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Eurosurveillance, Volume 11, Issue 45, 09 November 2006

## Articles

Citation style for this article: Gerstel L, Lenglet A, García Cenoz M. Mumps outbreak in young adults following a village festival in the Navarra region, Spain, August 2006. Euro Surveill. 2006;11(45):pii=3078. Available online: <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=3078>

### Mumps outbreak in young adults following a village festival in the Navarra region, Spain, August 2006

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On 10 August 2006, 12 cases of mumps were notified from a village of around 3500 inhabitants in Navarra, northern Spain. In 2005, the Public Health Institute of Navarra received only 33 mumps notifications for the whole region of Navarra (population 560 000). Since December 2005, mumps outbreaks have been reported from several regions of Spain [1] including the neighbouring region of La Rioja. An investigation into the outbreak in Navarra was begun and information on the patients' vaccination status and possible sources of infection was collected in order to recommend measures to prevent further spread of mumps in the area.

Mumps is a notifiable disease in Spain and vaccination was introduced in 1981. A seroprevalence study for measles in Navarra in 1993 showed that more than 95% of people between 0-34 years were protected, indicating a high vaccine coverage for measles, mumps and rubella. Since 1995, the childhood immunisation programme has included two doses of trivalent measles, mumps, rubella (MMR) vaccine, initially given at 15 months and 11 years of age, and since 1999, given at 15 months and six years of age. Since 1985, the annual incidence of mumps in Spain has decreased, although three epidemics have occurred, most recently in 2000. Between 1996 and 1998, as in most regions of Spain, the mumps component used in Navarra included the Rubini strain, and this was withdrawn in 1998 because it was found to have reduced effectiveness [2,3].

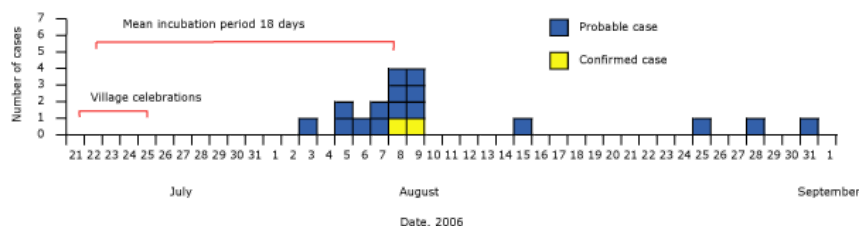
#### Methods

A probable case was defined as a person from village A who had acute inflammation of the parotid glands on or after 1 July 2006. A confirmed case was defined as a probable case with mumps IgM or an elevated IgG or isolation of mumps virus. The mandatory notifications of the region of Navarra was checked for patients fulfilling the case definition. The general practitioner who worked in the only healthcare centre in village A was asked to report additional cases to the regional epidemiology division and to collect samples. Blood was tested for IgM and IgG against mumps virus with ELISA; saliva and urine were tested by PCR. A telephone questionnaire was administered to all patients, asking them about their vaccination status, symptoms and activities since the 15 July 2006. Mumps vaccination status was verified through regional vaccination records and personal vaccination cards.

#### Results

A total of 19 cases were identified in village A, 10 (53%) of whom were male. Patients' ages ranged between 18 and 37 years. Samples from two cases were laboratory tested and both were confirmed by serology. None of the 18 patients interviewed was admitted to hospital. One patient had orchitis. Symptom onset of the 18 patients interviewed was between 3-31 August, with a peak on 8 August (Figure).

**Figure.** Cases of mumps by date of onset of symptoms, Navarra, Spain, August 2006 (n=18).



Six patients reported that they had never been vaccinated, and a further two patients reported that their vaccination status was unknown. Eleven patients reported having been vaccinated twice, and this was verified for 10 cases. Two of these were verified through personal vaccination cards only, and two through the regional vaccination records only; the remaining six were verified by checking both records. Six of the patients who had been vaccinated twice had received second dose of mumps vaccine between 1996 and 1998, when the Rubini vaccine was being used (Table). No patients received their first MMR dose between these dates.

**Table.** Vaccination history of cases of mumps during the outbreak in Village A, Navarra, Spain, August 2006 (n=19)

Reported	Number	Number of cases for
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vaccination history	of cases (%)	whom vaccination status could be verified
unvaccinated	6 (32%)	2
1 dose	0 (0%)	0
2 doses, date unknown	1(5%)	0
2 doses (second dose <1996 or >1998)	4 (21%)	4
2 doses (second dose 1996-1998)	6 (32%)	6
Unknown	2 (11%)	0
<b>Total</b>	<b>19 (100%)</b>	<b>12</b>

Seventeen (94%) of the 18 patients interviewed about their activities since 15 July 2006 reported attending the annual festival held in the village from 21-25 July 2006. These traditional festivals (fiestas) include bullfighting, processions, music, fireworks, and eating and drinking special dishes. They are attended by people who live in the village and many people from neighbouring villages. Other common activities reported in the interviews included visiting the swimming pool in the village (9 cases, 50%) and bars in the village (10 cases, 56%).

### Discussion

Considering the mean incubation of 18 days, the outbreak probably began with transmission at the village festival. As we did not conduct an analytical study, it was not possible to identify risk factors or transmission routes. The places where there was a possibility of close contact, and where exposure could therefore have taken place, include the swimming pool, bars and the village celebrations. These may well reflect the average summer activities in villages in Spain.

Our results suggest that this outbreak occurred partly because of the presence of susceptible people in cohorts who received a second dose of MMR vaccine between 1996 and 1998 with the Rubini strain, even though this group had received a different vaccine strain in the first MMR dose. As the data for calculating vaccine effectiveness was not collected, the precise role of the Rubini vaccine remains unclear. The outbreak follows the known cyclical pattern of mumps, and the presence of other susceptible persons (including non-vaccinated people and 'non-responders') in the population may have contributed to its occurrence.

### Recommendations

Cases in neighbouring villages started to appear from 14 August and further spread of mumps in Navarra seemed likely. We recommended enhanced surveillance in schools and universities where there would be people who had received the Rubini strain-containing vaccine at the start of the new academic year in September. Susceptible contacts of the cases, including those people who had been vaccinated with the Rubini strain, were vaccinated soon after the cases were ascertained.

### Follow up

Despite these measures, from 1 September to 15 October 2006, 58 further cases of mumps were notified in different places in Navarra. As the current measures do not seem to have been effective in preventing further spread of mumps, further studies in Spain and in other countries that used the Rubini strain such as Switzerland, Italy and Portugal [2,4,5] are needed to investigate whether large scale vaccination campaigns in people vaccinated with the Rubini strain of the vaccine would be appropriate to prevent further outbreaks within a country. These studies should include an estimation of the costs and side effects of revaccination with MMR in young adults and the amount burden of disease that can be prevented.

*Acknowledgements: The authors would like to thank J Castilla Catalán, M Arriazu Berastegui and A Barricarte Gurrea from the Epidemiology Division of the Public Health Institute of Navarra, Pamplona, Spain for inviting fellows of the Spanish field epidemiology programme (PEAC) and for their support during the study and the coordinators of the European Programme for Intervention Epidemiology Training (EPIET) and PEAC for their supervision and support.*

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