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Background
- Benzodiazepines and Z-drugs (such as zopiclone) are prescribed for a variety of indications, including sedation and insomnia
- Risks of these drugs include dependence, cognitive impairment and respiratory depression
- In the UK, around 300,000 people are on long-term prescriptions for benzodiazepines, despite the recommendation that they should be given for a maximum of 4 weeks1,2
- Prescription rates are higher in females and the elderly3,4
- It has been suggested that a relationship exists with deprivation5

Aim
To determine whether there was an association between benzodiazepine/Z-drug prescribing (overall, and by individual drug) and practice-level socioeconomic deprivation in England.

Methods
- **DATA SOURCES**
  - Monthly prescribing data for 2017 – NHS Digital
  - Practice-level age and sex structure – NHS Digital
  - Benzodiazepine equivalence doses – British National Formulary
  - Practice/CCG Index of Multiple Deprivation (IMD) Score - PHE
- **DATA PROCESSING**
  - Monthly prescriptions aggregated over 2017
  - Total mg diazepam-equivalent calculated
  - Prescribing calculated as mg diazepam-equivalent per 1000 patients
  - Data processed (1) per practice and (2) per CCG
- **ANALYSIS**
  - To compare prescribing by IMD score decile, we calculated means + 95% confidence intervals
  - To examine independent associations, multiple linear regression used, to include: % males, % >65s, practice list size, IMD score
  - To allow visualisation of prescribing inequality, choropleth maps were produced at CCG level
  - A bivariate choropleth map was used to visualise both deprivation and prescribing rates at CCG level (by tertiles)

Results

**Figure 1. Proportion of each drug prescribed**
- Proportion of total number of items of benzo/Z-drugs

**Figure 2. Prescribing by practice IMD decile**
- For total benzo/Z-drugs (upper) and nitrazepam (lower)
- A step-wise increase in prescribing by IMD decile is more apparent for some drugs but not overall

**Figure 3. Summary of regression analyses**
Association between practice IMD score and prescribing per 1000 registered patients
- For each individual drug, and for all drugs in total
- Beta values show the extra amount of mg-equivalent diazepam prescribed per 1000 patients for each one-point increase in practice IMD score
- Multiple R² values indicate the proportion of the variability in prescribing that is explained by the factors studied in the regression model

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<thead>
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<th>Drug</th>
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<th>Multivariable</th>
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<tbody>
<tr>
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<tr>
<td>prescriptions</td>
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<td>P value</td>
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<td>Zopiclone</td>
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**Figure 4. Prescribing by CCG**

**Figure 5. Prescribing by IMD/CCG**

Discussion

**Key Findings**
- IMD score is independently positively associated with prescribing
- This association is seen more strongly in some drugs than others
- A large proportion of the variation in prescribing is not explained by IMD score, age/sex structure and practice list size.

**Further Work**
- Analyses in individual patient-level datasets is required to determine the specific drivers for prescribing, to help identify interventions

**References**
1. NICE. Hypnotics: Key therapeutic topic [KTT6]. 2018