How vaccines are developed

- Vaccines are the most effective way to prevent the spread of infectious disease, but developing one can be costly, long, and complex.
- Due to significant investment and collaboration at a global scale, developing a vaccine is possible in a much shorter period of time.
- Three stages of vaccine development - the **exploratory** stage, the **pre-clinical** stage, and the **clinical** stage.
- On January 11, 2020, the genetic code of the virus causing COVID-19 was published. This allowed scientists all over the world to start working on finding potential vaccines.
- In the **pre-clinical** stage, scientists use laboratory and animal studies to identify safety concerns before testing the vaccine in humans. It is also used to help find the safest dose.
- Phase 1 trials usually involve a small number of healthy volunteers to test safety and confirm that the vaccine causes an immune response.
- An immune response simply refers to how our bodies recognizes and defends itself from viruses and other potentially harmful substances.
- Promising vaccines then progress to Phase 2, where they are given to hundreds of participants, including groups at risk of the disease.
- Phase 3 studies involve thousands of volunteer participants and compare groups that received the vaccine to those that didn't.
- Scientists have worked to reduce the time to develop a COVID-19 vaccine, has been to use study designs that allow merging of clinical phases allowing scientists to shorten the overall timeline and number of participants needed, without cutting corners or compromising safety.
- The first COVID-19 vaccine trials in humans started in March of 2020. Since then, tens of thousands of volunteers have been enrolled in clinical studies worldwide.
- Before approving a new vaccine, Health Canada looks closely at all of the data on it, paying very close attention to its safety.
- Only those that are proven safe, effective, and of high quality will be approved for use in Canada.
- A safe and effective vaccine will bring us one step closer to the widespread and long-term management of COVID-19.
- Visit Canada.ca/coronavirus to learn more.