

New immunization programs in BC to prevent rotavirus, varicella, and hepatitis A

Three new vaccine programs were launched in British Columbia in January 2012. This article summarizes the rationale for each.

The publicly funded rotavirus vaccine for infants at 2 and 4 months of age is the orally administered live attenuated monovalent human rotavirus vaccine Rotarix.¹ Benefits of this vaccine over the other approved product, pentavalent human-bovine reassortant rotavirus vaccine (RotaTeq), include the two dose series and a more favorable cost-effectiveness profile.² Based on immunization registry data, about one-quarter of infants in BC do not complete their third dose of DPT-containing vaccine by 8 months of age, the age by which a rotavirus vaccine series must be completed.

Rotavirus occurs seasonally with the peak in January through April in BC. This virus accounts for up to 40% of all childhood gastroenteritis, although death occurs rarely in Canada. It is estimated that in Canada between 1 in 62 and 1 in 312 children under 5 years old will require hospitalization for rotavirus, 36% of children with rotavirus will see a physician, 15% will be assessed in an emergency room, and 7% will be hospitalized.

Rotarix vaccine efficacy against severe rotavirus gastroenteritis ranged from 85% to 96% during the first rotavirus season and 79% to 86% during the second season in prelicensure clinical trials. Efficacy is unaffected by breastfeeding. The vaccine is contraindicated in infants who have had intussusception and should not be administered in those with known or suspected immunocompromise with-

out the advice of a specialist.

The National Advisory Committee on Immunization now recommends a second dose of varicella vaccine for children 1 to 12 years old.³ A second dose of varicella vaccine is added to the BC schedule at school entry (4 to 6 years of age). Mounting data indicate that a single dose does not provide durable protection. Both primary and secondary vaccine failure (“waning immunity”) contribute to breakthrough varicella in immunized people after the first dose. Several US outbreak epidemiologic studies suggest waning immunity, with time since vaccination as a risk factor. The annual rates of varicella increased from 1.6 cases per 1000 person years within 1 year after vaccination to 9 at 5 years and 58.2 at 9 years after vaccination.⁴ This phenomenon may be accentuated in the post-vaccine era with limited opportunity for natural boosting. Vaccine effectiveness does not appear to be related to when in the second year of life the immunization is given. At the same time as this change, the second dose of MMR previously given at 18 months of age is moved to school entry (4 to 6 years). Starting in 2015, this will allow use of combination MMRV (measles, mumps, rubella, and varicella vaccine) at school entry.

Hepatitis A vaccine is added to the routine schedule for Aboriginal infants in a two-dose series at the 6- and 18-month visits, and also offered to Aboriginal children at school entry and opportunistically to Aboriginal persons aged 7 to 18 years presenting for clinical services. The incidence of acute hepatitis A has declined in BC from 12.4 per 100 000 in 1996 to 0.7

per 100 000 in 2009, and this decline has been attributed to publicly funded vaccination of high-risk individuals including men who have sex with men and illicit drug users.⁵ Despite this decline, four of the five outbreaks recognized in the past 15 years have affected First Nations people living on reserve.^{6,7} The largest of these four outbreaks began on Vancouver Island over a year ago and has resulted in over 85 reported cases. Immunization of children has successfully reduced hepatitis A incidence in other countries including the US.⁸ Infant and child vaccination is substantially more cost effective than adult vaccination because children facilitate transmission through efficient fecal oral spread from infected diapered children, and asymptomatic infection and communities with high rates of infection have high prevalence of immunity in adults.⁹

Question and answer documents on all these programs can be found at <http://immunizebc.ca/healthcare-professionals>.

For more news and information check our websites periodically at www.bccdc.ca and www.immunizebc.ca.

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References

1. National Advisory Committee on Immunization. Updated statement on the use of rotavirus vaccines. *Can Commun Dis Rep* 2010;36(ACS-4):1-36. Accessed 23 December 2011. www.phac-aspc.gc.ca/publicat/ccdr-rmtc/10vol36/

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