

High vaccination coverage prevented large-scale measles spread in Poland following Ukrainian epidemic in 2006-2007

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ABSTRACT (REVISED)

Background. Along with WHO EURO elimination strategy, a high, over 95% immunization coverage of 2 doses of measles vaccine was maintained since 1997. In 2006 an unexpected rise of measles cases was notified. The aim of this study was to describe the measles outbreak investigation in Poland in 2006-2007 in order to review recommendations for outbreak management.

Methods. Individual reports summarizing investigation of each case in 2006-2007 were reviewed. Available information on epidemiological links and laboratory investigations was summarized.

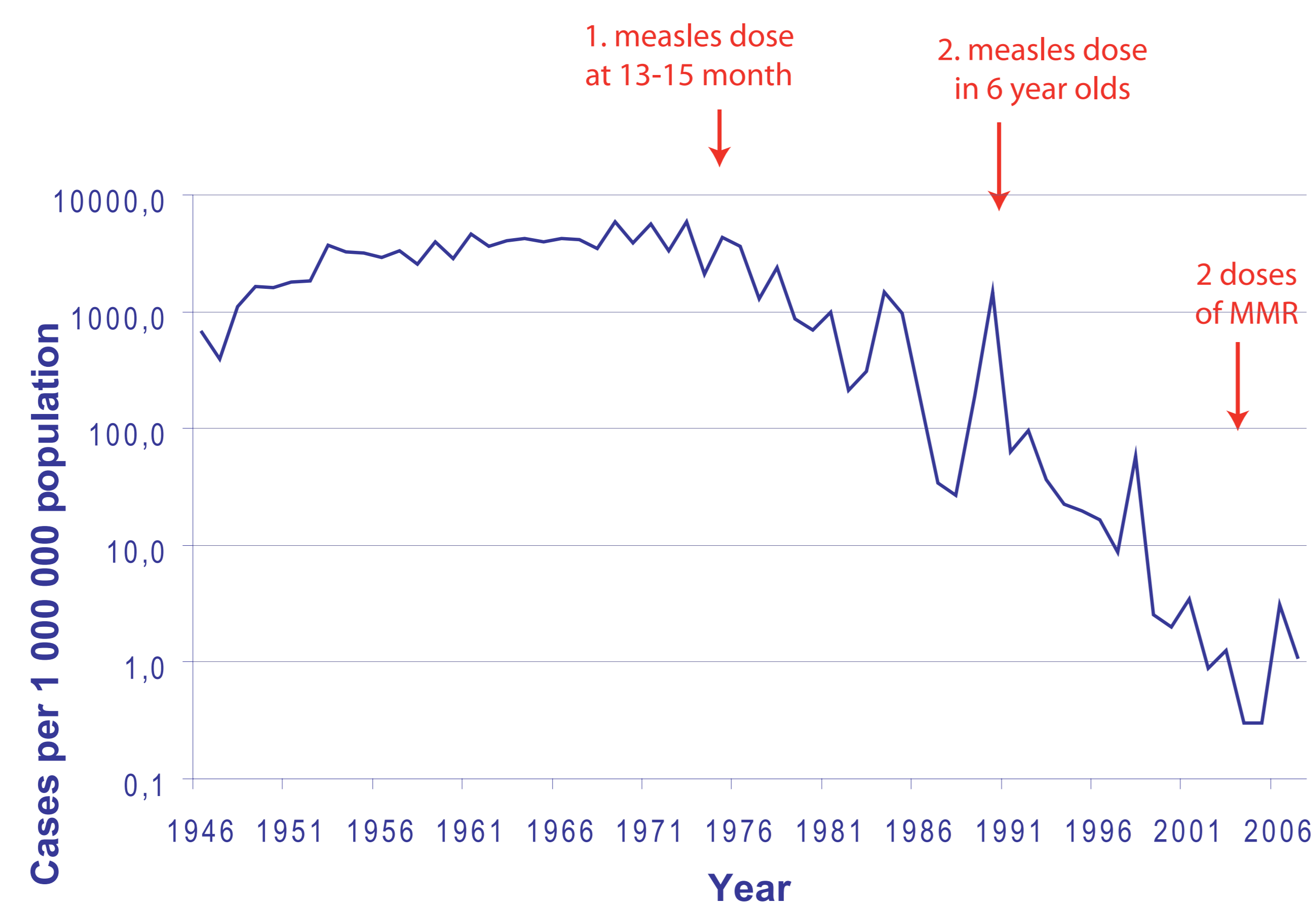
Results. A total of 439 suspect cases were screened for measles in 2006-2007, of which 116 (74%) were serologically confirmed, and 4 were epidemiologically linked. This was a significant increase, compared to 111 suspect cases (9 serologically confirmed) reported in 2004-2005. The highest disease activity was observed during three distinct periods: weeks 3-13 (p1, 31 cases), weeks 15-28 (p2, 51 cases) in 2006, and weeks 9-16 in 2007 (p3, 23 cases). During the initial period 2 cases were imported from Ukraine, chain of infection could be tracked in 15/31 cases, but no material for genotyping was collected. During p2 one case was imported from Ukraine, the chain of infection was tracked in 25/51 cases, and the genotype detected was a local D4 strain. During p3 the chain of infection could be tracked in 8/23 cases, and the genotype was D6, related to Ukrainian strain. Out of 120 cases, 93 (77.5%) were aged 20 years or more, of which 43/93 (46.2%) were not vaccinated.

Discussion. Poland borders with Ukraine, with increasing tourist traffic, reaching over 5 million Ukrainians visiting Poland in 2006. A massive epidemic of measles caused by D6 strain started in Ukraine in November 2005, involving over 47,500 cases up to date. Despite detection of some cases imported from Ukraine, no evidence was found that the preliminary phase of the outbreak in Poland was linked to Ukraine. Also, identification of the Ukrainian strain in 2007 cases did not help to track epidemiological links with this country. This stresses the need to closely monitor epidemiological links in each case and attempt virus isolation in each chain of transmission. Checking vaccination of close contacts and immunizing all unvaccinated should be considered in each case.

Background

- Due to high 2-measles vaccine dose coverage >95% maintained since 1997, an incidence of locally acquired measles in Poland was reduced below 1 case per 1,000,000 in 2002-2005 (Fig. 1).

Figure 1. Cases of measles per 1,000,000 population, Poland, 1919-2007.



- In 2006 an unexpected rise of measles cases was notified, possibly related to a massive epidemic of measles caused by D6 strain which started in Ukraine in November 2005, involving over 47,500 cases up to date.
- Poland borders with Ukraine, with increasing tourist traffic, reaching over 5 million Ukrainians visiting Poland in 2006.
- The aim of this study was to describe the measles outbreak investigation in Poland in 2006-2007 in order to review recommendations for outbreak management..

Material and Methods

- Individual reports summarizing investigation of each case suspected for measles in 2006-2007 were reviewed.
- Available information on epidemiological links and laboratory investigations was summarized.
- For the purpose of this study, only laboratory and epidemiologically confirmed cases were used for descriptions.

Results

- A total of 439 suspect cases were screened for measles in 2006-2007, of which 116 (74%) were serologically confirmed, and 4 were epidemiologically linked.

Figure 2. Number of suspected and confirmed cases of measles by week of onset, Poland, 2006-2007

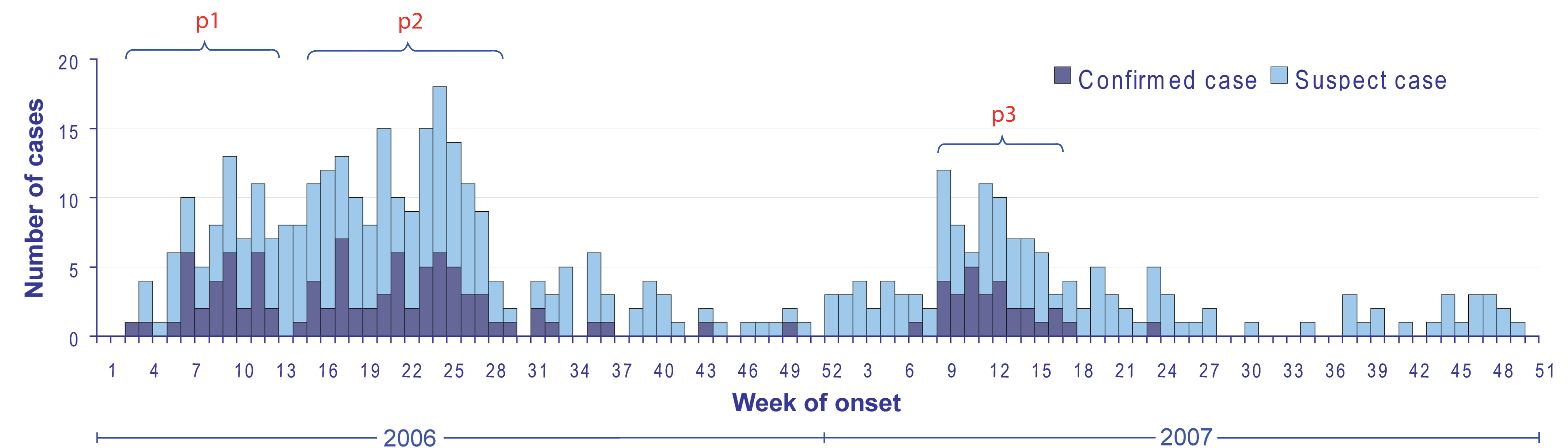
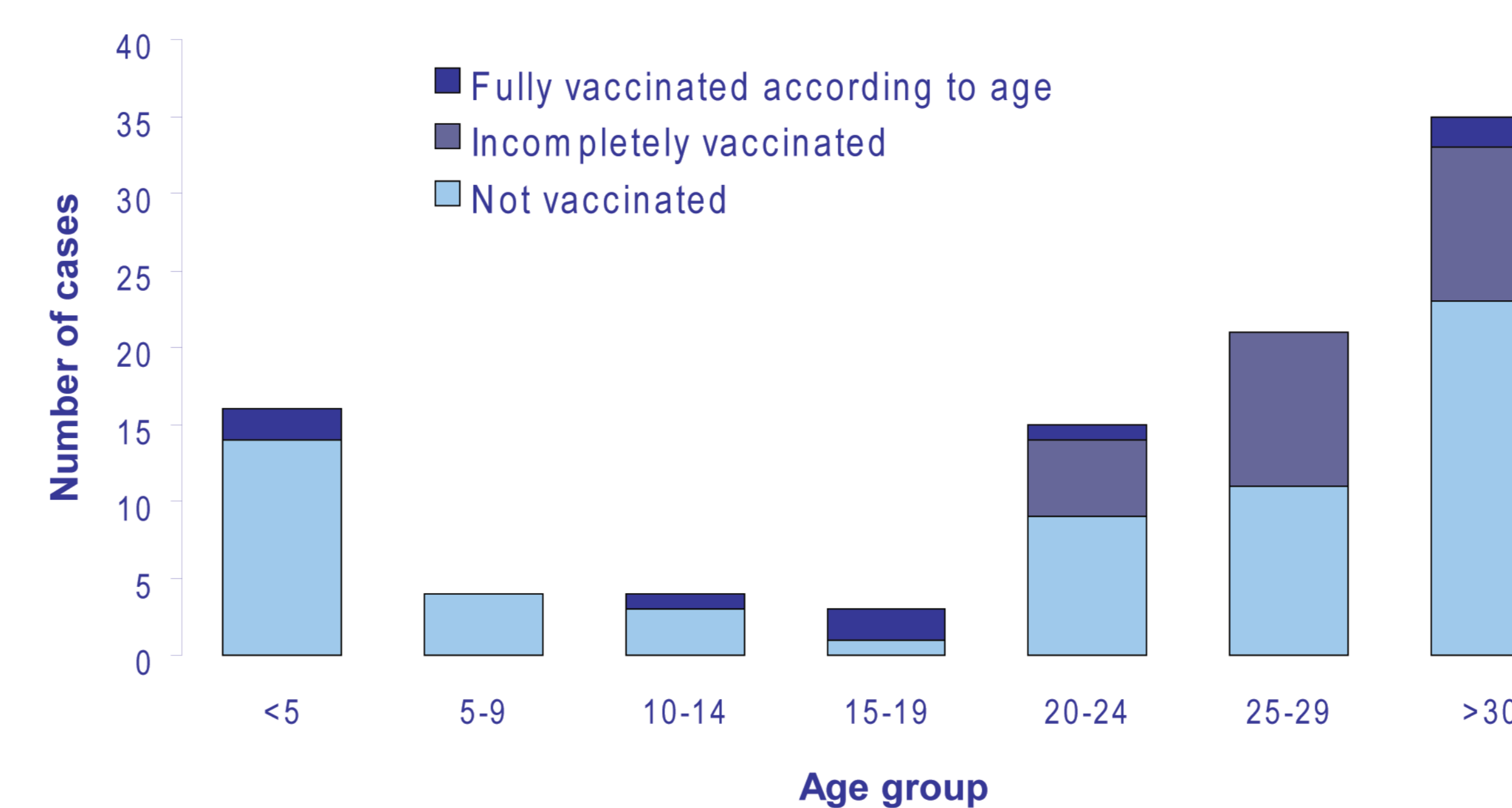


Table. Investigation of measles clusters during 2006-2007 in Poland

Period	Weeks	Suspect cases	Confirmed cases	Percent confirmed	Median time between rash onset and sample collection (days)	Number of clusters detected	Evidence of chain of infection (number of cases)	Imported cases	Genotype
P1	3-13	73	31	42.5	10	6	15	Ukraine (2)	-
P2	15-28	161	51	31.7	12	10	25	Ukraine (1)	D4 (PL)
P3	9-16	67	23	34.3	9	3	8	-	D6 (UKR)

- Out of 120 cases, 93 (77.5%) were aged 20 years or more, of which 43/93 (46.2%) were not vaccinated (Fig. 3).

Figure 3. Confirmed measles cases by age and vaccination status, Poland, 1999-2006.



Conclusions

- Despite detection of some cases imported from Ukraine, no evidence was found that the preliminary phase of the outbreak in Poland was linked to Ukraine.
- Close monitoring of epidemiological links in each measles case and attempt virus isolation in each chain of transmission is necessary in the present elimination phase.
- Checking vaccination of close contacts and immunizing all unvaccinated should be considered in each case.

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