

26–29 October 2015 // Copenhagen, Denmark

4th Meeting of the European Regional Verification Commission for Measles and Rubella Elimination (RVC)



**World Health
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ABSTRACT

The RVC met for the fourth time on 26-29 October 2015 in Copenhagen, Denmark. The 8-member panel evaluated annual status updates for 2014 and other documentation submitted by national verification committees, now established in 50 out of 53 Member States. The RVC concluded that as of the end of 2014, endemic measles transmission of measles was interrupted in 32 Member States, and endemic rubella transmission was interrupted in 32 Member States. Based on its conclusions for the period 2012–2014, the RVC could for the first time verify interruption over a 36-month period, and thereby declare that 21 Member States eliminated measles and 20 Member States eliminated rubella during this period.

Keywords

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Abbreviations

| | |
|--------|---|
| ASU | Annual Status Update |
| CISID | Centralized Information System for Infectious Diseases |
| CRS | congenital rubella syndrome |
| EIW | European Immunization Week |
| ESR | Elimination Status Report |
| ETAGE | European Technical Advisory Group of Experts on Immunization |
| EVAP | European Vaccine Action Plan |
| MCV | measles-containing vaccine |
| MeaNS | measles nucleotide surveillance database |
| MR | measles and rubella (vaccine) |
| MRCV | Measles- and rubella-containing vaccine |
| MRCV1 | first dose MCRV |
| MRCV2 | second dose MCRV |
| MMR | measles, mumps and rubella |
| MMR1 | first dose MMR |
| MMR2 | second dose MMR |
| NITAG | national immunization technical advisory group |
| NVC | National Verification Committee for Measles and Rubella Elimination |
| RubeNS | rubella nucleotide surveillance database |
| RVC | European Regional Verification Commission for Measles and Rubella Elimination |
| SIA | supplementary immunization activity |
| TIP | Tailoring Immunization Programmes |
| VPI | WHO Regional Office Vaccine-preventable Diseases & Immunization programme |

Executive summary

The European Regional Verification Commission for Measles and Rubella Elimination (RVC) is an independent panel of experts established by the WHO Regional Office for Europe (Regional Office) to evaluate the measles and rubella status of WHO Member States. The RVC met for the fourth time on 26–29 October 2015 in Copenhagen, Denmark to evaluate a total of 50 country reports, including 47 annual status updates (ASUs) for 2014, two late submitted or resubmitted ASUs for 2013 and one late-submitted elimination status report (ESR) for 2010–2012. Three late country ASUs for 2014 were courteously evaluated post-meeting. Following the 2014 modification of the verification procedures, the RVC also assessed the measles and rubella elimination status at country level for the period 2010–2014, based on all reports and documents submitted for that period by national verification committees (NVCs).

The RVC was concerned to note that 3 out of 53 Member States still have not formally established an NVC and that at least two of these indicate no intention of doing so in the near future. The RVC was pleased that more Member States had submitted timely and complete annual reports than in previous years and that the quality of reports had generally improved. Eighteen Member States were considered to have endemic measles transmission in 2014, and 18 to have endemic rubella transmission. Sixteen Member States were considered to have both measles and rubella transmission in 2014. The RVC was unable to review the measles and rubella status of 3 Member States due to failure of the NVC to provide an appropriate report.

The RVC concluded that based on reports submitted, at the end of 2014, there were 32 Member States in which endemic measles transmission had been interrupted and 32 Member States in which endemic rubella transmission had been interrupted.

The RVC considers it highly unlikely that the 2015 ASUs will provide evidence to exclude endemic transmission of measles and rubella in all countries of the Region as of 31 December 2015. In this event, the 2015 regional measles and rubella elimination goal will be missed. However, responding to a recommendation from the European Technical Advisory Group of Experts on Immunization (ETAGE), the RVC reviewed country data for 2012–2014 and determined the elimination status for measles and rubella at individual country level. Twenty-one Member States (40%) provided evidence to demonstrate the elimination of endemic transmission of measles, and 20 (38%) for the elimination of endemic transmission of rubella. A further 11 Member States (21%) provided evidence for the interruption of measles transmission for a period of 12 or 24 months, and 12 (23%) provided evidence for interruption of rubella transmission for the same period.

The RVC noted that despite recent improvements, rubella surveillance remains suboptimal, and many countries continue to find it a challenge. In addition, several countries still cannot provide evidence for the existence of sensitive nationwide or effective sentinel surveillance for congenital rubella syndrome (CRS). As the Region moves towards measles and rubella elimination, the ability to distinguish between remaining endemic transmission and import-related sporadic cases through genomic sequence analysis of viruses detected becomes imperative. Most Member States are now reporting data on measles virus detections in standard format, but the level of reporting on rubella genomic sequence data remains very low. The importance of both genomic sequence data, and the ability to detect and document chains of transmission by merging all clinical, epidemiological and

laboratory information, will continue to increase as more Member States achieve interruption of transmission.

Issues related to the verification of elimination in Member States with population sizes considered too small to maintain endemic transmission of measles and rubella continues to be of concern to the RVC. Standard approaches to verification applied to larger countries in the Region are not necessarily applicable to these countries, particularly in relation to establishing and running NVCs, defining indicators and thresholds, and in determining elimination status. Additional approaches are required to support small countries in demonstrating that population immunity to measles and rubella has been achieved and high-quality surveillance systems are in place.

Background

The RVC was established by the Regional Office in 2012 as an independent expert body with the mission of evaluating the documentation submitted by NVC, in order to verify the elimination of measles and rubella in the Region. VPI serves as the secretariat to the RVC.

The RVC holds annual meetings to determine the status of measles and rubella elimination in the WHO European Region based on reports and additional documents prepared and submitted by the NVCs. These reports include information on measles and rubella epidemiology, molecular epidemiology, the analysis of population immunity and immunization programme performance, the quality of surveillance, and changes that have occurred since the last report, together with additional information to support the NVC statement on measles and rubella elimination status.

Scope and purpose

At its 4th meeting on 26–29 October 2015, and in line with new procedures, the RVC evaluated the status of endemic transmission of measles and rubella in Member States of the WHO European Region for 2014 and verified elimination in those Member States that had sustained interruption for the entire period 2012–2014.

The objectives of the meeting were:

- to inform the RVC on current epidemiology of measles and rubella in the European Region and on VPI activities undertaken to support measles and rubella elimination;
- to review the NVCs' annual measles and rubella status updates for 2014, together with late-submitted measles and rubella reports for 2010–2012 and 2013, and all other documentation that NVCs provide towards documenting the absence of measles and rubella endemic transmission in their countries;
- to define, in line with new procedures established in 2014, the status of transmission of measles and rubella in each Member State and in the Region in 2014;
- to declare the diseases' elimination where achieved, and initiate preparation of the RVC's measles and rubella elimination status report for the period 2012–2014;
- to plan verification activities in 2016 and beyond, and define the role of the RVC in advocating for continuation of elimination efforts at national and regional levels;
- to assess RVC working procedures and verification process requirements.

Introduction and opening remarks

The 4th meeting of the RVC was held from 26 to 29 October 2015 in Copenhagen, Denmark. Participants were welcomed on behalf of the WHO Regional Director by Dr Nedret Emiroglu, Director, Division of Communicable Diseases, Health Security and Environment. Professor Susanna Esposito, outgoing RVC chairperson, was thanked on behalf of the WHO Regional Office, for her efforts and insight in guiding the RVC through its first three years. Dr Günter Pfaff was welcomed as the incoming RVC chairperson.

With available epidemiological data for 2015 to date, it was generally agreed that despite the enormous amount of work carried out by WHO, the international partner agencies and many of the Member States, the Regional goal of achieving measles and rubella elimination by the end of 2015 will not be met. This conclusion, in the form of a progress report, will be relayed to the WHO Regional Committee in 2016. That progress report will be based largely on the deliberations of the RVC during this meeting, underscoring the essential role of the RVC and the importance of this meeting.

Professor Susanna Esposito, as outgoing chairperson of the RVC, thanked WHO and her fellow commissioners for the opportunity to head the RVC for the past three years, and welcomed Dr Pfaff as the incoming chairperson. Mr Robb Butler, acting Programme Manager of VPI, welcomed participants on behalf of the VPI team. He noted that despite the wide range of achievements in measles and rubella elimination made in the Region, greater political commitment to meeting the goals is required in several countries. This meeting provided the opportunity to review and redefine the roles and expected responsibilities of RVC members, particularly in helping to mobilize resources and increase political commitment to achieving the elimination goals.

Status of measles and rubella elimination: global and regional update

Global update

Despite high global investments in measles control, large outbreaks continue to occur around the world. Although reported measles cases have decreased by 94% since 1980, little further progress towards global measles elimination has been made in the past five years. An increase in the number of measles cases in older adolescents and adults has been observed in some Regions, but two-thirds of all reported cases are still among children who should have received measles vaccine. Rubella surveillance remains suboptimal worldwide, and although there has been a gradual increase in global coverage with rubella-containing vaccine, still over half of the world's children are not being vaccinated against rubella. With the exception of the WHO Region of the Americas, regional measles and rubella elimination targets will be missed. An external midterm review will be conducted in 2016 in an attempt to understand why the global elimination programme is not being fully effective, and to propose some approaches to improve programme performance.

European regional update

While regional coverage with the second dose of measles-containing vaccine (MCV2) has been maintained above 90% for several years, large numbers of cases continue to occur each year. In the first half of 2015, approximately 15 000 cases of measles were reported in the Region, and large measles outbreaks have recently occurred in Bosnia and Herzegovina, Germany, Kazakhstan and Kyrgyzstan. Delays in reporting and receipt of incomplete data continue to be a challenge. Of the measles cases with adequate data reported for 2015 before the RVC meeting, 43% were 20 years of age or above, and 83% of cases were either not vaccinated or had no history of vaccination. Reported cases occurred in both the general population and in specific population groups that may have been considered at risk. The most concerning issue is that in general, affected countries have demonstrated incomplete or inadequate outbreak response actions, and in some cases, have not taken any action at all.

There has been a decrease in the reported incidence of rubella in the Region from 2014, with fewer than 600 cases reported in the first half of 2015. Although several Member States have made changes to strengthen surveillance for rubella, some key countries still lack active rubella surveillance and available information can be incomplete. Recent rubella outbreaks have been recognized as a consequence of late or inadequate introduction of rubella vaccine into the immunization programme, with cases mostly occurring among the adult population.

All WHO measles and rubella reference laboratories in the Region are accredited. Member States have included laboratory data from private or commercial laboratories outside of the WHO laboratory network in their surveillance and other relevant reports, including those of the NVC.. While there is confidence in the proficiency of some of these laboratories, the diagnostic proficiency and lack of information on the identity of the laboratories in several countries remain of great concern. With a small number of exceptions, all countries are now submitting genomic sequence information on measles cases to the measles nucleotide surveillance database (MeaNS). The predominant genotypes reported for 2014 include several lineages of D8, considered to be the dominant genotype in the Region; B3 lineages, frequently associated with importations from countries in south-east Asia and the western Pacific; and a relatively low incidence of D4 isolates. In contrast to the situation with measles, few countries are submitting genomic sequence information on rubella cases to the rubella nucleotide surveillance database (RubeNS). Rubella genotypes reported for 2014 include 2B and 1E.

Discussion

Recognition of the progress made in measles and rubella elimination in the European Region, and the major challenges remaining, was given during discussion of the Global Vaccine Action Plan (GVAP) report at the recent meeting of the Strategic Advisory Group of Experts on Immunization (SAGE) held in Geneva. The shift from verification of elimination at regional level to verification at country level, adopted by the European Region, was seen as a positive move, supportive of maintaining momentum in the absence of a new regional elimination target date. The challenge of addressing large measles- and rubella-susceptible populations of adolescents and adults, first recognized in Europe, is now of concern in the other WHO regions, although no obvious solutions to the problem have yet been advanced. It is likely that this issue will be addressed by a SAGE Working Group, and may be included in the agenda of next year's SAGE meeting.

The measles and rubella elimination target – the way forward after 2015

It is now accepted that the regional goal for measles and rubella elimination by the end of 2015 will not be met, and a formal progress report to the WHO Regional Committee (RC) is expected in September 2016. Although measles and rubella data for 2015 will not be reviewed by the RVC until October 2016, it is now accepted that the formal report to the RC will acknowledge the missed 2015 elimination goal – based on the report developed by the RVC for the period 2012–2014. Members of the RVC and ETAGE will need to review the RVC report and endorse the decision not to set a revised measles and rubella elimination target date. In order for the progress report to be available for the RC meeting in September, it must be completed by mid-May 2016.

Although the Region has not met the 2015 measles and rubella elimination goal, many of the Member States have provided evidence for absence of endemic measles and/or rubella transmission

for at least three years. Accordingly, the RVC can now review the county data for 2012–2014 and determine the elimination status for measles and rubella country-by-country. This approach is intended to highlight the achievements that have been made in the Region, acknowledging those Member States that have made the effort to establish strong immunization and surveillance systems. At the same time, highlighting Member States that have not achieved elimination will help in understanding their specific circumstances and challenges, as well as in defining priorities and focusing activities of countries and of the Regional Office.

Discussion

There is concern that the decision not to establish new elimination target dates for the Region will not be understood by Member States, and that lack of a specific target date will make it difficult to maintain the momentum that has been gained towards elimination. One of the approaches discussed by ETAGE was to separate the measles elimination goal from that of rubella, since the control of these two diseases has followed different histories within the Region. This has, however, been the *de facto* approach of the RVC in considering the elimination status of each Member State since review of the initial country reports, so the mechanism already exists to separate the two goals.

The increasing rate at which migrants and refugees are entering the Region in recent years is of some concern. In many Member States in the Region provision of public health services, including immunization, has moved partly or wholly to the private sector, and mechanisms do not exist to provide vaccination to a large influx of individuals, many with unknown vaccination histories. However, there is no evidence that the current wave of migrants and refugees entering Europe poses any threat to the measles and rubella elimination goals. Available evidence suggests that the migrants tend to be more fully immunized than resident populations.

Verification of measles and rubella elimination: working procedures, process-related issues and planning of activities for 2016

In past years, if the RVC was unable to reach a conclusive decision on the elimination status of a particular country, because of absent, incomplete or conflicting data provided for review, the category 'inconclusive' was applied. In line with the decision to verify measles and rubella elimination on a country-by-country basis, and given that Member States have been submitting annual reports since 2012, the decision has been taken to abolish the 'inconclusive' category for the 2014 status. The onus is now on Member States to provide conclusive evidence that endemic measles and rubella transmission has been interrupted; otherwise the country will be regarded as 'endemic'. The RVC and Secretariat also agreed to abolish the 'interrupted, at risk' category as there was no clear understanding of how to standardize its use in the verification process.

As the Region moves towards measles and rubella elimination, and an increasing proportion of Member States provide evidence for the interruption of endemic transmission, the ability to distinguish between remaining endemic and imported virus strains becomes imperative. All Member States have been requested to report genomic sequence data on viruses detected and to strengthen the capacity to link this data unequivocally to the surveillance records. In 2014, the RVC recommended changes to the ASU template to permit countries to provide evidence for the effective linkage between laboratory and epidemiological surveillance and improve documentation

on chains of transmission. In reviewing the 2014 reports, the RVC relied heavily on the genotyping data provided to determine if viral detection could be associated with ongoing endemic transmission or had resulted from importation of virus into a country that had interrupted endemic transmission. The importance of genomic sequence data, and the ability to detect and document chains of transmission, will continue to increase as more Member States achieve interruption of transmission.

The RVC noted that the collection and submission of more detailed subnational data (graphs and maps) would enhance the verification process at the national and regional levels. The RVC also noted that many Member States continue to find rubella surveillance challenging, particularly laboratory confirmation of suspected rubella cases, and it is therefore difficult to compile enough cases to establish baseline rubella genotyping data across the Region. Additionally, several countries still cannot provide evidence of sensitive nationwide or effective sentinel surveillance for congenital rubella syndrome (CRS).

Specific issues related to verification of elimination in Member States with population sizes considered too small to maintain endemic transmission of measles and rubella continues to be of concern. Standard approaches applied to larger countries in the Region are not necessarily applicable to these countries, particularly in relation to establishing of NVCs, defining indicators and thresholds, and in determining the elimination status. VPI should assess existing activities and programmes addressing the small countries and investigate possibilities to incorporate in them verification activities and development of technical guidelines on collection and analysis of information from these countries.

The role of the RVC is to independently evaluate progress towards the goal of measles and rubella elimination in the European Region. While communications between individual RVC members and the NVCs are to be encouraged, and where possible strengthened, RVC members should not be involved in data gathering and programmatic activities in Member States, as this may conflict with their ability to provide an independent evaluation. RVC members are encouraged, however, to advocate on behalf of measles and rubella elimination in the Region and to promote the verification process. Opportunities will be sought to engage the RVC more fully in these activities in 2016 and coming years.

Submission of the elimination status reports (ESRs) and ASUs

Three Member States, Albania, Monaco and San Marino, remain without formally established NVCs. The national immunization programme manager of Albania has informed the Regional Office that an NVC has been established and appropriate documents and reports will be forwarded, but these have not yet been received. Authorities in Monaco have stated that the country will not establish an NVC, and all attempted communications with San Marino on the subject have failed to raise a response.

An ESR for the period 2010 to 2012 was received prior to the meeting from Bosnia and Herzegovina, but not yet from Albania, Italy and San Marino. ASUs for 2013 were received prior to the meeting from Bosnia and Herzegovina, Italy and Ukraine, but not yet from Albania, Monaco and San Marino. The RVC previously requested resubmission of the 2013 ASU by Kyrgyzstan, Serbia and the former Yugoslav Republic of Macedonia, but only the report from Kyrgyzstan was resubmitted.

A total of 50 ASUs for 2014 were received for review (47 before and 3 after the meeting). Of these, 29 were received before the submission deadline of 31 July and 18 were received by 15 September.

No reports were received from Albania, Monaco or San Marino. Authorities in Bosnia and Herzegovina informed the Secretariat that a report was in preparation and would be submitted, but the report had not been received by the date of the meeting. Authorities in Serbia informed the Regional Office and WHO Country Office in Serbia that administrative and structural changes within the public health sector were delaying compilation of the report. A report was received from Ukraine, but it was unsigned and illegible. Attempts to acquire a legible copy were not successful by the date of the meeting. An unofficial version of the ASU for 2014 was received from Ukraine after the meeting. The RVC made a decision on Ukraine based on the NVC's documents from previous years and information from other official sources.

In compiling and assessing the reports, the Secretariat encountered issues and deficiencies similar to those encountered in previous years. Although there has been a general improvement in the quality of reporting, presentation of incomplete or partial information, particularly on laboratory activities and results, miscalculations and the inadequate presentation of data on surveillance indicators were common. Several Member States continued to use alternative surveillance indicators, which are incompatible with those requested for the report.

Review of submitted reports and updates

RVC members were invited to assess the received documentation in accordance with the definition of elimination provided in the *Eliminating measles and rubella: framework for the verification process in the WHO European Region*¹. Reports from Member States were allocated in alphabetic order to RVC members for preliminary review and presented at the meeting by major components: disease epidemiology; surveillance performance; population immunity as well as any supplemental information available. Conclusions on the measles and rubella annual status by Member State for 2014 are provided in Annex 1, along with a regional summary of measles and rubella status for 2014, and elimination status by Member State for the three-year period 2012–2014 and a regional summary of measles and rubella elimination for the period 2012 to 2014. As indicated in the framework document, elimination is defined as documented interruption of endemic transmission for a period of 36 months or more. Specific comments on the conclusions for each country are provided in Annex 2.

Conclusions and recommendations

Conclusions

Based on the 2012–2014 reports and ASUs submitted by the NVCs of 50 Member States, the RVC concluded that endemic transmission of measles and rubella persisted in the European Region in 2014. Based on this and a comprehensive review of measles and rubella epidemiology in the Region in 2015, the RVC does not believe that the 2015 regional elimination goal for measles and rubella has been achieved. Expecting that 2015 data from NVCs will confirm endemic measles and rubella transmission at the end of 2015 in some countries, the RVC stands committed to continue the verification process throughout the Region and to support national public health authorities with

¹ *Eliminating measles and rubella: framework for the verification process in the WHO European Region*. The Regional Office for Europe of the World Health Organization, 2014. Available online at http://www.euro.who.int/__data/assets/pdf_file/0009/247356/Eliminating-measles-and-rubella-Framework-for-the-verification-process-in-the-WHO-European-Region.pdf

political, technical and advocacy activities. The RVC also calls on the RVC Secretariat and the entire Regional Office to continue supporting measles and rubella elimination activities until regional verification has been achieved. The RVC appreciates the support of, and looks forward to further cooperation with ETAGE, as well as other global and regional experts and technical groups, in working towards measles and rubella elimination.

In 2015, the RVC reviewed documents submitted by NVCs for 2012, 2013 and 2014 to assess the status of endemic measles and rubella transmission for 2014, as well as to determine in which Member States measles and rubella can be considered eliminated for the three-year period. The RVC noted that there was significant improvement in the quality of the 2014 ASUs and supporting documents submitted by the NVCs compared to previous years. However, as in previous years, more than one-third of the 2014 ASUs were submitted to the Secretariat after the agreed deadline; several reports contained incomplete or inconsistent information, or self-developed surveillance indicators which were not clearly explained and might be inconsistent with the requirements for verification.

The RVC is concerned with the delay in initiation of the verification process in Albania, Monaco and San Marino. Information provided by national authorities indicates that these three countries have not established an NVC, and consequently have not submitted the required documentation to allow the RVC to assess their measles and rubella elimination status. Additionally, several documents are missing from a few countries with functioning NVCs (Elimination Status Report 2010–2012 from Italy; corrected ASU for 2013 from Serbia and the former Yugoslav Republic of Macedonia; and an official ASU for 2014 from Ukraine). Without complete documentation from all 53 Member States, regional verification will not be possible.

Based on the 50 ASUs submitted for 2014, the RVC verified that 32 Member States (60%) provided evidence of the interruption of endemic measles transmission in 2014, 18 (34%) remain endemic for measles transmission and 3 (6%) did not submit any documents. The RVC also verified that 32 Member States (60%) provided evidence of the interruption of endemic rubella transmission, 18 (34%) remain endemic for rubella transmission and 3 (6%) did not submit any documents. Sixteen Member States (30%) had endemic transmission of both measles and rubella in 2014. In the absence of an official 2014 ASU, special consideration was given to assessing measles and rubella transmission in Ukraine. Based on surveillance and coverage data for 2014 and the previous documents submitted by the NVC, the RVC concluded that Ukraine still has endemic measles and rubella transmission. The RVC recognized and thanked the technical staff and NVCs of Bosnia and Herzegovina, Italy, Kyrgyzstan and Ukraine that responded to a call for the submission of missing documents.

The RVC was unable to review the measles and rubella status of the three Member States without functioning NVCs. The RVC and Secretariat agreed to abolish the “*interrupted, at risk*” and “*inconclusive*” categories for the classification of measles and rubella elimination status.

The RVC considers it highly unlikely that the 2015 ASUs will provide evidence to exclude endemic transmission of measles and rubella in all countries of the Region as of 31 December 2015. In this event, the 2015 regional measles and rubella elimination goal will be missed. However, the RVC’s 4th

meeting was the first opportunity to assess the status of measles and rubella over a three-year period and potentially verify elimination at the country level. Many Member States have been able to document the absence of endemic measles and/or rubella transmission within their borders for the period 2012–2014, thereby qualifying them for verification of elimination.

Based on a country-by-country assessment of documents submitted by NVCs for 2012–2014, the RVC verified that 21 Member States (39.5%) provided evidence to demonstrate the interruption of endemic measles transmission for at least 36 months; 11 (21%) provided evidence for interruption for a period of 12 or 24 months; and 18 (34%) remain endemic for measles. The RVC verified that 20 Member States (38%) provided evidence to demonstrate the interruption of endemic rubella transmission for at least 36 months; 12 (22.5%) provided evidence for interruption for a period of 12 or 24 months; and 18 (34%) remain endemic for rubella. Sixteen Member States remain endemic for both measles and rubella.

As the Region moves towards elimination, it becomes increasingly important to distinguish endemic cases from imported and import-related cases, and to monitor chains of virus transmission through genetic sequencing. Most Member States are reporting measles genetic sequence data in a standard format, but the amount of sequence data on rubella remains low. The RVC also recognized that the usefulness of measles and rubella molecular data depends on the quality of the clinical and epidemiologic data of an integrated surveillance system.

The RVC continues to investigate approaches for verification in Member States with population sizes considered as too small to maintain endemic transmission of measles and rubella. The RVC also recognized that there are large population movements between Member States throughout the Region on a seasonal and/or daily basis, and in the context of the verification process, it is important for these Member States to share epidemiology and virus transmission data. New approaches could be useful in facilitating the verification process and developing technical guidelines on collecting and analysing information from these countries.

Recommendations

- The RVC urges national public health authorities and NVCs of Member States with endemic measles and/or rubella transmission to re-confirm their commitment to the regional goal and to achieve elimination as soon as possible.
- The RVC strongly recommends that all NVCs implement country-specific recommendations presented in Annex 2 of this report. The RVC also invites NVCs and national public health authorities to identify opportunities for the RVC and the WHO Secretariat to provide support towards measles and rubella elimination at the national level. The RVC and WHO Secretariat should take every opportunity to help NVCs to present their evidence for measles and rubella elimination in a manner that is clear and comprehensive.
- The RVC urges Albania, Monaco and San Marino to establish their NVCs and prepare elimination status reports for the period 2010 to 2012 and annual status updates for 2013 and 2014 using the standardized templates as soon as possible. The RVC and WHO Secretariat are prepared to provide any assistance needed to complete the necessary documentation.
- The RVC urges the NVCs of Italy, Serbia, the former Yugoslav Republic of Macedonia and Ukraine to submit all missing documentation as soon as possible.
- The RVC and WHO Secretariat should continue to participate in global measles and rubella elimination activities, verification commission meetings in other regions, and partners' meetings on measles and rubella elimination to ensure implementation of a consistent global approach to the elimination process in the European Region.
- The WHO Secretariat should:
 - keep the RVC informed about developments related to measles and rubella verification activities in the European Region and opportunities for the RVC to advocate and promote measles and rubella elimination activities at the national level;
 - continue to provide guidance to national health authorities and NVCs on completing the ASU;
 - continue to facilitate communication with the RVC in-between meetings through regularly scheduled teleconferences;
 - explore the possibility of using other WHO initiatives, such as the *small countries initiative*, to help with the verification process in MS with populations considered too small to maintain endemic transmission of measles and rubella;
 - consider informal grouping of countries, particularly small countries sharing land borders with much larger neighbours, into epidemiological blocks for the purpose of assessing virus transmission and evaluating elimination status.
- All Member States are urged to:
 - Support verification activities by providing all needed national and sub-national data, information and documents to NVC, thereby facilitating timely submission of complete and comprehensive annual status reports
 - improve the quality of rubella and CRS surveillance and increase the level of reporting of rubella genetic sequence data;

- support capacity building of the Regional Measles and Rubella Laboratory Network, and improve the capacity to link genetic sequence data to measles and rubella surveillance data;
- ensure that adequate documentation on outbreaks, including supplementary immunization response activities and outcomes, together with adequate outbreak reports are provided to the NVC;
- consider activities to increase population immunity through improving routine immunization coverage and/or targeted supplemental immunization activities.

Annex 1. Results of the RVC review of reports and documents submitted by NVCs**Table 1. RVC conclusions on measles and rubella elimination status in Member States in 2014 and for the period 2012–2014**

| Country | 2014 | | Period 2012–2014 | |
|------------------------|--------------------------------|--------------------------------|------------------------------------|------------------------------------|
| | Status of measles transmission | Status of rubella transmission | Measles elimination status | Rubella elimination status |
| Albania | No ASU 2014 | No ASU 2014 | Verification process not initiated | Verification process not initiated |
| Andorra | Interrupted | Interrupted | Eliminated | Eliminated |
| Armenia | Interrupted | Interrupted | Eliminated | Eliminated |
| Austria | Endemic | Endemic | Endemic | Endemic |
| Azerbaijan | Interrupted | Interrupted | Eliminated | Eliminated |
| Belarus | Interrupted | Interrupted | Eliminated | Eliminated |
| Belgium | Endemic | Endemic | Endemic | Endemic |
| Bosnia and Herzegovina | Endemic | Endemic | Endemic | Endemic |
| Bulgaria | Interrupted | Endemic | Eliminated | Endemic |
| Croatia | Interrupted | Interrupted | Interrupted 12 months | Interrupted 12 months |
| Cyprus | Interrupted | Interrupted | Eliminated | Eliminated |
| Czech Republic | Interrupted | Interrupted | Eliminated | Eliminated |
| Denmark | Interrupted | Endemic | Interrupted 12 months | Endemic |
| Estonia | Interrupted | Interrupted | Eliminated | Eliminated |
| Finland | Interrupted | Interrupted | Eliminated | Eliminated |

| Country | 2014 | | Period 2012–2014 | |
|------------|--------------------------------|--------------------------------|------------------------------------|------------------------------------|
| | Status of measles transmission | Status of rubella transmission | Measles elimination status | Rubella elimination status |
| France | Endemic | Endemic | Endemic | Endemic |
| Georgia | Endemic | Endemic | Endemic | Endemic |
| Germany | Endemic | Endemic | Endemic | Endemic |
| Greece | Interrupted | Interrupted | Interrupted 12 months | Interrupted 12 months |
| Hungary | Interrupted | Interrupted | Eliminated | Eliminated |
| Iceland | Interrupted | Interrupted | Interrupted 12 months | Interrupted 12 months |
| Ireland | Endemic | Interrupted | Endemic | Eliminated |
| Israel | Interrupted | Interrupted | Eliminated | Eliminated |
| Italy | Endemic | Endemic | Endemic | Endemic |
| Kazakhstan | Endemic | Endemic | Endemic | Endemic |
| Kyrgyzstan | Endemic | Endemic | Endemic | Endemic |
| Latvia | Interrupted | Interrupted | Eliminated | Eliminated |
| Lithuania | Interrupted | Interrupted | Interrupted 12 months | Interrupted 12 months |
| Luxembourg | Interrupted | Interrupted | Eliminated | Eliminated |
| Malta | Interrupted | Interrupted | Eliminated | Eliminated |
| Monaco | No ASU 2014 | No ASU 2014 | Verification process not initiated | Verification process not initiated |
| Montenegro | Interrupted | Interrupted | Interrupted 12 months | Interrupted 12 months |

| Country | 2014 | | Period 2012–2014 | |
|---|--------------------------------|--------------------------------|------------------------------------|------------------------------------|
| | Status of measles transmission | Status of rubella transmission | Measles elimination status | Rubella elimination status |
| Netherlands | Interrupted | Interrupted | Eliminated | Eliminated |
| Norway | Interrupted | Interrupted | Eliminated | Eliminated |
| Poland | Endemic | Endemic | Endemic | Endemic |
| Portugal | Interrupted | Interrupted | Eliminated | Eliminated |
| Republic of Moldova | Interrupted | Interrupted | Interrupted 24 months | Interrupted 12 months |
| Romania | Endemic | Endemic | Endemic | Endemic |
| Russian Federation | Endemic | Endemic | Endemic | Endemic |
| San Marino | No ASU 2014 | No ASU 2014 | Verification process not initiated | Verification process not initiated |
| Serbia | Endemic | Endemic | Endemic | Endemic |
| Slovakia | Interrupted | Interrupted | Eliminated | Eliminated |
| Slovenia | Interrupted | Interrupted | Eliminated | Eliminated |
| Spain | Interrupted | Interrupted | Interrupted 12 months | Interrupted 24 months |
| Sweden | Interrupted | Interrupted | Eliminated | Interrupted 12 months |
| Switzerland | Endemic | Endemic | Endemic | Endemic |
| Tajikistan | Interrupted | Interrupted | Interrupted 24 months | Interrupted 24 months |
| The former Yugoslav Republic of Macedonia | Endemic | Interrupted | Endemic | Interrupted 12 months |
| Turkey | Endemic | Endemic | Endemic | Endemic |

| Country | 2014 | | Period 2012–2014 | |
|--|--------------------------------|--------------------------------|----------------------------|----------------------------|
| | Status of measles transmission | Status of rubella transmission | Measles elimination status | Rubella elimination status |
| Turkmenistan | Interrupted | Interrupted | Eliminated | Eliminated |
| Ukraine | Endemic* | Endemic* | Endemic | Endemic |
| United Kingdom of Great Britain and Northern Ireland | Interrupted | Interrupted | Interrupted 12 months | Interrupted 24 months |
| Uzbekistan | Interrupted | Interrupted | Interrupted 12 months | Interrupted 12 months |

*Unofficial version of ASU for 2014 received from Ukraine; RVC made decision based on NVC's documents from previous years and information from other official sources

Table 2. Numbers of Member States of the WHO European Region by measles and rubella elimination status in 2014

| | Countries by measles elimination status, 2014 | Countries by rubella elimination status, 2014 |
|------------------------------------|---|---|
| Interrupted | 32 | 32 |
| Endemic | 18* | 18* |
| Annual Status Update not submitted | 3 | 3 |

*Unofficial version of ASU for 2014 received from Ukraine; RVC made decision based on NVC's documents from previous years and information from other official sources

Table 3. Number of Member States of the WHO European Region by measles and rubella elimination status, period 2012 to 2014

| | Countries by measles elimination status, 2012–2014 | Countries by rubella elimination status, 2012–2014 |
|------------------------|--|--|
| Eliminated | 21 | 20 |
| Interrupted, 24 months | 2 | 3 |

| | | |
|---------------------------------------|----|----|
| Interrupted, 12 months | 9 | 9 |
| Endemic | 18 | 18 |
| Verification process not initiated | 3 | 3 |

Table 4. Member States of the WHO European Region with endemic transmission of measles, rubella or both diseases in 2014

| | Countries |
|---|---|
| Endemic transmission of measles and rubella | Austria, Belgium, Bosnia and Herzegovina, France, Georgia, Germany, Italy, Kazakhstan, Kyrgyzstan, Poland, Romania, Serbia, Switzerland, The Russian Federation, Turkey, Ukraine* |
| Endemic transmission of measles | Ireland, the former Yugoslav Republic of Macedonia |
| Endemic transmission of rubella | Bulgaria, Denmark |

Annex 2. Country-specific conclusions and recommendations**Andorra:** status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|---|
| RVC conclusion for 2013 | Interrupted endemic transmission of measles and rubella. |
| Epidemiology | No confirmed measles and rubella cases in 2014. |
| Surveillance performance | One suspected case was discarded. Country report lacking performance indicators, but alternative indicators were used. |
| Population immunity | Reported MRCV1 coverage is >95% and MRCV2 coverage is >90%. |
| Supplementary information | None provided. |
| Specific comments to country | Recommended performance indicators should be provided, including for suspected cases. Efforts are needed to increase MRVC2 coverage. |
| Conclusion for 2014 | Interrupted endemic transmission of measles and rubella. |
| Elimination status for the period 2012–2014 | Measles eliminated. Rubella eliminated. |

Armenia: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|--|
| RVC conclusion for 2013 | Interrupted endemic transmission of measles and rubella. |
| Epidemiology | Reported measles incidence of 3.8 per million population. Zero confirmed rubella or CRS cases reported. |
| Surveillance performance | All 13 confirmed measles cases were classified as imported (epi-linked) or import-related, but no genotype data was provided to justify this classification. Measles and rubella surveillance sensitivity is inadequate (<2/100 000) when correct denominators are used to calculate the discard rate. Laboratory data indicate that measles IgM-positive cases are also tested for rubella IgM. |
| Population immunity | Reported MRCV1 and MRCV2 coverage both continue to be >95%. However, coverage calculation is not adequately explained. In a measles outbreak of 11 cases, 5 were children 1 to 4 years of age with no vaccination history. |
| Supplementary information | None provided. |
| Specific comments to country | The RVC requests genotyping data to support laboratory results and the conclusion that cases were imported. Although surveillance quality has improved, it remains suboptimal and further improvement is required. The RVC would appreciate receiving further information on how vaccine coverage is estimated. |
| Conclusion for 2014 | Interrupted endemic transmission of measles and rubella. |
| Elimination status for period 2012-2014 | Measles eliminated. Rubella eliminated. |

Austria: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|--|
| RVC conclusion for 2013 | Inconclusive for measles and rubella. |
| Epidemiology | <p>Measles incidence of 13.7 per million population. 117 cases reported with 14 outbreaks; B3, D8, D9 genotypes.</p> <p>Rubella incidence of 1.3 per million population. 11 cases reported with no genotype data. 91% of cases aged 20+ years.</p> <p>Zero congenital rubella syndrome (CRS) cases reported.</p> |
| Surveillance performance | <p>All rubella cases and 21.4% of measles cases clinically compatible.</p> <p>It is possible that surveillance indicators were calculated incorrectly.</p> <p>Low rate of laboratory investigations for rubella and discarded cases.</p> |
| Population immunity | <p>Reported MRCV1 coverage is 96% and MRCV2 is 87%, based on administrative data. The system for collecting coverage data varies by State.</p> <p>High-risk populations are not identified by region but by group.</p> |
| Supplementary information | <p>Mass campaign to raise awareness of measles vaccination through different media and distribution of materials was conducted in Spring 2014.</p> |
| Specific comments to country | <p>Surveillance of measles and rubella needs to be improved, particularly laboratory investigation of rubella-suspected cases and data reporting.</p> <p>The existing method for estimating national vaccination coverage is still not clearly and completely explained and understandable. Some modifications of the method, or a different way of presenting information should be considered.</p> |
| Conclusion for 2014 | Endemic for measles and rubella. |
| Elimination status for the period 2012–2014 | <p>Measles endemic.</p> <p>Rubella endemic.</p> |

Azerbaijan: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|--|
| RVC conclusion for 2013 | Interrupted endemic transmission of measles and rubella; at risk of re-established transmission of measles. |
| Epidemiology | Zero confirmed measles, rubella or CRS cases reported. 2013 measles outbreak was stopped. |
| Surveillance performance | Measles and rubella surveillance sensitivity were inadequate (<2/100 000). Inconsistent denominators were used to calculate measles and rubella discard rates and laboratory testing rate. No CRS surveillance in practice. |
| Population immunity | Reported MRCV1 and MRCV2 coverage both continue to be >95%. 2 nd dose coverage calculation not adequately explained. Approximately 5800 children, in three territories including some rayons of Baku, were not immunized. |
| Supplementary information | Data provided on supplemental immunization activities (SIAs) and mopping-up conducted in 2014: subnational measles and rubella campaign in October 2014, age group 11-15 years old, target population 171 565, coverage 94%. Annual mop-up among 11-15 years old, 8529 immunized. |
| Specific comments to country | Surveillance sensitivity remains suboptimal and requires improvement. Urgent consideration should be given to conducting coverage surveys to establish independent estimates of vaccination coverage. There is evidence for the existence of immunity gaps in some administrative territories, particularly Baku, and steps need to be taken to increase population immunity in these areas. |
| Conclusion for 2014 | Interrupted endemic transmission of measles and rubella. |
| Elimination status for the period 2012–2014 | Measles eliminated. Rubella eliminated. |

Belarus: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|---|
| RVC conclusion for 2013 | Interrupted endemic transmission of measles and rubella. |
| Epidemiology | <p>Measles incidence reported as 6.4 per million population, but all cases were classified as imported or import-related by genotyping. The majority of cases were 20+ years old. Imported measles cases were from Russian Federation and Ukraine.</p> <p>Rubella incidence reported as zero, with one confirmed case classified as imported (from Poland) by genotyping.</p> <p>Zero CRS cases reported.</p> |
| Surveillance performance | Adequate sensitivity of surveillance. All sera are tested for rubella IgM, including those from measles IgM-positive cases. |
| Population immunity | Reported MRCV1 and MRCV2 coverage both continue to be >95%. |
| Supplementary information | Information provided on SIAs conducted to catch-up non-immune health workers and outbreak response immunization. |
| Specific comments to country | No specific comments. |
| Conclusion for 2014 | Interrupted endemic transmission of measles and rubella. |
| Elimination status for the period 2012–2014 | <p>Measles eliminated.</p> <p>Rubella eliminated.</p> |

Belgium: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|---|
| RVC conclusion for 2013 | Endemic transmission of measles and rubella. |
| Epidemiology | Measles incidence reported as 6.1 per million population, and rubella incidence is unknown. Measles D8 and B3 isolates were detected in 2014. |
| Surveillance performance | Measles surveillance sensitivity is inadequate (<2 per million population) and the rate of viral detection is insufficient (50%). Data on rubella are available based on screening of pregnant women, but no nationwide rubella surveillance has been established. CRS is included in mandatory notification in Wallonia, but not in Brussels or Flanders. Timeliness and completeness indicators have been incorrectly calculated. |
| Population immunity | Reported MRCV1 coverage continues to be >95%. MRCV2 coverage is not available, except for 2012 survey data – Wallonia and Brussels 76%, Flanders 93%. MMR2 vaccination is given only at school. |
| Supplementary information | Local risk assessment studies published, but no new nationwide coverage survey took place in 2014. No SIAs conducted. |
| Specific comments to country | Measles surveillance sensitivity remains inadequate. Efforts should be strengthened to increase the rate of viral detection. RVC cannot evaluate rubella elimination status until recommended nationwide rubella surveillance is established. A permanent, reliable mechanism for national vaccination coverage calculation for all vaccine doses is urgently required. Similar comments were made in 2013, but no changes have been observed. |
| Conclusion for 2014 | Endemic transmission of measles and rubella. |
| Elimination status for the period 2012-2014 | Measles endemic. Rubella endemic. |

Bosnia and Herzegovina: status of measles and rubella elimination in 2012, 2013, 2014 and for the period 2012–2014

a. Elimination Status Report 2010–2012

| Component | RVC comment |
|----------------------------|---|
| Goals and strategies | Complex political organization of the country, organization of health systems and hierarchy of institutions impose challenges for creation of coherent goals and strategies. |
| Epidemiology | Continued sporadic measles cases throughout country. Cases reported in all age groups, but most cases are among age groups 15–19 years and 20–29 years. Large rubella outbreak in 2010 (2B lineage). |
| Surveillance indicators | All measles cases in 2010–2012 and rubella cases in 2011–2012 classified as “clinically compatible, unknown origin”. The complexity of administration and different approaches used make it impossible to evaluate surveillance performance. |
| Immunization | Many challenges, differences between entities/districts in programme and vaccines in use, supply challenges, outbreaks of rubella and mumps, susceptibles mostly among 1991–1999 birth cohorts. |
| Other relevant information | NVC reported on introduction of a centralized IT surveillance software and system, and initiation of use of the WHO recommendations for case-based surveillance. |
| Conclusion for 2012 | Endemic transmission of measles and rubella. |

b. Annual Status Update 2013

| Component | RVC comment |
|--------------------------|---|
| RVC conclusion for 2012 | Endemic transmission of measles and rubella. |
| Epidemiology | 6 confirmed measles cases of unknown origin reported (no laboratory results); and 17 clinically compatible measles cases of unknown origin. Most cases in 5–14 years age group. 7 clinically compatible rubella cases of unknown origin reported (conflicting information presented about final classification). |
| Surveillance performance | Indicators impossible to interpret. |
| Population immunity | All entities have reported coverage of MRCV1 and MRCV2 <95%. |

| | |
|------------------------------|--|
| | Immunity gaps and at-risk populations recognized throughout. |
| Supplementary information | Additional vaccinations and support provided to vaccination centres. In the Republic of Srpska: additional vaccination started in 2010 – a total of 12 757 persons vaccinated. |
| Specific comments to country | The RVC recognizes the efforts made to close the immunity gaps identified in the face of administrative complexity and logistical challenges and encourages further activities to improve vaccination coverage and population immunity. Quality of surveillance needs to be improved, particularly with regard to laboratory testing and reporting of laboratory results. |
| Conclusion for 2013 | Endemic transmission of measles and rubella. |

c. Annual Status Update 2014

| Component | RVC comment |
|--------------------------|--|
| RVC conclusion for 2013 | Endemic transmission of measles and rubella. |
| Epidemiology | Multiple outbreaks of measles in Republic of Srpska (RS) and Federation of BiH (FBiH), with 5048 cases. Sporadic cases in Brcko District (BD). Almost 90% among persons not immunized or with unknown immunization status. Cases among all age groups, but > 50% among persons 15 years and older. Genotype D8 in 6/21 outbreaks. Small number of reported rubella cases (5 in FBiH, 3 in RS). Conflicting data in report for rubella cases, and possible under-reporting (numbers of suspected, confirmed and discarded by lab cases). More than 80% of measles laboratory data, but only 42% of rubella data, originate from WHO-accredited and proficient labs. |
| Surveillance performance | Suboptimal performance of surveillance. Miscalculated indicators. Diversity of reporting between 3 surveillance systems. Suboptimal number of lab investigations. Reported lack of reagents. Screening data (TORCH) presented in surveillance table. |
| Population immunity | Reported coverage with MRCV1 was 89.1% in FBiH, 88% in RS and 80% in BD. Reported coverage with MRCV2 was 91.5% in FBiH, 86% in RS and 70% in BD. Suboptimal coverage reported from most cantons and regions. Suboptimal coverage for many years. Limited SIA conducted in FBiH, immunized 5343 persons. Outbreak response immunization conducted in BIH; no data on number of |

| | |
|---|---|
| | immunized persons provided. |
| Supplementary information | Roma population mentioned as a particular population group potentially susceptible to measles and rubella infections, and hard to reach. |
| Specific comments to country | <p>Measles and rubella surveillance should be strengthened, with increased number of suspected cases investigated and towards confirmation of cases by laboratory or by epidemiological linking. Country efforts to introduce genotyping are commended. Surveillance should be expanded to genotyping of $\geq 80\%$ measles and rubella chains of transmission. Laboratory investigation of suspected rubella cases should be expanded and conducted by WHO-accredited or proficient laboratories in the surveillance system.</p> <p>Reach and maintain $>95\%$ coverage with two doses of MRCV at all administrative levels within routine immunization programme, and conduct an extensive SIA, to boost population immunity and prevent outbreaks.</p> |
| Conclusion for 2014 | Endemic transmission of measles and rubella. |
| Elimination status for the period 2012–2014 | <p>Measles endemic.</p> <p>Rubella endemic.</p> |

Bulgaria: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|--|
| RVC conclusion for 2013 | Interrupted endemic transmission of measles; at risk of becoming re-established. Inconclusive for rubella. |
| Epidemiology | <p>Zero confirmed measles cases reported.</p> <p>Rubella incidence 1 per million population, but no data on rubella genotypes provided.</p> <p>NVC considers measles and rubella interrupted.</p> |
| Surveillance performance | Measles and rubella surveillance sensitivity is extremely low (<2/100 000) and the rates are incorrectly calculated. Rubella laboratory investigation is low. |
| Population immunity | <p>Reported MRCV1 coverage is 93%, MRCV2 coverage is 89%.</p> <p>MRCV2 coverage has declined by 5% since 2012.</p> <p>14 sub-national regions report coverage <90%.</p> <p>The vaccination coverage calculation is not adequately explained.</p> |
| Supplementary information | <p>No SIAs conducted.</p> <p>Project undertaken to improve MMR uptake in the Roma population.</p> |
| Specific comments to country | <p>The sensitivity of rash and fever surveillance is extremely low and needs to be improved.</p> <p>RVC requests an improvement of laboratory investigation for rubella and genotyping data to support the laboratory results.</p> <p>More detail on how the vaccination coverage estimates are calculated would be appreciated.</p> |
| Conclusion for 2014 | <p>Interrupted endemic transmission of measles.</p> <p>Endemic transmission of rubella.</p> |
| Elimination status for the period 2012–2014 | <p>Measles eliminated.</p> <p>Rubella endemic.</p> |

Croatia: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|---|
| RVC conclusion for 2013 | Inconclusive for measles and rubella elimination. |
| Epidemiology | <p>Measles incidence of 3.7 per million population. Of 16 confirmed cases, 13 were reported as an outbreak in Zagreb (started November 2014 and continued to June 2015). 56% of cases were older than 20 years. Confirmed genotypes D8 and B3.</p> <p>Zero rubella and CRS cases reported.</p> |
| Surveillance performance | <p>Discrepancy in the number of rubella suspected (0) and laboratory tested cases (5).</p> <p>Discrepancy in the number of laboratory confirmed measles cases and IgM positive cases.</p> <p>Surveillance indicators calculated incorrectly and alternative indicators used.</p> |
| Population immunity | <p>Reported MRCV1 coverage is 93.7% and MRCV2 coverage is 96.8%. 3 territories identified with MRCV1 coverage <90%. Among Roma community (17 000) estimated coverage of 50%.</p> <p>Problem with declining vaccination coverage in several areas.</p> |
| Supplementary information | Catch-up immunizations routinely conducted in Roma settlements. |
| Specific comments to country | <p>RVC requests clarification of the number of measles cases suspected tested and confirmed.</p> <p>More information on rubella and CRS surveillance is needed.</p> <p>Improvements in the quality of laboratory-based surveillance are required, and</p> <p>≥80% of cases suspected for measles or rubella with adequate specimens collected should be tested in a proficient laboratory.</p> <p>Genotype analysis should be performed in a proficient laboratory and sequences reported to MeaNS WHO database</p> |
| Conclusion for 2014 | Interrupted endemic transmission of measles and rubella. |
| Elimination status for the period 2012–2014 | <p>Measles interrupted 12 months.</p> <p>Rubella interrupted 12 months.</p> |

Cyprus: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|--|
| RVC conclusion for 2013 | Interrupted endemic transmission of measles and rubella; at risk of becoming re-established. |
| Epidemiology | Measles incidence 11.6 per million population. Outbreak February-April 2014 in Limassol; 10 cases, no genotype information provided, all aged 10-29, not immunized or unknown vaccination status. Zero rubella or CRS cases reported. |
| Surveillance performance | Surveillance indicators appear adequate. No information provided on existence or performance of CRS surveillance. |
| Population immunity | Reported MRCV1 coverage not reported for 2013 and 2014; MRCV2 coverage is 80.1% for 2014. 5 territories with low coverage for MRCV1, but only 1 territory with low coverage for MRCV2. No high-risk populations identified. |
| Supplementary information | Action plan developed for elimination of measles, rubella and CRS. Efforts to increase vaccination coverage in health centres and schools. Intensive catch-up immunizations in primary secondary schools. |
| Specific comments to country | Genotype information on $\geq 80\%$ of chains of transmission should be reported. Population immunity is low and every effort should be made to improve vaccination coverage. |
| Conclusion for 2014 | Interrupted endemic transmission of measles and rubella. |
| Elimination status for the period 2012-2014 | Measles eliminated. Rubella eliminated. |

Czech Republic: status of measles and rubella elimination in 2014 and for period 2012–2014

| Component | RVC comment |
|---|---|
| RVC conclusion for 2013 | Interrupted endemic transmission of measles and rubella. |
| Epidemiology | <p>Measles incidence of 20.78 per million population (222 cases); outbreak of 186 cases January to August 2014 as a result of importation of B3 genotype, 65% in age group >30 years. No evidence for continued endemic transmission after the outbreak.</p> <p>Rubella incidence of 0.09 per million population (1 case), zero CRS cases reported.</p> |
| Surveillance performance | <p>Rate of discarded cases and rate of viral detection calculated incorrectly; number of discarded measles cases appears low in comparison with number of confirmed cases.</p> <p>Only 2 suspected rubella cases reported. No information provided on rubella genotyping neither on existence or performance of CRS surveillance.</p> <p>Status of some measles cases appear to be pending or inconclusive, but it is not stated.</p> |
| Population immunity | <p>No coverage data reported for 2013 and 2014; according to Joint Reporting Form (JRF) >95% in all 14 regions for 2014.</p> <p>National seroprevalence study carried out in 2013 for age groups 30 – 44 years - antibody titres were lower than 90%.</p> |
| Supplementary information | <p>Vaccination campaign for health care workers (HCWs), 20-64 years old, March 2014, as a response to outbreak.</p> <p>No high-risk populations identified.</p> |
| Specific comments to country | <p>RVC would appreciate receiving clarification on the pending measles cases.</p> <p>The sensitivity of rubella surveillance needs to be clarified.</p> <p>Vaccination coverage data for 2013 and 2014 would be appreciated.</p> |
| Conclusion for 2014 | Interrupted endemic transmission of measles and rubella. |
| Elimination status for the period 2012-2014 | <p>Measles eliminated.</p> <p>Rubella eliminated.</p> |

Denmark: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|---|
| RVC conclusion for 2013 | Inconclusive for measles and rubella. |
| Epidemiology | <p>Measles incidence 3.6 per million population. 6 outbreaks reported, all B3 lineages, but genotyping data provides no evidence for ongoing transmission.</p> <p>Rubella incidence unknown, due to absence of routine surveillance. Zero CRS cases confirmed.</p> |
| Surveillance performance | Measles and rubella surveillance appears to be passive and non-compulsory. Obligatory reporting established only for rubella in pregnancy and CRS. No zero reporting at sub-national level. Case-based surveillance for measles established but no data on completeness or timeliness. Surveillance sensitivity unclear – many specimens were tested for measles IgM but were not included in discard rate. Measles IgM-negative suspected measles cases not tested for rubella. |
| Population immunity | Reported MRCV1 coverage is 88%, MRCV2 coverage is 73%. Coverage in Copenhagen is approximately 60%. Study showed that coverage was 3-4% under-reported in 2012. Reminder programme established in an attempt to catch-up unvaccinated children, with modest results to date. |
| Supplementary information | No measles outbreak response activities reported. |
| Specific comments to country | <p>RVC repeats that establishment of obligatory notification of suspected cases for measles and initiation of rubella surveillance are critical for adequate assessment of elimination status.</p> <p>RVC would propose for consideration and recommend that measles IgM-negative suspected measles cases should be tested for rubella.</p> <p>Action needs to be taken to increase population immunity, particularly in and around Copenhagen.</p> <p>RVC would like to see follow-up on its recommendations in country.</p> |
| Conclusion for 2014 | <p>Interrupted endemic transmission of measles.</p> <p>Endemic transmission of rubella.</p> |
| Elimination status for the period 2012–2014 | <p>Measles interrupted 12 months.</p> <p>Rubella endemic.</p> |

Estonia: Status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|--|
| RVC conclusion for 2013 | Interrupted endemic transmission of measles and rubella. |
| Epidemiology | No confirmed measles, rubella or CRS cases. |
| Surveillance performance | <p>The source of laboratory information is not clearly declared for 2014, but apparently tests were conducted in different labs for rubella.</p> <p>The total number of tests for measles (305) is higher than number of suspected cases (39), the same for rubella (640 tested versus 10 suspected).</p> <p>The rate of laboratory investigations is an estimation.</p> <p>The rate of discarded cases is apparently 3.0 for measles and 0.8 for rubella.</p> |
| Population immunity | <p>Reported MRCV1 coverage is 93.4% and MRCV2 coverage is 93.3%, based on information provided by family doctors.</p> <p>Two territories identified with <90% coverage.</p> |
| Supplementary information | Updated laboratory guidelines for HCWs. |
| Specific comments to country | <p>The RVC would appreciate receiving clarification on the discrepancy between the numbers of suspected cases and the number of laboratory tests conducted and further information on how laboratory investigation of suspected cases is organized.</p> <p>Laboratory testing results from screening activities should not be reported as part of disease surveillance in the Annual Status Update (ASU).</p> |
| Conclusion for 2014 | Interrupted endemic transmission of measles and rubella. |
| Elimination status for the period 2012-2014 | <p>Measles eliminated.</p> <p>Rubella eliminated.</p> |

Finland: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|--|
| RVC conclusion for 2013 | Interrupted endemic transmission of measles and rubella. |
| Epidemiology | Zero confirmed endemic measles cases but 2 imported cases reported (B3 lineage). Zero rubella or CRS cases reported. |
| Surveillance performance | Very high rate of discarded cases, surveillance appears to be adequate. |
| Population immunity | Reported MRCV1 coverage is 95.4% but no information was provided on MRCV2 coverage. Coverage is estimated within a random sample of 1000 children in each cohort, and this does not provide sufficient evidence of high population immunity. |
| Supplementary information | Anticipated shift to online vaccination registers should improve data quality. |
| Specific comments to country | Implement the shift to use of an electronic vaccination registry as soon as possible. |
| Conclusion for 2014 | Interrupted endemic transmission of measles and rubella. |
| Elimination status for the period 2012–2014 | Measles eliminated. Rubella eliminated. |

France: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|---|
| RVC conclusion for 2013 | Endemic transmission of measles and rubella. |
| Epidemiology | Measles incidence 4 per million population. 267 cases confirmed but only 122 laboratory confirmed; B3 and D8 genotypes identified. 3 confirmed rubella cases reported. 2 CRS cases reported from congenital rubella infection (CRI) surveillance. |
| Surveillance performance | No nationwide rubella surveillance; only rubella screening in pregnancy and CRI surveillance. Surveillance indicators poorly calculated. Alternative indicator calculations for measles based on the total number of suspected cases notified to health authorities. |
| Population immunity | Vaccine coverage data for 2014 not reported. Coverage study of the 2012 birth cohort found MRCV1 coverage to be 92.4% and MRCV2 coverage to be 65.8%. A 2013 serosurvey of 18-32-year-olds found 9.2% susceptible to measles. |
| Supplementary information | MMR vaccination recommended postpartum for rubella seronegative mothers. |
| Specific comments to country | Evaluation of rubella elimination status cannot be properly performed until nationwide rubella surveillance is established. The rate of laboratory confirmation of measles cases needs to be improved. MRCV2 coverage is particularly low and needs to be increased. RVC commends France on the quality of CRS surveillance. |
| Conclusion for 2014 | Endemic transmission of measles and rubella. |
| Elimination status for the period 2012–2014 | Measles endemic. Rubella endemic. |

Georgia: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|--|
| RVC conclusion for 2013 | Endemic transmission of measles and rubella. |
| Epidemiology | <p>Reported measles incidence of 854.8 per million population. 8 outbreaks recorded, 2 genotyped, associated with D8 lineages.</p> <p>Reported rubella incidence of 39.9 per million population. Rubella genotyping not conducted.</p> <p>Zero CRS cases reported.</p> |
| Surveillance performance | Quality of surveillance appears to be adequate except the rate of viral detection. |
| Population immunity | <p>Reported MRCV1 coverage is 92%; MRCV2 coverage is 86.6%.</p> <p>33 territories with coverage <90%; low immunity among 15-30-year-olds.</p> |
| Supplementary information | <p>Catch-up for children <14 years and mop-up for >14 years, coverage 21% and 11% respectively.</p> <p>During European Immunization Week 2014, one dose of MMR was offered to population with no vaccination history, regardless of age.</p> |
| Specific comments to country | <p>Georgia is to be commended for efforts made to provide catch-up vaccinations, but implementation is suboptimal.</p> <p>Population immunity needs to be increased through higher vaccination coverage.</p> <p>The immunization gap recognized in adults needs to be addressed.</p> <p>There is a need to improve the rate of viral detection both for measles and rubella (especially considering long-lasting outbreaks).</p> |
| Conclusion for 2014 | Endemic transmission of measles and rubella. |
| Elimination status for the period 2012-2014 | <p>Measles endemic.</p> <p>Rubella endemic.</p> |

Germany: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|---|
| RVC conclusion for 2013 | Endemic transmission of measles and rubella. |
| Epidemiology | <p>Measles incidence of 4.9 per million population. 443 cases reported with 40 outbreaks (17 genotyped); B3, D8, genotypes detected.</p> <p>Rubella incidence of 1.8 per million population. 151 cases reported with 2 outbreaks; no genotype data.</p> <p>Zero CRS cases reported.</p> |
| Surveillance performance | <p>Number of suspected cases of measles and rubella not available.</p> <p>Rate of discarded cases not available.</p> <p>Rate of viral detection : 55% measles, 0% rubella</p> <p>Most of reported rubella cases only clinically compatible.</p> <p>Sensitivity of surveillance not yet high.</p> |
| Population immunity | <p>Coverage data for 2014 not yet available.</p> <p>Cohort generated from country-wide health insurance claims data:</p> <p>At 24 months MRCV1 coverage is 94.9%, MRCV2 is 70.1%.</p> <p>At 36 months MRCV1 coverage is 97.6%, MRCV2 is 84.8%.</p> <p>At 48 months MRCV1 coverage is 98.1%, MRCV2 is 87.8%.</p> <p>4 territories identified with low coverage for MRCV2.</p> <p>Among refugees 87% seropositive. Anthroposophical communities identified with 58.2% coverage.</p> |
| Supplementary information | <p>Outbreak reports provided as an additional document.</p> <p>Several activities established (e.g. laboratory sentinel to assess discarded cases of measles, implementation of a national outbreak reporting form, national working group to develop a National Action Plan for the Elimination of Measles and Rubella (2015–2020), national conference on MR elimination).</p> |
| Specific comments to country | The quality of measles and rubella surveillance still needs to be clarified. Efforts should be made to have $\geq 80\%$ of specimens tested in WHO-accredited laboratories or laboratories with known high proficiency. |
| Conclusion for 2014 | Endemic transmission of measles and rubella. |
| Elimination status for the period 2012–2014 | <p>Measles endemic.</p> <p>Rubella endemic.</p> |

Greece: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|--|
| RVC conclusion for 2013 | Inconclusive for measles and rubella. |
| Epidemiology | Measles incidence 0.09 per million population (1 case aged 30+ with unknown vaccination status – D8 genotype). Zero rubella cases reported. Zero CRS cases reported. |
| Surveillance performance | Rate of discarded suspect measles cases reported as 2.2; rate of discarded suspect rubella cases was 6.27. However, all discarded suspected cases were investigated in “other” labs and not in WHO-accredited or proficient laboratories. No data about representativeness of reporting discarded cases. No CRS cases reported/tested. |
| Population immunity | Reported MRCV1 coverage is 97.3%. But no national vaccination registry system exists – data come from the national immunization coverage study conducted in 2013 among children aged 2-3 years old (birth cohort 2010) throughout Greece. No data on MRCV2 coverage in 2014 provided from the latest vaccination study (2013), as according to the national immunization programme (NIP) the 2nd dose is provided at the age of 4-6. No administrative territories with MRCV1 coverage <90%. |
| Supplementary information | Conducted SIA in different areas of the country but no data on coverage achieved. Following a WHO country mission, Greece updated strategies and procedures for measles, rubella and CRS elimination, including communications with all players in the country and enhanced CRS surveillance. |
| Specific comments to country | A mechanism for determining the immunization coverage for two vaccine doses at all administrative levels is required. Population immunity is not high enough and immunization coverage needs to reach 95% at national level and in all sub-national units for both MRCV doses. Measles and rubella surveillance quality should be further improved by ensuring all laboratory testing is performed in a WHO-accredited laboratory or a laboratory of known proficiency. RVC would appreciate more information on the SIAs that have been conducted. |
| Conclusion for 2014 | Interrupted endemic transmission of measles and rubella. |
| Elimination status for the period 2012–2014 | Measles interrupted 12 months. Rubella interrupted 12 months. |

Hungary: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|--|
| RVC conclusion for 2013 | Interrupted endemic transmission of measles and rubella. |
| Epidemiology | No confirmed measles or rubella cases reported. 5 suspected rubella cases discarded. |
| Surveillance performance | Surveillance sensitivity is low. |
| Population immunity | Reported MRCV1 and MRCV2 coverage are both >95%. Coverage estimates are based on administrative reports from health visitors of children 24-36 months, and school nurses after campaigns among children at grade 6. Concerns over population immunity among migrants. |
| Supplementary information | None provided. |
| Specific comments to country | Efforts should be made to improve the sensitivity of surveillance. The 2015 report should include coverage and surveillance information on new migrant populations. |
| Conclusion for 2014 | Interrupted endemic transmission of measles and rubella. |
| Elimination status for the period 2012–2014 | Measles eliminated. Rubella eliminated. |

Iceland: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|---|
| RVC conclusion for 2013 | Inconclusive for measles and rubella. |
| Epidemiology | One confirmed measles case reported; 61 tested in laboratory. No genotype information provided. Zero rubella cases; 120 tested in laboratory. |
| Surveillance performance | Most surveillance indicators unknown. |
| Population immunity | Reported MRCV1 coverage is 92%; MRCV2 coverage is 96%. |
| Supplementary information | National strategic plan and standard operating procedures (SOPs) are described in legislation, regulations, and recommendations of Chief Epidemiologist; funding secured by government; study (2010) revealed 95% of parents had a positive attitude towards immunization and 97% planned to vaccinate. |
| Specific comments to country | Reporting of surveillance data needs to be improved. Genotype data on isolates would be appreciated, to be used in confirming importation. Efforts should be taken to improve population immunity. |
| Conclusion for 2014 | Interrupted endemic transmission of measles and rubella. |
| Elimination status for the period 2012–2014 | Measles interrupted 12 months. Rubella interrupted 12 months. |

Ireland: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|--|
| RVC conclusion for 2013 | Endemic measles transmission; interrupted endemic transmission of rubella, at risk of becoming re-established. |
| Epidemiology | <p>Measles incidence 6.5 per million population (30 cases). 3 measles outbreaks reported, 2 genotyped associated with genotype D8. 3 sporadic cases genotyped B3. 30% of measles cases were in children 0-9 years of age.</p> <p>Rubella incidence 0.44 per million (2 cases). Zero CRS reported.</p> |
| Surveillance performance | <p>Improved surveillance activities – with ability to identify suspected and discarded cases (since July 2013).</p> <p>Measles and rubella surveillance sensitivity still inadequate.</p> <p>50% of reported cases were of unknown origin.</p> |
| Population immunity | <p>National immunization database in process of development.</p> <p>Reported MRCV1 coverage is 93% and MRCV2 is 91-93% (improvement).</p> <p>Of 30 measles cases reported, 19 were unvaccinated (63%), 15 (50%) were eligible for vaccination.</p> <p>12 administrative levels had MRCV1 coverage <90%.</p> |
| Supplementary information | SIA conducted at national level but no information on coverage provided. |
| Specific comments to country | <p>There is a need to increase population immunity by improving MRCV1 and MRCV2 coverage.</p> <p>A national immunization database should be established and fully implemented as soon as possible.</p> <p>The linkage between case investigation and laboratory testing data needs to be improved.</p> <p>The quality of case investigations needs to be improved.</p> |
| Conclusion for 2014 | <p>Endemic transmission of measles.</p> <p>Interrupted endemic transmission of rubella.</p> |
| Elimination status for the period 2012–2014 | <p>Measles endemic.</p> <p>Rubella eliminated.</p> |

Israel: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|--|
| RVC conclusion for 2013 | Interrupted endemic transmission of measles and rubella. |
| Epidemiology | Measles incidence 0.6 per million population (5 cases). 2 cases were imported and 3 import-related. Genotypes B3 and G3 were detected. Zero confirmed rubella or CRS cases. |
| Surveillance performance | The rate of discarded cases has improved but is still <2 per 100 000 population. No data provided on representativeness of reporting discarded cases. |
| Population immunity | Reported MRCV1 coverage is 96%; MRCV2 coverage is 99%. MRCV2 coverage obtained through central electronic register. No territories <90% coverage and no high-risk groups reported. |
| Supplementary information | None provided. |
| Specific comments to country | Lack of national plan for measles and rubella elimination should be addressed. The rate of discarded cases could be improved and data on the representativeness of reporting discarded cases should be collected. |
| Conclusion for 2014 | Interrupted endemic transmission of measles and rubella. |
| Elimination status for the period 2012–2014 | Measles eliminated. Rubella eliminated. |

Italy: status of measles and rubella elimination in in 2013, 2014 and for the period 2012-2014

a) Status in 2013

| Component | RVC comment |
|------------------------------|---|
| Epidemiology | In 2013: 2205 cases of measles (41 per million pop.) and 66 cases of rubella (1 per million pop.). 75% of reported cases occurred in individuals >15 years of age. Almost all Regions affected. CRS: 2 cases reported; 3 other “asymptomatic lab-confirmed cases” discarded. |
| Surveillance performance | Surveillance sensitivity for both diseases is low: 0.3 discarded cases/100 000 pop. for measles and 0.05/100 000 for rubella. Measles genotyping shows that various strains are currently circulating, primarily D8 and D4. |
| Population immunity | 2013 coverage data incomplete. MMR1 coverage of 88% and MMR2 coverage of 84% are too low to achieve elimination. Regional MRCV2 coverage varies widely. National trend in coverage appears slightly downward. SIAs conducted in certain regions, but no coverage results available. |
| Supplementary information | No coverage surveys or serosurveys reported. |
| Specific comments to country | Nationwide, wide age range SIAs should be urgently considered to close immunity gaps in individuals >15 years. Surveillance deficiencies, especially testing specimens in labs of unknown proficiency and insufficient rate of viral detection, should be addressed. |
| Conclusion 2013 | Endemic transmission of measles and rubella. |

b) Status in 2014 and for the period 2012–2014

| Component | RVC comment |
|-------------------------|---|
| RVC conclusion for 2013 | Endemic transmission of measles and rubella. |
| Epidemiology | Measles incidence 27 per million population, with measles outbreaks (193) occurring all over the country. Most reported outbreaks (114) were with 2 cases. All ages were affected, but 57% of cases were 20+ years old. D8 and B3 dominated but other lineages were also present. Insufficient data to define how many outbreaks/cases were linked. Rubella incidence 0.4 per million occurring in 11 regions. |

| | |
|---|--|
| | Zero CRS cases confirmed. |
| Surveillance performance | Inadequate sensitivity of rash and fever surveillance; few suspected cases are discarded. Reporting completeness and timeliness <80%. Large proportion of cases confirmed as clinically compatible, due to lack of lab investigation. Large proportion of specimens tested in labs with unknown proficiency, external quality assessment (EQA), or accreditation status. 62/193 measles chains of transmission were genotyped, various strains are currently circulating, primarily D8 and B3. |
| Population immunity | MRCV1 coverage is 86%, MRCV2 coverage is 82%. MRCV1 coverage <70% in one region and MRCV2 <70% in 2 regions. Coverage has declined nationwide since 2012. 85% of measles cases were unimmunized, 67% of rubella cases were unimmunized. |
| Supplementary information | Data provided on extensive catch-up vaccination for refugees/migrants. |
| Specific comments to country | RVC recommends that steps be taken to increase the sensitivity of rash and fever surveillance, to collect specimens on all suspect measles and rubella cases, and to test those specimens in accredited labs. RVC urges that implementation of the new National Vaccine Plan begin as soon as possible. |
| Conclusion for 2014 | Endemic transmission of measles and rubella. |
| Elimination status for the period 2012–2014 | Measles endemic. Rubella endemic. |

Kazakhstan: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|---|
| RVC conclusion for 2013 | Endemic measles and rubella transmission. |
| Epidemiology | <p>Measles incidence increased to 18.5 per million population. 321 cases reported - 274 cases (85%) laboratory confirmed. 183 cases (57%) were >15 years of age. 3 outbreaks reported in 5 different territories all genotyped. Same D8 genotype.</p> <p>Rubella incidence increased to 8.8 per million population. 152 cases reported, of which 13 were laboratory confirmed.</p> <p>1 CRS case reported.</p> |
| Surveillance performance | <p>Significant improvement compared to 2013.</p> <p>Corrected rate of discarded cases for measles is 1.72.</p> <p>Corrected rate of discarded cases for rubella is 2.2.</p> |
| Population immunity | <p>Reported MRCV1 coverage is 99.0% among children under 2 years of age and MRCV2 coverage is 99.2% for 6-year-olds.</p> <p>No territories with immunity gaps reported.</p> |
| Supplementary information | <p>Work has been conducted to increase awareness and knowledge of immunization in the population and consequences of refusals.</p> <p>Meetings with representatives of a religious organization were organized within the European Immunization Week with published information in the mass media.</p> |
| Specific comments to country | <p>Although improved over previous years, surveillance quality requires further improvement, and more suspected cases need to be investigated and tested by laboratories.</p> <p>Data presented in ASU should be better explained (e.g. data on suspected, confirmed and discarded cases are not in agreement with numbers of suspected, tested and confirmed/discarded by laboratories).</p> |
| Conclusion for 2014 | Endemic measles and rubella transmission. |
| Elimination status for the period 2012–2014 | <p>Measles endemic.</p> <p>Rubella endemic.</p> |

Kyrgyzstan: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|---|
| RVC conclusion for 2013 | NVC to resubmit complete ASU. |
| Epidemiology | <p>Measles incidence of 54.3 per million population. 318 cases, all laboratory confirmed and classified as imported (6) or import-related (312); genotype data provided – D8. The 2014 outbreak lasted for 12 months (May 2014 – May 2015).</p> <p>Rubella incidence of 4.4 per million population. 25 cases, all laboratory confirmed but not genotyped. No information on whether they related to importation or to endemic circulation. Zero confirmed CRS cases reported.</p> |
| Surveillance performance | <p>Timeliness and completeness of reporting appear adequate. Rate of discarded measles cases appears adequate.</p> <p>Unclear numerator and denominator used for calculation of laboratory investigation rate.</p> <p>Rubella surveillance sensitivity inadequate (0.84/100 000). No genotype information for rubella cases.</p> |
| Population immunity | Reported MRCV1 coverage is 95.6% and MRCV2 coverage is 96.8%; coverage calculation explained. |
| Supplementary information | <p>Mass immunization campaign in March-May 2015 (for 1-20-year-olds: 2 048 767 people in all).</p> <p>SIA for migrants every year; 18 500 persons were vaccinated in 2014.</p> <p>Introduction of “coverage of the dropped-out” in remote mountain villages.</p> <p>Information materials in Russian and Kyrgyz developed and printed.</p> <p>Meetings held with the leaders of religious groups.</p> |
| Specific comments to country | <p>RVC commends Kyrgyzstan for the efforts that have been made in the country in recent years.</p> <p>Data on genotyping for rubella cases is needed. Further improvements are needed in the quality of surveillance, particularly the quality of case investigation.</p> <p>The ASU tables should be completed more carefully (Table 3.1.b for rubella is empty) and some calculations of standard indicators are not correct.</p> |
| Conclusion for 2014 | Endemic measles and rubella transmission. |
| Elimination status for the period 2012–2014 | Measles endemic. Rubella endemic. |

Latvia: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|---|
| RVC conclusion for 2013 | Interrupted endemic transmission of measles and rubella; at risk of becoming re-established. |
| Epidemiology | <p>Measles incidence increased to 17.99 per million population. 36 cases reported with 31 (86%) cases ≥ 15 years of age. 7 outbreaks reported, but origin of all cases unknown. Genotype B3 detected in 3 outbreaks.</p> <p>Rubella incidence of 0.5 per million population (1 case).</p> <p>Zero confirmed CRS cases reported.</p> |
| Surveillance performance | <p>Surveillance performance indicators in general improved.</p> <p>The rate of discarded measles cases rose to 2.1.</p> <p>Rubella surveillance sensitivity inadequate.</p> |
| Population immunity | <p>Reported MRCV1 coverage is 94.9% and MRCV2 coverage is 88.5%.</p> <p>One administrative level with coverage <90% for MRCV1.</p> <p>Two administrative levels (Pierigas and Rigas regions) with coverage <90% for MRCV2.</p> <p>No high-risk population groups reported.</p> |
| Supplementary information | None provided. |
| Specific comments to country | <p>Immunization coverage appears to be declining; this requires further investigation, and appropriate measures to increase population immunity need to be taken.</p> <p>RVC would appreciate more information on the measles outbreaks that occurred in April and May 2014, and recommends to improve the rate of viral detection</p> |
| Conclusion for 2014 | Interrupted endemic transmission of measles and rubella. |
| Elimination status for the period 2012–2014 | <p>Measles eliminated.</p> <p>Rubella eliminated.</p> |

Lithuania: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|---|
| RVC conclusion for 2013 | Endemic transmission of measles. Inconclusive for rubella. |
| Epidemiology | Measles incidence 2.4 per million population. 11 cases confirmed – No genotype mentioned in the ASU but D8 genotype reported to MeaNS database. Zero rubella and CRS cases reported. |
| Surveillance performance | 4 measles cases classified as imported and 7 cases as endemic. All 11 cases occurred between March and June. Measles and rubella surveillance sensitivity inadequate (<2/100 000). Inconsistency in numbers of measles and discarded cases in epidemiological and laboratory tables. Insufficient rate of measles viral detection. |
| Population immunity | Reported MRCV1 and MRCV2 coverage both continue to remain relatively high (93.4% and 91.8%), but below 95%. MRCV2 coverage <90% reported in two counties (36% of population). |
| Supplementary information | National measles and rubella elimination verification action plan and surveillance guidelines are under development. |
| Specific comments to country | Further improvements in the quality and sensitivity of surveillance are essential, including increasing of the viral detection rate. To strengthen population immunity, immunization coverage should be increased to reach at least 95% in all subnational administrations. RVC requests that genotyping data be submitted to support interpretation of the laboratory results. |
| Conclusion for 2014 | Interrupted endemic transmission of measles and rubella. |
| Elimination status for the period 2012–2014 | Measles interrupted 12 months. Rubella interrupted 12 months. |

Luxembourg: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|---|
| RVC conclusion for 2013 | Interrupted endemic transmission of measles and rubella; at risk of becoming re-established. |
| Epidemiology | Zero confirmed local cases of measles, rubella and CRS, and 2 imported measles cases reported in 2014 and genotyped. |
| Surveillance performance | <p>Measles and rubella surveillance sensitivity inadequate (<2/100 000), moreover, ASU provided wrong estimates of rate of discarded cases (RDC).</p> <p>Timeliness and completeness of reporting is based on reporting of suspected cases (5 for measles and 1 for rubella).</p> <p>To reach RDC >2/100 000 at least 11 suspected cases should have been discarded.</p> <p>No routine reporting, including “zero” cases.</p> |
| Population immunity | MRCV1 coverage estimated at 99%; MRCV2 coverage at 85.6%. Both rates are extrapolated from a 2012 survey. |
| Supplementary information | <p>MMR catch-up vaccination for refugees 0-34 years of age. Target population of 584. Coverage reached 100%.</p> <p>MMR catch-up vaccination for military recruits >18 years of age. Target population of 130. Coverage reached 100%.</p> |
| Specific comments to country | <p>To strengthen population immunity MRCV2 coverage should be increased to reach 95%.</p> <p>Improvements are required in the quality of surveillance.</p> <p>Improvements are also necessary in the data reporting and presentation of surveillance indicators in annual reports.</p> |
| Conclusion for 2014 | Interrupted endemic transmission of measles and rubella. |
| Elimination status for the period 2012-2014 | <p>Measles eliminated.</p> <p>Rubella eliminated.</p> |

Malta: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|--|
| RVC conclusion for 2013 | Interrupted endemic transmission of measles and rubella. |
| Epidemiology | No measles and rubella cases reported. |
| Surveillance performance | Rubella testing is conducted as a screening programme, not active surveillance of suspected cases. Incorrect calculation of discard rate. |
| Population immunity | Reported MRCV1 coverage is 98.1% and MRCV2 coverage is 94.3%. |
| Supplementary information | All migrant minors <10 years old vaccinated with MMR within 48 hours of arrival. As of late 2014, Malta introduced testing for rubella IgG avidity to help in confirmation of acute cases. |
| Specific comments to country | Surveillance quality needs to be improved. Results of routine screening should not be reported in the ASU. More attention is required on reporting surveillance performance indicators. Efforts are required to improve the MRCV2 coverage. |
| Conclusion for 2014 | Interrupted endemic transmission of measles and rubella. |
| Elimination status for the period 2012–2014 | Measles eliminated. Rubella eliminated. |

Montenegro: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|---|
| RVC conclusion for 2013 | Inconclusive for measles and rubella. |
| Epidemiology | Measles incidence reported as 6.5/million population, but all 4 local cases were classified as import-related. Rubella and CRS incidence reported as zero (no cases). |
| Surveillance performance | Measles and rubella surveillance sensitivity is inadequate (<2/100 000). Timeliness of reporting was 79%, but completeness of reporting 85%. All suspected cases of rubella and all but 1 (imported case) suspected cases of measles were laboratory investigated. However, none of these tests were performed in WHO-accredited or proficient labs. No genotyping performed. |
| Population immunity | Noticeable decrease in MRCV1 coverage (below 80% in 2014). MRCV2 coverage, although decreased, remains >95%. In 10 administrative territories, MRCV1 coverage between 62% and 86% and 3 territories with MRCV2 coverage between 80% and 87%. |
| Supplementary information | SIAs conducted to catch-up unimmunized in Roma population. |
| Specific comments to country | Reach and maintain >95% coverage with both doses of MRCV at national and sub-national levels. Strengthen quality of surveillance through improving its sensitivity and testing specimens in WHO-accredited and/or proficient labs. Ensure measles and rubella virus isolation and genotyping. |
| Final conclusion for 2014 | Interrupted endemic transmission of measles and rubella. |
| Elimination status for the period 2012-2014 | Measles interrupted 12 months. Rubella interrupted 12 months. |

Netherlands: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|--|
| RVC conclusion for 2013 | Interrupted endemic transmission of measles and rubella. |
| Epidemiology | <p>Measles incidence is 7.7 per million population. Most measles cases linked to the 2013 epidemic, which lasted until March 2014. Several clusters of measles caused by other imported strains also occurred with last case reported in September 2014. All chains of transmission genotyped, different B3 and D8 lineages identified.</p> <p>Rubella incidence is 0.1 per million population.</p> <p>No CRS cases reported.</p> |
| Surveillance performance | <p>Measles surveillance sensitivity inadequate (<2/million population). Discard rate and some other surveillance performance indicators incorrectly calculated or unavailable. Alternative indicator: timeliness of notification 37%.</p> <p>Laboratory data analysis is based on cases tested at WHO-accredited laboratories. Incomplete data on cases tested at other proficient labs.</p> <p>Inconsistent numbers of cases tested at WHO-accredited labs were presented in tables. Several viral sequences mentioned in ASU are not available in MeaNS WHO database.</p> |
| Population immunity | <p>Reported MRCV1 coverage is >95% and MRCV2 coverage is 93%.</p> <p>Out of total 393 municipalities, <90% MRCV1 coverage reported in 35 and <90% MRCV2 coverage in 59 municipalities.</p> |
| Supplementary information | Information on the population group at risk and sub-national SIA already provided in report for 2013. |
| Specific comments to country | <p>Although the surveillance system is able to provide reliable data on measles and rubella, its sensitivity needs further improvement.</p> <p>RVC recommends routinely monitoring the quality of surveillance using standard indicators.</p> |
| Final conclusion for 2014 | Interrupted endemic transmission of measles and rubella. |
| Elimination status for the period 2012–2014 | <p>Measles eliminated.</p> <p>Rubella eliminated.</p> |

Norway: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|--|
| RVC conclusion for 2013 | Interrupted endemic transmission of measles and rubella; at risk of becoming re-established. |
| Epidemiology | 3 measles cases and 3 rubella cases classified as imported cases (including 1 clinically compatible). Zero CRS cases reported. |
| Surveillance performance | Measles and rubella surveillance sensitivity <2/100 000. Timeliness and completeness of reporting not monitored (no “zero” reporting). All reported suspected cases investigated in WHO-accredited lab. Ongoing search of information on CRS from various national sources. |
| Population immunity | Reported MRCV1 coverage is 94% and MRCV2 coverage is 92%. At least one MRCV dose received by 94% of school children and 97% persons at any age. Three sub-national territories reported MRCV2 coverage <90%. No high risk population group identified. |
| Supplementary information | No SIAs conducted. |
| Specific comments to country | Improve vaccination coverage through provision of both MRCV doses at recommended age. Increase sensitivity of surveillance to achieve case discard rate of 2/100 000. Consider introduction of monitoring of timeliness and completeness of reporting. |
| Final conclusion for 2014 | Interrupted endemic transmission of measles and rubella. |
| Elimination status for the period 2012-2014 | Measles eliminated. Rubella eliminated. |

Poland: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|---|
| RVC conclusion for 2013 | Endemic transmission of measles and rubella. |
| Epidemiology | <p>Measles incidence is 2.62 per million population, with 62 cases in measles outbreak in Wielkopolska Voivodeship (end-December 2013 to April 2014). Genotype D8 confirmed in 1 chain of transmission and 7 cases.</p> <p>Rubella incidence is 153.1 per million population, with 5891 cases and no data on origin of infection.</p> <p>Zero CRS cases reported.</p> |
| Surveillance performance | <p>Only alternative indicators provided. Timeliness of measles notification is 42%, unknown for rubella; rate of cases tested and found negative is 0.6.</p> <p>Most rubella cases confirmed as clinically compatible.</p> <p>Almost 90% of suspected measles cases tested were processed in WHO-accredited lab.</p> |
| Population immunity | Reported MRCV1 and MRCV2 coverage is >95%. No territories at sub-national level with <90 coverage. |
| Supplementary information | Population at risk (Roma). No data on SIA provided. |
| Specific comments to country | <p>RVC encourages that steps be taken to improve reporting and increase the sensitivity of surveillance.</p> <p>Nationwide surveillance for rubella needs to be introduced.</p> <p>Use and monitor quality of reporting and surveillance through appropriate performance indicators as recommended by WHO.</p> |
| Final conclusion for 2014 | Endemic transmission of measles and rubella. |
| Elimination status for the period 2012–2014 | <p>Measles endemic.</p> <p>Rubella endemic.</p> |

Portugal: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|---|
| RVC conclusion for 2013 | Interrupted endemic transmission of measles and rubella. |
| Epidemiology | <p>Zero measles cases confirmed.</p> <p>Incidence of clinically compatible rubella cases is 0.29 per million population (3 cases).</p> <p>Reported CRS prevalence is 0.096 per million population.</p> |
| Surveillance performance | <p>Introduction of online notification system SINAVE since 1 June 2014. NVC expects improvement of performance indicators in 2015; recognizes need to improve rubella and CRS surveillance.</p> <p>No genotyping data made available for rubella.</p> |
| Population immunity | <p>Reported coverage with MRVC1 is 97.8% and with MRCV2 is 95.7%.</p> <p>National assessment of MMR2 coverage by December 2014 reported as >95% in all birth cohorts 1996-2006.</p> |
| Supplementary information | <p>Universal screening for rubella recommended pre-conception and during 1st and 2nd pregnancy trimesters.</p> <p>Monitoring of immunization coverage and collaboration with schools. Activities on sensitization of parents.</p> |
| Specific comments to country | RVC commends Portugal on the quality of the 2014 ASU. |
| Final conclusion for 2014 | Interrupted endemic transmission of measles and rubella. |
| Elimination status for the period 2012–2014 | <p>Measles eliminated.</p> <p>Rubella eliminated.</p> |

Republic of Moldova: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|--|
| RVC conclusion for 2013 | Interrupted endemic transmission of measles and rubella; at risk of becoming re-established. |
| Epidemiology | 2 measles cases in twin children (imported/import related) detected and typed (D8 genotype); incidence is 0.25 per million population. Zero rubella or CRS cases reported. |
| Surveillance performance | Difficult to assess quality of surveillance on basis of the data provided. Representativeness of reporting discarded cases not calculated correctly. No information available for 1st administrative level. |
| Population immunity | MRCV1 coverage in decline for 3 rd consecutive year to <90% (86.9%); MRCV 2 reported as 93.4%. Routine vaccination coverage calculated by administrative method. No separate monitoring of child immunization coverage available for population subgroups. 15 administrative territories with < 90% coverage. |
| Supplementary information | No SIA has been conducted. Decreasing immunization coverage caused by refusals, anti-vaccination advocacy, structural issues of health care system. |
| Specific comments to country | The decline in MRCV1 coverage is a problem requiring urgent action to strengthen population immunity. The quality of surveillance needs to be improved together with the reporting of surveillance information. |
| Final conclusion for 2014 | Interrupted endemic transmission of measles and rubella. |
| Elimination status for the period 2012–2014 | Measles interrupted 24 months. Rubella eliminated. |

Romania: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|---|
| RVC conclusion for 2013 | Endemic transmission of measles and rubella. |
| Epidemiology | <p>Decrease of measles and rubella incidence reported in 2014 (3.0 and 1.4 per million population respectively).</p> <p>The reported number of CRS is 30, with only 2 laboratory confirmed cases.</p> |
| Surveillance performance | <p>Measles and rubella surveillance sensitivity inadequate (<2/100 000). Inconsistency in numbers of cases in epidemiology and laboratory data tables.</p> <p>No virus genotyping results provided for 2014.</p> |
| Population immunity | <p>Decrease of immunization coverage: reported MRCV1 is 87.6% and MRCV2 is 76.3%.</p> <p>67% of measles cases occurred in children below 5 years of age, most of them not immunized.</p> <p>37 first administrative level territories have <90% coverage for MRCV1 or MRCV2; 31 have <90% coverage for MRCV1.</p> <p>No high-risk groups identified.</p> |
| Supplementary information | No SIA conducted. |
| Specific comments to country | <p>Strengthen population immunity by reaching and maintaining >95% coverage with both doses of MRCV at national and sub-national levels.</p> <p>Consider conducting a wide age-range SIA to boost population immunity.</p> <p>Improve the sensitivity of surveillance.</p> <p>Ensure measles and rubella virus genotyping is conducted and results provided.</p> |
| Final conclusion for 2014 | Endemic transmission of measles and rubella. |
| Elimination status for the period 2012–2014 | <p>Measles endemic.</p> <p>Rubella endemic.</p> |

Russian Federation: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|---|
| RVC conclusion for 2013 | Endemic transmission of measles; inconclusive for rubella. |
| Epidemiology | <p>Measles incidence is 32.3 per million population (4711 cases, 55 outbreaks), and has been increasing since 2012.</p> <p>D4, D8 and B3 genotypes detected.</p> <p>Rubella incidence is 0.5 per million population, with 71 of 72 rubella cases classified as endemic.</p> <p>Zero CRS cases reported.</p> |
| Surveillance performance | Surveillance performance appears to be adequate. |
| Population immunity | <p>Reported coverage with both MRCV doses is > 95%.</p> <p>Supplementary and mop-up immunization campaigns for adolescents of 15–17 years; immunization of high-risk groups; combined target population 120 394; achieved coverage reported as 94.5%.</p> |
| Supplementary information | Monitoring of timeliness and completeness of anti-epidemic activities when reporting measles outbreaks. |
| Specific comments to country | <p>The NVC is commended for responding positively to previous RVC comments and for the quality of the work being undertaken.</p> <p>RVC would appreciate further explanation of the rubella surveillance data.</p> |
| Final conclusion for 2014 | Endemic transmission of measles and rubella. |
| Elimination status for the period 2012–2014 | <p>Measles endemic.</p> <p>Rubella endemic.</p> |

Serbia: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|---|
| RVC conclusion for 2013 | NVC to resubmit ASU. |
| Epidemiology | Measles incidence 3.8/million population. Measles outbreak with cases in 5 of 25 first-level administrative territories, Nov./Dec. 2014. Reported rubella incidence lower than in 2013, but sensitivity of surveillance is unclear. |
| Surveillance performance | Measles surveillance indicators failed to meet most requirements; surveillance of rubella was not in place (no mandatory reporting of suspected cases). |
| Population immunity | Reported coverage with MRCV1 is 85.8% and with MRCV2 is 89.2%. This is a decline in MRCV1 coverage, and an increase in MRCV2 coverage. Coverage with MRCV1 and MRCV2 less than 90% for 11 of 25 administrative territories. Immunity gaps. |
| Supplementary information | Not provided. |
| Specific comments to country | <p>Measles and rubella surveillance should be strengthened, its quality improved and data more effectively reported. Surveillance should be expanded to genotyping of confirmed cases, and include line-lists of discarded suspected cases with results of laboratory investigations for first-level administrative districts.</p> <p>Reach and maintain >95% coverage with both doses of MRCV at national and sub-national levels within routine immunization programme, and consider conducting SIA, to boost population immunity and prevent outbreaks.</p> |
| Conclusion for 2014 | Endemic transmission of measles and rubella. |
| Elimination status for the period 2012–2014 | Measles endemic. Rubella endemic. |

Slovakia: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|--|
| RVC conclusion for 2013 | Interrupted endemic transmission of measles and rubella. |
| Epidemiology | Zero measles, rubella or CRS cases reported in 2014. |
| Surveillance performance | 6 IgM positive measles samples from healthy children without clinical background after measles immunization; no IgG increase in second samples. 29 IgM positive rubella samples from screening pregnant women; all positive for IgG and no IgG increase in 2nd samples. Incorrect calculations of timeliness and completeness. |
| Population immunity | Reported coverage with MRVC1 is 96.6% and with MRCV2 is 98.1%. Coverage estimated by administrative method. |
| Supplementary information | None provided. |
| Specific comments to country | Laboratory testing results from routine screening should not be reported in the ASU as surveillance-related information. |
| Final conclusion for 2014 | Interrupted endemic transmission of measles and rubella. |
| Elimination status for the period 2012–2014 | Measles eliminated. Rubella eliminated. |

Slovenia: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|---|
| RVC conclusion for 2013 | Interrupted endemic transmission of measles and rubella. |
| Epidemiology | 52 confirmed measles cases reported. Genotyping data shows strong dominance of D8 Rostov on Don variant – all associated with importations. Most measles cases occurred in the 30+ age group with at least 30% unimmunized. No confirmed rubella case reported; 12 suspected cases were discarded. |
| Surveillance performance | Surveillance quality appears adequate. Alternative indicators used for timeliness indicator. |
| Population immunity | Reported coverage with MRCV1 and MRCV2 is marginally below 95%. |
| Supplementary information | No reported SIAs. Regional coordinator visited schools to raise awareness of vaccination among parents. |
| Specific comments to country | Population immunity needs to be increased by improving vaccination coverage. The immunity gap identified in adults needs to be addressed. |
| Final conclusion for 2014 | Interrupted endemic transmission of measles and rubella. |
| Elimination status for the period 2012–2014 | Measles eliminated. Rubella eliminated. |

Spain: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|---|
| RVC conclusion for 2013 | Inconclusive for measles. Interrupted endemic transmission of rubella; at risk of becoming re-established. |
| Epidemiology | <p>Measles incidence is 3.27 per million population (159 cases): 1 major and 4 small outbreaks (131 cases in Barcelona, Catalonia). D8 and B3 genotypes detected. 77.5% of outbreak cases were ≥15 years of age.</p> <p>Rubella incidence is 0.04 per million population. 3/5 cases imported – confirmed by laboratory. One CRS case, imported.</p> |
| Surveillance performance | <p>Surveillance quality appears low (timeliness and completeness of reporting not stated, very low discard rates reported). All measles chains of transmission and sporadic cases adequately genotyped and reported to MeaNS WHO database. Rubella chain of transmission genotyped but sequence not available in RubeNS WHO database.</p> <p>No zero reporting.</p> |
| Population immunity | <p>Reported coverage with MRCV1 is 96.1% and with MRCV2 is 93% (an increased coverage with second dose).</p> <p>4 administrative territories with MRVC2 coverage <90%.</p> <p>Outbreaks demonstrate immunity gaps in older age groups.</p> |
| Supplementary information | <p>Outbreak reporting forms provide helpful insight.</p> <p>Local procedures are in place to update immunization schedules for migrant and other unvaccinated or incomplete vaccinated persons.</p> |
| Specific comments to country | <p>RVC commends recent activities to increase population immunity in Catalonia.</p> <p>Immunity gaps in older age groups, health care workers and migrant workers need to be closed as a matter of urgency.</p> <p>Efforts should be made to harmonize Regional methods of estimating vaccination coverage to produce a more coherent national coverage estimate.</p> |
| Final conclusion for 2014 | Interrupted endemic transmission of measles and rubella. |
| Elimination status for the period 2012–2014 | <p>Measles interrupted 12 months.</p> <p>Rubella interrupted 24 months.</p> |

Sweden: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|--|
| RVC conclusion for 2013 | Interrupted endemic transmission of measles. Interrupted endemic transmission of rubella; at risk of becoming re-established. |
| Epidemiology | Measles incidence is 2.1 per million population. Seven outbreaks reported and genotyped, all imported or import-related (B3 and D8 lineages). Zero rubella or CRS cases reported. |
| Surveillance performance | No zero reporting, so cannot report on timeliness and completeness. Quality appears adequate but clarity in presentation is lacking, particularly for laboratory data. Reported 1933 tests for rubella, mostly TORCH screening – not valid for surveillance performance validation. |
| Population immunity | Reported coverage with MRCV1 is 97.3% and with MRCV2 is 95.5%. Immunity gaps identified in migrant populations around Stockholm and in anthroposophical communities. |
| Supplementary information | Measles outbreak reports submitted. Initiation of monthly laboratory reporting in 2015. |
| Specific comments to country | RVC would appreciate receiving detailed information on rubella. Laboratory testing results from routine screening should not be reported in the ASU. |
| Final conclusion for 2014 | Interrupted endemic transmission of measles and rubella. |
| Elimination status for the period 2012-2014 | Measles eliminated. Rubella interrupted 12 months. |

Switzerland: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|---|
| RVC conclusion for 2013 | Endemic transmission of measles and rubella. |
| Epidemiology | <p>Measles incidence rate of 1.7 per million population (23 cases). Sporadic cases aged 5 to 29 years. Genotypes D8, D9, B3 and H1 detected.</p> <p>Rubella incidence rate of 0.49 per million population (4 cases). Sporadic cases aged 10 to 30+ years.</p> <p>Zero CRS cases reported.</p> |
| Surveillance performance | Although rate of lab investigation , viral detection and origin of infection has improved, the timeliness and discard rate continue to be inadequate surveillance performance indicators. |
| Population immunity | <p>MCV/RCV1 coverage has been maintained at 92%; MVC/RCV2 has remained below 87%. Estimated through National rolling three-year coverage survey.</p> <p>At least 5 cantons with < 90% coverage for both doses.</p> |
| Supplementary information | <p>Some local, timely limited catch up vaccination events aimed at different target groups have taken place in some cantons; results not available at national level.</p> <p>Communications campaign targeted at adolescent and adult population.</p> |
| Specific comments to country | <p>Population immunity needs to be strengthened through improved routine immunization and targeted campaigns on adolescent and adult populations.</p> <p>Surveillance performance needs to be improved.</p> |
| Final conclusion for 2014 | Endemic transmission of measles and rubella. |
| Elimination status for the period 2012–2014 | <p>Measles endemic.</p> <p>Rubella endemic.</p> |

Tajikistan: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|--|
| RVC conclusion for 2013 | Interrupted endemic transmission of measles and rubella. |
| Epidemiology | Zero measles, rubella or CRS cases confirmed. |
| Surveillance performance | No significant improvement since 2012; inadequate rate of discarded cases and timeliness of lab investigation. Unclear origin of 11 suspected measles cases and 13 suspected rubella cases. |
| Population immunity | Reported coverage with MRCV1 is 98.1% and with MRCV2 is 97.7%. Administrative coverage method used. Roma population groups in various districts recognised as at-risk groups. |
| Supplementary information | None provided. |
| Specific comments to country | The quality of surveillance needs to be improved. Immunity gaps in identified susceptible population groups need to be addressed. |
| Final conclusion for 2014 | Interrupted endemic transmission of measles and rubella. |
| Elimination status for the period 2012–2014 | Measles interrupted 24 months. Rubella interrupted 24 months. |

The former Yugoslav Republic of Macedonia: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|--|
| RVC conclusion for 2013 | NVC to resubmit complete ASU. |
| Epidemiology | Measles incidence is 56.2 per million population (116 confirmed cases). 53 laboratory confirmed. 39% unvaccinated children < 5 years of age. Cases around Skopje. D8 genotype detected. Zero rubella and CRS cases. |
| Surveillance performance | Difficult to assess quality of surveillance on basis of the data provided. |
| Population immunity | Reported coverage with MRCV1 is 93.3% and with MRCV2 is 95.7%. Administrative method used for estimating coverage. Immunity gaps identified in areas around Skopje, Valandovo and Probistip. |
| Supplementary information | None provided. |
| Specific comments to country | Population immunity needs to be strengthened through improving vaccination coverage. Surveillance quality needs to be improved and the data more effectively reported. |
| Final conclusion for 2014 | Endemic transmission of measles. Interrupted endemic transmission of rubella. |
| Elimination status for the period 2012–2014 | Measles endemic. Rubella interrupted 12 months. |

Turkey: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|---|
| RVC conclusion for 2013 | Endemic transmission of measles and rubella. |
| Epidemiology | <p>Measles incidence of 5.8 per million population (565 cases). 23 outbreaks recognised throughout the country. 30% of cases unvaccinated children <5 years of age. D8 and H1 genotypes detected.</p> <p>Rubella incidence of 0.5 per million population (41 cases). Sporadic cases countrywide. No genotype data.</p> <p>Zero CRS cases reported.</p> |
| Surveillance performance | <p>Quality of surveillance appears reasonably good.</p> <p>Rate of laboratory investigation < 80%; viral detection at 50%.</p> <p>Incorrect denominator used for rate of discarded cases.</p> |
| Population immunity | <p>Reported coverage with MRCV1 is 94% and with MRVC2 is 88%. Administrative method used to estimate coverage.</p> <p>Apparent negative trend in immunization coverage over past 3 years.</p> <p>9 provinces with MRCV1 coverage < 90%.</p> |
| Supplementary information | <p>Additional dose at 9 months of age in all provinces.</p> <p>SIAs conducted in refugee camps and districts at risk.</p> <p>>574,000 vaccinate during 2013-14 school year.</p> <p>Nationwide case-based rubella surveillance since mid-2014.</p> |
| Specific comments to country | <p>Population immunity needs to be strengthened through increases vaccination coverage.</p> <p>One chain of transmission can have only one virus genotype. Need to provide genotype data for rubella cases.</p> <p>RVC commends the work that has been conducted in recent years.</p> |
| Final conclusion for 2014 | Endemic transmission of measles and rubella. |
| Elimination status for the period 2012–2014 | <p>Measles endemic.</p> <p>Rubella endemic.</p> |

Turkmenistan: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|--|
| RVC conclusion for 2013 | Interrupted endemic transmission of measles and rubella. |
| Epidemiology | No cases of measles, rubella or CRS reported. |
| Surveillance performance | It is difficult to assess quality of surveillance on basis of the data provided but the quality of surveillance is questioned. 129 specimens from suspect cases were tested for both measles and rubella. |
| Population immunity | Reported coverage with both MRCV1 and MRCV2 is 99.3%. Administrative method used to estimate coverage. No high risk populations identified. |
| Supplementary information | Line-listing of suspected cases with diagnosis provided. |
| Specific comments to country | The quality of surveillance needs to be improved. |
| Final conclusion for 2014 | Interrupted endemic transmission of measles and rubella. |
| Elimination status for the period 2012–2014 | Measles eliminated. Rubella eliminated. |

United Kingdom of Great Britain and Northern Ireland: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|---|
| RVC conclusion for 2013 | Endemic transmission of measles. Interrupted endemic transmission of rubella. |
| Epidemiology | <p>Measles incidence of 1.5 per million population (144 cases). 14 outbreaks recorded in England, Scotland and Wales. No endemic measles cases since March 2014, remaining cases sporadic or very small clusters linked to importations. D8, B3 and H1 genotypes detected.</p> <p>Rubella incidence of 0.016 per million population (3 cases).</p> <p>1 imported CRS case reported.</p> |
| Surveillance performance | <p>Surveillance quality appears to be reasonable but unable to assess timeliness and completeness because of incorrect calculation used.</p> <p>All detected/confirmed measles chains of transmission, sporadic cases and CRS genotyped.</p> |
| Population immunity | <p>Reported coverage with MRCV1 is 94.6% and with MRCV2 is 89%. Data from COVER electronic register. MRCV1 coverage at second birthday is 93%. Two counties of England identified with MRCV1 and MRCV 2 coverage less than 90%.</p> |
| Supplementary information | Routine local monitoring of MMR uptake established. |
| Specific comments to country | <p>The surveillance system has very high specificity but there are concerns over low sensitivity because of the referral system used.</p> <p>To strengthen population immunity, efforts should be made to improve coverage with MRCV2.</p> <p>The immunity gap in adolescents and young adults needs to be addressed.</p> |
| Final conclusion for 2014 | Interrupted endemic transmission of measles and rubella. |
| Elimination status for the period 2012–2014 | <p>Measles interrupted 12 months.</p> <p>Rubella interrupted 24 months.</p> |

Uzbekistan: status of measles and rubella elimination in 2014 and for the period 2012–2014

| Component | RVC comment |
|---|--|
| RVC conclusion for 2013 | Inconclusive for measles and rubella elimination. |
| Epidemiology | 8 measles cases detected – all classified as imported. D8 genotype detected. Zero rubella or CRS cases reported. |
| Surveillance performance | Significant improvement for lab confirmation and genotype identification. Rate of discarded cases suboptimal. |
| Population immunity | Reported coverage with MRCV1 is 99.9% and with MRCV2 is 99.8%. Administrative coverage estimate used. No at-risk populations identified. |
| Supplementary information | Mop-up operation conducted (647,509 children <2 years of age, approximately 8% coverage). |
| Specific comments to country | RVC would appreciate receiving additional information on the mop-up activities undertaken. The quality of surveillance is sub-optimal and needs to be improved. |
| Final conclusion for 2014 | Interrupted endemic transmission of measles. Interrupted endemic transmission of rubella |
| Elimination status for the period 2012–2014 | Measles interrupted 12 months. Rubella interrupted 12 months. |

Annex 3. Participants

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