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Surveillance report

RUBELLA IN ENGLAND, SCOTLAND AND WALES

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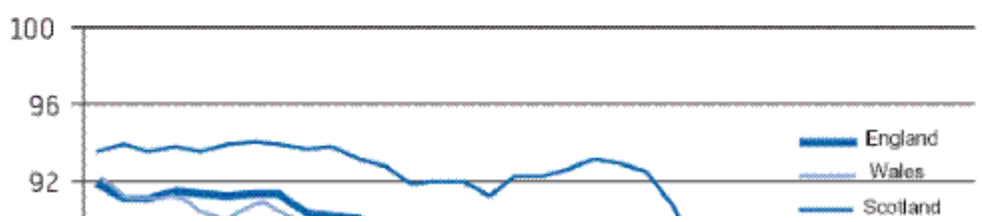
P Tookey
Paediatric Epidemiology, Institute of Child Health, London, UK

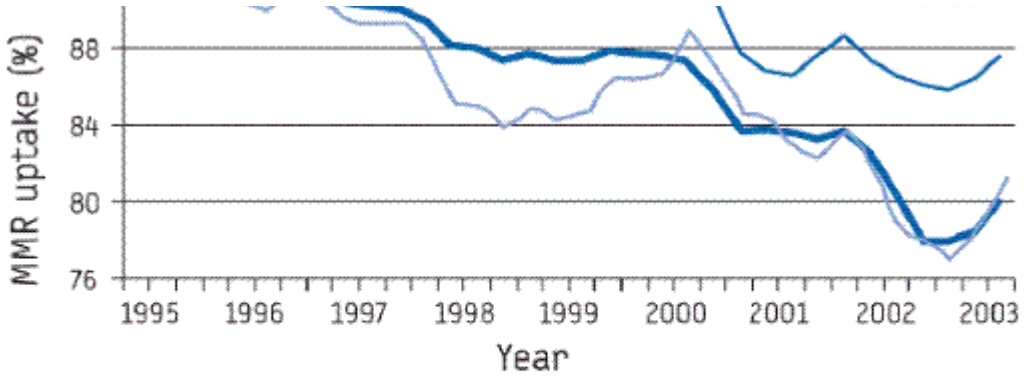
Rubella vaccine was offered to schoolgirls in the United Kingdom (UK) from 1970, with antenatal testing and postpartum vaccination for susceptible women introduced during the 1970s. Mass vaccination with MMR of children aged 12-15 months was introduced in 1988; schoolgirl vaccination was discontinued in 1996 and replaced by a second dose of MMR for pre-school children; postpartum vaccination of susceptible women identified through antenatal testing continues. Rubella was made a notifiable disease in 1988, and is monitored through clinical and laboratory reports; data are available on rubella associated terminations and congenital rubella syndrome(CRS) births, rubella susceptibility in population subgroups, and vaccine uptake. Reported cases of CRS declined from about 50 a year 1971-75 to just over 20 a year 1986-90, and rubella associated terminations from an average of 750 to 50 a year. About 40 infants with CRS have been reported since 1991; about a third of their mothers were infected abroad, most in their country of origin (imported infections), a third were born abroad but acquired infection in the UK, and a third were UK-born. Women living in the UK who were born abroad have much higher rubella susceptibility rates than UK-born women. Although there is currently very little rubella infection circulating, uptake of MMR has dropped by over 10% since 1995. If rubella starts to circulate again, immigrant women will be at increased risk of acquiring infection in pregnancy.

Before the introduction of rubella vaccine in 1970, British children usually acquired infection sometime between the ages of 4 and 9 years. Nevertheless, about 18% of women of childbearing age were susceptible to rubella infection, and congenital rubella (CR) was a significant problem, with about 200-300 CR births in non-epidemic years, and many more during epidemics. Since 1970, the incidence of CR has slowly declined, and in recent years, the very few reported births have mainly been associated with infection acquired abroad. However, although rubella infection is currently rare, it is possible that it could re-emerge. As shown in figure 1, uptake of the combined measles, mumps and rubella (MMR) vaccine in two year olds has declined in all three parts of Britain [1]. Outbreaks of measles and mumps have already occurred, particularly in student and travelling communities. Although rubella susceptibility rates are probably only about 2% overall for pregnant women [2], they are much higher among some minority ethnic groups which could be hit hard if rubella outbreaks occur [3].

FIGURE 1

Percentage of MMR uptake by 24 months - England, Scotland and Wales, 1995-2003





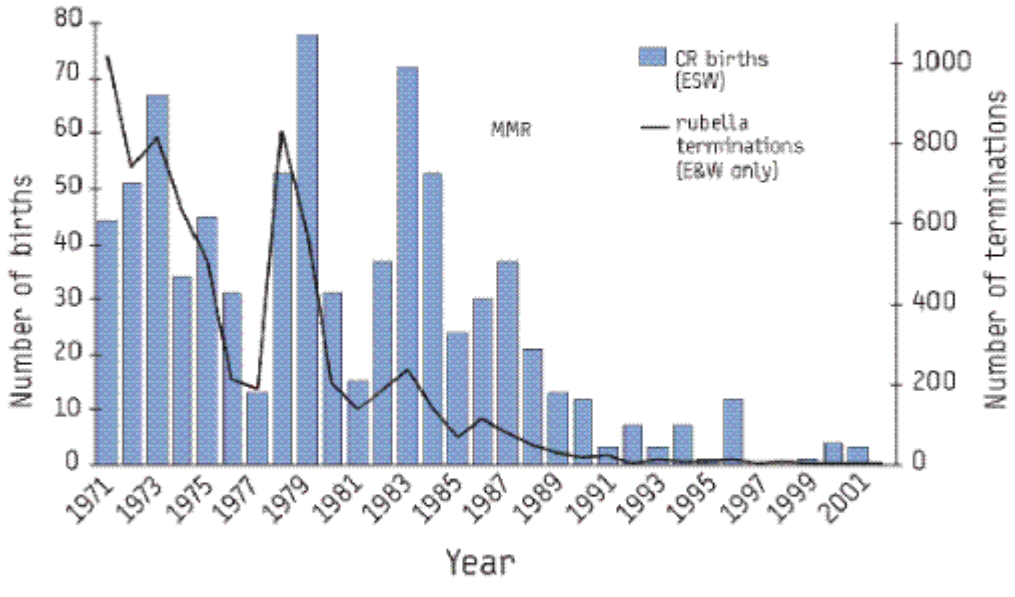
* Cover data from HPA and SCIEH [1]

Development and impact of vaccination strategy

Selective rubella immunisation for schoolgirls, health care workers, and susceptible adult women (mainly identified through antenatal testing) was first introduced in the United Kingdom (UK) in 1970. The National Congenital Rubella Surveillance Programme (NCRSP) was established in 1971 to monitor the effect of this strategy on CR incidence in England, Scotland and Wales [4]. As shown in figure 2, diagnosed reported cases of CR declined over the next 20 years from an average of about 50 a year (1971-75) to just over 20 a year (1986-90). Terminations of pregnancy carried out because of rubella disease or contact in pregnancy, monitored by the Office for National Statistics (ONS, previously OPCS), declined even more dramatically over the same time span, from an average of 750 a year to about 50 [5].

FIGURE 2

Congenital rubella births* and rubella associated terminations 1971-2002**



* National Congenital Rubella Surveillance Programme (NCRSP)
** Office for National Statistics (ONS)

In 1988, MMR vaccine was introduced for all children at the age of 12-15 months, with the aim of eliminating all three diseases. Uptake soon exceeded 90% by the age of 24 months, and rubella infection became rare, although there were small increases in notifications in 1993 and 1996, mainly affecting young men who had never been offered single rubella vaccine, and were too old to have been offered MMR [6]. In 1994, all schoolchildren were offered combined measles and rubella vaccine in a one-off attempt to avert a predicted measles epidemic and to reduce the number of rubella-susceptible young men who could facilitate transmission of rubella. After this, the schoolgirl programme was discontinued, and a second dose of MMR was introduced for all four year olds in 1996.

Since 1990, the number of CR births has declined further, with only 40 reported for the period 1991-2002 (figure 2), along with about 60 rubella-associated terminations. Three notifications of infants born in 2003 are also under investigation. Almost all infants had typical CR signs at birth. It is possible that since the introduction of MMR, children with isolated sensorineural hearing loss

due to CR have not been identified and reported, because by the time hearing loss is investigated, many children have already been vaccinated, and diagnosis is then less straightforward. Furthermore, since rubella is now so rare, health professionals might not consider CR as a possible diagnosis in infants with non-specific or atypical signs.

In recent years, mothers of babies diagnosed with CR have fallen into three roughly equal groups: those who acquired infection abroad in early pregnancy, most in Africa or Asia (imported infections); those who were born abroad but acquired infection in the UK, many within two years of arrival; and UK-born women, all but one of whom acquired their infection in the UK [7]. Among the UK-born women, five reported prior immunisation, although independent confirmation of this was only available for two women with confirmed reinfection in pregnancy; five had not been immunised, and the immunisation status of the others was unknown. Only one of the women born abroad reported having been previously immunised. Most of the 12 births reported in 1996 occurred in the late summer or autumn, and were associated with the outbreak of infection earlier in the year [4].

Current issues

The current low level of circulating infection depends on a high immunity level in the population as a whole. However, MMR uptake has declined over time, because of adverse publicity in the UK suggesting a link between MMR, autism and bowel disease [8] (Figure 2). Despite a consensus among most experts that no such link exists, and that the triple vaccine is the most effective way to control all three diseases [9-12], parental anxiety persists. MMR vaccine uptake was only 82% overall in England in 2002-3, with considerable local variation and some parts of London reporting uptake of less than 60% [13]. During 2003, English and Welsh uptake dipped below 80%, although Scottish uptake remains in excess of 85% [1]. Uptake of one dose of MMR by age five is currently about 90%, but it is unclear whether parents who decline the triple vaccine for their young children accept it when it is offered again pre-school. There are no data available for uptake of the single rubella vaccine among those rejecting MMR, and it is likely to be the least demanded of the three separate vaccines, since parents are generally more concerned about measles and mumps than about rubella. To further complicate the issue, single rubella vaccine is no longer available, and even susceptible women are now being offered MMR vaccine post partum [14].

Outbreaks of rubella infection abroad have the potential to cause outbreaks in the UK. This was demonstrated in early 1999 following the Greek outbreak, when infected Greek students attending British universities triggered a number of small UK outbreaks, including one in Aberdeen (Scotland). The only infant reported with congenital rubella in the UK in 1999 was born there, six months after this outbreak, to a woman who was subsequently diagnosed as having had rubella reinfection [15].

It has long been recognised that ethnic minority women have higher rubella susceptibility rates than white women in the UK, and this has led to their babies being disproportionately represented in congenital rubella births [16-18]. An analysis of rubella susceptibility rates in women in North London revealed high rates in some minority ethnic groups [3]. While less than 2% of British-born pregnant women were susceptible, between 4% and 8% of women originating from the Mediterranean region, Asia and Africa were susceptible. Within these groups women in their first pregnancy had particularly high susceptibility rates. The most vulnerable group identified were Sri Lankan women, 15% of whom were susceptible overall, including 23% of those in their first pregnancy. Where areas of low vaccine uptake are also those with a diverse ethnic mix, there is considerable potential for the importation and spread of rubella infection, with potentially disastrous consequences.

Antenatal rubella testing

A rubella immunity test is still routinely offered to pregnant women, usually at their first antenatal visit, and acceptance is high. This policy was recently reviewed by the National Screening Committee, which concluded that in view of the continuing inadequate uptake of MMR vaccine, and the presence of minority groups in the antenatal population with high levels of rubella, susceptibility screening should continue. In common with other programmes, this is subject to a three year review period [19]. The review group also recommended the following: better monitoring of the offer and uptake of a rubella-containing vaccine in the postpartum period; the development and implementation of strategies to protect susceptible women before they become pregnant, with particular emphasis placed on the needs of recent immigrants and asylum seekers and consideration of an offer of MMR vaccine to school leavers. Those caring for pregnant women should be aware that the rubella immunity test is not a diagnostic test, and cannot exclude the possibility of recent or current primary infection; guidelines are available for the management of rash illness or

primary infection. guidelines are available for the management of rash illness or contact in pregnancy [20].

Surveillance methods

Surveillance of rubella in England, Scotland and Wales is carried out through a combination of methods providing data on uptake of vaccine, clinical and laboratory confirmed cases of rubella and congenital rubella, rubella susceptibility in population subgroups, and rubella-associated terminations [18]. Regional monitoring of the uptake of routine antenatal tests, including the rubella immunity test, is currently being developed. These data are reported mainly to the national communicable disease surveillance centres (the Health Protection Agency (HPA) and Scottish Centre for Infection and Environmental Health (SCIEH)), the Office of National Statistics (ONS), and the National Congenital Rubella Surveillance Programme (NCRSP) at the Institute of Child Health. A comprehensive review of the evolution of measles, mumps and rubella surveillance in England and Wales was recently published (2).

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