

# Two-dose vaccine coverage necessary to reduce mumps outbreaks

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An analysis of a recent mumps outbreak in Ontario, Canada, indicates that two doses of mumps vaccine are more effective than one and further reveals the importance of ensuring people, especially older adolescents and young adults, are up to date on their mumps vaccinations. The administration of the second dose at a later age could have an impact on outbreaks, states an article in CMAJ (*Canadian Medical Association Journal*).

Researchers from the Ontario Agency for Health Protection and Promotion, the University of Toronto, the Ontario Ministry of Health and Long-term Care, and the North Bay Regional Health Unit in Ontario compared the effectiveness of one and two doses of the measles, [mumps](#) and rubella (MMR) vaccine observed during a mumps outbreak in Ontario between September 2009 and June 2010. Similar mumps outbreaks occurred in the United States (New York and New Jersey) and Israel at the same time, where cases were seen predominantly among males and those who had received at least one dose of the MMR vaccine.

Of 134 people in Ontario with confirmed mumps, 72% were male and 59% were between 15 and 24 years of age. Vaccination history was available for 114 (84%) people; the majority had received either no vaccine or only one dose (82 people or 72%).

The researchers found that people born between 1980 and 1994 were more likely than expected to become infected with mumps, especially those born between 1985 and 1991 (people currently aged 15 to 24).

"The clustering of cases, particularly among people born between 1985 and 1991, reflects the susceptible cohort," writes Dr. Shelley Deeks, Ontario Agency for Health Protection and Promotion, with coauthors. "In addition, the active social lifestyle of this age group may have facilitated the transmission of the disease. The predominance of male cases was likely due to the settings in which they were exposed to the virus. These settings included athletic events, such as hockey tournaments, where there is frequent close contact between people."

A review of 50 mumps outbreaks indicated the effectiveness of one dose of the MMR vaccine, which ranged from 73% to 91%, compared with the effectiveness of two doses, which ranged from 91% to 95%.

Mumps outbreaks in countries with two-dose vaccination policies are fairly unusual, although they have become more frequent since 2006. Waning immunity, a susceptible cohort of [people](#) only eligible to receive one dose of vaccine and low vaccine coverage are some of the suggestions for the resurgence of mumps in developed countries. The authors suggest that as two-dose MMR programs have been in place in Canada for about 14 years, we may start seeing the impact of waning immunity among recipients of two doses of vaccine.

"Outbreaks of mumps in Canada and abroad serve as a reminder that we cannot become complacent about vaccination programs or maximizing vaccine coverage," state the authors.

"Closely monitoring waning immunity will help to ensure that we have the necessary data for making policy decisions, such as whether a third dose of [MMR vaccine](#) is necessary or whether a different vaccine should be considered, and for evaluating the cost-effectiveness of the program," they conclude.

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