**Children’s Liquid Dashboard**

**Version: 1.0 Novemeber 2022**

**Comparator Descriptions and Specifications**

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# Background

Liquid medicines are commonly prescribed for children.  For many drugs, there is a range of different concentrations of liquid available, leading to the potential for dosing errors if the concentration is changed and parents and carers do not adjust the volume to be given accordingly.  Although unlicensed liquid “specials” are the most variable in terms of the range of concentrations available, there are also a significant number of drugs for which there are a range of licensed liquid concentrations in use.

Dosing errors arising from inadvertent switching between liquid concentrations or planned switches being incorrectly understood by parents and carers are reported in the literature and in the NHS National Learning and Reporting System (NRLS).

With the aim of improving patient safety, the UK Neonatal and Paediatric Pharmacists Group (NPPG) and the Royal College of Paediatrics and Child Health (RCPCH) have published a [national list of recommended concentrations for a range of oral drugs commonly prescribed as liquid formulations](http://nppg.org.uk/standardised-strengths-of-liquid-medicines-for-children/).  This document, first published in 2018, focuses on drugs for which there isn’t a licensed liquid product available.  However, it is planned that the list will expand during 2022 and 2023 to include recommended concentrations for licensed products as well as an extended range of unlicensed products.

# Purpose

This dashboard will enable staff working in Primary Care to determine the extent to which liquid medicines prescribed for patients under the age of 18 follow the nationally recommended concentration for each drug.  This will help prescribers, prescribing advisors and other members of the team identify patients on non-standard concentrations and review them with a view to switching to the national standard where appropriate.  It will also help describe variations in prescribing at a practice, PCN and SICBL level and identify areas of focus.

The dashboard will be updated to include additional drugs as the national NPPG/RCPCH list is extended.

# Table 1: List of comparators

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| --- |
| **Comparator Title** |
| Percentage of items prescribed at standard strength |
| Percentage of NIC for standard strength Items |
| NIC per 1,000 patients in age group on registered List Size |

# Prescribing data used in these comparators

Users of these prescribing comparators must be aware of the following parameters:

The data for these comparators

* Covers items prescribed in primary care by practices and cost centres linked to SICBLs. Please note prescriptions where no NHS number was captured, or where no PDS DOB is held will be excluded.

All data excludes:

* Items not dispensed, disallowed and those returned to the contractor for further clarification.
* Prescriptions prescribed and dispensed in Prisons, Hospitals and Private prescriptions.
* Items prescribed but not presented for dispensing or not submitted to NHS Prescription Services by the dispenser.

Each comparator is derived using prescribing data for a 12-month period, rolled into a single month. Therefore, each data point represents a year’s worth of prescribing. Historic data is available to allow organisations such as practices, PCNs or SICBLs to chart their progress in addressing a particular comparator area.

All the comparators show 12-month-rolling data at GP Practice/Cost Centre level (aggregated to PCN, SICBL, Regional and England level).

For patient list sizes the prompted month’s (12th month) list size is used in these comparators.

Unique patient: This has been determined from prescriptions where the NHSBSA has been able to obtain details regarding patient NHS number. Where the same patient appears in the data for more than one practice location they will be counted as one patient for each of the practice locations they appear in.

NB: While NHS numbers are used to formulate these comparators, no personal identifiable data will be released through these comparators.

A patient’s age is determined as the age that is captured whilst processing the prescription for processing. In the dashboard the patients age at the end of the selected 12-month period is used. Please note this may inflate the proportion of adults as any patient who has turned 18 in the 12-month period will be counted as an adult.

Data is limited to where we hold a DOB in the PDS (NHS Digital’s Personal Demographics Service) data for the patient.

# How to use these comparators

The principal target audience will be prescribing advisors, practice pharmacists and PCN pharmacists.  Adherence to the nationally recommended concentrations is expressed in terms of a percentage of prescriptions at the recommended concentration for that drug.  If all prescriptions written for a given drug are at recommended concentration, adherence will be reported as 100%.

The data can be used to identify practices prescribing non-standard concentrations for patients under the age of 18 years.  Local prescribing systems can then be used to identify patients receiving non-standard concentrations, allowing them to be reviewed for suitability of switching to the standard concentration.

Data owner & contact details: epact2support@nhsbsa.nhs.uk

Time Frame: 12-month rolling figures refreshed monthly.

# Data quality assurance

NHS Prescription Services have their own internal quality process to assure the data they provide matches what was originally submitted as part of the prescription processing activity. Some processes are complex and manual therefore there may be random inaccuracies in capturing prescription information which are then reflected in the data, but checks are in place to reduce the chance of issues occurring. The processes operate to several key performance indicators, one of which is the percentage Prescription Information Accuracy, the target being 99.7% and as of February 2022 the accuracy level achieved over the latest 12-months-rolling period was 99.92%.

Currently (three months to July 2022), 98.97% of all prescription items prescribed in England at GP Practices/Cost Centres can be linked to an NHS number. Age can be linked to 99.29% of prescription items. For EPS, the accuracy is 100%. In the three months to July 2022, EPS items accounted for 90.09% of these items. (Source: ePACT2).

# Comparator Specifications

Percentage of items prescribed at standard strength.

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| --- |
| Section 1: Introduction / Overview |
| 1.1 | **Title** | Percentage of items prescribed at standard strength. |
| 1.2 | **Definition** | Proportion of prescribing of recommended concentrations for a range of oral drugs commonly prescribed as liquid formulations.  |
| 1.3 | **Reporting Level** | GP Practice/Cost Centre level (aggregated to PCN, SICBL, Regional and England level).  |
| 1.4 | **Numerator** | Number of items prescribed to all patients over a 12-month period for Liquids, Oral Solutions and Oral Suspensions of the following standard drugs and strengths:

|  |  |  |
| --- | --- | --- |
| **BNF Chemical Substance**  | **BNF Code** | **Strength** |
| **Azathioprine** | 0802010G0 | 10mg/ml |
| **Chloral hydrate** | 0401010B0 | 100mg/ml |
| **Clopidogrel** | 0209000C0 | 5mg/ml |
| **Ethambutol hydrochloride** | 0501090H0 | 80mg/ml |
| **Hydrocortisone** | 0603020J0 | 1mg/ml |
| **Isoniazid** | 0501090K0 | 10mg/ml |
| **Phenobarbital** | 0408010N0 | 10mg/ml |
| **Phenobarbital sodium** | 0408010P0 | 10mg/ml |
| **Pyrazinamide** | 0501090N0 | 100mg/ml |
| **Sertraline hydrochloride** | 0403030Q0 | 10mg/ml |
| **Sodium chloride** | 0902012L0 | 292mg/ml |
| **Spironolactone** | 0202030S0 | 10mg/ml |
| **Tacrolimus** | 0802020T0 | 1mg/ml |

All other strengths are non-standard.  |
| 1.5 | **Denominator** | Number of items prescribed to all patients over a 12-month period for Liquids, Oral Solutions and Oral Suspensions only for the following drugs:

|  |  |
| --- | --- |
| **BNF Chemical Substance**  | **BNF Code** |
| **Azathioprine** | 0802010G0 |
| **Chloral hydrate** | 0401010B0 |
| **Clopidogrel** | 0209000C0 |
| **Ethambutol hydrochloride** | 0501090H0 |
| **Hydrocortisone** | 0603020J0 |
| **Isoniazid** | 0501090K0 |
| **Phenobarbital** | 0408010N0 |
| **Phenobarbital sodium** | 0408010P0 |
| **Pyrazinamide** | 0501090N0 |
| **Sertraline hydrochloride** | 0403030Q0 |
| **Sodium chloride** | 0902012L0 |
| **Spironolactone** | 0202030S0 |
| **Tacrolimus** | 0802020T0 |

 |
| 1.6 | **Methodology** | Numerator divided by denominator expressed as a percentage. |
| Section 2: Rationale |
| 2.1 | **Purpose** | To determine the extent to which liquid medicines prescribed for patients under the age of 18 follow the nationally recommended concentration for each drug. This will help prescribers, prescribing advisors and other members of the team identify patients on non-standard concentrations and review them with a view to switching to the national standard where appropriate. It will also help describe variations in prescribing at a practice, PCN and SICBL level and identify areas of focus. |
| 2.2 | **Evidence and Policy Base** | Liquid medicines are commonly prescribed for children. For many drugs, there is a range of different concentrations of liquid available, leading to the potential for dosing errors if the concentration is changed and parents and carers do not adjust the volume to be given accordingly. Although unlicensed liquid “specials” are the most variable in terms of the range of concentrations available, there are also a significant number of drugs for which there are a range of licensed liquid concentrations in use.Dosing errors arising from inadvertent switching between liquid concentrations or planned switches being incorrectly understood by parents and carers are reported in the literature and in the NHS National Learning and Reporting System (NRLS).With the aim of improving patient safety, the UK Neonatal and Paediatric Pharmacists Group (NPPG) and the Royal College of Paediatrics and Child Health (RCPCH) have published a national list of recommended concentrations for a range of oral drugs commonly prescribed as liquid formulations. This document, first published in 2018, focuses on drugs for which there isn’t a licensed liquid product available. However, it is planned that the list will expand during 2022 and 2023 to include recommended concentrations for licensed products as well as an extended range of unlicensed products. |

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Percentage of NIC for standard strength Items

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| --- |
| Section 1: Introduction / Overview |
| 1.1 | **Title** | Percentage of Net Ingredient Cost (NIC (£)) for standard strength Items |
| 1.2 | **Definition** | Proportion of prescribing of recommended concentrations for a range of oral drugs commonly prescribed as liquid formulations.  |
| 1.3 | **Reporting Level** | GP Practice/Cost Centre level (aggregated to PCN, SICBL, Regional and England level).  |
| 1.4 | **Numerator** | NIC of items prescribed to all patients over a 12-month period for Liquids, Oral Solutions and Oral Suspensions of the following drugs and strengths:

|  |  |  |
| --- | --- | --- |
| **BNF Chemical Substance**  | **BNF Code** | **Strength** |
| **Azathioprine** | 0802010G0 | 10mg/ml |
| **Chloral hydrate** | 0401010B0 | 100mg/ml |
| **Clopidogrel** | 0209000C0 | 5mg/ml |
| **Ethambutol hydrochloride** | 0501090H0 | 80mg/ml |
| **Hydrocortisone** | 0603020J0 | 1mg/ml |
| **Isoniazid** | 0501090K0 | 10mg/ml |
| **Phenobarbital** | 0408010N0 | 10mg/ml |
| **Phenobarbital sodium** | 0408010P0 | 10mg/ml |
| **Pyrazinamide** | 0501090N0 | 100mg/ml |
| **Sertraline hydrochloride** | 0403030Q0 | 10mg/ml |
| **Sodium chloride** | 0902012L0 | 292mg/ml |
| **Spironolactone** | 0202030S0 | 10mg/ml |
| **Tacrolimus** | 0802020T0 | 1mg/ml |

All other strengths are non-standard.  |
| 1.5 | **Denominator** | NIC of items prescribed to all patients over a 12-month period for Liquids, Oral Solutions and Oral Suspensions only for the following drugs:

|  |  |
| --- | --- |
| **BNF Chemical Substance**  | **BNF Code** |
| **Azathioprine** | 0802010G0 |
| **Chloral hydrate** | 0401010B0 |
| **Clopidogrel** | 0209000C0 |
| **Ethambutol hydrochloride** | 0501090H0 |
| **Hydrocortisone** | 0603020J0 |
| **Isoniazid** | 0501090K0 |
| **Phenobarbital** | 0408010N0 |
| **Phenobarbital sodium** | 0408010P0 |
| **Pyrazinamide** | 0501090N0 |
| **Sertraline hydrochloride** | 0403030Q0 |
| **Sodium chloride** | 0902012L0 |
| **Spironolactone** | 0202030S0 |
| **Tacrolimus** | 0802020T0 |

 |
| 1.6 | **Methodology** | Numerator divided by denominator expressed as a percentage. |
| Section 2: Rationale |
| 2.1 | **Purpose** | To determine the extent to which liquid medicines prescribed for patients under the age of 18 follow the nationally recommended concentration for each drug. This will help prescribers, prescribing advisors and other members of the team identify patients on non-standard concentrations and review them with a view to switching to the national standard where appropriate. It will also help describe variations in prescribing at a practice, PCN and SICBL level and identify areas of focus. |
| 2.2 | **Evidence and Policy Base** | Liquid medicines are commonly prescribed for children. For many drugs, there is a range of different concentrations of liquid available, leading to the potential for dosing errors if the concentration is changed and parents and carers do not adjust the volume to be given accordingly. Although unlicensed liquid “specials” are the most variable in terms of the range of concentrations available, there are also a significant number of drugs for which there are a range of licensed liquid concentrations in use.Dosing errors arising from inadvertent switching between liquid concentrations or planned switches being incorrectly understood by parents and carers are reported in the literature and in the NHS National Learning and Reporting System (NRLS).With the aim of improving patient safety, the UK Neonatal and Paediatric Pharmacists Group (NPPG) and the Royal College of Paediatrics and Child Health (RCPCH) have published a national list of recommended concentrations for a range of oral drugs commonly prescribed as liquid formulations. This document, first published in 2018, focuses on drugs for which there isn’t a licensed liquid product available. However, it is planned that the list will expand during 2022 and 2023 to include recommended concentrations for licensed products as well as an extended range of unlicensed products. |

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NIC per 1,000 patients in age group on registered List Size

|  |
| --- |
| Section 1: Introduction / Overview |
| 1.1 | **Title** | NIC per 1,000 patients in age group on registered List Size |
| 1.2 | **Definition** | Proportion of prescribing of recommended concentrations for a range of oral drugs commonly prescribed as liquid formulations per 1,000 patients.  |
| 1.3 | **Reporting Level** | GP Practice/Cost Centre level (aggregated to PCN, SICBL, Regional and England level).  |
| 1.4 | **Numerator** | NIC of items prescribed to all patients over a 12-month period for Liquids, Oral Solutions and Oral Suspensions of the following standard drugs and strengths:

|  |  |  |
| --- | --- | --- |
| **BNF Chemical Substance**  | **BNF Code** | **Strength** |
| **Azathioprine** | 0802010G0 | 10mg/ml |
| **Chloral hydrate** | 0401010B0 | 100mg/ml |
| **Clopidogrel** | 0209000C0 | 5mg/ml |
| **Ethambutol hydrochloride** | 0501090H0 | 80mg/ml |
| **Hydrocortisone** | 0603020J0 | 1mg/ml |
| **Isoniazid** | 0501090K0 | 10mg/ml |
| **Phenobarbital** | 0408010N0 | 10mg/ml |
| **Phenobarbital sodium** | 0408010P0 | 10mg/ml |
| **Pyrazinamide** | 0501090N0 | 100mg/ml |
| **Sertraline hydrochloride** | 0403030Q0 | 10mg/ml |
| **Sodium chloride** | 0902012L0 | 292mg/ml |
| **Spironolactone** | 0202030S0 | 10mg/ml |
| **Tacrolimus** | 0802020T0 | 1mg/ml |

All other strengths are non-standard.  |
| 1.5 | **Denominator** | Number of patients in age band on registered list size |
| 1.6 | **Methodology** | Numerator divided by denominator multiplied by 1,000. |
| Section 2: Rationale |
| 2.1 | **Purpose** | To determine the extent to which liquid medicines prescribed for patients under the age of 18 follow the nationally recommended concentration for each drug. This will help prescribers, prescribing advisors and other members of the team identify patients on non-standard concentrations and review them with a view to switching to the national standard where appropriate. It will also help describe variations in prescribing at a practice, PCN and SICBL level and identify areas of focus. |
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# Working Group

|  |  |
| --- | --- |
| Name | Role/Organisation |
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| Andrew Wignell | Specialist Clinical Pharmacist. Nottingham University Hospitals NHS Trust |
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| Margaret Dockey | Prescriptions Information Services Manager. NHS Business Service Authority |
| Nigel Gooding | Consultant Pharmacist – Neonates & Paediatrics. Cambridge University Hospitals NHS Foundation Trust  |
| Alison Metcalfe | Head of Professional and Clinical Services. NHS Business Services Authority |

# References

<http://nppg.org.uk/standardised-strengths-of-liquid-medicines-for-children/>

<https://www.nhsbsa.nhs.uk/pharmacies-gp-practices-and-appliance-contractors/payments-and-pricing/how-we-process-prescriptions>