## Appendices

## Appe**n**dix 1

Table S1: Benzodiazepines and Z-drugs classified according to ATC code and half-life value

|  |  |  |  |
| --- | --- | --- | --- |
| **Benzodiazepine** | **ATC code** | **Half-life (hours)** **[active metabolite]** [[1](#_ENREF_1), [2](#_ENREF_2)] | **Duration of action** |
| [clonazepam](http://www.guidetopharmacology.org/GRAC/LigandDisplayForward?ligandId=6963https://www.whocc.no/atc_ddd_index/?code=N03AE01&showdescription=yes) | N03AE01   |

|  |  |
| --- | --- |
| 18-50 |  |

 | Long-acting |
| diazepam | N05BA01   |

|  |  |
| --- | --- |
| 20-100 [36-200] |  |

 | Long-acting |
| [chlordiazepoxide](http://www.guidetopharmacology.org/GRAC/LigandDisplayForward?ligandId=3370) | N05BA02 |

|  |  |
| --- | --- |
| 5-30 [36-200] |  |

 | Long-acting |
| [potassium clorazepate](http://www.guidetopharmacology.org/GRAC/LigandDisplayForward?ligandId=7548)\* | N05BA05 |

|  |  |
| --- | --- |
| [36-200] |  |

 | Long-acting |
| [lorazepam](http://www.guidetopharmacology.org/GRAC/LigandDisplayForward?ligandId=5884) | N05BA06 |

|  |  |
| --- | --- |
| 10-20 |  |

 | Short-acting |
| bromazepam | N05BA08 | 10-20 | Short-acting |
| [clobazam](http://www.guidetopharmacology.org/GRAC/LigandDisplayForward?ligandId=7149) | N05BA09 |

|  |  |
| --- | --- |
| 12-60 |  |

 | Long-acting |
| [prazepam](http://www.guidetopharmacology.org/GRAC/LigandDisplayForward?ligandId=7275) | N05BA11 |

|  |  |
| --- | --- |
| [36-200] |  |

 | Long-acting |
| alprazolam | N05BA12 | 6-12 | Short-acting |
| [flurazepam](http://www.guidetopharmacology.org/GRAC/LigandDisplayForward?ligandId=7188) | N05CD01  |

|  |  |
| --- | --- |
| [40-250] |  |

 | Long-acting |
| nitrazepam | N05CD02 |

|  |  |
| --- | --- |
| 15-38 |  |

 | Long-acting |
| [flunitrazepam](http://www.guidetopharmacology.org/GRAC/LigandDisplayForward?ligandId=4193)\*\* | N05CD03 |

|  |  |
| --- | --- |
| 18-26 [36-200] |  |

 | Long-acting |
| [triazolam](http://www.guidetopharmacology.org/GRAC/LigandDisplayForward?ligandId=7313) | N05CD05 | 2 | Short-acting |
| [lormetazepam](http://www.guidetopharmacology.org/GRAC/LigandDisplayForward?ligandId=7553) | N05CD06  |

|  |  |
| --- | --- |
| 10-12 |  |

 | Short-acting |
| temazepam | N05CD07   |

|  |  |
| --- | --- |
| 8-22 |  |

 | Short-acting |
| [midazolam](http://www.guidetopharmacology.org/GRAC/LigandDisplayForward?ligandId=3342) | N05CD08 | 1.5 -2.5  | Short-acting |
| **Z-drug** | **ATC code** | **Half-life (hours)****[active metabolite]** [[1](#_ENREF_1), [2](#_ENREF_2)] | **Duration of action** |
| Zopiclone | N05CF01  | 5-6 | Short-acting |
| Zolpidem | N05CF02  | 2 | Short-acting |
| [Zaleplon](http://www.guidetopharmacology.org/GRAC/LigandDisplayForward?ligandId=4345)\*\*\* | N05CF03  | 2 | Short-acting |

\* Marketing authorisation withdrawn in 2005

\*\* Marketing authorisation withdrawn in 2013

\*\*\* Marketing authorisation withdrawn in 2015

### Appendix 2

## Additional results data

Note: Tables and figures presented in order of relevance to results section of main paper.

### Population sample

#### Table S1: Proportions of GMS eligible individuals during study period categorised according to gender and age

|  |  |  |  |
| --- | --- | --- | --- |
| **Study year** | **% male** | **% female** | **Total number of GMS patients** |
| **16-44 years** | **45-64 years** | **≥65 years** | **16-44 years** | **45-64 years** | **≥65 years** |
| 2005 | 13.2 | 11.2 | 18.3 | 19.3 | 13.0 | 24.9 | 914505 |
| 2006 | 13.5 | 11.2 | 18.0 | 20.1 | 13.0 | 24.2 | 958866 |
| 2007 | 14.0 | 11.1 | 17.9 | 20.4 | 12.8 | 23.8 | 997759 |
| 2008 | 15.3 | 11.1 | 17.3 | 20.8 | 12.6 | 22.9 | 1052254 |
| 2009 | 18.0 | 11.4 | 15.5 | 21.9 | 12.5 | 20.7 | 1143063 |
| 2010 | 19.1 | 11.6 | 14.8 | 22.4 | 12.5 | 19.6 | 1245455 |
| 2011 | 19.5 | 11.9 | 14.4 | 22.6 | 12.6 | 19.0 | 1304675 |
| 2012 | 20.3 | 11.9 | 13.7 | 23.6 | 12.5 | 18.0 | 1416837 |
| 2013 | 20.4 | 12.0 | 13.4 | 23.9 | 12.6 | 17.7 | 1427880 |
| 2014 | 19.9 | 12.4 | 13.4 | 23.8 | 13.0 | 17.5 | 1366491 |
| 2015 | 19.0 | 12.8 | 13.9 | 22.7 | 13.5 | 18.1 | 1344123 |

### Prescribing trends

#### Table S2: Prescribing rates per 1000 GMS population for individual benzodiazepine and Z-drugs



**\*\***

\*Marketing authorisation for flunitrazepam was withdrawn in 2013

\*\* Marketing authorisation for zaleplon was withdrawn in 2015

Figure S1: Prescribing rates for (a) benzodiazepines [BZDs] and (b) Z-drugs issued to GMS eligible patients aged ≥16 years from 2005 to 2015 according to gender and age

1. Benzodiazepine prescribing rates based on gender and age
2. Z-drug prescribing rates based on gender and age

### Long-term use

1. Benzodiazepines

Figure S2: Duration of consecutive (a) benzodiazepine and (b) Z-drug use among patients during study period according to gender and age

1. Z-drugs