# Should my patients start on a biosimilar?

## What are the differences between biologics and biosimilars?

A biologic is a medication that is produced from living organisms or their cells.[1] Some examples include insulin, vaccines, hormones, and monoclonal antibodies.[2] Biologics have transformed the care of patients with a vast range of diseases, including diabetes, inflammatory arthritis, inflammatory bowel disease, psoriasis and cancer.[3] These medications have been one of the most significant medical developments over the past decades.[3] Although they have been transformational from a clinical management perspective, their higher cost have contributed to the rapid growth of patented drug costs in Canada.[3]

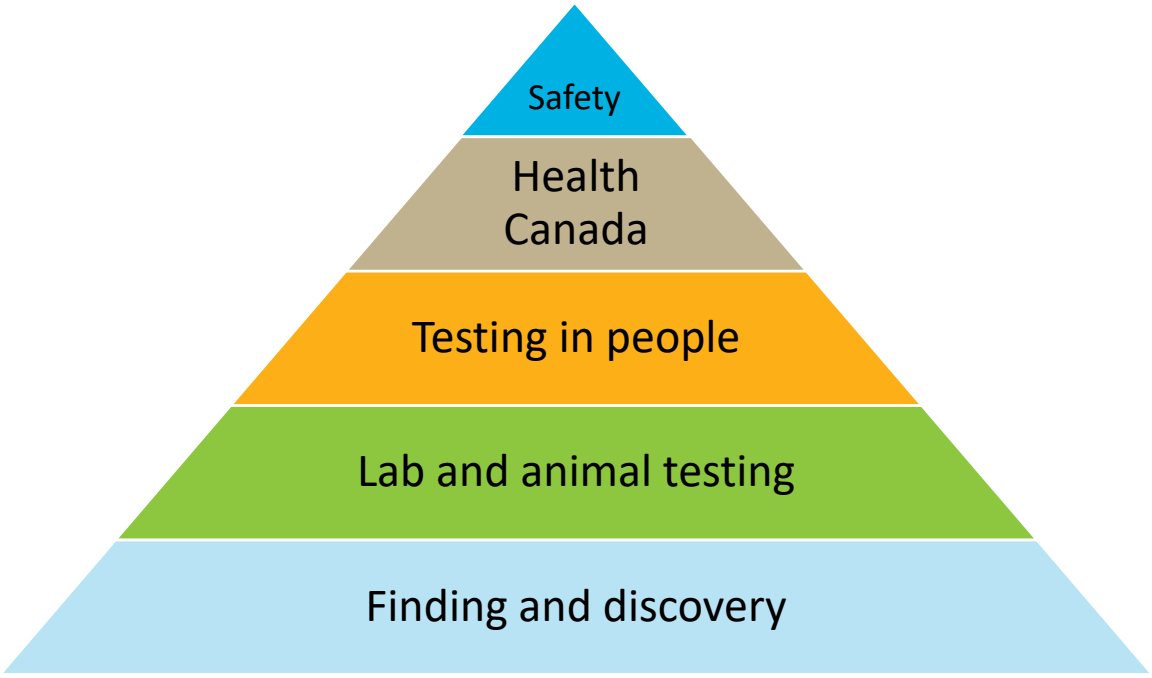
Once a patent for a biologic (also called reference biologic) has expired, Health Canada will allow for submission of a biosimilar biologic (or "biosimilar") for this medication. A biosimilar is a medication that is highly similar to the reference biologic that was already authorized for sale.[1] There are no expected clinically meaningful differences in efficacy and safety between a biosimilar and the reference biologic.[1]

Fundamentally, a biosimilar is also a biologic. The key difference is a biosimilar is just a biologic that mimics one that is already available in Canada.

**Before any biosimilar is approved in Canada, the manufacturer must demonstrate to Health Canada that there are no clinically meaningful differences from the reference biologic.**

## How does the regulatory approval process for reference biologics compare to that of biosimilars?

Reference biologics follow a similar discovery and regulatory approval process as all medications approved by Health Canada. The process from drug discovery to being commercially available is reviewed in the figure below. For each indication, the manufacturer must complete large phase III clinical trials to demonstrate the benefit/risk for that specific patient population. The process from discovery to regulatory approval will commonly take years and is very costly. To support the medical research, drug manufacturers are provided a 20-year patent from the date of discovery of the biologic where no other company can produce the same medication.




The biosimilar discovery and regulatory approval process is shorter and is reflective of developing a product that is similar to a medication which has been available for years. Biosimilars have minimal discovery as they are based off a biologic currently used in Canada. Biosimilars must complete comparative structural and functional studies to demonstrate similarity to the reference biologic.[1] Human studies are also completed to show that there are no clinically meaningful differences in expected efficacy and safety between the proposed biosimilar and the reference biologic.[1]

**Whether the patient is taking a biologic or biosimilar, clinicians can feel comfortable that these medications meet the high regulatory standards set by Health Canada**

## What biosimilars are available?

The first biosimilar product (somatropin) was approved in Europe in 2006.[4] Since then, many biosimilars have been approved for a large number of medications including medications for:[2]

- Autoimmune inflammatory conditions: adalimumab, etanercept, infliximab, rituximab
- Diabetes: insulin glargine, insulin lispro
- Oncology: bevacizumab, rituximab, trastuzumab, filgrastim, pegfilgrastim
- Anticoagulation: enoxaparin
- Osteoporosis: teriparatide

Over the next few years, there will be several other biosimilars launched in Canada.

## Is it appropriate to start a patient on a biosimilar?

Yes, it is appropriate for patients to start on a biosimilar. Canada is not the first country to introduce biosimilars. These medications have been available for decades in different parts of the world.[5] The European Union has approved more biosimilars than anywhere else in the world.[5] There has been high biosimilar uptake in the member countries of the European Union.[5] Professional organizations, support the role of biosimilars to reduce the overall cost of delivering care. For example:

- **American Society of Clinical Oncology** states: *"In conclusion, biosimilars will play an important role in the future care of patients with cancer and will improve access to valuable medicines."*[6]
- **Canadian Rheumatology Association** states: *"For a patient new to a specific biologic, cost effectiveness should be considered when there is an available choice between an originator biologic and one or more biosimilars."*[7]

**Starting a patient on a biosimilar has consistently shown to lead to the same clinical benefit but at a much lower cost than the reference biologic.**

## Is acceptance increasing in biosimilars?

Although regulators, professional organizations and extensive clinical experience all support the efficacy and safety of biosimilars, if clinicians and patients are not comfortable with these products, the uptake will be suboptimal. Trust is a critical component in the real-life implementation of any medication class.[8] Furthermore, trust on the part of the patient is not merely related to the fact that a drug is approved by regulatory bodies.[8] Patients must trust that prescribed drugs are reliable and safe, and were produced according to high quality standards.

Patient and clinician education is important aspect of increasing trust and acceptance. Ontario Health and the pan-Canadian Pharmaceutical Alliance have developed a number of tools to help clinicians and their patients to learn more about biosimilars. These tools can be accessed at: https://www.cancercareontario.ca/en/programs/provincial-drug-reimbursement/oncology-biosimilars-initiative

**In the past decade, no relevant differences between biosimilars and respective originators have been identified via the safety monitoring system in the European Union, and none of the approved biosimilars have been withdrawn, thus providing reassurance and validation of these agents in managing patients.**[8]

## The changing payer landscape for biosimilars

Canada has become one of the largest markets for biologic medications in the world.[9] They account for a disproportionately high share of drug plan costs compared to their share of claims.[9] Since biosimilars are

associated with a reduction in cost, when compared to the reference biologic, there is an interest from payers to increase utilization of these medications.

Almost every province and territory have a preferential listing for biosimilars for naïve patients over the reference biologic. This is also the case for many private drug plans. In practical terms, this would mean that patients prescribed this medication for the first time would be required to take the biosimilar in order to receive coverage by the public or private drug plan.

**The changing payer landscape is requiring many patients to start on biosimilars. Clinicians and patients can expect the same efficacy and safety as the reference biologic.**

## What does this mean for patients?

The number of biosimilars in Canada will continue to increase. Increased utilization of biosimilars can lead to similar outcomes and a lower cost compared to the reference biologic. Clinicians should feel comfortable using these agents and can advise patients that these options are effective and safe agents to manage their condition.

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