EpiPulse Cases

Measles & Rubella Reporting Protocol 2024

Surveillance data for 2024

Contents

Introduction

This reporting protocol describes the reporting of 2024 measles and rubella cases to **EpiPulse Cases**, which is replacing TESSy.

Please note:

- Since February 2023, the reporting of diphtheria is described in a separate reporting protocol: Diphtheria, Reporting Protocol 2023, Version 1.0.
- The Vaccine Preventable Diseases (VPD) reporting protocol 2024 describes reporting of: pertussis, mumps, poliomyelitis and tetanus.
- The Invasive Bacteria Diseases (IBD) reporting protocol 2024 describes reporting of: invasive H. influenzae disease, invasive meningococcal disease, Neisseria Meningitidis isolates, and invasive pneumococcal disease.

Reporting protocols are data collection guidelines for the data managers of reporting countries and the protocol design is intended to improve user-friendliness by:

- introducing a uniform structure to make it easier for data managers to find data collection information across different subjects;
- removing information which is not relevant for data managers.

Similarly, the surveillance protocol will contain some of the generic information previously contained in the reporting protocols.

Since the data managers in reporting countries often have multiple roles, subject-specific material is sometimes distributed together with a reporting protocol. To maintain the uniform structure, this type of material is now included in Annex 2.

How to use this document

This reporting protocol provides information for the data managers of reporting countries in three main sections:

- Reporting to EpiPulse Cases which contains guidelines on how to prepare data for submission to EpiPulse Cases, deadlines, subject-specific information (e.g. new changes to metadata), and links to further information.
- Annex 1 which contains:
  - the metadata set for the subject(s) covered by this reporting protocol.
  - a list of metadata changes for the subject(s) covered by this reporting protocol.
- Annex 2 which contains subject-specific material relevant for distribution with the reporting protocol.

Finding further information

Updated links to all the schedules, documentation and training materials mentioned in this reporting protocol are included in the Documentation and Help pages, including links to:

- EpiPulse Cases Metadata
- TESSy Metadata sets and change history
- EpiPulse Cases Machine to Machine Technical Documentation
- Tutorials for data transformation using respectively Excel and Access

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Reporting to EpiPulse Cases

In September 2024 EpiPulse Cases is expected to go live. We have built it as a replacement for TESSy, with the aim of improving the process of reporting, reviewing, and updating surveillance data.

Only Vaccine-Preventable Diseases will be reported to EpiPulse Cases in 2024, all other diseases will continue to be reported to TESSy for now.

This section provides both an overview of the EpiPulse Cases reporting process and tips on where you can find useful information.

The overall process is as follows:

- Familiarise yourself with the data collection deadlines.
- Prepare (export and transform) your data.
- Check that your data complies with the EpiPulse Cases metadata.
- Check that your data sources are up to date.
- Submit your file(s) to EpiPulse Cases.
- Finalise and approve your submission.

Checking the data collection schedule

A link to the current data collections schedule can be found in the Communication section of the 'Documentation and Help' pages.

Preparing data

After you have exported the data from your national database, you need to ensure that the data are in a format that EpiPulse Cases can accept. EpiPulse Cases accepts only CSV and XML files, optionally ZIP-compressed. The EpiPulse Cases metadata has been developed from the TESSy Metadata, with the aim to make only the minimal number of changes necessary, and to hopefully provide a better experience when reporting your datasets to ECDC.

Specific guidelines for measles and rubella data collection and preparation for EpiPulse Cases are provided in Annex 1 and Annex 2.

Checking metadata

The metadata defines the fields and data formats that are valid as input to EpiPulse Cases for a given subject. The EpiPulse Cases metadata includes a section that compares and highlights the changes between TESSy and EpiPulse Cases, to facilitate the transition.

As the requirements for data to be shared among ECDC Stakeholders can change, the data format changes needed to support the new requirements are identified and agreed upon between the National Surveillance Contact Points, the Network Coordination Groups and ECDC's Disease Experts. These changes are then implemented to the EpiPulse Cases metadata.

Changes to the metadata for the subject of this reporting protocol are described in Annex 1.

It is especially important to focus on:

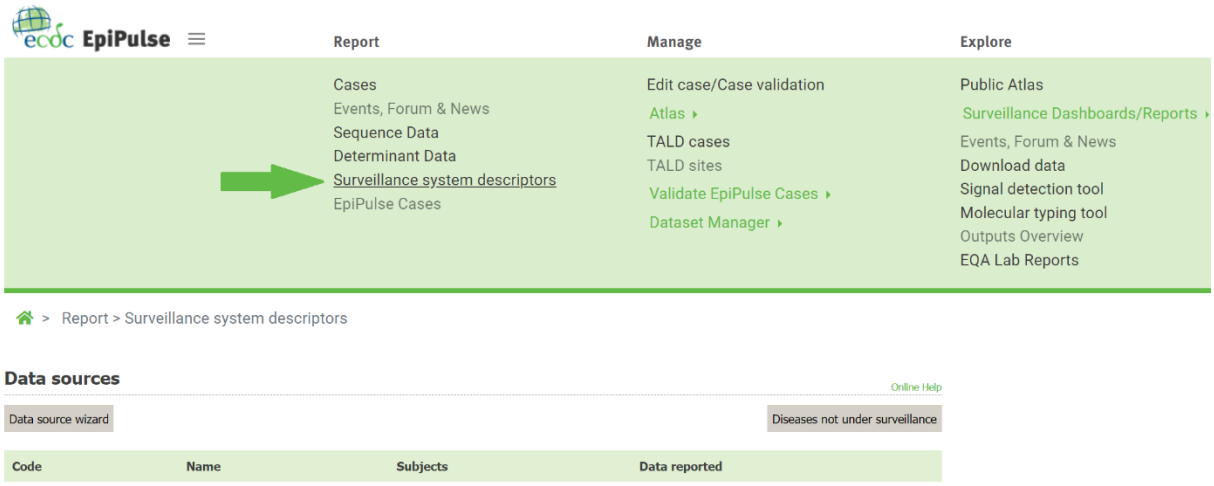
- **Field formats**
  Many fields require the data to be formatted in a specific way. For example, dates must be in the YYYY-MM-DD format; dates in the DD/MM/YYYY format will be rejected.
- **Reference Values (the equivalent of TESSy Coded Values)**
  Some fields only permit the use of specific values (reference values). For example, **M**, **F** or **OTH** are the coded values for 'Gender' and any other value in a 'Gender' field will be rejected. Please note that **UNK** is no longer a valid code, you may leave the field empty instead.

The EpiPulse Cases metadata Excel file contains all the definitions and rules necessary to format data correctly. The READ ME sheet of the Excel document explains how to work with the metadata. It can be downloaded from the Technical Guidelines & Tools section of the 'TESSy Help & Docs' pages.

Filtering the fields in the file by subject will enable you to see the fields required for your subject and the rules that apply to these fields.

Checking your Surveillance System Descriptors

Before submitting file(s), please review your data source(s) in EpiPulse (in the menu, go to 'Report' -> 'Surveillance systems descriptors') and update the information as necessary.



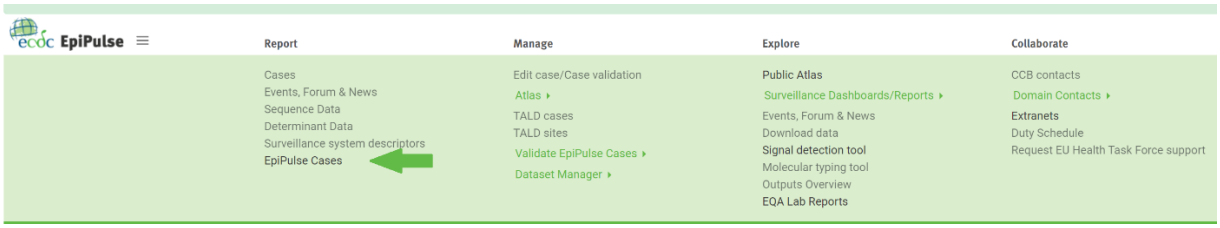
Complete and up-to-date data source information for each subject is important for improving the interpretation of data - each surveillance system has different features that need to be taken into account when comparing data European level.

If your data source information is out-of-date and you do not have access rights to update it, please ask your National Focal Point for Surveillance or National Coordinator to do so.

Information on data sources is available in the TESSy User Guide, as this functionality is still only available through TESSy.

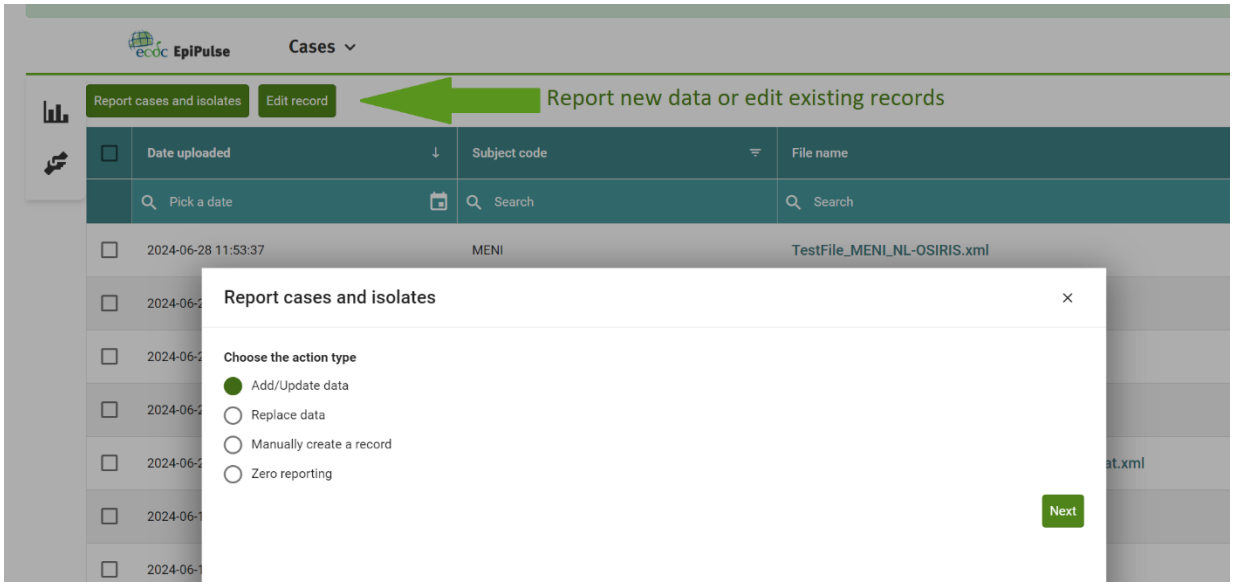
Uploading your data

Data is submitted through the EpiPulse web interface (in the menu, go to Report -> EpiPulse Cases).

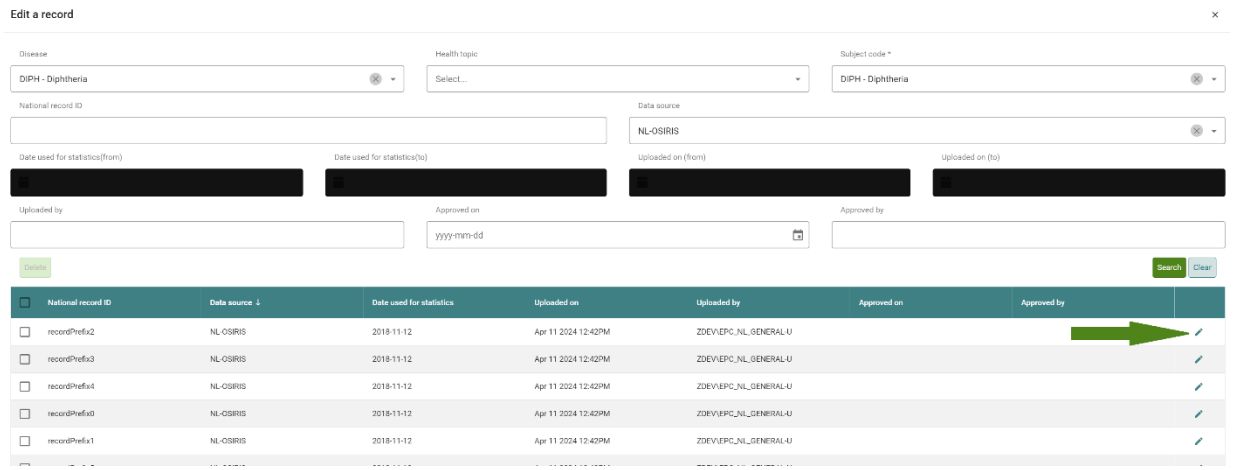


The visual interface for reporting new data and editing existing records has remained very similar to that of TESSy. For those of you that are also responsible for reporting diseases outside of the Vaccine Preventable Diseases group, you will continue to use TESSy (under EpiPulse) in parallel with the new EpiPulse Cases, until all disease groups will have been migrated to the new tool.

Similar to TESSy, you can Add/Update or Replace data with new uploads, using either CSV or XML files. You can also manually create records for some diseases, and report zero cases where appropriate.



The functionality for manually editing existing records is also a familiar experience. Search for the record you wish to edit, and modify the existing information as needed.



Finalising your submission

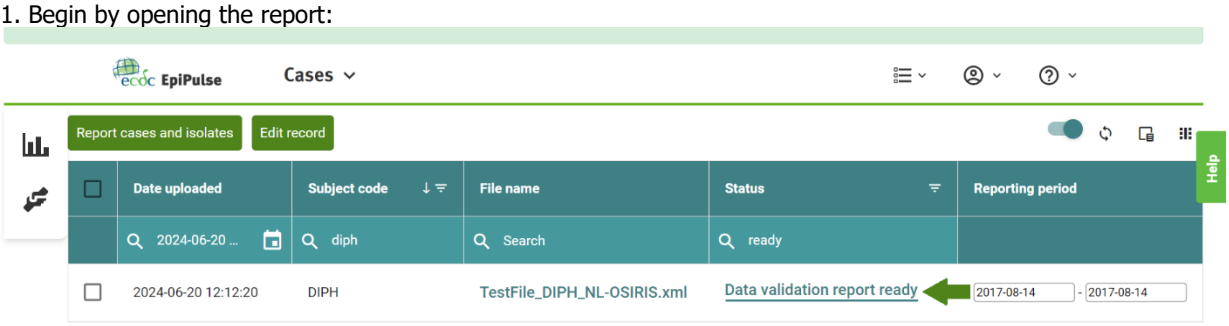
The compliance of your data with the validation rules in the metadata is checked automatically during the data upload process. In EpiPulse Cases this process is called "Technical Validation", and it is the only step where your upload can be rejected, for severe data quality issues, such as the file format not being readable by the system, or (one of the few) mandatory variables having missing values.

If your file has been rejected, there will be a message explaining each instance of non-compliance with the metadata that needs correcting.

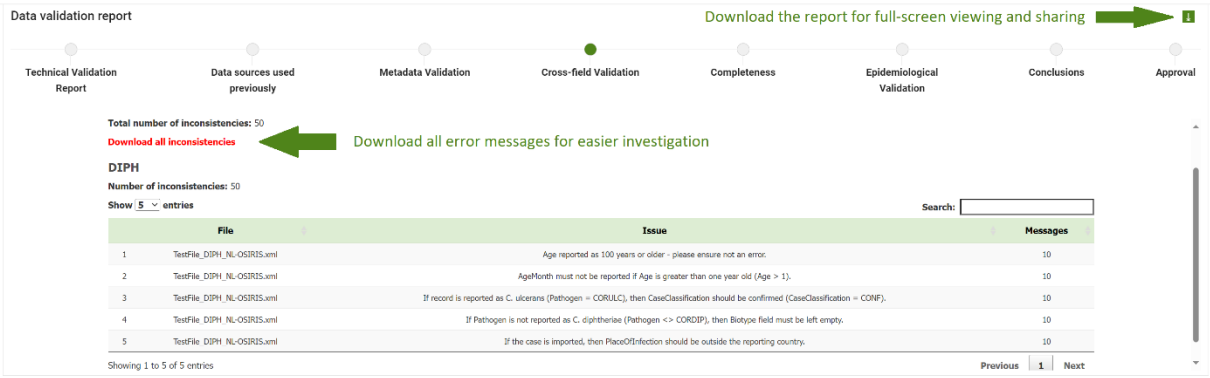
The significant new feature in EpiPulse Cases is the Data Validation Report, which puts your data in the context of the already existing information for the same disease, and provides you with a detailed overview of the new data in the file you have just uploaded, as well as the resulting overall epidemiological situation painted by the existing (past) data together with the newly uploaded file(s). This means much more timely feedback on your uploads, including details on data quality, as well as outputs (graphs, charts, and tables) on some of epidemiological indicators. The Data Validation reports will evolve and grow based on your feedback in collaboration with our Disease Experts. These reports will provide a new and better way of understanding and updating the information collected at European level, and will hopefully increase the quality and timeliness of the data, while reducing workloads.

Below you can find a few screenshots of the Data Validation Report.

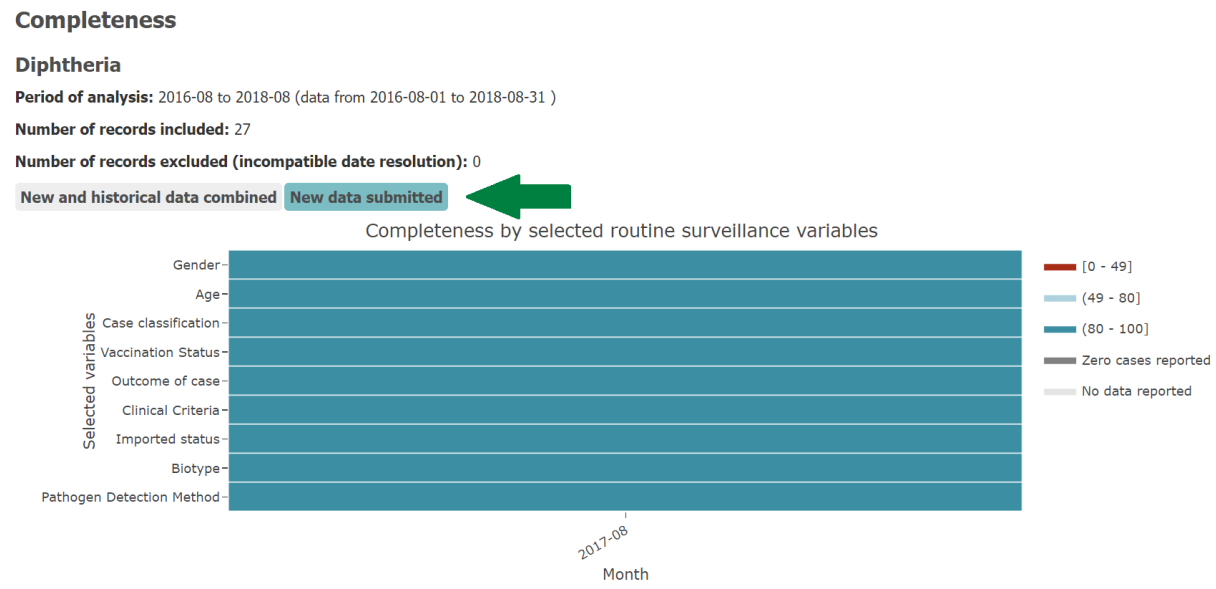
1. Begin by opening the report:

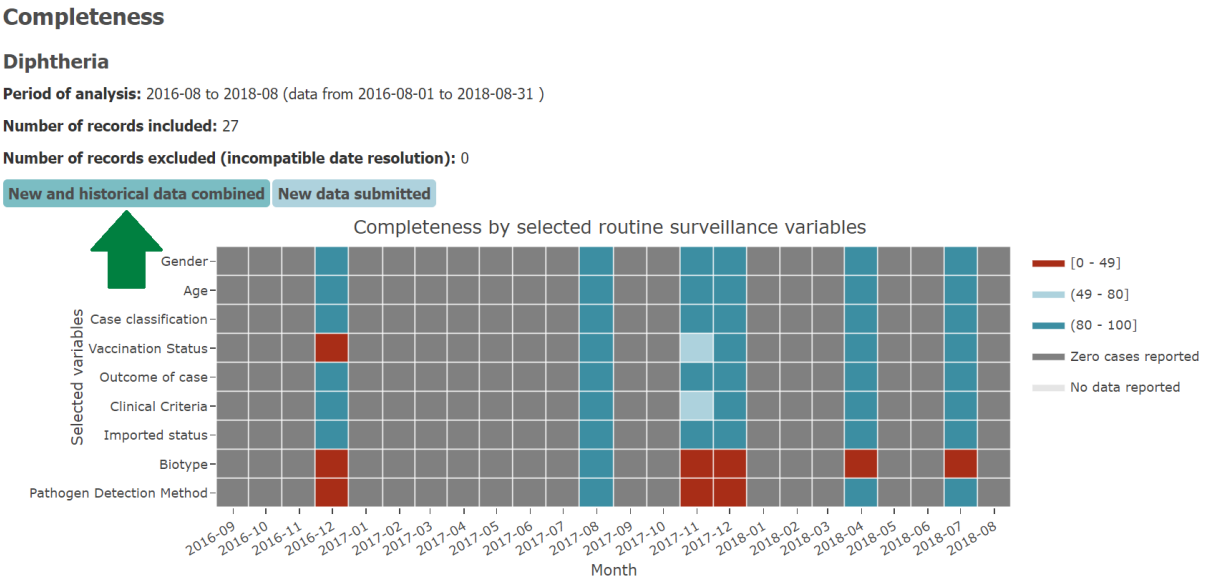


2. View the report in a window, download the list of eventual validation messages, or download the report

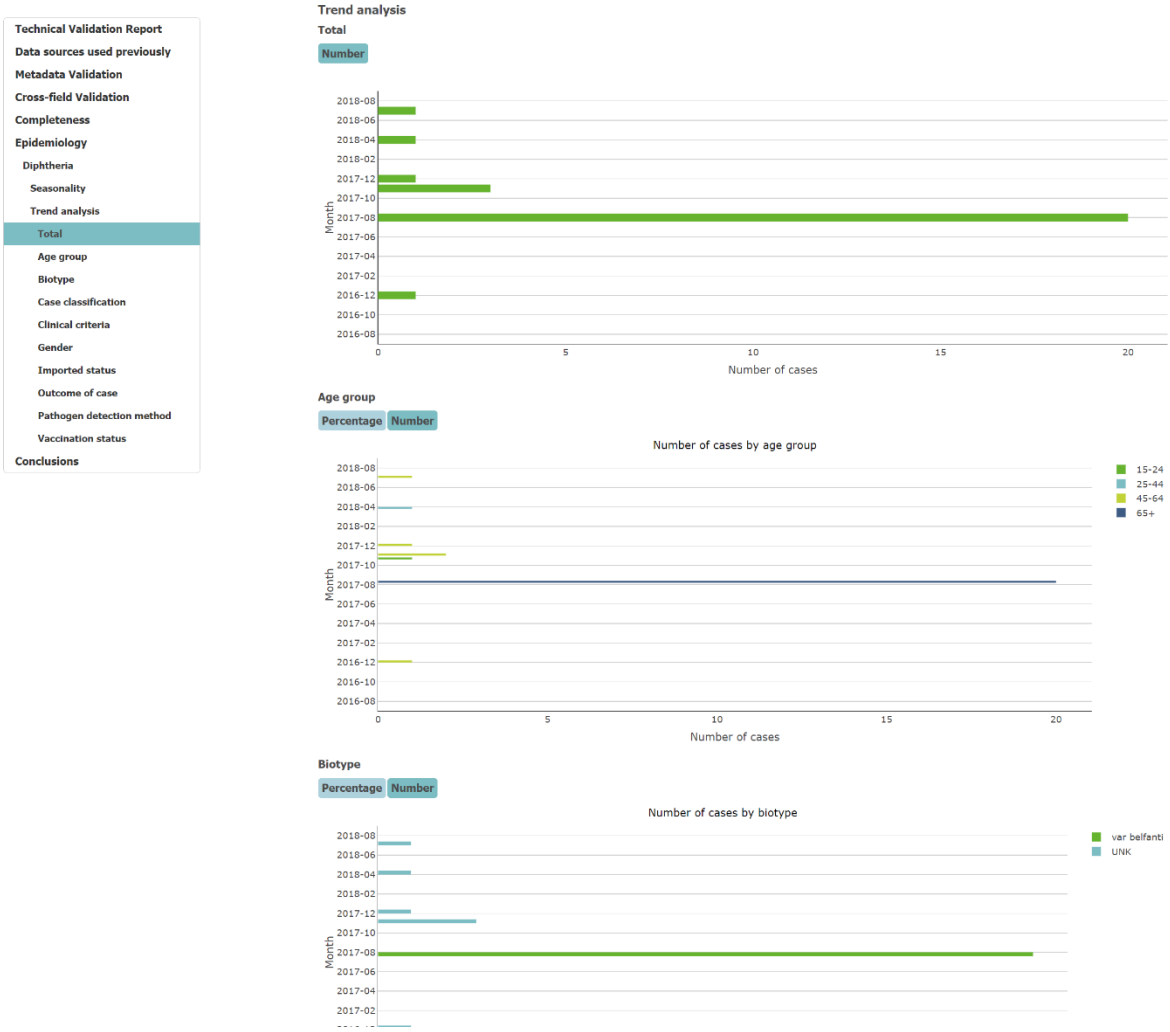


3. Check data completeness; both for the new upload, and in the context of historical data

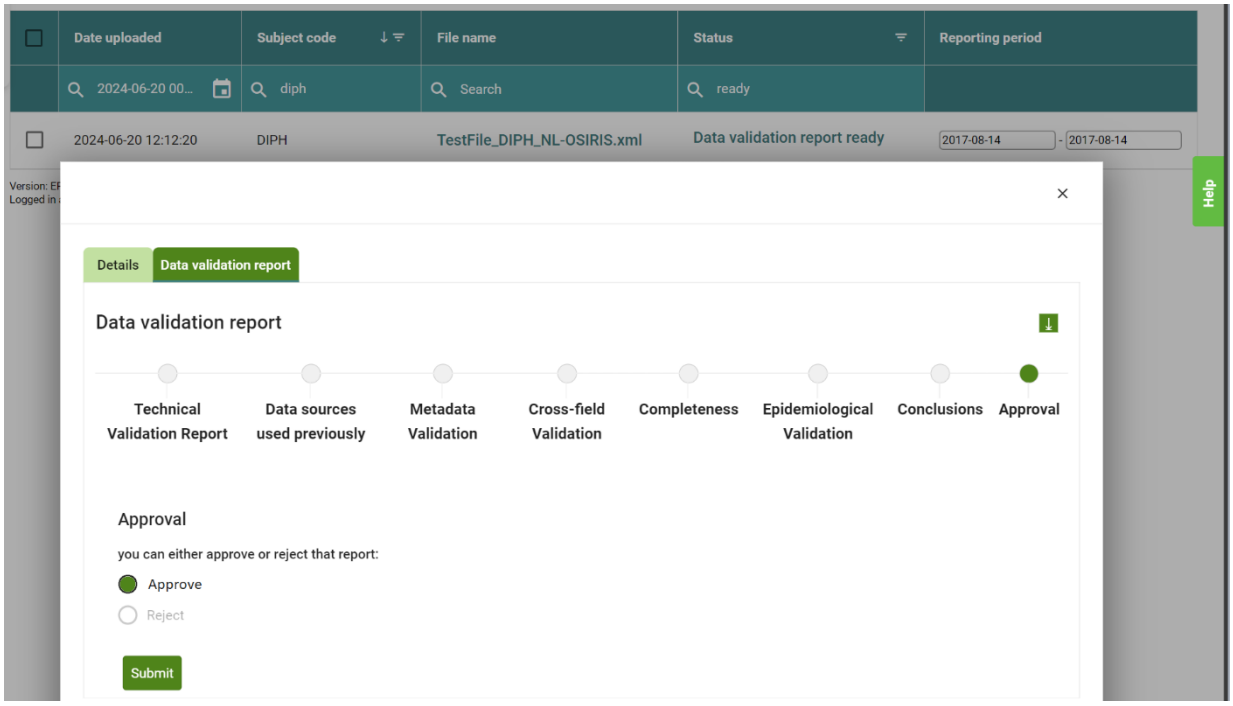




4. The downloaded report can be opened full screen for easier viewing and navigation. This is a preview of the currently developed epidemiological indicators/stratifications.



5. After reviewing the information in the Data Validation Report you can choose to approve or reject it.



If you choose to reject it, no data will be saved in the EpiPulse Cases system, but your file will remain visible should you wish to re-download it, or resubmit it for a new Data Validation at a later date or after further checks. Please check the Epi Validation Report carefully, there might be warnings and remarks relating to possible data quality issues or potential overwriting of existing records that you should consider.

When your file has been validated and you are satisfied that all corrections have been made, please ensure prompt approval or rejection. Unapproved uploads can block the approval of other related uploads.

EpiPulse Cases Helpdesk

Email: EpiPulseCases@ecdc.europa.eu

Telephone number: +46-(0)8-5860 1601

Availability: 9:00 – 16:00 Stockholm time, Monday to Friday (except ECDC holidays)

Annex 1: Measles and Rubella metadata

This section describes:

Measles and rubella metadata

Current subject codes

Table 1 shows the subject codes (formerly 'record types') to be used when reporting measles and rubella surveillance data to Epipulse Cases (EPC). Cases should be reported according to the EU Case Definition[1].

We strongly encourage **case-based reporting**. If case-based data are not available, aggregated data may be reported.

Table 1: Measles and rubella subject codes

Disease	Case-based subject code	Aggregated subject code
Measles	MEAS	MEASAGGR
Rubella	RUBE	RUBEAGGR

Comment: An aggregated format called "AGGRVPD" was available for measles and rubella since 2013. This format was the same as the "AGGR" format, but with "Vaccination Status" as an additional variable. From 2024, with the move from TESSy reporting to Epipulse Cases, aggregated subject codes MEASAGGR and RUBEAGGR have been launched.

Case-based reporting

The metadata set has variables that are common for both measles (MEAS) and rubella (RUBE), which are summarised in Table 2. Disease-specific variables (in addition to the common variables) are subsequently summarised in Table 3 (measles) and Table 4 (rubella).

Table 2: Case-based metadata common for both measles (MEAS) and rubella (RUBE)

Variable	Description	Coded value list
Age	Age of patient in years as reported in the national system at the time of disease onset.	
AgeMonth	Age of patient in months as reported in the national system for cases < 2 years of age at the time of disease onset.	
CaseClassification	Case classification according to EU case definition.	CONF = Confirmed PROB = Probable POSS = Possible DISCARDED = Discarded
ClinicalCriteriaStatus	The clinical criteria are met.	0 = No 1 = Yes
ClusterID	Unique identifier of the cluster as provided by the country epidemiologist.	
ClusterRelated	Is the case part of an outbreak/cluster?	0 = No 1 = Yes

[1] EU case definitions (europa.eu)

ClusterSetting	Setting of the cluster (for epidemiologically-linked cases).	CHILDCARE = Kindergarten or childcare FAM = Family MIL = Military NOS = Nosocomial (hospital) OTH = Other SCH = School SPORT = Sports team UNI = University
DataSource	The data source (surveillance system) that the record originates from. The DataSource value must be a special reference value from EpiPulse Cases metadata.	*Consult the reference values in mdDataSource dataset*
DateOfInvestigation	Date of start of epidemiological investigation of case by public health authorities.	
DateOfLabResult	Date when laboratory results become available (first validated result to confirm or invalidate the case).	
DateOfLastVaccination	Date of administration of the last vaccination dose - indicates the date when the last dose of vaccine was given before disease onset (if exact date is not known, then provide month or year).	
DateOfNotification	Date when the case report is first notified to public health authorities.	
DateOfOnset	Date of onset of disease. Leave empty for asymptomatic cases.	
DateOfSpecimen	Date when first specimen was collected from patient regardless of test results.	
DateUsedForStatistics	The reference date used for standard reports that is compared to the reporting period. The date used for statistics can be any date that the reporting country finds applicable, e.g. date of notification, date of diagnosis or any other date.	
Disease	The code of the disease that is being reported.	MEAS = Measles RUBE = Rubella
Gender	Gender of the reported case.	F = Female M = Male OTH = Other
Hospitalisation	History of hospitalisation due to the disease or related complications. Hospitalisation defined as at least one overnight stay.	0 = No 1 = Yes
ImportedStatus	Definition of the origin of infection as per Surveillance Guidelines for Measles Rubella and Congenital Rubella Syndrome in the WHO European region.	END = Endemic case IMP = Imported case IMPREL = Import related case
NationalRecordId	Unique identifier for each record within and across the specified surveillance system (data source) – selected and generated by the country reporting the record.	

Outcome	Information on whether the case is alive or deceased. The death should be due to the reported disease.	A = Alive D = Died
PlaceOfInfection	If ImportedStatus = 'IMP': The probable place of infection should be provided at the country level. One entry for each country visited during the incubation period of the disease. Note this is a repeatable field.	*Consult the reference values in mdLocation dataset*
PlaceOfNotification	Place of the first notification of the case to a regional authority. Select the most detailed NUTS level possible.	*Consult the reference values in mdLocation dataset*
PlaceOfResidence	Place of residence of patient at the time of disease onset. Select the most detailed NUTS level possible.	*Consult the reference values in mdLocation dataset*
ReportingCountry	The country reporting the record.	*Consult the reference values in mdLocation dataset*
ResultIgG	Result of serologic test for IgG (at least a fourfold rise in specific antibodies titre or seroconversion in paired serum samples).	EQUI = Equivocal NEG = Negative NOTEST = Not tested POS = Positive
ResultIgM	Result of serologic test for IgM.	EQUI = Equivocal NEG = Negative NOTEST = Not tested POS = Positive
ResultVirDetect	Validated result of virus detection or isolation, by for example RT-PCR or culture.	EQUI = Equivocal NEG = Negative NOTEST = Not tested POS = Positive
SpecimenSero	Type of specimen(s) collected for serological analysis.	DRYBLOSP = Dry blood spot EDTA = EDTA whole blood NASALSWAB = Nasal swab OTH = Other SALOR = Saliva/oral fluid SER = Serum URINE = Urine
SpecimenVirDetect	Type of specimen(s) collected.	DRYBLOSP = Dry blood spot EDTA = EDTA whole blood NASALSWAB = Nasal swab OTH = Other SALOR = Saliva/oral fluid SER = Serum URINE = Urine
Status	The Status value is used to provide the functionality for a record within EpiPulse Cases database. Default value: NEW/UPDATE. If set to DELETE, the record with the specified NationalRecordId is deleted (invalidated) from EpiPulse Cases database, if it exists. If set to NEW/UPDATE, the record is inserted into the database: If the same NationalRecordId already exists for the same data source and subject code, then the current submitted record updates (replace) the existing one.	DELETE = Delete a previously reported record. NEW/UPDATE = Update a previously reported record (default).

SubjectCode	SubjectCode is a reporting model for a disease/health topic - identifies the reporting structure and format of a record (case based or aggregate reporting).	MEAS = Measles RUBE = Rubella
VaccinationStatus	Indicates if the case is vaccinated and number of vaccine doses received.	10DOSE = 10 doses 1DOSE = 1 dose 2DOSE = 2 doses 3DOSE = 3 doses 4DOSE = 4 doses 5DOSE = 5 doses 6DOSE = 6 doses 7DOSE = 7 doses 8DOSE = 8 doses 9DOSE = 9 doses NOTVACC = Not vaccinated UNKDOSE = Vaccinated, dose unknown

Table 3: Case-based metadata – additional measles-specific variables

Variable	Description	Coded value list
CauseOfDeath	If death related to the measles episode, short description of the event leading to death.	
ComplicationDiagnosis	Complications of measles. Can be repeated if several complications have occurred.	ACENCE = Acute encephalitis DIARR = Diarrhoea NONE = None OME = Otitis Media OTH = Other PNEU = Bacterial pneumonia
Genotype	Measles virus genotype.	MEASV_A = Measles virus Genotype A MEASV_B1 = Measles virus Genotype B1 MEASV_B2 = Measles virus Genotype B2 MEASV_B3 = Measles virus Genotype B3 MEASV_C1 = Measles virus Genotype C1 MEASV_C2 = Measles virus Genotype C2 MEASV_D1 = Measles virus Genotype D1 MEASV_D10 = Measles virus Genotype D10 MEASV_D11 = Measles virus Genotype D11 MEASV_D2 = Measles virus Genotype D2 MEASV_D3 = Measles virus Genotype D3 MEASV_D4 = Measles virus Genotype D4 MEASV_D5 = Measles virus Genotype D5 MEASV_D6 = Measles virus Genotype D6 MEASV_D7 = Measles virus Genotype D7 MEASV_D8 = Measles virus Genotype D8 MEASV_D9 = Measles virus Genotype D9 MEASV_E = Measles virus Genotype E MEASV_F = Measles virus Genotype F MEASV_G1 = Measles virus Genotype G1 MEASV_G2 = Measles virus Genotype G2 MEASV_G3 = Measles virus Genotype G3 MEASV_H1 = Measles virus Genotype H1 MEASV_H2 = Measles virus Genotype H2

Table 4: Case-based metadata – additional rubella-specific variables

Variable	Description	Coded value list
ComplicationDiagnosis	Complications of rubella. Can be repeated if several complications have occurred.	ARTH = Rubella arthritis NEURO = Neurological complications NONE = None OTH = Other
Genotype	Rubella virus genotype.	RUBEV_1A = Rubella virus Genotype 1A RUBEV_1B = Rubella virus Genotype 1B RUBEV_1C = Rubella virus Genotype 1C RUBEV_1D = Rubella virus Genotype 1D RUBEV_1E = Rubella virus Genotype 1E RUBEV_1F = Rubella virus Genotype 1F RUBEV_1G = Rubella virus Genotype 1G RUBEV_1H = Rubella virus Genotype 1H RUBEV_1I = Rubella virus Genotype 1I RUBEV_1J = Rubella virus Genotype 1J RUBEV_2A = Rubella virus Genotype 2A RUBEV_2B = Rubella virus Genotype 2B RUBEV_2C = Rubella virus Genotype 2C
IgGAvidityTest	IgG avidity test method performed for confirmation of the case according to EU case definition.	0 = No 1 = Yes
Pregnancy	Pregnancy at the time of infection.	0 = No 1 = Yes
WeekOfGestation	Gestational age (weeks) at time of infection.	W1-12 = 1 to 12 weeks W13-20 = 13 to 20 weeks W20+ = More than 20 weeks

Aggregated reporting

Please refer to Table 5 to see the format for aggregated reporting for measles and rubella.

If only a few variables can be reported, it is recommended to give the following priority for reporting: AgeGroup, Classification, VaccStatus, Gender.

Table 5: Aggregate metadata for measles (MEASAGGR) and rubella (RUBEAGGR)

Variable	Description	Coded value list
AgeGroup	Age group of the reported record.	*See Table 6 below.*
CaseClassification	Case classification according to EU case definition.	CONF = Confirmed POSS = Possible PROB = Probable DISCARDED = Discarded
DataSource	The data source (surveillance system) that the record originates from. The DataSource value must be a special reference value from EpiPulse Cases metadata.	*Consult the reference values in mdDataSource dataset*
DateUsedForStatistics	The reference date used for standard reports that is compared to the reporting period. The date used for statistics can be any date that the reporting country finds applicable, e.g. date of notification, date of diagnosis or any other date.	
Disease	The code of the disease that is being reported.	MEAS = Measles RUBE = Rubella
Gender	Gender of the reported record.	F = Female M = Male OTH = Other
NumberOfCases	Total number of cases during the reported period for the specified disease.	
ReportingCountry	The country reporting the record.	*Consult the reference values in mdLocation dataset*
SubjectCode	SubjectCode is a reporting model for a disease/health topic - identifies the reporting structure and format of a record (case based or aggregate reporting).	MEASAGGR = Measles aggregated RUBEAGGR = Rubella aggregated
VaccinationStatus	Indicates if the case is vaccinated and number of vaccine doses received.	1DOSE = 1 dose 2DOSE = 2 doses 3DOSE = 3 doses 4DOSE = 4 doses NOTVACC = Not vaccinated UNKDOSE = Vaccinated, dose unknown

When reporting age, the age classes listed in Table 6 should be used. The age groups listed in Option 1 are the preferred categories for aggregate measles and rubella reporting.

Table 6: Age categories compatible with aggregate measles and rubella reporting

Option	Variable	Narrative description	Coded value of the variable AgeGroup
1 (preferred)	AgeGroup	<1 year 1-4 years 5-9 years 10-14 years 15-19 years 20-24 years 25-29 years 30-34 years 35-39 years 40-44 years 45-49 years 50-54 years 55-59 years 60-64 years 65 and over	0 01-04 05-09 10-14 15-19 20-24 25-29 30-34 35-39 40-44 45-49 50-54 55-59 60-64 65+
2	AgeGroup	<1 year 1-4 years 5-9 years 10-14 years 15-19 years 20-24 years 25-29 years 30 and over	0 01-04 05-09 10-14 15-19 20-24 25-29 30+
3	AgeGroup	<1 year 1-4 years 5-9 years 10-14 years 15-19 years 20-29 years 30 and over	0 01-04 05-09 10-14 15-19 20-29 30+

Changes to the measles and rubella metadata

Metadata changes prior to 2014 can be found on the TESSy documents website. Changes from 2015 onwards have been summarised in Table 7 below.

Table 7: Summary of implemented changes in case-based and aggregated subject codes (formerly 'record types') for measles and rubella from 2015 to current

Year of change	Subject	Variables	Description	Validation rule
2024	MEAS RUBE MEASAGGR RUBEAGGR	ALL	Reporting moved from TESSy to the Epipulse Cases platform. This transition has led to changes in some variable names and categorical values (see below).	
	MEAS RUBE	Classification → CaseClassification; ClusterIdentification → ClusterId; Complications → ComplicationDiagnosis; DateLastVaccDose → DateOfLastVaccination; Imported → ImportedStatus; ProbablyCountryOfInfection → PlaceOfInfection; RecordType → SubjectCode; RecordId → NationalRecordId; Subject → Disease; VaccStatus → VaccinationStatus	**Variable names changed from (TESSy) → to (Epipulse Cases):** Classification → CaseClassification; ClusterIdentification → ClusterId; Complications → ComplicationDiagnosis; DateLastVaccDose → DateOfLastVaccination; Imported → ImportedStatus; ProbablyCountryOfInfection → PlaceOfInfection; RecordType → SubjectCode; RecordId → NationalRecordId; Subject → Disease; VaccStatus → VaccinationStatus	
		RecordTypeVersion	Remove variable	
		CaseClassification; Outcome	Discontinued "UNK" categorical value	
		ResultIgG; ResultIgM; ResultVirDetect	Discontinued "UNK" and "NA" categorical values	
		ClusterRelated; Hospitalisation	Discontinued "UNK" categorical value and variable changed from coded value to Boolean (0 = No ; 1 = Yes)	
		ClusterSetting	Discontinued "UNK" and "NA" categorical values and "HOSP" remapped to "NOS"	
		ComplicationDiagnosis	Discontinued "UNK" categorical value and remapping of: "NOCOMP" to "NONE" "O" to "OTH"	
		Gender	Discontinued "UNK" categorical value and "O" remapped to "OTH"	
		ImportedStatus	Discontinued "UNK" categorical value and remapping of: "N" to "END" "Y" to "IMP"	
		SpecimenSero	Discontinued "UNK" and "NA" categorical values and "O" remapped to "OTH"	
		SpecimenVirDetect	Discontinued "UNK" and "NA" categorical values and remapping of: "O" to "OTH" "URI" to "URINE"	
		Status	Remapping of "NEW/UPDATE" to "ADD/UPDATE"	
		VaccinationStatus	Discontinued "UNK" and "NA" categorical values and "DOSEUNK" remapped to "UNKDOSE"	

	MEAS	CauseOfDeathText → CauseOfDeath; ClinicalCriteria → ClinicalCriteriaStatus	**Variable names changed from (TESSy) → to (Epipulse Cases):** CauseOfDeathText → CauseOfDeath; ClinicalCriteria → ClinicalCriteriaStatus	
		CauseOfDeath	Variable name changed from CauseOfDeathText to CauseOfDeath	
		ClinicalCriteriaStatus	Discontinued "UNK" and "NA" categorical values and variable changed from coded value to Boolean (0 = No ; 1 = Yes)	
		Genotype	Discontinued "UNK" and "NA" categorical values and remapping of: "A" to "MEASV_A" "B1" to "MEASV_B1" "B2" to "MEASV_B2" "B3" to "MEASV_B3" "C1" to "MEASV_C1" "C2" to "MEASV_C2" "D1" to "MEASV_D1" "D10" to "MEASV_D10" "D11" to "MEASV_D11" "D2" to "MEASV_D2" "D3" to "MEASV_D3" "D4" to "MEASV_D4" "D5" to "MEASV_D5" "D6" to "MEASV_D6" "D7" to "MEASV_D7" "D8" to "MEASV_D8" "D9" to "MEASV_D9" "E" to "MEASV_E" "F" to "MEASV_F" "G1" to "MEASV_G1" "G2" to "MEASV_G2" "G3" to "MEASV_G3" "H1" to "MEASV_H1" "H2 to "MEASV_H2"	
	RUBE	Genotype	Discontinued "UNK" and "NA" categorical values and remapping of: "1A" to "RUBEV_1A" "1B" to "RUBEV_1B" "1C" to "RUBEV_1C" "1D" to "RUBEV_1D" "1E" to "RUBEV_1E" "1F" to "RUBEV_1F" "1G" to "RUBEV_1G" "1H" to "RUBEV_1H" "1I" to "RUBEV_1I" "1J" to "RUBEV_1J" "2A" to "RUBEV_2A" "2B" to "RUBEV_2B" "2C" to "RUBEV_2C"	
		IgGAvidityTest; Pregnancy	Discontinued "UNK" and "NA" categorical values and variable changed from coded value to Boolean (0 = No ; 1 = Yes)	
		WeekOfGestation	Discontinued "UNK" and "NA" categorical values	
	MEASAGGR RUBEAGGR	AgeClass → AgeGroup; Classification → CaseClassification; RecordType → SubjectCode; Subject → Disease; VaccStatus → VaccinationStatus	**Variable names changed from (TESSy) → to (Epipulse Cases):** AgeClass → AgeGroup; Classification → CaseClassification; RecordType → SubjectCode; Subject → Disease; VaccStatus → VaccinationStatus	
		AgeGroup; CaseClassification	Discontinued "UNK" categorical value	
		Gender	Discontinued "UNK" categorical value and "O" remapped to "OTH"	
		SubjectCode	"AGGRVPD" value remapped to "MEASAGGR" and "RUBEAGGR"	
		VaccinationStatus	Discontinued "UNK" and "NA" categorical values and "DOSEUNK" remapped to "UNKDOSE"	

2019	MEAS	ClinicalCriteria [2]	Add variable	(Error) if not completed when Classification is 'CONF' and VaccStatus' is not 'NOTVACC' and 'VaccStatus' is not 'UNK'
2019	MEAS	ClinicalCriteria; Classification; VaccStatus	Add validation rule	(Error) if ClinicalCriteria is not 'Yes', 'No' or 'UNK', if Classification is 'CONF' and VaccStatus' is not 'NOTVACC' and 'VaccStatus' is not 'UNK'
2018	MEAS	ClinicalCriteria	Variable reactivated for use in the event of vaccinated cases with classification 'CONF'; whether these cases met the clinical criteria of the EU case definition should be recorded using this variable.	
2018	MEAS	Classification; ResultIgG; ResultIgM; ResultVirDetect	Add validation rule	(Error) If Classification is 'CONF' and (ResultVirDetect is not 'POS' or ResultIgM is not 'POS' or ResultIgG is not 'POS') Validation message: Confirmed cases should have evidence of laboratory confirmation, so should be 'POS' for at least one of ResultVirDetect, ResultIgM or ResultIgG
2017	MEAS RUBE	DateLastVacc Dose	The description of the variable updated to specify that the date given should be the date of last dose before disease onset.	
2017	MEAS		Add validation rule	A validation rule was changed, so that cases reported with ResultVirDetect==POS, must have Classification==CONF or DISCARDED. Previously, these cases could only be reported as Classification==CONF.
2017	RUBE		Add validation rule	A validation rule was changed, so that cases reported with ResultVirDetect==POS, must have Classification==CONF or DISCARDED. Previously, these cases could only be reported as Classification==CONF.
2015	MEAS RUBE	Imported	Description and coded values for the variable 'Imported' were edited to ensure consistency with the Surveillance Guidelines for measles, rubella and congenital rubella syndrome in the WHO European Region.	
2015	MEAS RUBE	Classification	The description of the variable was edited to ensure consistency with the EU case definition.	

[2] Note: the addition of the ClinicalCriteria variable was implemented following discussion at the Advisory Forum in September 2018 about modified measles. Vaccinated, laboratory confirmed cases must have the Clinicalcriteria field completed. The intention is to be able to identify modified measles cases, i.e. that are vaccinated and laboratory confirmed but don't meet the entire clinical criteria of the EU case definition.

Annex 2. Measles & rubella-specific material

Monthly reporting

Measles and Rubella - deadline 25th of each month

Measles and rubella data should be uploaded monthly. The deadline for upload is the 25th of each calendar month, and the data to be uploaded is up to the end of the previous calendar month. On the morning of the 26th of each month, the dataset available in TESSy is validated by disease experts at ECDC and forwarded to the WHO Regional Office for Europe.

Once the data are validated by the disease experts at ECDC, they are then made publicly available on the *Surveillance Atlas of Infectious Diseases.* Subsequently, *monthly* and *annual surveillance reports* are made available on the ECDC website.

Collection of discarded measles cases

Possible, probable, confirmed and discarded cases of measles and rubella should be reported to ECDC. The collection of discarded cases is important to monitor progress towards the measles and rubella elimination goal [1]. The metadata variable "Classification" for measles and rubella includes five different values (possible, probable, confirmed, discarded and unknown).

Discarded cases are defined according to WHO guidelines [2] as suspected cases which were investigated and discarded either through negative results of adequate laboratory testing for measles/rubella or by an epidemiological link to a laboratory-confirmed case of another disease. Suspected cases are defined as cases with signs and symptoms consistent with the clinical criteria of measles.

Collection of modified measles cases that don't fully meet the clinical criteria

Vaccinated, laboratory confirmed cases must have the Clinicalcriteria field completed. Please see comments from the paragraph "2019 metadata changes".

Narrative information

Changes over time in the number of cases reported in a surveillance system do not always reflect true changes in the incidence of disease. New reporting practices, improved laboratory capacities and changes in legislation are some of the factors that can influence the number of cases reported. It is important to be aware of such "surveillance artefacts" when analysing surveillance data and countries are encouraged to describe changes in the surveillance environment that may impact on the number of cases reported. It is equally important to report if the surveillance environment has remained the same from one year to the next. We encourage reporting countries to provide this information at the same time as data submission to TESSy and to *VPD.VPD@ecdc.europa.eu*.

Measles data collection and case definitions

From 1999, data on cases of measles were collected by the European surveillance network for selected vaccine-preventable diseases (EUVAC.NET), hosted at the Statens Serum Institute (SSI) in Denmark[3]. In 2011, the coordination of this network was transferred to ECDC, which closely collaborates with WHO and the Member States.

[3] Information about EUVAC.NET is available here: EUVAC.Net (europa.eu)

Cases are reported according to the following 2018 EU case definition for measles [3]:

Clinical criteria
Any person with fever;
AND
Maculo-papular rash;
AND at least one of the following three:
— Cough;
— Coryza;
— Conjunctivitis.

Laboratory criteria
At least one of the following four:
— Isolation of measles virus from a clinical specimen;
— Detection of measles virus nucleic acid in a clinical specimen;
— Measles virus specific antibody response characteristic for acute infection in serum or saliva;
— Detection of measles virus antigen by DFA in a clinical specimen using measles specific monoclonal antibodies.
Laboratory results need to be interpreted according to the vaccination status. If recently vaccinated, investigate for wild virus.

Epidemiological criteria
An epidemiological link by human to human transmission

Case classification
A. Possible case: any person meeting the clinical criteria
B. Probable case: any person meeting the clinical criteria and with an epidemiological link
C. Confirmed case: any person not recently vaccinated and meeting the clinical and the laboratory criteria

Previous versions of the EU case definition were published in 2012, 2008 and 2002. There were no differences between the 2018, 2012 and 2008 EU case definitions.

In the 2002 EU case definition, the clinical criteria were defined as "a clinical picture compatible with measles, i.e. a generalised rash lasting >3 days and a temperature >38.0°C and one or more of the following: cough, coryza, Koplik's spots, conjunctivitis". The laboratory criteria excluded the detection of measles antigen by DFA and did not stipulate the need to investigate for wild virus in recently vaccinated cases.

In the 2002 EU case definition, the case classifications were also defined differently, and as such, a laboratory-confirmed case did not need to meet the clinical case definition to be classified as confirmed. The 2002 EU case definition included the following case classifications:

- possible, a case diagnosed by a physician as measles (no classification in 2008 or 2012);
- probable, a clinically compatible case (possible in 2008 or 2012);
- confirmed, a case that is laboratory confirmed (confirmed in 2008 or 2012, if clinical criteria are met) or a clinically compatible case with an epidemiological link (probable in 2008 or 2012).

Rubella data collection and case definitions

From 2002, data on cases of rubella were collected by a European surveillance network for selected vaccine-preventable diseases (EUVAC.NET), hosted at the Statens Serum Institute (SSI) in Denmark. In 2011, the coordination of this network was transferred to ECDC, which closely collaborates with WHO and the Member States.

Clinical criteria

Any person with sudden onset of generalised maculo-papular rash;

AND at least one of the following five:

— Clinical adenopathy;

— Sub-occupital adenopathy;

— Post-auricular adenopathy;

— Arthralgia;

— Arthritis.

Laboratory criteria

At least one of the following four:

— Isolation of rubella virus from a clinical specimen;

— Detection of rubella virus nucleic acid in a clinical specimen;

— Rubella IgM antibody detection (*);

— Rubella IgG seroconversion or significant rise in rubella IgG antibody titre in paired specimens tested in parallel.

Laboratory results need to be interpreted according to the vaccination status (possible persistence of IgM antibodies upon vaccination).

Epidemiological criteria

An epidemiological link to a confirmed case

Case classification

A. Possible case: any person meeting the clinical criteria

B. Probable case: any person meeting the clinical criteria and with an epidemiological link

C. Confirmed case: any person meeting the clinical and the laboratory criteria who has not been recently vaccinated.

In case of recent vaccination, a person meeting the clinical criteria with detection of wild-type rubella virus strain is considered as a confirmed case.

Note: When rubella in pregnancy is suspected, further confirmation of a positive rubella IgM result is required for case management (for example, a rubella specific IgG avidity test, rubella IgM and comparison of rubella IgG levels on paired sera conducted in a reference laboratory).

(*) In elimination settings, additional testing may be considered in certain situations to exclude false-positive IgM results (WHO Manual for the Laboratory Surveillance of Measles and Rubella Viruses, 2018).

Cases are reported according to the following 2018 EU case definition for rubella [3]:

Previous versions of the case definition were published in 2012, 2008 and 2002.

In the 2018 EU case definition, compared with the 2012 and 2008 EU case definitions, the laboratory criteria and probable case classification were amended as below.

2018 EU Case Definition	2008 & 2012 EU Case Definitions
Laboratory criteria At least one of the following four: — Isolation of rubella virus from a clinical specimen; — Detection of rubella virus nucleic acid in a clinical specimen; — Rubella IgM antibody detection (*) — Rubella IgG seroconversion or significant rise in rubella IgG antibody titre in paired specimens tested in parallel. Laboratory results need to be interpreted according to the vaccination status (possible persistence of IgM antibodies upon vaccination). (*) In elimination settings, additional testing may be considered in certain situations to exclude false-positive IgM results (WHO Manual for the Laboratory Surveillance of Measles and Rubella Viruses, 2018).	Laboratory criteria Laboratory criteria for case confirmation At least one of the following three: — Isolation of rubella virus from a clinical specimen; — Detection of rubella virus nucleic acid in a clinical specimen; — Rubella virus specific antibody response (IgG) in serum or saliva. Laboratory criteria for probable case — Rubella virus specific antibody response (IgM). Laboratory results need to be interpreted according to the vaccination status.
Probable case: any person meeting the clinical criteria and with an epidemiological link	Probable case: any person meeting the clinical criteria and with at least one of the following two: — An epidemiological link — Meeting the laboratory criteria for a probable case

There were no differences between the 2012 and 2008 EU case definitions.

In 2002, the clinical criteria were defined as a 'clinical picture compatible with rubella, e.g. acute onset of generalized maculopapular rash and arthralgia/arthritis, lymphadenopathy, or conjunctivitis'. Among the laboratory criteria, the detection of IgM was included in the criteria for case confirmation. No laboratory criteria were defined for a probable case. Confirmed cases also had to meet the clinical criteria.

References

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