

## AT A GLANCE

# Vaccine Regulatory Process in Canada

Date: 12/16/2020

## Introduction

- With the introduction of COVID-19 vaccines, vaccine safety is paramount in ensuring vaccine confidence for public health, health system stakeholders and the public in Ontario.
- Vaccine safety monitoring is a continuous process starting at the time of clinical trials and continuing once vaccines have been authorized for use and incorporated into immunization programs. The ongoing monitoring of vaccine safety involves many groups, including federal and provincial governments and health agencies, public health units, health care providers, and the public.
- Post-marketing surveillance assesses the effectiveness and safety of vaccines and begins after vaccines are approved for use, and includes the monitoring of adverse events following immunization (AEFIs).<sup>1</sup>
- In Ontario, Public Health Ontario (PHO) is responsible for provincial surveillance of AEFIs in collaboration with local public health units and health care providers and contributes this information to Canada's post-marketing surveillance system.<sup>2</sup>
- This document describes how vaccines are approved for use in Canada and how vaccine safety continues to be monitored after approval in Canada and Ontario.

## Who is responsible for approving a vaccine in Canada?

- Health Canada is the federal authority responsible for the regulation of vaccines for human use under the Food and Drugs Act, and Food and Drugs Regulations.<sup>3</sup>
- Health Canada reviews clinical and manufacturing information of vaccine submissions, and authorizes the sale of vaccines in Canada.<sup>4</sup>

## What is the regulatory process?

- Manufacturers must provide scientific evidence from human clinical trials on the safety, efficacy and quality of a vaccine by filing a [New Drug Submission to Health Canada](#).<sup>4,5</sup>

- Submissions contain extensive data about the vaccine's safety, efficacy and quality; results of pre-clinical and clinical studies (up to Phase 3); details about production; and information on side effects and adverse reactions that occur following immunization.<sup>4,5</sup>
- The [scientific information](#) is reviewed by Health Canada.<sup>6</sup>
- Vaccines are approved for use and authorized for sale in Canada by Health Canada only if they are shown to be safe, effective and of high quality, and with benefits outweighing their risks.<sup>4</sup>
- All approved vaccines in Canada are continuously monitored to ensure that their safety, effectiveness and quality are maintained once marketed.<sup>4</sup>
- Health Canada issues both a Notice of Compliance (NOC) and a Drug Identification Number (DIN), which is necessary for the sale of a vaccine in Canada.<sup>4</sup>
- If the manufacturer wants to modify the product monograph to include additional uses after the initial authorization by Health Canada, they must re-submit the safety and efficacy data to Health Canada for scientific review, approval and authorization based on updated evidence.<sup>4</sup>

## How long does the regulatory process take?

- Health Canada's review of a vaccine can often take several years.<sup>4</sup>
- Given the urgency of the COVID-19 pandemic, the Government of Canada including Health Canada has made revisions to expedite the regulatory approval process without compromising safety, efficacy and quality standards.

## How is a vaccine's safety and efficacy monitored?

- Before a vaccine is authorized for use, Health Canada confirms there are no significant safety concerns based on phases 1-3 of human clinical trials.<sup>4</sup>

## Four phases of human clinical trials

- Phase 1 studies a vaccine on a small group of people (usually fewer than 100) for the first time, examining its safety including dosage range and side effects.<sup>7</sup>
- Phase 2 studies a vaccine on a larger group of people (usually several hundred or more), to see how effective the vaccine is in preventing a disease, confirming its safety and its optimum dosage.<sup>7</sup>
- Phase 3 studies a vaccine on a larger group of people (usually many thousands ) to confirm that it is both effective and safe by monitoring its side effects and any adverse reactions.<sup>7</sup>
- Phase 4 occurs after the vaccine has been approved for use and is incorporated into immunization programs. This is also known as post-marketing surveillance. This includes ongoing safety monitoring, assessing vaccine effectiveness in specific population groups, and determining the duration of immunity to inform future decisions on the need for booster doses.<sup>7</sup>

- Phases, 2 and 3, are often combined during clinical trials since this provides more information on a larger group of people in a shorter time about the vaccine's safety and effectiveness, in order to expedite the approval process.

## Post-marketing surveillance

- Post-marketing surveillance is a shared responsibility between Health Canada, vaccine manufacturers, the Public Health Agency of Canada (PHAC), provinces and territories, as well as local public health authorities.<sup>4</sup>
  - Health Canada provides regulatory oversight for safety, quality and effectiveness.<sup>4</sup>
  - PHAC collaborates with provincial and territorial public health stakeholders in monitoring and reporting of AEFIs.<sup>4</sup>
  - All serious adverse events associated with vaccines approved in Canada (whether they occur in Canada or outside of Canada) must be reported by the vaccine manufacturer to Health Canada within 15 days of having received this information.<sup>4</sup>

## How is a vaccine's quality monitored?

- An important component of vaccine safety is the quality of the vaccine product. Health Canada assesses the quality of the manufacturing process to ensure that there are necessary quality controls for production of the vaccine in place.<sup>4</sup>
- Once a vaccine is approved, the manufacturer must provide samples from three to five consecutive lots for testing in Health Canada's laboratories, to confirm that the manufacturer is consistently producing high-quality lots of the vaccine.<sup>4</sup>

## How has the regulatory process in Canada changed with COVID-19?

- To facilitate earlier access to COVID-19 drugs or vaccines, Health Canada has prioritized the review of these products while ensuring there is adequate evidence of their safety, efficacy and quality.<sup>8-12</sup> Additional scientific resources have been put in place to complete these reviews so that they may be done quickly while ensuring the integrity of the comprehensive review process.
- Since March 2020, Health Canada has put in place interim orders (IO) to respond to the urgent need for access to health products as a result of the COVID-19 pandemic, including clinical trials for medical devices, drugs and vaccines.<sup>13-15</sup>

## What is an Interim Order (IO)?

- An Interim Order is made under [subsection 30.1\(1\) of the Food and Drugs Act](#) (the Act), to allow the Federal Minister of Health "...to make temporary interim orders if the Minister believes that immediate action is required to deal with a significant risk, direct or indirect, to health, safety or the environment."<sup>16</sup>

- On September 16, 2020, the Federal Minister of Health signed an [Interim Order Respecting the Importation, Sale and Advertising of Drugs for Use in Relation to COVID-19](#) specifically to expedite the approval process of potential vaccines by allowing Health Canada to accept drug and vaccine submissions that are already in clinical trials with initial evidence of safety and efficacy, directly from manufacturers.<sup>15</sup>
- This means that manufacturers can present their vaccine submission to Health Canada as a rolling submission (i.e., data is presented as it is collected at different times during the phases of the clinical trials). This assists Health Canada in reviewing information as it is submitted, as distinct from a more typical process that requires all studies to be completed and data to be submitted at the same time.
- As of October 2020, Health Canada began receiving [submissions including potential COVID-19 vaccines for approval](#) under the drug authorization Interim Order for COVID-19.<sup>17</sup>
- Health Canada authorized the first [COVID-19 vaccine](#) for administration in Canada on December 9, 2020 after it met safety, efficacy and quality requirements.<sup>18</sup>

## How will vaccine safety be monitored in Ontario?

- Ontario will work with federal/provincial/territorial partners to conduct post-marketing surveillance to monitor the safety of COVID-19 vaccines.
- This process will rely in part on reporting of AEFIs by health care providers, vaccine recipients or their caregivers to their local public health unit (PHU). The [Ontario AEFI reporting form](#) is used by health care providers to submit AEFI reports to the PHU.

## Conclusion

- With the authorization of COVID-19 vaccines in Canada, post-marketing surveillance will be essential in ensuring the ongoing monitoring of the safety and effectiveness of these vaccines.
- Vaccine safety monitoring is a continuous process spanning all phases of the vaccine product life cycle, starting at the time of clinical trials and continuing to post-marketing surveillance activities, including provincial AEFI surveillance coordinated by PHO. The ongoing monitoring of vaccine safety is a collaborative effort involving many groups, and is an important component of public confidence in vaccines.

## References

1. Council for International Organizations of Medical Sciences and the WHO (CIOMS). Definition and application of terms for vaccine pharmacovigilance, report of CIOMS/WHO Working Group on Vaccine Pharmacovigilance. Geneva: World Health Organization; 2012. Available from: [who.int/vaccine\\_safety/initiative/tools/CIOMS\\_report\\_WG\\_vaccine.pdf](http://who.int/vaccine_safety/initiative/tools/CIOMS_report_WG_vaccine.pdf)
2. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Annual report on vaccine safety in Ontario, 2018. Toronto, ON: Queen's Printer for Ontario; 2019. Available from: [publichealthontario.ca/-/media/documents/a/2019/annual-vaccine-safety-report-2018.pdf?la=en](http://publichealthontario.ca/-/media/documents/a/2019/annual-vaccine-safety-report-2018.pdf?la=en)
3. Government of Canada. Health Canada [Internet]. Ottawa, ON: Government of Canada; 2020 [modified 2020 Sep 19; cited 2020 Dec 04]. Available from: <https://www.canada.ca/en/health-canada.html>
4. Government of Canada. Regulating vaccines for human use in Canada [Internet]. Ottawa, ON: Government of Canada; 2020 [modified 2020 Sep 09; cited 2020 Dec 04]. Available from: <https://www.canada.ca/en/health-canada/services/drugs-health-products/biologics-radiopharmaceuticals-genetic-therapies/activities/fact-sheets/regulation-vaccines-human-canada.html>
5. Government of Canada. Guidance documents – applications and submissions – drug products [Internet]. Ottawa, ON: Government of Canada; 2020 [modified 2020 Oct 20; cited 2020 Dec 07]. Available from: <https://www.canada.ca/en/health-canada/services/drugs-health-products/drug-products/applications-submissions/guidance-documents.html>
6. Government of Canada. Clinical trial applications (CTAs) [Internet]. Ottawa, ON: Government of Canada; 2015 [modified 2015 Dec 10; cited 2020 Dec 07]. Available from: <https://www.canada.ca/en/health-canada/services/drugs-health-products/drug-products/applications-submissions/guidance-documents/clinical-trials/applications.html>
7. Government of Canada. Clinical trials and drug safety [Internet]. Ottawa, ON: Government of Canada; 2020 [modified 2020 May 22; cited 2020 Dec 04]. Available from: <https://www.canada.ca/en/health-canada/services/clinical-trials.html>
8. Government of Canada. Health Canada's regulatory response to COVID-19: access to health products [Internet]. Ottawa, ON: Government of Canada; 2020 [modified 2020 Nov 23; cited 2020 Dec 04]. Available from: <https://www.canada.ca/en/health-canada/services/drugs-health-products/covid19-industry/regulatory-response-health-product-access.html>
9. Government of Canada. Drugs and vaccines for COVID-19 [Internet]. Ottawa, ON: Government of Canada; 2020 [modified 2020 Nov 26; cited 2020 Dec 04]. Available from: <https://www.canada.ca/en/health-canada/services/drugs-health-products/covid19-industry/drugs-vaccines-treatments/about.html#a1>
10. Government of Canada. Drug products [Internet]. Ottawa, ON: Government of Canada; 2020 [modified 2020 May 27; cited 2020 Dec 04]. Available from: <https://www.canada.ca/en/health-canada/services/drugs-health-products/drug-products.html>

11. Government of Canada. Guidance for market authorization requirements for COVID-19 vaccines: overview [Internet]. Ottawa, ON: Government of Canada; 2020 [modified 2020 Nov 20; cited 2020 Dec 04]. Available from: <https://www.canada.ca/en/health-canada/services/drugs-health-products/covid19-industry/drugs-vaccines-treatments/guidance-market-authorization-vaccines.html>
12. Government of Canada. Drug and vaccine authorizations for COVID-19: overview [Internet]. Ottawa, ON: Government of Canada; 2020 [modified 2020 Nov 26; cited 2020 Dec 04]. Available from: <https://www.canada.ca/en/health-canada/services/drugs-health-products/covid19-industry/drugs-vaccines-treatments/authorization.html>
13. Government of Canada. Notice: expedited review of health product submissions and applications to address COVID-19 [Internet]. Ottawa, ON: Government of Canada; 2020 [modified 2020 Mar 18; cited 2020 Dec 04]. Available from: <https://www.canada.ca/en/health-canada/services/drugs-health-products/drug-products/announcements/notice-expedited-review-health-products-covid-19.html>
14. Government of Canada. Canada: Interim Order respecting clinical trials for medical devices and drugs relating to COVID-19: notice [Internet]. Ottawa, ON: Government of Canada; 2020 [modified 2020 May 27; cited 2020 Dec 04]. Available from: <https://www.canada.ca/en/health-canada/services/drugs-health-products/covid19-industry/interim-order-respecting-clinical-trials-medical-devices-drugs/notice-interim-order.html>
15. Government of Canada. Explanatory note: Interim Order respecting the importation, sale and advertising of drugs for use in relation to COVID-19 [Internet]. Ottawa, ON: Government of Canada; 2020 [modified 2020 Oct 03; cited 2020 Dec 04]. Available from: <https://www.canada.ca/en/health-canada/services/drugs-health-products/covid19-industry/drugs-vaccines-treatments/interim-order-import-sale-advertising-drugs/note.html>
16. Government of Canada. Justice laws website: part II: administration and enforcement (continued): Interim Orders [Internet]. Ottawa, ON: Government of Canada; 2020 [modified 2020 Nov 27; cited 2020 Dec 04]. Available from: <https://laws-lois.justice.gc.ca/eng/acts/F-27/page-8.html?txthl=30.1#s-30.1>
17. Government of Canada. Drug and vaccine authorizations for COVID-19: List of applications received [Internet]. Ottawa, ON: Government of Canada; 2020 [modified 2020 Dec 04; cited 2020 Dec 07]. Available from: <https://www.canada.ca/en/health-canada/services/drugs-health-products/covid19-industry/drugs-vaccines-treatments/authorization/applications.html>
18. Government of Canada. Health Canada authorizes first COVID-19 vaccine [Internet]. Ottawa, ON: Government of Canada; 2020 [cited 2020 Dec 10]. Available from: <https://www.canada.ca/en/health-canada/news/2020/12/health-canada-authorizes-first-covid-19-vaccine0.html>

## Citation

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Vaccine regulatory approval process in Canada. Toronto, ON: Queen's Printer for Ontario; 2020.

## Disclaimer

This document was developed by Public Health Ontario (PHO). PHO provides scientific and technical advice to Ontario's government, public health organizations and health care providers. PHO's work is guided by the current best available evidence. PHO assumes no responsibility for the results of the use of this document by anyone. This document may be reproduced without permission for non-commercial purposes only and provided that appropriate credit is given to Public Health Ontario. No changes and/or modifications may be made to this document without explicit written permission from Public Health Ontario.

## Public Health Ontario

Public Health Ontario is an agency of the Government of Ontario, dedicated to protecting and promoting the health of all Ontarians and reducing inequities in health. Public Health Ontario links public health practitioners, front-line health workers and researchers to the best scientific intelligence and knowledge from around the world.

For more information about PHO, visit [publichealthontario.ca](https://publichealthontario.ca).

