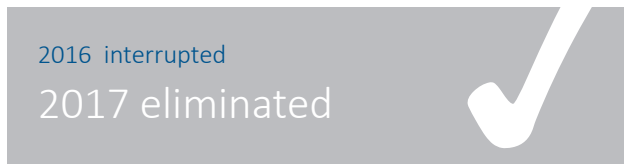


Measles and rubella elimination country profile

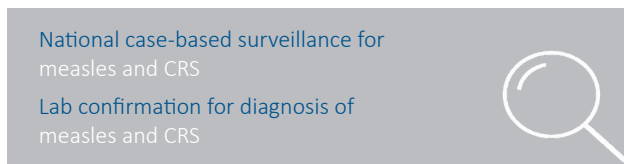
Republic of North Macedonia

Measles elimination status



Source: European Regional Verification Commission for Measles and Rubella Elimination (RVC) meeting report: www.euro.who.int/7thrv

Measles and rubella surveillance



Source: WHO/UNICEF Joint Reporting Form on Immunization, 2017

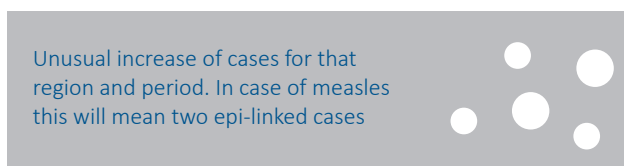
Measles and rubella immunization schedule, 2017

	Vaccine	Schedule	Year of introduction	
MCV1	MMR	12 months	MCV2	1987
MCV2	MMR	6 years	RCV	1982
Measles vaccination in school				Yes

Source: Immunization schedule, WHO, Data and Statistics, Immunization Monitoring and Surveillance (http://www.who.int/immunization/monitoring_surveillance/data/en/)

MMR = measles-mumps-rubella vaccine; MCV1 = first dose measles-containing vaccine; MCV2 = second dose measles-containing vaccine; RCV = rubella-containing vaccine

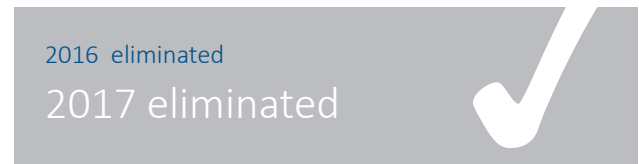
Definition used for an outbreak



Source: Measles and rubella elimination Annual Status Update report, 2017



Rubella elimination status



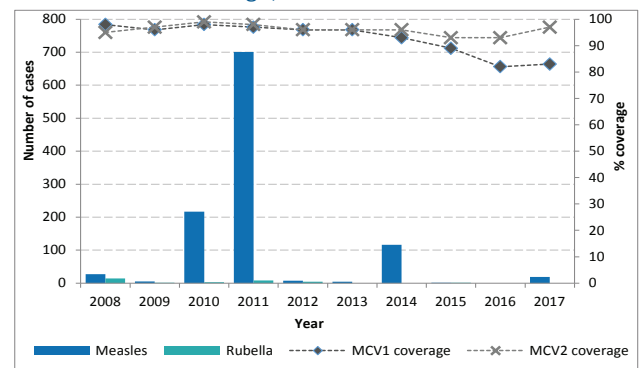
Source: European Regional Verification Commission for Measles and Rubella Elimination (RVC) meeting report: www.euro.who.int/7thrv

Demographic information, 2017

Total population	2 083 160
< 1 year old	24 092
< 5 years old	118 345

Source: World Population Prospects: The 2017 Revision, New York, United Nations

Measles and rubella cases and immunization coverage, 2008–2017

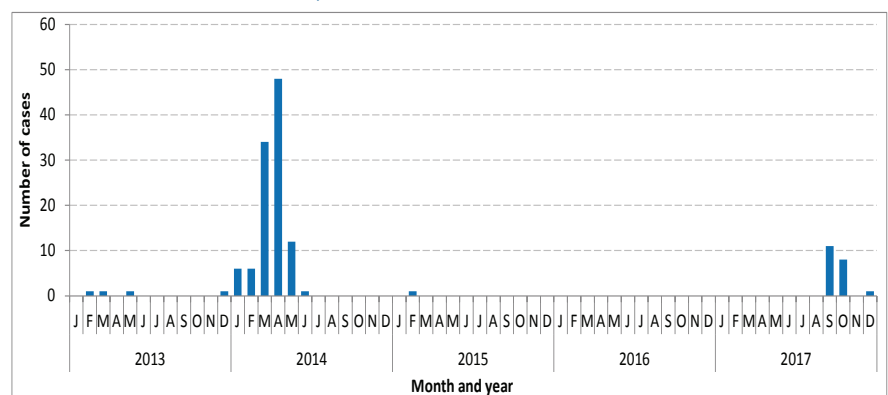


Source: Disease incidence and immunization coverage (WUENIC), WHO, Data and Statistics, Immunization Monitoring and Surveillance

(http://www.who.int/immunization/monitoring_surveillance/data/en/)

MCV1 = first dose of measles-containing vaccine
MCV2 = second dose of measles-containing vaccine

Confirmed measles cases by month of onset, 2013-2017

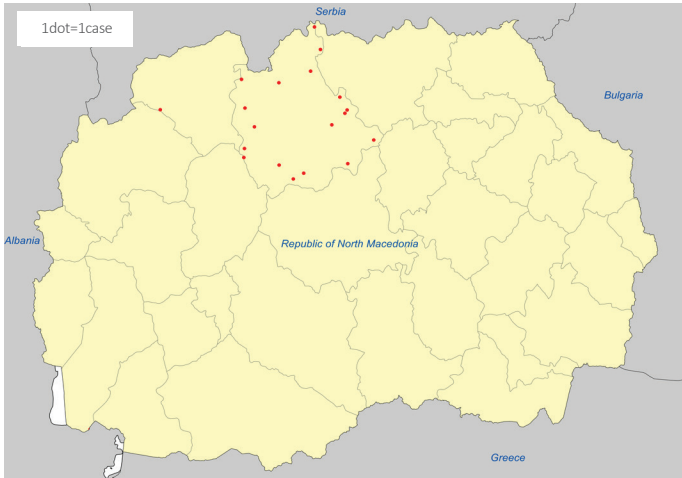


Source: CISD 2017

Measles and rubella elimination country profile

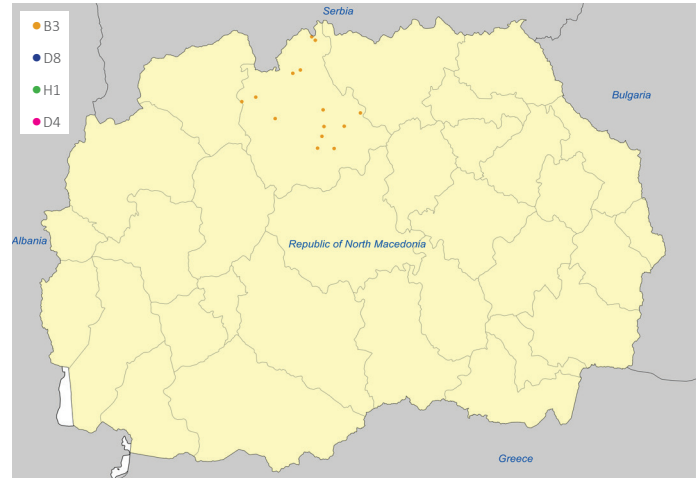
Republic of North Macedonia

Measles cases by first subnational level, 2017



Source: Measles and rubella elimination Annual Status Update report, 2017

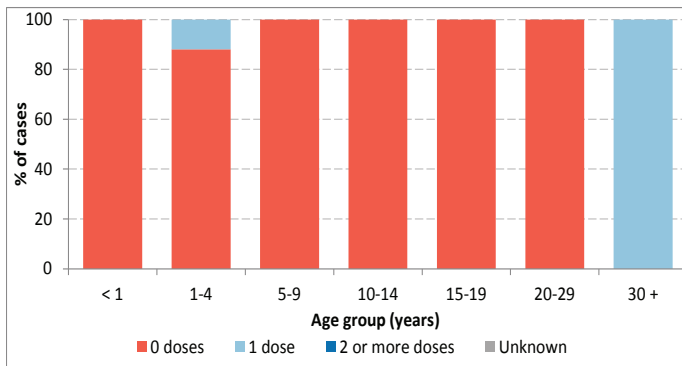
Measles genotypes by first subnational level, 2017



Source: MeaNS 2017

Note: The dots in the maps are placed randomly within the administrative regions.
Map disclaimer: The boundaries and names shown and the designations used on the maps 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 and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

Measles cases by age group and vaccination status, 2017



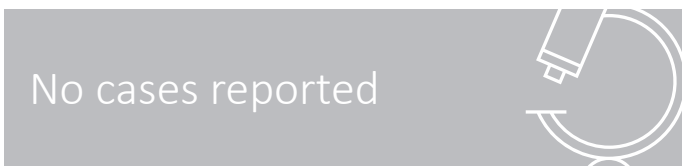
Source: Measles and rubella elimination Annual Status Update report, 2017
Note: Excludes imported cases

Sources of infection, 2017

	Measles	Rubella
Imported	0	0
Import-related	17	0
Unknown/ Not reported	1	0
Endemic	0	0

Source: Measles and rubella elimination Annual Status Update report, 2017

Information on CRS, 2017



Source: Measles and rubella elimination Annual Status Update report, 2017
CRS = congenital rubella syndrome

Measles and rubella elimination country profile

Republic of North Macedonia

Measles incidence, epidemiologic and virologic characteristics, 2013-2017

	Suspected measles cases	Confirmed measles cases				Discarded as non-measles	Measles incidence	Genotypes detected
		Laboratory	Epi-linked	Clinically	Total			
2013	16	2	0	2	4	12	1.5	D8
2014	126	49	20	47	116	10	56.2	D8
2015	2	0	0	0	0	2	0	NA
2016	3	0	0	0	0	3	0	NA
2017	25	18	0	1	19	6	9.2	ND

Source: Measles and rubella elimination Annual Status Update report, 2013-2017
Incidence calculated per 1 million population
ND = Data not available; NA= Not applicable

Measles surveillance and laboratory performance indicators, 2013-2017

	Discarded non-measles rate	% 1st sub-national unit with ≥ 2 discarded cases	% cases with adequate laboratory investigation	% origin of infection known	# specimen tested for measles	% positive for measles	Rate of viral detection	% WHO and proficient labs
2013	ND	ND	ND	ND	ND	ND	ND	ND
2014	ND	ND	100%	ND	119	44.5%	ND	ND
2015	ND	ND	NA	NA	2	0%	NA	100%
2016	1.0	3.2%	NA	NA	3	0%	NA	100%
2017	0	3.2%	100%	100%	25	72%	100%	100%

Source: ASU 2013-2017
ND = Data not available; NA= Not applicable
A proficient laboratory is WHO accredited and/or has an established quality assurance programme with oversight by a WHO accredited laboratory

Rubella incidence, epidemiologic and virologic characteristics, 2013-2017

	Suspected rubella cases	Confirmed rubella cases				Discarded as non-rubella	Rubella incidence	Genotypes detected
		Laboratory	Epi-linked	Clinically	Total			
2013	0	0	0	0	0	0	0	NA
2014	0	0	0	0	0	0	0	NA
2015	2	0	0	0	0	2	0	NA
2016	0	0	0	0	0	0	0	NA
2017	4	0	0	0	0	4	0	NA

Source: Measles and rubella elimination Annual Status Update report, 2013-2017
Incidence calculated per 1 million population
ND = Data not available; NA= Not applicable

Rubella surveillance and laboratory performance indicators, 2013-2017

	Discarded non-rubella rate	% 1st sub-national unit with ≥ 2 discarded cases	% cases with adequate laboratory investigation	% origin of infection known	# specimen tested for rubella	% positive for rubella	Rate of viral detection	% WHO and proficient labs
2013	NA	NA	NA	NA	ND	0%	NA	ND
2014	NA	NA	NA	NA	18	0%	NA	ND
2015	ND	ND	NA	NA	711	0.1%	NA	100%
2016	NA	NA	NA	NA	0	0%	NA	ND
2017	0	3.2%	100%	NA	4	0%	NA	100%

Source: ASU 2013-2017
ND = Data not available; NA= Not applicable
A proficient laboratory is WHO accredited and/or has an established quality assurance programme with oversight by a WHO accredited laboratory

RVC comments, based on 2017 reporting

The Regional Verification Commission for Measles and Rubella Elimination (RVC) concluded that endemic transmission of measles remained interrupted in 2017 and verified that measles has been eliminated. The RVC commends the national verification committee for measles and rubella elimination (NVC), national health authorities and public health system on this achievement. It also concluded that endemic transmission of rubella remained interrupted in 2017 and confirmed that rubella elimination has been sustained. Surveillance performance and sensitivity need to be strengthened and better documented.

Source: European Regional Verification Commission for Measles and Rubella Elimination (RVC) meeting report: www.euro.who.int/7thrv

Surveillance performance indicators and targets

- Rate of discarded cases: at least 2 discarded measles or rubella cases per 100 000 population
- % cases with adequate laboratory investigation: ≥ 80%
- % origin of infection known: ≥ 80%
- Rate of viral detection: ≥ 80%