Collaboratory

grEPI

Global Repository of Epidemiological Parameters

User Guide

May 2026, v3

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1. Introduction

grEPI (Global Repository of Epidemiological Parameters) is a publicly accessible, curated repository of epidemiological parameter estimates for infectious diseases. It is developed by the WHO Hub for Pandemic and Epidemic Intelligence in collaboration with the GREP Community of Practice, a global multidisciplinary network of over 100 epidemiologists, modelers, public health practitioners, data scientists, and IT professionals.

The repository brings together parameter estimates extracted from peer-reviewed literature by subject matter experts from the GREP Core Technical Working Group. It provides a standardized way to capture, present, and access this data for use in infectious disease modelling, surveillance, public health decision-making, and research synthesis. Each parameter estimate is versioned, meaning that when a record is updated, the previous version is retained and remains viewable, so the history of an estimate is preserved alongside the current value.

grEPI is currently in its proof-of-concept phase, covering parameter estimates for a prioritized set of infectious diseases including Ebola, Lassa fever, Marburg disease, Measles, Mpox, SARS, and Zika virus disease.

The repository currently contains estimates across the following parameter types: delay distributions (incubation period, serial interval, generation interval, infectious period, latent period), severity measures (case fatality ratio, case hospitalization risk, proportion of hospitalizations requiring critical care, proportion of infections hospitalized), transmissibility indicators (basic, effective, and maximum reproduction numbers, growth rate, doubling time, overdispersion), attack rates (primary and secondary), seroprevalence (by assay type, including IgG, IgM, PRNT, IFA, MIA, and healthcare-associated infections), mutation rates (evolutionary rate, mutation rate, substitution rate), and relative contribution.

You can access grEPI data in two ways: through the web application, or programmatically via the grEPI public API. Almost all grEPI content is available without an account, but full access to all reference tables requires signing in with a WHO Collaboratory account, which anyone can create at https://collaboratory.who.int.

The links below provide access to grEPI and related resources.

Key Links

Resource	URL
grEPI web application	https://collaboratory.who.int/epidemiologicalparameters/repository/
grEPI home page	https://who-collaboratory.github.io/collaboratory-grepi-web/
grEPI API user guide	https://who-collaboratory.github.io/collaboratory-grepi-web/assets/files/grEPI_API_Documentation.pdf
grEPI API documentation (Swagger UI)	https://collaboratory.who.int/grepi/api/swagger/index.html
Epidemiological Parameters Community of Practice GitHub site	https://who-collaboratory.github.io/collaboratory-epiparameter-community/

Epidemiological Parameters Community of Practice Collaboratory site	https://collaboratory.who.int/about/communities/epidemiological-parameters/

2. Navigating the Web Application

The grEPI web application opens to a home page that provides an overview of the repository. The application itself is organized into three main sections, which are accessible from the left sidebar. Each parameter estimate in the repository links to a source publication and is classified using controlled vocabularies from a set of reference tables. These three sections reflect that structure:

The Home page is the default landing view when you open the grEPI web application. It provides an overview of the repository's current contents and an entry point into the data. The page has three components:

- *Welcome panel.* A short introduction to grEPI, including its purpose and the current proof-of-concept scope. A "Find out more" link leads to additional background information.
- *Live counts by disease.* A panel on the right of the page lists every disease currently covered in grEPI with a count of parameter estimates available for that disease. The counts update as new estimates are added to the repository, so the figures shown always reflect the current state of the data. Each disease name is a link: clicking it opens the Epidemiological Parameters browse table pre-filtered to that disease.
- *Interactive chart: estimates by disease and WHO region.* A stacked bar chart below the welcome panel shows the number of parameter estimates per disease, broken down by WHO region. The legend on the right identifies each region by color. Hovering over a bar segment shows a tooltip with the disease name, the region, and the exact count for that segment. Clicking a bar segment opens the Epidemiological Parameters browse table pre-filtered to that disease and WHO region. As with the disease counts, the chart reflects the live state of the repository.

Epidemiological Parameters (Section 3) contains the core dataset: extracted parameter estimates from the literature. Each row represents a single estimate (e.g., an incubation period for Mpox from a specific study), with details on the study population, geographic context, statistical methods, and source citation.

Literature (Section 4) contains details on the publications from which estimates have been extracted. Each row represents a journal article. A single literature entry may be the source for multiple parameter estimates.

Reference Data (Section 5) contains the controlled vocabularies and classification tables that structure the repository. These include disease definitions (linked to ICD codes), pathogen taxonomy (species, genus, family), epidemiological parameter categorizations, delay event definitions, estimate units, and estimate value types. There are currently 32 reference tables. These tables define the valid values used across the Epidemiological Parameters and Literature sections. Without signing in, only two reference tables are visible: “Diseases caused by pathogens (strains, clades, serotypes)” and “Pathogen taxonomy.” To access the full set of reference tables, sign in with your existing WHO Collaboratory account or create a new one.

Additional interface elements:

Breadcrumb bar. Displayed at the top of each page, it shows your current location within the application (e.g., Home > Reference Data > Diseases).

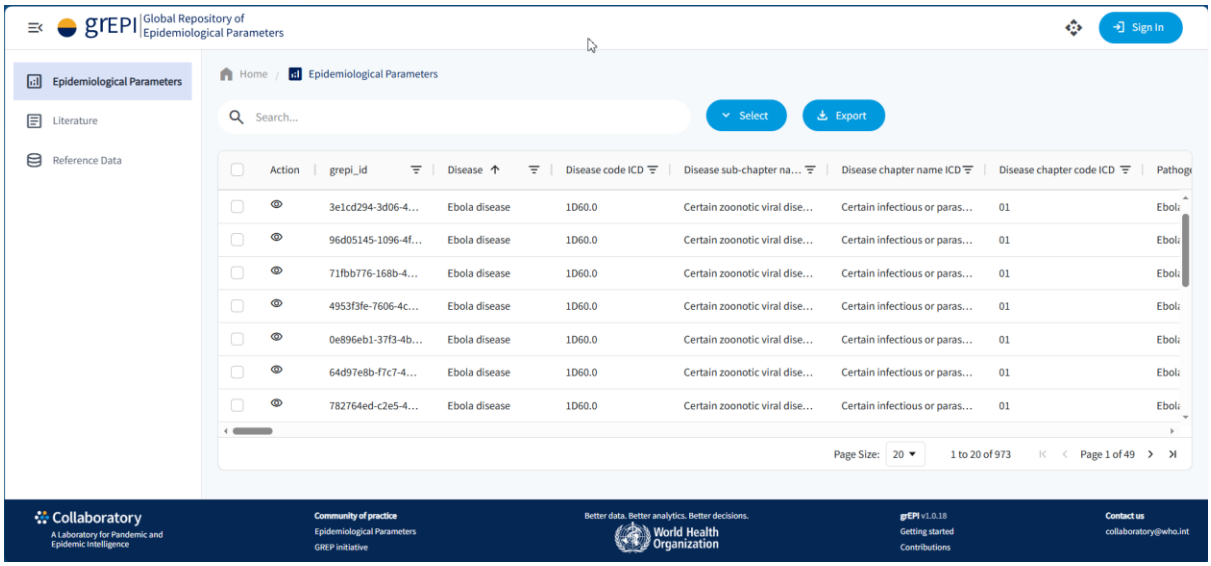
Top-right icons. The diamond-shaped icon links to the grEPI API documentation (Swagger UI). The Sign In button allows you to create or log in with a Collaboratory account.

Help icons. In the parameter detail view, circled question mark icons appear next to field labels. Hover over these for a brief description of what the field means.

3. Epidemiological Parameters

3.1 The Browse Table

The Epidemiological Parameters section opens to a paginated table of all parameter estimates in the repository. By default, the table shows a subset of the available columns. The full dataset contains over 140 fields. Additional columns can be made visible using the Select button, which opens a dropdown with a column search, "Select All", and "Remove All" options.



Default visible columns: Disease, Pathogen Species, Epi Parameter Type, Epi Parameter SubType, Epi Delay (Time from), Epi Delay (Time to), Epi Parameter Category, Type of Estimate, Estimate Value Type, Estimate Point Value, Estimate Lower Bound value, Estimate Upper Bound value, Estimate Unit Name, Countries (Population), Population study (start year), Population study (end year), WHO Region, Created date.

The table below lists the remaining columns available via Select, grouped thematically for reference. Note that, in the application, all columns appear in a single flat list within the Select dropdown.

Field Type	Fields
Identifiers	grepi_id, Created By
Literature	Article DOI, Article Title, Article Authors, Article Published in, Article Publication year, Article Label
Disease classification	Disease code ICD, Disease sub-chapter name ICD, Disease chapter name ICD, Disease chapter code ICD, Disease Spread Type, Disease Pathogen Comment
Pathogen taxonomy	Pathogen Species code ICD, Pathogen Strain, Pathogen Strain code ICD, Pathogen Substrain, Pathogen sub-Strain code ICD, Pathogen

	Genus, Pathogen Genus code ICD, Pathogen Family, Pathogen Family code ICD, Pathogen transmission
Estimate categorization	Estimate category comment, Epi delay - Time from other, Epi delay - Time to other
Estimate values	Estimate value type other, Estimate point value is inverse?, Estimate Lower bound value is inverse?, Estimate Upper bound value is inverse?, Estimate unit other, Estimate Comment
Uncertainty	Uncertainty value type, Uncertainty value type other, Uncertainty Single Value, Uncertainty single value is inverse?, Uncertainty range - lower bound value, Uncertainty range - lower bound value is inverse?, Uncertainty range - upper bound value, Uncertainty range - upper bound value is inverse?, Uncertainty Unit Name, Uncertainty unit other
Extraction flags	Epi parameter estimate extracted from supplement?, Epi parameter estimate extracted from figure?
Probability distribution	Probability distribution, Probability distribution other, Probability distribution comment, plus for each of Parameters 1-3: value available?, value, value type, value type other, uncertainty value available?, uncertainty single value, uncertainty range lower/upper bound value, uncertainty value type, uncertainty value type other
Methods	Inference method, Inference method other, Inference method comment, Is data bias adjusted?, Is data discretised?, Is data censored?, Is data right censored?, Is data left censored?, Is data interval censored?, Is data truncated?, Is data right truncated?, Is data left truncated?
Percentage calculation	Method Percent Calculation, Method Percent Calculation Other, Method Percentage Adjusted by, Method Percentage Adjusted by other, Is percentage unit related?, Numerator value, Numerator specification, Denominator value, Denominator specification
Case classification	Case classification - confirmed, Case classification - probable, Case classification - possible/suspected, Case classification - unspecified
Population	Population sample size, Population age min/max years, Population age min/max months, Population sex, Population group, Population group other, Population setting, Population setting other, Population data - moment value, Population data - moment value other, Population comment
Data source	Data extracted by Name, Data extracted by WebSite, Data source name, Data source location, Data imported from Name, Data

	imported from URL, Data imported from DOI, Data imported on, Data imported - local unique identifier, Import comment.

Searching. The search bar at the top of the table performs a multi-term search across all fields. You can enter multiple keywords separated by spaces, and the table will filter to rows that match all of those terms across any combination of fields. For example, entering "mpox incubation period germany" will return rows where the disease is Mpox, the parameter subtype is Incubation period, and the Countries (Population) field includes Germany. This makes it easy to locate specific estimates without needing to set multiple column filters.

Filtering by column. Each column header includes a filter icon. Click it to apply a filter to that column. The filter supports multiple operators, with the available set depending on the column type.

- *Text columns* support: Contains, Does not contain, Equals, Does not equal, Begins with, Ends with, Blank, and Not blank.
- *Numeric columns* (e.g., estimate values) support: Equals, Does not equal, Greater than, Greater than or equal to, Less than, Less than or equal to, Between, Blank, and Not blank.
- *Date columns* (e.g., Created date) support: Equals, Does not equal, Before, After, Between, Blank, and Not blank.

Multiple column filters can be active at the same time.

Sorting. Click a column header to sort the table by that column. The sort direction is indicated by an arrow. Only one sort can be active at a time (sorting by a new column replaces the previous sort). The default sort is by Disease (ascending), which groups estimates for the same disease together.

Reordering columns. You can reorder columns by clicking on a column header and dragging it to a new position in the table.

Pagination. The table displays 20 rows per page by default. The Page Size dropdown offers three options: 20, 50, or 100 rows per page. Navigation controls at the bottom allow moving between pages (first, previous, next, last). The total number of records is shown (e.g., "1 to 20 of 1000").

3.2 The Parameter Detail View

Click the eye icon in the Action column to open the full detail page for a single parameter estimate. This page contains significantly more information than the table view, organized into the following sections.

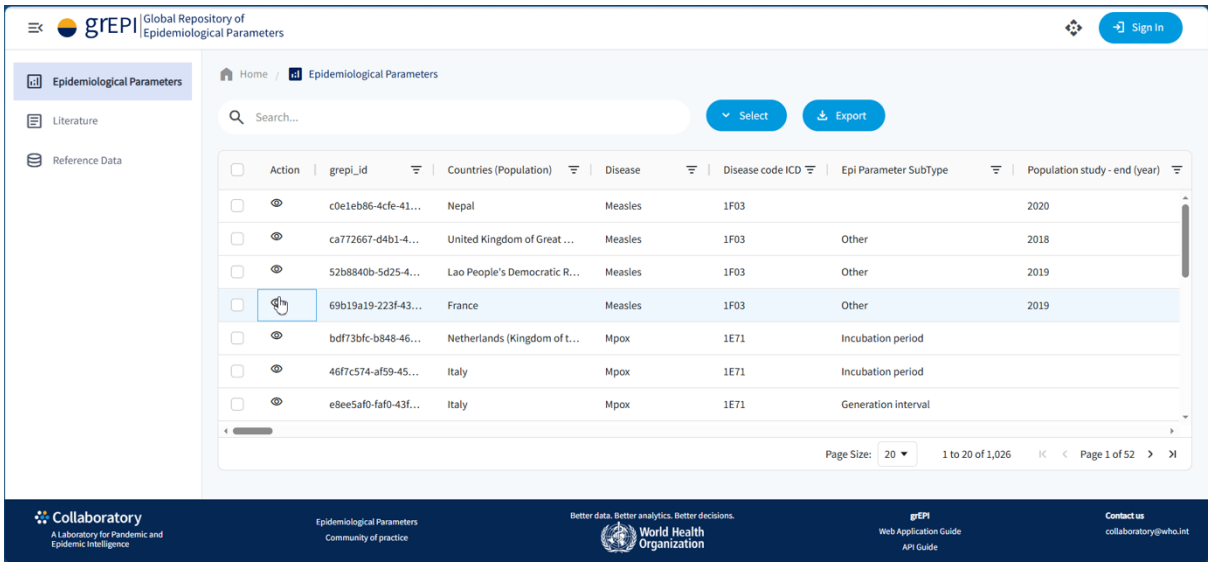


Figure 1. The Epidemiological Parameters browser table, showing the default column layout with search, Select, and Export controls.

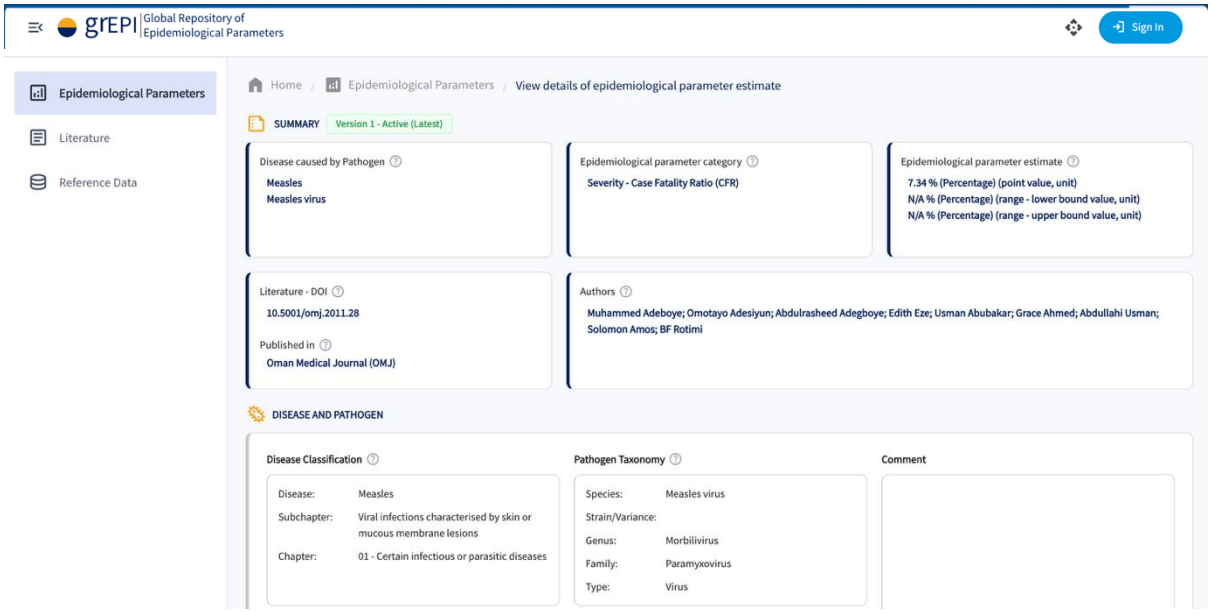


Figure 2. The parameter detail view for a single estimate, showing the Summary cards, literature citation, and the Disease Pathogen section.

Summary

The top of the page shows three cards: Disease caused by Pathogen (disease name and pathogen species), Epidemiological parameter category and parameter type (e.g., "Severity - Case Fatality Ratio"), and the Epidemiological parameter estimate itself (point value and/or range with units). A

version tag is also displayed at the top of the page. The tag shows the version number plus "Active (Latest)" when viewing the current version, or "Previous (Not current)" when viewing an earlier version. When more than one version exists, a "Compare versions" button appears next to the version tag. Below these, the Literature DOI, journal name, and author list are displayed.

Disease and Pathogen

Disease Classification shows the disease name, ICD subchapter, and ICD chapter. Pathogen Taxonomy shows the species, strain/variance, genus, family, and type. Disease Spread and Pathogen transmission modes and routes are also shown (may read "Unspecified" for some entries). A Comment field captures additional context (e.g., "Zaire Ebola virus").

Epidemiological Parameter Categorization

Group is the high-level category (Delays, Severity, Transmissibility, or Population immunity). Class is the specific parameter type (e.g., Case Fatality Ratio, Incubation period). For delay parameters, the Epidemiological Delay sub-section shows the Time From and Time To events that define the interval being measured.

Epidemiological Parameter Estimate

The Estimate card shows the Type (Point or Range), Value type (Mean, Median, Crude proportion, Standard deviation, Other, or Unspecified), Point value, Lower bound value, Upper bound value, Unit, and an Inverse flag. An accompanying Uncertainty card shows any reported uncertainty measures from the source study in the same structure (value type, single value, range, unit). A Comment field is available for additional notes.

Probability Distribution

If the source study reported a fitted distribution, this section records the Distribution Type (e.g., gamma, log-normal) and up to three distribution parameters (Parameter 1, 2, 3) with their values. These typically represent that shape and scale of the distribution, or equivalent parameterizations such as mean and standard deviation, depending on the distribution type. Each parameter has corresponding Uncertainty fields (Uncertainty 1, 2, 3) with single values and ranges. Many entries will have this section empty.

Methods

Inference Method records how the estimate was derived. Methodological criteria flags indicate whether the data was bias-adjusted, censored (right, left, or interval), discretized, or truncated (right or left). For percentage-based estimates, a Percentage calculation sub-section shows the Calculation Method (e.g., Naive), Adjusted By, Numerator value, Denominator value, Numerator specification, Denominator specification, and Case classification (confirmed, probable, possible/suspected, unspecified).

Population Data

This section describes the study population from which the estimate was derived: Sample Size, Timing related to outbreak (e.g., "Post outbreak"), Setting (e.g., "Hospital based"), Population study dates (start/end year, month, day), Group (e.g., “Children”, “Pregnant women”), Age (min/max years and months), Sex, and Country/territory/area (with Name, Continent, and WHO Region). A Comment field provides additional location or context details.

Literature

The source publication details: DOI, Published in (journal), Publication year, Title, Label (short citation, e.g., "Xu 2016"), Authors, and Data extracted from literature by (the organization or group that performed the extraction, with a link). Also records whether data was extracted from supplementary material or from a figure (TRUE/FALSE).

Data Sources

Where the data was imported from: the source name, a comment on the import (e.g., "Partial import, entire dataset available at source"), the Unique local identifier from the source system, and the Data imported on date.

Versioning. Each row in the table represents the latest version of a parameter estimate. The browse table only ever shows the current version of each record. Previous versions are accessible from the parameter detail view (see Section 3.2) and through the version history (see Section 3.3).

At the bottom of the page, the Back button returns to the browse table.

3.3 Version History and Comparing Versions

When a parameter estimate has more than one version, the detail view exposes two version-related features:

View version history. Opens a list of all versions of the record, ordered from most recent to oldest. Each entry shows the version number, the date the version was created, the user who created it, an indicator for which version is current, and the version comment (a short note describing what changed, where provided).

Compare versions. Opens a side-by-side view of two versions of the record. Fields that differ between the two versions are highlighted, so changes to values, units, methods, or any other captured attribute are immediately visible. By default, the comparison runs between the current version and the immediately preceding version; either side can be changed to any other version in the history.

4. Literature

The Literature section lists the source publications from which parameter estimates have been extracted.

Default visible columns: DOI, Title, Authors, Published in (journal name), Publication Year, Publication Source Type, Created Date Time, Last Modified Date.

Additional columns available via Select: Label (short citation), Created by, Last Modified By, Record Status.

The browse interface works that same way as in the Epidemiological Parameters table (see Section 3.1 for details on search, column filters, sorting, pagination, and export).

Each literature entry is linked to one or more parameter estimates. The DOI serves as the key link between a parameter estimate and its source publication: the Article DOI field in the Epidemiological Parameters table corresponds to the DOI field in the Literature table.

Change history. The Action column contains a three-dot menu for each row. Click it to access the History option, which opens a popup showing the change history for that entry. The History table displays the Field that was changed, the Date Time of the change, the User who made it, the Action Type (e.g., "Add new value"), and the Previous Value (if applicable). This provides a transparent audit trail for every literature record in grEPI.

5. Reference Data

Reference Data holds the controlled vocabularies that define the valid values used throughout grEPI. The Reference Data landing page displays a card-based overview of all 32 reference tables, with a search bar to find a specific table by name. Click any card to open that reference table.

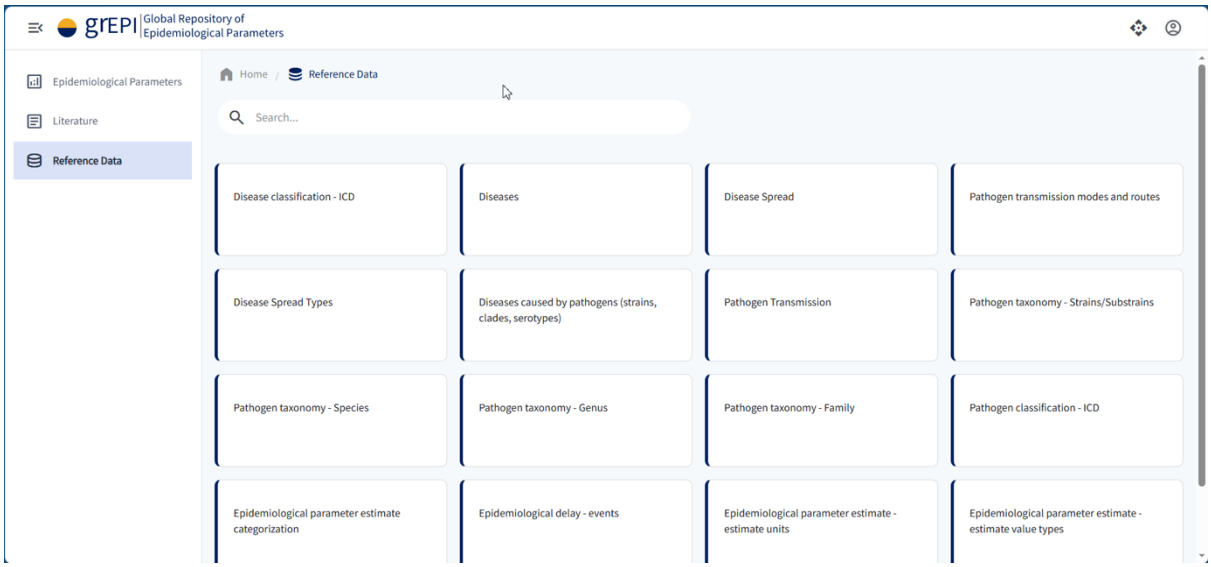


Figure 3. The Reference Data landing page, showing the card-based grid of reference tables with the search bar at the top.

The 32 reference tables fall into five groups. The Appendix provides a full column listing for each table.

Disease and Pathogen Classification (12 tables): Disease classification - ICD, Diseases, Disease Spread, Disease Spread Types, Diseases caused by pathogens (strains, clades, serotypes), Pathogen classification - ICD, Pathogen taxonomy - Species, Pathogen taxonomy - Genus, Pathogen taxonomy - Family, Pathogen taxonomy - Strains/Substrains, Pathogen transmission modes and routes, Pathogen Transmission.

Epidemiological Parameter Classification (8 tables): Epi parameter estimate categorization, Epidemiological delay - events, Epi parameter estimate - estimate units, Epi parameter estimate - estimate value types, Epi parameter estimate - uncertainty units, Epi parameter estimate - uncertainty value types, Mapping: categories to Percentage/Reproduction/Epi delay, Mapping: categories to allowed estimate units.

Methods and Calculations (6 tables): Probability distribution types, Probability distribution - Parameter value types, Methods to calculate reproduction number, Methods to calculate percentage, Methods to calculate percentage - adjusted by, Epidemiological parameters - Inference Methods.

Population and Study Context (5 tables): Timing related to outbreaks - moment values, Population - Settings, Population - Groups, Population - Sex, Countries, territories, areas - WHO health boundaries.

Literature (1 table): Literature - Publication sources.

Each reference table has the same browse interface: search bar, Select (to choose visible columns), Export, column filters, sorting, and pagination.

Change history. Each row in a Reference Data table has a three-dot action menu in the Action column with a History option. This works the same way as in the Literature table: it shows a log of changes including the field, timestamp, user, action type, and previous value. For reference data entries created during initial system setup, the user may appear as "grepi_system_user". Currently, only designated administrators can modify reference data and literature records directly. Contributor features that allow registered users to suggest modifications are planned for a future release.

6. Exporting Data

Each of the three main sections (Epidemiological Parameters, Literature, and individual Reference Data tables) supports data export in CSV format.

6.1 What Gets Exported

Columns. The exported CSV includes only the columns that are currently selected via the Select button (see Section 3.1). To include all available fields in the export, open the Select dropdown and click "Select All" before exporting.

Rows. By default, the export includes all rows in the table (unfiltered). The export will be filtered if you have entered text in the search bar (only matching rows are exported) or if you have selected specific rows using the checkboxes (only those selected rows are exported).

6.2 How to Export

1. Navigate to the table you want to export.

2. Use the Select button to choose which columns to include. Click "Select All" if you want every available field.

3. Optionally, use the search bar to narrow the rows. For example, entering "measles incubation period" will limit the export to matching rows. Alternatively, use the checkboxes to select specific rows.

4. Click the Export button to download the CSV file.

7. API Access

grEPI data is also available in machine-readable format via the grEPI public API. The API enables programmatic access to epidemiological parameter estimates, literature records, and reference data. Two resources are available to support API usage:

The **API documentation (Swagger UI)** provides the full technical specification of available endpoints, request parameters, and response schemas. It is accessible from the diamond-shaped icon in the top-right corner of the application, or directly at: https://collaboratory.who.int/grepi/api/swagger/index.html

The **grEPI API User Guide** provides guidance for working with the API, including quickstart examples in both R and Python, worked examples for common queries, and instructions for using grEPI data with the {epiparameter} R package. It is available at: https://who-collaboratory.github.io/collaboratory-grepi-web/assets/files/grEPI_API_Documentation.pdf

8. Frequently Asked Questions

Why are some columns hidden by default?

To keep the browse view readable, only the most commonly used fields are shown. The Epidemiological Parameters table has over 140 available fields. Click the Select button above any table to add or remove columns. You can search for column names within the Select dropdown.

How do I export all fields, not just the visible ones?

Click Select, then "Select All" to include all columns. Then click Export. If the search bar is empty and no rows are individually selected, the export will contain the full unfiltered dataset.

How does the search bar work?

The search bar accepts multiple keywords separated by spaces. It matches each keyword against any field in the table and returns rows that satisfy all of the terms. For example, "mpox incubation period germany" will find rows where the disease is Mpox, the parameter subtype is Incubation period, and the country includes Germany.

What filter options are available on columns?

Click the filter icon on any column header to access these operators: Contains, Does not contain, Equals, Does not equal, Begins with, Ends with, Blank, and Not blank. Multiple column filters can be active at the same time.

What does the eye icon do?

In the Epidemiological Parameters table, it opens the full detail view for a single parameter estimate, showing all fields organized into sections (Summary, Disease and Pathogen, Categorization, Estimate, Probability Distribution, Methods, Population Data, Literature, and Data Sources).

How do I find all parameter estimates from a specific study?

Search or filter by the Article DOI in the Epidemiological Parameters table. Alternatively, find the study in the Literature section and note its DOI, then filter the parameters table by that DOI.

How do I see previous versions of a parameter estimate?

Open the parameter detail view (click the eye icon in the Action column on the browse table). When a record has more than one version, a "Compare versions" option opens a side-by-side view that highlights differences between any two versions.

Why does the browse table only show one row per estimate, even if there are multiple versions?

The Epidemiological Parameters browse table shows the latest version of each estimate. This keeps the table focused on current values. Earlier versions remain available through the version history in the parameter detail view (see Section 3.3).

What if a study does not have a DOI?

Some older studies in the repository may not have a DOR. In these cases, the Article Title, Article Authors, and/or Article Publication Year fields can be used to identify the source.

What is the difference between Epi Parameter Type and Epi Parameter SubType?

The Type is the broad classification (e.g., Human Delay, Reproduction number, Case Fatality Ratio). The SubType is the specific epidemiological parameter within that broader category. For example, under Human Delay: Incubation period, Serial interval, Generation interval. Under Reproduction number: Basic (R0), Effective (Re), Maximum (Rt).

What do the "Data imported from" fields mean?

These fields record where the data originally came from before being loaded into grEPI. Many of the current estimates were originally curated by partner initiatives (e.g, EpiReview/PERG at Imperial College London) and then imported into grEPI.

How can I see when a record was last changed and by whom?

In the Literature and Reference Data tables, click the three-dot menu in the Action column and select "History". This shows a log of all changes to that record, including the date, the user who made the change, the type of action, and the previous value of any modified field. For parameter estimates, change tracking works differently: each update creates a new version, and the full version history is available from the parameter detail view (see Section 3.3).

What does the question mark icon next to field names mean?

These are in-app help tooltips. Hover over the circled question mark to see a brief description of what the field captures.

How often is the data updated?

grEPI is in its proof-of-concept phase. The current dataset covers estimates extracted by the GREP Core Technical Working from peer-reviewed literature. New data will be added as additional diseases and sources are incorporated.

Can I contribute data to grEPI?

Contributor features are planned for a future release. For now, data is curated by the GREP Core Technical Working. To get involved, contact the team via collaboratory@who.int or join the Epidemiological Parameters Community of Practice at https://collaboratory.who.int/about/communities/epidemiological-parameters/.

Appendix: Reference Data Table Column Listings

This appendix lists every column available in each of the 32 Reference Data tables. All tables include standard audit fields (Created by, Created Date Time, Last Modified By, Last Modified Date, Record Status) unless otherwise noted.

Disease and Pathogen Classification

Reference Table	Description
Disease classification - ICD	ICD chapter and sub-chapter classification codes
Diseases	Diseases covered by grEPI with ICD codes
Disease Spread	Disease-level transmission mode, route, and spread type mappings
Disease Spread Types	Types of disease spread (e.g., direct, indirect)
Diseases caused by pathogens (strains, clades, serotypes)	Maps pathogen variants to diseases
Pathogen classification - ICD	Top-level ICD pathogen type classification
Pathogen taxonomy - Species	Pathogen species with ICD codes and genus linkage
Pathogen taxonomy - Genus	Pathogen genera with ICD codes and family linkage
Pathogen taxonomy - Family	Pathogen families with ICD codes and type linkage
Pathogen taxonomy - Strains/Substrains	Strains and substrains with full taxonomy hierarchy
Pathogen transmission modes and routes	Transmission modes and routes (e.g., airborne, vector-borne)
Pathogen Transmission	Pathogen-specific transmission mode and route assignments

1. Disease classification - ICD

Columns: Disease Chapter ICD, Disease Chapter Code ICD, Disease Chapter ID ICD, Disease Chapter Depth In Kind, ICD Sub-chapter, Subchapter ID ICD, Subchapter Depth In Kind, Created by, Created Date Time, Last Modified By, Last Modified Date, Record Status

2. Diseases

Columns: Disease Name (preferred), Disease Name - ICD, Disease Code - ICD, Disease identifier - ICD, Disease Sub-chapter - ICD, Disease Chapter ICD, Disease Chapter Code - ICD, Created by, Created Date Time, Last Modified By, Last Modified Date, Record Status

3. Disease Spread

Columns: Disease, Disease transmission mode, Disease transmission route, Disease spread type, Created by, Created Date Time, Last Modified By, Last Modified Date, Record Status

4. Disease Spread Types

Columns: Disease Spread Type, Created By, Created Date Time, Modified By, Modified Date Time, Record Status

5. Diseases caused by pathogens (strains, clades, serotypes)

Columns: Disease name, Pathogen Species name, Pathogen Strain name, Pathogen Substrain name, Created by, Created Date Time, Last Modified By, Last Modified Date, Record Status

6. Pathogen classification - ICD

Columns: Pathogen type name, Pathogen type name - ICD, Pathogen type code - ICD, Pathogen type identifier - ICD, Pathogen type-level ICD (DepthInKind), Created By, Created Date Time, Last Modified By, Last Modified Date, Record Status

7. Pathogen taxonomy - Species (23 records)

Columns: Pathogen Species name, Pathogen Species name - ICD, Pathogen Species code - ICD, Pathogen Species identifier - ICD, Pathogen Species ICD (DepthInKind), Pathogen Genus name, Pathogen Genus name - ICD, Pathogen Genus code - ICD, Pathogen Genus identifier - ICD, Pathogen Genus ICD (DepthInKind), Created By, Created Date Time, Last Modified By, Last Modified Date, Record Status

8. Pathogen taxonomy - Genus

Columns: Pathogen Genus name, Pathogen Genus name - ICD, Pathogen Genus code - ICD, Pathogen Genus identifier - ICD, Pathogen Genus ICD (DepthInKind), Pathogen Family name, Pathogen Family name - ICD, Pathogen Family code - ICD, Pathogen Family identifier - ICD, Pathogen Family ICD (DepthInKind), Created By, Created Date Time, Last Modified By, Last Modified Date, Record Status

9. Pathogen taxonomy - Family

Columns: Pathogen Family name, Pathogen Family name - ICD, Pathogen Family code - ICD, Pathogen Family identifier - ICD, Pathogen Family ICD (DepthInKind), Pathogen type name, Pathogen type name - ICD, Pathogen type code - ICD, Pathogen type identifier - ICD, Pathogen type-level ICD (DepthInKind), Created By, Created Date Time, Last Modified By, Last Modified Date, Record Status

10. Pathogen taxonomy - Strains/Substrains

Columns: Pathogen Strain name, Pathogen Strain name - ICD, Pathogen Strain code - ICD, Pathogen Strain identifier - ICD, Pathogen Strain ICD (DepthInKind), Pathogen Substrain name, Pathogen Substrain name - ICD, Pathogen Substrain code - ICD, Pathogen Substrain identifier - ICD, Pathogen Substrain ICD (DepthInKind), Pathogen Species name, Pathogen Genus name, Pathogen Family name, Pathogen Type name - ICD, Created By, Created Date Time, Last Modified By, Last Modified Date, Record Status

11. Pathogen transmission modes and routes

Columns: Pathogen Transmission Mode, Pathogen Transmission Route, Created By, Created Date Time, Last Modified By, Last Modified Date, Record Status

12. Pathogen Transmission

Columns: Pathogen Species name, Pathogen Strain name, Pathogen Substrain name, Transmission Mode, Transmission Route, Created by, Created Date Time, Last Modified By, Last Modified Date, Record Status

Epidemiological Parameter Classification

Reference Table	Description
Epi parameter estimate categorization	Parameter categories, types, and subtypes (e.g., Delays > Human Delay > Incubation period)
Epidemiological delay - events	Events used in delay definitions (e.g., Infection, Symptom Onset, Death)
Epi parameter estimate - estimate units	Units for estimates (e.g., Days, Percentage)

Epi parameter estimate - estimate value types	How the estimate is expressed (e.g., Mean, Median)
Epi parameter estimate - uncertainty units	Units for uncertainty measures
Epi parameter estimate - uncertainty value types	Types of uncertainty values (e.g., CI, CrI)
Mapping: categories to Percentage/Reproduction/Epi delay	Flags which parameter subtypes are percentage-, reproduction-, or delay-related
Mapping: categories to allowed estimate units	Defines which units are valid for each parameter type and subtype

13. Epi parameter estimate categorization

Columns: Estimate Category, Estimate Type, Estimate Sub Type, Created by, Created Date Time, Modified by, Modified Date Time, Record Status

14. Epidemiological delay - events

Columns: Epidemiological Event Name, Created by, Created Date Time, Last Modified By, Last Modified Date, Record Status

15. Epi parameter estimate - estimate unit

Columns: Estimate Unit, Created by, Created Date Time, Last Modified By, Last Modified Date, Record Status

16. Epi parameter estimate - estimate value types

Columns: Estimate Value Type, Created by, Created Date Time, Last Modified By, Last Modified Date, Record Status

17. Epi parameter estimate - uncertainty units

Columns: Estimate Uncertainty Unit, Created by, Created Date Time, Last Modified By, Last Modified Date, Record Status

18. Epi parameter estimate - uncertainty value types

Columns: Estimate Uncertainty Value Type, Created by, Created Date Time, Last Modified By, Last Modified Date, Record Status

19. Mapping: categories to Percentage/Reproduction/Epi delay

Columns: Parameter Type, Parameter SubType, Percentage related, Reproduction related, Epi Delay Related, Created by, Created Date Time, Last Modified By, Last Modified Date, Record Status

20. Mapping: categories to allowed estimate unit

Columns: Parameter Type, Parameter SubType, Estimate Unit, Created by, Created Date Time, Last Modified By, Last Modified Date, Record Status

Methods and Calculations

Reference Table	Description
Probability distribution types	Types of fitted distributions (e.g., gamma, lognormal)
Probability distribution - Parameter value types	Types of distribution parameter values
Methods to calculate reproduction number	Methods for estimating R0, Re, Rt
Methods to calculate percentage	Methods for percentage-based estimates
Methods to calculate percentage - adjusted by	Adjustment methods for CFR/IFR calculations
Epidemiological parameters - Inference Methods	Statistical inference methods used to derive estimates

21. Probability distribution types

Columns: Estimate Distribution Type, Created by, Created Date Time, Last Modified By, Last Modified Date, Record Status

22. Probability distribution - Parameter value types

Columns: Probability Distribution Parameter Value Type, Created by, Created Date Time, Last Modified By, Last Modified Date, Record Status

23. Methods to calculate reproduction number

Columns: Estimate Method Reproduction Number, Created by, Created Date Time, Last Modified By, Last Modified Date, Record Status

24. Methods to calculate percentage

Columns: Method Percentage Calculation, Created by, Created Date Time, Last Modified By, Last Modified Date, Record Status

25. Methods to calculate percentage - adjusted by

Columns: Method Calculation Adjusted by, Percentage Calculation Method, Created by, Created Date Time, Last Modified By, Last Modified Date, Record Status

26. Epidemiological parameters - Inference Methods

Columns: Inference Method, Created by, Created Date Time, Last Modified By, Last Modified Date, Record Status

Population and Study Context

Reference Table	Description
Timing related to outbreaks - moment values	When data was collected relative to the outbreak
Population - Settings	Study settings (e.g., hospital-based, community)
Population - Groups	Population groups studied
Population - Sex	Sex categories for the study population
Countries, territories, areas - WHO health boundaries	Geographic reference with ISO codes, WHO region, World Bank income group, and continent

27. Timing related to outbreaks - moment values

Columns: Estimate Method Moment Value, Created by, Created Date Time, Last Modified By, Last Modified Date, Record Status. Note: the CSV export filename for this table currently reads

"Epidemiological Parameter Estimate Method Moment Value"; this will be corrected in a future release.

28. Population - Settings

Columns: Population Setting, Created by, Created Date Time, Last Modified By, Last Modified Date, Record Status

29. Population - Groups

Columns: Population Group, Created by, Created Date Time, Last Modified By, Last Modified Date, Record Status

30. Population - Sex

Columns: Population Sex, Created by, Created Date Time, Last Modified By, Last Modified Date, Record Status

31. Countries, territories, areas - WHO health boundaries

Columns: Country Name, ISO2 Country Code, ISO3 Country Code, WHO Region, World Bank Income Group, Continent, Created by

Literature

Reference Table	Description
Literature - Publication sources	Types of publication sources (e.g., Journal)

32. Literature - Publication sources

Columns: Publication source type, Created by, Created Date Time, Last Modified By, Last Modified Date, Record Status