EPH269

Unlocking Insights in Prescription Data in England: The Power of the Prescribing Episode Statistics (PES) Database

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Background

- The Prescription Episodes Statistics (PES) database offers detailed, real-world prescription data from primary care within the National Health Service (NHS) in England.
- It provides pseudonymized monthly-level information on prescriptions for medicines that have been dispensed and claimed in community settings.

Objectives

- We aimed to describe the database to emphasize its potential to improve patient care and support informed decision-making in healthcare.

Methods

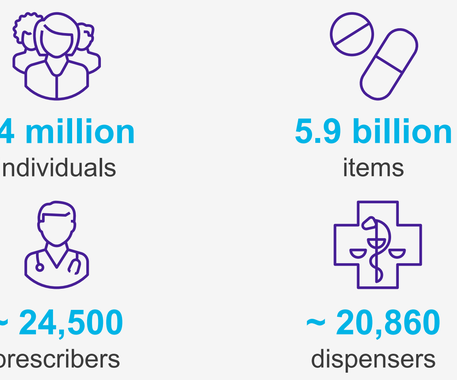
- PES were generated utilizing data submitted to the NHS Business Services Authority (NHSBSA).
- A comprehensive data resource profile was created based on data processing and descriptive analyses.

Results

Content of the database

- As of June 2025, it provides patient-level information on demographics for 54.3 million individuals, along with data on 5.9 billion prescription items dispensed between April 2020 and March 2025. Additionally, it includes information on 24,505 prescribers and 20,855 dispensing pharmacies (see **Figure 1**).

Figure 1. Database overview



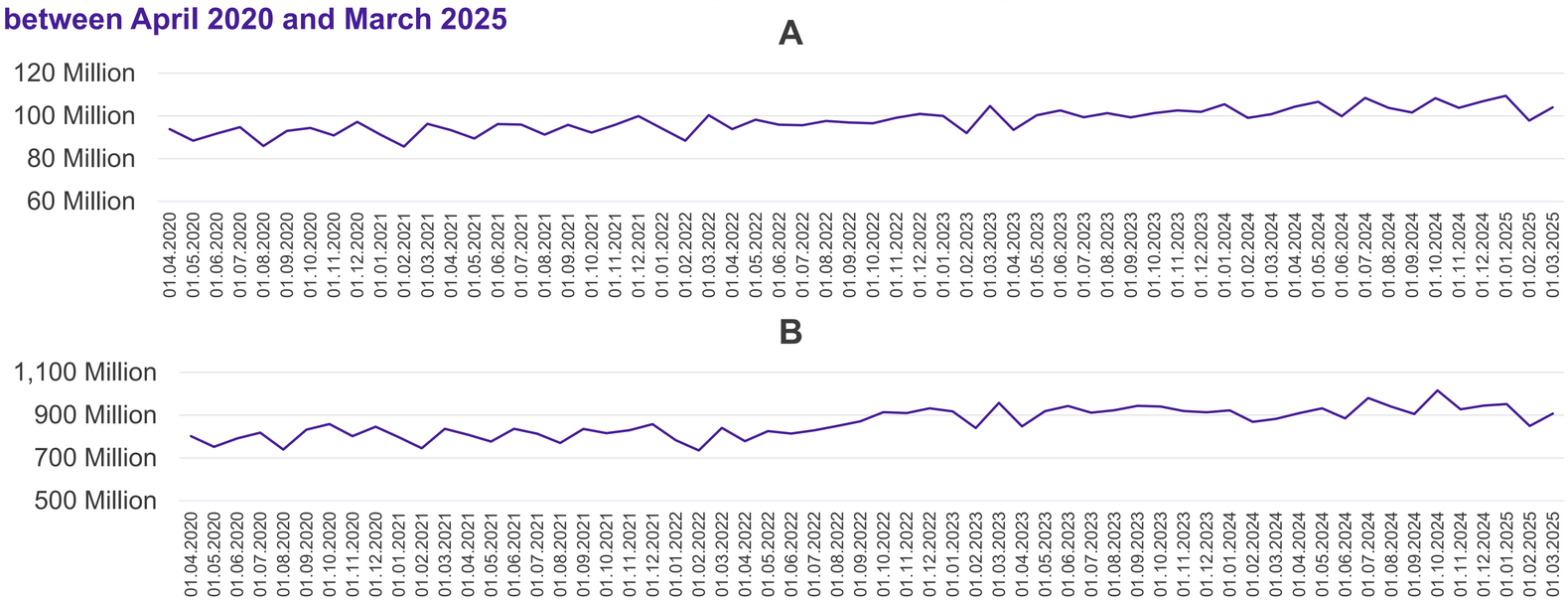
- **Patient-level** information includes demographics (age, gender) as well as pseudonymized patient identifier (ID), which can be used to link patients across different datasets.
- Data on **dispensed items** includes the British National Formulary (BNF) code and name, which serve as a unique identifier for each medication in the UK, as well as month and year of prescription, dosage, quantity, formulation (e.g., capsule, cream, tablet), supplier name, and Net Ingredient Cost (NIC).
- Details on **prescriber** cover the type of prescriber (e.g., general practitioner (GP), nurse, dental practitioner) and specifics regarding the prescribing organization such as identifier code (Organisation Data Service (ODS) code), type (e.g., GP practice, dentist practice, hospital), subtype (e.g., walk-in-center, public health service, community health service), and geographic information (country code, lower layer super output area (LSOA)).
- Information on **dispensing organization** includes organization identifier code (ODS code) and type (e.g., GP practice, pharmacy/appliance contractor).

Descriptive analyses

- The number of prescribed items increased by 10.8% (93.8 million in April 2020; 104.0 million in March 2025) (see **Figure 2A**).
- Correspondingly, total NIC increased by 13.1% (£802.2 million in April 2020; £907.3 million in March 2025) (see **Figure 2B**). Individuals aged >65 years accounted for 44.1% of total costs.

Results (cont.)

Figure 2. Count of prescribed items [A] and net ingredient costs (£) [B] captured in the PES database between April 2020 and March 2025



- The NHS Commissioning Region Midlands recorded the highest prescription share (18.8%, thereof adults: 96.9%) (see **Figure 3**).
- Stratified by BNF category, the prescription item count was highest for the cardiovascular system (BNF section 2), accounting for 29.4% and 1.8 billion prescription items (adults: 99.3%) (see **Figure 4**).

Figure 3. Distribution of prescribing items by region for the period between April 2020 and March 2025

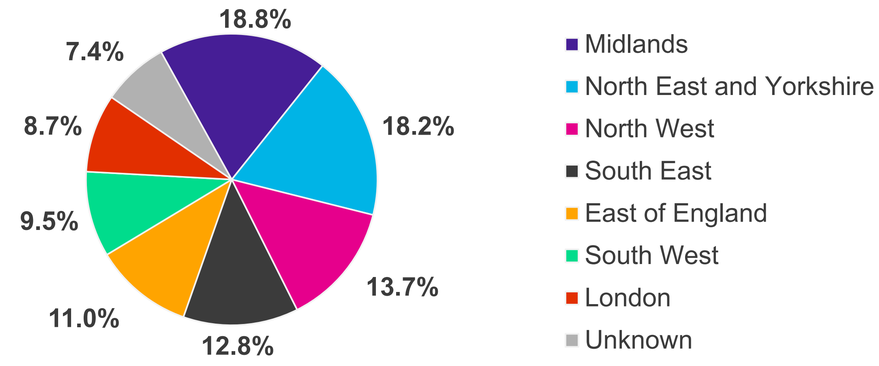
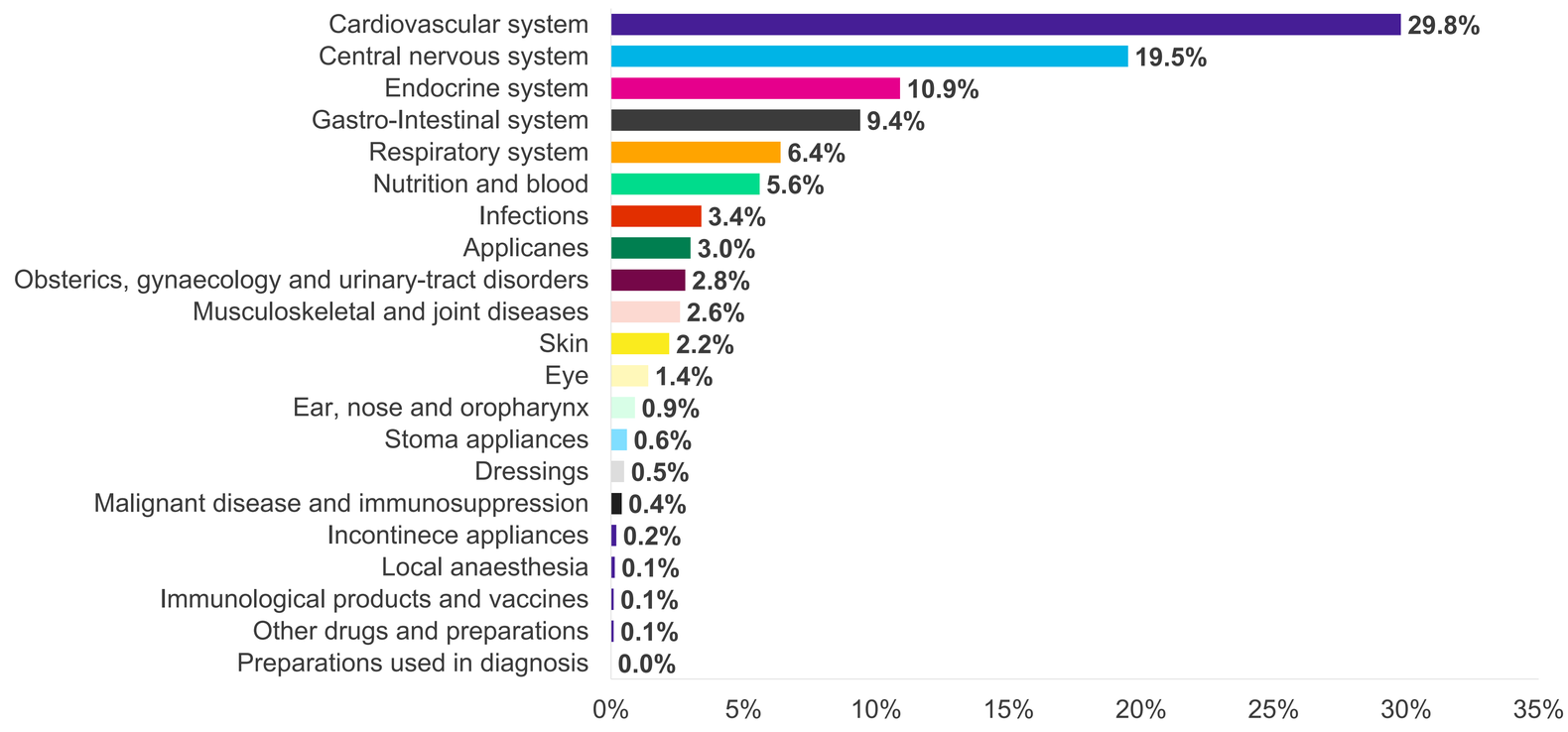


Figure 4. Distribution of prescribing items by BNF-sections for the period between April 2020 and March 2025



Strengths of the database

- The database provides nationwide prescribing information covering the entire population of England.
- Up-to-date longitudinal patient-level data allows tracking patients over a five-year period.
- Patient profiles stratified by age, gender, and region of residence can be compiled, enabling targeted analyses and tailored healthcare interventions.
- In-depth analyses on treatment adherence, discontinuation, switch as well as concomitant medication use can be conducted, enhancing understanding of the patient journey.
- Adherence to treatment guidelines (e.g., dosage change withing pre-defined timeframe) can be evaluated, showing treatment gaps.

Limitations of the database

- Prescriptions are only available on monthly basis, which may affect the accuracy of time-to-event analyses and the interpretation of treatment patterns
- The database does not include clinical diagnoses, making it difficult to directly link prescriptions to underlying conditions.
- Prescriptions issued by specialist physicians are not captured, potentially underrepresenting certain therapeutic areas.
- Medications dispensed and administered within hospital settings are not included, which may lead to incomplete assessment of overall treatment exposure.

Conclusion

- The PES database can enhance our understanding of real-world prescribing behaviors over time across different age groups and geographies, help identify treatment gaps and support informed decision-making, especially when linked with other NHS datasets like Hospital Episodes Statistics (HES).

Presented at: ISPOR Annual European Congress;
09-12 November 2025; Glasgow, Scotland.