

2020 VEC NEWSLETTER

Immunization is recognized as one of the greatest successes in the history of public health. Research studies continue to find vaccines to be a safe and effective way to prevent serious disease.

This year, as the COVID-19 pandemic continues to evolve, researchers and scientists around the world are in a global race to develop a COVID-19 vaccine. An alarming health crisis like this really calls attention to the importance of having an effective vaccine to prevent people from getting disease and also curb transmission.



In this issue, we share with you our research on:

**PERTUSSIS
VACCINATION**

HPV VACCINATION

CMV VACCINATION

**INCREASING VACCINE
COVERAGE**

**CORONAVIRUS DISEASE
(COVID-19)**



Our researchers and staff at the Vaccine Evaluation Center (VEC) are committed to making a meaningful impact. This year during National Immunization Awareness Week, VEC proudly shares highlights of our vaccine research.

CONNECT WITH US:

For more information on the publications outlined in this newsletter and to stay up to date on the studies the VEC are currently working on, please visit our NEW website: <https://bcchr.ca/vec>



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Pertussis Vaccination

Pertussis, also known as whooping cough, is a serious infection of the airways and may lead to complications such as pneumonia, seizures, brain damage or death.

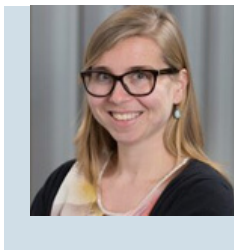
Through continued research, our researchers seek to understand the immune responses to pertussis vaccine during pregnancy and to learn more about the implications of giving pregnant women the pertussis vaccine to protect newborns. Our research has shown that:

- Pertussis vaccination for pregnant women in the early third trimester produces highly functional antibodies in the newborn, providing infants more effective protection against pertussis compared to vaccination in the late third trimester: [publication link](#)
- Receiving the pertussis vaccine during pregnancy modifies the immune responses of infants when they receive their own vaccinations later on, such as pertussis, diphtheria, tetanus and pneumococcal vaccines. We are undertaking further work to understand the mechanism that impacts infants' response to vaccines.



Dr. Manish Sadarangani

"I'M SOMEONE WHO BELIEVES STRONGLY IN PREVENTION RATHER THAN CURES — THAT IS WHY I ENDED UP DRAWN TO VACCINE RESEARCH. VACCINES ARE AMAZING BECAUSE THE RESEARCH WE DO HERE CAN HAVE POTENTIAL IMPLICATIONS ACROSS THE GLOBE."



Dr. Robine Donken

"I THINK THAT THE GREAT BENEFIT OF GOING FROM A THREE- TO A TWO-DOSE [HPV VACCINE SCHEDULE] IS DEFINITELY THAT IT'S MORE CONVENIENT FOR ADOLESCENTS AND THEIR PARENTS, WHILE GIVING COMPARABLE PROTECTION UP TO AT LEAST 10 YEARS POST-VACCINATION."

HPV Vaccination

An unvaccinated individual's chance of becoming infected with human papillomavirus (HPV) is very high, with an 80% lifetime risk. While most infected individuals will not show any symptoms and the infection will clear on its own, HPV infection that persists can lead to various types of cancer, like cervical cancer, as well as other serious illnesses.

- In a national study, our researchers analyzed the immune responses in girls aged 9-13 who received either 2 or 3 doses of the HPV vaccine with the immune responses of women aged 16-26 who received 3 doses of the HPV vaccine, using data from various timepoints to 10 years since their initial vaccination!
- The results showed that sometimes less is more, or at least the same: the immune response to 2 doses of HPV vaccine in girls are as good as 3 doses in adult women 10 years after vaccination: [link](#)
- From a public health perspective, it means a more affordable vaccine to protect more women against cervical cancer in BC, across Canada and throughout the world.

CMV Infection and Vaccination

CMV is the most common infection in unborn babies. It is a major cause of childhood hearing loss and neurodevelopmental delay. However, we currently don't have a vaccine or other ways to prevent CMV. In addition, most infected babies aren't diagnosed in time to give them the best available treatments.

Our researchers are studying CMV from a range of perspectives:

- In a study that followed 29 Ugandan mother-infant pairs weekly for CMV acquisition, our researchers found that high levels of glycoprotein B-specific antibody may contribute to the partial protection against CMV infection after a baby is born, and that inclusion of glycoprotein B antigens is important in developing an effective CMV vaccine: [link](#)
- Our research also showed that immunity from natural CMV infection is incomplete; a highly effective CMV vaccine should aim to induce protection that exceeds that of natural immunity.
- In another study, our researchers evaluated a CMV assay and found it is an accurate and simple method for identifying newborns with cCMV infection, and appears suitable for CMV testing even in remote and resource-limited settings: [link](#)



Dr. Soren Gantt

"PARENTS OFTEN ASK ME QUESTIONS LIKE 'IS THERE ANY WAY WE COULD HAVE PREVENTED THIS?' OR 'WHAT IF MY CHILD HAD BEEN DIAGNOSED EARLIER?' THESE QUESTIONS MOTIVATE MY RESEARCH. I LOOK FORWARD TO A DAY WHEN WE CAN PREVENT KIDS FROM BEING HARMED BY CMV, SO FAMILIES DON'T HAVE TO WONDER HOW THINGS COULD HAVE BEEN DIFFERENT."



Increasing Vaccination Coverage

Motivated by concerns of inadequate vaccination coverage and the potential for outbreaks of vaccine-preventable diseases, Canadian provinces have been discussing and tightening policies requiring documentation of vaccination for school enrolment.

Our researchers sought to understand how parents and other adults in BC feel about various policy options. In a [study](#) consisted of an online survey responded by more than 1000 adults in BC, our researchers learned that more than 80% of respondents held positive attitudes towards immunization.



Dr. Julie Bettinger

"OUR FINDINGS PROVIDE EVIDENCE THAT MOST BRITISH COLUMBIANS STRONGLY SUPPORT VACCINATION AND EXPECT PARENTS TO VACCINATE THEIR CHILDREN."



- **Examining the effects of public health measures related to COVID-19:** Through collaboration with researchers across Canada, our researchers will examine the sociocultural dimensions of COVID-19, such as how individuals and community understand and react to the disease. The data will be used to improve the process by which public health policies are created and implemented.

Some interesting observations when asked about policy options to increase vaccination rates:

- More than 80% of respondents supported requiring parents to report their child's vaccination status when their child starts school;
- More than 80% supported requiring parents who decide not to vaccinate their children to sign a form stating they're choosing not to comply with medical advice about vaccination;
- More than 70% supported required education sessions for parents who do not vaccinate their children;
- Less than 40% of respondents supported policies that punish parents who do not vaccinate their kids, such as withholding government benefits like the Canada child benefit.

It is important to highlight that while some other countries have implemented policies that create financial penalties for not vaccinating, our research indicates such measures would not be acceptable to most British Columbians.

Our research provides a snapshot of popular attitudes towards vaccines and vaccine policy, an important context for policy makers tackling the growing public health issue of outbreaks of vaccine-preventable illness.

Coronavirus Disease (COVID-19)

COVID-19 is a global challenge that has enormous social and economic impact on our society. Although there is still much to be learned about COVID-19 and the virus that causes the disease, our researchers are rising to the challenge and contributing to an extraordinary global effort to halt the spread of the deadly novel coronavirus. Some of the studies regarding COVID-19 that are currently underway at VEC include:

- **COVID-19 Immunity Study:** the study is collecting information and blood and respiratory specimens from patients who have been diagnosed with COVID-19, in order to develop a deeper understanding of their blood test results. The development of these tests will help to validate antibody tests for infection, and identify and track subsequent waves of the virus. Moreover, it will help doctors and researchers understand the immune response to the disease – which could help development of future treatments and/or vaccines.