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Organization**

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**Third meeting of the
European Regional
Verification
Commission for
Measles and Rubella
Elimination (RVC)**

**10-12 November 2014
Copenhagen, Denmark**

Third meeting of the European Regional Verification Commission for Measles and Rubella Elimination (RVC)

10-12 November 2014 – Copenhagen, Denmark

ABSTRACT

The RVC met for the third time on 10– 12 November 2014 in Copenhagen, Denmark. The 8-member panel evaluated 59 country reports, annual status updates (ASU) for 2013 and late-submitted elimination status reports (ESRs) for 2010–2012, received after the 2013 meeting. The RVC was pleased to note that 50 out of 53 Member States have now established NVCs and, as a result, more Member States had submitted timely and complete annual reports than in the previous year. Based on reports submitted, it was concluded that as of the end of 2013, there were 22 countries in which endemic measles transmission had been interrupted, and 23 countries in which endemic rubella transmission was interrupted.

Keywords

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Abbreviations

ASU	Annual Status Update
CISID	Centralized Information System for Infectious Diseases
CME	continuing medical education
CRS	congenital rubella syndrome
ECDC	European Centre for Disease Prevention and Control
EIW	European Immunization Week
ESPID	European Society for Paediatric Infectious Diseases
ESR	Elimination Status Report
ETAGE	European Technical Advisory Group of Experts on Immunization
EVAP	European Vaccine Action Plan
IPA	International Paediatric Association
MCV	measles-containing vaccine
MeaNS	measles nucleotide surveillance (web-based database)
MR	measles and rubella (vaccine)
MRCV	Measles- and rubella- containing vaccine (usually with 1 for first and 2 for second dose)
MRLDMS	Measles and Rubella Laboratory Data Management System
MMR	measles, mumps and rubella (vaccine, usually with 1 for first and 2 for second dose)
NITAG	national immunization technical advisory group
NVC	National Verification Committee for Measles and Rubella Elimination
RubeNS	rubella nucleotide surveillance (web-based database)
RVC	Regional Verification Commission for Measles and Rubella Elimination
SIA	supplementary immunization activity
TIP	Guide to Tailoring Immunization Programmes
UNICEF	United Nations Children's Fund
VPI	Vaccine-preventable Diseases and Immunization Programme of WHO

Executive summary

The Regional Verification Commission (RVC) is an independent panel of experts established by the WHO Regional Office to determine whether endemic transmission of measles and rubella has been interrupted in each Member State based on documents submitted by National Verification Committees (NVC). Its ultimate goal is to declare that measles and rubella has been eliminated from the Region. The RVC met for the third time on 10 – 12 November 2014 in Copenhagen, Denmark. The 8-member panel evaluated 59 country reports, annual status updates (ASU) for 2013 and late-submitted elimination status reports (ESRs) for 2010–2012, received after the 2013 meeting.

The RVC was pleased to note that 50 out of 53 Member States have now established NVCs and, as a result, more Member States had submitted timely and complete annual reports than in the previous year. Based on reports submitted, it was concluded that as of the end of 2013, there were 22 countries in which endemic measles transmission had been interrupted, and 23 countries in which endemic rubella transmission was interrupted. Of those, 9 countries were at high risk of re-establishing endemic transmission of one or both diseases, mainly due to significant immunity gaps in the population. Thirteen member States were considered to have endemic measles transmission, and of these, 9 were considered to also have endemic rubella transmission. In addition, the Commission was unable to verify interruption of measles transmission in 9 countries, or rubella transmission in 12 countries due to insufficient surveillance data to review, the absence of other essential information, or to the presence of conflicting or incongruent data in reports provided.

Although the quality of reporting needs further improvement, increased submissions and completeness of reports have enabled the RVC to look more critically at disease surveillance and immunization programme performance, and therefore to make more in-depth evaluations and recommendations. The WHO Regional Office and the members of the RVC stand ready to assist individual Member States as needed to improve performance where gaps have been identified.

Background

The RVC was established by the World Health Organization Regional Office for Europe (Regional Office) in 2012, as an independent expert body with the mission to evaluate the documentation submitted by NVCs of Member States, in order to verify the elimination of measles and rubella at the regional level. The Vaccine-preventable Diseases and Immunization programme (VPI) of the Regional Office serves as the secretariat to the RVC.

At the sixtieth session of the WHO Regional Committee for Europe (2010) the ministries of health of all Member States endorsed resolution EUR/RC60/R12, renewing their commitment to measles and rubella elimination and prevention of congenital rubella syndrome in the WHO European Region by 2015. Establishing NVCs and reporting on achieved progress in measles and rubella elimination are activities incorporated in the commitment. The RVC has recommended establishment of NVCs in all Member States and approved a standard format for the ESR and ASU, developed by the WHO secretariat. These reports include information on measles and rubella epidemiology, molecular epidemiology, the analysis of population immunity and immunization programme performance, the quality of surveillance, changes that may have occurred since the last report and additional information to support NVC statement.

Scope and purpose of the meeting

In line with its terms of reference, the RVC reviewed the measles and rubella ASU for 2013 and all other information that NVCs provide towards documenting absence of measles and rubella endemic transmission in their countries. Late-submitted measles and rubella ESRs for 2010-2012 were also reviewed.

The objectives of the meeting were:

- to inform the RVC on current epidemiology of measles and rubella in the European Region and implementation of the *Package for accelerated action towards measles and rubella elimination in the Region* for the years 2013-2015;
- to review annual measles and rubella status updates for 2013;
- to review late-submitted measles and rubella status reports for 2010-2012;
- to define the status of diseases transmission by country and in the Region in 2013;
- to assess working procedures of the RVC and verification process requirements, and plan activities for 2015.

The expected outcome of the meeting was an RVC statement on the status of measles and rubella virus transmission in Member States and consequently the RVC conclusion on status of diseases elimination in the WHO European Region in 2013.

Introduction and opening remarks

The third meeting of the RVC was held from 10 to 12 November 2014 in Copenhagen, Denmark. Dr Nedret Emiroglu, deputy Director, Division of Communicable Diseases, Health Security, and

Environment, welcomed participants on behalf of the WHO Regional Director. This is a critical period for measles and rubella elimination in the European Region, with little time remaining to achieve the elimination targets. The RVC, together with international partners, plays an essential role in supporting WHO to encourage Member States along the path to regional measles and rubella elimination as rapidly as possible. Outcomes from this meeting will be reported back to the WHO Regional Director, and all recommendations to specific Member States will be forwarded directly to them for their review.

Professor Susanna Esposito, RVC chairperson, welcomed participants on behalf of the RVC, congratulated the Region on the wide range of achievements in measles and rubella elimination already made, but cautioned that greater political commitment to meeting the goals was required in several countries. Mr Robb Butler, acting VPI Programme Manager, welcomed participants on behalf of the VPI team and underscored the importance of the RVC in helping to mobilize resources and increase political commitment to achieving the elimination goals. Conclusions and outcomes from the third meeting of the RVC, together with the latest available data on current measles and rubella epidemiology in the Region, will be presented at an extraordinary meeting of the European Technical Advisory Group of Experts on Immunization (ETAGE) in January 2015. This meeting will allow ETAGE to formulate more specific recommendations to speed up and facilitate further measles and rubella elimination activities in the Region.

Status of measles and rubella elimination: global and regional update

Global update

All WHO regions have now adopted measles elimination goals, and three regions have adopted rubella elimination goals. Approximately 45% of Member States now have a reported measles incidence of less than 1 case per million population, but 16 countries (8%) still have a rate of over 50 cases per million population. Receipt of a first dose of measles-containing vaccine (MCV1) has remained stable at approximately 84% of the target population for the past 5 years, with below average coverage in the African, South East Asian and Eastern Mediterranean regions. Global coverage with a second dose of measles-containing vaccine (MCV2) is approximately 53%, with coverage in the African Region remaining below 10%¹.

¹ Source: WHO/UNICEF coverage estimates 2013 revision. July 2014. Immunization Vaccines and Biologicals, (IVB), World Health Organization. Date of Slide: 17 July 2014.

European regional update

The reported incidence of both measles and rubella in the Region has shown dramatic declines over the past 20 years. In the presence of improved surveillance, the number of reported measles cases has fallen from more than 340 000 in 1993 to approximately 31 000 in 2013. Since 2010, large outbreaks in Bulgaria, France, Georgia, Turkey and Ukraine have accounted for a significant proportion of the total number of cases. Continuing the trend observed in recent years, approximately one third of reported measles cases have been ≥ 20 years of age. However, there are considerable differences in the age distribution of cases seen in different countries. In some countries, cases among health care workers are significant. Reported rubella cases have fallen from 620 000 in 2000 to fewer than 40 000 in 2013. Rubella outbreaks in Romania and Poland have accounted for almost all of the reported recent cases.

Vaccination coverage in the Region as a whole remains high, with MCV1 coverage at approximately 94%². In addition, wide-scale supplementary immunization activities (SIA) have been conducted, with 24 being reported since 2000. However, most of the measles cases reported in 2013 are among unvaccinated or incompletely vaccinated individuals, with many cases in older age groups with unknown vaccination status.

Significant measles outbreaks were reported in 2013 and in 2014 in Azerbaijan, Bosnia and Herzegovina, Georgia, Germany, Italy, Latvia, the Netherlands, Russian Federation, Turkey, Ukraine and United Kingdom. There is a continuing large outbreak of rubella in Poland, although the number of cases began to decline in 2014. Most recent outbreaks of measles and rubella have occurred among the general population but some have been focussed on recognized undervaccinated groups. One encouraging note is that the number of reported measles cases for the first 6 months of 2014 is 39% less than the number reported for the first six months of 2013, and the number of reported rubella cases shows an 86% reduction.

Elimination of measles and rubella is one of the top priorities for the WHO Regional Office, and one of the six primary goals of the European Vaccine Action Plan 2015-2020 (EVAP). EVAP is a regional interpretation of the Global Vaccine Action Plan (GVAP), viewed as a road-map for immunization service delivery in the European Region for the next 5 years and endorsed by the WHO European Regional Committee in September 2014.

² Source: WHO/UNICEF Joint Reporting Form and monthly MR reporting to WHO European Region Update: 25 August 2014.

To support Member States in achieving the measles and rubella elimination goals, VPI developed the *Package for Accelerated Action 2013 -2015*³, and outlined priority areas and defined key activities into the following six categories:

- vaccination and immunization system strengthening
- surveillance
- outbreak prevention and response
- communications, information and advocacy
- resource mobilization and partnerships
- verification of measles and rubella elimination.

The main activities conducted by VPI, implementing the *Package for Accelerated Action* in 2013-2014, were presented.

The role and importance of National Immunization Technical Advisory Groups (NITAGs) were promoted to Member States (MS), resulting in increased national interest and acceptance, and bringing the total number of MS with NITAGs to 43 in 2014. To help NITAGs in developing evidence-based recommendations, improving decision-making capacity and sharing of information, workshops were conducted in 2013.

Countries were supported to use the Guide to Tailoring Immunization Programmes⁴ (TIP) as a tool to define and address main immunization challenges. Based on experience with four countries implementing TIP by end 2014, VPI is planning cooperation with more countries in 2015 and following years.

Technical support was provided to three Member States (Azerbaijan, Georgia and Turkey) in conducting SIAs, and assessments during and after the SIA campaign was conducted in Azerbaijan.

VPI has provided continuous support for measles and rubella surveillance activities in countries, including assessments of their information technology capacities, review of structures and quality of the VPI databases, and carried out surveillance-related technical missions to Armenia, Azerbaijan, Belarus, Georgia and Turkmenistan. Results of data analysis and reviews were regularly presented to countries, partners and general public by issuing EpiData and EpiBrief updates on the WHO web

³ *Measles and rubella elimination 2015 Package For Accelerated Action: 2013–2015*. The Regional Office for Europe of the World Health Organization, 2013. Available online at http://www.euro.who.int/_data/assets/pdf_file/0020/215480/PACKAGE-FOR-ACCELERATED-ACTION-20132015.pdf

⁴ *The Guide to Tailoring Immunization Programmes (TIP): Increasing coverage of infant and child vaccination in the WHO European Region*. The Regional Office for Europe of the World Health Organization, 2013. Available online at http://www.euro.who.int/_data/assets/pdf_file/0003/187347/The-Guide-to-Tailoring-Immunization-Programmes-TIP.pdf

page. At the same time, new data management protocols and standard operating procedures (SOPs) were drafted in the Regional Office.

The *Guidelines for Measles and Rubella Outbreak Investigation and Response in the WHO European Region*⁵ were finalized in 2013, to address the specifics of measles and rubella outbreaks in elimination settings. VPI provided technical and/or financial support to countries affected with measles and rubella outbreaks, and cooperated with national technical counterparts in preparing and publishing epidemiological descriptions of outbreaks and responses through EpiBriefs.

A variety of activities were performed by VPI to make high-quality technical information available to national technical counterparts and the general population. In addition to the outbreak response guidelines, the guide *Vaccine Safety Events: managing the communications response: A Guide for Ministry of Health EPI Managers and Health Promotion Units*⁶ was published, and three subregional trainings on implementing these guidelines were held. Countries were supported in developing communication capacities through in-country communications reviews and assistance was provided to develop communications working groups. Development of a modifiable vaccination reminder smartphone application that all countries could adapt and make available to the public was supported, together with development of a public health authority immunization website template that Member States could use as a model. In addition, a resource mobilization toolkit for national immunization programmes is being developed to assist in obtaining reliable and long-term domestic funding for immunization.

VPI assisted in strengthening resource mobilization and building partnerships through recognition of the important role played by civil societies (such as the Lions Clubs International) and professional societies. Together with the International Paediatric Association (IPA), VPI developed an infographic sheet for health care workers and distributed these through various channels, including presidents of professional societies in 41 Member States. In association with the European Society for Paediatric Infectious Diseases (ESPID) VPI plans to develop vaccination continuing medical education (CME) curricula for health care professionals, similar to existing CME on antimicrobial resistance.

As of October 2014, a total of 50 Member States had established NVCs (including the joint Nordic NVC established by Denmark, Norway and Sweden), and of these, 46 have submitted ASUs for 2013. The annual reporting form has been modified and an RVC database, containing summaries from the

⁵ Guidelines for Measles and Rubella Outbreak Investigation and Response in the European Region. The Regional Office for Europe of the World Health Organization, 2013. Available online at http://www.euro.who.int/__data/assets/pdf_file/0003/217164/OutbreakGuidelines-updated.pdf

⁶ Vaccine Safety Events: managing the communications response: A Guide for Ministry of Health EPI Managers and Health Promotion Units. The Regional Office for Europe of the World Health Organization, 2013. Available online at http://www.euro.who.int/__data/assets/pdf_file/0007/187171/Vaccine-Safety-Events-managing-the-communications-response-final.pdf

reports, has been established. Meetings have been held with NVCs from Azerbaijan, Georgia, Malta and the Russian Federation during missions to countries; RVC members joined the VPI team for mission to the Russian Federation. VPI has developed a process to evaluate and prioritize countries according to their situation and need for assistance to complete the elimination process.

The current situation and challenges in achieving elimination of measles and rubella in the Region by 2015 were presented to the European Technical Advisory Group of Experts on Immunization (ETAGE) in October 2014. Some programmatic options were presented at the meeting, including verification of elimination at country level and grouping of countries by their achievements to monitor progress towards measles and rubella elimination in the Region, and on review were supported by ETAGE, but with need for further discussion and development of indicators. This will promote competition, and may facilitate prioritization of actions and resources to countries in greatest need. Further discussions will take place at an Extraordinary ETAGE meeting, which will be held in Copenhagen on 30 January 2015. Outcomes of third RVC meeting are to be an essential component of the information considered by ETAGE before more specific recommendations can be made.

Measles and rubella laboratory network: contribution to the verification process

The Regional measles and rubella laboratory network was established in 2002 and is made up of 72 laboratories; one Global Reference Laboratory (London), three Regional Reference Laboratories (Luxembourg, Berlin and Moscow), 48 National Reference Laboratories, and 20 subnational laboratories. In the past year an additional National Reference Laboratory for rubella has been accredited in France.

Laboratories report data to WHO through monthly aggregate data reporting using the Centralized Information System for Infectious Diseases (CISID) or through the specimen-based online Measles and Rubella Laboratory Data Management System (MRLDMS). Genomic information on isolates is reported through the web-based measles nucleotide surveillance (MeaNS) and rubella nucleotide surveillance (RubeNS) databases. These two databases are hosted, curated and maintained by Public Health England, in their capacity as a Global Reference Laboratory. All National and subnational laboratories are currently accredited.

There is a high level of laboratory confirmation of measles cases, but with large variation within the Region. Some countries have most of their cases laboratory confirmed while others have the majority of cases reported as clinically compatible or epidemiologically linked to confirmed cases. In Georgia and Ukraine, in particular, the majority of reported measles cases are clinically compatible. Most of the reported rubella cases in the Region continue to be categorized as clinically compatible.

Since 2013 more than 90% of reported rubella cases have occurred in Poland, and Poland has no policy for laboratory confirmation of rubella.

Of the 40 Member States reporting measles cases in 2013, thirty-seven reported some laboratory-confirmed cases, and 28 of these reported genomic sequence data to MeaNS. In the same year, 21 Member States reported rubella cases, of which 18 reported some laboratory-confirmed cases, but only 4 reported rubella genomic sequence data to RubeNS. The predominant measles genotypes reported from 2012 to 2014 included D8, B3 and D4 (but D4 was rare in 2013 and 2014), but these genotypes are genetically diverse and detected in large numbers. Thus, the information provided is not sufficient to assess patterns of virus transmission in such a highly varied Region. For this reason a classification system using sequence variant names (different lineages) within virus genotypes has been adopted and is being used in association with epidemiological information to determine the main transmission routes. There is very little genomic sequence data available for rubella, with only 7 Member States reporting sequence data between 2010 and 2014. Of the 52 sequences reported, genotypes 1E and 2B were dominant. Far more sequence data, together with supporting epidemiological data, are required before any conclusions on transmission pathways or sources of virus can be made.

The laboratory networks are functioning at high levels of proficiency and capacity, but continue to face a number of constraints. These include major gaps in the provision of virus sequence data to WHO, lack of adequate linkage between laboratory and surveillance data, and less than optimal timeliness and reporting of results. Within the Region many private or commercial laboratories are used to confirm measles- or rubella-like cases and a mechanism needs to be developed for assessing the quality of these laboratories and collecting their data for incorporation into Regional databases. Issues over financial sustainability and national resource allocation for laboratory services continue to threaten the future of the laboratory network. Many of the problems encountered are beyond the capacity of the laboratory network alone to solve.

Discussion

The RVC was concerned that while all Member States had endorsed resolution EUR/RC60/R12, renewing their commitment to measles and rubella elimination and prevention of congenital rubella syndrome in the WHO European Region by 2015, some Member States appear not to have taken targeted action in support of their political commitment. WHO has conducted several meetings to address this issue, and more are planned. Assessments of priority needs and resource availability are being made in order to determine how best to mobilize and use the available resources. Initiatives to strengthen technical collaboration between WHO and ECDC are underway and joint plans are

expected to be developed. Steps are also underway to more effectively mobilize resources provided by ETAGE.

The lack of capacity to document virus transmission pathways, through the absence of sufficient genomic sequence data and failure to effectively implement surveillance by linking clinical, epidemiological and laboratory data, is of growing concern as the Region moves towards the measles and rubella elimination goal. It is imperative that all Member States report genomic sequence data on viruses isolated or detected and that the capacity to integrate these data unequivocally to the surveillance case records is significantly strengthened.

Status of measles and rubella elimination

Submission of the elimination status reports (ESRs) and annual status updates (ASUs)

After the second RVC meeting in October 2013, the reporting format was modified and the Annual Status Update form for reporting on measles and rubella elimination status in 2013 was introduced. Further follow-up has also been conducted with countries on queries and questions arising from the verification and reporting processes and on clarifying submitted reports and data.

Thirty-six countries submitted their ESRs for the year 2010-2012 in 2013. In addition, 13 countries submitted this ESR in 2014. Annual updates (for the year 2013) for the review at the 3rd meeting of the RVC were submitted by 46 countries. At the time of the meeting, four Member States had not yet provided an ESR 2010-2012 or an ASU for 2013 (Albania, Bosnia and Herzegovina, Italy and San Marino).

Thirty-one Member States submitted their ASU before the deadline (31 August 2014) and 15 submitted in September or October 2014. Albania, Bosnia and Herzegovina, Iceland, Italy, Monaco, San Marino, and Ukraine had yet to submit their ASU. Of the Member States submitting reports, 26 claimed to have interrupted endemic measles transmission, 11 reported they remained endemic, 5 failed to claim a status, 1 claimed to be in a 'pre-elimination period' and 1 claimed to have re-established endemic transmission. For rubella, 28 Member States claimed to have interrupted endemic transmission, 8 reported they remained endemic, 7 failed to claim a status, and 1 claimed to be in a 'pre-elimination period'. In addition, 1 Member State (Turkmenistan) provided further details and clarifications on its surveillance data that had initially been submitted in 2010-2012, as requested by the RVC at its 2013 annual meeting.

In 2014, the Secretariat encountered similar issues and deficiencies to those encountered with the ESR 2010-2012 submission: incomplete information, particularly regarding laboratory activities,

misinterpretation of data requested, and inappropriate use of denominators for the estimation of vaccination coverage. Miscalculations and the inadequate presentation of data, particularly with regard to surveillance indicators, were also common.

Review of newly submitted ESRs and ASUs

In line with the *Eliminating measles and rubella: framework for the verification process in the WHO European Region*⁷, the RVC members were invited to make their judgments in accordance with the definition of elimination, which is “the absence of endemic measles or rubella cases in a defined geographical area for a period of at least 12 months, in the presence of a well-performing surveillance system” based on the data provided by NVCs, including data on epidemiology, performance of surveillance and population immunity.

The RVC was unable to reach a conclusive decision in some instances. Reasons included absent, incomplete or conflicting surveillance data provided for review. Causes included low quality surveillance systems, a low quality of reporting of surveillance data, and occasionally indeterminate geographical coverage of the surveillance data provided. The following algorithm was agreed for developing the RVC conclusions.

Country (example)	Absence of endemic cases supported by high quality surveillance, including genotyping information	Demonstrated high population immunity	RVC conclusion
Country A	Inconclusive	Any result	Inconclusive
Country B	Yes	Inconclusive or No	Interrupted transmission, at risk
Country C	Yes	Yes	Interrupted transmission
Country D	No	Inconclusive, No or High-risk groups	Endemic

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. Specific comments and final conclusions for each country are summarized in Table 1 below and in country-specific tables in Annex 1.

⁷ *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

Table 1. Summary of final conclusions, by Member State, 2012 and 2013

Country	Status of measles elimination in 2012	Status of rubella elimination in 2012	Status of measles elimination in 2013	Status of rubella elimination in 2013
Andorra	Interrupted	Interrupted	Interrupted	Interrupted
Armenia	Interrupted	Interrupted	Interrupted	Interrupted
Austria	Inconclusive	Inconclusive	Inconclusive	Inconclusive
Azerbaijan	Interrupted; at risk	Interrupted	Interrupted; at risk	Interrupted; at risk
Belarus	Interrupted	Interrupted	Interrupted	Interrupted
Belgium	Endemic	Endemic	Endemic	Endemic
Bulgaria	Interrupted; at risk	Inconclusive	Interrupted; at risk	Inconclusive
Croatia	Inconclusive	Interrupted	Inconclusive	Inconclusive
Cyprus	Interrupted; at risk	Interrupted; at risk	Interrupted; at risk	Interrupted; at risk
Czech Republic	Interrupted	Interrupted	Interrupted	Interrupted
Denmark	Inconclusive	Inconclusive	Inconclusive	Inconclusive
Estonia	Interrupted	Interrupted	Interrupted	Interrupted
Finland	Interrupted	Interrupted	Interrupted	Interrupted
France	Endemic	Endemic	Endemic	Endemic
Georgia	Endemic	Endemic	Endemic	Endemic
Germany	Inconclusive	Endemic	Endemic	Endemic
Greece	Endemic	Inconclusive	Inconclusive	Inconclusive
Hungary	Interrupted	Interrupted	Interrupted	Interrupted
Iceland	Interrupted; at risk	Interrupted; at risk	Inconclusive	Inconclusive
Ireland	Endemic	Interrupted; at risk	Endemic	Interrupted; at risk
Israel	Interrupted	Interrupted	Interrupted	Interrupted
Kazakhstan	Endemic	Inconclusive	Endemic	Endemic
Kyrgyzstan	Interrupted	Interrupted	NVC to resubmit ASU	NVC to resubmit ASU
Latvia	Interrupted; at risk	Interrupted; at risk	Interrupted; at risk	Interrupted; at risk
Lithuania	Inconclusive	Inconclusive	Endemic	Inconclusive

Country	Status of measles elimination in 2012	Status of rubella elimination in 2012	Status of measles elimination in 2013	Status of rubella elimination in 2013
Luxembourg	Interrupted; at risk	Interrupted; at risk	Interrupted; at risk	Interrupted; at risk
Malta	Interrupted	Interrupted	Interrupted	Interrupted
Monaco	Inconclusive	Inconclusive	N/A	N/A
Montenegro	Inconclusive	Inconclusive	Inconclusive	Inconclusive
Netherlands	Interrupted; at risk	Interrupted; at risk	Inconclusive	Interrupted
Norway	Interrupted	Interrupted	Interrupted; at risk	Interrupted; at risk
Poland	Endemic	Endemic	Endemic	Endemic
Portugal	Interrupted	Interrupted	Interrupted	Interrupted
Republic of Moldova	Inconclusive	Interrupted; at risk	Interrupted; at risk	Inconclusive
Romania	Endemic	Endemic	Endemic	Endemic
Russian Federation	Endemic	Endemic	Endemic	Inconclusive
Serbia	Inconclusive	Endemic	NVC to resubmit ASU	NVC to resubmit ASU
Slovakia	Interrupted	Interrupted	Interrupted	Interrupted
Slovenia	Interrupted	Interrupted	Interrupted	Interrupted
Spain	Endemic	Endemic	Inconclusive	Interrupted; at risk
Sweden	Interrupted	Interrupted	Interrupted	Inconclusive
Switzerland	Endemic	Endemic	Endemic	Endemic
Tajikistan	Inconclusive	Inconclusive	Interrupted	Interrupted
The former Yugoslav Republic of Macedonia	NVC to resubmit ESR	NVC to resubmit ESR	NVC to resubmit ASU	NVC to resubmit ASU
Turkey	Endemic	Endemic	Endemic	Endemic
Turkmenistan*	Interrupted	Interrupted	Interrupted	Interrupted
Ukraine	Endemic	Endemic	N/A	N/A
United Kingdom	Endemic	Endemic	Endemic	Interrupted
Uzbekistan	Inconclusive	Inconclusive	Inconclusive	Inconclusive

*Turkmenistan – The RVC concluded that the situation with measles and rubella in 2012 was inconclusive, as the ESR was incomplete. The NVC of Turkmenistan subsequently submitted missing information (case-based data for discarded cases) and the RVC decided to revise its decision, considering that provided data indicate and document interrupted transmission of measles and rubella.

Regional progress towards verification of measles and rubella elimination, 2012 and 2013

The status of measles and rubella elimination in 2013 was similar to 2012 (Fig. 1, 2). Fig. 3 shows detail of countries with no report reviewed for 2013.

Fig. 1. Regional progress towards verification of measles elimination, WHO European Region, 2012 and 2013

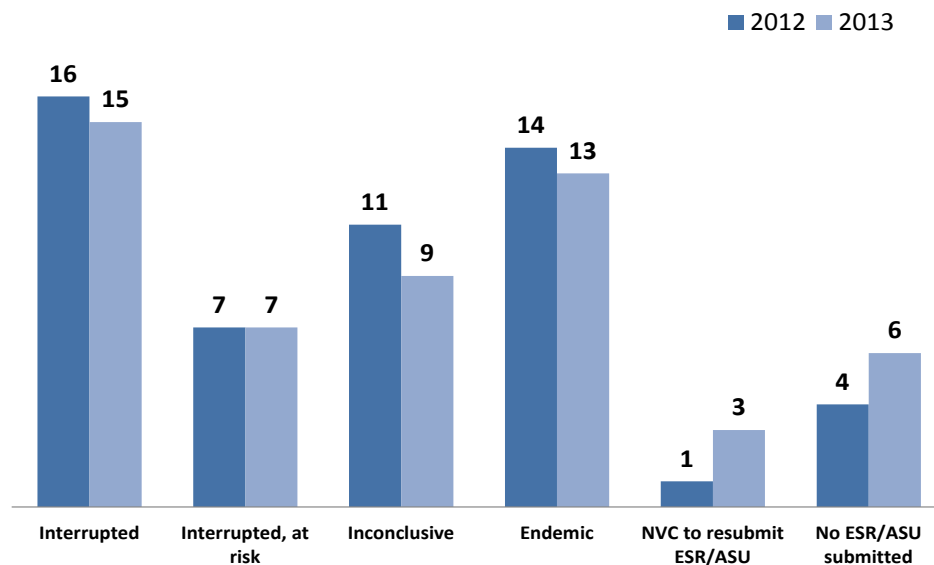


Fig. 2. Regional progress towards verification of rubella elimination, WHO European Region, 2012 and 2013

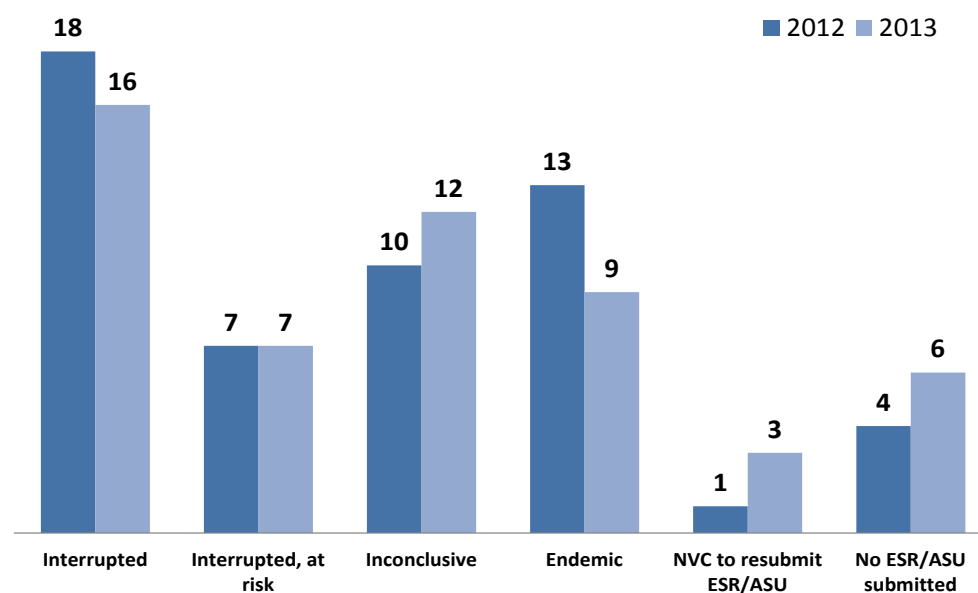


Table 2. Member States grouped by RVC final conclusions, 2012 and 2013

Measles 2012

Interrupted	16	Andorra, Armenia, Belarus, Czech Republic, Estonia, Finland, Hungary, Israel, Kyrgyzstan, Malta, Norway, Portugal, Slovakia, Slovenia, Sweden, Turkmenistan
Interrupted, at risk	7	Azerbaijan, Bulgaria, Cyprus, Iceland, Latvia, Luxembourg, Netherlands
Inconclusive	11	Austria, Croatia, Denmark, Germany, Lithuania, Monaco, Montenegro, Republic of Moldova, Serbia, Tajikistan, Uzbekistan
Endemic	14	Belgium, France, Georgia, Greece, Ireland, Kazakhstan, Poland, Romania, Spain, Switzerland, The Russian Federation, Turkey, Ukraine, United Kingdom
To resubmit ESR	1	The former Yugoslav Republic of Macedonia
No ESR submitted	4	Albania, Bosnia and Herzegovina, Italy*, San Marino

Rubella 2012

Interrupted	18	Andorra, Armenia, Azerbaijan, Belarus, Croatia, Czech Republic, Estonia, Finland, Hungary, Israel, Kyrgyzstan, Malta, Norway, Portugal, Slovakia, Slovenia, Sweden, Turkmenistan
Interrupted, at risk	7	Cyprus, Iceland, Ireland, Latvia, Luxembourg, Netherlands, Republic of Moldova
Inconclusive	10	Austria, Bulgaria, Denmark, Greece, Kazakhstan, Lithuania, Monaco, Montenegro, Tajikistan, Uzbekistan
Endemic	13	Belgium, France, Georgia, Germany, Poland, Romania, Serbia, Spain, Switzerland, The Russian Federation, Turkey, Ukraine, United Kingdom
To resubmit ESR	1	The former Yugoslav Republic of Macedonia
No ESR submitted	4	Albania, Bosnia and Herzegovina, Italy*, San Marino

Measles 2013

Interrupted	15	Andorra, Armenia, Belarus, Czech Republic, Estonia, Finland, Hungary, Israel, Malta, Portugal, Slovakia, Slovenia, Sweden, Tajikistan, Turkmenistan
Interrupted, at risk	7	Azerbaijan, Bulgaria, Cyprus, Latvia, Luxembourg, Norway, Republic of Moldova
Inconclusive	9	Austria, Croatia, Denmark, Greece, Iceland, Montenegro, Netherlands, Spain, Uzbekistan
Endemic	13	Belgium, France, Georgia, Germany, Ireland, Kazakhstan, Lithuania, Poland, Romania, Switzerland, The Russian Federation, Turkey, United Kingdom
To resubmit ASU	3	Kyrgyzstan, Serbia, The former Yugoslav Republic of Macedonia
No ASU submitted	6	Albania, Bosnia and Herzegovina, Italy*, Monaco, San Marino, Ukraine

Rubella 2013

Interrupted	16	Andorra, Armenia, Belarus, Czech Republic, Estonia, Finland, Hungary, Israel, Malta, Netherlands, Portugal, Slovakia, Slovenia, Tajikistan, Turkmenistan, United Kingdom
Interrupted, at risk	7	Azerbaijan, Cyprus, Ireland, Latvia, Luxembourg, Norway, Spain
Inconclusive	12	Austria, Bulgaria, Croatia, Denmark, Greece, Iceland, Lithuania, Montenegro, Republic of Moldova, Sweden, The Russian Federation, Uzbekistan
Endemic	9	Belgium, France, Georgia, Germany, Kazakhstan, Poland, Romania, Switzerland, Turkey
To resubmit ASU	3	Kyrgyzstan, Serbia, The former Yugoslav Republic of Macedonia
No ASU submitted	6	Albania, Bosnia and Herzegovina, Italy*, Monaco, San Marino, Ukraine

Verification of measles and rubella elimination: working procedures and process-related issues, and planning of activities for 2015

In line with the *Eliminating measles and rubella: framework for the verification process in the WHO European Region*⁸ and the *European Regional Verification Commission: Terms of Reference* documents, an opportunity was taken to obtain the views of the RVC on a number of working procedures and process-related issues. The proposed plan of activities for 2014-2015 was also discussed and commented upon.

Working procedures and process-related issues

- **Documents received from NVCs in non-official WHO languages**

The official working language of the RVC is English, but several countries have provided supplementary documents that are not in English or in one of the official WHO languages.

RVC discussion: Regardless of challenges related to translation of documents into official languages (in the WHO European Region these are English, French, German and Russian), the Secretariat should reinforce previous communications with Member States that NVCs should send all original documents, together with a summary or abstract of the main results and conclusions in English. Ideally, complete documents should be translated into English in-country and attached to the reports, but in lieu of any translations being available, the RVC encourages all Member States to submit all supporting documentation regardless of language.

- **Changes to formatting of the ASU form**

Following comments from the RVC, NVCs and countries, and to align with global guidelines, the Secretariat modified the ASU form for 2013. To ensure uniformity of provided information, and to develop a software tool for extraction of data, the new format provides defined spaces for information entry and is locked against format change. Complaints have been received from some NVCs over their incapacity to change the format or to include additional information on the forms.

RVC discussion: The current format is acceptable and appropriate, but additional space should be included on the forms for comments in narrative form, together with a capacity to

⁸ *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

attach additional supportive documents if necessary. It appears that NVCs require further training in completing the forms and this should be provided through training workshops.

- **Adequacy of questions and instructions in the ASU reporting form**

Reviewing the ESR forms received in 2013 and the ASU forms received in 2014 it is apparent that some questions are frequently not answered, or data presented in the report do not correspond to the question asked. Discrepancies have been noted in information provided in different parts of the same report, together with discrepancies between the data reported and that submitted to WHO Europe through other reporting channels (monthly surveillance, JRF, etc.). Possible reasons for missing or discrepant data include a superficial approach to the reporting requirements, misunderstanding or misinterpretation of questions, or absence of the required information in an appropriate format in the national system.

RVC discussion: The Secretariat needs to review and revise the wording and clarity of the instructions and explanations for completing the form, particularly those for determining performance indicators, especially the calculation of the sensitivity of surveillance. RVC members continue to believe that the term “discard case rate” is not well understood by NVCs and that it probably does not translate adequately into many MS languages. Feedback should be provided to the NVCs on the quality of the report submitted, together with comments on mistakes frequently made. Time constraints made pilot-testing of the current form impossible, but any proposed further changes to the form should be pilot-tested if possible before the forms are sent to the NVCs.

- **Communications between Member States and VPI/RVC**

Communication channels between Member States and WHO VPI and RVC are regulated by protocol and international agreement. Adherence to these regulations has, in some cases, resulted in national technical counterparts being informed of RVC comments or recommendations after national health authorities were informed, leading to difficulties for the national counterparts.

RVC discussion: The Secretariat is developing standard operating procedures (SOP) on communication between the RVC and Member States to clarify the types of comments and requests that can be considered, to whom they should be addressed and the level of official clearance they require.

A schedule for regular teleconferences for the RVC and members of the WHO Secretariat will be established together with more frequent sharing of material. The RVC SharePoint site has

been established for RVC members to review the databases and information provided by the NVCs and all RVC members are encouraged to make use of this site.

- **Classification of cases by origin**

Two Member States commented on their inability to classify cases by origin as available data does not exclude endemic circulation, but also does not confirm it. It has also been commented that “Imported” and “Import-related” are clearly categories that relate to territory, while “Endemic” considers not only territory but also depends on genotype of virus and time of circulation. Some Member States have proposed that another case group be added, such as “Local cases”, but this has yet to be fully defined.

RVC discussion: This discussion should be deferred to an upcoming teleconference when the technical issues can be fully explored.

- **Changes to the composition of the RVC**

In line with current guidelines RVC members serve for a total of 4 to 5 years, and the chairperson is appointed by the WHO Regional Director, from those members that have served for at least 1 year. The chair is appointed to serve a term of three years. The term of the current Chairperson, Professor Susanna Esposito, will end in 2015 after she has attended the extraordinary meeting of ETAGE to be held on 30 January 2015. After that the Secretariat will appoint a new chairperson. An additional 2 members of the RVC are also being sought.

- **Addressing the special situation related to population size of Member States**

There are specific issues related to implementation of verification/elimination/surveillance quality indicators in Member States with atypically small or large populations. The standard approach may not adequately cover these countries, particularly in relation to establishing of NVCs, defining indicators and thresholds, and in determining the elimination status.

RVC discussion: There is a requirement for technical guidelines on collection and analysis of information from these countries and the Secretariat is urged to raise the question with ETAGE and SAGE for appropriate guidance. An additional complication of the WHO European Region is the “open border” policy among Members of the European Union. There are instances where tens of thousands of citizens are commuting daily or weekly between their place of residence in one country and place of work in another country. This situation requires not only significant improvement in cross-border communication, coordination and

cooperation, but also for improved understanding and synchronization of health systems, immunization programmes and legislation. The complexity of this issue requires the attention from the technical expert advisory bodies, health policy and political stockholders.

- **RVC and Regional Office work and support to NVCs to improve quality of annual reports**

Further support to NVCs and health officers involved in preparing ASUs is very important, and should involve establishing working relations, interaction and provision of support and advice to NVCs and other relevant staff.

RVC discussion: Work with counterparts before reports are formally reviewed at annual RVC meetings can be conducted in different ways, including during country visits, implementing a process to screen reports as they are submitted, and proactively providing support through training workshops for NVCs.

Planning of activities for 2015

- **Planned meetings with NVCs**

From experience gained through assessing submitted ESRs and ASUs it has become clear that training workshops are required for NVC members and those responsible for completing the reports in certain countries.

RVC discussion: Existing plans to hold a meeting/workshop with participation of key NVCs and RVC members in March or April 2015 should be implemented. Participants should also include the national EPI manager or individual responsible for completing the ASU form together with the national contact person or responsible person in each Member State. Further discussions are required within the WHO Regional Office on possible funding sources and the structure, format, participants and number of any meetings.

- **Planning of country visits**

Effective missions to countries have already been completed, with some RVC members participating, and more country visits are planned. There is a need, however, to better define the scope and purpose, and terms of reference of future missions to make best use of available resources.

RVC discussion: Country missions to support NVCs should be more closely tailored to the situation in specific Member States and the Region as a whole, based on a needs assessment

and prioritization of countries at greatest need. The final status summary for each Member State should be used by the RVC as the basis for planning future country missions. These will be discussed during the next teleconference. RVC members should consider which Member States are most likely to benefit from a visit from members of the RVC, and these considerations used to help prioritize country visits. Procedures for appointing RVC members for country missions should be defined as a matter of urgency.

Conclusions and recommendations

Following changes made to the reporting form, the response from countries and NVCs in preparing and submitting the ASU reports has been highly commendable, with a significant improvement in the number and overall quality of reports received. There remain problems, however, with a large number of reports received after the agreed deadline for submission, reports lacking required data or sufficient detail, and a small number of reports that the RVC is requesting to be resubmitted. Four Member States have yet to provide either an ESR 2010-2012 or an ASU 2013. The RVC members thanked the technical staff and NVCs of each country that responded to a call for the ASU submission.

The RVC concluded that based on reports submitted, as of end 2013, there were 22 countries in which endemic measles transmission had been interrupted, but of these 7 were at high risk of re-established endemic transmission, mainly due to significant immunity gaps in the population. Endemic rubella transmission was interrupted in 23 countries, with 7 at risk of re-established endemic transmission. Thirteen Member States were considered to have endemic measles transmission, and of these, 9 were considered to also have endemic rubella transmission. In addition, the RVC was unable to verify interruption of measles transmission in 9 countries, or rubella transmission in 12 countries due to insufficient surveillance data to review.

The report format has been revised according to the recommendations of the RVC. The format used for the ASU 2013 required less information from the countries than the previous format, but with a more specific focus. The report forms were provided in a 'locked' format, allowing only pre-defined inputs, in an attempt to improve uniformity of data submitted and to permit automatic extraction of data to generate summary databases. Not all countries were able to adjust their NVC reports to the locked format, preferring instead to provide reports in their own format.

Completeness of the ASUs was generally high, although a number omitted important information or details. It appears that a significant minority of countries did not completely understand the requirements or lacked the resources to provide all data requested. In regards to surveillance, it was

noted by the RVC that the quality of rubella surveillance is suboptimal in the Region, and still challenging for many of countries. In addition, very few countries provided evidence of sensitive nationwide or sentinel surveillance for CRS. Considering this as a serious limitation, the RVC advised significant improvement in rubella surveillance performance and would appreciate any updates that national systems and NVCs could provide on the structure and function of CRS surveillance. NVCs are also invited to look for additional information, such as results from studies of newborns with congenital symptoms compatible with suspected CRS, which have been undertaken in the past 5 years. For several countries, information on the quality of surveillance indicators was either absent, incomplete or not submitted correctly. Confusion continues over the definition and method of calculation of the sensitivity of surveillance (sensitive surveillance is defined as the detection of ≥ 2 suspected cases per 100 000 population), making it difficult for the RVC to assess the frequency of suspected and discarded cases. Since 2005, the Regional Office has issued guidelines to fully investigate all suspected cases, but these have not been adopted by all Member States. In preparation for the report, several Member States have indicated that they do not yet collect this type of information at national level, so it remains impossible to obtain these data.

The lack of capacity to document virus transmission pathways, due to the absence of sufficient genomic sequence data and failure to effectively link laboratory and epidemiological surveillance data is of growing concern as the Region moves towards measles and rubella elimination. It is imperative that all Member States report genomic sequence data on viruses isolated and that the capacity to link this data unequivocally to the surveillance records is significantly strengthened.

Information provided on diseases epidemiology, and vaccination coverage achieved through routine and supplemental immunization activities are of concern. A significant number of countries maintain suboptimal vaccination performance, as coverage with MRCV is lower than the recommended 95%, particularly with the second dose. Immunity gaps continue to persist in the general population or in some population subgroups, even in countries that have interrupted endemic transmission of measles and rubella. Many countries in the Region are therefore maintaining continuous transmission of diseases or remain at risk of re-establishing transmission due to known immunity gaps. The RVC recognize that immunity gaps will not be closed without additional measures being taken. SIAs, especially mass immunization campaigns, have been demonstrated to be instrumental in significantly reducing immunity gaps in other WHO regions, and similar activities are needed in the European Region to address this problem. The NVCs can play a major role in providing support to the national systems, by defining and explaining the problems, existing limitations and obstacles related to legislative and population attitude to immunization and presenting their opinion and advice as advocates before their national decision-makers.

There was considerable discussion on the needs and practicalities of providing consistency on the part of the RVC in assessing ESRs and ASUs. Heterogeneity in population and geographical size, development status and level of compliance with the verification process of the 53 Member States in the Region can make it difficult to directly compare the elimination status of one country with another. It was concluded that the revised reporting format should help improve consistency of data reported, but that NVCs and country counterparts need training in the correct use of the form. Further improvements could be made to the form (i.e., provide more space for responses, clearer instructions on completing the form, and guidance on attaching supplementary files).

Recommendations

- The RVC urges countries (Albania, Monaco and San Marino) currently lacking an NVC to establish one, and to compile and submit data for the period 2010-2013 using the appropriate forms. Those countries that have an NVC but have not yet submitted appropriate country reports for 2010-2012 and 2013 are urged to do so.
- The RVC and WHO Secretariat should continue with development of the verification process requirements, documents and tools to clarify and explain the evidence required to demonstrate elimination in a manner which is clear and comprehensible to Member States and fully aligned with global practice.
- The WHO Secretariat should do the following.
 - Review and revise the wording and clarity of the instructions and explanations for completing the ASU form, particularly those for determining performance indicators. Feedback should be provided to the NVCs on the quality of the reports submitted, together with a summary of mistakes frequently made.
 - Provide selected NVCs and key staff from the national health authorities with guidance and training in completing the ASU forms. A mechanism for selecting the highest priority countries for training should be further discussed and agreed with the RVC.
 - Reinforce previous communications with Member States that NVCs should submit all supporting documentation regardless of written language, but, as a minimum, should provide a summary or abstract of the main results and conclusions in English.
 - Facilitate more frequent communication with the RVC during the inter-meeting periods, ideally by establishing regular scheduled teleconferences.
- Member States are urged to do the following.
 - Report genomic sequence data on all sporadic cases and chains of transmission and to develop the capacity to link this data unequivocally to the measles and rubella

surveillance data. Support to strengthen the Regional capacity to generate, analyse and report genomic sequence data should be continued through the Regional Measles and Rubella Laboratory Network.

- Provide adequate documentation on outbreaks that occur in the country, including any supplementary immunization responses and outcomes, to facilitate the RVC conclusions on the status of interruption of endemic measles and rubella. An adequate outbreak report should provide accurate information on the start and end date of outbreak and the transmission timeline using integrated laboratory and epidemiological data. Virus genomic sequence data should also be provided.
- Improve the quality of rubella and CRS surveillance, and quality of data provided to the RVC. Updates on the structure and function of CRS surveillance in the country and any available information from recent studies that were not presented to the RVC (e.g. congenital symptoms compatible with suspected CRS in new-borns), should be included as additional documentation to the NVC annual status update for 2014.
- Consider and, where appropriate, conduct supplementary immunization activities (SIA) to stop transmission of diseases, or reduce the risk of re-establishing transmission, by reducing immunity gaps in the general population and recognized susceptible groups. The NVCs are encouraged to promote and support national systems in deciding the most appropriate and feasible form of SIA to be conducted, including mass immunization campaigns, and to advocate for political commitment and the support of decision-makers and national authorities.
- Country missions to support NVCs should be more closely tailored to the situation in specific Member States and the Region as a whole, based on a situation and needs assessment. The final status summary for each Member State should be used by the Secretariat and RVC as the basis for prioritization and planning of future country missions, considering which Member States are most likely to benefit from a the RVC members visit. Procedures for appointing RVC members for country missions should be defined as a matter of urgency.

Annex 1. Status of measles and rubella elimination in the WHO European Region – results of the RVC review of reports and documents submitted by NVCs

Andorra

Status of measles and rubella elimination for 2012

(Review of Elimination Status Reports, 2010-2012)

Component	RVC comment
Goals and strategies	General information was provided, but without any details.
Epidemiology	No measles cases have been reported since 2003 and no measles outbreaks in >10 yrs. No rubella cases have been reported since 2007; the last outbreak was in 2006 (22 cases).
Surveillance performance and indicators	Completeness of reporting is >80% for all years, but no discarded cases were reported.
Immunization and population immunity	In the period 2010-2012, MCV1 coverage was >97%, and MCV2 coverage was >83%. No historical coverage data were provided. A serosurvey in 2000 showed: <ul style="list-style-type: none"> • Seropositive for measles was >95% among 6-7 and 10-11-year-olds, 87% for 13-14-year-olds; • Seropositive for rubella was 87% among 6-7-year-olds, 83% among 10-11-year olds and 93% among 13-14-year-olds.
Supplementary information	Andorra planned to revise its immunization schedule (in the last quarter of 2013) and to improve its surveillance system (2013-2014).
RVC conclusion 2012	Interrupted endemic transmission of measles and rubella.

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
Epidemiology	No confirmed measles cases since 2003, and no confirmed rubella cases since 2007.
Surveillance performance and indicators	All suspected measles cases were discarded. Country report lacking performance indicators and laboratory data.
Immunization and population immunity	Very high coverage (>95%) for MRCV1; high coverage (>90%) for MRCV2.
Supplementary information	None provided.
Specific comments to country	Plans to revise the schedule of immunization (last Q 2013), and improve the surveillance system (2013-14) appear to have been implemented or initiated. The NVC should ensure that the next ASU includes the requested surveillance performance indicators and laboratory data.
RVC conclusion 2013	Interrupted endemic transmission of measles and rubella.

Armenia

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Interrupted endemic transmission of measles and rubella.
Epidemiology	11 measles and 4 rubella cases reported – all measles cases in adults. No genotype data provided but there is no evidence of ongoing measles or rubella transmission.
Surveillance performance and indicators	Data confused over number of cases suspected and number with final classification. All 11 confirmed measles cases classified as imported or import-related, but no information provided to justify classification.
Immunization and population immunity	MRVC1 and MRCV2 both continue >95%.
Supplementary information	None provided.
Specific comments to country	Genomic data should be available for all sporadic cases and at least 80% of chains of transmission. Therefore, a sustainable mechanism allowing for viral genotyping is necessary, using the arrangements in place within the Measles and Rubella Regional Laboratory Network. RVC strongly recommends providing genomic sequence data in the next ASU. Confusion over the number of suspect cases, confirmed cases and discarded cases should be resolved. The NVC is recommended to review current guidelines for calculating the rate of discarded cases.
RVC conclusion 2013	Interrupted endemic transmission of measles and rubella.

Austria

Status of measles and rubella elimination for 2012

(Review of Elimination Status Reports, 2010-2012)

Component	RVC comment
Goals and strategies	Detailed information was provided, goals and strategies in accordance with the WHO Regional Office for Europe guidelines.
Epidemiology	For the years 2010-2012, 43/97/29 measles cases (with 6 small outbreaks) and 2/2/21 rubella cases (no outbreaks) were reported. Discrepancies were observed in case numbers in different tables.
Surveillance performance and indicators	The rate of discarded cases is not available. Genotype information is available for 7 measles (D4 and D) cases, but not for rubella cases.
Immunization and population immunity	Austria has had a two-dose MMR vaccination schedule since 1998. Historical coverage data are unclear (annex table) – it appears that MCV1 coverage is 91%, and MCV2 even lower. Supplemental immunizations/national vaccination days have been conducted.
Supplementary information	Austria has a national action plan for measles and rubella elimination. No stock outs of vaccines, funding is secured by the Government.
RVC conclusion 2012	Inconclusive about measles and rubella transmission status.

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
Epidemiology	Higher incidence of measles in 2013; 9 outbreaks with 59 measles cases occurring around the year, and two measles genotypes identified. 7 rubella cases.
Surveillance performance and indicators	Investigation completeness and timeliness not calculated. Viral detection data not provided. Sensitivity of measles and rubella surveillance appears low.
Immunization and population immunity	Vaccination coverage MCV1 94%, MCV2 91%, no seroprevalence data.
Supplementary information	Guidelines for HCW developed. Enhanced surveillance of measles and rubella since 9/2013
Specific comments to country	The RVC considers the surveillance and coverage data provided to be inadequate for making a firm decision on elimination status and requires more information on surveillance quality and vaccination coverage before any conclusion can be reached. On the basis of this report the RVC cannot support the NVC conclusion that Austria has interrupted endemic transmission of measles and rubella. Coverage data provided is difficult to interpret and the denominators used are unclear. A better, more thorough explanation of the process used to calculate vaccination coverage would be appreciated. The RVC urges the NVC to comply with WHO recommendations and guidelines on completing the ASU in a manner that will provide firm evidence in support of the NVC conclusion.
RVC conclusion 2013	Inconclusive about measles and rubella transmission status.

Azerbaijan

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Interrupted endemic transmission of measles, at risk of becoming re-established and interrupted endemic transmission of rubella.
Epidemiology	No evidence of ongoing measles transmission; outbreak finished in 7 months after the first reported importation; however, SIA not targeted on adolescents and adults (most affected age cohorts).
Surveillance performance and indicators	Generally high sensitivity of measles and rubella surveillance.
Immunization and population immunity	MRVC1 and MRVC2 coverage both continue >95%.
Supplementary information	Information on outbreak response vaccination in 2013 and planned SIAs in 2014 provided.
Specific comments to country	<p>The large measles outbreak that occurred in Baku in 2013 highlights the potential risk of re-establishment of endemic measles transmission in Azerbaijan.</p> <p>It would be helpful to confirm that WHO guidelines for testing of rubella and measles negative cases are being followed i.e. that the 730 suspected cases negative for measles were subsequently tested for rubella.</p> <p>Additional details of measures planned or undertaken to address immunity gaps, particularly the immunity gap in adults, would be helpful.</p>
RVC conclusion 2013	Interrupted endemic transmission of measles and rubella, at risk of becoming re-established.

Belarus

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Interrupted endemic transmission of measles and rubella.
Epidemiology	No evidence of endemic measles or rubella transmission. 16 measles cases confirmed from 329 suspected cases. Measles largely in adults.
Surveillance performance and indicators	High sensitivity of measles and rubella surveillance.
Immunization and population immunity	MRVC1 and MRVC2 both continue >95%.
Supplementary information	None.
Specific comments to country	The RVC commends the NVC on the quality of the report submitted. A better, more thorough explanation of the process used to calculate vaccination coverage would be appreciated.
RVC conclusion 2013	Interrupted endemic transmission of measles and rubella.

Belgium

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Endemic transmission of measles and rubella.
Epidemiology	<p>Provided information indicate that measles and rubella epidemiology is unchanged and diseases are still endemic.</p> <p>Even in the absence of systematic rubella surveillance, detected cases indicate virus circulation.</p> <p>43 of 118 suspected measles cases confirmed, but measles case classification appears inconsistent with laboratory and epidemiology results.</p>
Surveillance performance and indicators	Low sensitivity of measles surveillance; no rubella surveillance.
Immunization and population immunity	MRVC1 continues >95%. MRVC2 in 2013 not available but likely remains <85%; however, three regions of the country have different systems and specific methods for coverage assessment.
Supplementary information	Information on known immunity gaps and activities undertaken to close them have been provided, but not in all regions of country.
Specific comments to country	<p>The RVC cannot realistically evaluate the rubella elimination status until recommended nationwide rubella surveillance is established and the data are provided.</p> <p>The MRVC2 data for 2013 has not been provided because of the complicated manner in which coverage is calculated. A permanent, reliable mechanism for national vaccination coverage calculation for all vaccine doses is urgently required.</p>
RVC conclusion 2013	Endemic transmission of measles and rubella.

Bulgaria

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Interrupted endemic transmission of measles, at risk of becoming re-established. Inconclusive about rubella transmission status.*
Epidemiology	It is not clear why 9 of 10 confirmed rubella cases were classified as clinically compatible, when 5 laboratory confirmed rubella cases are mentioned in other part of the report.
Surveillance performance and indicators	Low sensitivity of measles and rubella surveillance.
Immunization and population immunity	MRCV1 just above 95%, MRCV2 just below 95%.
Supplementary information	None.
Specific comments to country	In 2013 the RVC made a request for additional information on rubella surveillance, but have not received the data requested, so must consider the rubella status for 2012 and 2013 as inconclusive. The sensitivity of measles and rubella surveillance is low, and needs to be improved. The RVC requires more information on surveillance, in particular how measles and rubella surveillance is implemented, how cases are classified and how surveillance indicators are calculated, in order to assess whether the process is consistent with WHO recommendations and the requirements for verification. The RVC requests additional information on the method used to estimate national vaccination coverage and the process used to classify rubella cases as confirmed.
RVC conclusion 2013	Interrupted endemic transmission of measles, at risk of becoming re-established. Inconclusive about rubella transmission status.

*2012 rubella status reassessed and amended from 'interrupted, at risk' to 'inconclusive'.

Croatia

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Inconclusive about measles transmission status. Interrupted endemic transmission of rubella.
Epidemiology	2 suspected cases reported; 1 confirmed rubella, no confirmed measles.
Surveillance performance and indicators	Extremely low sensitivity of MR surveillance.
Immunization and population immunity	MRCV1 coverage just below 95%, MRCV2 coverage just above 95%. Immunity gaps identified but no specific activities to address them.
Supplementary information	None.
Specific comments to country	Due to low sensitivity of MR surveillance, the RVC is unable to express confidence about measles and rubella elimination status until evidence is provided that rash and fever surveillance meets required standards. Information on activities addressing the identified immunity gaps would be helpful.
RVC conclusion 2013	Inconclusive about measles and rubella transmission status.

Cyprus

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Interrupted endemic transmission of measles and rubella, at risk of becoming re-established.
Epidemiology	No measles or rubella cases reported in 2013.
Surveillance performance and indicators	No suspected or discarded cases reported, although the laboratory part of report mentions 89 measles and 221 rubella cases tested by the laboratory. There is confusion over calculation of the surveillance indicators. It is impossible to calculate timeliness of investigation without reported suspected or discarded cases.
Immunization and population immunity	Low MRCV1 and MRCV2 coverage identified and territories with low coverage.
Supplementary information	None.
Specific comments to country	On the basis of evidence provided the RVC concludes that endemic transmission of measles and rubella has been interrupted but there is a risk of re-establishing transmission due to suboptimal population immunity.
RVC conclusion 2013	Interrupted endemic transmission of measles and rubella, at risk of becoming re-established.

Czech Republic

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Interrupted endemic transmission of measles and rubella.
Epidemiology	No evidence for endemic transmission of measles or rubella. Table 3.1 in the report includes confusing data: 15(?) measles cases, no rubella cases.
Surveillance performance and indicators	Surveillance indicators have not been calculated properly; e.g. number of discarded cases. No genotype information provided.
Immunization and population immunity	High population immunity 2012, MCV1 99.43%, MCV 2 98.51%; results from 2013 coverage study are pending. Seroprevalence study (2013) revealed lower protection in age group 35-44.
Supplementary information	None.
Specific comments to country	Surveillance quality needs to be improved, surveillance indicators should be correctly calculated and information provided on discarded cases. Genomic data should be available for all sporadic cases and at least 80% of chains of transmission. Therefore, a sustainable mechanism allowing for viral genotyping is necessary, using the arrangements in place within the Measles and Rubella Regional Laboratory Network. The RVC strongly recommends providing genomic sequence data in the next ASU.
RVC conclusion 2013	Interrupted endemic transmission of measles and rubella.

Denmark

Status of measles and rubella elimination for 2012

(Review of Elimination Status Reports, 2010-2012)

Component	RVC comment
Goals and strategies	Ministry of Health and the Danish Health and Medicines Authority are committed to achieving and sustaining measles and rubella elimination in Denmark.
Epidemiology	For the years 2010-2012, 5/84/2 measles cases were reported, mostly classified as imported or import related, with genotype data provided. No rubella or CRS cases were reported in same period. Measles IgM-negative suspected cases were not tested for rubella.
Surveillance performance and indicators	Measles surveillance is passive and non-compulsory, no zero reporting. Surveillance sensitivity (discarded case rate) is very low. Obligatory reporting only for rubella in pregnancy and CRS.
Immunization and population immunity	Routine immunization coverage was suboptimal in 2010-2012, with MRCV1 <90%, MRCV2 <85% (and in the area of West Jutland <80%). SIA was conducted in 2012, with 5% coverage. Policy includes rubella vaccination (given as MMR) to seronegative women >18 years of age, but no coverage estimate was provided.
Supplementary information	Denmark does not have a strategic plan for measles, rubella and CRS elimination as a distinct document.
RVC conclusion 2012	Inconclusive about measles and rubella transmission status.

Status of measles and rubella elimination for 2013

(review of Annual Status Update, 2013)

Component	RVC comment
Epidemiology	20 suspected measles cases were IgM-positive but only 17 were classified as confirmed cases.
Surveillance performance and indicators	Case-based surveillance for confirmed measles and rubella has been established but no data provided on completeness or timeliness. Sensitivity of surveillance remains unclear as many specimens were tested for measles IgM but were not included in discard rate.
Immunization and population immunity	Reported MRVC1 and MRVC2 continue <90%. No evidence provided why Denmark believes coverage is underreported.
Supplementary information	No information about impact of recall system (letters to parents of identified children at specific ages that are missing vaccines), planned to start in 2013. No measles outbreak response activities reported.
Specific comments to country	The RVC cannot realistically evaluate the rubella elimination status until recommended nationwide rubella surveillance is established and the data are provided. In the absence of systematic surveillance it is difficult to envisage how sufficient evidence will be collected to demonstrate successful elimination of rubella. A conclusion on the status of measles elimination cannot be reached until the recommended obligatory notification of all suspected cases is established. Reported vaccination coverage remains low and activities are needed to either demonstrate that population immunity is at the recommended high level or to raise vaccination coverage levels. WHO guidelines for testing of rubella and measles negative cases should be followed i.e. that all suspected cases negative for measles should subsequently be tested for rubella.
RVC conclusion 2013	Inconclusive about measles and rubella transmission status.

Estonia

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Interrupted endemic transmission of measles and rubella.
Epidemiology	No evidence for endemic transmission of measles and rubella; 2 imported measles cases, 2 rubella cases classified as 'endemic' but reasoning unclear. No genotyping data provided.
Surveillance performance and indicators	Most of the surveillance indicators are available; no virus detection information.
Immunization and population immunity	High vaccination coverage, MRCV1 93.7%, MRCV2 92.3%. 2 territories with lower coverage
Supplementary information	Information on vaccinations is available to the public; a communication guide on talking to parents about immunizations is available to health care personnel
Specific comments to country	The NVC is requested to clarify the discrepancies between reported suspected, discarded and confirmed cases and the reported information on laboratory negative cases. It is unclear if the surveillance data includes other results, for example specific diseases screening data. Genomic data should be available for all sporadic cases and at least 80% of chains of transmission. Therefore, a sustainable mechanism allowing for viral genotyping is necessary, using the arrangements in place within the Measles and Rubella Regional Laboratory Network. The RVC strongly recommends providing genomic sequence data in the next ASU.
RVC conclusion 2013	Interrupted endemic transmission of measles and rubella.

Finland

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Interrupted endemic transmission of measles and rubella.
Epidemiology	In 2013, 2 confirmed measles and 2 confirmed rubella cases; only laboratory confirmed cases reported.
Surveillance performance and indicators	Reliable case-based surveillance system for measles and rubella. Representativeness of reporting discarded cases based on laboratory reporting.
Immunization and population immunity	Very high vaccination (97.4%) MCV1 coverage for last cohort 2009. No nationwide data for MCV2 coverage because national vaccinations register is still pending.
Supplementary information	None.
Specific comments to country	In the absence of nationwide data for MCV2 coverage the RVC urges that introduction of a national vaccination register be completed as soon as possible.
RVC conclusion 2013	Interrupted endemic transmission of measles and rubella.

France

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Endemic transmission of measles and rubella.
Epidemiology	In 2013 there were 237 measles cases reported, with four different measles genotypes identified; and 6 rubella cases (in pregnancy).
Surveillance performance and indicators	Alternative surveillance indicators have been used. Rate of cases tested negative for measles IgM calculation included saliva and/or serum. No nationwide rubella surveillance – only rubella in pregnancy and CRI surveillance in use.
Immunization and population immunity	Vaccination coverage 90.5% for MCV1 and 72% for MCV2 in 2012; 2013 coverage results pending.
Supplementary information	Reminder letters sent to parents of 1) underimmunized 24 month olds and 2) underimmunized school age children.
Specific comments to country	<p>The RVC cannot realistically evaluate the rubella elimination status until the recommended nationwide rubella surveillance is established and the data are provided. In the absence of nationwide surveillance for rubella it is difficult to envisage how sufficient evidence will be collected to demonstrate successful elimination of rubella.</p> <p>The RVC would appreciate more detailed and comprehensive surveillance and coverage data.</p> <p>National measles elimination activities would benefit from more effective use of genotyping data and linkage between epidemiological and laboratory data.</p>
RVC conclusion 2013	Endemic transmission of measles and rubella.

Georgia

Status of measles and rubella elimination for 2012

(Review of Elimination Status Reports, 2010-2012)

Component	RVC comment
Goals and strategies	Detailed information was provided, goals and strategies in accordance with the WHO Regional Office for Europe guidelines.
Epidemiology	For 2012, 31 measles and 73 rubella cases were reported. No information was provided about outbreaks, underimmunized population, territories with low coverage, classification of cases or lab performance.
Surveillance performance and indicators	Data provided, with acceptable lab performance indicators. Confirmed measles virus genotype D4.
Immunization and population immunity	Routine immunization coverage with MRCV1 and MRCV2 is suboptimal; subnational data are incomplete. MR SIA conducted in 2008, with suboptimal coverage.
Supplementary information	General lack of trust in vaccination/vaccines. National immunization plans exist and are sustainably funded.
RVC conclusion 2012	Endemic transmission of measles and rubella.

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
Epidemiology	The highest number of measles cases reported in the Region in 2013 – a nationwide outbreak.
Surveillance performance and indicators	More cases should be epidemiologically-linked or laboratory-confirmed and fewer clinically-compatible (in 2013, 96.5% of rubella cases were clinically-confirmed and 86% of measles cases clinically-confirmed)
Immunization and population immunity	SIA: MMR nationwide catch-up conducted in period April to December, targeting population 2-14 years old, and achieved 70.1% coverage. Routine immunization coverage <90%.
Supplementary information	None provided.
Specific comments to country	Recognized immunity gaps, particularly in older age groups, need to be closed through more effective vaccination activities. Behavioural changes may be required to increase acceptance of vaccination in adults. The large number of reported clinically confirmed cases may be a reflection of the large number of cases overwhelming laboratory capacity, but mechanisms should be put in place to strengthen epidemiological capacity to link cases.
RVC conclusion 2013	Endemic transmission of measles and rubella.

Germany

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	<p>Inconclusive about measles transmission status. Endemic transmission of rubella.</p> <p>Germany was encouraged to provide more detailed information on measles and rubella surveillance, including line-list of discarded suspected cases with results of laboratory investigations; it is critical to set up high-quality nationwide surveillance for rubella.</p>
Epidemiology	In 2013 measles endemic, (1713 cases) 6 different measles genotypes identified; no data provided on rubella.
Surveillance performance and indicators	<p>Rubella surveillance started in March 2013.</p> <p>No data on measles suspected cases; data missing on timeliness of reporting and investigation and rate of discarded cases.</p>
Immunization and population immunity	High coverage in school entry examination 2012, but immunity gaps exist (adolescents, young adults, anthroposophists, migrants, refugees, health care workers). 2013 coverage data not yet available. MCV2 coverage <90% in 4 territories.
Supplementary information	Many activities at national and regional level (information and educational campaigns, trainings, supplemental immunizations, immunizations committees established, guidelines developed, laboratory sentinel surveillance planned).
Specific comments to country	<p>The RVC commends Germany for initiating rubella surveillance and is looking forward to receiving the surveillance results in the next annual report.</p> <p>Measles surveillance quality needs to be improved, surveillance indicators should be correctly calculated and information provided on discarded cases. Genomic data should be available for at least 80% of chains of transmission. National measles elimination activities would benefit from more effective linkage between epidemiological and laboratory data.</p>
RVC conclusion 2013	Endemic transmission of measles and rubella.

Greece

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	<p>Endemic transmission of measles. Inconclusive about rubella transmission status.</p> <p>Greece was encouraged to introduce national vaccination registry system as soon as possible; provide more detailed information on measles and rubella surveillance, including line-list of discarded suspected cases with results of laboratory investigations.</p>
Epidemiology	<p>Measles: 1 imported case and 3 'endemic' cases. No molecular epidemiology of measles.</p>
Surveillance performance and indicators	<p>Measles IgM(+) – 2 laboratory-confirmed cases (4 laboratory-confirmed in total because 2 were tested in hospital laboratory) Rubella IgM – 7 cases tested (-) even though no suspected or discarded measles or rubella cases were reported.</p>
Immunization and population immunity	<p>Data on MMR coverage not available; estimates only.</p>
Supplementary information	<p>None.</p>
Specific comments to country	<p>The RVC requires more information on surveillance quality before any conclusion on the status of measles and rubella elimination can be reached.</p> <p>Surveillance quality needs to be improved, surveillance indicators should be correctly calculated, information provided on all suspected and discarded cases and genomic data should be available for all sporadic cases.</p> <p>Vaccination coverage data for 2013 has not been provided because of the lack of systematic monitoring. A permanent, reliable mechanism for national vaccination coverage calculation for all vaccine doses is urgently required. If it is not possible to establish a national vaccination registry or conduct annual surveys, then alternative methods must be developed.</p>
RVC conclusion 2013	<p>Inconclusive about measles and rubella transmission status.</p>

Hungary

Status of measles and rubella elimination for 2012

(Review of Elimination Status Reports, 2010-2012)

Component	RVC comment
Goals and strategies	Goals and strategies in accordance with the WHO Regional Office for Europe guidelines.
Epidemiology	Last indigenous measles case was reported in 2001, with epidemiology and laboratory investigations supporting no endemic measles transmission since 2002. A measles outbreak was reported in 2011 (5 cases; D8). Sporadic rubella cases were reported (10 in 2007, 3 in 2011, 7 in 2012) with epidemiology and laboratory investigations supporting no endemic transmission. Incidence was <1 for measles and rubella in the period 2010-2012.
Surveillance performance and indicators	Good-quality surveillance is in place, but it does not meet all indicators (discarded cases, timeliness). Lab performance is good but some cases were reported with unknown origin and without genotyping.
Immunization and population immunity	Routine immunization coverage with MRCV1 and MRCV2 has been >98% for 20 years. No gaps in subnational coverage by territory or population were reported. A serosurvey (ESEN2) in 2003 showed <5% seronegative in children < 5 years old and young adults.
Supplementary information	Hungary plans to conduct a review of immunization in refugee camps (2014), a coverage survey (2015) and a serosurvey (2016).
RVC conclusion 2012	Interrupted endemic transmission of measles and rubella.

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
Epidemiology	No measles or rubella cases.
Surveillance performance and indicators	Timely and complete surveillance and adequate laboratory investigations.
Immunization and population immunity	High coverage with both doses of MRCV, >97%.
Supplementary information	None.
Specific comments to country	The RVC commends the NVC on its active support of national measles and rubella elimination activities. There remains room for improvement in the sensitivity of surveillance.
RVC conclusion 2013	Interrupted endemic transmission of measles and rubella.

Iceland

Status of measles and rubella elimination for 2012

(Review of Elimination Status Reports, 2010-2012)

Component	RVC comment
Goals and strategies	Goals and strategies in accordance with the WHO Regional Office for Europe guidelines. Position of NVC – maintaining elimination.
Epidemiology	No measles and endemic rubella cases have been reported since 1996 (2 imported rubella cases were reported for 2012). There is a discrepancy in total/classification of rubella cases for 2012.
Surveillance performance and indicators	Incomplete (reported for 4 indicators), and value “>80%” entered for all reported questions – validity of data questionable. No genotyping of 2 imported rubella cases in 2012.
Immunization and population immunity	Routine immunization coverage with MCV1 was 90% in 2010-2011. Coverage was not reported in ESR for 2012 (JRF= 90%). Historical data shows MCV1 coverage of 88-93% (2000-2005) and MCV2 coverage of 86-97% (2007-2012). Serosurveys of pregnant women in 2010, 2011 and 2012 showed <2% seronegative.
Supplementary information	National strategic plan and SOPs are described in legislation, regulation and recommendations of Chief Epidemiologist. Funding is secured by the Government. A study in 2010 revealed that 95% of parents had a positive attitude towards immunization and 97% planned to vaccinate.
RVC conclusion 2012	Interrupted endemic transmission of measles and rubella, at risk of reintroduction.

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
Epidemiology	No confirmed measles or rubella cases reported in 2013.
Surveillance performance and indicators	No surveillance indicators calculated. 60 cases tested negative for measles IgM, 134 cases tested negative for rubella IgM, but only 3 rubella cases were referred to initially as suspected cases and finally as discarded cases. No genotyping data provided.
Immunization and population immunity	MRCV1 and MRCV2 coverage 91% and 94%, respectively. No risk groups or population immunity gaps described.
Supplementary information	No SIAs, no programmatic changes reported in 2013. Government commitment and public acceptance are satisfactory, and described in ESR submitted for 2010-12.
Specific comments to country	The RVC requests the NVC to clarify why only 3 out of 194 cases tested were referred to as suspected and then discarded cases. The RVC requests the NVC to review the WHO guidelines for calculating surveillance indicators and provide the required data. The RVC requests the NVC to confirm if the WHO guidelines for testing of measles and rubella IgM-negative cases are being followed, that is, if discarded measles cases were subsequently tested for rubella, and that discarded rubella cases were subsequently tested for measles.
RVC conclusion 2013	Inconclusive about measles and rubella transmission status.

Ireland

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Endemic transmission of measles. Interrupted endemic transmission of rubella, at risk of becoming re-established.
Epidemiology	Many cases (27.1%) are among the unvaccinated, and most are in children age 0-9 years (42/48, 87.5%).
Surveillance performance and indicators	Recognized improvement of the surveillance activities. The ability to identify all suspect cases was not in place until July 2013; from July 1st 2013 there are data on suspected and discarded cases.
Immunization and population immunity	There is no national immunization database; region-based systems at present; MMR2 data is not routinely collected. MMR uptake in 4-5 year olds (2012-2013 school year) was estimated to be 89% and 78% through the schools and GP lead programmes respectively.
Supplementary information	SIA: nationwide catch-up for 5-13 years, no coverage data provided.
Specific comments to country	The RVC commends Ireland for the improvement in surveillance capacity implemented in 2013. Surveillance quality needs to be improved, surveillance indicators should be correctly calculated and information provided on all suspected and discarded cases. Low overall MCV2 coverage and the failure to adequately address known immunity gaps leave Ireland at risk of re-establishing rubella transmission. More information on vaccination coverage attained during the SIA would be appreciated.
RVC conclusion 2013	Endemic transmission of measles. Interrupted endemic transmission of rubella, at risk of becoming re-established.

Israel

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Interrupted endemic transmission of measles and rubella.
Epidemiology	49 confirmed measles cases; 1 confirmed rubella. Measles outbreak in Jerusalem – 37 cases. 51% of measles cases of unknown origin; 86% not immunized.
Surveillance performance and indicators	Discarded cases are based on those found negative at the central laboratory. Do not currently have the capacity to identify all community suspected diagnoses – not all sporadic suspected cases were laboratory-tested.
Immunization and population immunity	MMR1 – 96%; MMR2 – 95%. Data on first dose of MMRV for years 2012-2013 are based on estimates of district chief physicians. Official numbers are not yet available. Underimmunized populations exist: ultra-orthodox in Jerusalem (91.1%); communities and pockets of opposition in North District (78%); children of migrant workers, sample from South Tel-Aviv (91%). In Jerusalem district, during outbreak: catch-up on MMRV in schools and Mother & Child clinics, and immunization of susceptible contacts.
Supplementary information	None.
Specific comments to country	The RVC commends Israel for attempting to align measles and rubella reporting with WHO standards. A rapid and reliable mechanism for national vaccination coverage calculation for all vaccine doses is urgently required.
RVC conclusion 2013	Interrupted endemic transmission of measles and rubella.

Kazakhstan

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Endemic transmission of measles. Inconclusive about rubella transmission status. Kazakhstan was encouraged to provide more detailed information on measles and rubella surveillance, including line-listing of discarded suspected cases with results of laboratory investigations.
Epidemiology	The number of measles and rubella cases in 2013 was higher than in 2012; 4 measles outbreaks, 1 rubella outbreak; mostly affected ≥ 15 years old with unknown vaccination status.
Surveillance performance and indicators	All cases are reported as "import-related", however there are no data confirming the importation.
Immunization and population immunity	Seroprevalence studies: measles: 2652/3500 (75.7%) seropositive and 848 (24.3%) seronegative; rubella: 2273/2423 (93.8%) seropositive, 150 (6.2%) seronegative.
Supplementary information	A study on measles and rubella immunity is planned for 2014 (in all 16 regions, a total of 9600 persons).
Specific comments to country	Genomic data should be available for all sporadic cases and at least 80% of chains of transmission. Therefore, a sustainable mechanism allowing for viral genotyping is necessary, using the arrangements in place within the Measles and Rubella Regional Laboratory Network. The RVC strongly recommends providing genomic sequence data in the next ASU. The RVC would appreciate receiving details of the planned seroprevalence studies and is looking forward to receiving the results when available.
RVC conclusion 2013	Endemic measles and rubella transmission.

Kyrgyzstan

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Interrupted endemic transmission of measles and rubella.
Epidemiology	1 measles case and 12 rubella cases reported.
Surveillance performance and indicators	Unclear; inadequate and incomplete information provided.
Immunization and population immunity	98.6% for MMR1 and and 97.3% for MMR2
Supplementary information	None.
Specific comments to country	The report is incomplete and no conclusion on the status of measles and rubella elimination can be reached. The NVC is urged to complete and re-submit an appropriate ASU 2013 to the WHO Secretariat as soon as possible.
RVC conclusion 2013	NVC to resubmit complete ASU 2013.

Latvia

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Interrupted endemic transmission of measles and rubella, at risk of becoming re-established.
Epidemiology	No outbreaks, no cases, no population at risk
Surveillance performance and indicators	The rate of discarded cases is low: for measles 0.05, for rubella 1.1. With 24 cases in total population of 2 023 825 the rate = 1.19.
Immunization and population immunity	MMR 1 – 95.7% MMR 2 – 94.6%
Supplementary information	Measles IgM 124 tested; RT-PCR 37 tested Rubella IgM 175 tested; RT-PCR 37 tested
Specific comments to country	Supplementary information on laboratory testing results has been provided, but without explanation of why these tests were conducted. The RVC would appreciate receiving information on the rationale for testing. The country remains at risk of re-establishing transmission due to known immunity gaps.
RVC conclusion 2013	Interrupted endemic transmission of measles and rubella, at risk of becoming re-established.

Lithuania

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Inconclusive about measles and rubella transmission status. Lithuania was encouraged to provide more detailed information on measles and rubella surveillance, including line-listing of discarded suspected cases with results of laboratory investigations.
Epidemiology	Measles outbreak with 34 cases in Vilnius county and 1 case in Utena county between April and June 2013. Most cases are 20+ years.
Surveillance performance and indicators	Completeness and timeliness of reporting 96%, 28 reports not submitted. Not all suspected measles and rubella cases laboratory investigated. Two rubella cases clinically confirmed. The rate of discarded cases is <2.
Immunization and population immunity	Immunization coverage with both MMR doses remains <95% (MMR1 in 10 districts, and MMR2 in 7 districts). In Kaunas county it is <90%.
Supplementary information	SIA conducted with coverage of 4% (but unknown denominator), technical report form not completed. High-risk population groups are not specified and group-specific immunization coverage is not indicated. Line-lists of suspected cases of measles (30/65) and rubella (33/33) are available.
Specific comments to country	Lithuania is commended on improving reporting and acting on previous recommendations of the RVC, but further support for improving the quality of surveillance is strongly encouraged. The RVC requires more information on surveillance quality before any conclusion on the status of rubella elimination can be reached.
RVC conclusion 2013	Endemic transmission of measles. Inconclusive about rubella transmission status.

Luxembourg

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Interrupted endemic transmission of measles and rubella, at risk of becoming re-established.
Epidemiology	No measles or rubella cases reported
Surveillance performance and indicators	100% timeliness and completeness based on two reports. The rate of discarded cases not correctly presented in ASU (100% instead of 0.4 per 100 000 population).
Immunization and population immunity	Coverage with 1st dose almost 100%, 2nd dose <90%. All refugees are invited for medical examination and MMRV immunization. National catch-up with MMRV, 14-33 years.
Supplementary information	Serological study in 2013, analysis ongoing.
Specific comments to country	Luxembourg is considered to be at risk of importation and re-establishment of transmission due to the large number of transient visitors to country and the lower than optimal MRCV2 coverage.
RVC conclusion 2013	Interrupted endemic transmission of measles and rubella, at risk of becoming re-established.

Malta

Status of measles and rubella elimination for 2012

(Review of Elimination Status Reports, 2010-2012)

Component	RVC comment
Goals and strategies	Goals and strategies in accordance with the WHO Regional Office for Europe guidelines.
Epidemiology	No cases were reported for 2012. A small outbreak of measles and two outbreaks of rubella were reported for 2011, with unknown origin and genotyping.
Surveillance performance and indicators	No numeric values were provided (only a value of 'good').
Immunization and population immunity	Coverage with MMR1 was >95% and with MMR2 was >90% in 2011 and 2012, but <90% for both doses in 2010. The immunization schedule was modified in 2010 (2 nd dose moved from age 10 to age 3). A catch-up programme for 2 nd dose is ongoing. Migrants and refugees are considered a high-risk group, and a special immunization programme was organized for them.
Supplementary information	Measles and rubella are addressed in the Communicable Disease Strategy (2014). Reminders for unvaccinated persons from national registry are systematically sent. Malta plans to send buccal swabs to the Regional Reference Laboratory in Luxembourg for genotyping from 2014.
RVC conclusion 2012	Interrupted endemic transmission of measles and rubella.

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
Epidemiology	No measles or rubella cases reported
Surveillance performance and indicators	Timely and complete surveillance and adequate laboratory investigations. The rate of discarded cases <1.
Immunization and population immunity	High MRCV1 (>97%) and good MRCV2 (>90%) coverage.
Supplementary information	All migrant minors <10y vaccinated with MMR within 48 hr after arrival.
Specific comments to country	The RVC commends Malta on its routine immunization programme and supplementary activities
RVC conclusion 2013	Interrupted endemic transmission of measles and rubella.

Monaco

Status of measles and rubella elimination for 2012

(Review of Elimination Status Reports, 2010-2012)*

Component	RVC comment
Goals and strategies	Incomplete information provided.
Epidemiology	Measles cases were reported for 2011 and 2012 (52 and 5, retrospectively), with notes on impact of French measles outbreak in 2012. No case classification or origin of infection was noted.
Surveillance performance and indicators	No surveillance indicators were reported. Monaco does not have case-based surveillance for measles and rubella.
Immunization and population immunity	No coverage data were provided. Coverage in Monaco is estimated to be about 70% in the <3-year-old age group. Vaccination status is verified by the Department of School Health.
Supplementary information	Monaco does not have an NVC, nor a National Plan for measles and rubella elimination. The School Health Service is responsible for monitoring and reminding parents about vaccination. An MMR event was organized for EIW.
RVC conclusion 2012	Inconclusive for measles and rubella.

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Status of measles and rubella elimination for 2013 – ASU not submitted

(Review of Annual Status Update, 2013)

Component	RVC comment
Epidemiology	
Surveillance performance and indicators	
Immunization and population immunity	
Supplementary information	
Specific comments to country	NVC was not established and no ASU provided. The RVC recognizes that Monaco has a small population, and that the status of measles and rubella transmission is highly influenced by transmission patterns in its much larger neighbours. However, Monaco does collect disease incidence information and monitor vaccination coverage, and this information should be reported to the RVC. The RVC urges Monaco to establish an NVC and to submit an ASU 2013 to the WHO Secretariat as soon as possible.
RVC conclusion 2013	NVC to be established, to confirm ESR and to submit ASU.

Montenegro

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Inconclusive about measles and rubella transmission status. Montenegro was encouraged to provide more detailed information on measles and rubella surveillance, including line-listing of discarded suspected cases with results of laboratory investigations.
Epidemiology	10 discarded measles cases and 7 discarded rubella cases indicated as endemic clinically-compatible cases in Table 6, but analysis based on these cases has little value.
Surveillance performance and indicators	Timeliness of reporting <80%. Denominator used for timeliness and completeness of reporting is incorrect. Denominators used for laboratory investigations completeness are incorrect. The rate of discarded cases is <2 for both measles and rubella.
Immunization and population immunity	Decrease in MMR1 coverage reported (<90%), but MMR2 coverage remains >95%. SIA in 7 municipalities, mostly in Roma communities, achieved 85.3% MMR1 and 81.5% MMR2 coverage.
Supplementary information	Lower coverage linked with media reports on a legal process in Italy regarding a child who allegedly developed autism following MMR immunization, and activities of certain anti-vaccination movements in the country.
Specific comments to country	Montenegro is commended on its efforts to address the issue of underimmunized populations and is encouraged to continue with activities aimed at closing known immunity gaps. The RVC requires more information on surveillance quality before any conclusion on the status of measles and rubella elimination can be reached. Surveillance quality needs to be improved, surveillance indicators should be correctly calculated and information provided on all suspected and discarded cases.
RVC conclusion 2013	Inconclusive about measles and rubella transmission status.

Netherlands

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Interrupted endemic transmission of measles and rubella, at risk of becoming re-established.
Epidemiology	Measles outbreak in the bible-belt, between May 2013 and March 2014, with 2640 cases, mostly unvaccinated school-age children (including 182 hospitalizations and 1 death). Total numbers of measles cases are inconsistent throughout the ASU, and suggested to have been higher due to underreporting.
Surveillance performance and indicators	Number of suspected cases of measles (Table 3.1.a) is less than number of confirmed cases (Table 3.1.b). The rate of discarded cases is not correctly estimated (45.5% for measles and 1.6% for rubella). Timeliness and completeness of reporting?
Immunization and population immunity	National coverage rates 96.1% for MMR1 and 92.4% for MMR2. However out of total 430 municipalities, <90% MMR1 coverage in 31 and MMR2 coverage in 70 municipalities. Orthodox protestant religious group includes about 220 000 individuals, only 60% estimated to be immunized.
Supplementary information	Subnational SIA: MMR0 dose 9351 infants 6-12 months targeted, 54% vaccinated; MMR1 dose 759 children 12-14 months targeted, 79% vaccinated
Specific comments to country	The RVC requires more information on the measles outbreak in 2013-2014 before any conclusion on the status of measles elimination can be reached. The NVC is requested to compile and submit an end-of-outbreak report on the outbreak occurring between May 2013 and March 2014. The NVC should ensure that the next ASU includes all of the requested surveillance performance indicators and laboratory data, including virus genotyping information.
RVC conclusion 2013	Inconclusive about measles transmission status. Interrupted endemic transmission of rubella.

Norway

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Interrupted endemic transmission of measles and rubella.
Epidemiology	Two small measles outbreaks caused by imported cases (D8 Italy, D4 Pakistan). Very low incidence of rubella. Absence of sustained M/R transmission. CRS surveillance reinforced, but no case observed.
Surveillance performance and indicators	Passive surveillance system, no zero reporting, therefore part of surveillance indicators not applicable. The rate of discarded cases is estimated as percent, the rate per 100 000 is 0.76 for measles and 0.84 for rubella (based on reported number of discarded cases).
Immunization and population immunity	MMR1 coverage 93%, MMR2 coverage 91%; 6 administrative territories with coverage <90%. The national immunization registry SYSVAK is likely to underestimate the coverage. Free MMR is available for all children and adults, including rubella susceptible females.
Supplementary information	None provided.
Specific comments to country	On the basis of evidence provided the RVC concludes that endemic transmission of measles and rubella has been interrupted but there is a risk of re-establishing transmission due to suboptimal population immunity in at least 6 subnational administrative areas.
RVC conclusion 2013	Interrupted endemic transmission of measles and rubella, at risk of becoming re-established.

Poland

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Endemic transmission of measles and rubella.
Epidemiology	Continuous rubella epidemics, with most of cases in unimmunized males 15+ years old. Measles outbreaks in Roma communities, a smaller outbreak originated from Germany. Measles cases occur in the unvaccinated, including <1 year olds and patients with unknown immunization status.
Surveillance performance and indicators	The rate of discarded cases of measles is 0.36, based only on cases investigated at the proficient laboratory. Figures for numerators and denominators are not indicated; impossible to assess the indicators. Laboratory-confirmed imported measles cases included in total measles cases. Data on laboratory-confirmed measles cases are not consistent in different sections of the ASU. No laboratory confirmation of rubella suspected cases.
Immunization and population immunity	Reported MMR1 coverage and MCV2 is >95%. Coverage with RCV2 increased, but remains <95%. No administrative territories with <90% coverage. No information on high-risk population groups. However, the "Programme for Roma minority in Poland" being implemented since 2003 includes immunization. No detail on immunization coverage in Roma population provided in the ASU.
Supplementary information	Two CRS cases reported in 2013. The country is encouraged to provide more detailed information on measles/rubella/CRS surveillance and reporting procedures.
Specific comments to country	Poland is encouraged to provide more detailed information on surveillance and reporting procedures. The NVC should ensure that the next ASU includes the requested surveillance performance indicators and laboratory data. The RVC would appreciate receiving additional information on vaccination coverage levels achieved in minority populations, particularly Roma communities.
RVC conclusion 2013	Endemic transmission of measles and rubella.

Portugal

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Interrupted endemic transmission of measles and rubella.
Epidemiology	1 imported measles case; no rubella cases reported.
Surveillance performance and indicators	Suboptimal measles surveillance performance; denominators are unclear from report. No performance data for rubella surveillance.
Immunization and population immunity	MRCV1/2 exceeded 95% in 2011-2012, and since 2006 (according to supplementary information).
Supplementary information	Recommendations for the immunization of adults born ≥ 1970 (1 dose), health professionals (2 doses) and migrants.
Specific comments to country	<p>The RVC commends the NVC and Directorate General of Health on actions planned and undertaken to improve timeliness and completeness of reporting for measles, rubella and CRS surveillance and looks forward to further improvement.</p> <p>The NVC should ensure that the next ASU includes all of the requested surveillance performance indicators and laboratory data.</p>
RVC conclusion 2013	Interrupted endemic transmission of measles and rubella.

Republic of Moldova

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Inconclusive about measles transmission status. Interrupted endemic transmission of rubella, at risk of becoming re-established. Republic of Moldova was encouraged to provide more detailed information on measles and rubella surveillance, including line-listing of discarded suspected cases with results of laboratory investigations.
Epidemiology	Measles incidence reported for 2013 = 0.066 cases per 1 million population. Recalculation for 22 import-related cases and 3.559/4.066 million population without and with Transnistria region = 6.18/5.41 per 1 million pop. No rubella cases reported.
Surveillance performance and indicators	Overall performance unclear. Transnistria report states incomplete sample collection for lab confirmation, no detection of suspected measles (2013) or rubella (2012) cases; possible under detection.
Immunization and population immunity	Data from official national reports for vaccination coverage indicate good population immunity (2010-12 report, update for 2013), but 95% target not reached in recent years. M/RVC immunization coverage <90% in seven administrative territories (raions/cities); possibly related to vaccine supply. Transnistria: immunization gaps.
Supplementary information	Report on measles outbreaks in 2013 in two administrative districts of the Republic of Moldova (5 imported and 22 import-related cases).
Specific comments to country	The RVC urges consideration is given to improvement of quality of information on surveillance performance and population immunity. Some indicators are inconclusive and the NVC is requested to provide denominators for population. Immunization and vaccine management should be strengthened. Information campaigns should be developed for health care workers and the general population to counter the rise in vaccination refusals. The RVC urges the NVC to comply with WHO recommendations and guidelines on completing the ASU in a manner that will provide firm evidence in support of the NVC conclusion.
RVC conclusion 2013	Interrupted endemic transmission of measles, at risk of becoming re-established. Inconclusive about rubella transmission status.

Romania

Status of measles and rubella elimination for 2012

(Review of Elimination Status Reports, 2010-2012)

Component	RVC comment
Goals and strategies	Goals and strategies in accordance with the WHO Regional Office for Europe guidelines.
Epidemiology	Measles and rubella status were classified by the NVC as endemic. A measles outbreak affected the whole country in 2010-2012, with over 10 000 measles cases, mainly among <1-year-olds and unimmunized children aged 1-9. A rubella outbreak affected the whole country in 2011, with most cases among unimmunized 15-24-year-olds. 22 cases of CRS were reported for 2012.
Surveillance performance and indicators	Information about strong measles and rubella surveillance was provided (discarded cases, rate and types of laboratory investigation).
Immunization and population immunity	Romania was late to introduce a two-dose schedule (2005), and in the past had a gender-specific rubella immunization schedule. Before 2010, a significant number of children remained unimmunized due to parents' refusal. Routine immunization coverage is <95%, and in some territories <90%. SIAs were implemented in the past (MRCV and RCV SIA, and as outbreak response measures).
Supplementary information	Romania has a national action plan for measles and rubella elimination and CRS prevention. An SIA was conducted in 2011, as a school-based campaign in "affected areas," but incomplete information was provided.
RVC conclusion 2012	Endemic transmission of measles and rubella.

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
Epidemiology	High incidence of measles with substantial proportion of cases in unimmunized population, including children <1 year of age. Rubella cases in various age groups. CRS cases reported.
Surveillance performance and indicators	Rate of discarded cases was below 2 per 100 000 population in 2013. Inconsistent figures on laboratory confirmed cases in different chapters.
Immunization and population immunity	Decrease in immunization coverage with both doses of MMR reported in recent years. Almost half of administrative territories reported MMR1 and/or MMR2 rates below 90% in 2013.
Supplementary information	High-risk population groups are not specified and group-specific immunization coverage not indicated.
Specific comments to country	The RVC acknowledges that Romania is facing a wide range of problems and challenges in pursuing the measles and rubella elimination goals, but urges the country to address the vaccine supply issues, known immunity gaps in some populations, and apparent increase in vaccine-refusal and hesitancy among parents and caregivers.
RVC conclusion 2013	Endemic transmission of measles and rubella.

Russian Federation

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Endemic transmission of measles and rubella.
Epidemiology	Measles incidence increased up to 16.5 per 1 million population predominantly in Central and Southern federal regions; rubella incidence is declining. The RVC noticed that vast majority of the country is measles/rubella free.
Surveillance performance and indicators	No CRS cases reported; not clear if there are any sensitivity issues.
Immunization and population immunity	High immunization coverage $\geq 95\%$ reported for MCV1/RCV1 at 1 year and MCV2/RCV2 at 6 years. Nadirs of population immunity in administrative territories and population groups permit outbreaks, and probably sustained transmission.
Supplementary information	None.
Specific comments to country	<p>The RVC requires more information on rubella surveillance before any conclusion on the status of rubella elimination can be reached. The NVC is requested to revise and re-submit the report by the end of February 2015.</p> <p>Reporting categories used diverge from WHO Regional Office for Europe format but include supplementary information. The epidemiology of measles and rubella described by the term 'pre-elimination period' is not distinguishable from 'endemic transmission', and should be collapsed into this category. The NVC should ensure that the next ASU includes all of the requested surveillance performance indicators and laboratory data, using the definitions provided.</p> <p>The Russian Federation is commended on its virus genotyping activities. Regional and national measles and rubella elimination activities would benefit from more effective use of genotyping data and linkage between epidemiological and laboratory data.</p>
RVC conclusion 2013	Endemic transmission of measles. Inconclusive about rubella transmission status.

*The NVC responded to the request of the RVC and provided additional information on 25 December 2014.

Serbia

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Inconclusive about measles transmission status. Endemic transmission of rubella. Serbia was encouraged to provide more detailed information on measles and rubella surveillance, including line-listing of discarded suspected cases with results of laboratory investigations.
Epidemiology	Measles: Sporadic cases w/o infection source, no genotype information. Rubella: No active surveillance; mandatory registration requirement for aggregate data did not produce notifications.
Surveillance performance and indicators	Measles: Active surveillance system established 2009 but without satisfactory performances. Rubella: Mandatory registration of aggregate data.
Immunization and population immunity	Between 2011 and 2013, M/RCV1/2 coverage has declined to less than 95%; nadirs in 1 st administrative territories.
Supplementary information	Not provided.
Specific comments to country	During the 2013 meeting the RVC expressed its concern over lack of essential data from Serbia and requested more detailed information on measles and rubella surveillance, including a line-list of discarded suspected cases with results of laboratory investigations. This recommendation has not been complied with and essential information is still lacking. The RVC requires more information on surveillance quality before any conclusion on the status of measles and rubella elimination can be reached. The NVC is urged to complete and re-submit an appropriate ASU 2013 to the WHO Secretariat as soon as possible.
RVC conclusion 2013	NVC to resubmit complete ASU.

Slovakia

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Interrupted endemic transmission of measles and rubella.
Epidemiology	No cases of measles or rubella in 2011-2013.
Surveillance performance and indicators	No information provided on discarded cases. No surveillance indicators provided. Serological surveillance is conducted but not linked to epidemiological investigations.
Immunization and population immunity	Record of high immunization coverage since 2011.
Supplementary information	Not provided.
Specific comments to country	<p>The RVC is concerned that no surveillance performance indicators have been provided, and urges the NVC to ensure that the next ASU includes the requested surveillance performance indicators, including information on suspected cases and laboratory data.</p> <p>The RVC urges the NVC to comply with WHO recommendations and guidelines on completing the ASU in a manner that will provide firm evidence in support of the NVC conclusion.</p>
RVC conclusion 2013	Interrupted endemic transmission of measles and rubella.

Slovenia

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Interrupted endemic transmission of measles and rubella.
Epidemiology	One measles and no rubella cases reported.
Surveillance performance and indicators	Some performance indicators with incorrect calculations. Rate of discarded cases <1.
Immunization and population immunity	High MRCV1 and MRVC2 (>95%).
Supplementary information	None provided.
Specific comments to country	The RVC is concerned that insufficient evidence has been provided to demonstrate that the historical immunity gap in young adults has been closed. The NVC is recommended to review current guidelines for calculating performance indicators.
RVC conclusion 2013	Interrupted endemic transmission of measles and rubella.

Spain

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Endemic transmission of measles and rubella.
Epidemiology	Decline in measles cases as compared to 2012. Interruption of endemic measles transmission claimed but origin of 5/117 cases remains unknown. Discrepancy with Table 3.1.e which contains 19 cases of unknown origin. Rubella: two imported cases; interruption of rubella virus transmission.
Surveillance performance and indicators	Case-based surveillance system for measles and rubella meets most performance indicators, except for timeliness & completeness and for the rate of discarded cases.
Immunization and population immunity	High vaccination coverage for measles and rubella reported, remaining $\geq 95\%$ for MRCV1; but areas of the country with low (<90%) coverage and immunity gaps in various population groups. Evidence for declining coverage in Catalonia.
Supplementary information	Table on Measles cases tested positive with genotype information.
Specific comments to country	Spain is commended on the decline in the number of reported measles cases but the RVC requires more information on measles surveillance before any conclusion on the status of measles elimination can be reached. On the basis of evidence provided the RVC concludes that endemic transmission of rubella has been interrupted but there is a risk of re-establishing transmission due to suboptimal population immunity in at least 4 subnational administrative areas.
RVC conclusion 2013	Inconclusive about measles transmission status. Interrupted endemic transmission of rubella, at risk of becoming re-established.

Sweden

Status of measles and rubella elimination for 2012

(Review of Elimination Status Reports, 2010-2012)

Component	RVC comment
Goals and strategies	Goals and strategies in accordance with the WHO Regional Office for Europe guidelines.
Epidemiology	In the last 10 years, 1-51 measles cases were reported annually. In the period 2010-2012, these were mostly reported as small import-related outbreaks that were interrupted within 5 weeks. The largest measles and rubella outbreaks were reported in an anthroposophist community in 2012. Genotyping is available for most of the outbreaks.
Surveillance performance and indicators	High-quality surveillance is in place, but some cases may be missed due to low physician awareness. No zero reporting.
Immunization and population immunity	MCV1 >95% since 1989 except dip 2001-5, MCV2 90-95%; Serosurvey 2007 shows seronegative M<2% and <5% R all populations; both immigrant and Swedish children 14-16y seronegative M<3% and R<2%; fertile women seronegative <4%.
Supplementary information	A national routine immunization registry for all vaccines was to be initiated in January 2013.
RVC conclusion 2012	Interrupted endemic transmission of measles and rubella.

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
Epidemiology	Few measles and no rubella cases in 2013. Good description of measles outbreaks provided, all lasting <9 weeks.
Surveillance performance and indicators	Adequate laboratory investigations. Low rate of discarded cases.
Immunization and population immunity	High coverage with both doses of MRCV 1 and 2 >95%.
Supplementary information	TIP is being used to target undervaccinated populations.
Specific comments to country	The RVC requires more information on surveillance quality before any conclusion on the status of rubella elimination can be reached. The NVC should ensure that the next ASU includes all of the requested surveillance performance indicators and laboratory data.
RVC conclusion 2013	Interrupted endemic transmission of measles. Inconclusive about rubella transmission status.

Switzerland

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Endemic transmission of measles and rubella.
Epidemiology	18 measles outbreaks; 1 rubella outbreak.
Surveillance performance and indicators	Poor surveillance as evidenced by the high percentage of clinically-confirmed cases, and cases of unknown origin. Unsatisfactory timeliness of investigation and notification. Switzerland does not participate in WHO laboratory quality assurance program but provides genotype information on some chains of transmission. Low rate and representativeness of discarded cases. No cases of CRS reported.
Immunization and population immunity	Suboptimal coverage; 85.5% for MRCV2, national coverage weighted calculated every 3 years. At least 7 cantons with $\leq 90\%$ coverage accounting for continued transmission.
Supplementary information	NVC recently established (2013); report on active media campaign.
Specific comments to country	<p>The RVC commends Switzerland on establishment of the NVC and conducting its media campaign.</p> <p>A permanent, reliable mechanism for national vaccination coverage calculation for all vaccine doses is urgently required. If it is not possible to establish a national vaccination registry or conduct annual surveys, then alternative methods must be developed.</p> <p>The country should consider adopting recommended WHO surveillance indicators and laboratory quality assurance programme. Alternatively, the report should provide evidence that results originate from proficient laboratories using validated assays and passing the laboratory external quality assurance (EQA) test of a reputable EQA program.</p> <p>The RVC would appreciate receiving more information on response measures taken for reported outbreaks.</p>
RVC conclusion 2013	Endemic transmission of measles and rubella.

Tajikistan

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Inconclusive about measles and rubella transmission status. RVC encouraged Tajikistan to provide more complete surveillance data, including line-listing of discarded cases, in order to permit the RVC to determine measles and rubella elimination status in the country.
Epidemiology	No outbreaks reported. No cases of CRS recognized.
Surveillance performance and indicators	Timely and complete surveillance and rate of laboratory investigation performance indicators, but not for viral detection. All but one of the 36 suspected cases were discarded. Surveillance should be reinforced.
Immunization and population immunity	High reported MRCV1/2 coverage >97%, although methodology for determining coverage not presented and it is not clear that this is only administrative coverage.
Supplementary information	Not provided.
Specific comments to country	The RVC would appreciate receiving clarification on the methodology used for determining immunization coverage. Does the data provided refer to vaccine distribution or vaccine application? The RVC would appreciate receiving more information on population immunity to both measles and rubella. Surveillance quality needs to be improved, surveillance indicators should be correctly calculated and information provided on all suspected and discarded cases. Genomic data should be available for all sporadic cases. Therefore, a sustainable mechanism allowing for viral genotyping is necessary, using the arrangements in place within the Measles and Rubella Regional Laboratory Network. The RVC strongly recommends providing genomic sequence data in the next ASU.
RVC conclusion 2013	Interrupted endemic transmission of measles and rubella.

The former Yugoslav Republic of Macedonia

Status of measles and rubella elimination for 2012

(Review of Elimination Status Reports, 2010-2012)

Component	RVC comment
Goals and strategies	Goals and strategies in accordance with the WHO Regional Office for Europe guidelines.
Epidemiology	Since the outbreak in 2011, there has been a decline in the number of measles cases reported, with 7 measles cases reported in 2012. Sporadic rubella cases have been reported.
Surveillance performance and indicators	The former Yugoslav Republic of Macedonia did not provide evidence to document that high-quality MR surveillance is in place.
Immunization and population immunity	High reported routine coverage with both MMR doses. SIAs were conducted in 2009-2011.
Supplementary information	The national program for elimination of Measles, Rubella and CRS 2010-2015 in place. Immunity gaps in Roma communities in suburban and rural areas were reported.
RVC conclusion 2012	NVC to resubmit complete ESR.

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
Epidemiology	Report confirmed 4/16 suspected cases clinically compatible. No cases of rubella or CRS reported for 2013.
Surveillance performance and indicators	No data on surveillance performance indicators. Case-based surveillance to be established.
Immunization and population immunity	Population immunity inferred from high administrative coverage, no additional data to support coverage. Immunity gaps in Roma population
Supplementary information	Not provided.
Specific comments to country	The former Yugoslav Republic of Macedonia was one of the countries pending review of the ESR 2010-2012. The NVC is requested to resubmit the complete ESR. The ASU report provided is incomplete and no conclusion on the status of measles and rubella elimination can be reached. The NVC is urged to complete and re-submit an appropriate ASU 2013 to the WHO Secretariat as soon as possible.
RVC conclusion 2013	NVC to resubmit complete ASU.

Turkey

Status of measles and rubella elimination for 2012

(Review of Elimination Status Reports, 2010-2012)

Component	RVC comment
Goals and strategies	Goals and strategies in accordance with the WHO Regional Office for Europe guidelines.
Epidemiology	Measles cases were reported for every year, with an outbreak of 332 cases in 2012, predominantly among children (<15 years of age), the unvaccinated or people with unknown vaccination status. Small import-related outbreaks were reported in some provinces (D4, D9). Mainly sporadic rubella cases were reported with small outbreaks. Ongoing transmission of measles in Istanbul is possible.
Surveillance performance and indicators	Turkey meets most measles surveillance performance indicators; rubella surveillance is not developed.
Immunization and population immunity	High reported routine coverage with MRCV1 (94-98%) but suboptimal MRCV2 coverage (85-93%). Territories and populations at risk (unimmunized) are defined. Limited MR follow up immunization was conducted in 2010-2013.
Supplementary information	Measles, Rubella and CRS Surveillance Guidelines were updated in 2010. The guide includes surveillance standard operating procedures that have been widely used in the field.
RVC conclusion 2012	Endemic transmission of measles and rubella.

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
Epidemiology	Measles outbreaks (63) with 7346 cases reported nationwide, 77% < 15 years of age. Last year, D4 and D8 genotypes were identified. Rubella: 81 cases reported, 36 in Istanbul mainly in children <10 years of age. No laboratory data for rubella.
Surveillance performance and indicators	Origin of measles cases and timeliness of reporting is suboptimal although completeness of reporting 100%. Although no cases of CRS are reported, rubella surveillance is not developed.
Immunization and population immunity	High reported routine coverage with MRCV1 (94-98%); suboptimal MRCV2 coverage (85-93%); high proportion of provinces with low MRCV2 coverage; suboptimal coverage by DHS; coverage determined by electronic registry.
Supplementary information	Comprehensive measles outbreak response activities including introduction of additional MMR dose for children 9-11 months, vaccination of HCW, military etc.
Specific comments to country	Turkey is commended for the measles outbreak response efforts in 2013. The RVC urges further development of rubella surveillance according to WHO recommendations. The NVC is recommended to review current national guidelines for calculating the rate of discarded cases and ensure that appropriate data is included in the next ASU.
RVC conclusion 2013	Endemic transmission of measles and rubella.

Turkmenistan

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	<p>Interrupted endemic transmission of measles and rubella.</p> <p>The 2012 measles and rubella status was reassessed and amended from “Inconclusive both for measles and rubella”, as the NVC responded to RVC recommendations:</p> <p>RVC recognizes that Turkmenistan has achieved high vaccination coverage, has implemented broad age-range catch-up vaccination, and has demonstrated strong political commitment; weaknesses in surveillance quality are the only reason that the country is not considered to have achieved elimination. RVC encourages Turkmenistan to provide more complete surveillance data, including line-list of discarded cases, in order to permit the RVC to determine the measles and rubella elimination status in the country.</p>
Epidemiology	No cases of measles and rubella reported.
Surveillance performance and indicators	All of the 128 suspected (measles?) cases were discarded; country reports timely and complete performance indicators.
Immunization and population immunity	High coverage (>98%) for MRCV1 and 2.
Supplementary information	None.
Specific comments to country	The RVC thanks the NVC for providing requested supplemental information on discarded cases from 2010 to 2013. As a result the status of measles and rubella elimination in 2012 has been revised – from ‘inconclusive’ to ‘interrupted endemic transmission’.
RVC conclusion 2013	Interrupted endemic transmission of measles and rubella.

Ukraine

Status of measles and rubella elimination for 2012

(Review of Elimination Status Reports, 2010-2012)

Component	RVC comment
Goals and strategies	Goals and routine immunization strategy are in accordance with the WHO Regional Office for Europe guidelines. More information is needed.
Epidemiology	Ukraine has a very high incidence of measles, with an outbreak of 12 746 cases reported in 2012, affecting all age groups and administrative territories. Genotype D4 was confirmed in 2012. In 2012, 1952 cases of rubella were reported. No MR case-based data were provided.
Surveillance performance and indicators	No evidence was provided to document that high-quality MR surveillance is in place.
Immunization and population immunity	Very low reported routine coverage with both MRCV doses since 2008. No MR SIA has been conducted.
Supplementary information	National plan for measles and rubella elimination is mentioned but not presented. No actions have been taken to improve routine coverage or conduct SIAs.
RVC conclusion 2012	Endemic transmission of measles and rubella.

Status of measles and rubella elimination for 2013 – ASU not submitted

(Review of Annual Status Update, 2013)

Component	RVC comment
Epidemiology	
Surveillance performance and indicators	
Immunization and population immunity	
Supplementary information	
Specific comments to country	The RVC acknowledges that Ukraine is facing a wide range of problems and challenges in pursuing the measles and rubella elimination goals, but urges the NVC to complete and submit an appropriate ASU 2013 to the WHO Secretariat as soon as possible.
RVC conclusion 2013	NVC to submit ASU.

United Kingdom of Great Britain and Northern Ireland

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Endemic transmission of measles and rubella.
Epidemiology	Measles transmission is continuing, interrupted rubella transmission. Rubella incidence has declined. Incidence of measles essentially unchanged from last year, annualized incidence 50.2 per million population. Comprehensive genotyping information is available.
Surveillance performance and indicators	Performance indicators are good.
Immunization and population immunity	94.7% MRCV1 and suboptimal (88.9%) MRCV2 coverage. At least 6 regions with less than 90% MRCV coverage. Electronic registry and additionally United Kingdom- evaluated at 5 th birthday; MCV1 at 2 nd birthday is 93% (2013). Coverage monitoring at 10-16 year olds – 89.9%, 17-18 year olds > 85%.
Supplementary information	The Joint Committee on Vaccination and Immunization (JCVI) has decided that routine antenatal blood screening for rubella should be discontinued and is moving towards screening for susceptibility on the basis of history.
Specific comments to country	The RVC commends the JCVI for their excellent efforts.
RVC conclusion 2013	Endemic transmission of measles. Interrupted endemic transmission of rubella.

Uzbekistan

Status of measles and rubella elimination for 2013

(Review of Annual Status Update, 2013)

Component	RVC comment
RVC conclusion 2012	Inconclusive about measles and rubella transmission status. The RVC encouraged Uzbekistan to provide more complete surveillance data, including line-listing of discarded cases, in order to permit the RVC to determine measles and rubella elimination status in the country.
Epidemiology	No confirmed measles or rubella cases reported since 2011. No information on CRS cases.
Surveillance performance and indicators	Only 8 suspected cases discarded. Not clear if they were measles or rubella suspected. Surveillance performance indicators not consistent with what the country reports. Representativeness of discarded cases is inconsistent with data for rubella; quality is not high enough to make strong judgment about interruption.
Immunization and population immunity	High MRCV1 and MRCV2 administrative coverage; no other data presented to substantiate immunization coverage.
Supplementary information	None.
Specific comments to country	The RVC recognizes the progress being made but requires more information on surveillance quality before any conclusion on the status of measles and rubella elimination can be reached. Uzbekistan is strongly encouraged to implement high quality case-based surveillance for measles and rubella.
RVC conclusion 2013	Inconclusive about measles and rubella transmission status.

Annex 2. List of participants

RVC Members

Professor Susanna Esposito (*Chair*)
Department of Maternal and Pediatric Sciences
Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico
University of Milano
Italy

Dr Robin Biellik
Consultant Epidemiologist
Switzerland

Dr Irja Davidkin
Senior Researcher
Virology Unit
National Institute for Health and Welfare (THL)
Finland

Professor Mira Kojouharova
Head of Department
National Center for Infectious and Parasitic Diseases,
Ministry of Health
Bulgaria

Dr Andrei Lobanov
Consultant
Russian Federation

Dr Günter M. Pfaff
Department Epidemiology and Health Reporting
Baden-Württemberg State Health Office
Germany

Dr José Ignacio Santos Preciado
Professor of Medicine
Universidad Nacional Autónoma de México
Mexico

Dr John Simpson
Deputy Director
Emergency Response Department
Public Health England
United Kingdom of Great Britain and Northern Ireland

United States Centres for Disease Control and Prevention

Dr Susan E. Reef
Acting Rubella Team Lead
Global Immunization Division
Center for Global Health
United States Centers for Disease Control and Prevention
United States of America

Dr Nino Khetsuriani
Advisor on Immunizations for South Caucasus
United States Centers for Disease Control and Prevention
Tbilisi, Georgia

European Centre for Disease Prevention and Control (ECDC)

Dr Lucia Pastore Celentano
Senior Expert
Vaccine Preventable Diseases Surveillance Unit
European Centre for Disease Prevention and Control (ECDC)
Sweden

UNICEF

Dr Oya Zeren Afsar
Immunization Specialist
Department of Health and Nutrition
UNICEF Regional Office for CEE/CIS
Switzerland

Observer

Professor Takis Panagiotopoulos
Department of Child Health
National School of Public Health
Greece

Rapporteur

Dr Raymond Sanders
Independent Consultant
United Kingdom of Great Britain and Northern Ireland

WHO Regional Office for Europe

Dr Nedret Emiroglu
Deputy Director
Division of Communicable Diseases, Health Security, & Environment

Mr Robb Butler
Programme Manager a.i.
Vaccine-preventable Diseases and Immunization Programme

Dr Niyazi Cakmak
Technical Officer
Vaccine-preventable Diseases and Immunization Programme

Dr Abigail Shefer
Technical Officer
Vaccine-preventable Diseases and Immunization Programme

Dr Sergei Deshevoi
Medical Officer
Vaccine-preventable Diseases and Immunization Programme

Dr Dragan Jankovic
Technical Officer
Vaccine-preventable Diseases and Immunization Programme

Dr Myriam Ben Mamou
Scientist
Vaccine-preventable Diseases and Immunization Programme

Dr Shahin Huseynov
Technical Officer
WHO Country Office, Uzbekistan
Vaccine-preventable Diseases and Immunization Programme

Ms Katrine Habersaat
Consultant
Vaccine-preventable Diseases and Immunization Programme

Ms Catharina de Kat-Reynen
Consultant
Vaccine-preventable Diseases and Immunization Programme

Ms Malika Abdusalyamova
Programme Assistant
Vaccine-preventable Diseases and Immunization Programme

The WHO Regional Office for Europe

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World Health Organization Regional Office for Europe

UN City, Marmorvej 51, DK-2100 Copenhagen Ø, Denmark
Tel.: +45 45 33 70 00 Fax: +45 45 33 70 01 Email: contact@euro.who.int
Website: www.euro.who.int