

Summary report on the

**Intercountry laboratory training
workshop on measles virus detection
and genotyping**

Muscat, Oman
11–18 March 2007



**World Health
Organization**

Regional Office for the Eastern Mediterranean

Summary report on the

**Intercountry laboratory training
workshop on measles virus detection
and genotyping**

Muscat, Oman
11–18 March 2007



© World Health Organization 2008. All rights reserved.

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

The World Health Organization does not warrant that the information contained in this publication is complete and correct and shall not be liable for any damages incurred as a result of its use.

Publications of the World Health Organization can be obtained from Distribution and Sales, World Health Organization, Regional Office for the Eastern Mediterranean, PO Box 7608, Nasr City, Cairo 11371, Egypt (tel: +202 670 2535, fax: +202 670 2492; email: DSA@emro.who.int). Requests for permission to reproduce WHO EMRO publications, in part or in whole, or to translate them – whether for sale or for noncommercial distribution – should be addressed to the Coordinator, Knowledge Management and Sharing, at the above address (email HIT@emro.who.int).

Contents

1.	Introduction	ERR
	
	OR! BOOKMARK NOT DEFINED.	
2.	Conclusions.....	2
3.	Recommendations	ERR
	
	OR! BOOKMARK NOT DEFINED.	

1. Introduction

The WHO Regional Office for the Eastern Mediterranean has established a regional goal to eliminate measles, by 2010 with laboratory support of surveillance as an indispensable element of the programme. All countries in the Eastern Mediterranean Region have established national measles and rubella laboratories served by WHO trained staff to support and provide immunization programmes with reliable measles laboratories data which are in line with WHO's set standard. WHO recommends that the clinical diagnosis of measles be confirmed by the detection of measles immunoglobulin class M (IgM) using an enzyme immunoassay. Epidemiological measles virus surveillance distinguishing between indigenous and imported viruses has become important as the Region approaches the measles elimination target. The Region has improved its virological surveillance for measles, although gaps still remain in identifying measles and rubella virus genotypes in some countries.

To address this situation, the Regional Office organized an intercountry training workshop focusing on building capacity in molecular techniques for measles virus detection and genotyping. The laboratory training workshop on measles virus detection and genotyping was held on 11–18 March 2007 at the Central Public Health Laboratory in Muscat, Oman, which serves as the regional reference laboratory for measles and rubella for the regional laboratory network.

The objectives of the workshop were to:

- review the measles/rubella laboratory performance in the national malaria laboratories in the Region;
- provide updated technical information on laboratory issues related to measles elimination goals in the Region; and
- provide the training in molecular epidemiological techniques for measles virus detection.

Participants from 10 national measles and rubella laboratories were invited to attend the training: Bahrain, Egypt, Islamic Republic of Iran, Iraq, Jordan, Kuwait (absent), Oman, Pakistan, Saudi Arabia and Syrian Arab Republic. The workshop was conducted with support from the WHO secretariat and temporary advisers from the two measles and rubella regional reference laboratories (Tunis and Muscat) and from the Centers for Disease Control and Prevention (CDC), Atlanta.

The workshop began with global and regional updates on measles elimination and virus surveillance by course facilitators, followed by 10 brief presentations from each country on measles surveillance laboratory activities and availability and settings of different equipment needed for molecular techniques and cell culture facilities.

The practical training was organized in such a way as to provide the participants with demonstrations and hands-on experience coupled with comprehensive background lectures to update knowledge and skills in molecular techniques on measles. During the hands-on practice, the facilitators demonstrated each technique step by step, and participants worked in pairs and then took turns for each activity. Throughout the training, the facilitators gave detailed instructions to the participants, observed their laboratory practices, and assisted with calculations and interpretation of the results.

On the last day the participants were given a post-test for course evaluation. After completion of the laboratory training course, each participant was given Vero/SLAM cells, Geneticin, and One Step RP-PCR and measles and rubella primers as well as RNA controls.

2. Conclusions

The staff of the Central Public Health Laboratory/RRL in Muscat did an excellent job in preparation for the course. In addition to preparing

practical laboratory space with all necessary equipment, supplies and reagents for the training, they prepared cascade stages of both clean and virus infected Vero/SLAM cells to enable participants to visualize all stages of cytopathic effect and IFA detection and to enable them to prepare stock of cells as well as virus. This preparation allowed the students to complete the laboratory exercises and conduct and repeat their hands-on practice without unnecessary delays.

The participants showed a high level of interest and technical competence and were keen to learn. They greatly contributed the smoothness of the course their interaction and open high quality of discussions. Overall, the training was extremely successful as indicated by the scores and the response of the participants.

The participants were encouraged to pass the gained knowledge to their local staff and to continue to practice using the reagents consisting of Vero/SLAM cells, geneticin, reagent kits for RNA extraction, One Step RT-PCR, PCR Cleanup kit etc. They were asked to remain in contact with each other and with the facilitators and provide feedback on the practical activities performed at their own setting and feel free to request guidance whenever needed.

In conclusion, genetic characterization of wild measles viruses provides a means to facilitate the study of transmission pathways of the virus and is an essential component of laboratory-based measles surveillance activities. Virological surveillance needs to be expanded in all areas of the world and conducted during all phases of measles control. Samples should be obtained from each chain of transmission. Timely reporting and dissemination of genotype data are needed. Logistical problems also need to be addressed. As the WHO laboratory network expands, continued training of laboratory and field staff will be indispensable.

3. Recommendations

To national measles and rubella laboratories

1. Ensure use of dedicated equipment, rooms and hoods for cell culture and PCR to prevent contamination and maintain high quality performance.
2. To enhance the genotype information in the Region, work with national surveillance counterparts to collect clinical samples for measles/rubella virus detection and genotyping as well as to reconcile laboratory and surveillance data in order to allow submission of compatible data for global monitoring of measles and rubella.
3. Ensure that the form on data elements is filled and accompanies the specimens whenever they are sent to the regional reference laboratories for validation or for genotyping.
4. Ensure that specimen handling and transport conforms with the recently revised United Nations recommendations on the transport of dangerous goods.
5. Submit information about isolated circulating measles and rubella strains to the regional reference laboratory, and submit the identified genotype to the WHO genotype database.