

# **The cost of alcohol harm to the NHS in England**

An update to the Cabinet Office (2003) study  
July 2008

**Health Improvement Analytical Team**  
Department of Health

**DH INFORMATION READER BOX**

<b>Policy</b>	Estates Commissioning IM & T Finance Social Care / Partnership Working
HR / Workforce Management Planning / Performance Clinical	
<b>Document Purpose</b>	For Information
<b>Gateway Reference</b>	10277
<b>Title</b>	The cost of alcohol harm to the NHS in England: An update to the Cabinet Office (2003) study
<b>Author</b>	HIAT DH
<b>Publication Date</b>	22 Jul 2008
<b>Target Audience</b>	PCT CEs, NHS Trust CEs, SHA CEs, Foundation Trust CEs , Directors of Finance, Medical Directors, Directors of PH, Directors of Nursing, Local Authority CEs, Directors of Commissioning/Specialised Commissioning Groups, Allied Health Professionals, GPs, Emergency Care Leads
<b>Circulation List</b>	Voluntary Organisations/NDPBs, NGOs, alcohol industry
<b>Description</b>	Cost of alcohol misuse to the NHS in England was quantified by Cabinet Office at £1.4 - £1.7 billion per annum in 2001 prices. This paper implements latest data on unit costs and estimated usage across inpatient costs, ambulance costs, GP consultation costs etc - estimating a cost of £2.7 billion per annum in 2006/7 prices.
<b>Cross Ref</b>	Cabinet Office (2003) Alcohol Misuse: how much does it cost
<b>Superseded Docs</b>	N/A
<b>Action Required</b>	N/A
<b>Timing</b>	N/A
<b>Contact Details</b>	Jonathan White HIAT 3rd Floor Wellington House London SE1 8UG
<b>For Recipient's Use</b>	

## Executive Summary

A previous paper by Cabinet Office (2003)<sup>1</sup> quantified the annual cost of alcohol misuse to the NHS in England at £1.4bn - £1.7bn per annum in 2001 prices. Many categories of cost – from inpatient costs to ambulance costs and GP consultation costs – were included in this comprehensive estimate.

However, the original study is now five years old. This updated estimate takes into account of increases in unit costs that have occurred since the paper was written, as well as more recent and more accurate data on alcohol consumption and harm.

Using similar methods to the original paper, it is estimated that the annual cost of alcohol harm to the NHS in England is £2.7bn in 2006/7 prices. This is broken down as follows:

	Cost Estimate (£m)
Hospital inpatient & day visits	
- Directly attributable to alcohol misuse	167.6
- Partly attributable to alcohol misuse	1,022.7
Hospital outpatient visits	272.4
Accident and emergency visits	645.7
Ambulance services	372.4
NHS GP consultations	102.1
Practice nurse consultations	9.5
Laboratory tests	N/A
Dependency prescribed drugs	2.1
Specialist treatment services	55.3
Other health care costs	54.4
<b>Total</b>	<b>2,704.1</b>

The paper also considers the key factors behind the increased estimate, which include:

- Significant increases in estimated alcohol-related admissions (including those that are indirectly linked to alcohol consumption).
- Higher Office for National Statistics (ONS) estimates of the proportion of people drinking at levels of increasing risk and at levels of higher risk. The new estimates take account of larger glass sizes and increased average ABVs.
- Inflation of around 22% between 2001/2 and 2006/7, as implied by the Hospital & Community Health Services (HCHS) pay and prices index<sup>2</sup>.

The limitations of the estimate are also discussed.

<sup>1</sup> Cabinet Office (2003), 'Alcohol misuse: how much does it cost?'. See [http://www.cabinetoffice.gov.uk/strategy/work\\_areas/alcohol\\_misuse/background.aspx](http://www.cabinetoffice.gov.uk/strategy/work_areas/alcohol_misuse/background.aspx)

<sup>2</sup> Personal Social Services Research Unit (2007), 'Unit costs of health and social care', Page 185. See <http://www.pssru.ac.uk/pdf/uc/uc2007/uc2007.pdf>

## Contents

Section Number	Section Title	Page Number
1	Introduction	1
2	Preliminary calculation: the number of higher-risk drinkers in England	3
3	The updated estimate	3
4	A comparison with the original Cabinet Office (2003) estimate	12
5	Conclusions	15

*In this report, totals may not exactly add up due to rounding.*

## 1. Introduction

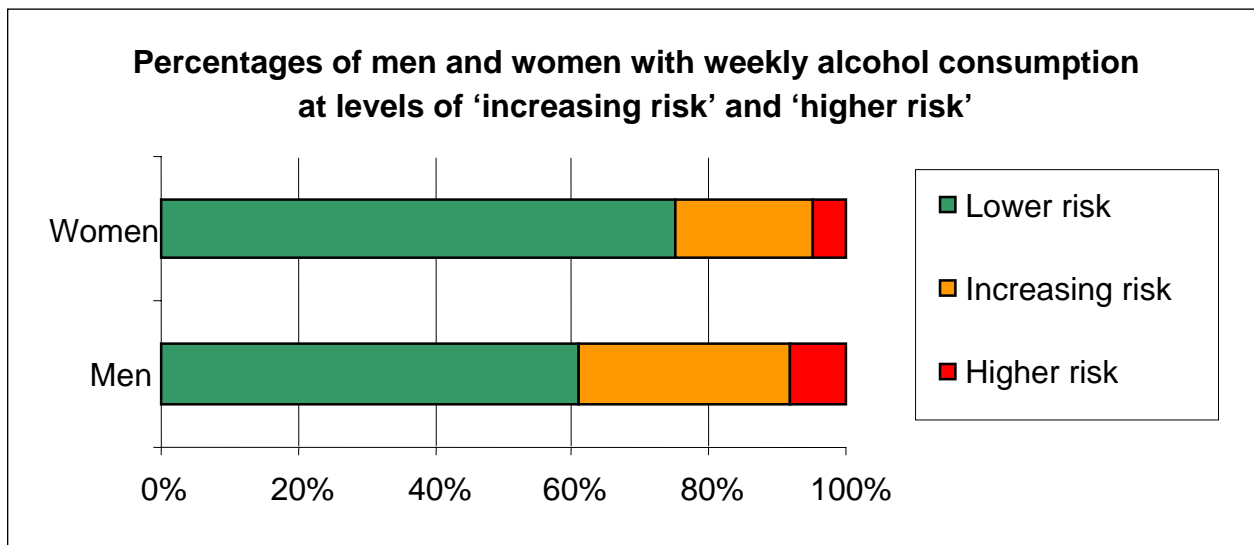
Alcohol harm manifests itself in a wide variety of different ways. A report by the Cabinet Office Strategy Unit (2004)<sup>3</sup> divided the harm into four broad categories, and attempted (as far as possible) to quantify each of them:

- Harm to the health of the consumer.
- Crime, anti-social behaviour, domestic violence, drink-driving and its impact on victims.
- Loss of productivity.
- Social harms, including problems within families.

This paper is specifically focused on the cost of alcohol harm to the NHS in England, which enters into a number of the four categories above. For example, in addition to the cost of treating an individual's own illnesses or accidents that have resulted from excessive alcohol consumption, the NHS must also pay for the cost of treating victims, such as those injured in a drink-driving accident.

### 1.1. Recommended and actual levels of alcohol consumption

The current advice issued by the Department of Health<sup>4</sup> is that men should not regularly drink more than 3 - 4 units<sup>5</sup> of alcohol per day, and that women should not regularly drink more than 2 - 3 units of alcohol per day. Consumption above these levels may harm the drinker's health (or, especially with higher consumption, cause them to harm the health of others), resulting in associated costs to the health service. Specifically, categories of 'increasing risk' and 'higher risk' drinking are defined using the number of units consumed per week. Definitions and levels of these two categories are as follows:



<sup>3</sup> Cabinet Office Strategy Unit (2004), 'Alcohol harm reduction strategy'. See [http://www.cabinetoffice.gov.uk/strategy/work\\_areas/alcohol\\_misuse.aspx](http://www.cabinetoffice.gov.uk/strategy/work_areas/alcohol_misuse.aspx)

<sup>4</sup> See [http://www.dh.gov.uk/en/Publichealth/Healthimprovement/Alcoholmisuse/DH\\_085385](http://www.dh.gov.uk/en/Publichealth/Healthimprovement/Alcoholmisuse/DH_085385)

<sup>5</sup> One unit is equal to 10 millilitres of pure alcohol equivalent. For example, 1,000 millilitres of an alcoholic drink at 5% ABV contains 5% of 1000 millilitres, i.e. 50 millilitres, of pure alcohol equivalent. This is equivalent to five units.

<i>Units per week</i>	Increasing risk	Higher risk
Men	21-50	50+
Women	14-35	35+

(Source: Office for National Statistics, 'Smoking and drinking among adults, 2006')<sup>6</sup>

Clearly, although the majority of alcohol consumption is lower-risk, a significant proportion of men and women do fall into the upper two categories. Furthermore, previous data underestimated the proportion of the population in these categories; the above data takes account of revised assumptions on average ABV levels and glass sizes, both of which have increased in recent years. For example, estimated female drinking levels at increasing risk rose from 12% to 20% after the adjustments; estimated female drinking at higher risk increased from 2% to 5%. These increases have a bearing on any estimate of the cost of alcohol harm to the NHS.

### 1.2. Past estimate of the cost of alcohol harm to the NHS in England

The aforementioned Cabinet Office report included an economic assessment of the costs of alcohol misuse (Cabinet Office (2003))<sup>7</sup>, part of which covered the cost of alcohol misuse to the NHS in England. A total annual cost of £1.4bn - £1.7bn was calculated (in 2001 prices), which was broken down as follows.

*Estimates of the annual cost of alcohol misuse to the NHS in England (2001 prices):*

	First Estimate (£m)	Second Estimate (£m)
Hospital inpatient & day visits		
- Directly attributable to alcohol misuse	£126.2	£126.2
- Partly attributable to alcohol misuse	£344.2	£399.8
Hospital outpatient visits	£222.8	£445.6
Accident and emergency visits	£305.2	£305.2
Ambulance services	£205.0	£205.0
NHS GP consultations	£27.8	£48.7
Practice nurse consultations	£19.1	£19.3
Laboratory tests	N/A	N/A
Dependency prescribed drugs	£1.6	£1.6
Specialist treatment services <sup>8</sup>	£96.2	£96.2
Other health care costs	£35.3	£35.3
<b>Total</b>	<b>£1,383.4</b>	<b>£1,682.9</b>

(Source: Cabinet Office, 2003)

### 1.3. Rationale and methods for updating the past estimate

There are a number of reasons for updating the above estimate:

<sup>6</sup> Page 62. See

[http://www.statistics.gov.uk/downloads/theme\\_compendia/GHS06/Smokinganddrinkingamongadults2006.pdf](http://www.statistics.gov.uk/downloads/theme_compendia/GHS06/Smokinganddrinkingamongadults2006.pdf)

<sup>7</sup> Cabinet Office (2003), 'Alcohol misuse: how much does it cost?'. See

[http://www.cabinetoffice.gov.uk/strategy/work\\_areas/alcohol\\_misuse/background.aspx](http://www.cabinetoffice.gov.uk/strategy/work_areas/alcohol_misuse/background.aspx)

<sup>8</sup> Part of this figure represents costs borne by non-NHS organisations (e.g. voluntary organisations).

- NHS unit costs will have increased over time, partly due to inflation.
- More accurate data is now available, including the aforementioned improved estimates of the number of drinkers at 'increasing risk' and 'higher risk'. This data is likely to result in a more accurate, increased estimate of the cost to the NHS in England.
- Increasing numbers of alcohol-related admissions also suggest that the cost has risen.

This paper uses a mix of the original Cabinet Office methods and new methods, alongside new data on virtually all relevant costs, medical parameters and usage rates.

All results are presented in 2006/7 prices.

## 2. Preliminary calculation: the number of higher-risk drinkers in England

A number of the estimates included in this paper make use of the estimated number of higher-risk drinkers in England. This is calculated as follows.

Office for National Statistics mid-year population estimates for England (2006)<sup>9</sup> identify 19,969,500 men aged 16+; the respective figure for women is 21,119,700. As illustrated by the graph in section 1.1, 8% of these men and 5% of these women are estimated to drink more than 50 or 35 units per week (i.e. the 'higher-risk' thresholds for men and women respectively).

The estimated numbers of higher-risk drinkers in England are therefore as follows:

*Estimated numbers of higher-risk drinkers in England, 2006:*

	Number of higher-risk drinkers in England (2006)
Men	1,597,560
Women	1,055,985
<b>Total</b>	<b>2,653,545</b>

*(Source: Office for National Statistics, 'Smoking and drinking among adults, 2006' and mid-2006 population estimates)*

## 3. The updated estimate

The updated calculations are split into the same categories as the original Cabinet Office (2003) study, as displayed in section 1.2. Each of the following subsections deals with a single category of cost, resulting in an estimated cost per annum for that category. These are then summed to calculate the estimated annual cost of alcohol harm to the NHS in England.

### 3.1. The cost of alcohol-related inpatient stays

The cost of alcohol-related inpatient stays made up the largest portion of the original Cabinet Office (2003) calculation. It is now possible to re-estimate this cost using the same data sources, assumptions and methodologies as the interim Public Service Agreement (PSA) target on alcohol-related admissions. These are in turn based in part on the provisional findings of a review of the relevant evidence on alcohol-related conditions and the corresponding alcohol-attributable fractions by North West Public Health Observatory (NWPHO). Further information

<sup>9</sup> See <http://www.statistics.gov.uk/statbase/Product.asp?vlnk=15106>

on the data sources, assumptions and methodologies used below (including alcohol-attributable fractions) is available from NWPHO (2008)<sup>10</sup>.

*Inputs and associated calculations:*

- The International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10)<sup>11</sup> is a coding of diseases and signs, symptoms, abnormal findings, complaints, social circumstances and external causes of injury or diseases, as classified by the World Health Organization (WHO). For each code, it is possible to estimate an Alcohol-Attributable Fraction (AF), which measures the estimated proportion of cases that are thought to result from alcohol consumption. The estimated AFs therefore range between zero and one, with an estimated AF of zero implying that no cases are linked to alcohol consumption, and an estimated AF of one implying that all cases are linked to alcohol consumption<sup>12</sup>. The AFs used in this study are presented in Appendix 1.
- Hospital Episode Statistics data (HES, 2007)<sup>13</sup> are used to identify finished in-year admissions where one or more of the conditions listed in Appendix 1 feature in any one of the fourteen diagnosis fields within the admission (first) episode of care in the spell. The resulting data therefore includes all admissions in which alcohol played a part. Only ordinary and day cases are used.
- An AF is assigned to each admission, based on the diagnosis codes, age and sex of the patient; where an admission has more than one diagnosis code, the highest AF is used.

*Further detail on the attributable fractions used:*

- The alcohol-related conditions and fractions used for the interim PSA indicator and for this paper were based on the provisional findings of the NWPHO review. A small number of changes were subsequently made by NWPHO to the list of conditions and fractions and these are reflected in their final report. For example, malignant neoplasm of the stomach was excluded, chronic hepatitis not elsewhere classified was added, and alcohol liver disease was split out from other categories of liver disease. These would have a small net effect on the number of admissions. Of slightly greater significance is the exclusion from the interim PSA indicator (and this paper) of those conditions where the all-age attributable fraction for men or women was less than 0.2. This was done to reduce the degree of confounding when using the indicator for performance management purposes.
- There are four conditions where NWPHO report some evidence of a beneficial effect of moderate consumption: ischaemic heart disease (I20-I25), ischaemic stroke (I63-I66, I69.3-I69.4), type-II diabetes (E11) and cholelithiasis (K80). In all four cases, the AFs (overall and for each age group / sex) were either negative or less than 0.2. (A negative AF implies that the reduction in morbidity arising from moderate consumption outweighs the increase in morbidity arising from heavy consumption.) Consequently, none of these conditions were used to identify alcohol-related admissions for the interim PSA indicator or this report (although of course they may be present in the selected admissions).
- The inclusion of conditions with AFs of less than 0.2 would increase the estimated number of alcohol-related admissions by four per cent; the harms implied by these AFs are greater than the implied health benefits. Therefore, the cost estimate presented below is conservative.

*Costs and associated calculations:*

- The tariff applying to each admission is estimated using the HES-produced Healthcare Resource Group (HRG) code, method of admission and spell duration, alongside the tariffs for 2008/9. Account is taken of the adjustments to tariff that apply to long stays

---

<sup>10</sup> North West Public Health Observatory (2008), 'Hospital admissions for alcohol-related harm: understanding the dataset' and 'Hospital admissions for alcohol-related harm: technical information and definition'. See <http://www.nwph.net/alcohol/lape/>

<sup>11</sup> For more information, see <http://www.who.int/classifications/apps/icd/icd10online/>

<sup>12</sup> This is often true by definition, e.g. for alcoholic gastritis.

<sup>13</sup> For more information, see <http://www.hesonline.nhs.uk/>



and to emergency short-stays. No top-up is applied for specialised services or for non-specialised children's services.

- The cost of each alcohol-related admission is calculated by multiplying the calculated tariff by the appropriate AF. The total cost of alcohol-related inpatient stays is calculated by summing the cost of these admissions.

In 2008/9 prices, it is therefore estimated that directly alcohol-related cases (those with an AF of one) generate a cost of £183 million per annum, with a cost of £1,118 million for indirectly alcohol-related cases. This yields a total of £1,301 million.

For consistency with the rest of the calculations, it is necessary to downscale these values into 2006/7 prices. The Hospital and Community Health Services (HCHS) pay and prices index (as set out in PSSRU (2007)<sup>14</sup>) changed from 240.9 to 251.9 between 2005/6 and 2006/7, implying an inflation rate of 4.566%. The 2008/9 values are downscaled twice by this percentage.

It is therefore estimated that directly alcohol-related inpatient stays cost £167.6 million in 2007, with indirectly alcohol-related inpatient stays costing £1,023 million, giving a total of £1,190 million in 2006/7 prices.

### **3.2. The cost of alcohol-related outpatient visits**

Given the substantial cost of alcohol-related inpatient stays, it should be expected that some of those admissions would also result in subsequent outpatient appointments.

HES data are also available on outpatient appointments. However, diagnosis codes are currently populated for only a small proportion of records, meaning that the detailed calculations that have been applied to inpatient stays cannot yet be replicated here. An updated version of the Cabinet Office (2003) method is therefore applied.

#### *Inputs and associated calculations:*

- The Birmingham Untreated Heavy Drinkers project recruited 500 untreated heavy drinkers in 1997, and has tracked them (through interviews, questionnaires and so on) up to the Wave Four report, which was published as BUHD (2004)<sup>15</sup>. The 2004 report discusses the cohort's use of hospital-based services, including outpatient attendance, and finds that the cohort are twice as likely to use A&E and/or outpatient services in the past three months (relative to the general population).
- The General Household Survey (2006)<sup>16</sup> finds an annual average of 1.12 outpatient attendances for men, and 1.34 attendances for women. If higher-risk drinkers use these services twice as much, i.e. 2.24 and 2.68 attendances per annum respectively, the excess usage of 1.12 and 1.34 attendances per annum can be attributed to alcohol consumption (although confounding factors may also play a role).
- From section 2, the estimated numbers of male and female higher-risk drinkers are 1,597,560 and 1,055,985 respectively. Applying the excess usage figures from above yields an estimate of 3.2 million outpatient attendances per annum.

#### *Costs and associated calculations:*

- PSSRU (2007)<sup>17</sup> cites a national average cost of £85.00 for adult outpatient attendances<sup>18</sup>. (As with most figures from PSSRU (2007), this is in 2006/7 prices).

<sup>14</sup> Personal Social Services Research Unit (2007), 'Unit costs of health and social care', Page 185. See <http://www.pssru.ac.uk/pdf/uc/uc2007/uc2007.pdf>

<sup>15</sup> BUHD (2004), Dalton, Orford, Webb and Rolfe, 'Birmingham untreated heavy drinkers project: report on wave four'. Commissioned by the Department of Health. See [http://www.dh.gov.uk/en/PublicHealth/HealthImprovement/Alcoholmisuse/DH\\_4001740](http://www.dh.gov.uk/en/PublicHealth/HealthImprovement/Alcoholmisuse/DH_4001740)

<sup>16</sup> Office for National Statistics (2006), 'General Household Survey', Table 7.30. See [http://www.statistics.gov.uk/downloads/theme\\_compendia/GHS06/GeneralHouseholdSurvey2006.pdf](http://www.statistics.gov.uk/downloads/theme_compendia/GHS06/GeneralHouseholdSurvey2006.pdf)

<sup>17</sup> Op cit. 'Weighted average of all follow-up attendances (adult)', Page 99.

<sup>18</sup> This figure is derived from reference costs and reports on NHS Trusts and Primary Care Trusts.

Applying this to the annual number of 3.2 million attendances yields an annual cost of £272.4 million.

The cost of alcohol-related outpatient attendances is therefore estimated at £272.4 million per annum in 2006/7 prices.

### **3.3. The cost of alcohol-related Accident and Emergency visits**

Alcohol-related visits to Accident and Emergency departments also impose a cost on the NHS. Some of them will also result in ambulance journeys, or subsequent inpatient stays and outpatient attendances etc., but these are costed elsewhere.

Again, HES data are available but with poorly populated diagnosis codes, so updated data is applied to the Cabinet Office (2003) method.

#### *Inputs and associated calculations:*

- Cabinet Office (2003) commissioned a MORI poll of Accident and Emergency staff, asking them what percentage of visits they thought was related to alcohol consumption. The resulting central estimate was that 35% of visits were alcohol-related. Although this survey is now becoming out of date, alcohol-related demand for Accident and Emergency services is not thought to have decreased since the survey was carried out; it is likely a conservative estimate of the current situation.
- Hospital Activity Statistics (2006/7)<sup>19</sup> conclude that there were 18,922,275 Accident and Emergency visits in 2006/7. The above survey implies that 35% of these (or 6,622,796 visits) were alcohol-related.

#### *Costs and associated calculations:*

- PSSRU (2007)<sup>20</sup> finds a national average cost of £84 for a lower-cost A&E investigation, and £111 for a high cost investigation<sup>21</sup>. The arithmetic average of the two is used in this study (i.e. £97.50 per visit). For the above number of visits, this yields a cost of £645.7 million per annum.

It is therefore estimated that alcohol-related Accident and Emergency visits cost £645.7 million per annum in 2006/7 prices.

### **3.4. The cost of alcohol-related emergency ambulance / paramedic journeys**

The emergency ambulance / paramedic journeys associated with the above findings also form part of the cost of alcohol to the NHS. Again, updated data is applied to the Cabinet Office (2003) method.

#### *Inputs and associated calculations:*

- The finding from the aforementioned MORI poll is also applied here, implying that 35% of ambulance journeys are alcohol-related.
- The Ambulance Services in England statistics (2006/7)<sup>22</sup> estimate that there were 3,550,000 'emergency journeys' in 2006/7. If 35% of these were alcohol-related, this yields a total of 1,242,500 journeys per annum.

---

<sup>19</sup> Department of Health (2006/7). 'Hospital Activity Statistics'. Includes first attendances and a small number of follow-up attendances. See

[http://www.performance.doh.gov.uk/hospitalactivity/data\\_requests/a\\_and\\_e\\_attendances.htm](http://www.performance.doh.gov.uk/hospitalactivity/data_requests/a_and_e_attendances.htm)

<sup>20</sup> Op cit. 'High cost investigation' and 'Lower cost investigation', Page 99.

<sup>21</sup> Again, these figures are derived from reference costs and reports on NHS Trusts and Primary Care Trusts.

<sup>22</sup> Department of Health / The Information Centre (2006/7), 'Ambulance Services in England'. See <http://www.ic.nhs.uk/pubs/ambserv0607>

#### *Costs and associated calculations:*

- PSSRU (2007)<sup>23</sup> estimate a national average cost of £6.70 per minute of an emergency ambulance journey, and £6.80 per minute of a paramedic unit's journey. Both costs take account of equipment / vehicle costs, building costs, salaries / wages and overheads. Taking an arithmetic average of these costs and applying the average journey time of 44.4 minutes yields an average cost of £299.70 per journey. Applying this figure to the above number of journeys yields a cost of £372.4 million per annum.

Alcohol-related emergency ambulance / paramedic journeys are therefore estimated to cost the NHS £372.4 million per annum in 2006/7 prices.

### **3.5. The cost of alcohol-related GP consultations**

Again, some of the cost will fall on GPs, e.g. when diagnosing or discussing alcohol-related health problems with patients who drink at higher-risk levels. The following calculations are similar (though not identical) to those of Cabinet Office (2003).

#### *Inputs and associated calculations:*

- Cabinet Office (2003), though personal communication with the authors of the Birmingham Untreated Heavy Drinkers project, obtained an estimate that 22% to 35% of the cohort's GP visits were alcohol related<sup>24</sup>. An arithmetic average of these figures – 28.5% - is used in the calculations below<sup>25</sup>.
- The General Household Survey (2006)<sup>26</sup> finds that, on average, men have three NHS GP appointments per year; the equivalent figure for women is five.
- From section 2, the estimated numbers of male and female higher-risk drinkers are 1,597,560 and 1,055,985 respectively.
- For men, it is therefore estimated that 1,597,560 people each have three GP appointments per year, 28.5% of which are alcohol-related. A similar calculation is performed for women, giving an estimated total 2.87 million consultations per annum.

#### *Costs and associated calculations:*

- PSSRU (2007)<sup>27</sup> identifies a cost of £34 per 11-minute GP consultation session, including qualification costs and direct care staff costs<sup>28</sup> as well as salary oncosts and overheads. This cost is in 2005/6 prices as it has not yet been possible to agree an appropriate inflator. The aforementioned generic Hospital and Community Health Services (HCHS) pay and prices index (as set out in PSSRU (2007)<sup>29</sup>) is therefore used to uprate the cost by 4.56%, yielding a cost of £35.55 per consultation session.
- Applying this cost to the above number of consultations yields an annual cost of £102.1 million.

The cost to the NHS of alcohol-related GP consultations is therefore estimated to be £102.1 million in 2006/7 prices.

### **3.6. The cost of alcohol-related practice nurse consultations**

Part of the burden on GPs will also fall on the practice nurse; the impact is costed on a similar basis to the impact on GPs.

<sup>23</sup> Op cit. 'Cost per minute', Page 100.

<sup>24</sup> Op cit. Annex, Page xi and xii.

<sup>25</sup> Cabinet Office (2003) instead presented a range.

<sup>26</sup> Op cit. Table 7.18.

<sup>27</sup> Op cit. 'General practitioner – unit costs'. Page 127.

<sup>28</sup> These are included on the basis that both qualification costs and direct care staff costs form part of the full marginal costs incurred by alcohol-related GP consultations. This differs slightly from Cabinet Office (2003), which did not include the latter.

<sup>29</sup> Op cit. Page 185.

#### *Inputs and associated calculations:*

- It is assumed that the above estimate of 28.5% of heavy drinkers' GP appointments being alcohol-related is also applicable to practice nurse appointments.
- The General Household Survey (2006)<sup>30</sup> finds that, on average, men have one practice nurse appointment per year; the equivalent figure for women is two.
- From section 2, the estimated numbers of male and female higher-risk drinkers are 1,597,560 and 1,055,985 respectively.
- For men, it is therefore estimated that 28.5% of 1,597,560 practice nurse appointments are alcohol-related. A similar calculation is performed for women; the end result is an estimate of 1.06 million alcohol-related practice nurse appointments.

#### *Costs and associated calculations:*

- Again, PSSRU (2007)<sup>31</sup> supplies a relevant cost of £9 per consultation in 2006/7 prices, including qualifications, salary oncosts and overheads. Using the above calculations, this yields a total cost of £9.5 million per annum.

The cost to the NHS of alcohol-related practice nurse consultations is therefore estimated to be £9.5 million per annum in 2006/7 prices.

### **3.7. The cost of alcohol dependency-prescribed drugs**

Alcohol dependency can be treated with a number of drugs; expenditure on these drugs constitutes part of the cost to the NHS. As with Cabinet Office (2003), the cost of prescriptions for *acamprosate* and *disulfiram* (the two main drugs used to treat alcohol dependency) can be identified from the Prescription Cost Analysis (2006)<sup>32</sup>. The net ingredient cost is £1.46 million for *acamprosate* and £686,000 for *disulfiram*, yielding a total annual cost of £2.14 million in 2006 prices.

The cost of consultations for prescribing these drugs and monitoring their use should already have been taken account of in other sections. However, the above cost does not take into account any dispensing costs but equally does not take into account prescription fees paid by the patient.

It is therefore estimated that expenditure on alcohol dependency-proscribed drugs is at least £2.14 million per annum in 2006 prices.

### **3.8. The cost of specialist alcohol treatment services**

A significant portion of specialist alcohol treatment services are provided by voluntary and other organisations that are independent of the NHS, although NHS provision is still notable. Cabinet Office (2003) cites a paper by Alcohol Concern (2002)<sup>33</sup>, which used a survey methodology to assess then-current expenditure on specialist alcohol treatment services.

The following tables (from and based on Alcohol Concern (2002)<sup>34</sup>) presents the expenditure for 255 out of 475 'alcohol agencies' in 2001/2 prices. The first table contains the raw results, whereas the second is adjusted to take account of the incomplete response rate (using an

---

<sup>30</sup> Op cit. Table 7.24.

<sup>31</sup> Op cit. Page 124.

<sup>32</sup> The Information Centre (2006), 'Prescription cost analysis (England)', 'Totals for chemicals' tab, 'Net ingredient costs'. See <http://www.ic.nhs.uk/statistics-and-data-collections/primary-care/prescriptions/prescription-cost-analysis-2006>

<sup>33</sup> Alcohol Concern (2002), 'Report on the mapping of alcohol services in England'. Commissioned by the Department of Health. See [http://www.dh.gov.uk/en/Publichealth/Healthimprovement/Alcoholmisuse/DH\\_4001740](http://www.dh.gov.uk/en/Publichealth/Healthimprovement/Alcoholmisuse/DH_4001740)

<sup>34</sup> Op cit. Page 9.

extrapolation factor of 475/225) and is expressed in 2006/7 prices using the Hospital and Community Health Services (HCHS) pay and prices index (as set out in PSSRU (2007)<sup>35</sup>).

*Estimated expenditure on specialist alcohol treatment services in England (2001/2 prices, not adjusted for non-response):*

£000s	NHS	Local Authority	Probation	Charitable	Other	Total
Assessment & Care Mgmt.	1,377	843	43	31	423	2,716
Community Detox	1,823	132	7	0	22	1,985
Open Access	3,239	2,692	238	266	584	7,019
Planned Counselling	3,410	1,394	350	246	377	5,778
Residential Detox	4,649	1,417	69	57	886	7,078
Residential Rehabilitation	876	8,035	54	224	3,307	12,497
Structured Day Care	1,297	1,769	234	242	546	4,088
Unspecified	6,988	986	372	120	553	9,020
<b>Total</b>	<b>23,659</b>	<b>17,268</b>	<b>1,367</b>	<b>1,186</b>	<b>6,698</b>	<b>50,181</b>

*(Source: Alcohol Concern (2002))*

*Estimated expenditure on specialist alcohol treatment services in England (2006/7 prices, adjusted for non-response):*

£000s	NHS	Local Authority	Probation	Charitable	Other	Total
Assessment & Care Management	3,218	1,970	101	72	989	6,348
Community Detox	4,261	309	16	0	51	4,640
Open Access	7,570	6,292	556	622	1,365	16,405
Planned Counselling	7,970	3,258	818	575	881	13,505
Residential Detox	10,866	3,312	161	133	2,071	16,543
Residential Rehabilitation	2,047	18,780	126	524	7,729	29,209
Structured Day Care	3,031	4,135	547	566	1,276	9,555
Unspecified	16,333	2,305	869	280	1,293	21,082
<b>Total</b>	<b>55,298</b>	<b>40,360</b>	<b>3,195</b>	<b>2,772</b>	<b>15,655</b>	<b>117,288</b>

The cost of NHS specialist alcohol treatment services is therefore estimated at £55.3 million per annum in 2006/7 prices.

### **3.9. The cost of other alcohol-related healthcare usage**

Cabinet Office (2003) also considered the cost of alcohol-related counselling, community psychiatric nurse visits, health visitors and usage of 'other services'. These categories were defined using the Birmingham Untreated Heavy Drinkers project.

*Inputs and associated calculations:*

- The latest publication in the series, BUHD (2004)<sup>36</sup>, presents the usage of these four categories in 1999, 2001 and 2003 (in terms of the number of visits). The arithmetic average of this usage is taken for both males and females, resulting in the annual usage rates presented in the first table below.
- From section 2, the estimated numbers of male and female higher-risk drinkers in England are 1,597,560 and 1,055,985 respectively. The figures in the first table are multiplied by these estimates in order to derive annual population usage.

<sup>35</sup> Op cit. Page 185.

<sup>36</sup> Op cit. Page 69.

*Estimated annual usage of various services by higher-risk drinkers (number of sessions per higher-risk drinker):*

	Men	Women
Counselling	0.20	0.93
Community Psychiatric Nurse	0.07	0.17
Health visitor	0.00	0.07
Other professionals	0.17	0.50

*Estimated annual usage of various services by higher-risk drinkers (totals for all higher-risk drinkers in England):*

	Men	Women
Counselling	319,512	985,586
Community Psychiatric Nurse	106,504	175,998
Health visitor	0	70,399
Other professionals	266,260	527,993

*(Source: BUHD (2004); estimates from section 2)*

*Costs and associated calculations:*

- The cost of a counselling session is taken from PSSRU (2007)<sup>37</sup> as £34 per session in 2006/7 prices, including salary oncosts and overheads.
- The cost of a visit from a community psychiatric nurse is also taken from this paper<sup>38</sup>, at £72 per hour of face-to-face contact. This equates to £24 for a 20-minute session. Again, these figures are in 2006/7 prices and include salary oncosts and overheads.
- The cost of a session with a health visitor is stated in PSSRU (2007)<sup>39</sup> as £86 per hour of client contact in 2006/7 prices, including qualifications, salary oncosts and overheads. This equates to £28.67 for a 20-minute session.
- The cost of 'other professionals' was stated in Cabinet Office (2003) as £1.24 per session, derived from BUHD data. No further information on this cost could be found, so it has been inflated from 2001/2 prices to 2006/7 prices using the aforementioned Hospital and Community Health Services (HCHS) pay and prices index (as set out in PSSRU (2007)<sup>40</sup>), yielding a cost of £1.51.
- Multiplying the above usage figures by these costs yields:

*Estimated annual cost for usage of various services by higher-risk drinkers (totals for all higher-risk drinkers in England, 2006/7 prices):*

	Men	Women
Counselling	£10,863,408	£33,509,924
Community Psychiatric Nurse	£2,556,096	£4,223,940
Health visitor	£0	£2,018,105
Other professionals	£402,732	£798,616
<b>Total</b>	<b>£13,822,236</b>	<b>£40,550,585</b>

The cost of other alcohol-related healthcare usage (i.e. that not covered elsewhere) is therefore estimated to be £54.4 million per annum.

<sup>37</sup> Op cit. 'Counselling services in primary medical care'. Page 152.

<sup>38</sup> Op cit. 'Community mental health team for adults with mental health problems', Page 144.

<sup>39</sup> Op cit. 'Health visitor', Page 121.

<sup>40</sup> Op cit. Page 185.

### **3.10. Methods attempted but not used**

Methods other than those presented above were applied to some of the cost categories, but were found to be unsuccessful.

For example, the General Household Survey (2006) contains data on outpatient appointments, practice nurse appointments and GP appointments as well as data on respondents' alcohol consumption. Using the GHS (2006) raw dataset, separate Ordinary Least Squares (OLS) regressions were estimated with the NHS usage variable (such as the number of NHS GP appointments) as the dependent variable. A vector of explanatory variables was used, including age, sex, the number of cigarettes smoked on weekdays and weekends, dummy variables for occupational social class and so on, alongside a measure of alcohol consumption. The measures of alcohol consumption used included the number of days on which the respondent drank last week, and whether they consumed more than double the 4 or 3-unit<sup>41</sup> 'recommended limit' on any day last week. No statistically significant relationship could be identified, perhaps due to a lagged effect or the limitations of the aforementioned measures of alcohol consumption. A relationship should exist, as the list of conditions in Appendix 1 can be expected to result in a significant number of outpatient, GP and practice nurse appointments. The methods used in the relevant sections above were therefore chosen instead.

### **3.11. Additional considerations and limitations**

There are a number of additional considerations and limitations associated with the calculations above. These are discussed below.

There are a number of factors that would increase the NHS cost estimate if they could be sufficiently quantified. For example, consider the cost of disruption caused at an Accident and Emergency department by those who are drunk or have alcohol-related injuries (often at a time when the A&E department is at its busiest). There is also an emotional cost to staff – as well as personal risk – when dealing with alcohol-related cases, which is not directly quantified. This may well adversely affect recruitment, although market wages may have risen partly to compensate. Additionally, the outpatient visits, practice nurse consultations, GP consultations and 'other health care cost' estimates above only account for costs that result from higher-risk drinkers' consumption. Those drinking at lower levels will also impose costs on the NHS, but these are not taken account of due to a lack of quantitative evidence.

Lastly, as noted above, an additional limitation is that it has not been possible to use Hospital Episode Statistics (HES) data to quantify alcohol-related visits to outpatient or Accident and Emergency departments. This may be feasible in future once the records are more complete, yielding a more accurate estimate. It is not clear whether this would reduce or increase the estimate.

### **3.12. Overall totals**

A summary table of the results is presented below, subject to the points made in each subsection above. The total cost of alcohol harm to the NHS is therefore estimated as £2.7 billion per annum in 2006/7 prices.

---

<sup>41</sup> 4 units for men; 3 units for women.

*Updated estimates of the annual cost of alcohol misuse to the NHS in England (2006/7 prices):*

	Cost Estimate (£m)
Hospital inpatient & day visits	
- Directly attributable to alcohol misuse	167.6
- Partly attributable to alcohol misuse	1,022.7
Hospital outpatient visits	272.4
Accident and emergency visits	645.7
Ambulance services	372.4
NHS GP consultations	102.1
Practice nurse consultations	9.5
Laboratory tests	N/A
Dependency prescribed drugs	2.1
Specialist treatment services	55.3
Other health care costs	54.4
<b>Total</b>	<b>2,704.1</b>

Before the paper concludes, the above results are compared with the original Cabinet Office (2003) estimates.

#### **4. A comparison with the original Cabinet Office (2003) estimate – why is the new estimate higher?**

The new estimate of the cost of alcohol harm to the NHS in England is £2.7 billion per annum (in 2006/7 prices), which is significantly higher than the previous Cabinet Office (2003) estimates that were set out in the introduction. Specifically, it is 61% higher than the original (2001 prices) upper estimate of £1.683 billion per annum, and 95% higher than the original (2001 prices) lower estimate of £1.383 billion per annum. It is useful to restate (from the introduction to this paper) the three core factors that must drive any increase in the cost over time:

- NHS unit costs will have increased over time, partly due to inflation.
- More accurate data is now available, including the aforementioned improved estimates of the number of drinkers at 'increasing risk' and 'higher risk'. This data is likely to result in a more accurate, increased estimate of the cost to the NHS in England.
- Increasing numbers of alcohol-related admissions also suggest that the cost has risen.

Although unit cost increases are easier to identify, the latter two points are more difficult to disentangle. The following two sections discuss (i) the reasons for the increase in the level of alcohol-related inpatient costs and (ii) the reasons behind the increases in all other costs.

##### **4.1. Reasons for the increase in the level of alcohol-related inpatient costs**

The increase in the level of alcohol-related inpatient costs is particularly significant; the new estimate of £1.19bn per annum (in 2006/7 prices) is substantially more than the original estimate of £526m (in 2001 prices).

It should be noted that the newer method is different from the original method in a number of ways:

- The original calculations were partly based on the ICD-9 classification system, whereas the newer calculations exclusively use ICD-10. This complicates the comparison of attributable fractions that are used in each set of calculations.



- The newer calculations use attributable conditions and fractions that are compatible with the interim PSA indicator on alcohol-related admissions. These newer attributable fractions also take account of differences across both age and sex.
- The newer calculations make use of actual NHS tariffs, rather than applying a generic cost per bed day. This newer method is significantly more precise.

Nonetheless, the increase will have been largely driven by a 71% rise in alcohol-related admissions (including those that are indirectly alcohol-related) between 2002/3 and 2006/7<sup>42</sup>. Additionally, the Hospital & Community Health Services (HCHS) pay and prices index (as set out in PSSRU (2007)<sup>43</sup>) rose from 206.5 in 2001/2 to 251.9 in 2006/7, implying 22% inflation over this period. Together, these account for about nine-tenths of the increase.

#### **4.2. Reasons for the increase in the level of other alcohol-related costs**

From section 3.12, the non-inpatient alcohol-related costs of alcohol to the NHS are estimated at £1.5bn in 2006/7 prices. By contrast, Cabinet Office (2003) estimated this figure at £913m - £1.15bn in 2001 prices. The gap between the two must be explained by differences in the unit costs and by differences in input variables, such as the estimated number of higher-risk drinkers.

##### *Increases in unit costs:*

- If the unit costs chosen in this paper are replaced by the original Cabinet Office (2003) unit costs (which were in 2001 prices), the non-inpatient alcohol-related costs fall by £440m from the initial figure of £1.5bn. The new and original unit costs are presented in the subsequent table, along with the impact that each change has on the total estimate.
- It is clear from the table that the percentage increases in each unit cost vary greatly. For example, there is only a 2% difference between the estimated costs of an outpatient attendance, but there is a 98% difference between the estimated costs of a GP consultation<sup>44</sup>. These varying differences are partly due to the costs' heterogeneity – they measure different things, and they would not all be expected to increase in similar proportions. The differences are also partly due to the inherent difficulty in measuring these unit costs.
- It is also clear that the increased cost per Accident and Emergency attendance, the increased cost of an emergency ambulance / paramedic journey and (to a lesser extent) the increased cost of a GP consultation are responsible for much of the overall impact on the total cost estimate.

---

<sup>42</sup> North West Public Health Observatory (2008), 'Local Alcohol Profiles for England'. See <http://www.nwph.net/alcohol/lape/>

<sup>43</sup> Op cit. Page 185.

<sup>44</sup> The increase in the estimated cost of a GP consultation is partly driven by the choice of this paper to include direct care staff costs, which Cabinet Office (2003) did not do. It would nonetheless have increased by 75% even if this change were not made.

A comparison between the new and original unit costs, including an analysis of how the changes have had an impact:

Unit cost	New value (£ 2006/7)	Original value (£ 2001) <sup>45</sup>	Taking the new estimate but at the original (£ 2001) unit costs, what is the marginal impact on the total cost of switching each unit cost to the new value?
Cost per outpatient attendance	£85.00	£83.34	£5.3m
Cost per A&E attendance	£97.50	£61.00	£241.7m
Cost per emergency ambulance / paramedic journey	£299.70	£201.00	£122.6m
Cost per practice nurse consultation	£9.00	£10.00	-£1.1m
Cost per GP consultation	£35.55	£18.00	£50.4m
Cost of counselling (per hour)	£37.00	£28.47	£10.2m
Cost of community psychiatric nurse (per hour)	£72.00	£70.00	£0.2m
Cost of health visitor (per hour)	£86.00	£72.00	£0.3m
Cost for 'other professionals' (per session)	£1.51	£1.24	£0.2m
Cost of specialist treatment services	22% uplift	No uplift	£10m
<b>Total</b>			<b>£440m</b>

The following changes to the calculation inputs (relative to Cabinet Office (2003)) have also resulted in notable increases to the estimated cost:

*Increases in input estimates:*

- As explained in section 2, it is now estimated by the Office for National Statistics that 8% of men and 5% of women are higher-risk drinkers, partly due to better estimates of ABV and glass sizes. By contrast, in 2001 these figures were estimated to be 7% and 3% respectively. Switching to the new estimates has resulted in higher accuracy as well as having increased the estimated total cost of alcohol harm to the NHS.
  - Amount of the total cost estimate accounted for by this change:
    - At the new unit costs (2006/7 prices): £115.2m
    - At the old unit costs (2001 prices): £97.1m
- The new estimate of the number of Accident and Emergency attendances is 18,922,275 in 2006/7, compared with the original estimate of 14,290,000 in 2001. Because both the original and updated calculations identify 35% of these attendances as being alcohol-related, this increase passes through into the overall cost estimate. It is argued that this pass-through can be legitimately included given recent increases in the estimated number of alcohol-related admissions.
  - Amount of the total cost estimate accounted for by this change:
    - At the new unit costs (2006/7 prices): £158.1m
    - At the old unit costs (2001 prices): £98.9m
- Similarly, the new estimate of the number of emergency ambulance / paramedic journeys is 3,550,000 in 2006/7, versus the original estimate of 2,914,000 in 2001. Again, 35% of these journeys are identified as alcohol-related, so the increase passes into the overall cost estimate. This pass-through is also argued to be legitimate due to recent increases in the estimated number of alcohol-related admissions.
  - Amount of the total cost estimate accounted for by this change:
    - At the new unit costs (2006/7 prices): £66.7m
    - At the old unit costs (2001 prices): £44.7m

<sup>45</sup> As used in Cabinet Office (2003)

However, it should be noted that whilst the above changes have served to increase the estimated cost to the NHS, three other changes and factors have worked in the opposite direction:

*Downward adjustments to the original calculations:*

- Cabinet Office (2003) included a range for the cost of alcohol-related outpatient appointments. As in this paper, the range was derived from the Birmingham Untreated Heavy Drinkers project<sup>46</sup>, which found that heavy drinkers use outpatient and/or Accident and Emergency services twice as much as the general public. The upper bound of the range assumed that all of their usage was alcohol-related; the lower bound assumed that only their excess usage was alcohol related. Here, it is argued that only the latter assumption is justifiable, so the new cost estimate is lower than the original upper bound (even taking into account the new, higher unit costs).
- The original calculations assumed (again, using data taken from the Birmingham Untreated Heavy Drinkers project) that all of heavy drinkers' practice nurse consultations were alcohol-related. Here, again, it is argued that this is hard to justify, so the cost of alcohol-related practice nurse consultations has been calculated on a similar basis to the cost of alcohol-related GP consultations. This results in a lower cost estimate.
- The original calculations included the cost to non-NHS organisations (such as volunteers and Local Authorities) of specialist alcohol treatment services. Because of its different context and purpose, this paper considers only the cost to NHS organisations, which is around £50m per annum (instead of a total of £117m per annum).

Most of the increase between the original estimate of £913m - £1.15bn and the new estimate of £1.5bn is therefore the result of increased unit costs (which are in turn partly driven by inflation); it is difficult to disaggregate the remaining part of the increase between better estimation and worsening alcohol harm.

## 5. Conclusions

The summary table of the calculated costs (from section 3.12) is reproduced here for convenience, including the £2.7bn estimated annual cost to the NHS in England (in 2006/7 prices). These figures compare with a previously estimated cost of £1.4bn - £1.7bn per annum (Cabinet Office (2003), in 2001 prices). Key factors behind the increase are also summarised.

*Updated estimates of the annual cost of alcohol misuse to the NHS in England (2006/7 prices):*

	Cost Estimate (£m)
Hospital inpatient & day visits	
- Directly attributable to alcohol misuse	167.6
- Partly attributable to alcohol misuse	1,022.7
Hospital outpatient visits	272.4
Accident and emergency visits	645.7
Ambulance services	372.4
NHS GP consultations	102.1
Practice nurse consultations	9.5
Laboratory tests	N/A
Dependency prescribed drugs	2.1
Specialist treatment services	55.3
Other health care costs	54.4
<b>Total</b>	<b>2,704.1</b>

<sup>46</sup> BUHD (2004). Op cit.

*Key factors behind the increase in the estimate:*

- Significant increases in estimated alcohol-related admissions (including those that are indirectly linked to alcohol consumption).
- Higher ONS estimates of the proportion of people drinking at levels of increasing risk and at levels of higher risk. The new estimates take account of larger glass sizes and increased average ABVs.
- Inflation of around 22% between 2001/2 and 2006/7, as implied by the Hospital & Community Health Services (HCHS) pay and prices index.

## Appendix 1. List of ICD-10 codes and corresponding alcohol-attributable fractions

ICD code	ICD name	Alcohol attributable fraction															
		All ages		16-24		25-34		35-44		45-54		55-64		65-74		75+	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
I42.6	Alcoholic cardiomyopathy	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
K29.2	Alcoholic gastritis	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
G72.1	Alcoholic myopathy	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
G62.1	Alcoholic polyneuropathy	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
E24.4	Alcohol-induced pseudo-Cushing's syndrome	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
G31.2	Degeneration of nervous system due to alcohol	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
K86.0	Chronic pancreatitis (alcohol induced)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
F10	Mental and behavioural disorders due to use of alcohol	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
X45	Accidental poisoning by and exposure to alcohol	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
T51.0	Ethanol poisoning	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
T51.1	Methanol poisoning	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
T51.9	Toxic effect of alcohol, unspecified	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
X31	Accidental excessive cold	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
W65-W74	Drowning	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34
W00-W19	Fall injuries	0.22	0.14	0.22	0.14	0.22	0.14	0.22	0.14	0.22	0.14	0.22	0.14	0.12	0.04	0.12	0.04
X00-X09	Fire injuries	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
W32-W34	Firearm injuries	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
W78-W79	Inhalation of gastric contents/Inhalation and ingestion of food causing obstruction of the respiratory tract	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
X85-Y09	Assault	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27
X60-X84, Y10-Y33	Intentional self-harm/Event of undetermined intent	0.34	0.31	0.34	0.35	0.34	0.33	0.35	0.34	0.37	0.34	0.36	0.32	0.31	0.25	0.27	0.20
§§	Pedestrian traffic accidents	0.40	0.17	0.69	0.50	0.58	0.22	0.51	0.42	0.51	0.42	0.16	0.06	0.16	0.06	0.16	0.06
§	Road traffic accidents (driver/rider)	0.33	0.11	0.37	0.18	0.37	0.18	0.37	0.18	0.37	0.18	0.09	0.00	0.09	0.00	0.09	0.00
V90-V94	Water transport accidents	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
O03	Spontaneous abortion	NA	0.20	NA	0.23	NA	0.21	NA	0.22	NA	0.21	NA	0.20	NA	0.15	NA	0.12
K85, K86.1	Acute and chronic pancreatitis	0.31	0.13	0.32	0.16	0.31	0.14	0.31	0.14	0.34	0.15	0.32	0.13	0.28	0.09	0.23	0.07
K22.6	Gastro-oesophageal laceration-haemorrhage syndrome	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47
K70, K74	Liver cirrhosis	0.78	0.52	0.79	0.57	0.78	0.54	0.77	0.55	0.81	0.55	0.79	0.53	0.74	0.43	0.67	0.37
I85	Oesophageal varices	0.78	0.52	0.79	0.57	0.78	0.54	0.77	0.55	0.81	0.55	0.79	0.53	0.74	0.43	0.67	0.37
C32	Malignant neoplasm of larynx	0.36	0.18	0.38	0.21	0.37	0.20	0.36	0.20	0.40	0.20	0.38	0.19	0.33	0.14	0.28	0.11
C00-C14	Malignant neoplasm of lip, oral cavity and pharynx	0.53	0.31	0.54	0.35	0.54	0.33	0.53	0.33	0.57	0.34	0.55	0.31	0.50	0.24	0.44	0.20
C15	Malignant neoplasm of oesophagus	0.34	0.17	0.35	0.20	0.35	0.18	0.34	0.18	0.38	0.18	0.36	0.17	0.31	0.13	0.26	0.10
I47-I48	Cardiac arrhythmias	0.36	0.33	0.35	0.36	0.36	0.35	0.37	0.35	0.38	0.35	0.37	0.33	0.34	0.27	0.30	0.22
I10-I15	Hypertensive diseases	0.37	0.16	0.39	0.19	0.38	0.17	0.37	0.18	0.41	0.18	0.39	0.16	0.34	0.12	0.28	0.09
C50	Malignant neoplasm of breast	NA	0.11	NA	0.13	NA	0.12	NA	0.12	NA	0.12	NA	0.11	NA	0.08	NA	0.07
G40-G41	Epilepsy and Status epilepticus	0.57	0.57	0.56	0.64	0.58	0.59	0.58	0.61	0.61	0.61	0.61	0.57	0.51	0.45	0.42	0.35
I60-I62, I69.0-I69.2	Haemorrhagic stroke	0.31	0.11	0.33	0.13	0.32	0.12	0.29	0.12	0.36	0.12	0.32	0.11	0.26	0.07	0.19	0.06
L40 excluding L405	Psoriasis	0.34	0.31	0.34	0.33	0.34	0.33	0.35	0.33	0.36	0.32	0.35	0.31	0.33	0.26	0.30	0.22

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

§§ V02-V04 (.1, .9), V06.1, V09.2, V09.3 The units should decrease with time.