective admissions were due to alcohol-specific conditions.

#### Alcohol causes potentially avoidable demand especially on urgent care services

By limiting our analysis of A&E attendance to attendances likely to be due to alcohol poisoning, the analysis reflects only the most severe consequences of alcohol consumption. It is therefore likely to underestimate the true levels of alcohol-specific activity in A&E settings. Previous studies have estimated that approximately one third of A&E attendances are alcohol related, rising to up to 70% on weekend nights (PHE, no date a). Furthermore, a survey of A&E staff found that between 16.3 and 19.3% of A&E attendances were perceived to be related to alcohol (EMPHO, 2010).

In the present study, while A&E attendances likely to be due to alcohol poisoning increased over the period under study, they accounted for a relatively small proportion of all A&E attendances (0.5% in 2013/14). Nonetheless, 75% arrived by ambulance. Of all those attending A&E likely to alcohol poisoning, one in three were subsequently admitted to hospital overnight, in comparison with approximately one in five of those attending A&E for other reasons (HSCIC, 2015c), placing potentially avoidable strain on ambulance trusts, A&E and hospital services.

In 2013/14, the alcohol-specific emergency admission rate was 577 per 100,000 population. This rate is slightly lower than that reported by PHE (alcohol-related hospital admissions (narrow definition) in 2013/14 was 645 per 100,000 (PHE, no date b)). The reason for the difference is that we used a more specific definition to identify activity specific to alcohol and our methods to calculate the rates are not directly comparable.

A&E attendances due to alcohol poisoning and alcohol-specific emergency admissions reflect the most severe consequences of alcohol-related harm, and do not reflect all hospital activity related to alcohol. In England, approximately nine million adults drink alcohol at a level that poses some risk to their health and 2.2 million are at high risk of harm. It is estimated that approximately 1.6 million people have some degree of alcohol dependence, and approximately 250,000 are moderately or severely dependent and may benefit from structured alcohol treatment (PHE, 2014c).

Every contact counts: hospitals have a role in preventing serious illness by taking opportunities to intervene

Our findings emphasise the importance of NHS services in prevention and making every contact count. There is a need to capitalise on the 'teachable moment', as 90% of those who attended A&E for alcohol poisoning, and 72% of those who had an alcohol-related emergency admission, only attended hospital (outpatient appointment, A&E attendance or hospital admission, for any reason) once in 2013/14.

There are cost-effective screening tools available, and brief interventions for identifying people who are not seeking treatment for alcohol problems but who may be consuming harmful levels of alcohol (NICE, 2010).

NICE best practice guidelines published in 2010 recommended that commissioners and local authorities prioritise alcohol prevention as an 'invest to save' initiative (NICE, 2010). The guidelines called for the managers of NHS-commissioned services to ensure that staff are trained to provide alcohol screening and structured brief advice, and allowed the time and resources to carry this out effectively. This was followed in 2011 by NICE quality standards (NICE, 2011c) for local commissioners and providers to assess the quality of prevention and care of alcohol-use disorders, including awareness among staff, opportunistic screening and referral to specialist services. In England, the Coalition Government's national alcohol strategy in 2012 stated that it 'expect[ed] all areas to implement the recent NICE guidance and a quality standard on the management of harmful drinking and alcohol dependence' (HM Government, 2012, p. 25).

However, implementation of these initiatives within hospital settings is patchy; there is no systematic way to collect data on alcohol consumption, nor the offer of brief advice within hospitals; and it is known that one in four hospitals do not have an alcohol service available (PHE, 2014a).

This is the first study to look at patterns of hospital use before and after ARLD diagnosis, and identified higher levels of hospital activity before the diagnosis. In the two years before diagnosis, the ARLD cohort had 1.5 times more outpatient activity, 1.5 times more elective admissions, 6.5 times more A&E attendances and 7.8 times more emergency admissions, compared with the general population. Three quarters of those diagnosed with ARLD had contact with hospital services in the year before diagnosis – any hospital setting (77%), A&E (34%), inpatient admission (48%) or outpatient appointment (58%). Before ARLD diagnosis, approximately 30 to 45% of emergency admissions in this group were known to be specifically related to alcohol – providing an opportunity to identify issues of alcohol dependency, and provide specialist advice and onward referral, which may prevent progression to ARLD (Hazeldine and others, 2015; Mc Queen and others, 2011).

The 2013 National Confidential Enquiry into Patient Outcome and Death (NCEPOD) – patients who died with ARLD – also identified opportunities for earlier intervention to prevent more serious problems developing, and recommended alcohol misuse

screening for all patients who present to hospital services (NCEPOD, 2013). It also recommended that all hospitals have a seven-day Alcohol Specialist Nurse Service, alongside a multidisciplinary Alcohol Care Team integrated across primary and secondary care.

A 2013 PHE survey on hospital alcohol teams reported that 73% of hospitals (deemed to be of an appropriate size) had some sort of alcohol service (PHE, 2014a). However, there was limited understanding about how the services were delivered locally – for instance, working hours, referral routes, methods used to target patients who would benefit (e.g. A&E, medical admission wards, gastroenterology wards, whole hospital) – to learn about and establish optimal ways of working. In September 2015, PHE published guidance on a minimum dataset for specialist alcohol services operating within hospital settings (PHE, 2015b). The dataset aims to support local services and commissioners to monitor levels of activity and outcomes (interventions provided and onward referral for alcohol treatment) for patients with these services. A common tool will also support service development, enabling comparison across different models of in-hospital specialist alcohol services.

It would also be of national importance to understand the current provision of alcohol teams within hospital providers, and future commissioning intentions, given the current reductions in both health and local government funding. Following the Health and Social Care Act 2012, the responsibility for commissioning alcohol services rests with local authorities. A recent review of 142 (94%) local authorities' drug and alcohol commissioning intentions found that alcohol was a local priority, reflecting greater emphasis on prevention, screening, and the integration of interventions – from brief advice to alcohol treatment services – with other related services (e.g. housing and criminal justice) (PHE and ADPH, 2014). The majority of the local authorities (70%) were not planning on reducing funding for drug and alcohol services, but rather trying to do more with less (PHE and ADPH, 2014). Similar findings were found in a review by Alcohol Concern (2015) of local authority and clinical commissioning groups' alcohol service commissioning. But this report also highlighted reductions in funding in some areas, experienced disproportionately by areas with the highest levels of alcohol harm, which were often the most socioeconomically deprived as well.

Commissioners have stressed the challenges they are facing to ensure that specialist alcohol treatment services are available, while managing significant cuts in health and local government funding (PHE and ADPH, 2014).

The longer-term impact of continuing cuts to the public health ring-fenced grant and the public health budget is of key concern. It may be that local commissioners protect specialist treatment services, such as those described above, but at the cost of other less specialised initiatives to address alcohol misuse. The result would be a focus on the most severe cases, addressing less than 10% of the dependent drinkers in England (114,000 out of 16 million dependent drinkers). The more severe drinkers may place a disproportionate burden on the NHS but there are merits in both prevention and treatment as part of a balanced and comprehensive approach. Investment in screening for harmful drinking, provision of alcohol liaison teams and providing treatment for those who are dependent will all save money by reducing the burden on the NHS and other public services. As an illustration, every £1 spent on young people's drug and alcohol interventions is estimated to save between £5 and £8 to society (largely in health, crime and welfare costs) (PHE, 2014d).

### Harmful alcohol consumption is affecting both younger and older populations

In this study, the highest rates of A&E attendances likely to be due to alcohol poisoning were seen in the younger age group (aged 15 to 24 years), and in particular young women (aged 15 to 19 years) who had approximately 1.4 times more attendances than young men in the same age group. This finding is supported by other literature, suggesting that young women appear more likely to receive alcohol-related hospital care (Healey and others, 2014).

From 2008/09 to 2013/14, A&E attendance rates likely to be due to alcohol poisoning among the younger age groups increased by 76.3% in those aged 15–19 and 92.8% in those aged 20–24. These findings are in contrast to a reduction in binge drinking (and an increase in the proportion of people who do not drink at all) among 16- to 24-year-olds over a similar period (2005 to 2013), found by the General Household Survey (ONS, 2013). It is known that people tend to underestimate the amount they drink in general population surveys, which may account for lower reported levels of binge drinking (Goddard, 2001). However, of greater concern is the fact that while the number of young people who are binge drinking is decreasing, those who do are drinking in much greater quantities and experiencing more alcohol-related harm (Healey and others, 2014).

In contrast to A&E attendance, higher rates of alcohol-related emergency admissions were seen in men and in the older age groups. The older population being admitted may reflect the chronicity of alcohol-related diagnoses and the contribution of alcohol to many long-term conditions that are more prevalent in older age groups (Wadd and Papadopoulos, 2014). In a study specifically describing the demographic profile of hospital admissions for ARLD, rates increased across all age bands in England, with the largest percentage increase seen in those aged 25–34 (Thomson and others, 2008). This highlights the widespread and changing nature of alcohol-related harm experienced across all age groups, and the need for targeted initiatives to address different patterns of harmful alcohol consumption across different age groups (OECD, 2015).

### Socioeconomic inequalities in alcohol-related harm are widening

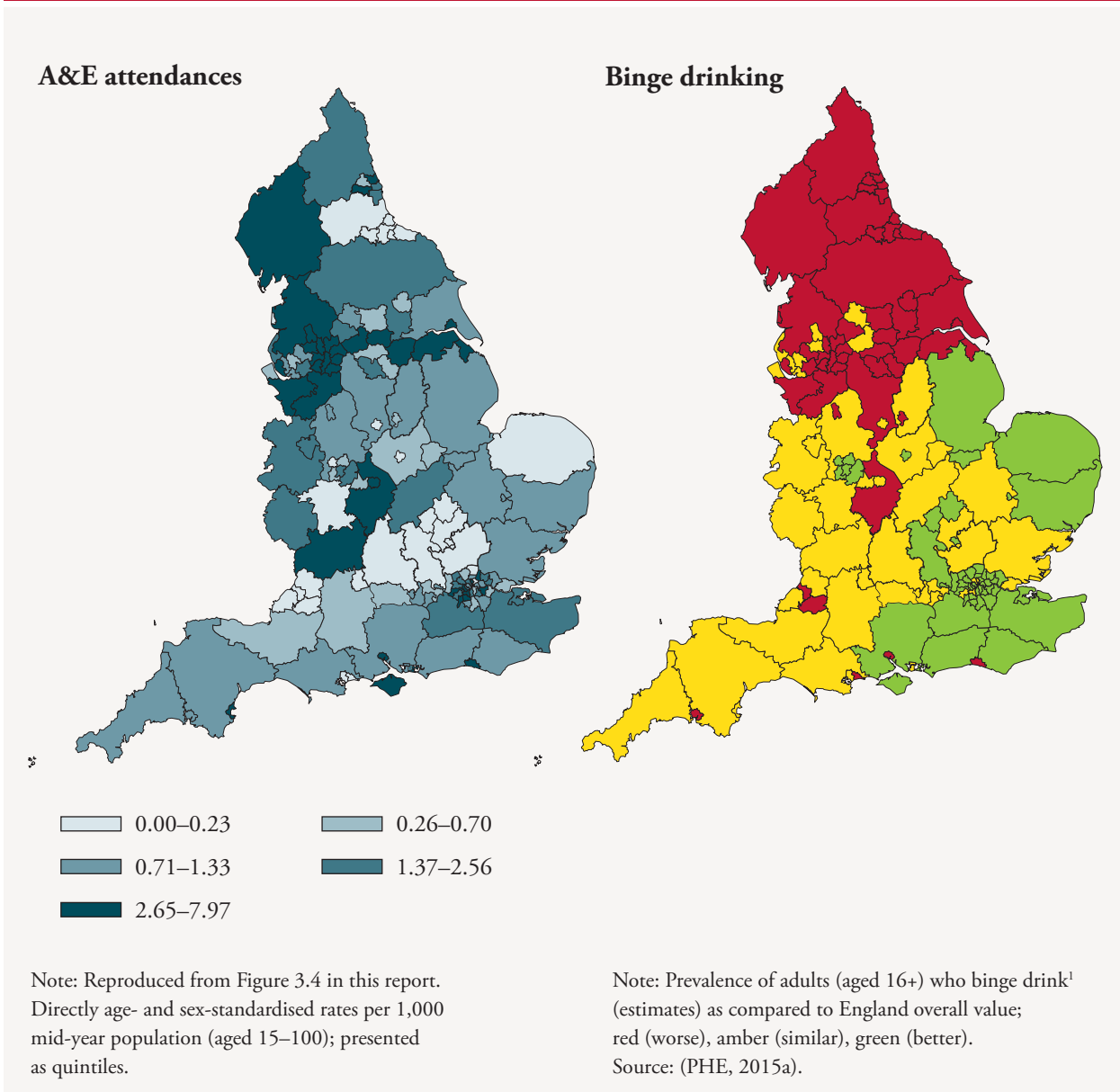
In this study, A&E attendances likely to be due to alcohol poisoning, and emergency hospital admissions, were three to four times higher in the poorest fifth of the population – a finding supported by other studies (PHE, 2014e). From 2008/09 to 2013/14, there was some evidence to suggest decreasing inequalities in emergency admissions due to alcohol between the least and most deprived. However, over the same period, inequalities in A&E attendance between the least and most deprived increased. Widening inequalities have been described as the alcohol harm paradox, whereby those living in the most deprived areas experience more harm, yet apparently consume less alcohol (Smith and Foster, no date). This is of particular concern in light of greater reductions in funding alcohol services in areas with the highest levels of alcohol harm, which are often the most socioeconomically deprived as well (Alcohol Concern, 2015).

### There are regional variations in alcohol-related harm

Regional differences were also in evidence in this study, with higher hospital activity rates specific to alcohol in the north of England and urban centres. These patterns reflect the distribution of binge-drinking rates (see Figure 3.12, page 34) and higher-risk drinking levels across England. Such regional differences highlight the importance of local initiatives to address alcohol harms. Although public health is now situated within local government, it does not, as yet, have control over local licensing laws. However, the public

health teams can influence local providers and licensing arrangements to limit availability. A voluntary scheme in Suffolk and Portsmouth called ‘Reducing the Strength’ is one such example where off-licences were encouraged to remove super-strength alcohol from sale (Local Government Association, 2014). It is initiatives such as these, which restrict availability of alcohol, and the introduction of fiscal measures (such as minimum unit pricing; Woodhouse and Ward, 2015), which are more likely to help reduce these health inequalities (Anderson and others, 2009; Lorenc and others, 2013; Martineau and others, 2013).

**Figure 3.12: Comparison of A&E attendances due to alcohol poisoning (2013/14) and estimates of binge drinking (based on the Health Survey for England 2007/08) by local authority area**



1. In PHE (2015), binge drinking is defined for men as having consumed more than eight units of alcohol on the heaviest drinking day in the previous seven days; for women the cut-off is six units or more of alcohol.

### There needs to be better clinical recording of alcohol use

A key limitation of this study, and others using hospital data to ascertain the burden of alcohol-specific activity, is the poor recording of alcohol in routine hospital administrative data. As a result, rates are likely to underestimate the true level of alcohol-related activity. Poor clinical coding may also have important consequences for the quality of care. For example, we found that following ARLD diagnosis, an alcohol-related code was only recorded in 72% of emergency admissions, and 41% of elective admissions, raising questions about whether all the health needs of the patient are identified and appropriately managed. The 2013 NCEPOD on patients who died with ARLD also called for an accurate alcohol history for all patients to be documented (NCEPOD, 2013).

The need to improve the data recorded for alcohol events has been recognised at a national level. The minimum dataset for specialist alcohol services operating within hospital settings (PHE, 2015b), described above, is welcomed but it will not address the need for a more systematic approach to capturing the alcohol-related activity within health care settings, in both hospitals, and community and primary care. In some places, hospitals are implementing changes to gather information about lifestyle choices in specific patient groups through the use of incentive schemes (NHS Institute for Innovation and Improvement, 2014), but this application is not consistent. The community safety partnership initiative encourages hospitals to share A&E attendance related to violence, to inform policing and other violence prevention initiatives (DH, 2012). Inclusion of 'alcohol consumption' in the recommended dataset may help support local councils to also tackle alcohol licensing, or trading standards' decisions in the local area to, for example, address under-age alcohol consumption.

Better information on alcohol-related health care activity would help support the implementation of alcohol screening in clinical practice, and also an assessment of the true impact of alcohol on primary, secondary and ambulance services.

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1. In PHE (2015), higher-risk drinking is defined as consuming more than 50 units a week for men and more than 35 units a week for women.

## 5. Conclusion

Our assessment of alcohol-related harm across England presents a worrying picture of increasing harm across a range of population groups and persistent, and in some cases widening, inequalities. The results also add to the evidence that alcohol-specific activity places a significant burden on hospital settings and that there are opportunities to identify those drinking at harmful levels, and to direct them to appropriate services in line with best practice guidelines. It is of concern that, despite the availability of cost-effective evidence-based interventions for use within health care settings (NICE, 2010), and best practice guidance on the importance of alcohol liaison services in hospitals (NICE, 2011; PHE, 2014a), approximately one in four hospitals do not have an alcohol service available.

At a national level, the English NHS has prioritised prevention as one of the key components in the *Five Year Forward View* (NHS England, 2014). In addition, PHE's national strategy to improve population health included preventing and reducing the harmful effects of alcohol as a key priority (PHE, 2014b). Nonetheless, to deliver change, these national aspirations need to be translated into practice at a local level, with emphasis from both the NHS and local government on:

- prevention
- delivery of health promotion
- addressing local accessibility and availability of alcohol
- training for staff to identify those in need of support
- sustainable services to meet demand.

The current funding challenges faced in health and local government may result in a reduction in commissioning such services to prevent and treat alcohol-related harm, at a time when more needs to be done.

The gains will be even greater if local initiatives are supported by government-led population-based approaches to reduce alcohol-related harm, potentially through:

- minimum unit pricing
- increased taxation
- restricting availability
- limiting marketing and advertising.

These approaches have the potential to benefit population health and subsequently benefit the health care system. A key driver of societal change to address alcohol consumption is pricing, but previous commitment to minimum unit pricing under the Coalition Government seems firmly off the agenda in England. The recent announcement by the current government of cuts to local authority public health budgets in England raises concerns over the sustainability of services aiming to reduce alcohol-related harm (HM Treasury, 2015).

### Key priorities for action

- Funding of the non-mandated public health functions of local authorities (DH, 2011), such as alcohol services, must be protected. The announcement of cuts to public health budgets has important implications for the NHS and further cuts or indeed making these cuts recurrent would be short-sighted. A longer-term view is needed to ensure that the benefits of investing in these services now will be seen later. Services must be available to support individuals once they have been identified as consuming harmful quantities of alcohol and urgent care pathways must be able to recognise and provide adequate support to individuals.
- The English government should consider refreshing the national alcohol strategy or otherwise reaffirm its commitment to taking firmer action to tackle alcohol-related harm through population-based approaches, including legislative measures such as minimum unit pricing, along with introducing new restrictions on the advertising and marketing of alcohol.
- The national policy direction for integration and new models of care in England must promote a population approach to prevention, addressing the needs of the local population, including the most vulnerable groups and those with complex needs.
- Although lifestyle factors can be recorded in primary care datasets, the information is not readily available to other health care sectors. Inclusion of lifestyle factors in routinely recorded administrative datasets, including hospital systems, along with recording of interventions delivered by the multidisciplinary team, should be considered. Similarly, information about the contribution of alcohol to health care activity in primary care as well as for ambulance services is needed to enable an assessment of the total burden of the problem, which can then be monitored over time.
- At a local level, local commissioners in local government and clinical commissioning groups must collaborate to ensure that funding of preventative services is provided to address local needs – including the provision of alcohol liaison services within acute trusts, in line with best practice guidelines.
- Again at a local level, providers of health and other services should ensure that their staff receive training and support to identify and signpost individuals who may be consuming alcohol at harmful levels.



# Appendix 1: Wholly alcohol attributable ICD-10 codes used to define alcohol-specific inpatient activity

**Table A1.1: Wholly alcohol attributable ICD-10 codes used to define alcohol-specific inpatient activity (alcohol-specific conditions)**

<b>ICD-10 code</b>	<b>Description</b>
E24.4	Alcohol-induced pseudo-Cushing's syndrome
F10	Mental and behavioural disorders due to alcohol
G31.2	Degeneration of nervous system due to alcohol
G62.1	Alcoholic polyneuropathy
G72.1	Alcoholic myopathy
I42.6	Alcoholic cardiomyopathy
K29.2	Alcoholic gastritis
K70	Alcoholic liver disease
K85.2	Alcohol-induced acute pancreatitis
K86.0	Alcohol-induced chronic pancreatitis
Q86.0	Foetal alcohol syndrome (dysmorphic)
R78.0	Excess alcohol blood levels
T51.0	Ethanol poisoning
T51.1	Methanol poisoning
T51.9	Toxic effect of alcohol, unspecified
X45	Accidental poisoning by and exposure to alcohol
X65	Intentional self-poisoning by and exposure to alcohol, undetermined intent
Y15	Poisoning by and exposure to alcohol, undetermined intent
Y90	Evidence of alcohol involvement determined by blood alcohol content
Y91	Evidence of alcohol involvement determined by level of intoxication

Source: Knowledge and Intelligence Team (North West) for Public Health England (2015)

## Appendix 2: Assessment of changes in HES datasets

### Inpatient HES data

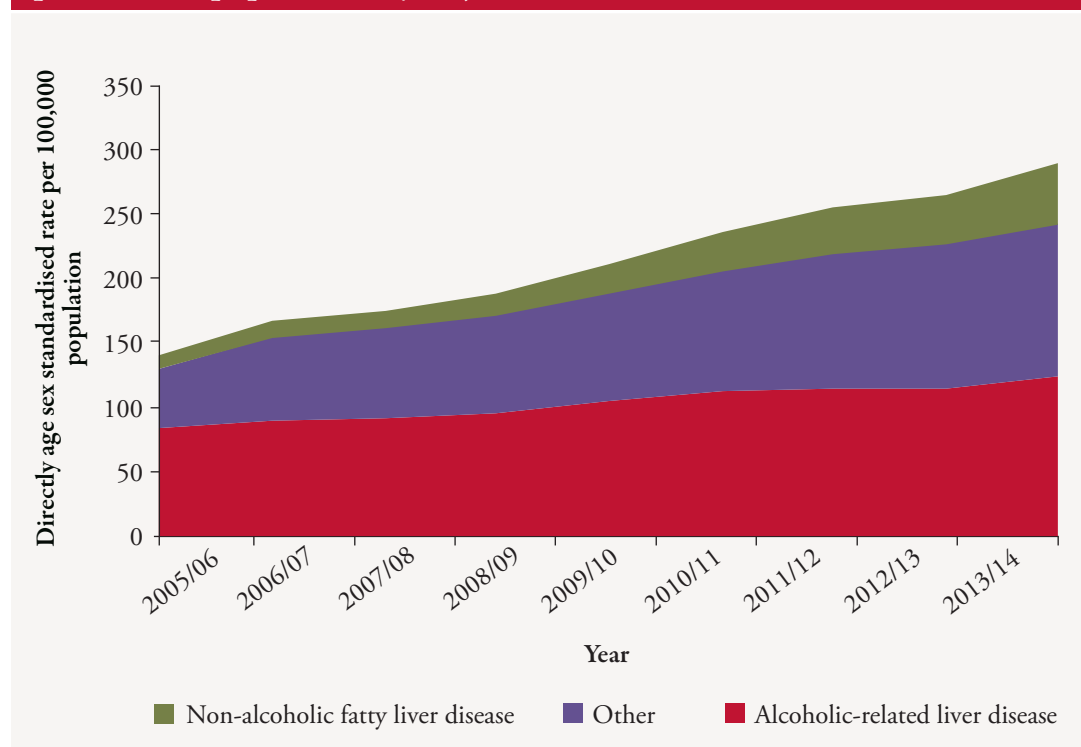
In assessing changes over time of alcohol-specific hospital admissions, we were concerned that changes in recorded diagnoses over time might reflect changes in coding practices rather than real changes in the burden of disease. We selected ARLD as a specific condition to investigate.

### Coding of other types of liver disease

First, we were concerned that changes over time in ARLD might be accounted for by changes in coding of other types of liver disease (i.e. has alcohol been recorded as the cause for the liver disease consistently over time?). To consider whether this was an important consideration, we looked at the trend over time for all liver disease using ICD-10 codes starting with K7. We grouped these codes into ARLD (K70), non-alcoholic fatty liver disease (K76.0) and other (see Figure A2.1).

It appeared that there was an increase in hospital admissions within each of these three categories, rather than a greater increase within the ARLD group alone. This suggests that changes in coding practices did not account for the increase in ARLD hospital admissions.

Figure A2.1: Directly age- and sex-standardised rates of liver disease, per 100,000 population, by major cause, 2005/06 to 2013/14



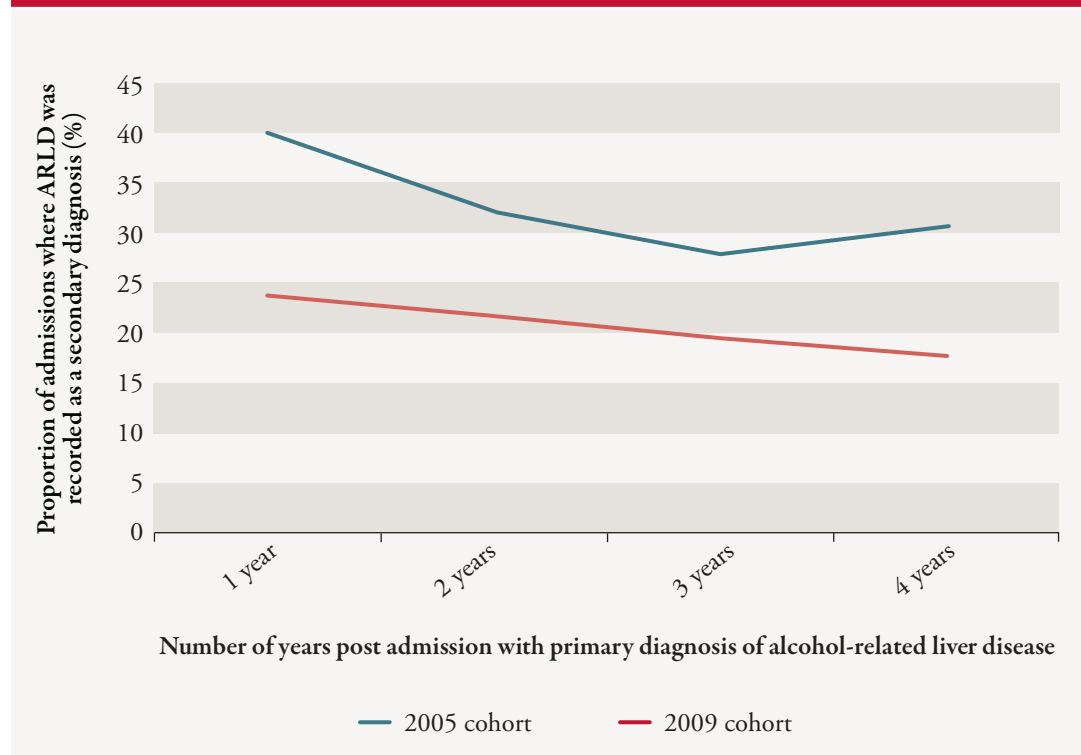
Source: HES

### Recording of co-morbidities

We were also concerned that the completeness of recording co-morbidities as secondary diagnoses had changed over time. If co-morbidities had become more consistently recorded, hospital admissions where ARLD was recorded as a primary or secondary reason for admission would appear to have increased. To assess this, we took a group of patients with a primary diagnosis of ARLD and looked at how long ARLD persisted as a secondary diagnosis. We defined two cohorts, one from 2005 and another from 2009, of individuals who had an inpatient admission with ARLD recorded as a primary diagnosis but with no subsequent admissions where ARLD was recorded as a primary diagnosis. We then considered the proportion of admissions where ARLD was recorded as a secondary diagnosis over the following four years and compared the proportions in the two cohorts.

ARLD was recorded as a secondary diagnosis in a smaller proportion of cases in the 2009 cohort (Figure A2.2). It therefore seems unlikely that more complete recording of co-morbidities explains the increase in the number of admissions where ARLD was recorded.

**Figure A2.2: Proportion of subsequent inpatient admissions where alcohol-related liver disease was recorded as a secondary diagnosis following an incident diagnosis in 2005 and in 2009**



Source: HES

### Conclusion

We were satisfied that changes in hospital admissions over time due to ARLD were unlikely to be due to coding. We applied this finding to our assessment of alcohol-related hospital admissions.

## A&E HES data

In assessing changes over time of A&E attendances for alcohol poisoning, we were concerned that completeness of recording in A&E HES might mask real changes over time.

### Recording of attendances

A&E HES is available from 2007/08; however, very few A&E attendances were recorded until 2008/09. This has previously been investigated and an assessment of the completeness of attendances in each year of data has been made (see Table A2.1) (Blunt, 2014). Recording of A&E attendances did not appear to be complete until approximately 2011/12.

**Table A2.1: Major A&E attendances captured in the HES dataset, 2007/08 to 2013/14**

	QMAE*	NHS England	HES	HES completeness
<b>2007/08</b>	13,395,275		12,532**	n/a
<b>2008/09</b>	13,426,136		4,914,251	37%
<b>2009/10</b>	13,618,300		9,519,018	70%
<b>2010/11</b>	13,931,715		12,621,201	91%
<b>2011/12</b>		14,095,073	13,947,320	99%
<b>2012/13</b>		14,293,618	14,269,618	100%
<b>2013/14</b>		14,213,148	14,355,677	100%
<b>(added)</b>				

\* Quarterly Monitoring of A&E.

\*\* Likely to be due to significant under-use of the AEDEPTTYPE (A&E Department Type) field in this year.

Source: Adapted from Blunt (2014)

### Recording of the reason for attendance

It is also known that recording of the reason for A&E attendance is not complete in A&E HES. The proportion of attendances for which a primary reason for attendance was recorded is given in Table A2.2. From 2011/12, the proportion where a reason for attendance had been recorded was broadly stable at approximately three quarters of attendances.

**Table A2.2: Completeness of the reason given for attendance at major A&E departments in the HES dataset, 2008/09 to 2013/14**

	Total attendances in HES	Primary reason for attendance recorded in HES	Completeness of recording of reason for attendance
<b>2007/08</b>	12,532*	n/a	n/a
<b>2008/09</b>	4,914,251	2,802,440	57%
<b>2009/10</b>	9,519,018	6,177,960	65%
<b>2010/11</b>	12,621,201	8,590,089	68%
<b>2011/12</b>	13,947,320	10,138,793	73%
<b>2012/13</b>	14,269,618	10,371,053	73%
<b>2013/14 (added)</b>	14,355,677	10,903,293	76%

\* Likely to be due to significant under-use of the AEDEPTTYPE (A&E Department Type) field in this year.

Source: HES

We were also interested in understanding the proportion of attendances where a secondary reason was not recorded (see Table A2.3). Over the time period 2008/09 to 2013/14, the proportion where only a primary reason for attendance was recorded was broadly stable at approximately 88%.

**Table A2.3: Proportion of A&E attendance records where only a primary reason for the attendance is recorded in the HES dataset, 2008/09 to 2013/14**

	Primary reason for attendance recorded in HES	No secondary reason for attendance recorded in HES	Proportion where no secondary reason for attendance recorded
<b>2008/09</b>	2,802,440	2,424,226	87%
<b>2009/10</b>	6,177,960	5,431,618	88%
<b>2010/11</b>	8,590,089	7,404,462	86%
<b>2011/12</b>	10,138,793	8,656,578	85%
<b>2012/13</b>	10,371,053	8,931,604	86%
<b>2013/14</b>	10,903,293	9,549,309	88%

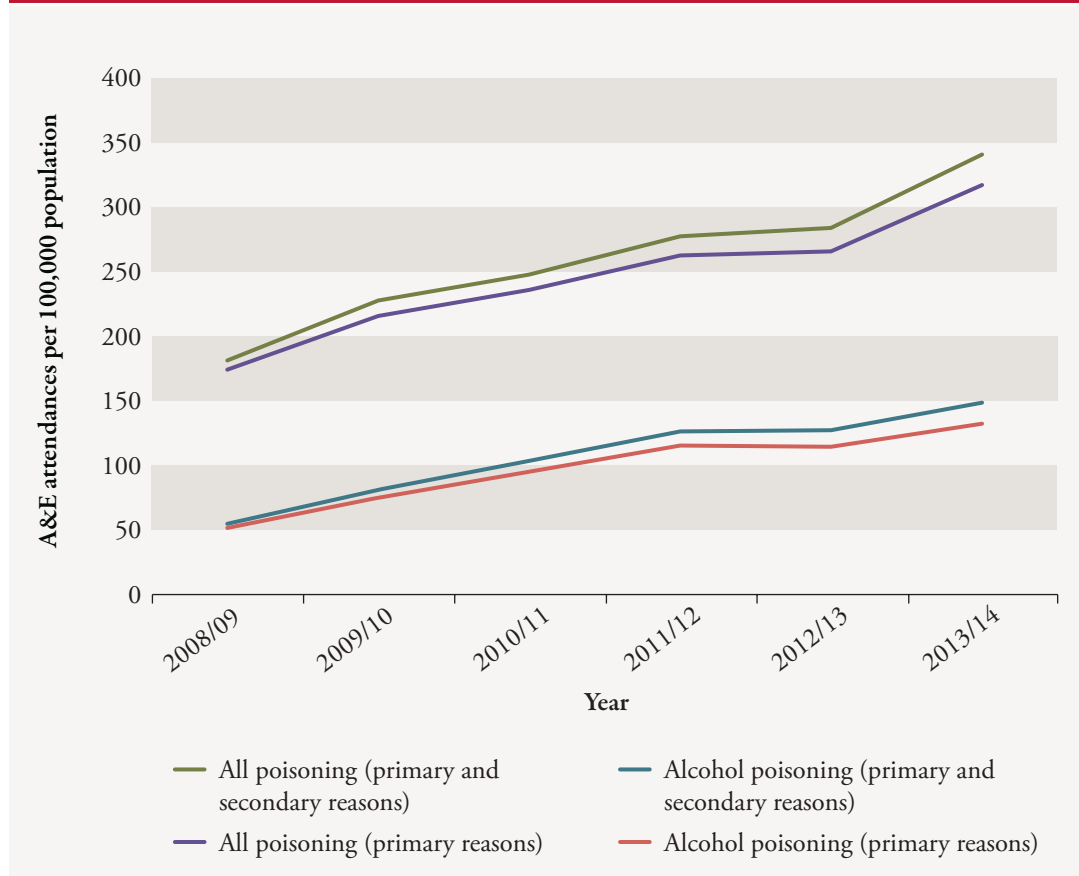
Source: HES

### Recording of the underlying cause of poisoning

We wondered whether any change in poisoning due to alcohol may be accounted for by changes in the coding of other types of poisoning (i.e. has alcohol been recorded as the cause for poisoning consistently over time?). To see whether this was an important consideration, we looked at the trend over time for all poisoning (A&E codes starting with 14) and compared this with the trend in alcohol poisoning (A&E code 144).

It appeared that there was an increase in A&E attendances for poisoning as a whole, which suggested that changes in coding practices did not account for the increase in alcohol poisoning seen (see Figure A2.3).

**Figure A2.3: Directly age- and sex-standardised rates of A&E attendance for all poisoning and the subcategory of alcohol poisoning, 2008/09 to 2013/14**



Source: HES

### Conclusion

We recognised that changes over time may have been due to the completeness of the recording of both the number of attendances and the reason for attendance. We therefore took account of this by scaling all analyses over time in this study to 2013/14 levels using the proportions for completeness in the tables above. We were satisfied that changes in A&E attendances over time due to alcohol poisoning were unlikely to be due to the coding of the underlying reason for poisoning.

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Nuffield Trust is an independent health charity. We aim to improve the quality of health care in the UK by providing evidence-based research and policy analysis and informing and generating debate.

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59 New Cavendish Street  
London W1G 7LP  
Telephone: 020 7631 8450  
Facsimile: 020 7631 8451  
Email: [info@nuffieldtrust.org.uk](mailto:info@nuffieldtrust.org.uk)

 [www.nuffieldtrust.org.uk](http://www.nuffieldtrust.org.uk)