Guidance for Health Care Providers

Understanding Severe Allergic Reactions to COVID-19 Vaccines

What is a severe allergic reaction?

Allergic reactions to vaccines are rare. A severe allergic reaction is also called anaphylaxis. About half of allergic reactions to vaccines happen in the first 15 minutes after receiving the vaccination. Symptoms can start very quickly (usually within minutes) and almost always within 4 hours of vaccination. Typical symptoms include hives, swelling of mouth, lips, tongue or throat, shortness of breath, wheezing, chest tightness, low blood pressure or loss of consciousness. These reactions need immediate medical attention.

An allergic reaction is considered severe, if the client needs to be treated with epinephrine or if they require hospital care/monitoring. If the client had a severe allergic reaction to any vaccine ingredient or had a severe allergic reaction after getting the first dose of the mRNA vaccine, they should not get a second dose.

An Immediate Allergic Reaction

Clients with a mild to moderate localized allergic reaction, such as hives, swelling, and wheezing within 4 hours after receiving a COVID-19 vaccine; should get an assessment by an allergist before getting re-immunized with the COVID-19 vaccine.

Localized Reactions

Vaccines can cause localized reactions such as red, swollen, painful or itchy skin at the injection site. This is a common reaction, lasting 2-3 days. It is not an allergic reaction to the vaccine.

Vasovagal Reaction

Anxiety or a panic attacks may sometimes trigger a vasovagal reaction, which may appear similar to an allergic reaction. Symptoms may include rapid breathing, throat tightness, flushing, tachycardia and light-headedness.

Adverse Event Following Immunization - Reporting to Public Health

Any client with a potential allergic reactions to the vaccine should be reported through formal processes, by completing an AEFI Reporting Form. Speak to a supervisor. Fax the completed form to 416-696-3492 or email it to AEFI@toronto.ca.

Ingredients of the Pfizer-BioNTech and Moderna COVID-19 Vaccines

Both vaccines do **not** contain preservatives, formaldehyde, thimerosal, aluminum salt, latex, antibiotics, attenuated or inactivated virus.

Anaphylactic reactions to vaccines are rare. They can occur due to a vaccine ingredient or preservative, however, the amount is so tiny that it is unlikely to trigger a severe allergic reaction.

	Pfizer-BioNTech	Moderna
Active	Nucleoside-modified messenger RNA (modRNA) encoding the viral spike (S) glycoprotein of SARSCoV-2.	Nucleoside-modified mRNA encoding the viral spike (S) glycoprotein of SARS-CoV-2
lipids	(4-hydroxybutyl)azanediyl)bis(hexane-6,1-diyl)bis(2-hexyldecanoate)	SM-102 (Proprietary to Moderna)
	2[(**polyethylene glycol** [PEG])-2000]-N,N-ditetradecylacetamide	**Polyethylene glycol** (PEG) 2000 dimyristoyl glycerol (DMG)
	1,2-distearoyl-sn-glycero-3-phosphocholine	1,2-distearoyl-sn-glycero-3-phosphocholine
	Cholesterol	Cholesterol
salts, sugars, buffers	Potassium chloride, monobasic potassium phosphate, sodium chloride, dibasic sodium phosphate dehydrate	Tromethamin, Tromethamin hydrocholoride, acetic acid, sodium acetate
	Sugar (sucrose)	Sugar (sucrose)
	Diluent (Sodium Chloride)	Diluent (None)

Table taken from The Journal of Allergy and Clinical Immunology: In Practice. Also available in US CDC.

Polyethylene glycol (PEG) – in both mRNA vaccines

PEG is a common, water-soluble ingredient used to stabilize or preserve a wide variety of commercial products including some vaccines and medications. It is often used as laxatives or bowel prep products for colonoscopy (Golytely). Other products containing PEG include:

- cosmetics, skin creams, dermal fillers, medications such as cough syrup, ultrasound gel
- personal care products, shampoos, toothpastes, hair products, and contact lenses & solutions
- some fast foods, baked goods & drinks but allergic reactions to PEG in food/drinks have not been documents

Tromethamine – only in Moderna vaccine

Also known as trometamol or Tris are also found in contrast media, oral and parenteral medications.