**Short Report**

**Eliminating congenital rubella syndrome in Spain: does massive immigration have any influence?**

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In this short report we highlight the importance of implementing good immunization programs adapted to the epidemiological situation of rubella and congenital rubella syndrome (CRS), discuss the influence of massive immigration and stress the need to improve surveillance and control by implementing comprehensive national surveillance and promoting awareness among primary healthcare workers and midwives to find out any signs and symptoms compatible with rubella in pregnant women who have recently arrived from countries with high susceptibility to rubella infection.

**Keywords:** congenital rubella syndrome, elimination, immigration, immunization, surveillance

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**Introduction**

Measles and rubella remain important causes of vaccine-preventable disease and death in the European Region. The strategic plan for measles rubella and congenital rubella infection in the European Region aims to eliminate endemic measles, rubella and reduce Congenital Rubella Syndrome (CRS) to <1 per 100,000 live births by 2010.

To achieve this goal countries have to ensure:

1. high vaccination coverage within childhood immunization programmes (≥95% coverage with two doses of measles and at least one dose of rubella vaccines), targeting susceptible populations such as women of childbearing age.
2. improved rubella and CRS surveillance, increasing its sensibility and specificity by individual case investigation, in accordance to control phase and early outbreak control.

In the elimination phase, when disease incidence approaches 1 per 100,000, surveillance activities for measles, rubella and CRS need to be of sufficient quality to detect clusters and sporadic cases, with rigorous epidemiological investigation and laboratory confirmation, ensuring the required capacity of laboratory network to investigate >80% of all suspected measles and rubella cases and to genotype measles and rubella circulating virus.

This report explores the role of immigration in the evolution of rubella and CRS incidence in Spain.

**Methods**

We retrieved CRS laboratory confirmed cases as well as rubella cases notified between January 1997 and December 2007 to the Spanish National Surveillance Network and performed hospital records active search for CRS.

Yearly CRS incidence was estimated from yearly CRS cases and live births from census of 1997–2005.

Specific (immigrant or autochthonous) cumulative CRS incidence rates, using number of live births by country of origin in census of 1997–2005, were calculated.

**Results**

Thirteen congenital rubella births occurred: Three cases in 1997; two in 1998; one in 1999; one in 2003; one in 2004; and five in 2005 (four of them were associated with the Madrid outbreak). No cases were detected since 2005.

Eight cases were notified to the National Surveillance Network according to protocol, and the remaining five were detected by hospital records active search.

Three and six cases occurred in newborns from autochthonous and immigrant mothers, respectively. Information about the place of birth of four of the mothers could not be retrieved. Three of the mothers were from Spain, two from Africa, three from Latin America and one from the Philippines. Three out of five cases declared in 2005, born from Latin American mothers, were associated to a major outbreak of rubella infection that occurred in Madrid the same year.

CRS incidence ranged from 0 in 2002 to 0.45 per 100,000 live births in 2004. In 2005 the CRS incidence in Spain was 1.09 per 100,000 live births (five cases in 454,922 new born).

Specific (immigrant or autochthonous) cumulative CRS incidence rates for the period 1997–2005 are of 3.6 CRS cases per 100,000 live births of foreign origin mother and of 0.09 CRS cases per 100,000 live births of autochthonous mother.

(P < 0.0001, by Fisher’s exact test).
Discussion

Spain has achieved the elimination target of CRS, but consolidation of this result is threatened by immigrants with high susceptibility to rubella infection. An example of this situation is the rubella outbreak that occurred in Madrid in 2005. The outbreak affected 431 persons, mostly unvaccinated young Spanish citizens (20–29 years old) of Latin American origin of both sexes. Forty-two percent of patients were female and 92% were at childbearing age. Thirty-three percent of cases were in immigrant women of childbearing age compared with 6% in Spanish women of childbearing age. Maternal rubella was not diagnosed during pregnancy and the diagnosis of congenital rubella infection in the newborn was unexpected.

Cases of CRS have occurred after rubella outbreaks in either autochthonous or immigrant populations. The increasing trend of immigration over the last 10 years, from 600 000 in 1996 to over 4 million in 2006, mainly young adults and women at childbearing age, mostly coming from Latin America (36.21%), Western Europe (21.06%), Eastern Europe (17.75%) and Morocco (13.6%) has lead to an accumulation of susceptible to rubella infection.

Interestingly, the origin of rubella outbreaks and the occurrence of CRS cases in Spain seems to be correlated to an increase of immigrant population.

A National Survey conducted in 1996 detected a seroprevalence of rubella virus of 93.8% among general population 2–39 years of age and higher than 96% among women of all age groups. At the time, the susceptible population was young men born after the decline of wild virus circulation and who did not receive vaccine due to its age. Since 1997, universal immunization of children has resulted in a drop from 3828 rubella cases in 1997 to 87 in 2006, in Spain. The seroprevalence study conducted in Catalonia in 2004 revealed that susceptibility to rubella infection was greater in immigrant women (11%) (most of them from Latin America) than indigenous (5.4%). This situation is concordant with our findings and plays a prominent role in order to establish the right policy vaccination measures. Women who had come to Spain in later childhood or adult life would be at higher risk of acquiring infection in pregnancy than indigenous women. Countries like Morocco currently have a CRS incidence of 8.10–12.70 per 100 000 live births.

This study allows better knowledge of our CRS active surveillance system. Although information about place of birth could not be retrieved in four of the mothers we can still be concerned about the major number of affected mothers from Latin America, concordant with the increasing trend of Latin American immigrants and their immunization status. We must improve completion of surveillance records to allow appropriate control measures and good studies quality.

Surveillance of CRS in Europe has large differences between and within countries. For example UK monitors births of babies with active surveillance of CRS through the British Paediatric Surveillance Unit since 1990. Researchers from UK highlight that most of the CRS reports concern infants with very serious rubella-associated defects present at birth and it is possible that some infants with less serious signs of congenital rubella or those with later onset are not diagnosed or reported. Under reporting should be considered an important possibility to explain no cases of CRS after rubella outbreaks in countries where vaccination coverage to new arrivals is not fully guaranteed. Effective surveillance of CRS requires participation of paediatricians, obstetricians, cardiologists and ophthalmologists.

Long standing rubella vaccination programmes have led to the virtual elimination of congenital rubella in many countries of the European Union. Nevertheless, migration into Spain from countries without long standing high uptake rubella vaccination has contributed to an increased opportunity for susceptible to be in contact with infected persons, either autochthonous or immigrants, hence the risk of reappearance of rubella outbreaks and consequently of CRS.

The main strategies to prevent CRS are highlighted in a recent review. Serological screening of pregnant women and postpartum vaccination of seronegatives to be implemented in countries with good overall vaccination coverage but with high susceptibility groups; targeted vaccination of women at childbearing age or adolescents to be used in countries where susceptibility is high; targeted vaccination of immigrants to be used by countries with recent outbreaks concentrated in immigrant population.

The consequence of rubella infection during pregnancy remains an important public health problem both in the European Union and the wider WHO European Region. A continued strong public health commitment is required to increase the proportion of vaccinated individuals with absolute priority to immunizing women of childbearing age either opportunistically or through specific ‘catch up’ programmes for recent arrivals. Any contact with the primary health care system should be an opportunity for any unvaccinated woman to update her vaccination schedule.

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Conflict of interest: None declared.

Key points

- Promoting awareness about rubella and CRS among primary health care workers is essential in the elimination phase of CRS.
- Ensuring of epidemiological and laboratory investigations of rubella suspected cases and characterization of circulating rubella viruses is a must.
- Any contact with the primary health care system should be an opportunity for any unvaccinated woman to update her vaccination schedule.
- Immigrant women of childbearing age coming from countries with low rubella immunization coverage should be specially targeted for the above interventions.

References


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