



EpiPen Autoinjector Shortage

There is only one supplier for epinephrine autoinjectors in Canada at this time¹:

DIN	Manufacturer	Product	Active Ingredient	Strength
00509558	Pfizer Canada	EpiPen	epinephrine	0.3 mg/0.3 ml
00578657	Pfizer Canada	EpiPen Jr	epinephrine	0.15 mg/0.3 ml

Suppliers of epinephrine 1 mg/ml ampules¹:

DIN	Manufacturer	Product	Active Ingredient	Strength
02435810	Teligent OU	Epinephrine Injection	epinephrine	1 mg/ml ampule
00155357	Erfa Canada Ltd (McKesson)	Adrenalin Chloride 1:1000	epinephrine	1 mg/ml ampule

Management of shortage

Autoinjectors:

- Advise patients to use the product they currently have on hand even if it is expiring. EpiPens expire on the last day of the month indicated on the product packaging. **Health Canada advises anyone having a reaction to USE THEIR EXPIRED PRODUCT and immediately call 911.**²
 - There are some stability data of EpiPen devices: two studies indicate most (97.2%) devices retained at least 90% of labeled concentrations for up to 24 months past the labeled expiry date.^{3,4} Another study does not provide detailed results but the range of retained concentrations was 51-102% with the most outdated product (51 months past expiry date) retaining the lowest concentration.⁵
- EpiPen Jr. is currently available and not expected to be affected by shortage. Adults and older children can use two EpiPen Jr autoinjectors.² (Disadvantages: two injections, doubling of the cost.⁶)

Manual injections:

In-pharmacy preparation of anaphylactic kit⁷

Option 1: Anaphylactic kit with epinephrine ampules

- 2 – 1 cc syringes and 2 needles
 - Needle gauge and length:
 - Infants < 18 months, 25 – 27 G, 5/8 – 1'A inch
 - Children > 18 months up to 18 years, 23 – 25 G, 5/8 to 1'A inch
 - Adult 23 – 25 G, 1 to 1'A inch
- 2 extra needles
- 2 ampules of epinephrine 1:1,000
- Alcohol swabs, cotton balls, gauze pads
- Small sharps container (Optional)

- Case to hold syringes (e.g., pencil case, eyeglass case)
- Directions for breaking ampule, filling syringe, where and how to administer injection, safe disposal of ampules, needles, syringes, etc.⁸

*Option 2: Anaphylactic kit with prefilled epinephrine syringes (pharmacy must have laminar flow hood)**

- Prepare 2 – 1 cc syringes containing epinephrine 0.3 mg with needles attached*
 - Needle gauge and length:
 - Infants < 18 mon, 25 – 27 G, 5/8 – 1'A inch
 - Children > 18 month up to 18 years, 23 – 25 G, 5/8 to 1'A inch
 - Adult 23 – 25 G, 1 to 1'A inch
- 2 - extra needles
- Alcohol swabs, cotton balls
- Small sharps container (Optional)
- Directions on where and how to administer injection, safe disposal of needles and syringe, etc.
- Storage instructions: room temperature, protect from light, expiry date up to 3 months from preparation date⁹⁻¹¹

*Directions for prefiling epinephrine syringes: <https://www.youtube.com/watch?v=rMrJ4MKpHRw>
<https://www.youtube.com/watch?v=0KUwVn1p0ww>

**Prepared by K.Jensen MSc, BSP; reviewed by C.Bell BSP
 medSask | 25 Jan 2018**

References:

1. Health Canada. Drug Product Database Online Query. Ottawa, ON: Health Canada; [cited 18 Jan 2018]. Available from: <http://webprod5.hc-sc.gc.ca/dpd-bdpp/index-eng.jsp>.
2. Health Canada. Shortage of EpiPen (0.3 mg) auto-injector in Canada. Ottawa, ON: Health Canada; [cited 18 Jan 2018]. Available from: <http://healthy Canadians.gc.ca/recall-alert-rappel-avis/hc-sc/2018/65748a-eng.php>.
3. Cantrell FL, Cantrell P, Wen A, et al. Epinephrine concentrations in EpiPens after the expiration date. *Ann Int Med.* 2017; 166(12): 918-919.
4. Rachid O, Simons FE, Wein MB, et al. Epinephrine doses contained in outdated epinephrine auto-injectors collected in a Florida allergy practice. *Ann Allergy Asthma Immunol* 2015; 114(4): 354-356.
5. Simons FE, Gu X, Simons KJ. Outdated EpiPen and EpiPen Jr autoinjectors: past their prime? *J Allergy Clin Immunol.* 2000; 105:1025-30.
6. McKesson Canada. PharmaClik [Internet]. 2018 [cited 18 Jan 2018]. Available from <http://clients.mckesson.ca> Account required.
7. Ministry of Health. Saskatchewan Immunization Guide - Epinephrine kit. [cited 20 Jan 2018] Available at <https://www.ehealthsask.ca/services/manuals/Documents/sim-chapter12.pdf>.
8. Becton Dickinson. Principles of injection technique. 2017; Franklin Lakes, NJ. [cited 20 Jan 2018] Available at <http://www.bd.com/en-us/offerings/capabilities/syringes-and-needles/syringes-and-needles-resource-library> (Enter "Injection technique principles" and check In-service material under Content Type on left-hand side of screen)
9. Kerddonfak et al. The stability and sterility of epinephrine prefilled syringe. *Asian Pac J Allergy Immunol.* 2010;28:53-7.
10. Rawas-Qalaji et al. Long-term stability of epinephrine dispensed in unsealed syringes for the first-aid treatment of anaphylaxis. *Ann Allergy Asthma Immunol.* 2009;102:500-3.
11. Pepper et al. The high cost of epinephrine autoinjectors and possible alternatives. *J Allergy Clin Immunol Pract* 2017;5:665-8.