

This report provides an overview of selected epidemiological characteristics of measles and rubella in the WHO European Region. It is based on data submitted to the centralized information system for infectious diseases.¹ The analyses of these diseases are performed on cases with disease onset dates during the first quarter of 2013.²

This report also provides summaries of measles outbreaks that have occurred in several countries during this period and beyond. These summaries are based on more recent data that were either available on official health authorities' web sites or provided in aggregated format by the health authorities.

Measles from January to March 2013

Incidence – notifications and laboratory data

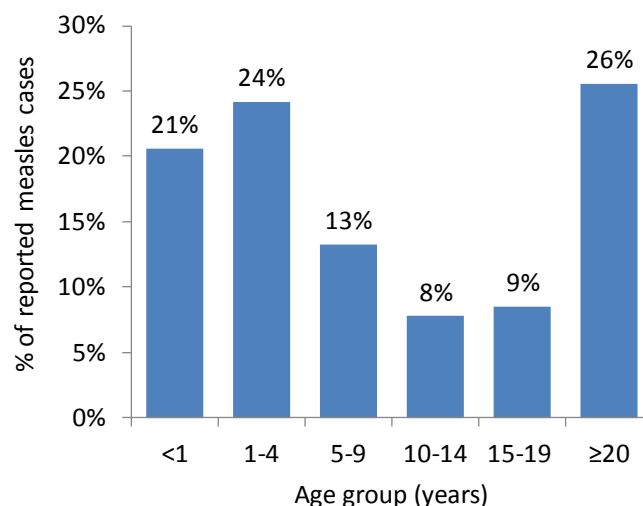
For the first quarter of 2013, 6266 measles cases were reported in 26 countries (49%) of the WHO European Region among 49 (92%) countries that submitted measles data (including zero reporting). Four countries, namely Bosnia and Herzegovina, Monaco, San Marino and Tajikistan did not submit reports. Of the total, 82% of cases (n=5163) were reported by four countries: Georgia (n=629; 10%), Turkey (n=2772; 44%), Ukraine (n=1046; 17%) and the United Kingdom (n=716; 11%). With 1524 cases of measles, the 27 Member States constituting the European Union reported 30% of all cases in the Region. The highest incidence per million population for the first quarter of 2013 was reported in Georgia (147.0) followed by Turkey (36.8).

Of the total, 4926 (79%) cases were laboratory confirmed and 231 (4%) were epidemiologically linked. The remaining 1109 (18%) were classified as clinically compatible. During the first quarter of 2013, a total of 429 sequences were submitted to the Measles Nucleotide Sequence database (MeaNS)³ by the countries of the WHO European Region. The genotypes identified in the Region included D8 (n=371), D4 (n=36), B3 (n=20) and A (n=2).

Age distribution

The age group was known in 89% (n=5578) of cases, of which 1151 were <1 year old, 1349 were 1–4 years old, 741 were 5–9 years old, 434 were 10–14 years old,

Fig. 1. Age distribution of measles cases in the WHO European Region, first quarter of 2013 (n=5578)



N.B. Discarded cases are not included

476 were 15–19 years old and 1427 were ≥20 years old. Fig. 1 shows the age distribution by percentage of reported measles cases in the Region during the first quarter of 2013.

Vaccination status

Vaccination status was known in 3929 cases (69%). Of these, 2824 (72%) were unvaccinated: 1076 cases (38%) were <1 year old, 668 cases (24%) were 1–4 years old, 296 cases (10%) were 5–9 years old, 258 cases (9%) were 10–14 years old, 135 cases (5%) were 15–19 years old and 386 cases (14%) were ≥20 years old. The remaining 1105 cases (28%) were reportedly vaccinated with at least one measles-containing vaccine (MCV) dose.

Hospitalization

Data on hospitalization status was available for 38% (n=2351) of all reported measles cases. There were 1552 reported hospitalized cases in connection with measles, amounting to 66% of all cases with known hospitalization status.

Imported cases

Importation status was known in 24% (n=1523) of cases. Of these, 48 were reported as imported cases, amounting to 3.2% of cases with a known importation status. The remaining cases were believed to have been infected within their own countries.

¹ World Health Organization. Computerized system for infectious diseases (CISID) <http://data.euro.who.int/CISID/>

² Where these dates were unavailable, cases with the date of notification reported during the first quarter 2013 were included.

³ Measles Nucleotide Sequence database (MeaNS) <http://www.hpa-bioinformatics.org.uk/Measles>

Rubella from January to March 2013

Incidence – notifications and laboratory data

For the first quarter of 2013, 4567 rubella cases were reported in 12 countries (23%) of the WHO European Region among 38 (72%) countries submitting rubella data (including zero reporting). The cases were reported almost exclusively by Poland (n=4520; 99%), which also had the highest incidence per million population (118). The 27 Member States constituting the European Union reported 99.8% (n=4558) of all cases in the Region.

Of the total, 38 (1%) cases were laboratory confirmed. These were reported by Romania (29), United Kingdom (3), Norway (2), Switzerland (2), Armenia (1) and Austria (1). The remaining 4520 cases, all from Poland, were classified as clinically compatible.

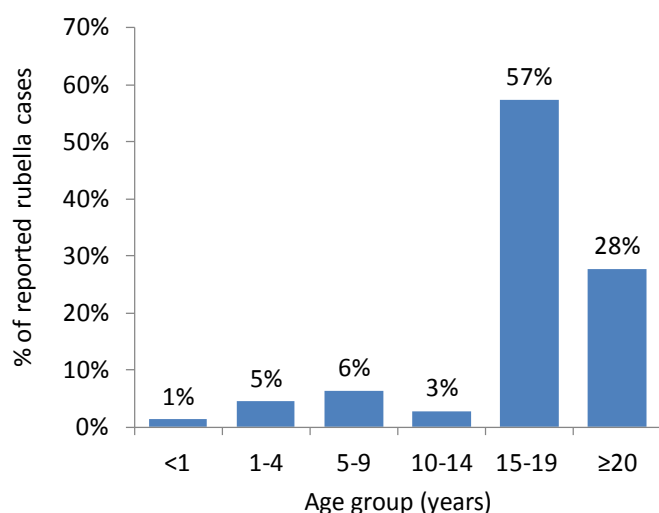
Age distribution

The age group was known in all 4567 cases of which 60 were <1 year old, 206 were 1–4 years old, 290 were 5–9 years old, 128 were 10–14 years old, 2620 were 15–19 years old and 1263 were ≥20 years old. Fig. 2 shows the age distribution by percentage of reported rubella cases during the first quarter of 2013.

Vaccination status

Vaccination status was known in 24 cases (0.5%). Of these, 18 (75%) were unvaccinated: three cases (17%) were <1 year old, five cases (28%) were 15–19 years old and 10 cases (56%) were ≥20 years old. The remaining six cases (25%) were reportedly vaccinated with at least one rubella-containing vaccine dose.

Fig. 2. Age distribution of rubella cases in the WHO European Region, first quarter of 2013 (n=4567)



N.B. Discarded cases are not included

Imported cases

Importation status was known in 1% (n=41) of rubella cases. Of these, two were reported as imported cases amounting to 4.9% of cases with a known importation status. The remaining cases were believed to have been infected within their own countries.

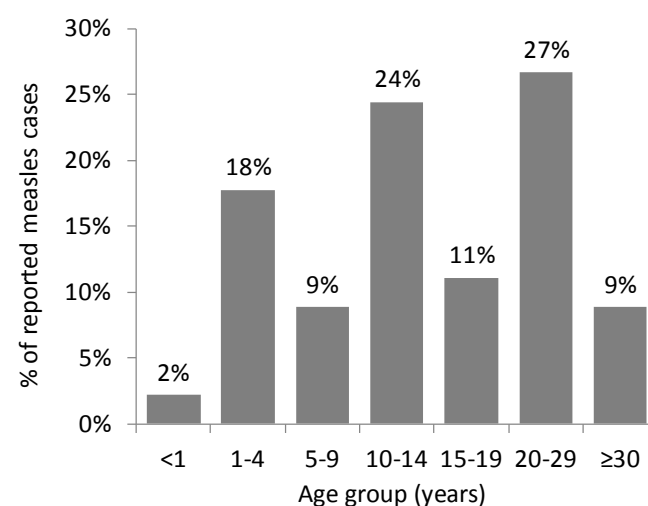
Measles outbreak in Azerbaijan

An outbreak of measles is currently ongoing in Azerbaijan. Between 1 January–31 May 2013, 658 cases of measles were reported by the Republican Center for Hygiene and Epidemiology of the Ministry of Health. Most (79%; n=519) cases have been reported from the capital, Baku. Of the total, 45 (7%) were laboratory confirmed, 138 (21%) were discarded following negative laboratory test results and 475 (72%) are pending for laboratory confirmation results. Measles virus genotype D4 has been detected.

Among 45 confirmed cases, 21 cases (51%) occurred among unvaccinated individuals and seven cases (15%) had at least one dose of the combined measles-mumps-rubella (MMR) vaccine. Fig. 3 shows the distribution of measles cases by age groups. Those most affected were adults aged 20–29 years (27%; n=12), followed by adolescents aged 10–14 years (24%; n=11). Hospitalization status was known in all of the 45 laboratory-confirmed cases; 35 cases (78%) were hospitalized. No measles-related deaths were recorded.

The measures implemented so far to limit the spread of measles have included the offering of MMR vaccine

Fig. 3. Age distribution of laboratory-confirmed cases of measles in Azerbaijan, 1 January–31 May 2013 (n=45)



to unvaccinated or partly vaccinated children younger than 10 years of age and all susceptible contacts of cases. During April–May 2013 about 30 000 vaccinations were given in addition to the routine vaccination programme. To keep the public informed, the Republican Center for Hygiene and Epidemiology is providing regular updates on the measles situation in the country through the mass media.

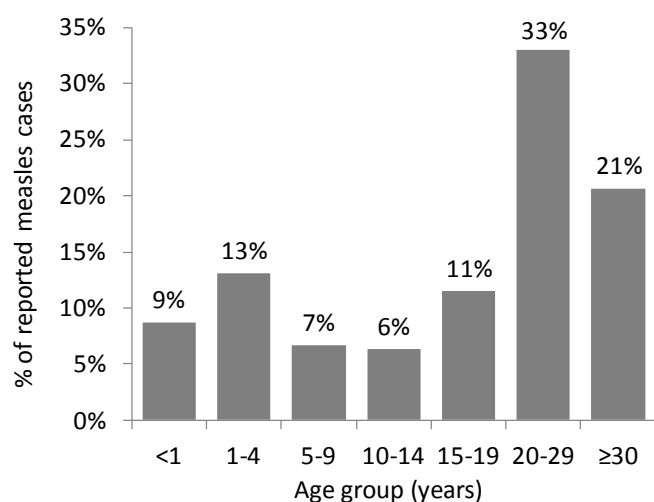
Measles outbreak in Georgia

A large-scale outbreak of measles is ongoing in Georgia. As of 3 June, 4611 cases were reported for this year by the National Center for Disease Control and Public Health (NCDC),⁴ corresponding to a crude incidence of 1025 per million inhabitants. So far, 60% of cases have been reported in the capital Tbilisi. Measles-related deaths were recorded in two persons (aged 11 months and 19 years). Of the total, 9.4% were laboratory confirmed. Measles virus genotype D8 has been detected.

Over 65% of cases (n=3000) were reported among those aged 15 years and older (Fig. 4). The incidence per million inhabitants was highest in infants (<1 year), followed by children 1–4 years old, and young adults 20–29 years of age (7003, 2633 and 2080 per million, respectively).

The measures implemented so far to limit the spread of measles have included the offering of MMR vaccine to unvaccinated or under-vaccinated children <7 years of age, contacts of cases and health care workers. Vaccination of military personnel has also been undertaken. To keep the public informed, NCDC's web

Fig. 4. Age distribution of reported measles cases in Georgia, 1 January–3 June 2013 (n=4604)



site is providing regular updates on the measles situation in the country.

Measles outbreak in Berlin, Germany

After a record low of 166 measles cases reported by Germany in 2012, an outbreak of measles in the country's capital city, Berlin, emerged during week 9 of 2013 (commencing 25 February). By 6 June, 292 cases were reported to the local public health authorities (192 laboratory-confirmed cases, 46 epidemiologically linked cases and 54 clinically compatible cases). Measles virus genotype D8 was identified in clinical specimens of 58 cases including 54 cases of the variant MVs/Frankfurt Main.DEU/17.11 and four cases of a virus closely related to this variant. In another six cases genotype D4 with the variant MVs/Manchester.GBR/10.09 was detected.

The outbreak has affected the general population (30 households and two schools) and 18 children (2–8 years of age) residing in four refugee centres. The index case could not yet be identified; however, three cases are believed to have acquired the infection whilst attending an international exhibition in Berlin in early February. Of the total, 276 cases were identified as having acquired the infection in Berlin. Of these, two cases were employees of a hotel establishment where they were infected and one other case was a health care worker who acquired the infection in hospital. Three other cases were imported from abroad: Italy (1), United Arab Emirates (1) and United Kingdom (1). These were sporadic cases and are not believed to have contributed to further measles virus transmission. Most cases (54%; n=157) were over 16 years of age and 24% (n=69) of cases were over 30 years of age.

Of the 267 cases with information on vaccination status, 239 cases (90%) were unvaccinated, 20 cases (7%) had received one dose of MCV and eight cases (3%) had two documented childhood doses of MCV. Of the 289 cases with information on hospitalization status, 98 cases (34%) were hospitalized. One case was complicated by acute encephalitis. Other cases were complicated by pneumonia and otitis media. No measles-related deaths were reported.

The District Health Offices have offered the MMR vaccine to all residents of the refugee centres. They have also applied visit bans to public settings, namely schools and nurseries, where these were considered at

⁴ National Center for Disease Control and Public Health (NCDC) <http://www.ncdc.ge/?lang=geo>

high risk for transmission of the disease. The Department of Health and Social Affairs of Berlin used the local media, including television, newspapers and its own web site, to promote vaccination to the city's population with the aim of increasing the coverage against measles. The Berlin State Office for Health and Social Affairs in cooperation with the Berlin physicians' associations informed general practitioners and paediatricians about the outbreak and urged them to intensify measles vaccination activities in line with the national recommendations on vaccination.

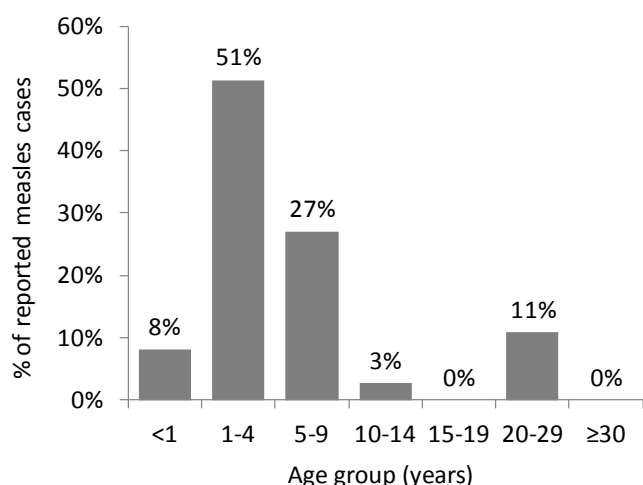
Measles outbreak in Israel

An outbreak of measles with 37 cases occurred in Israel, all in the district of Jerusalem, between 16 January 2013 and 7 April 2013. The index case was a 1½-year-old unvaccinated child who returned from a visit to London, United Kingdom, nine days before rash onset. Fifteen cases occurred among children whose parents prefer not to vaccinate them as part of a 'close to nature' lifestyle. The remaining 22 cases were members of ultra-orthodox Jewish communities in Jerusalem.

Of the total, 10 cases (27%) were laboratory confirmed and the remaining 27 cases were epidemiologically linked. Measles virus genotype D8 has been identified from clinical specimens collected from cases belonging to the ultra-orthodox Jewish community.

Fig. 5 shows the age distribution of cases. The median age of the cases was 4.4 years (age range: 2 months–29.5 years). Most cases were reported among children 1–4 years old (51%; n=19) and children 5–9 years old (27%; n=10).

Fig. 5. Age-distribution of reported measles cases in Israel, 16 January–7 April 2013 (n=37)



Of the 37 reported cases, 35 cases were unvaccinated and in two cases the vaccination status was unknown. Hospitalization status was available in all cases; one patient was admitted to hospital with vomiting. No cases with major complications or of measles-related deaths were reported.

The measures implemented to limit the spread of measles included the offering of the combined measles-mumps-rubella-varicella (MMRV) vaccine to unvaccinated or partly vaccinated children younger than 6 years of age, contacts of cases and health care workers. To keep the public informed, the web site of the Ministry of Health provided regular updates on the measles situation in the country.

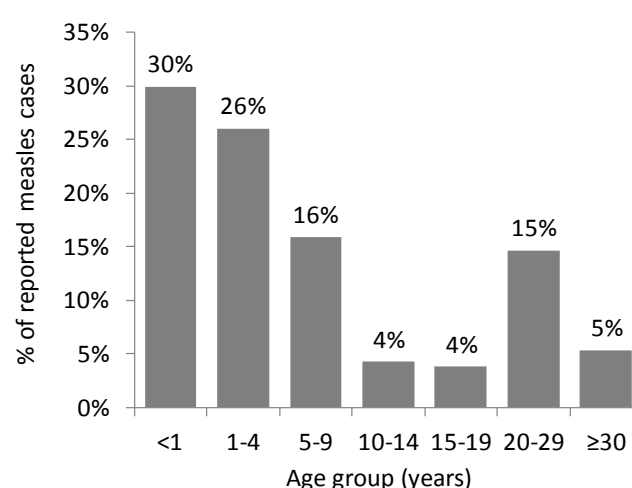
Measles outbreak in Turkey

An outbreak of measles is ongoing in Turkey mostly in the south-eastern parts of the country and the cities of Ankara and Istanbul. In 2013, 4707 measles cases were reported by 16 May. Two persons aged 9 years and 31 years were reported to have died of measles-related complications. Of the total cases, 9.5% (n=445) were reported among Syrian citizens.

Over 99% of cases were laboratory confirmed. Measles virus genotype D8 has been detected this year. Age was known in almost all (99.8%; n=4698) cases. Most cases have been reported among infants (<1 year old) (30%; n=1411) and children 1–4 years old (26%; n=1221), however, 20% (n=943) occurred in adults 20 years and older (Fig. 6). Among the latter age group, 66 cases (7%) were identified as health care workers.

Of 2849 cases with a known vaccination status, 1972

Fig. 6. Age distribution of reported measles cases in Turkey, 1 January–16 May 2013 (n=4707)



(69%) were unvaccinated. Of these, 1409 (72%) cases were infants who had not reached the recommended age of 12 months to receive the first measles-containing vaccine according to the national vaccination schedule.

To limit the spread of measles, MMR vaccine is being offered to infants aged 9–12 months, children aged less than 4 years with no vaccination records, children aged 4 years–5½ years attending kindergarten (as an additional dose) and all persons aged 6 months–15 years in districts considered to be at high risk for measles transmission based primarily on migration patterns and poor health care access due to socio-cultural and geographical factors. The vaccine is also being offered to health care workers and military personnel born in 1980–1991. Contacts of cases are actively being traced and vaccinated (if older than 6 months of age).

Measles outbreaks in the United Kingdom

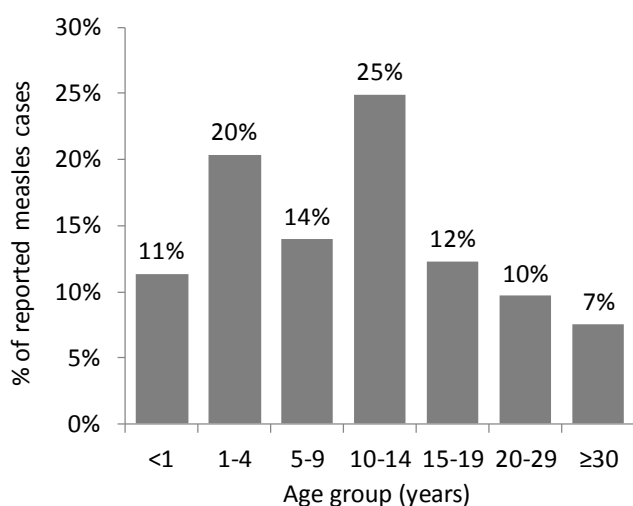
Measles in England

Since the beginning of 2013, a total of 962 laboratory-confirmed cases of measles with dates of disease onset up to 30 April were reported in England, mostly in the north-west and north-east parts of the country.

Most of the cases in England that have been typed have been shown to be MVs/Taunton.GBR/27.12/[D8]. This strain differs from the D8 genotype currently circulating in Wales (MV/Swansea.GBR/4.13/).

Most cases occurred in the general population; 184 (19%) were associated with school outbreaks. A similar proportion (15%) of cases was associated with known

Fig. 7. Age distribution of laboratory-confirmed cases of measles in England, 1 January–30 April 2013 (n=961)



low coverage groups: Traveller community (93 cases) and ultra-orthodox Jewish community (55 cases).

Age was known for 961 cases. Fig. 7 shows the distribution of measles cases by age groups; those most affected were children 10–14 years old (n=239; 25%) followed by 1–4 year olds (n=196; 20%). Approximately one in six cases (n=165) occurred in adults 20 years and older. Of the 192 cases (19%) admitted to hospital 26 cases had complications including pneumonia, meningitis and gastroenteritis.

To limit the spread of measles, in April 2013, Public Health England in collaboration with the Department of Health and the National Health Service of England initiated a national MMR vaccination catch-up programme. The programme consisted of three key components:

- an urgent, targeted communication strategy pushing unvaccinated young people towards primary care or other appropriate providers;
- a rapid active programme to identify and vaccinate unvaccinated and partially vaccinated 10–16 year olds;
- a sustained long-term intervention to strengthen current routine approaches and specifically target vulnerable and underserved populations.

Measles in Wales

In Wales, an upsurge of measles transmission has affected 1400 persons from the time it started in November 2012 till 5 June 2013, peaking in April with 625 notified cases. Most of the reported cases (67%) were associated with an outbreak, mainly affecting the Swansea and Neath Port Talbot Local Authority areas. The index cases are believed to have acquired the infection at a holiday camp in south-west England during the second half of October 2012. Transmission in schools largely contributed to the extent of the outbreak.

As of 5 June, 30% of notified cases were laboratory confirmed, although this figure may increase as laboratory testing for the most recently notified cases was still underway. Measles virus genotype D8 (MV/Swansea.GBR/4.13/) has been detected.

Age was known for 1395 cases (99.6%). Fig. 8 shows the distribution of measles cases by age groups; those mostly affected were children and teenagers. Of the notified cases, 378 cases (27%) were 1–4 years old, 269 cases (19%) were 10–14 years old and 230 cases

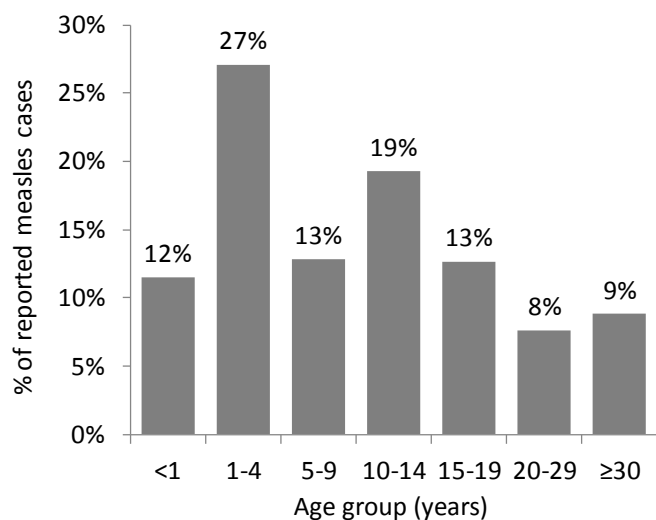
(16%) were adults 20 years and older. The majority of laboratory-confirmed cases were 10–19 years old.

Ninety-five percent of the confirmed cases (where vaccination status was known) occurred among individuals who had not received two doses of MMR vaccine. Public Health Wales is aware of 88 cases from the outbreak area who were admitted to hospital. Measles was confirmed in a 25-year-old male who died, however, it is not yet confirmed if the death was measles related.

Several press releases were issued by Public Health Wales warning the public of the risk of disease and urging parents, carers and communities to ensure children between 1 year and 18 years are fully vaccinated with MMR vaccine. Public Health Wales and Health Boards collaborated closely with the local and national media and used social media intensively to reach out to the public. Parents of school children were also urged to vaccinate their children through letters sent out from schools.

The MMR vaccine catch-up campaign centred on the outbreak area was extended to a national scale in early April 2013. By 5 June 2013, 68 881 non-routine vaccine doses were administered to the public through general practice clinics, school catch-up vaccination sessions and Health Board MMR drop-in clinics. Catch-up MMR vaccine doses were administered to health care workers by Health Board Occupational Health Departments and to prisoners by prison health services. To keep the public informed, Public Health Wales' web site provided regular updates on the measles situation in the country.

Fig. 8. Age distribution of reported measles cases in Wales, 1 November–5 June 2013 (n=1395)



Comments

The number of reported measles cases in the European Region for the first quarter of 2013 decreased by 45% compared with the same period in 2012 (n=11 299). This was mostly due to a decline in the number of cases in Romania, the Russian Federation, Spain and Ukraine. However, in the first quarter of 2013, outbreaks emerged or transmission intensified in some countries including Azerbaijan, Georgia, Turkey and the United Kingdom.

Periods of suboptimal vaccination coverage over the years most likely explains the accumulation of susceptible populations of different ages. In the United Kingdom, school-age children (10–16 years) in England and Wales emerged as a particularly susceptible group. These cohorts have been most affected by the decline in MMR coverage in the early part of the century. In Georgia and to a lesser extent Turkey, apart from young children, adults 20 years and older emerged as a susceptible group that also need attention. However, as reported in Israel and United Kingdom, outbreaks have also affected minority groups such as ultra-orthodox Jewish communities, Traveller communities and those following an alternative 'closer to nature' lifestyle. These groups require more tailored approaches to increase vaccination coverage. The WHO Regional Office for Europe recently published a guide to tailoring immunization programmes that supports countries in identifying barriers and responding to the needs of susceptible individuals.⁵

Persistent transmission of rubella in the Region remains of concern in a few countries. With 4520 cases of rubella, Poland reported almost exclusively all cases in the Region for the first quarter of 2013. Further cases are expected to be reported to WHO through the official channels as reporting delays during large-scale outbreaks can be anticipated. A recent publication originating from the National Institute of Public Health in Poland reported 21 283 cases of rubella for January to April 2013.⁶ Of these cases, only 29 cases (0.1%) were laboratory confirmed. Most (81%) of the reported cases were among males 15–29 years old reflecting the history of immunization policies in Poland: from 1989 adolescent girls were selectively vaccinated and since 2004, a universal two-dose MMR vaccination programme has been implemented.

⁵ The Guide to Tailoring Immunization Programmes (TIP) www.euro.who.int/immunizationtip

Despite a decline in measles cases in the first quarter of 2013, the persisting occurrence of large-scale outbreaks in various countries remains a challenge for the elimination of measles in the Region by 2015. To achieve this goal stronger political will and efforts, and engagement of health care workers, are necessary, particularly in high-incidence countries, to improve vaccination coverage in the population to at least 95%. In addition to maintaining the required high vaccination coverage and closing immunity gaps in the population with supplementary immunization activities, countries

should conduct high-quality integrated epidemiological and laboratory surveillance of measles and rubella as stipulated in the Region's measles and rubella elimination plan.

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⁶ Paradowska-Stankiewicz I, Czarkowski MP, Derrough T, Stefanoff P. Ongoing outbreak of rubella among young male adults in Poland: increased risk of congenital rubella infections. *Euro Surveill*. 2013;18(21):pii=20485. <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=20485>