

Congenital rubella syndrome – Time to act on missed prevention opportunities

An international comparison of congenital rubella syndrome (CRS) surveillance results in Australia, Britain, Canada, New Zealand and Switzerland has provided important information on incidence and epidemiology, and has indicated where countries should be concentrating their public health efforts. Data were obtained from the annual reports and program directors of the five national paediatric surveillance units that undertook studies on CRS using the same case definition and case confirmation methods. All units are members of the International Network of Paediatric Surveillance Units (INoPSU).

Background

CRS is a serious health condition that occurs when a susceptible woman becomes infected with rubella during early pregnancy. This intrauterine infection causes multiorgan disease in the fetus, leading to fetal death or to the birth of an infant with severe disability, including:

- Congenital cataracts or glaucoma
- Nerve deafness
- Cardiac malformation
- Mental retardation

Rationale for rubella immunization

Rubella and CRS are vaccine-preventable diseases. At least 85% immunization coverage is needed to ensure collective immunity in a population (herd immunity) to prevent

CRS. However, 50% of the countries in the world do not have a universal rubella immunization program and, unfortunately, even where available, the program is incomplete or interrupted. Therefore, the risk of rubella and CRS remains a global and persistent presence.

National rubella immunization strategy

All five countries had similar strategies with:

- Availability of a rubella vaccine in the 1970s
- Transition phase in the 1970s to 1980s to different target groups
- Introduction of a universal one-dose in the 1980s and a universal two-dose in the 1990s

Results of rubella immunization strategy

The decreasing CRS incidence attests to the fact that universal immunization strategies have been extremely successful in Australia, Canada, New Zealand and Switzerland, where no cases have been reported for one or more years. CRS, however, continues to persist in countries where rubella vaccine is not routinely used (eg, the majority of countries in Asia and Africa, as well as many Caribbean, and Southern and Central American countries); accordingly, cases often occur in foreign-born mothers who are less likely to have been immunized against rubella before immigration (Table 1). Results attest to missed prevention opportunities because maternal rubella immunization was not received in 35.1% of CRS cases with data (Table 2).

TABLE 1
Congenital rubella syndrome cases epidemiology (1993 to 2001)

Country	Native	Pregnancy travel to*	Immigrated from	Total
Australia	27 [†]	N/A	15	42
Britain [‡]	10	1 (Greece)	9 (Africa, India)	19
Canada	3	1 (Mexico)	3 (India, Jamaica, Pakistan)	6
New Zealand	0	0	0	0
Switzerland	2	0	2 (ex-Yugoslavia, Georgia)	4

*Included in Native column; [†]Children were born in Australia, but some of their mothers were born overseas and immigrated to Australia; [‡]11 cases (1993 to 1995) were not included because data were unavailable

TABLE 2
Maternal rubella immunization status

Country	Total CRS cases	Not vaccinated	Unknown
Australia	27	8	N/A
Britain	19	N/A	N/A
Canada	6	3	2
New Zealand	0	0	0
Switzerland	4	2	0

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TABLE 3
Canadian maternal rubella immunity status

CRS case	Gravida	Immunization	Prenatal screening
India	II	Unknown	Immune
Jamaica	II	No	Susceptible
Canada	I	No	Susceptible
Canada	I	Yes	Immune
Canada	II	No	N/A
Pakistan	I	Unknown	N/A

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Canadian maternal rubella immunity status

Physicians providing prenatal care are expected to confirm that pregnant women are immune to rubella and to ensure rubella immunization of seronegative women in the immediate postpartum period as recommended by Health Canada’s National Advisory Committee on Immunization (1) and by the Canadian Paediatric Society Infectious Diseases and Immunization Committee (2). Standing orders for postpartum rubella immunization of susceptible women is a primary prevention tool (3). Data reveal that at least one-third of CRS cases had documented prenatal maternal susceptibility and, in one case, maternal susceptibility had been documented in a previous pregnancy (Table 3). A few cases could also represent women experiencing primary vaccine failure.

Conclusions

This CRS international comparison:

- reaffirms the importance of maintaining a measles-mumps-rubella vaccine uptake of more than 85% in

decreasing the risk of rubella infection and CRS;

- confirms the judicious choice of a universal two-dose rubella immunization strategy;
- encourages increased efforts to immunize all women who do not have proof of immunization, including the immigrant population; and
- reinforces the need for every hospital with an obstetrical unit to have standing orders for immunization of rubella-susceptible women in the immediate postpartum period.

REFERENCES

1. Canadian Immunization Guide, 6th edn. Rubella Vaccine. Ottawa: Canadian Medical Association, 2002:201-2.
2. Canadian Paediatric Society, Infectious Diseases and Immunization Committee. Prevention of congenital rubella syndrome. Paediatr Child Health 1999;4:155-7.
3. Eason E, Naus M, Sciberras J, Oppenheimer L. Evaluation of an institution-based protocol for postpartum rubella vaccination. CMAJ 2001;165:1321-3.

The Canadian Paediatric Surveillance Program (CPSP) is a joint project of the Canadian Paediatric Society and Health Canada’s Centre for Infectious Disease Prevention and Control that undertakes the surveillance of rare diseases and conditions in children. For more information visit our Web site at <www.cps.ca/english/cpsp> or <www.cps.ca/francais/pcsp>.