



**Patient information leaflet**  
**Botulinum toxin injections**

Botulinum toxin (also more commonly known as Botox®, Dysport, Azzalure, Xeomin, which are the different commercially available preparations) is a neurotoxin produced by Clostridium botulinum bacteria. Botox® is a sterile vacuum dried form of purified Botulinum toxin type A produced from a culture of the Hall strain of Clostridium botulinum.

The human nervous system is susceptible to types A, B, E, F and G. These act on the peripheral nervous system to inhibit the release of a neurotransmitter called acetylcholine from the neuromuscular junction (the junction between a nerve and muscle), thereby weakening the signal from the nerve to the muscle, which would usually cause the muscle to contract. The strength of the muscle contraction is reduced.

The botulinum toxin binds to the cholinergic receptors at the neuromuscular (nerve to muscle) junction and is then internalised (taken into the nerve ending) where it acts to block the release of the neurotransmitter chemical acetylcholine. In other words, the treatment blocks the signal from the nerve to the muscle, which would normally instruct it to contract.

Botulinum toxin may be used therapeutically to treat blepharospasm, chronic migraine and hyperhidrosis (excessive sweating) (in the form of arm pit injections) and cosmetically to treat dynamic wrinkles. Skin wrinkling becomes more pronounced with age. Only wrinkles caused by muscle contraction are amenable to treatment with botulinum toxin (Botox®) injections, which reduces the release of neurotransmitter at the nerve-muscle junction decreasing the strength of muscle contraction.

Tiny doses of the substance are injected into the muscles rather than into the crease lines. The discomfort of the small needlestick and a localised stinging and/or pressure sensation may be felt as the solution is injected.

The onset of action can vary from patient to patient and from one injection to another in the same patient. Most people will notice an effect after 24 to 48 hours with maximal muscle weakening occurring up to a week after the injection. The effects of the injections last two to three months (and rarely up to 11 months) so a programme of repeated treatment is usually needed. Subsequent injections of the same volume

and concentration may have a different duration of effect in the same person. Some reports suggest that the effects of the (Botox®) last longer and longer in patients who have had multiple injections over a number of years.

In the first week after injection, patients will notice an early alteration in dynamic wrinkles. After this, there is remodelling of the dermis of the skin as the muscle contractions are relaxed. Botulinum toxin injections will reduce the wrinkle lines that are present and prolonged use should prevent further deepening of existing lines. Botox® is therefore one of the few treatments that prevents the visible signs of ageing.

The most dramatic responses to anti-wrinkle (Botox®) injections are seen in patients aged 30 to 50 years. With deeper wrinkles, the botulinum toxin will reduce wrinkles but additional filler, which can mechanically elevate the depressed tissue of the wrinkle, is likely to be required to smooth the skin.

Side effects may be due to localised effects of the injection or inadvertent spread of the Botox® solution to surrounding tissues. They include: a small haematoma (bruise), droopy eyelids (ptosis of the upper lid and sagging or ectropion of the lower lid), with resultant dry or watery eyes (epiphora), brow ptosis (droopy eyebrows) and double vision (diplopia), reduced strength of oral closure, drooling and lip droop. Many of these side effects have not been reported in cosmetic patients but in those who receive botulinum toxin for therapeutic reasons. These side effects usually disappear within a week or two. The most common side effect reported in cosmetic patients is post injection ptosis (droopy upper lid), which may be reduced with specific eye drops. Temporary redness at the injection site is common. A flu-like syndrome and headache following botulinum toxin injections have also been reported. The botulinum toxin product contains albumin, a derivative of human blood, however no cases of transmission of viral diseases or CJD have ever been reported for albumin.