Original Paper

OpenPrescribing Hospitals, an Open Access Analytics Platform for Hospital Medicines Use in England: Development and Implementation Study

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Abstract

Background: The Secondary Care Medicines Data (SCMD) makes detailed data on medicines issued by National Health Service (NHS) hospital trusts in England openly available for the first time. These data provide an opportunity to understand medicine use patterns, highlight variation, and drive improvements in evidence-based practice, prescribing safety, and cost-effectiveness. However, this dataset requires extensive domain and technical knowledge to access, clean, transform, and link to other external sources before it can be used effectively.

Objective: This study aimed to describe the development, implementation, and functionality of OpenPrescribing Hospitals and showcases example use cases. OpenPrescribing Hospitals is an open-access platform for analyzing hospital medicines use in England using the SCMD.

Methods: We developed a data pipeline that imports the SCMD and links further medicinal product information from the dictionary of medicines and devices, organization information from the Organisation Reference Data, and medicines classifications and measurement information from the Anatomical Therapeutic Chemical and Defined Daily Dose index. Using these linked data, we calculated alternative measures of quantity to support appropriate comparison across the products reported. These data are presented through an open-access web platform with 3 main features: *Submission History*, *Measures*, and *Analyse*. We describe these features through illustrative use cases. We also summarize the web analytics collected between the platform launch in February 2025 and September 2026.

Results: The platform supports open, accessible use of preprocessed hospital medicines data and supports analysis and comparisons across NHS trusts, Integrated Care Boards, NHS regions, ingredients, and therapeutic groups. The Submission History feature displays patterns that can indicate changes in the completeness and consistency of data submissions by NHS trusts. The Measures feature presents predefined measures and benchmarking based on national medicines recommendations. The Analyse feature supports detailed user-defined analyses. Illustrative examples show how incomplete submissions can affect apparent medicines use and how the platform can surface trends and variation in the issuing of selected medicines. As of September 2026, the platform attracts approximately 1000 unique visitors monthly and has been used to run more than 20,000 custom analyses.

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Conclusions: OpenPrescribing Hospitals reduces the technical barriers to analyzing hospital medicines data in England. The platform is openly accessible and accompanied by extensive documentation to support transparent and reproducible analyses. We encourage adoption of the platform by clinicians, academics, and policy advisors to support rapid local feedback against national medicines standards and to monitor the extent of and variation in the uptake of new medicines. This early report does not assess usability, clinical outcomes, prescribing changes, or cost savings. Further research is needed to evaluate data validity, user experience, and effects on medicine optimization.

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KEYWORDS

drug use; secondary care; medical informatics; open data; quality improvement; health services research

Introduction

Data on prescribing in general practices funded by the National Health Service (NHS) have been openly available since 2011 [1]. The scrutiny of prescribing data is embedded into routine care using both open and restricted access analytic platforms [2,3]. These tools are commonly used by medicines optimization teams, who provide feedback to general practitioners (GPs) to support better value, safety, and more environmentally friendly prescribing. Until recently, analogous data for medicines use in secondary care in England was not openly available.

In July 2020, we advocated making this previously inaccessible data openly available [4], and in July 2021, it was made publicly available for the first time in the form of the Secondary Care Medicines Data (SCMD) [5]. This dataset provides detailed information on the use of individual medicines by NHS trusts by capturing stock issuing data from hospital pharmacies in all NHS acute, teaching, specialist, mental health, and community trusts in England. The dataset is collated by Rx-Info, a UK-based health care analytics company that provides medicines data and analytics software to the NHS [6]. It is hosted and published on behalf of NHS England via the NHS Business Services Authority (BSA) Open Data Portal [7].

Since its publication, studies using the SCMD showcase the benefits of making these data openly available and their potential for future use [8-10]. However, this rich data source remains underused. As with other NHS datasets, there are barriers to using the SCMD [11]: multiple versions of the data exist [5,12]; monthly data are made available as separate files that must be downloaded, aggregated, and processed; and linkage to external data sources is required to contextualize the data (eg, the geographical location of organizations from the Organisation Data Service [ODS] [13]). A small number of dashboards attempt to address this complexity and provide high-level insights for NHS trusts [14,15]. Platforms offering richer datasets and more advanced analytics are typically restricted to NHS users or are not openly available [16-19]. This limited access constrains broader efforts to benchmark activity, explore measures of value, safety, and evidence-based practice, and share examples of best practice more widely.

Since 2015, we have maintained the OpenPrescribing platform [20,21], which supports a wide range of analyses of English primary care prescribing data. Building on this experience, we developed OpenPrescribing Hospitals to reduce technical barriers to the use of the SCMD. The platform, launched in February 2025, is publicly available, free to use, and supported by open-source code and public documentation. It aims to achieve for the SCMD the same benefits in safety, efficiency, and innovation that OpenPrescribing has already demonstrated for primary care data [22,23].

This early report describes the development, implementation, functionality, and initial use of OpenPrescribing Hospitals. We describe the data-processing methods and platform functionality and provide selected use cases that illustrate possible applications for understanding medicine use and informing clinical practice. This report does not evaluate usability, clinical outcomes, prescribing changes, or cost savings.

Methods

Study Design

This study was a descriptive early report of the development and initial implementation of OpenPrescribing Hospitals. The platform was developed between August 2024 and February 2025 and was launched publicly in February 2025. We describe the initial implementation and use through September 2026. We did not include a prospective evaluation of usability, clinical outcomes, prescribing changes, or cost savings, but this description forms the basis for future evaluation.

Aims and Reported Outputs

The aim of OpenPrescribing Hospitals is to reduce the technical barriers to using the SCMD and provide an open platform for the analysis of hospital medicine use in England. The planned outputs were:

1. An automated pipeline for importing, processing, and updating the SCMD
2. Linkage of the SCMD to external data sources for further medicinal product, organization, and therapeutic classification information
3. Calculation of alternative quantity measures to allow comparisons across the wide range of medicinal products reported in the SCMD
4. Public functionality for assessing Submission History, predefined Measures, and user-defined Analyse
5. Open-source code and public documentation

Data Source and Processing

The data available through the OpenPrescribing Hospitals platform comprise a curated aggregation of multiple data sources (Textbox 1). The primary data source is the SCMD [5].

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Textbox 1. Data sources used by OpenPrescribing Hospitals.

Secondary Care Medicines Data (SCMD): the primary data source, containing information about medicines issued in hospitals. These data are published by the National Health Service (NHS) Business Services Authority (BSA) and are available to download from the NHS BSA SCMD data download page [5] or using the NHS BSA Open Data Portal API [7]. The data are also accessible through ePACT2 (NHS BSA) for registered users [3].

Dictionary of medicines and devices (dm+d): a standardized dictionary, providing supplementary information about products included in the SCMD. For example, it provides information about a product's ingredients and route of administration. The dm+d is updated weekly and published by the NHS BSA [24].

Organisation Reference Data (ORD): individual organizations in the SCMD are identified by their Organisation Data Service (ODS) code [13]. Basic information about these organizations, such as their names, locations, and relationships to other organizations, can be obtained using the ODS data search and export tool [25] or NHS ODS ORD API [26].

Anatomical Therapeutic Chemical (ATC)/Defined Daily Dose (DDD): the ATC system provides a classification for medicinal substances based on their main therapeutic, pharmacological, and chemical properties. In combination with the DDD, a unit that enables comparison of medicine consumption, the ATC system supports nuanced analysis of use across groups of medicines. The ATC/DDD index is maintained by the World Health Organization (WHO) Collaborating Center for Drug Statistics Methodology [27] and published openly [28]. A machine-readable version is available for a fee.

All data sources outlined in Textbox 1 are dynamic and routinely updated. To support ongoing updates, we have developed a data pipeline to import, transform, validate, and link these sources as part of the OpenPrescribing Hospitals platform. This pipeline is managed using the workflow orchestration tool Prefect (Prefect Technologies, Inc) [29]. The pipeline includes:

- Linkage of the SCMD data to the dictionary of medicines and devices (dm+d) to identify further product information, such as their ingredients and routes of administration.
- Linkage of the SCMD to the Organisation Reference Data (ORD) to identify NHS trust information, including their relationships to other NHS organizations, such as the Integrated Care Board (ICB), to which they belong, and other NHS trusts with which they have merged or by which they have been acquired. This supports aggregation of data for historical trusts into their successor trust in the features described below.
- Linkage of the SCMD to Anatomical Therapeutic Chemical (ATC)/Defined Daily Dose (DDD) and dm+d to enable calculation of alternative measures of quantity (Textbox 2).

Textbox 2 shows the quantity metrics of OpenPrescribing Hospitals.

Textbox 2. OpenPrescribing Hospitals quantity metrics.

Secondary Care Medicines Data (SCMD) quantity: the quantity as reported in the SCMD with the following adjustments:

- Historical dictionary of medicines and devices (dm+d) codes used to identify products are mapped to their most recent dm+d code so that the data for a product identified using multiple identifiers in the raw data is aggregated under a single code.
- Reported quantities are converted to base units to enable easier aggregation and comparison (eg, quantities in micrograms are converted to grams and quantities in microliters to milliliters).

Every product has an SCMD quantity, making this a reliable way to examine the quantities of individual products issued. However, it uses a wide range of units of measure (eg, tablets, sachets, and milliliters), which limits its use for comparing multiple products.

Unit dose quantity: a unit dose is a single measured quantity of a medicine, packaged for administration to a patient in a single unit. This is different from a dose, which is the quantity of medication given as part of a broader dosage regimen that includes frequency and duration. Unit doses are only defined for products with a discrete unit dose form in the dm+d.

Ingredient quantity: the amount of active ingredients within a product. Ingredient quantity is calculated for all specified ingredients within a product where the ingredient's unit of measurement for the ingredient is compatible with the reported SCMD quantity.

Defined Daily Dose (DDD) quantity: a DDD is a standardized unit of drug use, defined by the WHO, that allows comparison of drug use between different countries, regions, and health care settings. DDDs are only calculated for products that have been mapped to an Anatomical Therapeutic Chemical (ATC) code and that have a compatible unit of measure with the specified DDD for that ATC code.

System Architecture and Technical Design

OpenPrescribing Hospitals has 3 main technical layers: data processing, data storage, and a public web application.

The data pipeline stores and processes source data using Google BigQuery [30]. These data are then used to populate a PostgreSQL (PostgreSQL Global Development Group) database [31], optimized to handle the various ways users interact with the data efficiently through the OpenPrescribing Hospitals web application. For example, the database supports searches across all products reported in the SCMD by name, product code, ingredients, or therapeutic use, as well as queries about the quantities of selected medicines issued over time by a subset of NHS trusts.

The server-side application was developed with Django (Django Software Foundation) [32]. The user interface was developed with Svelte (Svelte core team) [33] and Tailwind CSS (Tailwind Labs Inc) [34]. Interactive charts are generated using Highcharts (Highsoft AS) [35]. The platform is deployed using the DigitalOcean (DigitalOcean LLC) app platform [36]. Web

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analytics are measured using Plausible Analytics (Plausible Insights OÜ) [37].

The source code for the data pipeline and platform is made available under a Massachusetts Institute of Technology (MIT) license [38].

Platform Features

The OpenPrescribing Hospitals platform has 3 primary features: Submission History, Measures, and Analyse. Submission History provides information about the availability and consistency of trust submissions to the SCMD. Measures provides predefined analyses based on national medicine recommendations. Analyse allows users to create custom analyses of selected products and NHS trusts. Public documentation and answers to frequently asked questions are available on the platform [39].

Submission History Feature

The SCMD contains processed pharmacy stock-control data submitted by individual hospital trusts (the trusts submitting data as of September 2026 are shown in Table S1 in Multimedia Appendix 1). This presents several challenges:

- Data submitted by individual trusts can be incomplete or inconsistent [40].
- NHS organizations change over time as trusts open, close, merge, or are acquired [40].
- Historical stock control data can be amended after submission. As a result, SCMD data are initially released as provisional data and finalized annually [41].

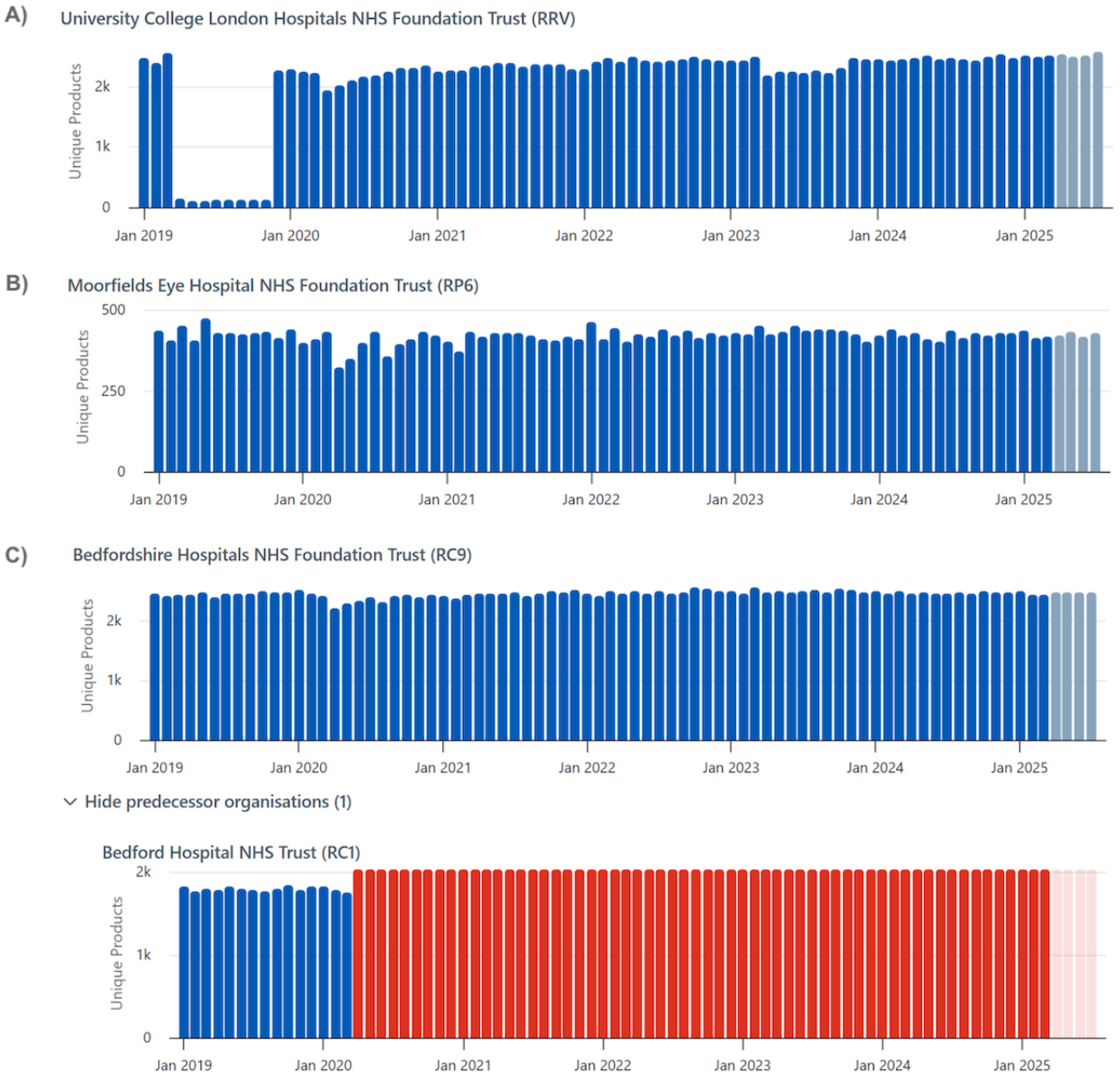
These challenges must be considered when interpreting charts generated from the SCMD using the OpenPrescribing Hospitals platform. The Submission History feature helps users assess these issues by showing:

- All of the NHS trusts included in the SCMD
- Data submission completeness and consistency over time
- Organization changes such as mergers and acquisitions between trusts
- Whether the data each month represents provisional or finalized data

The Submission History feature is demonstrated in Figure 1. It displays the monthly number of unique products reported by each NHS trust that submits to the SCMD. Months for which trusts submit no data are represented by red bars. The height of each blue bar represents the number of unique products reported by each trust in the SCMD for that month.

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Figure 1. Submission History of the Secondary Care Medicines Data, as displayed on OpenPrescribing Hospitals, for (A) University College London Hospitals National Health Service (NHS) Foundation Trust (Organisation Data Service [ODS] code: RRV), which shows an inconsistent number of products included in monthly submissions. (B) Moorfields Eye Hospital NHS Foundation Trust (ODS code: RP6), a trust with a clinical specialty, as reflected in the lower number of unique products issued. (C) Bedfordshire Hospitals NHS Foundation Trust (ODS code: RC9) and its predecessor organization, Bedford Hospital NHS Trust (ODS code: RC1), showing no submissions from April 2020. Red bars represent months when no products were reported in the SCMD for that trust. Transparent bars represent months for which SCMD data remain provisional and await finalization. NHS: National Health Service.



For some trusts, this can indicate periods where the set of products they submit data for is incomplete (Figure 1A). Some variation in the number of unique products reported each month is expected, reflecting trust size, degree of specialization, and differences in the local formularies. For example, smaller, more specialized trusts are more likely to issue a smaller number of products (eg, Moorfields Eye Hospital; Figure 1B). Where trusts have merged or been acquired, the Submission History feature groups them with their successor (Figure 1C). In this example, the number of products for the successor trust (Bedfordshire Hospitals NHS Foundation Trust) represents the number of unique products issued in that trust and its predecessor (Bedford Hospital NHS Trust). Finally, this feature shows the status of the SCMD each month. Solid-colored bars represent finalized data, whereas transparent bars represent months for which the data remain provisional.

Measures Feature

Measures quantify activity for a clinical area of interest. They can be used to drive targeted quality improvement work by highlighting variation and identifying potential areas for improvement in evidence-based practice, prescribing safety, and cost-effectiveness. Measures are based on national medicines recommendations, such as the NHS England medicines optimization opportunities [42] or prescribing guidance within the British National Formulary [43].

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For each measure on OpenPrescribing Hospitals, we describe as follows:

1. What is this measure? A brief description of what the measure captures.
2. How is it calculated? An explanation of how products in the measure are chosen, which quantity measure is used (Textbox 2), and how the measure is calculated from these quantities.
3. Why does it matter? An indication of why the measure is important to monitor. For example, alignment with commissioning recommendations.
4. Which trusts are included? Trusts are only included in a given measure if they issue the products specified in that measure. This gives an indication of the number of trusts included.

The supporting text aims to make all measures easily understandable, transparent, and reproducible for a general audience.

Measures are visualized on a time-series chart with 4 modes: NHS trust, ICB, Region, and National. In NHS trust mode, a percentile chart is displayed, allowing individual trusts to be selected for comparison. Figure 2 shows the charts available for a measure of the uptake of Phesgo, a breast cancer treatment. In Figure 2A, the percentile chart is presented with data for 2 hospital trusts overlaid. This mode is designed to clearly show the extent of variation across NHS trusts and how an individual trust compares to their peers. Below the time-series chart, we show the products included in the measure and their units of measurement (Figure 2B).

Figure 2. An example of the OpenPrescribing Hospitals measure for the uptake of Phesgo in National Health Service (NHS) trust mode, showing (A) a time-series chart with national trust-level percentiles and selected individual trusts and (B) the products included in the numerator and denominator of the measure. NHS: National Health Service.



Analyse Feature

Overview

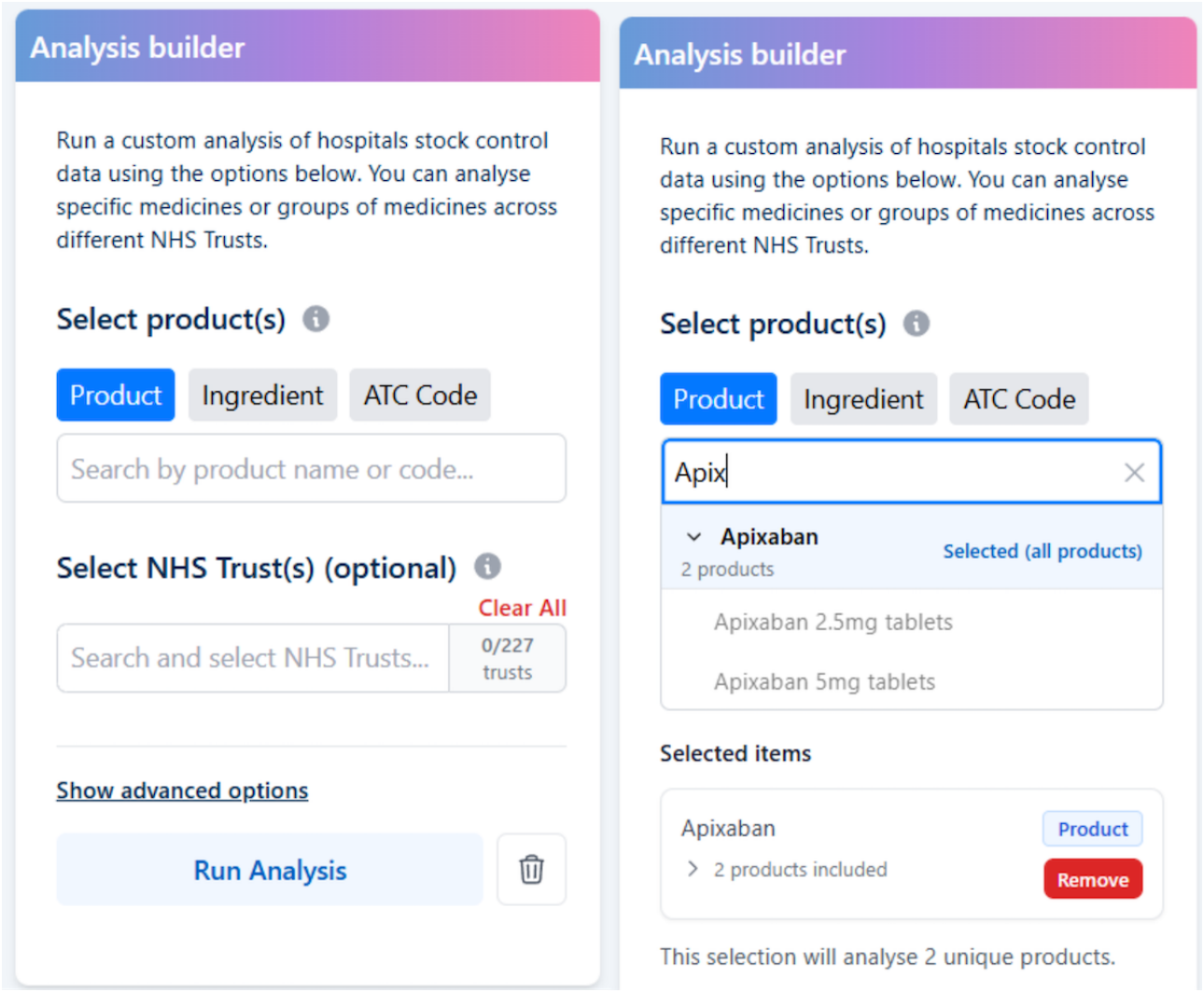
The Analyse feature supports user-defined analyses against the underlying data. Analyses are specified using the Analysis builder.

Product and Trust Selection

Figure 3 shows how users can search for and select products.

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Figure 3. Analysis builder for custom analyses on OpenPrescribing Hospitals. Users can use free-text searches to select products by product name or identifier, ingredient name, or Anatomical Therapeutic Chemical name or code and to select NHS trusts for analysis.



Products can be found as follows:

1. Product names or identifier codes: products can be selected individually or as groups of related products. For example, selecting the dm+d Virtual Therapeutic Moiety code 775354007 includes all available codeine products, such as codeine 30 mg tablets and codeine 60 mg tablets.
2. Ingredient names: selecting an ingredient selects all products containing that ingredient. For example, by selecting an ingredient, users can select all products containing paracetamol, including combination products such as co-codamol (paracetamol and codeine).
3. ATC name or code: selecting an ATC level will select all products matched to that ATC level or any of its child categories. For example, a user could select all “proton pump inhibitors” (ATC code: A02BC).

Users can also search for and select NHS trusts. All trusts reporting data in the SCMD are included, with predecessor trusts grouped with their successor. Predecessor trusts are not selectable individually.

Quantity Type Selection

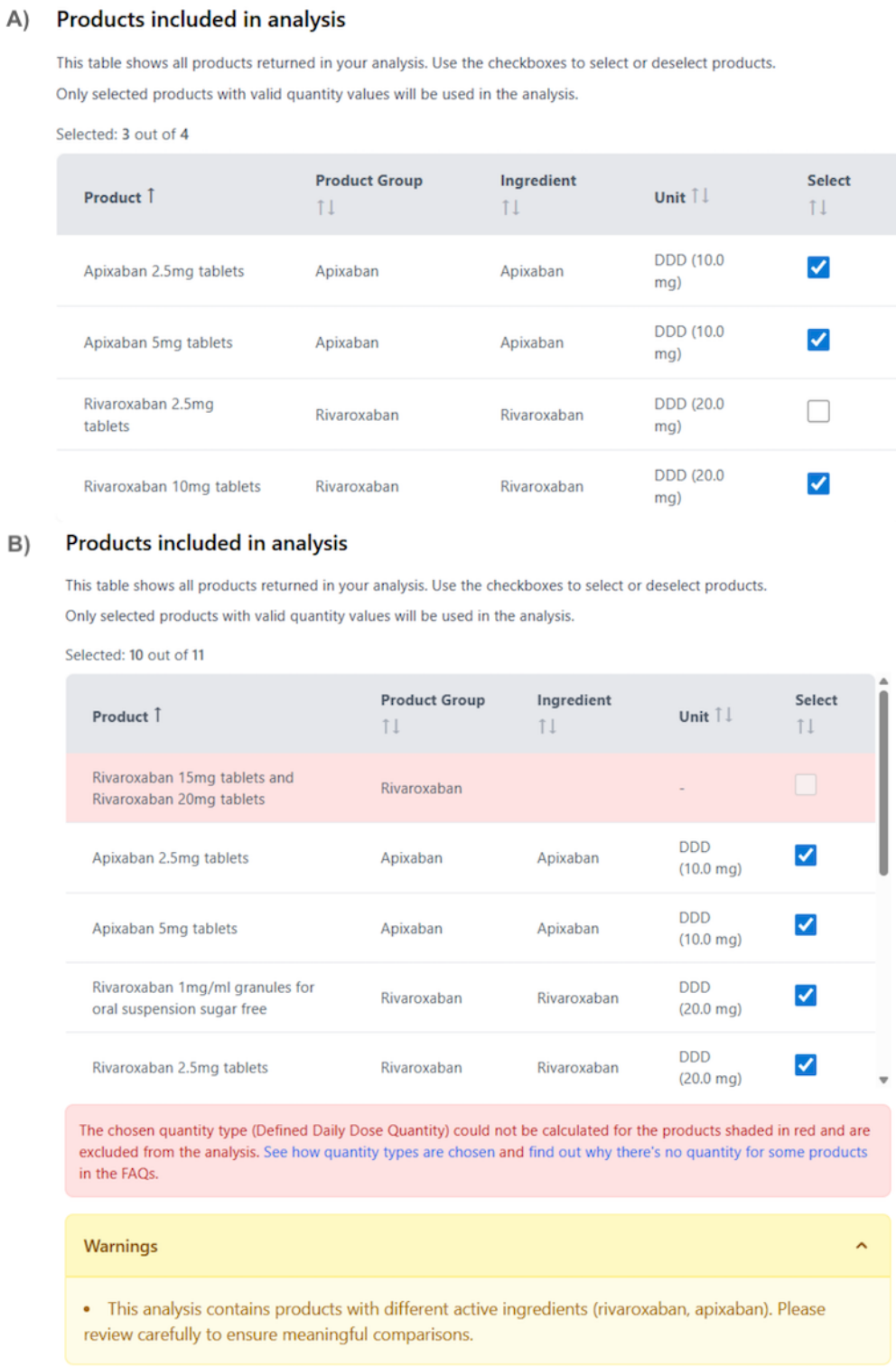
Users can select one of the quantity measures described in Textbox 2 through the advanced options. The most appropriate quantity type for an analysis is automatically decided based on the products selected (Figure S1 in Multimedia Appendix 1) but can be manually specified.

Included Products

The results for a custom analysis are returned in 3 sections. The first section indicates the products included in the analysis (Figure 4A), along with basic product information, including the product name, the group to which the product belongs to, the ingredients within a product, and the unit of measure for the product in the quantity type chosen for the analysis. Additionally, users can edit the included products to refine the analysis.

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Figure 4. Results from a custom analysis on OpenPrescribing Hospitals showing (A) the products included in an analysis, which can be edited to refine an analysis and (B) the products that are excluded as they do not have quantity data for the quantity type used in the analysis. Warnings are also provided when quantity aggregation for the selected products may be inappropriate. DDD: Defined Daily Dose.



Quantity data for the selected quantity type may not be available for all selected products (eg, when the DDD quantity is selected but a product has no associated DDD value). In these cases, products are excluded from the analysis and listed in this table (Figure 4B). Even when quantity data for the chosen quantity type are available, comparing use across the selected products may be inappropriate. Warnings are provided alongside this table in the following circumstances:

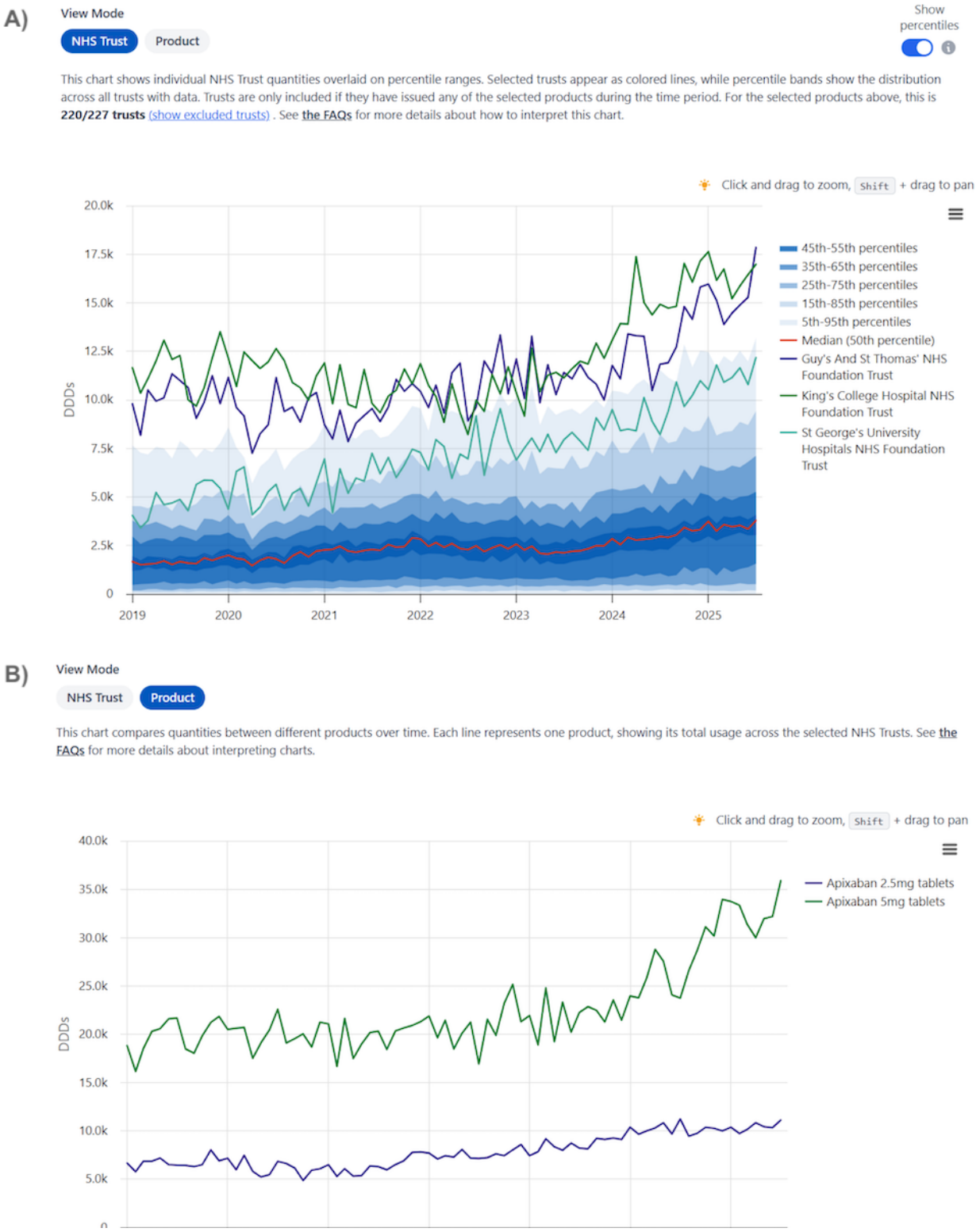
1. The products have different units of measurement for the selected quantity type. For example, analyses using ingredient quantity, where some products are reported in milliliters and others are reported in grams.
2. The selected products contain a mix of ingredients.

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Time-Series Charts

The second section of the analysis results displays the quantities issued for the selected products in a time-series chart (Figure 5). Multiple chart modes are available depending on the analysis specifications (Textbox 3). Figure 5A shows NHS trust mode, with a selection of NHS trusts. Figure 5B shows the same product and trust selection in product mode. Examples of all of the available modes are available in Figures S2-S9 in Multimedia Appendix 1.

Figure 5. Time-series charts from the results section of the Analyse feature on OpenPrescribing Hospitals in (A) National Health Service (NHS) trust mode, showing the issuing patterns for selected trusts, with percentiles showing national variation at the trust level and (B) Product mode, showing the aggregated use for each product across the selected trusts. FAQ: frequently asked question; NHS: National Health Service.



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Textbox 3. Chart modes available in analysis results generated from custom analyses with the Analyze feature on OpenPrescribing Hospitals.

National Health Service (NHS) trust: the default chart, available for all analyses. This mode displays percentile charts, demonstrating variation in the issuing of the selected products across all NHS trusts in England issuing them. If trusts are selected in the analysis builder, the data for each trust are plotted individually with the percentiles. Percentiles can be toggled to restrict this chart to only the traces for individual trusts.

Integrated Care Board (ICB) mode: the aggregated quantities of all selected products issued by NHS trusts within each ICB. This is only available when no trusts are selected.

Region: the aggregated quantities of all selected products issued by NHS trusts within an NHS region. This is only available when no trusts are selected.

National: the aggregated quantities of all selected products issued by NHS trusts in England. This is only available when no trusts are selected.

Product: the quantity issued for each selected product (eg, apixaban 5 mg tablets) aggregated across all trusts in England, if no trusts are selected, or across the selected trusts if they are.

Product group: the quantities issued for the selected products aggregated by product group (eg, all apixaban products), across all trusts in England, if no trusts are selected, or across the selected trusts if they are.

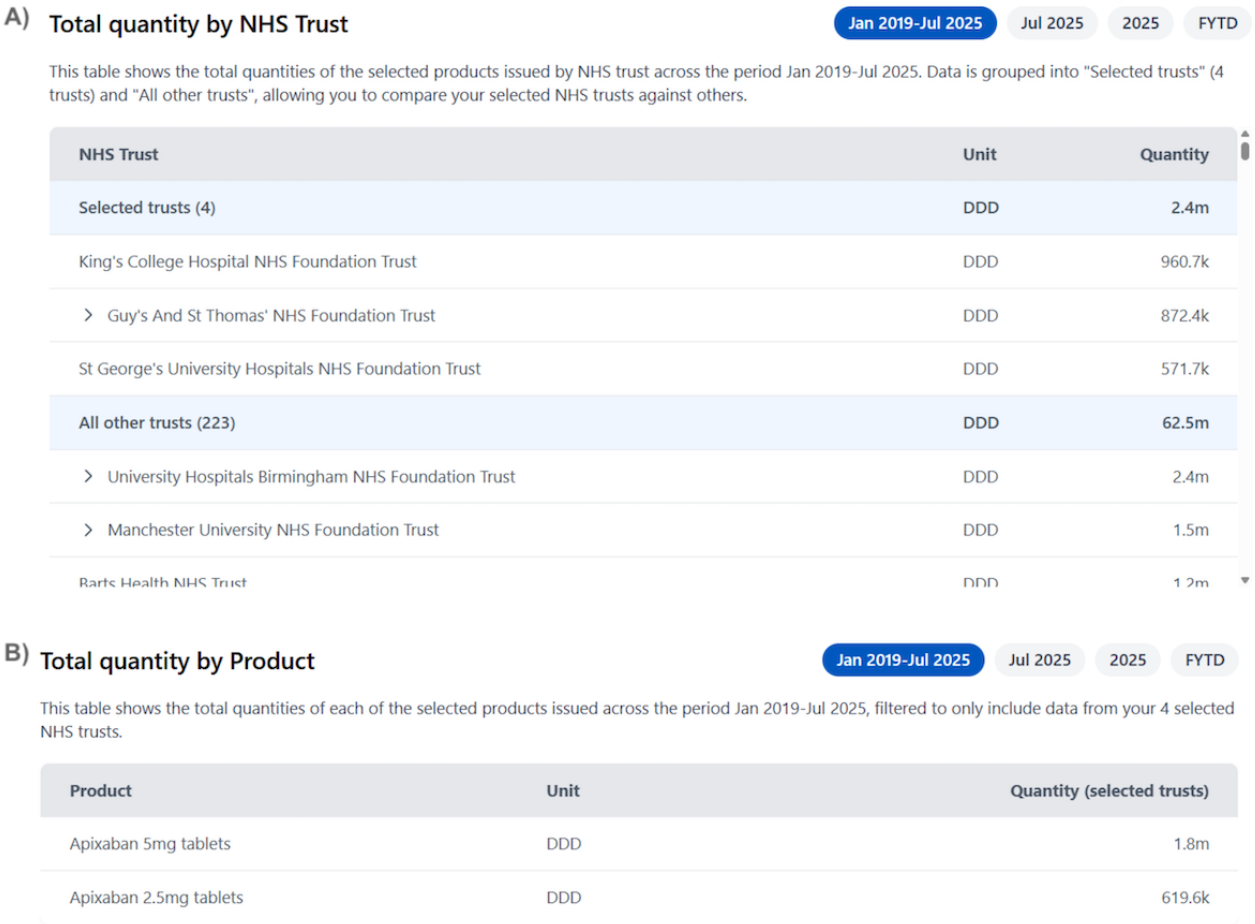
Ingredient: the quantities issued for the selected products aggregated by ingredient, across all trusts in England, if no trusts are selected, or across the selected trusts if they are.

Unit: the quantities issued for the selected products aggregated by unit of measure, across all trusts in England, if no trusts are selected, or across the selected trusts if they are.

Summary Totals

The final section of the analysis results displays the total quantities for the selected products over the following periods: the full SCMD period, the latest month with data, the latest year, and the financial year to date (FYTD; Figure 6). The totals in this table are aggregated using the same modes available in the chart selection.

Figure 6. An example of the totals table in the results section of a custom analysis using the OpenPrescribing Hospitals Analyse feature. The totals table shows aggregations depending on the selected mode: (A) the total across each trust and (B) the total for each selected product within the selected trusts. DDD: Defined Daily Dose; FYTD: financial year to date; NHS: National Health Service.



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Target Users

OpenPrescribing Hospitals is a national, publicly available platform. The primary target users are health care professionals (pharmacists, pharmacy technicians, doctors, nurses, and NHS analysts) working within the NHS in England. This includes those working in both primary care and secondary care who need to explore and analyze medicines used in hospitals in England. The platform is designed for users who need to examine hospital medicines data but lack the time, technical knowledge, or computing resources to download and process the raw SCMD files. Secondary users include researchers, policymakers, commissioners, patients, and members of the public. The platform provides the same public functionality to all users.

Early Adoption

The OpenPrescribing Hospitals platform was launched in February 2025. As of September 2026, it attracts approximately 1000 visitors monthly and has supported more than 20,000 custom analyses.

Ethical Considerations

This study used aggregated, anonymized data derived from the SCMD, openly published by the NHS BSA. No patient-level records, identifiable information, or personal data were accessed. This work does not constitute research under the UK Policy Framework for Health and Social Care Research, and as such, review by an NHS Research Ethics Committee (REC) and the Health Research Authority (HRA) was not required.

Results

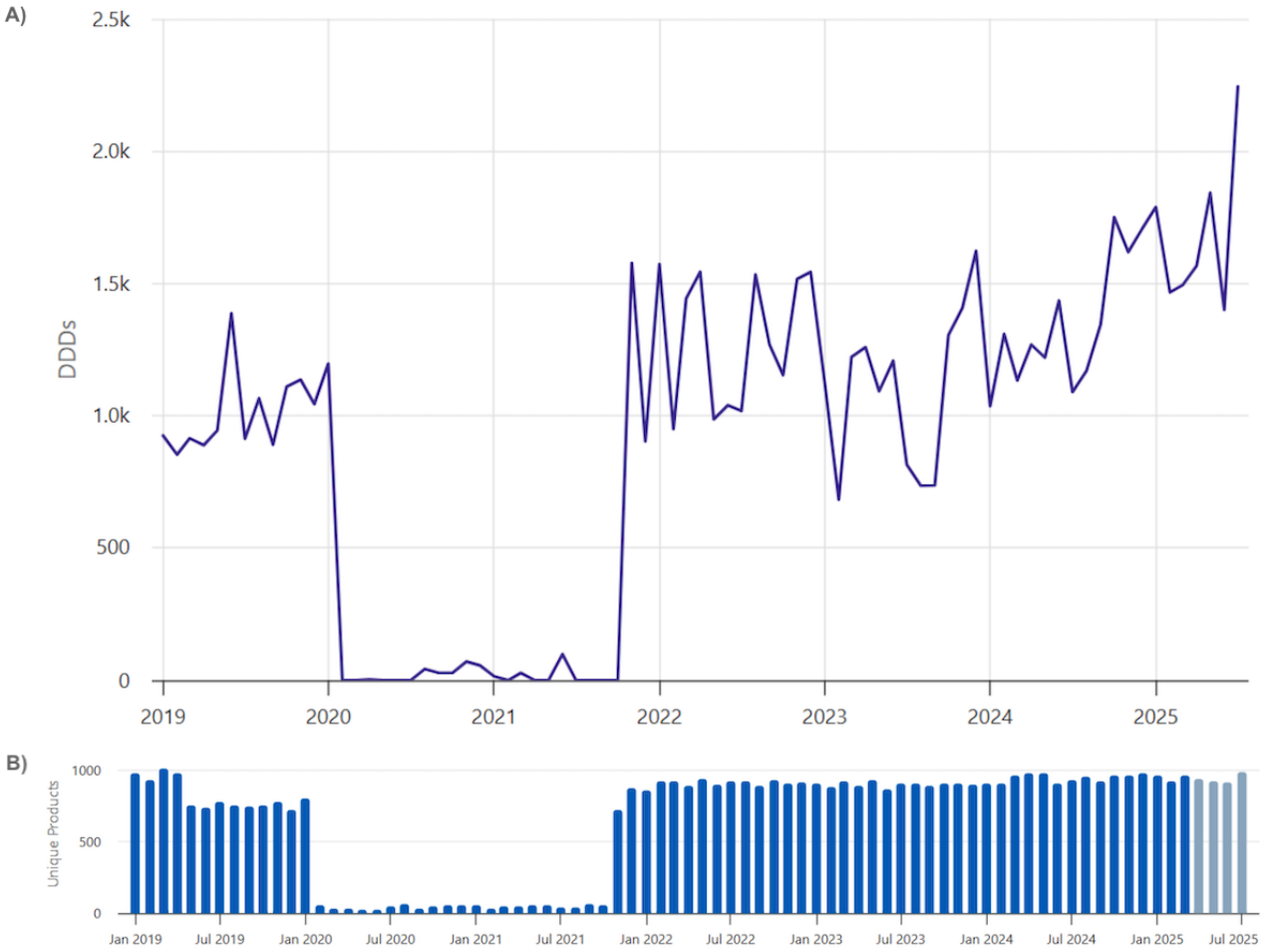
Use Cases

Below, we give example of use cases for the features of OpenPrescribing Hospitals. These are not exhaustive; we encourage users to explore the platform to investigate other use cases.

Identifying Data Quality Issues

The Submission History feature can be used to explain unexpected results in custom analyses run using the Analyse feature. As an example, Figure 7A shows a transient decrease in the number of apixaban tablets issued between February 2020 and November 2021 by an individual NHS trust. This decrease aligns with a fall in the number of unique products submitted to the SCMD during the same time period by the same trust (Figure 7B). The Submission History feature shows that this is not a true change in issuing practice but rather a data quality issue that would be hard to identify otherwise.

Figure 7. An example of using the Submission History feature to understand unexpected results from the Analyse feature. (A) Results of a custom analysis of apixaban tablets in a single trust using the Analyse feature on OpenPrescribing Hospitals. (B) The Submission History for the same trust. DDD: Defined Daily Dose.

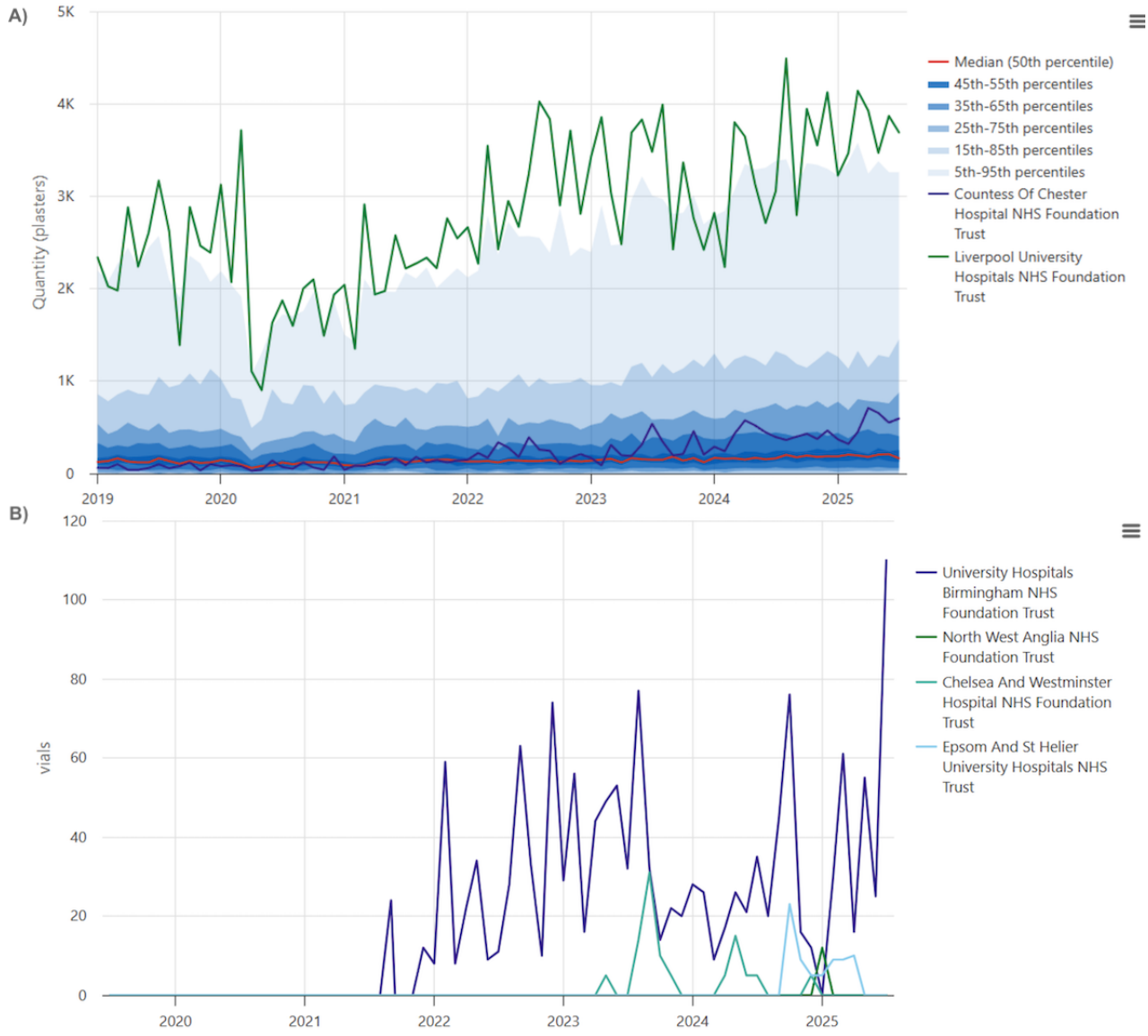


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Rapid Feedback on Medicines Use

The Measures feature can be used to provide rapid local feedback against national medicines standards. For example, the measure shown in Figure 8A shows the number of lidocaine patches issued in a selection of trusts, relative to national trust-level percentiles. Lidocaine patches are included in a list of items published by NHS England that should not be prescribed in primary care due to a lack of robust evidence of clinical effectiveness [44]. In most cases, items that should not be used in primary care should also not be used in local hospitals, although there are some exceptions.

Figure 8. Examples of monitoring medicine use using OpenPrescribing Hospitals. (A) A measure on OpenPrescribing Hospitals showing the number of lidocaine patches issued each month across National Health Service (NHS) trusts in England. This shows the trend for 2 selected NHS trusts relative to percentiles calculated across all NHS trusts in England. (B) Results of a custom analysis using the Analyse feature, showing the number of vials of andexanet alfa issued across all NHS trusts in England between January 2019 and July 2025. NHS: National Health Service.



Monitoring Innovation

The Analyse feature can be used to monitor the extent and variation in the uptake of new medicines. For example, in May 2021, andexanet alfa was recommended by the National Institute for Health and Care Excellence as an option for managing major gastrointestinal bleeding in patients taking the anticoagulants apixaban or rivaroxaban [45]. Andexanet alfa is expensive, and its risk-benefit profile is not well established [46,47]. Figure 8B shows the results of a custom analysis of andexanet alfa issuing in a selection of NHS trusts using the OpenPrescribing Hospitals Analyse feature. It highlights wide variation in the speed and volume of uptake across trusts. This may reflect variation in local protocols [48], which are influenced by individual clinicians' interpretations of the evidence, raising important questions for policymakers and those responsible for local clinical guidance implementation.

Discussion

Principal Findings

OpenPrescribing Hospitals is the first openly available platform that allows comprehensive analysis of hospital medicines data in England. For the first time, any interested party can compare

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the quantity of a medicine or group of medicines issued at individual trusts and in aggregated groups of trusts within ICBs or NHS regions in England.

Strengths and Limitations

The SCMD is a rich data source with potential to inform safer, higher-value care in the NHS. It is a welcome addition to the open data hosted by the NHS BSA. However, its usability is limited by the technical skill required to analyze the data. The OpenPrescribing Hospitals platform provides a user-friendly interface for exploring the SCMD. It enables anyone inside and outside the NHS to efficiently monitor medicines used in secondary care. This includes monitoring national initiatives across hospital trusts in local areas [42], including low-value medicine prescribing [44,49], environmentally friendly inhalers [50], and uptake of new treatments [51]. Before OpenPrescribing Hospitals were available, such analyses were time-consuming and limited to people, predominantly within the NHS, who had password-protected access to available analytic tools [2,16-18].

Beyond open access to the platform, another strength of this work is the transparency of the implementation. All source code for data preparation and the platform is openly available [38]. We have produced extensive documentation on the challenges of working with the SCMD and how we have approached processing and presenting the data within the OpenPrescribing Hospitals platform [39,52].

We acknowledge some limitations with the initial version of the platform. There are 4 major limitations in the primary data source, the SCMD. First, the SCMD reports stock-control data rather than individual patient prescriptions and therefore cannot differentiate whether products issued were subsequently administered to patients. Second, the data within the SCMD are available based on the generic name of the medicines. Brand-level information is unavailable. As a result, we are unable to report the use of biosimilar medications, which is an important national priority for cost savings in medicines [53,54], or produce measures that require brand-level information. As an example, immunosuppressants such as tacrolimus, used in organ transplantation, have a narrow therapeutic window and should be prescribed by brand to reduce the chance of organ transplant rejection [55,56]. Third, cost is reported in the SCMD as an indicative cost. This does not reflect the actual cost paid by hospitals because purchasing prices can vary between hospitals based on confidential price agreements. Consequently, this cost measure has limited utility. Finally, there are known data quality issues that have the potential to provide misleading results on OpenPrescribing Hospitals. Some of these are described above and are mitigated as part of the platform, but there are likely further data quality issues we have not described. Despite these limitations, we believe the current version of SCMD can generate transformative insights on the quality and safety of medicines issued in hospitals. Unlike primary care, which has well-defined catchment populations, it is difficult to determine the populations served by secondary care organizations. As a result, care must be taken when analyzing the quantities of products issued across multiple trusts; variation does not necessarily reflect differences in clinical practice but may instead reflect differences in trust size and clinical specialization of the trusts. In this initial version of the platform, we do not attempt to identify suitable denominator populations in custom analyses. We do, however, support this in the Measures feature, which, by design, includes denominators that allow for normalization. We will investigate and implement appropriate denominators for custom analyses as the platform develops.

Findings in Context

The cost of medicines issued in hospitals is substantial and has increased in recent years. Between 2019-2020 and 2023-2024, the reported actual cost increased from £7.14 billion to £10.3 billion (GBP £1=US $1.35 as of September 1, 2026), an increase of 44.3% [57]. Public data on how medicines are used within hospitals allows for identification of excessive spending, particularly as hospitals are where the newest and most costly treatments are most likely to be used. Beyond cost, it also allows the assessment of unwarranted variation and suboptimal care. Greater scrutiny of medicines use in hospitals is needed, and an openly available and accessible platform such as OpenPrescribing Hospitals facilitates analyses of these data within the NHS and by interested third parties.

OpenPrescribing Hospitals is the first openly available tool that can be used to conduct comprehensive analyses of individual medicines or groups of medicines at individual NHS hospital trusts in England. It was influenced by the Hospital Medicines Use Data Explorer, an open-source tool for basic exploration of the SCMD [15], which, through open working methods, supported knowledge sharing and more rapid development of the OpenPrescribing Hospitals platform [58].

Other platforms are available for analyzing hospital medicine use [16-19]. These platforms require password-protected access, which is available predominantly to people working within the NHS. All measures are stock issued rather than prescribed at the individual patient level. The most similar platform is the Define (Rx-Info) tool [16], which has data on actual cost and medicines issued at the brand level and is used by NHS personnel with access. Detailed comparison with OpenPrescribing Hospitals is challenging because implementation details are not publicly available [58].

Policy Implications

National collection of primary care prescribing data has been taking place since the late 1980s [59,60], with access originally limited to selected NHS staff. From September 2011, however, general practice prescribing data have been released monthly as open data. These data include detail down to the level of individual practices and are without information governance restrictions. This shift has enabled the development of a broad landscape of analyses, digital tools, and local support services. Medicines optimization teams within NHS commissioning organizations now routinely use these data to review trends and provide feedback to general practices, while online platforms make prescribing patterns accessible to the wider public. Researchers have also used the dataset to explore a wide variety of questions, and evidence shows that structured feedback to GPs based on these data can lead to measurable improvements in prescribing, including substantial savings [22,23].

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The NHS has now released similar data for hospital medicines, and we have built the first comprehensive, widely available tool to integrate the data. We have 2 recommendations for making the best use of these data.

1. Funding bodies should offer funding streams to support data infrastructure projects that enable better use of data to improve patient care [58,61]. Securing funding to develop data infrastructure as a shared resource is difficult. Traditional academic funding routes do not typically support data infrastructure or the ongoing costs of maintaining a platform such as OpenPrescribing Hospitals. This platform has been developed on a modest budget with funding from the NHS England Primary Care and Medicines Analytics Unit.
2. The NHS should support dissemination of this openly available tool as a complementary tool to those available in private to a small number of NHS experts. In primary care, the openly available OpenPrescribing platform had 20,000 unique users per month at the time of writing and has had a demonstrable impact on prescribing in primary care [22,23]. Since launching in February 2025, use of OpenPrescribing Hospitals has provided another demonstration of easy-to-use platforms, improving accessibility and increasing use of open data. Medicines optimization teams in primary care are highly skilled in analyzing primary care prescribing data, which they use to scrutinize medicines use within their organizations and to implement changes in clinical practice. The same skills are needed across integrated care systems to assess value and effectively deliver changes based on sound data and analytics. The OpenPrescribing Hospitals platform supports hospital pharmacy teams and other organizations responsible for secondary care medicine use to achieve this.

Conclusions

OpenPrescribing Hospitals provides public access to processed data on medicines issued by NHS hospital trusts in England. The platform links national medicines and organization data and provides functionality for reviewing Submission History, predefined measures, and user-defined analyses. Its source code and methods are publicly available.

The platform can support investigation of medicine use and variation, but the data used by the platform requires careful interpretation. The source data describe stock issued rather than medicines prescribed or administered. Comparisons can also be affected by incomplete submissions, trust size, clinical specialty, and the absence of suitable population denominators. These limitations are considered in the results presented through the platform.

We have described the platform's development, implementation, functionality, and initial use. Future work is required to establish its usability and its effects on prescribing, costs, clinical decisions, or patient outcomes.

Data Availability

The data available through the OpenPrescribing Hospitals platform is a curated aggregation of the following data sources: (1) Secondary Care Medicines Data [5], (2) Organisation Reference Data [13], (3) NHS dictionary of medicines and devices (dm+d) [24], and (4) Anatomical Therapeutic Chemical/Defined Daily Dose (ATC/DDD) [28].

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Generative AI Use

This study used generative AI tools to support code generation, optimization and testing. All generated code underwent human review. Generative AI was not used in the initial writing of this manuscript but was used for final manuscript review.

Authors' Contributions

Conceptualization: LF, CW, RC, S Black, S Bacon, BG, BM, VS
Data curation: LF, CW, S Black, VS
Formal analysis: LF, CW, S Black, VS
Funding acquisition: BG, BM
Investigation: LF, CW, S Black, BM, VS
Methodology: LF, CW, RC, S Black, BM, VS
Project administration: LF, CW, BM, VS
Resources: S Bacon, BG, BM
Software: LF, CW, VS
Supervision: BG, BM, VS
Validation: LF, CW, VS
Visualization: LF, CW, S Black, BM, VS
Writing – original draft: LF, VS

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Writing – review & editing: LF, CW, AB, RC, S Black, HJC, RH, AT, S Bacon, BG, BM, VS

Conflicts of Interest

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Multimedia Appendix 1

Data describing contributing trusts and the functionality and outputs of OpenPrescribing Hospitals.
[PDF File (Adobe PDF File), 1084 KB-Multimedia Appendix 1]

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Abbreviations

ATC: Anatomical Therapeutic Chemical
BSA: Business Services Authority
DDD: Defined Daily Dose
dm+d: dictionary of medicines and devices
FYTD: financial year to date
GP: general practitioner
HRA: Health Research Authority
ICB: Integrated Care Board
NHS: National Health Service
ODS: Organisation Data Service
ORD: Organisation Reference Data
REC: Research Ethics Committee
SCMD: Secondary Care Medicines Data
WHO: World Health Organization

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