World Health Organization

European Region

Thirteenth meeting of the European Regional Verification Commission for Measles and Rubella Elimination

10–12 September 2024
Copenhagen, Denmark

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Abstract
The Thirteenth meeting of the European Regional Verification Commission for Measles and Rubella Elimination (RVC) took place in Copenhagen, Denmark on 10–12 September 2024, with the aim of reviewing the 2023 annual status updates (ASUs) from Member States of the WHO European Region. The RVC evaluated 53 national ASUs for 2023 submitted by the countries' national verification committees. The RVC concluded that, by the end of 2023, 33 Member States had provided evidence to demonstrate that endemic transmission of measles was interrupted for at least 36 months and were thereby verified as having eliminated the disease. Similarly, 50 Member States interrupted endemic rubella transmission for at least 36 months and were verified as having eliminated the disease.

Keywords
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Contents

Abbreviations

ASU	annual status update
COVID-19	coronavirus disease
CRS	congenital rubella syndrome
EQA	external quality assessment
IgM	immunoglobulin M
MCV1	first dose of measles-containing vaccine
MeaNS	Measles Nucleotide Surveillance (database)
MMR	measles, mumps and rubella
MRCV	measles- and rubella-containing vaccine
MRCV1	first dose of measles- and rubella-containing vaccine
MRCV2	second dose of measles- and rubella-containing vaccine
NRL	national reference laboratory
NVC	national verification committee for measles and rubella elimination
PAHO	Pan American Health Organization
PCR	polymerase chain reaction
RCV	rubella-containing vaccine
RKI	Robert Koch Institute
RubeNS	Rubella Nucleotide Surveillance (database)
RVC	European Regional Verification Commission for Measles and Rubella Elimination
SIA	supplementary immunization activity
VPI	Vaccine-preventable Diseases and Immunization Programme

Executive summary

The Thirteenth meeting of the European Regional Verification Commission for Measles and Rubella Elimination (RVC) took place in Copenhagen, Denmark on 10–12 September 2024, with the aim of reviewing the 2023 annual status updates for measles and rubella (ASUs) from Member States of the WHO European Region. The RVC evaluated 51 of 53 national ASUs for 2023 submitted by each country's independent expert body – the national verification committee or its equivalent. Two countries' ASUs were evaluated after the meeting. The RVC concluded that, by the end of 2023, 33 Member States had provided evidence to demonstrate that endemic transmission of measles was interrupted for at least 36 months and was thereby verified as eliminated (in 2022, 33 Member States had this status). Similarly, endemic rubella transmission was interrupted in 50 Member States for at least 36 months and verified as eliminated (in 2022, 49 Member States had this status). Nine countries are considered endemic for measles, and three countries have re-established measles transmission. For three countries, more data and analysis are needed to define their rubella elimination status.

Background

The European Regional Verification Commission for Measles and Rubella Elimination (RVC) was established by the WHO Regional Office for Europe in 2012 as an independent expert body with the mission of evaluating the documentation submitted by the national verification committee (NVC) of each of the 53 Member States of the WHO European Region to verify the elimination of measles and rubella when achieved in countries and in the Region. The Vaccine-preventable Diseases and Immunization Programme (VPI) of the Regional Office serves as the Secretariat to the RVC and supports Member States throughout the process.

The RVC holds annual meetings to determine the status of measles and rubella elimination in the Region based on annual status updates (ASUs) and additional documents prepared and submitted by the NVCs. Before the meeting, it is expected that the NVC secretariat in each country (generally representing the national immunization and surveillance programmes) uses the ASU form to provide data from existing databases and reports (including on measles and rubella epidemiology, molecular epidemiology, analysis of population immunity and immunization programme performance, quality of surveillance, and changes that may have occurred since the last report), together with any relevant additional information to the NVC. The NVC is expected to review and analyse the received information and complete the form with its statement on the measles and rubella elimination status in the country for the year being assessed.

The main technical reference documents utilized for the assessment of reports were the most recent WHO position paper on measles vaccines *(1)*, recently updated WHO guidance on surveillance, outbreak response and verification of elimination *(2),* and global updates on measles molecular epidemiology *(3)* and circulation of active genotypes of measles virus and recommendations for use of sequence analysis to monitor viral transmission *(4)*.

Scope and purpose of the meeting

The RVC reviewed the ASUs and other documentation (e.g. relevant technical reports and scientific articles) submitted by NVCs and their secretariats, and assessed the status of measles and rubella transmission in 2023 in the Member States of the Region. Based on its conclusions for 2023 and previous years, the RVC determined the elimination status for each Member State that submitted a report.

The objectives of the meeting were to:

- inform the RVC about the current epidemiology of measles and rubella in the European Region and the activities of the VPI related to measles and rubella elimination, as well as global developments in measles and rubella epidemiology and elimination activities;
- review and discuss the NVCs' annual measles and rubella status updates for 2023, documents for previous years submitted after the corresponding review periods and all other documentation that NVCs provide towards confirming the absence of measles and rubella endemic transmission in their countries;

- determine the status of transmission of measles and rubella in each Member State and in the Region in 2023, declare whether elimination of either or both diseases was achieved and declare the status of measles and rubella epidemiology in the Region in the context of the elimination targets; and
- initiate preparation of the RVC's measles and rubella elimination status report for 2023.

Opening remarks

Dr Shahin Huseynov, VPI, opened the meeting and welcomed participants. He conveyed the interest of the Regional Office's management in the diseases' elimination and verification process and its expectation to be briefed on the latest status of measles and rubella elimination in the Region after the meeting. The RVC Chair, Dr Mira Kojouharova also welcomed the participants to the meeting and noted the successes over the years in working towards measles and rubella elimination in the Region, but also highlighted the challenges, especially the recent measles outbreaks in several countries.

Status of measles and rubella elimination: global and regional update

Global update

Dr Natasha Crowcroft, WHO headquarters, presented an estimate of 136 000 deaths prevented in 2022 through measles vaccination and 57 million during 2000–2022, worldwide – more than for any other vaccine. However, coverage has not yet been restored to pre-pandemic levels, leaving 235 million children under the age of 15 susceptible, according to data from 2023. She added the caveat that these numbers are overestimates because they do not consider immunity acquired through natural infection. There was a considerable increase in cases in 2023, especially in the European and African Regions, and even higher numbers of cases in the first half of 2024. Among the 10 countries with the highest incidence rate, five are in the European Region, and 51 countries experienced large or disruptive outbreaks in 2023. Most cases are in low or lower-middle income countries (based on World Bank economic classification). It is encouraging that the number of countries that achieve the WHO recommended surveillance standard has increased from 81 in 2019 to 96 in 2024, indicating that surveillance systems have started to recover from disruption caused by the coronavirus disease (COVID-19) pandemic.

The highest incidence of rubella is in the African Region, mostly in countries that have not introduced rubella vaccination. In many countries, the requirement to achieve at least 80% coverage with the first dose of measles-containing vaccine (MCV1) is the barrier to introduction of rubella vaccine. The threshold of 80% MCV1 coverage will be reviewed by the Strategic Advisory Group of Experts on Immunization (SAGE) and new guidelines are expected to be released late in 2024.

Globally, 99 Member States (51%) have verified rubella elimination and 83 (43%) have verified measles elimination. The Immunization Agenda 2030 and the Measles and Rubella Strategic Framework 2021–2030 are global strategies that recognize the importance of measles and rubella. The goal of the Measles and Rubella Partnership's Measles and Rubella Elimination Advisory Group Task Team is to monitor progress towards the point at which an eradication goal can be set.

Regional update

Dr Dragan Jankovic, VPI, on behalf of the RVC Secretariat informed the meeting that countries in the European Region had reported more than 60 000 measles cases in 2023 and warned that measles transmission is continuing and has increased in many countries in the first half of 2024, with around 95 000 cases reported. Most of the cases were reported from central Asian countries. Surveillance is challenged by the high number of cases, leading to delayed reporting and possible underreporting of routine surveillance data to the Regional Office. Indicators show decreased surveillance performance quality in the absence of confirmed cases. Most cases are among non-immunized individuals aged 1–4 years old, but a significant number of cases are also among adults, either not immunized or without immunization data. Rubella cases are reported from a small number of countries, but most cases in the Region are reported as clinically compatible in the absence of laboratory confirmation.

Routine country-level immunization coverage with both doses of measles- and rubella-containing vaccines (MRCVs) remains high, exceeding 90%. However, all countries have under-immunized and susceptible populations. The COVID-19 pandemic is considered a major cause of the accumulation of susceptible individuals under 5 years old, who were the most affected in outbreaks in 2023. An immunity profile of 53 Member States, conducted globally by the United States Centers for Disease Control and Prevention, indicates that in 35 of them, the size of the susceptible population is equal to or larger than the size of the annual birth cohort, presenting a risk of large outbreaks. It is estimated that almost half a million children missed the first dose of MRCV (MRCV1) in routine immunization. Timeliness of routine immunization is a problem for many countries reporting low coverage.

The Secretariat informed about the support provided by WHO in 2023 and 2024, primarily to endemic countries and those dealing with measles outbreaks. This support included strengthening outbreak response capacities, publishing a new regional guiding document on measles and rubella and introducing it, conducting trainings, developing the measles and rubella surveillance dashboard, and initiating the development of the web platform for ASU submission. Activities related to measles and rubella elimination and verification are continuing amid competing priorities in routine work and recognized emergencies in countries and the Region.

Regional update on measles and rubella laboratory network

Dr Myriam Ben Mamou, VPI, presented the activities of the Secretariat in strengthening national measles and rubella laboratories. The Regional Measles Rubella Laboratory Network is proficient, committed and has made progress in the expansion of measles real-time reverse transcription polymerase chain reaction (PCR). Supported by colleagues from regional reference laboratories for measles and rubella, all national reference laboratories (NRLs) were provided with training, consultation, webinars, online workshops and missions, according to their needs. Onsite accreditation visits were conducted in seven NRLs.
All laboratories passed the serology external quality assessment (EQA), and significant capacities exist in the Region for molecular activities, as confirmed by NRLs passing molecular EQA. The total number of tested specimens in 2023 was 70 807 for measles and 47 832 for rubella, returning to levels seen before the COVID-19 pandemic and indicating the amount of work that has been done. In 2023, all measles viruses were of the B3 and D8 genotypes, with the most common lineages being MVs/Rudaki.TJK/49.21 [D8] and MVs/Quetta.PAK/44.20 [B3]. There are many different named and unnamed lineages,

some of which belong to the same chains of transmission, as presented by some countries in the ASUs.

Insufficient specimen collection for genotyping is a problem, and in 2023, 18 countries did not have viral detection or genotyping despite reporting cases. Across the Region, the number of specimens collected for rubella testing is small and for many countries the proficiency of non-WHO laboratories is unknown and it not clear whether they use solely PCR testing, which has known limitations for sensitivity, quality control and assurance.

The RVC was informed that the NRLs that had issues in accreditation did not have questionable testing quality, and specimens taken from cases in those countries were tested in parallel in one of the regional reference laboratories as well. It is also confirmed that adequate laboratory capacities for rubella surveillance exist in all countries, including those pending final review for rubella status.

Secretariat update on activities

Measles outbreak preparedness and response planning in countries of the European Region

Dr Dragan Jankovic informed participants that the recently updated document, *Eliminating measles and rubella in the WHO European Region: integrated guidance for surveillance, outbreak response and verification of elimination (2)*, recommends that every country should have outbreak preparedness guidelines and a functional outbreak response plan. The Secretariat contacted technical counterparts and WHO country offices in some Member States during 2024 and asked them to share the documents countries have about measles and rubella elimination, verification, outbreak preparedness and response. The aim is to create a register of existing documents, check if they are in line with WHO guidelines and plan support to countries that need to develop or update documents.

A total of 27 countries (50%) submitted relevant national documents. Documents from two countries did not address the topic of outbreak preparedness and response, but documents from the other 25 countries were evaluated. The assessment concluded that 21 countries had valid measles and rubella or measles-specific documents. Most documents covered key preparedness and response elements related to surveillance and immunization; however, information sharing, especially with international partners and neighbouring countries, reporting outbreaks to WHO and special considerations for rubella outbreaks were rarely covered. The lack of uniformity and differences in the level of operational guidelines and details were also noted. It was further observed that there is little integration of plans for outbreaks of different infectious diseases (COVID-19, mpox, pertussis, etc.) This is considered a lost opportunity, as guidance for infection prevention and control or isolation in hospitals may exist for COVID-19 but is not used for measles cases.

There are many limitations that were recognized during the process. Some of the received national documents are in national languages and not in official languages of WHO. These documents are adequate for the health systems and legal requirements of each Member State but not automatically in line with WHO recommendations, and the technical team in the Regional Office does not have a comprehensive knowledge of each of the national health systems nor information about all relevant and related regulations. The type of submitted documents varied widely; some were older technical

guidance documents, some were combinations of legal and technical guidance, some were only legal regulations of the country, and some provided more specific guidance for particular settings only, such as outbreaks in schools or among refugees. Additionally, some countries have different documents for measles and rubella outbreak preparedness and response, and others for routine integrated disease surveillance, which are not synchronized.

The Secretariat plans to continue with this assessment. As most countries in the Region have not entirely adopted the WHO guidelines, results of the assessment will be used for bilateral cooperation with national counterparts in developing similar regulations, structures and capacities in each of the countries. Further, this may be followed by an assessment of implementation of the guidance and conducting of simulation exercises.

In discussion, the RVC recognized that countries differ widely in their approach to planning for outbreak preparedness and response and stressed that distribution of WHO Regional Office guidance documents and development of a template may help ensure all relevant factors are considered when a country is developing a plan.

The Secretariat's approach to rubella endemic countries

The Secretariat is reassessing the situation in three rubella endemic countries (Bosnia and Herzegovina, Poland and Ukraine) using a similar approach as for some other Member States that previously had challenges in documenting rubella elimination. The aim of the assessment is to determine whether the data presented by these countries, along with supplementary data, support interruption of endemic rubella transmission for a period longer than 12 months accrued in a 36-month period (January 2021 to December 2023). If the presented data do not support the conclusion of interruption of endemicity, additional data would be needed.

Retrospective review of rubella in Poland

Dr Mark Muscat, VPI, provided a retrospective review of rubella in Poland for 2016–2023 based on available vaccination and surveillance data. Poland reported 246 rubella cases in 2023, and as in previous years, almost all (242 cases) were classified as clinically compatible. Only four cases had a laboratory confirmation. With such a large proportion of clinically compatible cases, an accurate assessment of rubella in Poland is not possible as there is a high possibility that other pathogens caused the clinical picture presented by these cases. Most cases were reported among children aged 1–10 years. During 2021–2023, 48–60% of reported rubella cases were immunized with at least one dose of rubella-containing vaccine (RCV). In most cases no clinical specimens were collected for laboratory testing and only limited data were available about other rash-producing infections in suspected cases negative for rubella.

In 1989, Poland introduced routine immunization with RCV exclusively for girls, and in 2005 routine systematic immunization with two doses of RCV for all children. There were also periodic supplemental immunizations conducted. Routine immunization coverage at national and subnational level with two vaccine doses is around 90%, with an observed decrease in some regions after the COVID-19 acute pandemic years. Almost no provinces reported coverage lower than 80% – a relevant level for rubella immunity.

The RVC agreed that a sustained high RCV coverage with at least one vaccine dose at national and subnational levels for an extended period is unlikely to permit ongoing rubella transmission in the country. However, the RVC requests the NVC to provide more

data about the reported rubella cases (including case-based data on age, vaccination status and location, but also about the reporting physicians and who requested laboratory testing of the few laboratory confirmed cases), additional data about congenital rubella syndrome (CRS) surveillance and more data on surveillance performance. Confirmatory laboratory testing of suspected rubella cases is considered optimal, since without testing for rubella other rash-producing infections, such as those caused by human herpes viruses and parvovirus B19, are easily misdiagnosed as rubella. The RVC planned to finalize discussions analysing the Polish ASU later in the meeting.

Use of laboratory data for verification

Measles genotypes and strains in the European Region

Dr Kevin Brown, RVC member, outlined the measles-related information that countries provide to the WHO genetic database, Measles Nucleotide Surveillance (MeaNS). All laboratories that perform genetic analysis to determine genotypes of circulating measles and rubella viruses must report the genotype, relevant sequence data and epidemiological information to WHO measles or rubella sequence databases, MeaNS or Rubella Nucleotide Surveillance (RubeNS). The virus' sequences, whether named or not, should be presented in a summary table by week of appearance, and also in the form of a phylogenetic tree identifying possible relations and connections between isolates. It is important to note that not all countries are providing information in the required format, that confirmed but not genotyped cases are often not presented in these data, and that in most cases an index imported case, and index virus isolate, is not detected or stated in the provided data. This indicates a need for better cooperation between epidemiologists and laboratories in summarizing data.

Genotypes B3 and D8 were detected and reported in the European Region in 2023. Reviewing available MeaNS data for genotype B3 and looking at the week of onset, there is one sequence appearing throughout the year in the Region. The phylogenetic tree of likely relations among all B3 isolates shows eight possible separate clusters of similar virus sequences in countries of the Region, but does not indicate a continuous transmission in any of the countries or the Region as a whole. For genotype D8, presenting and analysing data in the same way, it is apparent that two virus lineages with named sequences are most likely causing continuous transmission of two strains in one of the countries. The phylogenetic tree of likely relations among all D8 isolates shows six possible separate clusters of similar virus sequences in countries of the European Region. The phylogenetic tree raises concerns about the continuous circulation of viruses with the same or similar sequences in at least three countries.

All this information was reassessed during the analysis of country data, incorporating information that countries submitted in ASUs. To understand the epidemiology of diseases in the whole Region, it is also relevant to look for a cross-border transmission of the same or similar lineages of the viruses. It is emphasized again that genotyping data alone are not sufficient to determine endemicity or the interruption of measles transmission. Genotyped confirmed measles cases must be analysed using all available clinical and epidemiological data – as well as surveillance data on suspected and discarded cases, clinically compatible cases and epidemiologically linked cases, to fully utilize this information in verification processes.

RVC virtual meeting with the German NVC and its secretariat

Dr Dorothea Matysiak-Klose, secretariat member of the German NVC, elaborated on the infectious diseases surveillance system in Germany. A new software is being developed to modernize disease notification and to include reporting of suspected and discarded cases. Disease surveillance in Germany is strongly laboratory-based with reporting mostly of confirmed cases. For measles, 24 sentinel laboratories also report discarded cases (specimens tested negative) to provide information on the sensitivity of surveillance.

The measles case definition had been recently updated to include vaccine breakthrough cases usually appearing with "attenuated" clinical symptoms. Investigation of measles cases for 2023 showed that 66% had a known origin of infection and were classified as imported or import-related cases. More than 80% of cases were laboratory investigated. Detailed information existed on transmission chains: in 89% of outbreaks viral investigation was conducted and in 70% of outbreaks this included information on the genotype of the measles virus.

There are two main sources for immunization coverage monitoring: the school entry examination of children aged 4–7 years and health insurance claims for children aged 24 and 36 months of age. The latest data presented were from 2020 or 2021 depending on the source. The latest available data for the first dose of measles, mumps and rubella (MMR) vaccine indicate that coverage was 93.7% for 2-year-olds and 97.5% for 4–7-year-olds. Data indicate that coverage with the second dose of MMR vaccine was 80.5% for 2-year-olds and 93.2% for 4–7-year-olds.

Dr Annette Mankertz, head of the NRL, described the laboratory investigations performed at the Robert Koch Institute (RKI), noting that not all notified cases were investigated at RKI because submission of specimens is not mandatory, many are tested in private laboratories, and some have no laboratory investigation. Dr Mankertz presented details on the number of specimens received, confirmed and genotyped at RKI. Two immunoglobulin M (IgM)-positive suspected rubella cases had no clinical symptoms and may remain unresolved. These specimens were PCR-negative. A specimen from a suspected CRS case was also negative. RKI performs reflex testing on negative specimens, but no additional measles or rubella cases were identified. Dr Mankertz presented the results of phylogenetic analyses of measles cases, with details about variants that were identified in 2023, including the geographical location of the cases in Germany and import source countries.

The discussion focused on the representativeness of the sentinel laboratory system. The NVC members explained that the sentinel laboratories provide discarded case numbers for every state, that they are super-regional and receive large numbers of specimens annually. It was agreed to include a map with the location of the sentinel laboratories in the next ASU. These laboratories only report discarded measles cases, not discarded rubella cases, because the number of suspected and discarded rubella cases is very high, due to inclusion of routine screening results.

Immunization coverage data from state health insurance claims represent 85% of the population but surveys show that there is no significant difference in immunization coverage between this group and the population with private insurance. The NVC and its secretariat agreed that district-level coverage data will be included in the next report, in addition to federal state and country-level data.

The number of cases without importation source and the number of non-genotyped sporadic cases were also discussed. The NVC assured the RVC that outbreaks would not be missed and that the short duration of outbreaks speaks to the high vaccination coverage and successful outbreak containment. While there is a large number of migrants and some groups are incompletely immunized, outbreaks among migrants did not spread outside of their communities. All participants agreed that the inclusion of outbreak reports and analyses in the ASU in the future would be very useful. The RVC asked for more efforts to be made on genotyping confirmed rubella cases, as Germany is one of the countries that have adequate capacities to do so.

RVC discussions

Preparation and organization of the RVC meeting

The RVC appreciates the work that the Secretariat conducted prior to the in-person meeting and agrees with the concept of online pre-meetings to discuss submitted reports and request clarifications. The work of the laboratory experts in the RVC and Secretariat in explaining the molecular epidemiology in light of ASU data, WHO MeaNS and verification requirements is helping in understanding countries' status.

Reporting on elimination activities in overseas territories

At its 12th meeting, the RVC commented on the need to confirm with some countries of the Region that the ASU includes data for the whole territory of the country, considering that some countries have "overseas" territories and coverage and surveillance data from these territories are not always clear in their reports. The Secretariat stated that attempts to officially clarify whether all countries with "overseas" territories report measles and rubella epidemiology and immunization for populations living in such territories were often not successful due to the complexity of procedures, both inside countries and with international organizations. While there is still some uncertainty around this subject, it was stated that many Member States report the data for their overseas territories to the corresponding WHO region; for example, a European country with territories in the Americas will report data from those territories to the Pan American Health Organization (PAHO). The Secretariat stated that further investigation is needed but it may be more feasible to synchronise this work globally and postpone it for times when all Member States reach interruption or verified elimination of measles. Once all 53 Member States have achieved measles or rubella elimination, the elimination status of the Region will be assessed and verified by the RVC, using case-specific assessment tools and approaches to document the situation in countries, territories and areas that are not members of WHO and did not participate in the verification process.

Outbreaks and vaccination coverage

The RVC is concerned about the return of measles to the European Region, particularly after the Secretariat stated that in some Member States outbreaks from 2023 are continuing in 2024. The objective of the meeting was to review the elimination status of Member States for 2023 only, but the RVC agreed to express its concerns in the recommendations from the 13th meeting to Member States whose measles elimination status will be challenged due to disease epidemiology in 2024.

The RVC noted that reported national routine measles and rubella vaccination coverage is generally high in the European Region, but still almost 90% of cases in 2023 were not immunized against measles. This is mostly due to poor performance of immunization programme in some subnational territorial units, the movement of people within and between countries, and pockets of susceptibility in under-vaccinated communities, and therefore all countries are vulnerable to outbreaks. The RVC expressed concerns about the build-up of susceptible populations, and the availability and reliability of immunization coverage data.

The RVC again raised and discussed the status of the development of measles microneedle patches and their possible use in future. Ideally, these would be combined measles and rubella vaccine patches, but the currently tested patches contain only a measles vaccine. The RVC believes that their use during outbreaks could be beneficial. The Secretariat shares this opinion, but stressed that there are requirements for registration and use of patches in countries and that national authorities are reluctant to have more than one type of antigen product or presentation (patches and injectable vaccines for the same disease) in routine immunization. The RVC believes that WHO support can help in the use of patches in some countries in special circumstances, particularly for outbreak response or for immunization of adults against measles only.

The RVC discussed the option of coordinating vaccination campaigns in neighbouring countries with shared epidemiological situations and challenges, which has been successful in the WHO Region of the Americas. The Secretariat reported that the WHO Regional Office for Europe coordinates cross-border information sharing and planning, but there is insufficient interest from countries, partners and donors in the European Region for such an intervention, and there are vaccine supply-related issues.

Concerns about surveillance and reporting in ASUs

The RVC observed that some information submitted in the ASUs is unclear, which requires the Secretariat to follow up with countries for clarifications before sharing the ASU with the RVC and the meeting. The RVC noted that a few Member States are still routinely reporting aggregate data and encouraged all Member States to introduce routine case-based reporting.

Many Member States do not report discarded cases in ASUs, due to routine surveillance data collection and reporting regulations and requirements. The RVC is glad to hear about the new European Centre for Disease Prevention and Control regulation for measles surveillance including reporting of "discarded case" and expects this may lead to improvements.

Regarding the laboratory segment of surveillance, Member States should continue confirming cases by positive results of laboratory tests (serology, detection PCR) or epidemiological links with laboratory confirmed measles cases, and characterizing viruses through genotyping.

Genotyping at least 80% of chains of transmission and especially a minimum 80% of all sporadic measles cases is a challenge. Member States that have achieved elimination or have a small number of measles cases should put more efforts into genotyping sporadic cases when it is feasible, in support of elimination verification.

The RVC appreciates the development of the web platform for ASU submissions, expecting that the platform will provide an opportunity to improve data collection, offer more information, and simplify editing and updating of forms and data for both national and regional structures in the verification process. One caveat mentioned is that the NVCs may not have access to all relevant information or complete technical capacities in analysis and interpretation, and that secretariats in country should include all types of experts and should connect this database with other national surveillance and monitoring platforms. The platform's development follows the recent introduction of the global WHO disease surveillance system and is conducted in parallel with the development of platforms for routine epidemiological and laboratory surveillance.

Rubella elimination status and promising options

Following the discussion about rubella elimination in Poland, the RVC appreciated the information that similar studies for Bosnia and Herzegovina and Ukraine are in preparation and under discussion with counterparts in those countries. The RVC discussed options to improve rubella surveillance in Member States that have not yet documented the interruption of endemic transmission. Buy-in at the political level is required to make this a priority, including providing funding for the collection, transport and testing of specimens. Reliable and affordable rapid diagnostic tests may be useful in these countries.

The RVC stressed that it would be useful to talk more about successes in measles and rubella elimination. The fact that 50 of 53 Member States have eliminated endemic circulation of rubella is a success story as the European Region is close to becoming the second WHO region to eliminate endemic circulation of rubella.

Use of elimination status categories and terminology in verification process

The RVC discussed the use of the terms "endemic" versus "re-established" and agreed that while the terms share the same meaning, the use of "re-established" is preferred for Member States that had previously achieved verified elimination of endemic transmission. The distinction identifies countries that had demonstrated the capacity to interrupt transmission and encourages them to intensify efforts to return to elimination status.

In addition, following the PAHO experience of losing the achieved regional status, the European Region is interested in keeping the category of "verified disease elimination" after interruption of endemic transmission for 36 months for countries whose status was previously "endemic", and after interruption of endemic transmission for 12 months for countries whose status was previously "re-established".

Review of ASUs for 2023

In line with WHO's integrated measles and rubella elimination guidance *(2)*, the 2023 ASUs from NVCs were distributed to all RVC members. Groups of countries were allocated to specific RVC members to act as a primary reviewer for that group. A group of 25 ASUs, first received and pre-reviewed by the Secretariat, in which there were no significant changes in disease epidemiology and ASU data quality, were discussed during the online meeting of the RVC on 2 September 2024, and preliminary decisions on elimination status were made by the RVC. During the in-person meeting, all RVC members stated that they had reviewed the preliminary conclusions and recommendations and approved them. The RVC thanked the Secretariat for preparing the preliminary analyses and noted that this new process makes more effective use of the members' time and leaves more time for discussion. For the group of the next 26 ASUs, each member reviewed the ASUs assigned to them and prepared a presentation with proposed elimination status and recommendations. The presentations focused on disease epidemiology, surveillance performance, population immunity and supplemental information, if available. After reading the ASUs and viewing the presentations, the RVC discussed each country's situation and agreed on a final conclusion with respect to measles and rubella elimination status for each country for the particular time period.

For the 13th RVC meeting, 51 of the expected 53 ASUs for 2023 were received and reviewed. Two countries, Israel and Türkiye, provided the ASUs after the meeting. Five previously missing ASUs from Israel and one from Türkiye were reviewed by the RVC at an online meeting, and conclusions and recommendations are included in this report. The RVC was pleased that verification activities of measles and rubella elimination are continuing and urged that dedicated and timely work be continued in all Member States.

Conclusions on the measles and rubella status for each Member State for 2023 are provided in Annex 1, together with a regional summary of measles and rubella status for 2023. The country-specific status and RVC observations for each Member State are provided in Annex 2. Finally, Annex 3 comprises a list of the meeting's participants.

Conclusions

The RVC concluded that based on reports submitted for 2023 and previous years:

- 33 (62%) Member States provided evidence to demonstrate the elimination of endemic measles (interruption for at least 36 months) and 50 (94%) the elimination of endemic rubella; 33 (62%) provided evidence of the elimination of both measles and rubella;
- 8 Member States (15%) interrupted measles transmission; 7 of which (13%) for 24 months and 1 (2%) for 12 months;
- 9 (17%) Member States were considered endemic for measles;
- 3 (6%) Member States were considered to have re-established measles transmission; and
- 3 (6%) Member States are pending a retrospective review of rubella status.

The RVC noted that countries in the Region have reported increasing numbers of measles cases since 2021, due largely to the impact of the COVID-19 pandemic on health systems and the easing of the social restrictions taken in response. This trend continued in the first half of 2024. However, in the majority of countries, there was no recognized continuous chain of transmission of either measles or rubella for a period of 12 months or longer. Considering the known characteristics of the diseases, especially measles, and acknowledging the limitations of surveillance in some countries, the RVC believes that outbreaks and a high endemic presence of the diseases would have been detected by any of the countries in the Region. Updates received on improved national routine and supplemental immunization activities in the Region were encouraging but also reflected the need for continuous work to achieve and maintain high immunization coverage in all populations, across all territories of the countries. The RVC appreciates the interpretation and analysis of measles and rubella epidemiology for 2023 and 2024 provided by the Secretariat and shares the Secretariat's concerns about the worsening measles epidemiological situation in some countries, and consequently in the Region as a whole.

The RVC emphasized that to achieve measles and rubella elimination, as recommended by WHO, countries need to achieve and sustain at least 95% coverage with two doses of MRCV and establish epidemiological surveillance with sufficient sensitivity to detect and discard at least two suspected cases as non-measles or non-rubella disease per 100 000 population each year at the national level and in ≥ 80% of subnational administrative units. To demonstrate adequate surveillance sensitivity, it is essential to analyse the geographic distribution of suspected, confirmed and discarded cases. Once a country achieves elimination, sustaining surveillance sensitivity is essential to provide evidence that if any cases of measles or rubella were to occur, they would be detected and responded to in a timely manner with high-quality comprehensive immunization activities.

The RVC has again noted with concern the COVID-19 pandemic's generally negative impact on vaccination coverage and surveillance quality and sensitivity in some countries in the Region.

The RVC defined the following priorities for WHO to support elimination of measles and rubella and its verification:

- support the remaining endemic countries to take the necessary steps to increase their vaccination coverage and surveillance sensitivity and quality to levels consistent with achieving elimination, and support countries with re-established endemic transmission to regain their previous status as soon as possible;
- follow up with countries that have achieved elimination to help them sustain their status;
- support NVCs and their secretariats to improve the quality of ASUs and provide all available additional information, documents or retrospective analysis of already existing data, when feasible.

The RVC is concerned about the high number of documented and undocumented relocated people, migrants, refugees, asylum seekers and other groups in the European Region who need medical support and services (including immunization and diseases case management), but may not have access to these services, may not be recognized by national health systems, or may have services provided differently to them than to the general population. Information about them may not be adequately included in ASUs. The RVC invites NVCs to work with their secretariats to find ways to reliably collect information about such populations, assess their role and relevance for measles and rubella epidemiology and disease elimination, address any barriers they face to accessing the health system, and report and present this information in the ASUs.

Recommendations

For NVCs and their secretariats:

- The RVC repeats its request that NVCs (and their secretariats) make every effort to provide comprehensive ASUs approved with NVC members' signatures in advance of the deadlines for submission to the RVC Secretariat. The ASUs should include all available and relevant data for the RVC to verify measles and rubella elimination. It is critical to include in the ASUs:
  - the rate of discarded cases, at subnational and national level, preferably with maps indicating population density and distribution of suspected, confirmed and discarded cases to highlight equal quality of surveillance in different regions of the country;
  - outbreak reports;
  - a description of genotyping data using charts (with the number of cases per week per distinct sequence identifier, including non-genotyped cases and marking of imported cases) and phylogenetic trees;
  - detailed epidemiological data about cases (such as location, age and vaccination status) supported by outbreak reports, laboratory algorithm flowcharts, maps, phylogenetic graphics, genotyping information, and information on outbreak response measures and actions taken after the outbreak based on lessons learned;
  - the latest immunization coverage data available at national and subnational levels achieved through routine and any supplemental activities, including highlighting of areas with suboptimal coverage;
  - any supplementary or alternative information (including surveys, serosurveys, published or unpublished data, etc.); and
  - an explanation of the most relevant surveillance and health system structures, even if there are no changes from the previous year.

- The RVC calls upon all NVCs and their secretariats to strongly promote and facilitate national authorities' and main stakeholders' prioritization of measles and rubella elimination. This may include raising decision-makers' awareness of outbreaks, immunization gaps and the presence of unimmunized children among the general public as well as among high-risk populations, and of core challenges for the immunization programme and for the surveillance of measles and rubella.

- NVCs and their secretariats are encouraged to address the following issues:
  - Outbreak detection and timely response: all countries with ongoing measles outbreaks should take all actions needed as soon as possible to stop outbreaks, investigate the reasons for the outbreaks and implement all measures to prevent outbreaks in the future. All countries should develop, update and test their outbreak preparedness and response guidelines and regulations.
  - Vaccination coverage: countries with decreasing vaccination coverage should prioritize increasing coverage to WHO-recommended levels to prevent outbreaks caused by importations. All countries should ensure that vaccination coverage is equal in all regions and populations of the country.
  - Subnational laboratories: countries are encouraged to take steps to ensure that their subnational laboratories are providing high-quality data. This can be accomplished through the introduction of accreditation schemes for serology and molecular work and through formalization of the oversight role of the national laboratory.

- The RVC encourages all Member States to follow WHO recommendations and guidelines and work to improve routine immunization coverage, including initiating activities to vaccinate susceptible individuals of any age, and to improve disease surveillance by better case detection and investigation. In line with surveillance indicators, Member States should conduct laboratory investigation of at least 80% of measles and rubella suspected cases. All Member States should also genotype at least 80% of chains of transmission. Member States that have achieved or are approaching elimination should genotype the same percentage of sporadic cases, when feasible. Genotyping data are essential to demonstrate importations of different variants, which may prove sustained interruption of endemic transmission. To accomplish this, it may be necessary to:
  - better integrate clinical, epidemiological and laboratory data to identify chains of transmission and facilitate case classification (e.g. an endemic or an imported case and/or an outbreak-related or a sporadic case);
  - increase specimen collection for laboratory confirmation of rubella suspected cases; and
  - increase specimen collection for molecular testing and genotyping for sporadic cases.

- The RVC states that detected viral sequences should be submitted to MeaNS and RubeNS to support the Region in the analysis of circulating strains.

- To support surveillance activities, the RVC urges Member States that do not already do so to test all IgM-negative sera from suspected measles cases for rubella IgM, and vice versa. If countries are conducting screening for rubella susceptibility (usually in pregnancy) it should not be considered as part of disease surveillance activity and should not be used in calculating discard rates for rubella and measles. The results of screening are welcomed if presented separately, clearly distinguished from suspected case investigation results.

- The RVC reminds Member States that the achievement of measles or rubella elimination status implies that endemic measles or rubella transmission has been eliminated, but not measles or rubella infection per se. Health-care staff should be reminded to continue to investigate suspected measles and rubella cases and discard these as measles or rubella infection only through timely epidemiological investigation and laboratory testing. Use of the most sensitive approach (such as considering as suspected cases any patients with fever and maculopapular (non-vesicular) rash or in whom a health-care worker suspects measles or rubella infection) may help in:
  - timely detection and response to cases;
  - outbreak prevention and control; and
  - in final definition and detection of existing susceptible populations and provision of immunization services to them to further progress towards the diseases' elimination.

For the RVC Secretariat:

- The RVC is grateful for updates provided by the Secretariat on WHO's and partners' activities in supporting countries' efforts towards measles and rubella elimination in 2023 and 2024. The RVC understands the complexity of the situation and challenges that some countries are facing and believes that the Secretariat/WHO, as the leading technical organization, will continue providing support to countries. The RVC would appreciate updates on simplification of partner organizations' procedures and requirements for providing support in outbreak response, which is needed to facilitate countries' timely and adequate response to outbreaks, as well as prevent cross-border spread of measles in the future. The RVC expects that the Secretariat will continue addressing these and other obstacles to control outbreaks in countries and prevent the spread to others. The RVC also expects the Secretariat to continue to work with funding partners to expedite the approval of funding for vaccination campaigns in response to measles outbreaks, which are urgent and should not be delayed.

- The Secretariat, as per its mandate, should continue to support the verification activities of NVCs and national technical counterparts, especially in endemic countries, countries with re-established endemic transmission and/or ongoing outbreaks, and countries undergoing retrospective rubella reviews (Bosnia and Herzegovina, Poland and Ukraine). The RVC is expecting to see the three countries' reviews once feasible, to enable potential finalization of the verification process for rubella elimination in the Region. The RVC stresses its readiness to support countries together with the Secretariat, by participation in country missions, online meetings, in-person bilateral meetings with NVCs and/or in-person meetings during the annual RVC meeting.

- The Secretariat should consider supporting NVCs and their secretariats in capacity-building, including providing additional training on verification requirements and reviewing surveillance performance. Some countries may need to reassess case definitions and be consistent in the use of a decision-making algorithm for case classification; others may have to address recognized challenges in their vaccination coverage monitoring.

- The RVC would appreciate further developments in the introduction of the electronic ASU. The RVC sees this as an opportunity to provide feedback to and follow up with colleagues in countries and potentially improve the timeliness of reporting and data quality.

- The RVC would appreciate further documenting and publishing of the results of verification activities in the Region, through meeting reports and scientific papers. Publishing the rubella elimination retrospective reviews conducted in the Region, as done in the past, is a good model.

- The assessment of national documents for outbreak preparation demonstrated that countries differ widely in their approach to planning for outbreak preparedness and response. Distribution of a template may help to ensure all relevant factors are considered when developing a plan. Countries should include different scenarios (large/small outbreak etc.) in their response planning.

- Most countries in the Region have eliminated endemic rubella. The RVC and Secretariat are encouraged to explore avenues to use rubella as a success story to emphasize the importance of further efforts to eliminate measles.

- The RVC Secretariat is expected to look for the best modalities and timing for activities on documenting rubella elimination in Bosnia and Herzegovina and Ukraine.

- The RVC appreciates that the Secretariat will:
  - update the ASU form for 2024 reporting and consider whether to include additional questions, as per discussions during the meeting;
  - set a date and location for the next meeting, preliminarily planned for September 2025; and
  - organize periodic virtual meetings with the RVC to follow up on country activities.

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[1] All references accessed on 12 July 2025.

Annex 1. Results of the RVC review of reports and documents submitted by NVCs

Table A1. RVC conclusions on measles and rubella elimination status per Member State for 2023

Member State	Measles	Rubella
Albania	Interrupted 24 months	Eliminated
Andorra	Eliminated	Eliminated
Armenia	Eliminated	Eliminated
Austria	Eliminated	Eliminated
Azerbaijan	Eliminated	Eliminated
Belarus	Eliminated	Eliminated
Belgium	Eliminated	Eliminated
Bosnia and Herzegovina	Endemic	Pending retrospective review
Bulgaria	Interrupted 24 months	Eliminated
Croatia	Eliminated	Eliminated
Cyprus	Eliminated	Eliminated
Czechia	Eliminated	Eliminated
Denmark	Eliminated	Eliminated
Estonia	Eliminated	Eliminated
Finland	Eliminated	Eliminated
France	Interrupted 24 months	Eliminated
Georgia	Endemic	Eliminated
Germany	Interrupted 24 months	Eliminated
Greece	Eliminated	Eliminated
Hungary	Eliminated	Eliminated
Iceland	Eliminated	Eliminated
Ireland	Eliminated	Eliminated
Israel	Interrupted 12 months	Eliminated
Italy	Interrupted 24 months	Eliminated
Kazakhstan	Endemic	Eliminated
Kyrgyzstan	Endemic	Eliminated
Latvia	Eliminated	Eliminated
Lithuania	Interrupted 24 months	Eliminated
Luxembourg	Eliminated	Eliminated
Malta	Eliminated	Eliminated
Monaco	Eliminated	Eliminated
Montenegro	Eliminated	Eliminated
Netherlands (Kingdom of the)	Eliminated	Eliminated
North Macedonia	Eliminated	Eliminated
Norway	Eliminated	Eliminated

Table A1. continued

Member State	Measles	Rubella
Poland	Endemic	Pending retrospective review
Portugal	Eliminated	Eliminated
Republic of Moldova	Eliminated	Eliminated
Romania	Endemic	Eliminated
Russian Federation	Re-established	Eliminated
San Marino	Eliminated	Eliminated
Serbia	Endemic	Eliminated
Slovakia	Interrupted 24 months	Eliminated
Slovenia	Eliminated	Eliminated
Spain	Eliminated	Eliminated
Sweden	Eliminated	Eliminated
Switzerland	Eliminated	Eliminated
Tajikistan	Re-established	Eliminated
Türkiye	Endemic	Eliminated
Turkmenistan	Eliminated	Eliminated
Ukraine	Endemic	Pending retrospective review
United Kingdom	Eliminated	Eliminated
Uzbekistan	Re-established	Eliminated

Table A2. Summary of measles and rubella elimination status for the WHO European Region in 2023

Country status	Number (and percentage) of countries	
	Measles	Rubella
Eliminated	33 (62%)	50 (94%)
Interrupted 24 months	7 (13%)	–
Interrupted 12 months	1 (2%)	–
Re-established endemic	3 (6%)	–
Endemic	9 (17%)	–
Pending retrospective review	0 (0%)	3 (6%)
Total	53	53

Annex 2. RVC conclusions on status of measles and rubella elimination per Member State in the WHO European Region in 2023

Albania Status of measles and rubella elimination in 2023	**Measles interrupted for 24 months** **Rubella eliminated**

The RVC concluded that endemic transmission of measles was interrupted for a period of 24 months. Endemic transmission of rubella remained interrupted for a period of greater than 36 months and elimination of rubella is thereby sustained. The RVC urges the country to implement the latest WHO guidelines to increase routine immunization coverage to at least 95% for both doses of MRCV, especially in the most populated regions (the cities of Durres, Shkoder and Tirana), to stop ongoing and prevent future outbreaks. Considering preliminary information about measles cases reported in 2024, the RVC emphasizes the importance of integrating laboratory data, including virus genotyping conducted in regional reference laboratories, in the 2024 status update. This is crucial for documenting separate chains of transmission and confirming the absence of continuous circulation of the same virus lineage for a period longer than 12 months. The RVC is concerned that achievement of measles elimination status would be at risk if the same chains of transmission continue in 2024.

Andorra Status of measles and rubella elimination in 2023	**Measles eliminated** **Rubella eliminated**

The RVC concluded that endemic transmission of measles and rubella remained interrupted for a period of greater than 36 months and elimination of both diseases is thereby sustained. The RVC urges the country to implement the latest WHO guidelines to improve surveillance sensitivity and commends the country for achieving routine immunization coverage higher than 95% with both doses of MRCV. The RVC would appreciate it if the NVC could explain the measles, rubella and CRS diagnostic procedures used and indicate which laboratory structures are involved in routine surveillance and the generation of data for ASU preparation.

Armenia Status of measles and rubella elimination in 2023	**Measles eliminated** **Rubella eliminated**

The RVC concluded that measles elimination status is sustained but at high risk, due to continuous local transmission of measles for a nine-month period (which does not fulfil the criteria for re-established endemicity). Endemic transmission of rubella remained interrupted for a period greater than 36 months and elimination of rubella is thereby sustained in 2023. The RVC is concerned that the measles elimination status could be lost if cases reported in 2024 belong to the same chain of transmission detected in 2023. The RVC commends the country on successful outbreak immunization efforts but urges it to implement a more comprehensive outbreak response and reach all pockets of susceptibility. A description and analysis of the response should be provided in the ASU for 2024, in addition to the outbreak's epidemiological data and genotyping information, which are critical for distinguishing chains of transmission. The RVC further recommends including in future ASUs data on subnational immunization coverage and at-risk populations, as well as on any supplementary immunization activity (SIA) and its achieved coverage. The RVC urges the country to follow WHO guidelines to ensure high routine immunization coverage (of at least 95%) for both doses of MRCV.

Austria
Status of measles and rubella elimination in 2023

Measles eliminated
Rubella eliminated

The RVC concluded that endemic transmission of measles and rubella remained interrupted for a period of greater than 36 months and elimination of both diseases is thereby sustained. The RVC commends the country on the efforts made to characterize chains of transmission and sporadic cases through extensive genotyping. The RVC is concerned about the significant drop in vaccination coverage from 2022 to 2023, and the sharp increase in measles cases in 2023. The RVC therefore strongly suggests that the country accelerates efforts to increase vaccination coverage to at least 95% for both doses of MRCV, as recommended by WHO, to provide data about vaccination coverage at subnational level and increase surveillance sensitivity. The RVC also requests the NVC to include a map showing discarded cases per subnational region in 2024 in the next ASU.

Azerbaijan
Status of measles and rubella elimination in 2023

Measles eliminated
Rubella eliminated

The RVC concluded that measles elimination status is sustained but at high risk, due to continuous local transmission of measles in the second half of 2023. Endemic transmission of rubella remained interrupted for a period greater than 36 months and elimination of rubella is thereby sustained. The RVC is concerned that measles elimination status could be lost if cases reported in 2024 belong to the same chain of transmission as those detected in 2023. The RVC urges the country to provide a more comprehensive ASU for 2024, including an outbreak report with epidemiological data and genotyping information, which are both required to characterize and distinguish chains of transmission. The RVC further requests data on subnational immunization coverage and on at-risk populations, including any planned and/or conducted SIA with achieved coverage. The RVC urges the country to follow the WHO guidelines to ensure high routine immunization coverage (of at least 95%) for both doses of MRCV in all administrative territories.

Belarus
Status of measles and rubella elimination in 2023

Measles eliminated
Rubella eliminated

The RVC concluded that endemic transmission of measles and rubella remained interrupted for a period of greater than 36 months and elimination of both diseases is thereby sustained. The RVC commends the country on the high-quality surveillance and complete integration of laboratory (molecular epidemiology) and epidemiology data. Reported repeated importations of measles, resulting in limited chains of transmission exposed the presence of susceptible adults and children, which should be addressed with immunization activities. The RVC recommends continuing with high-quality surveillance, and comprehensive analysis and response measures, in order to document repeated importations and the absence of endemic transmission in 2024. The RVC is concerned that elimination status could be lost if the same chains of transmission continue in 2024.

Belgium
Status of measles and rubella elimination in 2023

Measles eliminated
Rubella eliminated

The RVC concluded that endemic transmission of measles and rubella remained interrupted for a period of greater than 36 months and elimination of both diseases is thereby sustained. The RVC commends Belgium for the provision of maps that clearly show the geographic distribution of suspected and confirmed measles and rubella cases. The RVC reiterates its concern that the country's measles elimination status remains vulnerable while coverage with the second dose of measles- and rubella-containing vaccine (MRCV2) remains low across all age groups, especially in Brussels and Wallonia. The RVC therefore strongly suggests efforts be made to improve vaccination and ensure high routine immunization coverage (of at least 95%) for both doses of MRCV in all administrative territories in line with WHO guidelines.

Bosnia and Herzegovina
Status of measles and rubella elimination in 2023

Measles endemic
Rubella – pending retrospective review

The RVC concluded that measles remained endemic and suggests a retrospective review of rubella data to determine its elimination status. The RVC noted the measles outbreak that started in December 2023 and continued into 2024 and urges the country to take steps to respond and to increase routine immunization coverage, especially in the most populated regions, to prevent further outbreaks. The RVC urges the country to follow WHO guidelines to ensure high routine immunization coverage (of at least 95%) for both doses of MRCV in all administrative territories. The RVC notes that the suboptimal and limited surveillance data provided in the ASU may not allow for reliable interpretation of the measles and rubella epidemiology in the country. The RVC strongly suggests that the NVC improve the quality of the ASU and work with its secretariat to ensure that laboratory investigations data, including genotyping, are included.

Bulgaria
Status of measles and rubella elimination in 2023

Measles interrupted for 24 months
Rubella eliminated

The RVC concluded that the endemic transmission of measles was interrupted for a period of 24 months. Endemic transmission of rubella remained interrupted for a period greater than 36 months and elimination is thereby sustained. The RVC urges the NVC and its secretariat to provide comprehensive information and data analysis in future ASUs. The RVC encourages the country to follow the latest WHO guidelines to improve surveillance and laboratory performance, including better sensitivity with an increased number of suspected cases, which is critical for documenting the quality of surveillance in the absence of confirmed cases, and timely collection of specimens for genotyping if cases are diagnosed. The RVC reiterates the need to increase routine immunization coverage (to at least 95%) for both doses of MRCV, in line with WHO guidelines, and to conduct SIA in the areas where routine immunization was challenged in 2020–2023, considering that 17 regions reported suboptimal coverage for one or both MRCV doses.

Croatia
Status of measles and rubella elimination in 2023

Measles eliminated
Rubella eliminated

The RVC concluded that endemic transmission of measles and rubella remained interrupted for a period of greater than 36 months and elimination of both diseases is thereby sustained. As in previous years, the RVC notes to the NVC that the provision of information in the ASU is insufficient for a comprehensive assessment of surveillance quality, and that improvement of the quality of information in future ASUs is critical. The RVC asks the NVC to include data documenting how many measles, rubella and CRS cases were suspected and discarded through epidemiological and laboratory surveillance. The RVC encourages the country to follow the latest WHO guidelines to intensify surveillance and ensure high routine immunization coverage (of at least 95%) for both doses of MRCV. Reported MRCV routine immunization coverage at levels around 90% for both doses in recent years indicates a need for SIA in the areas where routine immunization was challenged during the period 2020–2023, considering that nine regions reported suboptimal coverage for one or both MRCV doses.

Cyprus
Status of measles and rubella elimination in 2023

Measles eliminated
Rubella eliminated

The RVC concluded that endemic transmission of measles and rubella remained interrupted for a period of greater than 36 months and elimination of both diseases is thereby sustained. The RVC asks the NVC and its secretariat to provide better surveillance data in the ASUs, especially documentation of suspected cases and the laboratory data used to discard cases, so that the RVC can better assess the quality of surveillance. The RVC invites the country to follow the latest WHO guidelines to ensure collection of comprehensive immunization coverage data at all levels. If the existing regulations and health system organization do not match the requirements in the WHO guidelines, some other options for coverage assessment should be considered, to allow the NVC and its secretariat to assess coverage by territory and in different birth cohorts. The RVC would like to receive more details about the new electronic database for the general health system, especially whether it includes an immunization registry and whether it has improved routine immunization coverage data.

Czechia
Status of measles and rubella elimination in 2023

Measles eliminated
Rubella eliminated

The RVC concluded that endemic transmission of measles and rubella remained interrupted for a period of greater than 36 months and elimination of both diseases is thereby sustained. The RVC shares the NVC's concern about decreasing immunization coverage and about challenges in including specific populations (e.g. refugees and migrants) in the health system and in providing health surveillance and immunization services to them. The RVC invites the country to follow WHO guidelines to ensure high routine immunization coverage (of at least 95%) for both doses of MRCV in all administrative territories and to improve surveillance to meet the thresholds of WHO surveillance indicators for elimination, with an adequate number of discarded cases in all regions and nationally. The RVC urges the country to follow WHO guidelines to ensure collection of comprehensive immunization coverage data within a timeframe that allows regular and timely identification of risks and interventions to increase coverage. The RVC would like to learn whether the new immunization registry from 2023 has improved the situation and whether it is helping the NVC and its secretariat collect more representative, timely routine immunization coverage data for 2024. In the absence of confirmed cases the RVC invites the NVC and its secretariat to find solutions that will facilitate collection and inclusion in future ASUs of supplemental or alternative surveillance data that can document or support the absence of endemic transmission of measles and rubella.

Denmark
Status of measles and rubella elimination in 2023

Measles eliminated
Rubella eliminated

The RVC concluded that endemic transmission of measles and rubella remained interrupted for a period of greater than 36 months and elimination of both diseases is thereby sustained. The RVC applauds the initiation of comprehensive confirmed rubella case reporting and commends the incorporation of genotyping data of measles viruses into surveillance. The RVC commends the achieved immunization coverage and hopes that the proactive routine immunization reminder programme will result in even higher routine coverage, reaching at least 95% for both doses of MRCV. The RVC is also interested to learn whether delayed immunization is underreported. If so, this will indicate that coverage is increasing by age, but that timeliness of immunization should be improved.

Estonia Status of measles and rubella elimination in 2023	**Measles eliminated** **Rubella eliminated**

The RVC concluded that endemic transmission of measles and rubella remained interrupted for a period of greater than 36 months and elimination of both diseases is thereby sustained. The RVC commends the country's high-quality surveillance, as presented in the ASU. The RVC shares the concerns of the NVC about immunization coverage, which is suboptimal across the country. The RVC urges the country to follow WHO guidelines to ensure high routine immunization coverage (of at least 95%) for both doses of MRCV in all administrative territories, to maintain disease elimination and prevent outbreaks. The RVC would appreciate it if the data quality and reliability of the current register could be assessed through additional questionnaires and studies, to determine whether there is significant underreporting or a real decrease in immunization coverage. The sero-prevalence study mentioned in the ASU may be an option, but it should be carefully designed, and implemented only if followed by SIA (i.e. vaccination of susceptible individuals).

Finland Status of measles and rubella elimination in 2023	**Measles eliminated** **Rubella eliminated**

The RVC concluded that transmission of measles and rubella remained interrupted for a period of greater than 36 months and elimination of both diseases is thereby sustained. In the absence of measles and rubella cases and without the provision of data on clinically suspected and discarded cases, the NVC and its secretariat may consider providing any additional information and country-specific indicators that could be useful to document the presence of sensitive surveillance at the subnational level. The RVC encourages the health authorities to monitor immunization coverage and ensure that measures are taken to avoid any underreporting of vaccinations, as the WHO guidelines require documented high routine immunization coverage (of at least 95%) with both doses of MRCV.

France Status of measles and rubella elimination in 2023	**Measles interrupted for 24 months** **Rubella eliminated**

The RVC concluded that the endemic transmission of measles was interrupted for a period of 24 months. Endemic transmission of rubella remained interrupted for a period greater than 36 months and elimination is thereby sustained. The RVC commends the country for providing data that allow the calculation of surveillance sensitivity. However, data on timeliness and completeness of reporting are still not available and few surveillance data were provided regarding rubella and CRS. The RVC commends efforts to establish an EQA programme and laboratory oversight over national measles and rubella laboratories by a WHO-accredited laboratory, to ensure that all specimens will be analysed with equal reliability, following the same procedures and methodology. The RVC reiterates its concern that achievement of measles elimination and continuation of rubella elimination status remain vulnerable as long as coverage with the second dose of MRCV remains low in some territories. The RVC invites the country to follow WHO guidelines to ensure high routine immunization coverage (of at least 95%) for both doses of MRCV in all administrative territories.

Georgia Status of measles and rubella elimination in 2023	**Measles endemic** **Rubella eliminated**

The RVC concluded that the transmission of measles remained endemic as the data provided are not sufficient to demonstrate interruption of transmission. The RVC concluded that endemic transmission of rubella remained interrupted for a period of greater than 36 months and elimination of rubella is therefore sustained. The RVC commends the country on conducting SIA but notes that coverage with the MRCV2 should be increased to reach the WHO-recommended coverage level of at least 95%. The RVC recommends the improvement of surveillance in all territories, increased epidemiological investigation of measles cases and more genotyping of sporadic cases and outbreaks to characterize chains of transmission.

Germany Status of measles and rubella elimination in 2023	**Measles interrupted for 24 months** **Rubella eliminated**

The RVC concluded that the endemic transmission of measles was interrupted for a period of 24 months. Endemic transmission of rubella remained interrupted for a period greater than 36 months and elimination is thereby sustained. The RVC was grateful for the direct communication with the NVC and its secretariat during the RVC meeting. This gave the RVC the opportunity to have a better understanding of the two systems for monitoring immunization coverage and of the structure of surveillance and laboratory networks for detecting and classifying cases. The RVC appreciates the challenges that were presented and the initiatives taken to validate coverage and surveillance information from different systems. For the next ASU, the RVC would appreciate more data documenting surveillance sensitivity, in particular demonstrating the absence of "quiet" areas in the country, until reporting of discarded cases is in place. In addition, the inclusion of comprehensive subnational immunization coverage maps would be appreciated, especially since these data are available from the country's public health system. The RVC applauds the legal and technical initiatives launched to improve coverage with MRCV and calls for continuation of efforts until the WHO recommended level (of at least 95%) is achieved in all federal states, districts and population groups. The RVC is interested to see more information about efforts to obtain genotype data from sporadic measles cases as well as from any confirmed rubella cases in the next ASU.

Greece Status of measles and rubella elimination in 2023	**Measles eliminated** **Rubella eliminated**

The RVC concluded that endemic transmission of measles and rubella remained interrupted for a period of greater than 36 months and elimination of both diseases is thereby sustained. The RVC is satisfied with the surveillance data presented in the ASU for 2023 and invites the NVC and its secretariat to consider how the WHO-accredited laboratory can provide more support to other laboratories participating in surveillance, to help them also provide high-quality data. The RVC invites the country to follow the latest WHO guidelines on monitoring immunization coverage and again urges the NVC and its secretariat to provide up-to-date information about routine immunization coverage. While expecting that the national immunization registry will provide comprehensive and representative data in the coming years, the RVC again encourages the NVC and the country to consider conducting additional studies (such as a small-scale survey on personal immunization records data, a survey on immunization services provided by general practitioners, a survey on the immunization status of students in elementary and high schools, an assessment of immunization status in high-risk populations or any similar intervention). The mentioned studies could provide recent immunization data, which would allow better assessment and estimation of immunization coverage in different age cohorts, regions and/or specific populations.

Hungary Status of measles and rubella elimination in 2023	**Measles eliminated** **Rubella eliminated**

The RVC concluded that endemic transmission of measles and rubella remained interrupted for a period of greater than 36 months and elimination of both diseases is thereby sustained. The RVC commends the sustained high routine immunization coverage. In the absence of measles and rubella in the population and without provision of data about clinically suspect and discarded cases, the NVC and its secretariat should consider providing any additional information and country-specific indicators that could be useful to demonstrate the presence of sensitive surveillance at the subnational level.

Iceland
Status of measles and rubella elimination in 2023

Measles eliminated
Rubella eliminated

The RVC concluded that endemic transmission of measles and rubella remained interrupted for a period of greater than 36 months and elimination of both diseases is thereby sustained. The RVC commends the high routine immunization coverage in 2023, and the increased coverage in birth cohorts that were targeted for routine immunization in 2021 and 2022. The RVC reiterates that WHO guidelines recommend high routine immunization coverage (of at least 95%) with both doses of MRCV to ensure disease elimination. The RVC would appreciate learning about any immunization activities targeting adults born in 1975–1987 and any other population groups considered to be at risk for measles.

Ireland
Status of measles and rubella elimination in 2023

Measles eliminated
Rubella eliminated

The RVC concluded that endemic transmission of measles and rubella remained interrupted for a period of greater than 36 months and elimination of both diseases is thereby sustained. The RVC commends the NVC for a detailed report, and the national technical counterparts in the various agencies for activities to increase immunization coverage, improve surveillance and maintain measles and rubella elimination. It is still important to note that low (less than 90%) vaccination coverage was reported from subnational units, and the RVC hopes that continuation of activities in 2024 will result in achieving the WHO-recommended high routine immunization coverage of at least 95% for both doses of MRCV. The RVC also expects that the comprehensive immunization register into which complete data will be routinely entered may show better coverage data. As in the previous year, the RVC encourages the use of the latest WHO guidelines to introduce testing of measles IgM-negative specimens for rubella. Laboratory results of screenings for measles or rubella immunoglobulin G immunity should be presented separately in the ASU, with a description of the diagnostic procedures and assays used, and clearly distinguished from the results of suspected case investigation.

Israel
Status of measles and rubella elimination in 2023

Measles interrupted for 12 months
Rubella eliminated

The RVC concluded that the endemic transmission of measles was interrupted for a period of 12 months. Endemic transmission of rubella remained interrupted for a period greater than 36 months and elimination is thereby sustained. The RVC commends the Israeli NVC and its secretariat for providing summarized information for the period 2019 –2022 and a comprehensive ASU for 2023. The RVC based its review of the 2019–2022 period on data routinely reported to WHO in previous years and the latest available information and statements provided by the NVC following discussions and analyses conducted with its secretariat. Due to the complex measles epidemiology in Israel before the COVID-19 pandemic, and the measles and rubella surveillance and immunization challenges faced in the European Region during the pandemic, the RVC considers it certain that measles cases reported in 2023 are not part of continuous endemic transmission since 2019. However, due to the lack of surveillance data for 2019–2022 and the highly contagious nature of the measles virus, the RVC cannot take a firm position regarding measles elimination status in 2019–2022. The RVC commends the surveillance quality for 2023, including the comprehensive genotyping strategy, and invites the country to improve the presentation of final case classifications in ASUs by integrating epidemiological and laboratory surveillance data. With regard to immunization coverage, the RVC recognizes the sustained high routine immunization coverage in all regions of the country but is concerned about the reported decrease of MRCV2 coverage in the past year, and the possibility that some pockets of susceptible subpopulations could still be large enough to result in an outbreak, which could pose a risk for elimination status. The RVC encourages the NVC to share additional information about possible delayed routine immunization and possible MRCV supplemental immunizations conducted during activities to respond to poliovirus detection in the country. The RVC appreciates and values the work and dedication of the NVC and its secretariat and looks forward to further bilateral cooperation.

Italy Status of measles and rubella elimination in 2023	**Measles interrupted for 24 months** **Rubella eliminated**

The RVC concluded that the endemic transmission of measles was interrupted for a period of 24 months. Endemic transmission of rubella remained interrupted for a period greater than 36 months and elimination is thereby sustained. The RVC commends the country's commitment to increase vaccination coverage and to update the National Measles and Rubella Elimination Plan, as well as the dedicated work of the public health sector and the NVC. The RVC recommends increasing coverage with MRCV2 to the level recommended by WHO (of at least 95%). The RVC further recommends improving surveillance in all regions of the country, and improving epidemiological and laboratory investigations to reduce the number of cases classified as clinically confirmed or of unknown origin. The RVC also recommends resuming the national accreditation programme of the national measles and rubella laboratory network (MoRoNet).

Kazakhstan Status of measles and rubella elimination in 2023	**Measles endemic** **Rubella eliminated**

The RVC concluded that the transmission of measles remained endemic. Endemic transmission of rubella remained interrupted for a period greater than 36 months and elimination is thereby sustained. Following a recognized measles outbreak in 2023, the RVC acknowledges the decreasing number of cases in 2024. This is a positive development, but increased efforts to stop measles transmission are still needed. The RVC recommends maintaining measles surveillance at the existing level while improving measles genotyping and data analysis. To keep the rubella elimination status, the RVC recommends improving surveillance, analysis and presentation of data (e.g. gender analysis) and increasing efforts to obtain genotype information. Given the ongoing outbreak, the RVC expressed concern about the quality and representativeness of subnational routine vaccination coverage data and suggested better monitoring and analysis. For the 2024 ASU, the RVC requests from the NVC information about the outbreak and outbreak response analysis, including causes of the outbreak, a description of response immunization activities and achieved coverage. The RVC also recommends an improvement to CRS surveillance.

Kyrgyzstan Status of measles and rubella elimination in 2023	**Measles endemic** **Rubella eliminated**

The RVC concluded that the transmission of measles remained endemic. Endemic transmission of rubella remained interrupted for a period of greater than 36 months and elimination of rubella is thereby sustained. The RVC is concerned that the measles outbreak recognized in 2023 continues in 2024 and hopes that outbreak response immunization conducted by the country with support from the Measles and Rubella Partnership will stop transmission soon. The RVC recommends continuation of the routine outbreak response and any supplemental vaccination efforts to reach the WHO-recommended 95% coverage. The RVC further suggests that the country increase measles and rubella genotyping activities and report more details on the rubella cases. The RVC notes the existence of unjustified medical contraindications for vaccination and recommends a revision of the official recommendations for vaccination. For the 2024 ASU, the RVC requests from the NVC information about the outbreak and outbreak responses analysis, including causes of the outbreak, a description of response immunization activities and achieved coverage especially in the most affected areas, like Bishkek.

Latvia Status of measles and rubella elimination in 2023	**Measles eliminated** **Rubella eliminated**

The RVC concluded that endemic transmission of measles and rubella remained interrupted for a period of greater than 36 months and elimination of both diseases is thereby sustained. The RVC commends the increased routine immunization coverage but noticed that some territories reported coverage of more than 100%. The RVC requests an explanation of this from the NVC, as it could be due to a variety of factors (e.g. increased size of the target population, integration of data for a few birth cohorts). The RVC also urges implementation of the latest WHO guidelines to strengthen surveillance sensitivity and accelerate case detection, especially in regions with suboptimal surveillance performance. The NVC and its secretariat should consider inclusion of other data and country-specific indicators of surveillance performance in the absence of confirmed measles and rubella cases.

Lithuania Status of measles and rubella elimination in 2023	**Measles interrupted for 24 months** **Rubella eliminated**

The RVC concluded that the endemic transmission of measles was interrupted for a period of 24 months. Endemic transmission of rubella remained interrupted for a period greater than 36 months and elimination is thereby sustained. The RVC again reiterates its concern about the threat to measles elimination posed by declining MRCV coverage, noting that activities are being conducted to address this. These activities should be extended to the entire country, and the RVC would appreciate receiving an update on the results of all measures taken to increase immunization coverage in the next ASU. The RVC urges implementation of the WHO guidelines to ensure high routine immunization coverage (of at least 95%) with both doses of MRCV in all administrative areas and also urges improvements in case detection and surveillance sensitivity, with an adequate number of suspected and investigated cases in all subnational units. It is critical to detect the origin of confirmed cases, especially if they are detected in the same territories and with a possible temporal link, to ensure that no cases and disease transmission (constituting an outbreak) are missed.

Luxembourg Status of measles and rubella elimination in 2023	**Measles eliminated** **Rubella eliminated**

The RVC concluded that endemic transmission of measles and rubella remained interrupted for a period of greater than 36 months and elimination of both diseases is thereby sustained. The RVC expresses concern about the lack of routine immunization coverage data for 2019–2023. Data presented in the 2023 ASU on coverage with MRCV1 and MRCV2, based on a coverage survey carried out in 2018, are considered outdated. As in the previous year, the RVC invites health authorities to consider conducting another coverage survey or to establish a nationwide immunization register preferably using an electronic platform to monitor vaccination coverage in a timely manner, in line with WHO guidelines.

Malta Status of measles and rubella elimination in 2023	**Measles eliminated** **Rubella eliminated**

The RVC concluded that endemic transmission of measles and rubella remained interrupted for a period of greater than 36 months and elimination of both diseases is thereby sustained. The RVC invites the NVC and its secretariat to facilitate the implementation of the WHO guidelines and improve MRCV2 coverage, or to improve the data collection and quality of the immunization registry, which could be a reason for low coverage reported in the ASU. The RVC repeats its request to the NVC and secretariat to find a way to separate results of screening for measles and rubella from testing of suspected cases. The RVC is keen to learn about disease testing methods and algorithms used, including whether IgM or immunoglobulin G testing is used for screening.

Monaco
Status of measles and rubella elimination in 2023

Measles eliminated
Rubella eliminated

The RVC concluded that endemic transmission of measles and rubella remained interrupted for a period of greater than 36 months and elimination of both diseases is thereby sustained. The RVC encourages the country to implement the latest WHO guidelines to further increase coverage with both doses of MRCV and to ensure high-quality surveillance, capable of detecting and responding to cases and outbreaks, and to include all available data in the next ASU. The RVC would appreciate it if its counterparts in the verification process in Monaco could provide their statement on measles and rubella elimination status in the ASU. The RVC would also appreciate it if the measles, rubella and CRS diagnostic procedures used could be explained, as well as which laboratory structures are involved in routine surveillance and the generation of data for ASU preparation.

Montenegro
Status of measles and rubella elimination in 2023

Measles eliminated
Rubella eliminated

The RVC concluded that endemic transmission of measles and rubella remained interrupted for a period of greater than 36 months and elimination of both diseases is thereby sustained. The RVC recognizes that routine immunization coverage is still suboptimal, mostly due to postponed immunization. The RVC considers that SIA and catch-up as part of routine immunization activities are needed and should be conducted as soon as possible. The RVC urges the national health authorities and public health system to further strengthen the measles and rubella immunization programme and improve disease surveillance quality. The current immunity status in Montenegro and the measles outbreaks in the European Region highlight the risk of a measles outbreak in Montenegro and the need for increased capacities for timely detection and response to suspected cases.

Netherlands (Kingdom of the)
Status of measles and rubella elimination in 2023

Measles eliminated
Rubella eliminated

The RVC concluded that endemic transmission of measles and rubella remained interrupted for a period of greater than 36 months and elimination of both diseases is thereby sustained. The RVC appreciated the explanations of the immunization regulations and challenges in reporting routine immunization coverage and is concerned that these challenges will complicate the collection of reliable data and analysis. The RVC noted that while high levels of measles and rubella immunity were detected by a serosurvey conducted five years ago, MRCV coverage has declined since then. The RVC continues to urge implementation of all WHO-recommended strategies to ensure high routine immunization coverage (of at least 95%) for both doses of MRCV. While commending the high rate of laboratory investigation and viral detections, the RVC invites the country to make efforts to improve case detection and surveillance sensitivity, and to test measles IgM-negative specimens for rubella.

North Macedonia
Status of measles and rubella elimination in 2023

Measles eliminated
Rubella eliminated

The RVC concluded that endemic transmission of measles and rubella remained interrupted for a period of greater than 36 months and elimination of both diseases is thereby sustained. The RVC encourages the country to implement the latest WHO guidelines and recommendations to strengthen surveillance and reach the required thresholds of surveillance indicators (i.e. increase the number of investigated cases at the subnational level), and to ensure high routine immunization coverage (of at least 95%) for both doses of MRCV. Reported low immunization coverage, especially in some population groups and cities is a risk for outbreaks of measles and calls for action.

Norway
Status of measles and rubella elimination in 2023

Measles eliminated
Rubella eliminated

The RVC concluded that transmission of measles and rubella remained interrupted for a period of greater than 36 months and elimination of both diseases is thereby sustained. The RVC appreciates the activities tailored to recognize susceptible subgroups in the country and provide them with immunization, and calls for continued efforts to maintain high coverage with MRCV1 and ensure that coverage with MRCV2 reaches at least 95%.

Poland
Status of measles and rubella elimination in 2023

Measles endemic
Rubella – pending retrospective review

The RVC concluded that measles remained endemic in Poland. The RVC noted that reported coverage with MRCV1 and MRCV2 in some regions is < 95%, which creates a risk of outbreaks. The RVC continues to urge the implementation of all WHO-recommended strategies to ensure high routine immunization coverage (of at least 95%) for both doses of MRCV, especially in suboptimal-performing regions and among susceptible populations. The RVC requests the NVC to present MRCV1 coverage estimates for 24-month-old children instead of 36-month-old children, if that is feasible. The RVC urges improvements in surveillance sensitivity, increased efforts to identify chains of transmission and increased collection of specimens for measles genotyping. Including a map showing discarded cases per region in future ASUs would be useful.

Based on a comprehensive presentation about rubella immunization and epidemiology in Poland, prepared by the RVC Secretariat and colleagues in Poland, the RVC concluded that Poland's immunization data strongly suggest the absence of endemic transmission of rubella possibly for a period of greater than 36 months. However, the country continues to report relatively large numbers of rubella cases each year without laboratory testing of suspected cases for rubella or epidemiological linkage to laboratory-confirmed cases. The surveillance data presented suggest a high likelihood that other rash-producing viral infections, such as those caused by human herpes viruses and parvovirus B19, are misdiagnosed and reported as clinically compatible rubella cases. The RVC recommends an improved rubella surveillance performance and would be interested to discuss rubella in Poland with the NVC and its secretariat. The RVC strongly recommends the collection and testing of virological specimens from suspected rubella cases, confirmation of cases through laboratory testing or epidemiological linkage to laboratory-confirmed cases, and the genotyping of rubella positive specimens. Concerns related to MRCV coverage are also relevant for rubella elimination status. The RVC noted the improved quality of, and detailed information provided in the ASU.

Portugal
Status of measles and rubella elimination in 2023

Measles eliminated
Rubella eliminated

The RVC concluded that endemic transmission of measles and rubella remained interrupted for a period of greater than 36 months and elimination of both diseases is thereby sustained. The RVC reiterates its concern regarding the continuing low sensitivity of measles and rubella surveillance in the absence of cases and urges the country to implement the latest WHO guidelines to strengthen surveillance. In the absence of measles and rubella in the population and without provision of data about clinically suspect and discarded cases, the NVC and its secretariat may consider providing other data and country-specific indicators that can be useful to document the presence of sensitive surveillance at the subnational level.

Republic of Moldova Status of measles and rubella elimination in 2023	**Measles eliminated** **Rubella eliminated**

The RVC concluded that endemic transmission of measles and rubella remained interrupted for a period of greater than 36 months and elimination of both diseases is thereby sustained. The RVC commends the country for conducting high-quality surveillance and recommends timely collection of specimens for genotyping. The RVC also appreciates immunization activities among high-risk populations (religious and ethnic groups, refugees), and encourages the country to ensure this is done in all administrative territories. The RVC encourages the country to follow the WHO guidelines to ensure high routine immunization coverage (of at least 95%) with both doses of MRCV, especially in regions and among specific population groups with coverage below the national average.

Romania Status of measles and rubella elimination in 2023	**Measles endemic** **Rubella eliminated**

The RVC concluded that the transmission of measles remained endemic. Endemic transmission of rubella remained interrupted for a period greater than 36 months and elimination is thereby sustained. With a measles outbreak that started in 2023 and is continuing in 2024, the RVC is concerned about the slow pace in implementing outbreak response measures and the low and decreasing routine vaccination coverage. The RVC strongly encourages implementation of the WHO guidelines and recommendations to increase immunization among susceptible people of all ages in all regions, starting with the most affected populations, as reaching high routine immunization coverage of at least 95% is critical to stop outbreaks and eliminate measles. The RVC noted that the surveillance system is performing well but could become overwhelmed due to the high number of cases. The RVC recommends using outbreak analysis to modify the outbreak response and to help prevent similar outbreaks in future. The RVC requests the NVC to include as much detail as possible about the analysis of the outbreak and the response measures in the next ASU.

Russian Federation Status of measles and rubella elimination in 2023	**Measles re-established** **Rubella eliminated**

The RVC agreed with the NVC and concluded that endemic transmission of measles has been re-established. Endemic transmission of rubella remained interrupted for a period of greater than 36 months and elimination of rubella is thereby sustained. The RVC applauds the high quality of the ASU, which included detailed information and good laboratory and epidemiological analysis and commends the extensive and comprehensive activities undertaken in response to measles cases, clusters and outbreaks. The RVC is pleased to learn that the country is continuing activities to stop measles virus transmission and requests the NVC to include in the next ASU details on activities in different territories and among different population groups, as well as analysis of data and measures taken or planned to define and close gaps in immunity and surveillance, in order to prevent transmission and outbreaks in the future.

San Marino Status of measles and rubella elimination in 2023	**Measles eliminated** **Rubella eliminated**

The RVC concluded that endemic transmission of measles and rubella remained interrupted for a period of greater than 36 months and elimination of both diseases is thereby sustained. The RVC encourages the country to implement the latest WHO guidelines to further increase coverage with both doses of MRCV and to ensure high-quality surveillance, capable of detecting and responding to cases and outbreaks. The RVC would appreciate it if the NVC could explain the measles, rubella and CRS diagnostic procedures used and indicate which laboratory structures are involved in routine surveillance and the generation of data for ASU preparation.

Serbia Status of measles and rubella elimination in 2023	**Measles endemic** **Rubella eliminated**

The RVC concluded that the transmission of measles remained endemic as the provided data does not exclude endemic disease transmission for a sufficient period. Endemic transmission of rubella remained interrupted for a period greater than 36 months and elimination is thereby sustained. The RVC recommends that efforts to improve immunization should continue, using the WHO recommendations and guidelines to target susceptible populations. The RVC noted the absence of reported measles cases for eight months in 2023 and commends the country for submitting genotyping data. However, the RVC noted that according to the data provided in the ASU, surveillance is suboptimal and should be improved at the subnational level. The RVC requests the NVC to include better-elaborated data in future ASUs, with information about measles epidemiology, outbreaks analysis and documentation of importations.

Slovakia Status of measles and rubella elimination in 2023	**Interrupted for 24 months** **Rubella eliminated**

The RVC concluded that the endemic transmission of measles was interrupted for a period of 24 months. Endemic transmission of rubella remained interrupted for a period greater than 36 months and elimination is thereby sustained. The RVC stresses that the ASU data do not indicate the presence of a high-quality surveillance system and requests the NVC to improve data presentation in ASUs. Based on the available information, the RVC urges implementation of the latest WHO guidelines to strengthen surveillance by increasing its sensitivity (more detection of suspected cases) and urges more efforts to maintain high routine immunization coverage (of at least 95%) for both doses of MRCV in light of the decline in coverage reported in 2023. The RVC requests the NVC to provide more comprehensive ASUs in the coming years.

Slovenia Status of measles and rubella elimination in 2023	**Measles eliminated** **Rubella eliminated**

The RVC concluded that endemic transmission of measles and rubella remained interrupted for a period of greater than 36 months and elimination of both diseases is thereby sustained. The RVC would appreciate it if the NVC could explain and comment on the noted new procedures for monitoring routine immunization coverage, and whether the NVC has any concerns about their reliability, as the RVC is concerned about the decreasing coverage with MRCV2. The RVC urges implementation of the latest WHO guidelines to achieve and maintain high routine immunization coverage (of at least 95%) for both doses of MRCV and to strengthen the sensitivity of surveillance.

Spain Status of measles and rubella elimination in 2023	**Measles eliminated** **Rubella eliminated**

The RVC concluded that endemic transmission of measles and rubella remained interrupted for a period of greater than 36 months and elimination of both diseases is thereby sustained. The RVC urges implementation of the latest WHO guidelines to strengthen case detection and improve surveillance sensitivity and asks the NVC to include maps showing the geographic distribution of suspected, discarded and confirmed measles and rubella cases in future ASUs. While commending the country on the efforts made to genotype chains of transmission and sporadic cases, the RVC believes that urgent steps should be taken to establish oversight over national measles and rubella laboratories by the WHO-accredited national laboratory, to ensure that all specimens are analysed with equal reliability, following the same procedures and methodology.

Sweden Status of measles and rubella elimination in 2023	**Measles eliminated** **Rubella eliminated**

The RVC concluded that transmission of measles and rubella remained interrupted for a period of greater than 36 months and elimination of both diseases is thereby sustained. The RVC commends the immunization programme's work, in close contact with regions and municipalities, to tailor actions to different target groups and build long-term acceptance and demand for MRCV, and the comprehensive genotyping strategy. The RVC supports suggestions presented in the ASU to avoid underreporting of vaccinations, to include a mandatory requirement to report without delay vaccines administered within the national immunization programme, and to allow the reporting and sharing of dose numbers, to enable proper analysis of immunization coverage. The RVC understands that in the absence of reporting of discarded cases, laboratory testing data are used as a proxy for surveillance quality but suggests including information on reasons for testing and age of the patients from whom specimens were taken in future ASUs.

Switzerland Status of measles and rubella elimination in 2023	**Measles eliminated** **Rubella eliminated**

The RVC concluded that endemic transmission of measles and rubella remained interrupted for a period of greater than 36 months and elimination of both diseases is thereby sustained. The RVC commends the country for the catch-up vaccination efforts and calls for continued efforts to ensure that coverage with MRCV1 and MRCV2 reaches 95% in all cantons. The RVC would like the NVC to clarify whether clinically compatible cases without laboratory investigation and PCR-negative cases are discarded, both of which are not in line with WHO guidelines and could lead to an undercounting of cases.

Tajikistan Status of measles and rubella elimination in 2023	**Measles re-established** **Rubella eliminated**

The RVC concluded that transmission of endemic measles remained re-established. Endemic transmission of rubella remained interrupted for a period of greater than 36 months and elimination of rubella is thereby sustained. The RVC compliments the country on the SIA implemented in 2023. The RVC notes the drop-off in cases after August 2023, which may indicate interruption of transmission, but the reduced number of suspected and investigated cases after August 2023 casts doubts upon the quality of surveillance. Good-quality surveillance data in 2024 will therefore be critical for assessing the measles elimination status. The RVC urges implementation of the WHO guidelines to improve surveillance performance for measles, rubella and CRS. The RVC recommends timely collection of adequate specimens to increase genotyping of measles cases, which will aid in the documentation of possible interruption of transmission. The NVC should inform the RVC in the next ASU whether recommendations from WHO's laboratory accreditation mission were followed. The RVC requests the NVC to provide more detailed ASUs in future, including situation analysis.

Türkiye Status of measles and rubella elimination in 2023	**Measles endemic** **Rubella eliminated**

The RVC concluded that the transmission of measles remained endemic. Endemic transmission of rubella remained interrupted for a period greater than 36 months and elimination is thereby sustained. The RVC welcomes the inclusion of genotyping information in the ASU, but notes that inclusion of more comprehensive laboratory and epidemiological data in the ASUs would simplify the assessment for the RVC. The RVC encourages the NVC to provide details about the lineages detected in multiple reported importations and different chains of transmission. The RVC recommends that the NVC discuss with its secretariat possibilities for improvement of the collaboration between the laboratory and epidemiology teams, as it could result in better description and analysis of multiple lines of transmission or outbreaks, and in better documentation of multiple importations in the ASUs. The NVC is invited to analyse rubella cases, especially those among immunized individuals. The RVC would appreciate it if the NVC could include reports on epidemiology or outbreaks and outbreak response in the most affected areas (including Istanbul) in the next ASU.

Turkmenistan Status of measles and rubella elimination in 2023	**Measles eliminated** **Rubella eliminated**

The RVC concluded that endemic transmission of measles and rubella remained interrupted for a period of greater than 36 months and elimination of both diseases is thereby sustained. The RVC commends the country for its high-quality measles and rubella immunization programme and presented surveillance performance. The RVC appreciates the provided information about continuous efforts in updating national technical guidelines and in promotion of immunization.

Ukraine Status of measles and rubella elimination in 2023	**Measles endemic** **Rubella – pending retrospective review**

The RVC concluded that measles remained endemic and suggests a retrospective review of rubella data to determine the elimination status. The RVC appreciates the country's efforts towards measles and rubella elimination and verification under difficult circumstances. The RVC commends the country for the supplemental immunizations and the reported decrease in the population susceptible to measles and rubella. The RVC encourages continuation of activities to increase coverage with both doses of MRCV to the level recommended by WHO (at least 95%). The RVC is pleased to see that surveillance for measles is in place but notes that increasing surveillance sensitivity in all regions and all populations is critical for early detection of cases and outbreaks. With regard to documenting the status of rubella elimination, the RVC encourages efforts to strengthen rubella surveillance and laboratory activities including genotyping, as far as is feasible in the current situation.

United Kingdom Status of measles and rubella elimination in 2023	**Measles eliminated** **Rubella eliminated**

The RVC concluded that endemic transmission of measles and rubella remained interrupted for a period of greater than 36 months and elimination of both diseases is thereby sustained. The RVC reiterates its concern about the threat to measles elimination posed by low coverage with MRCV1 and MRCV2, especially in London, and urges implementation of the new United Kingdom Health Security Agency Measles and Rubella Elimination Strategy published in December 2023 to close immunity gaps throughout the population. The RVC is concerned that measles elimination status may be lost in 2024, if transmission of the same measles virus lineage continues for a period longer than 12 months in 2023 and 2024.

Uzbekistan Status of measles and rubella elimination in 2023	**Measles re-established** **Rubella eliminated**

The RVC concluded that transmission of endemic measles remained re-established. Endemic transmission of rubella remained interrupted for a period of greater than 36 months and elimination of rubella is thereby sustained. The RVC commends the country for the reported high coverage of routine immunizations and the outbreak response immunization and SIA that were conducted. The RVC urges implementation of the latest WHO guidelines to strengthen all segments of measles, rubella and CRS surveillance, and continuation of activities to increase coverage with both doses of MRCV to the level recommended by WHO (at least 95%) in all segments of the population. The RVC requests the NVC to discuss with its secretariat how to improve the involvement of the national reference measles and rubella laboratory and strengthen cooperation in situation analysis with the epidemiology team in preparation of the ASU. The RVC stresses the need for investigation of rubella cases and for genotyping data for both measles and rubella cases. The RVC notes that no CRS data were presented in the ASU nor a description of the surveillance system, which is especially concerning because a large segment of not vaccinated in the population has been infected with measles but remains unvaccinated and thereby unprotected from rubella. The RVC requests the NVC to provide more detailed ASUs in future.

Annex 3. List of participants

RVC members

Mira Kojouharova, Chair
National Centre for Infectious and Parasitic Diseases, Bulgaria (Retired)

Robin Biellik
WHO, United Nations Children's Fund and PATH, Switzerland (Retired)

Kevin Brown
United Kingdom Health Security Agency, United Kingdom (Retired)

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Bettina Bankamp

The WHO Regional Office for Europe

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