

# Treatment of anaphylaxis

## *EpiPen, Twinject, or another autoinjector?*

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Anaphylaxis is a multisystem reaction to the release of histamine and other inflammation mediators by the mastocyte and basophile cells following stimulation of the body by an antigen (such as a chemical, an insect bite, or a food item). This reaction might occur from a few minutes to a few hours after the cells come into contact with the antigen. The reaction can take different forms, such as cutaneous reactions (erythema, pruritis, swelling), changes in the oral mucous membrane (from changes in the voice to changes in the larynx), respiratory changes (such as bronchial spasm), vascular changes (hypotension, syncope, and collapse), and digestive changes (nausea, vomiting, and diarrhea).<sup>1,2</sup> The prevalence of severe allergies is less than 2% in Canada. Sales of autoinjectors were estimated at \$21 million in 2004.<sup>3</sup>

Anaphylaxis is a condition that progresses rapidly to death. Rapid treatment (ie,  $\leq 5$  minutes after the appearance of symptoms) by means of intramuscular injections of epinephrine is vital in order to save lives.<sup>4,5</sup> In spite of this, EpiPen use is low. Barely 3 out of 10 individuals use EpiPens following severe anaphylactic reactions, and only 1 in 10 use EpiPens when symptoms appear.<sup>6,7</sup> These data appear to be linked to anxiety around EpiPen administration, possibly owing to inadequate knowledge about its use.<sup>8,9</sup>

These observations are alarming, especially when we consider that up to 35% of cases can require more than one dose in order to adequately treat the anaphylactic reaction.<sup>10,11</sup> In fact, it was following a death in Quebec in 1998 that a coroner issued a recommendation to prescribe 2 EpiPens or 1 Twinject to patients at risk of anaphylaxis.<sup>12</sup> Such patients are advised to carry 2 doses for the injection of epinephrine (2 EpiPens or 1 Twinject) on their person at all times. However, it should be noted that there have been no studies of the Twinject autoinjection device proving that the second dose (consisting of a syringe containing adrenaline) is easy to inject.

These data on anaphylaxis point to another problem with epinephrine autoinjection devices. In addition to having a usage rate of between 10% and 30%, these systems also have a maximum expiry date of 1 year. As a result, unused and potentially renewable prescriptions abound. In addition to polluting our environment, these prescriptions increase the government's fiscal burden, which was on the order of \$14 million for the year 2004!<sup>3,13</sup>

In order to increase the usage rate of epinephrine autoinjectors, individuals with allergies and their families should be more adequately educated through, for example, periodic reviews of the use of these devices. One way of reducing the costs of these devices and the pollution they generate would be a new system delivering multiple injections. This system is already available to patients with diabetes in the form of an injector with disposable cartridges. As is the case with insulin, an adrenaline cartridge could be used for more than one injection, by simply turning a button and changing the needle. It should be noted that the EpiPen and Twinject needles are 5/8" long, similar to the needle provided with the insulin pen, yet these needles should be a minimum of 7/8" long because the intramuscular route provides the best therapeutic result.<sup>14</sup>

Many people are already using this system. It has the potential to be less expensive and less polluting. Why wouldn't we use it?

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### Competing interests

None declared

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