

Epinephrine in anaphylaxis

Florence Morriello MD MSc, Martin Chapman BM

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1 Rates of anaphylaxis are increasing

Hospital admissions for anaphylaxis have increased five- to sevenfold, with an increase in food-induced anaphylaxis (most frequently peanuts, shellfish and tree nuts).¹ Nonsteroidal anti-inflammatory drugs, antibiotics (specifically β -lactams), neuromuscular blocking agents and chemicals are the most commonly reported iatrogenic triggers.² Reactions related to chemotherapeutic or immunomodulator agents are also increasing.³

2 Epinephrine should be given immediately on recognition of anaphylaxis

Epinephrine is the first-line treatment for anaphylaxis. Delays in administration are associated with poorer outcomes, including respiratory or cardiac arrest.⁴

3 Intramuscular epinephrine should be used for initial treatment

The recommended dose and route for epinephrine is 0.5 mg intramuscularly for adults and 0.01 mg/kg intramuscularly in children weighing 30 kg or less, to a maximum of 0.3 mg in prepubertal children and 0.5 mg in adolescents.⁴ Intramuscular epinephrine is administered into the deltoid or the vastus lateralis muscle of the mid-outer thigh and can be repeated within 5–15 minutes.⁴ Autoinjectors are effective, single-use, pre-filled syringes, available in doses of 0.3 mg for adults and for children and adolescents weighing more than 30 kg and 0.15 mg for children weighing 15–30 kg.⁴ A hold of 3 seconds against the skin during and after deployment allows the contents to discharge fully.

4 Medication errors with epinephrine are common and can be dangerous

Wrong-route errors, where intramuscular epinephrine is mistakenly given intravenously, and wrong-dose errors, with intravenous delivery of epinephrine, are frequently reported.⁵ These errors can cause severe hypertension, angina, myocardial infarction, cardiogenic shock, stroke and potentially fatal tachyarrhythmias.^{4,5}

5 Intravenous infusions of epinephrine should be used only for refractory anaphylaxis

Refractory anaphylaxis is defined as ongoing symptoms despite 2 doses of intramuscular epinephrine and occurs in about 1% of patients with severe anaphylaxis.^{4,6} Along with critical care consultation, a low-dose infusion of intravenous epinephrine should be started.⁴ Mixing 1 mg of epinephrine in 1000 mL of crystalloid creates a 1 μ g/mL solution, infused at 5–20 μ g per minute (5–20 mL/min).

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Affiliations: Temerty Faculty of Medicine (Morriello, Chapman) and Divisions of General Internal Medicine (Morriello), Critical Care Medicine (Chapman) and Anesthesiology & Pain Medicine (Chapman), University of Toronto, Toronto, Ont.; Department of Medicine (Morriello), Division of General Internal Medicine (Morriello), Northern Ontario School of Medicine, Sudbury, Ont.

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Correspondence to: Florence Morriello, Florence.morriello@utoronto.ca

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