

AN UPDATE ON AN ONGOING MEASLES OUTBREAK IN BULGARIA, APRIL-NOVEMBER 2009

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Earlier this year, an outbreak of measles was detected in Bulgaria, following an eight-year period without indigenous measles transmission, and continues to spread in the country. By the end of 48 week of 2009 (first week of November), 957 measles cases had been recorded. Most cases are identified among the Roma community living in the north-eastern part of the country. Measles has affected infants, children and young adults. The vaccination campaign that started earlier in the year in the affected administrative regions continues, targeting all individuals from 13 months to 30 years of age who have not received the complete two-dose regimen of the combined measles-mumps-rubella (MMR) vaccination.

Introduction

This is an update of an article published in July 2009 that reported an outbreak of measles in Bulgaria. The outbreak was first clearly noticeable in April 2009 and had involved 79 cases by mid-June [1]. Since then, the outbreak has intensified and continues to spread throughout the country. It occurred eight years after the last indigenous cases of measles in Bulgaria were reported in 2001 [2].

Measles has been a statutorily notifiable disease in Bulgaria since 1921, obliging medical practitioners and microbiologists to immediately report suspected measles cases to the Regional Inspectorate for Protection and Control of Public Health (RIPCPh). Notifications of measles cases are collected and analysed centrally at the National Centre of Infectious and Parasitic Diseases in Sofia. In 2005, the Council of Ministries of the Republic of Bulgaria approved the Bulgarian national programme for the elimination of measles and congenital rubella infection (2005-2010) [3]. National case-based notification was initiated in 2004 and the European Union (EU) case definition and case classification have been adopted since 2005 [4,5].

In Bulgaria, the measles vaccine is given as the combined measles-mumps-rubella (MMR) vaccine. Since 1993 the first dose has been recommended at the age of 13 months and the second dose at the age of 12 years, but at least one month after the first dose. For 2005-08, the national vaccine coverage was estimated at 95.9-96.2% for the first MMR dose in two year-old children and at 92.4-94.3% [6,7] for the second dose in 12 year-old children.

We aim to report an update on the ongoing measles outbreak in Bulgaria by analysing measles data provided for the first 48 weeks of 2009.

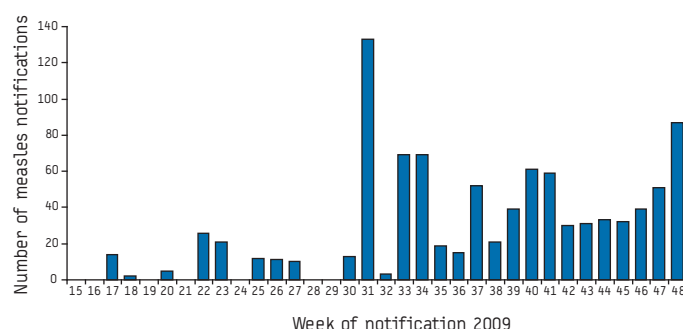
Outbreak description

The outbreak has spread to five more administrative regions since the last report [1], now affecting nine regions (Figure 1). By week 48 of 2009 (week beginning 23 November), there have been 957 notifications of measles, giving a crude incidence of 12.5 per 100,000 inhabitants, with large regional variations. Most cases (97%) were reported from the north-eastern part of the country, i.e. the regions of Dobrich, Silistra, Burgas, Varna, Shumen and Razgrad (Figure 2). Although no data by ethnicity are available, it was clear to the outbreak investigators that at least 90% of cases occurred in the Roma ethnic community. Members of this community usually belong to large families and frequently travel within and across borders. So far, during the current outbreak, several family clusters have been recorded among this group.

Of the total, 429 cases (45%) were laboratory-confirmed by detection of measles IgM antibodies in serum. An epidemiological link to laboratory-confirmed cases was identified in 337 (35%) cases. The remaining 191 cases (20%) were classified as clinical cases only. The World Health Organization (WHO) Regional Reference Laboratory (RRL) for Measles and Rubella in Berlin identified the virus as measles genotype D4. The nucleotide sequence was identical to that detected between January and June 2009 in northern Germany, confirming the epidemiologically link with the index case who had stayed in Hamburg during that period. Apart from the index case all cases acquired measles in the country and are therefore indigenous cases.

FIGURE 1

Notified measles cases by week of notification, Bulgaria, April-November 2009 (n=957)



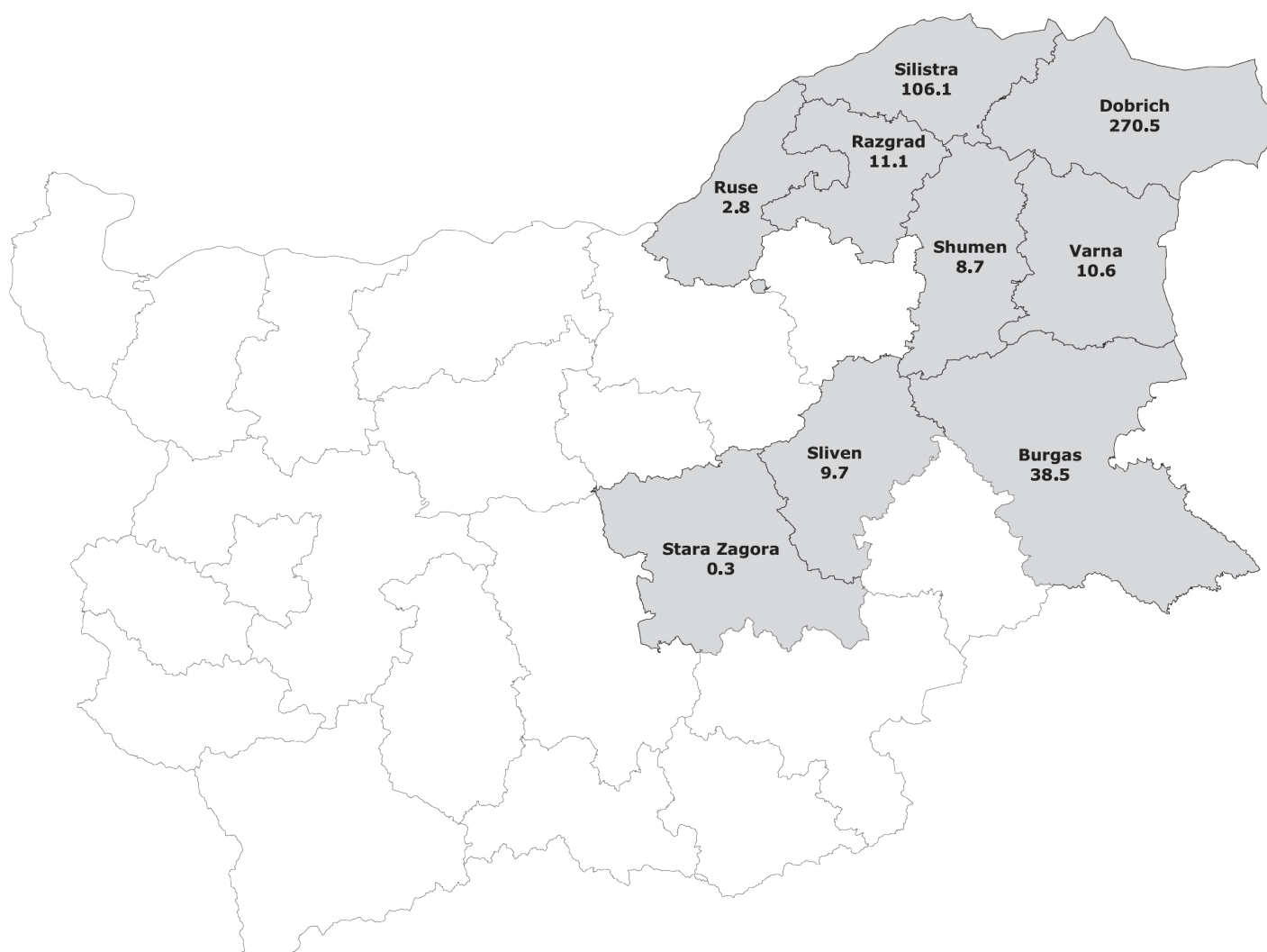
Our analysis on age, vaccination, hospitalisation and complications variables was based on the 748 case-based reports received by week 44 as data on the remaining 209 cases reported in weeks 45-49 are still being processed. The age was known for 730 cases (98%). The median age was 10 years (range: four days to 38 years). The cases were distributed between age-groups with 96 (13%) aged under one year, 149 (20%) aged 1-4 years, 123 (17%) aged 5-9 years, 131 (18%) aged 10-14 years, 137 (19%) aged 15-19 years, 73 (10%) aged 20-29 and 21 (3%) older than 30 years. The status of measles vaccination was known in 482 cases (64%). Overall, 142 were unvaccinated (29%), 248 (52%) had received one dose of measles-containing vaccine and 91 (19%) had received two doses (Figure 3). A total of 522 cases (69.7%) were hospitalised, and 303 cases (40.5%) were reported with measles-related complications including pneumonia (n=95; 31.3%) and abdominal symptoms and diarrhoea (n=35; 11.5%). No cases of acute encephalitis or measles-related deaths were reported.

Control measures

Several control measures continue to be implemented by local health authorities, according to the Bulgarian national programme for the elimination of measles and congenital rubella infection. Activities have been undertaken to increase awareness of the ongoing outbreak among the public in general and healthcare professionals in particular. General practitioners and other medical staff were requested to pay special attention to rash/fever symptoms and to strengthen routine immunisation of children aged 13 months (first dose) and 12 years (second dose) by directly reaching out to the parents and explaining the benefits of vaccination. In addition, a supplementary MMR vaccination campaign that had started earlier in the year in the affected administrative regions continues targeting all individuals from 13 months to 30 years of age who had not received the complete two-dose vaccination regimen. The MMR vaccine is supplied by the Ministry of Health and is offered free of charge through the routine immunisation services (family doctors). Special outreach teams consisting of regional epidemiologists, health inspectors and local Roma community leaders have been deployed in the campaign to immunise the Roma community.

FIGURE 2

Measles incidence per 100,000 population by region, Bulgaria, April-November 2009 (n=957)



Discussion

Despite the high national immunisation coverage with MMR vaccine, this outbreak highlights the presence of pockets of vulnerable individuals, particularly those members of the Roma community that are still susceptible to measles infection. They are only brought to light when the measles virus is imported from abroad. A similar experience was made in Croatia in 2008 [8]. It is generally believed that the vaccination coverage among members of the Roma community in Bulgaria does not differ from that of the rest of the population, since all citizens are well integrated into the primary healthcare system that provides easily accessible and free immunisation services. However, travelling members of the Roma community may be overlooked, if they delay or even fail to use the immunisation services. There is therefore a need for innovative ways to improve vaccination coverage in such groups that are hard to reach by standard immunisation programmes. In doing so, the herd immunity would be maintained at a high level conducive to measles elimination in Bulgaria.

The age distribution changed towards increasing numbers of older children, adolescents and young adults compared with what we noticed during first 10 weeks of the outbreak [1]. This provides more accurate insight into the susceptible age groups. Obtaining an accurate vaccination history presents challenges, but the large proportion (50%) of cases who reported having received one measles vaccine dose is indicative of vaccine failure and raises concerns about the maintenance of the cold-chain. However, a proportion of these cases may have received a vaccine dose offered as part of the outbreak control measures, when they were already infected with the measles virus and in the incubation period. Further data including the date of vaccination of such cases would need to be collected for more in-depth analysis of this hypothesis. The high hospitalisation rate noted is explained by the large number of patients from crowded households and poor living conditions of affected Roma families.

The current measles situation in Bulgaria underlines the need for more urgent preventive and control measures to be taken. To achieve the goal of measles elimination, awareness of the disease as well as a commitment by the public health authorities in Bulgaria

are essential to strengthen vaccination programmes. The WHO's strategic plan for the elimination of measles from the European region stipulates that vaccination programmes should achieve and sustain a minimum of 95% coverage with two doses of vaccine and better target susceptible individuals in the general population and high-risk groups [9].

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FIGURE 3

Notified measles cases by vaccination status, Bulgaria, April-October 2009 (n=748)

