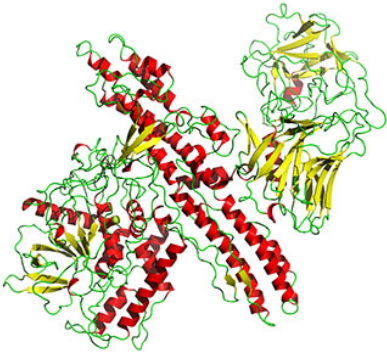


Foundation Toxin



Tricks and Tips for Beginners
CISC Training

www.cisc-training.co.uk

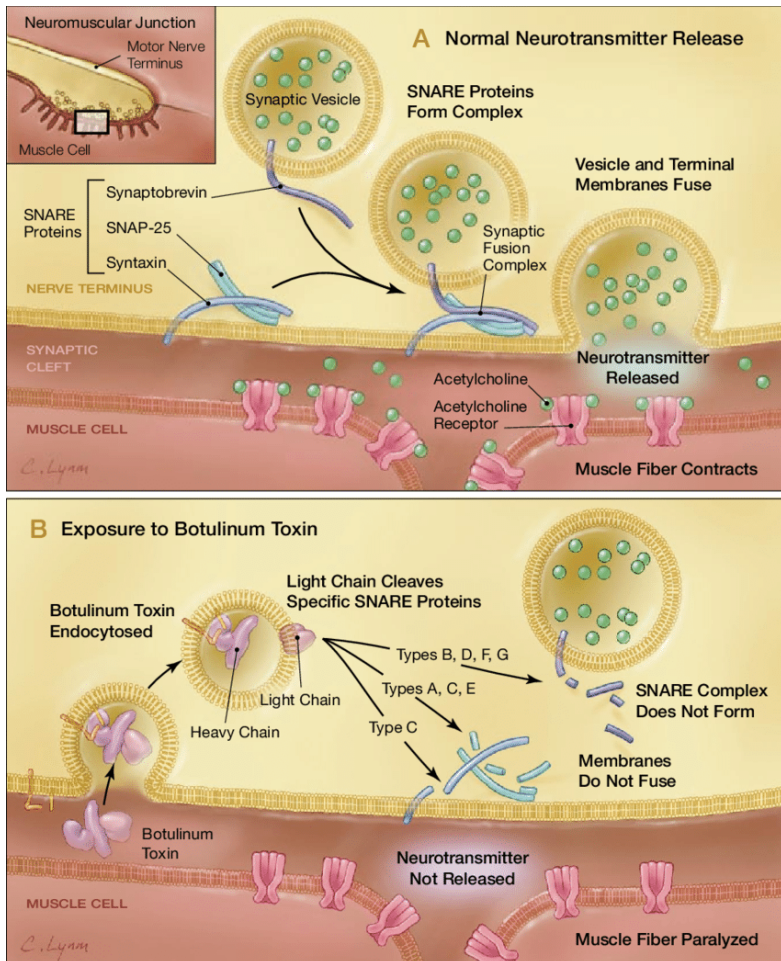
Dr Ryan Hamdy

MECHANISM OF ACTION

Botulinum Toxin A is a peripheral neuromuscular blocking agent. There are 8 serotypes. Most commonly we use Type A.

It irreversibly binds to the presynaptic terminal of the neuromuscular junction preventing **ACETYLCHOLINE** release and thereby preventing muscular contraction.

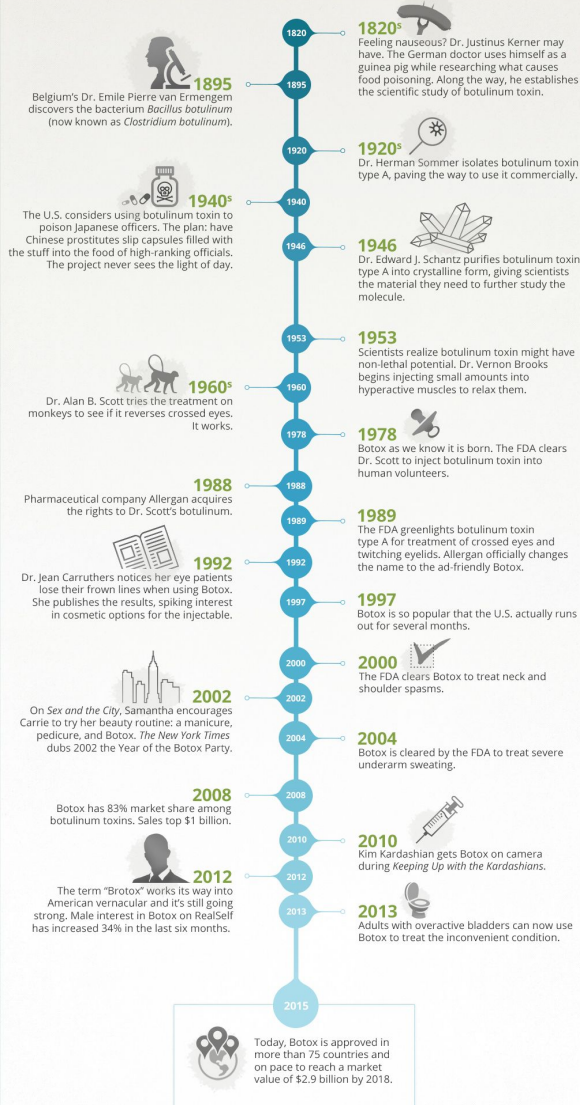
There are 3 steps- **BINDING, INTERNALIZATION** and **BLOCKING**.



HISTORICAL TIMELINE OF BOTULINUM TOXIN

The History of Botox

A Beauty Option Through the Ages
trends.realself.com



MOST COMMONLY USED BRANDS OF BOTULINUM TOXIN A

BOTOX (Onabotulinum toxin A)

100unit BU vial. Contains human albumin. Vacuum dried. Must be refrigerated prior to use at 2-8 degrees C.



Vistabel is identical to Botox but branded in a 50BU vial.

AZZALURE (Abobotulinum toxin A)

125 Speywood Unit vial. Contains human albumin and lactose. Must be refrigerated prior to use at 2-8 degrees C.



Dysport is identical to Azzalure but branded in a 500 Speywood Unit vial.

BOCOUTURE (Incobotulinum toxin A)

50 unit vial. Contains human albumin and sucrose. This can be stored at room temperature prior to use. This product is free of complexing proteins.



Xeomin is identical to Bocouture but is branded in a 100 unit vial.

REMEMBER

All products must be refrigerated after reconstitution.

THE UNITS ARE NOT INTERCHANGEABLE

However independent studies suggest that the conversion ratio of Botox to Azzalure to Bocouture is 1:2.5:1

DILUTION AND DOSING

Botox Recommended dilution with 2.5mls Bacteriostatic Saline. Resulting in a concentration of 4 BU in 0.05mls solution.

Azzalure Recommended dilution with 0.63mls Bacteriostatic Saline. Resulting in a concentration of 10 Speywood Units (SU) in 0.05mls solution.

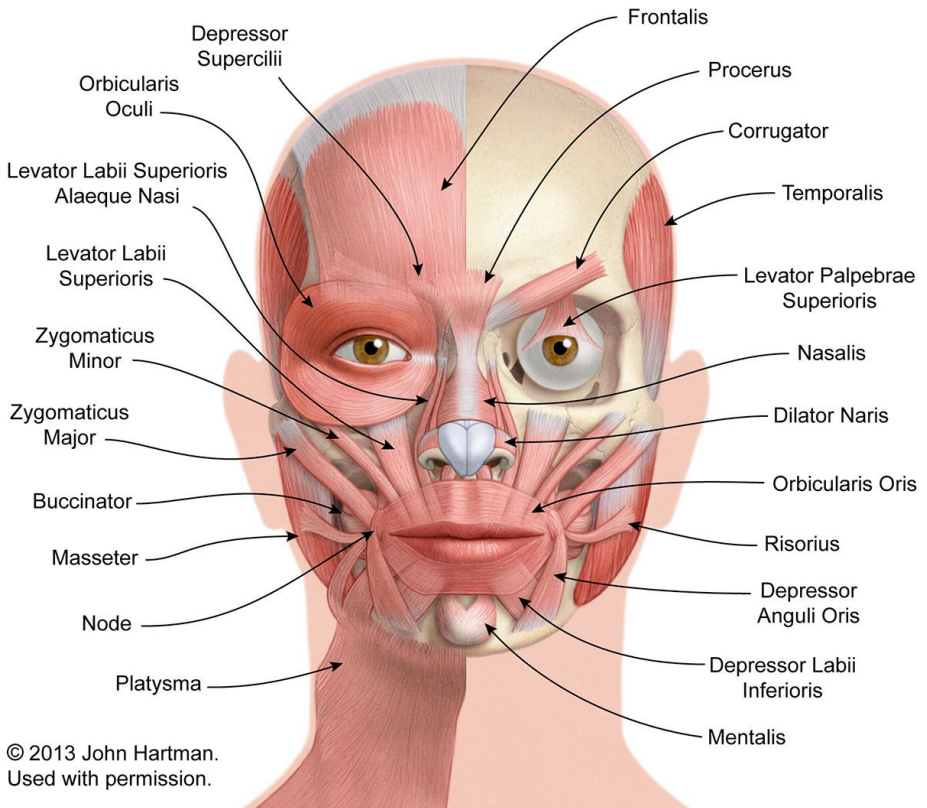
Bocouture Recommended dilution with 1.25mls Bacteriostatic Saline. Resulting in a concentration of 4 Bocouture Units in 0.05mls solution.

My preferred dilution with Botox is with 2mls of Bacteriostatic Saline. This results in a concentration of 5 BU in 0.05mls solution.

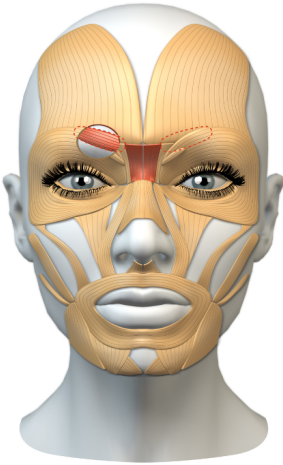
The reason for this is that I find it easier to visualize the dosing with the syringes being used. Below are the licensed dosing for the 3 products available.

Brand/Dose	BOTOX	AZZALURE	BOCOUTURE
Area Treated			
GLABELLA	20 UNITS	50 UNITS	20 UNITS
CROWS FEET	24 UNITS	60 UNITS	24 UNITS
FOREHEAD	20 UNITS	15-50 UNITS (UL)	10-20 UNITS

RELEVANT FACIAL ANATOMY



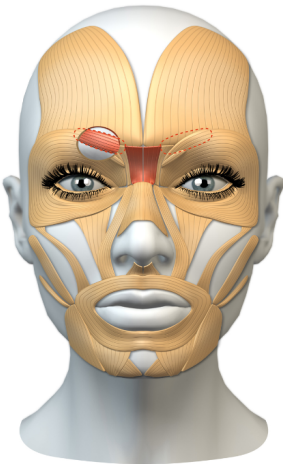
GLABELLA COMPLEX



PROCERUS

Responsible for pulling the medial brow down and contributing to horizontal lines on the bridge of the nose.

BROW DEPRESSOR

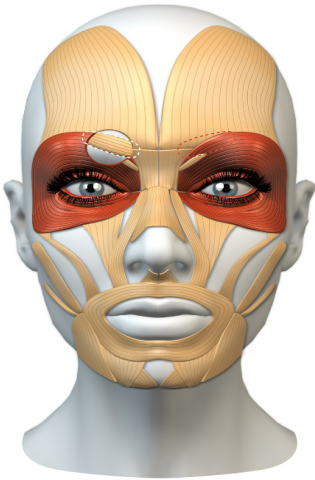


CORRUGATOR SUPERCILII

Responsible for pulling the medial brow down and inwards contributing to vertical frown lines.

BROW DEPRESSOR

ORBICULARIS OCULI

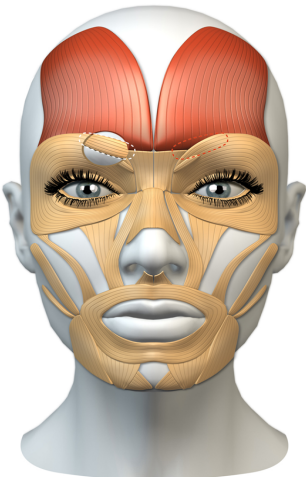


ORBICULARIS OCULI

Responsible for closing the eyes and contributing to Crows Feet (Lateral canthal lines)

BROW DEPRESSOR

FRONTALIS



FRONTALIS

Responsible for lifting the eyebrows and contributing to horizontal forehead lines

BROW ELEVATOR

INJECTION GUIDANCE

GLABELLA FROWN LINES



4 BTXU	●
6 BTXU	●
2 BTXU	●
OR 10 SU PER POINT	

INJECTION TIPS

- Typically treated with 5 injection points. 1 injection to procerus and 2 each corrugator.
- Keep medial corrugator point 0.5-1cm above orbital rim and lateral corrugator 1cm above orbital rim.
- Ensure lateral corrugator point is medial to mid-pupillary line and superficial to reduce the risk of product migration and eyelid ptosis.
- Try not to hit the bone with needle tip as this may cause headache.
- Above dosing is for guidance only and in BU. In Speywood Units the dose per point is 10SU.
- Remember the diffusion radius of BTXA is 1cm.

INJECTION GUIDANCE

LATERAL CANTHAL LINES (CROWS FEET)



DOSE RANGE

2-4 BTXU ● ●

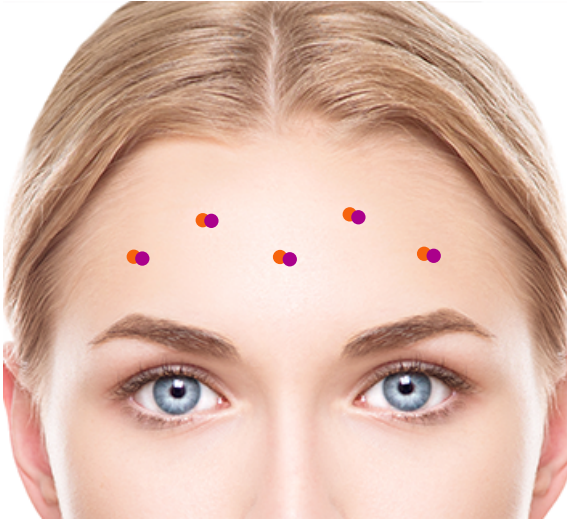
OR 10 SU PER POINT

INJECTION TIPS

- Typically treated with 3 injection points per eye to lateral orbicularis oculi.
- Orbicularis oculi is a superficial muscle so keep injection points superficial. Approach needle at a shallow angle to create a bleb.
- This is a highly vascular area and prone to bruising so watch out for veins.
- Keep injection point at least 1cm away from the orbital rim.
- Ensure lower points are above the zygoma. Insertion of zygomatic muscles are very close and inadvertent spread can result in a ptotic smile.
- Check the snap test if injecting medially under the eye. This can result in ectropian of the lower lid or oedema and worsening of lower eyelid bags.

INJECTION GUIDANCE

FRONTALIS FOREHEAD LINES



DOSE RANGE

2-4 BTXU ● ●

OR 5-10 SU PER
POINT

INJECTION TIPS

- Typically treated with 4-10 injection points. This is the most challenging area of the upper face to treat. Frontalis is extremely sensitive to neurotoxin.
- To limit the risk of brow ptosis keep lowest inject points at least 2 cm above orbital rim.
- Keep injection superficial and avoid hitting the bone.
- Assess each patient to look for masked brow ptosis.
- Watch for lines extending into the hair line and above the lateral brows.
- Consider treating more lateral to avoid Spock or Mephisto sign.
- You may need to think about not treating the brow in older patients or consider very light dosing e.g. 1BTXU per point.

GENERAL TIPS.

- Ensure appropriate patient selection e.g. age, medical history, contraindications etc.
- Manage expectations and watch for BDS.
- Evaluate lines and the extent to which they can be treated.
- Watch for asymmetries.
- Take full medical history and CONSENT.
- Take good quality photographs at rest and at full movement.
- Remove makeup and clean skin.
- Follow up new patients. Try to discourage the use of the term “top up” and use review.
- Remember that when you start off you WILL NOT be an expert. Things do go wrong and it is how you learn from your mistakes that will dictate how good an injector you will become.
- Advise your patient that the results are not permanent and they will need a repeat treatment usually after 3-4 months.

CONTRAINDICATIONS TO TREATMENT

- Under 18.
- Pregnancy and breast feeding.
- History of known allergy to neurotoxin or excipients.
- Infection at the site of injections.
- History of known neurological disorder.
- Individuals with unrealistic expectations.

SIDE EFFECTS AND COMPLICATIONS

Reassuringly most reactions are mild to moderate and self-limiting in nature. Most of these are related to the treatment and injection technique.

The most common side effects are injection site reactions and headache (in about 10% of cases).

INJECTION SITE REACTIONS

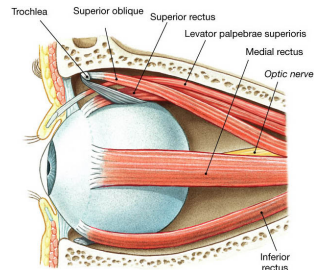
- Pain-variable but usually not significant and is dependent on injection technique.
- Bleeding and Bruising - remember to take a full history including NSAIDS and OTC items e.g. ginseng, ginger, ginko etc.
- Infection - actually very rare but be mindful of asepsis.
- Redness and Swelling - usually self-limiting resolving in an hour or two.

OTHER RARER COMPLICATIONS

- Dizziness.
- Dry eye.
- Muscular twitching.
- Visual disturbances e.g. diplopia or blurring of vision.
- Rash, urticaria, pruritus.
- Hypersensitivity reactions.
- Neuromuscular weakness, swallowing and speech disorders - **Very rare.**

WHEN NEUROTOXIN RESULTS IN UNDESIREABLE EFFECTS

EYELID PTOSIS



(b) Medial surface, right eye

This is usually the result of diffusion of neurotoxin into the muscle levator palpebrae superioris. Resulting in drooping or ptosis of the upper eye lid. The effects of this can last from 2-12 weeks and can be a source of much patient dissatisfaction.

Prevention is key. This is usually caused by inaccurate placement of toxin in the tail of the corrugator. Keep the injection here away from the mid-pupillary line, 1 cm above the orbital rim and superficial (bearing in mind that the muscle inserts into the skin laterally).

Treatment is usually watchful waiting.

Also consider eye lubricants and lolidine (apraclonidine 0.5%). This anti glaucoma drug causes contraction of Mullers Muscle which results in temporary elevation of the lid. Dose is 1-2 drops tds. It is meant for short term use only and can cause eye redness and irritation.

BROW PTOSIS

This is the result of over treatment of frontalis and/or no assess the patient accurately prior to injection. Generally if frontalis is completely immobile there will be little that can be done other than waiting. The patient may complain of puffiness of the upper lids and difficulty with applying eye makeup.

MEPHISTO / SPOCK SIGN

This is a term used to describe excessive lateral brow elevation following neurotoxin treatment. This can happen when only the central portion of the forehead is treated resulting in lateral frontalis overactivity.

It is easily corrected (if required) with simple placement of toxin at the point of maximum contraction above the brow as indicated.



0.5-1 BTXU ●

OR 1-2.5 SU

ECTROPIAN OF LOWER EYELID



This rare occurrence is the result of toxin weakening lower orbicularis leading to a lack of support.

Usually seen in older patients.

There is no treatment other than waiting for resolution

DIFFUSION AND SPREAD

Diffusion and Spread are often confused as the same effect but they are notably distinct.

DIFFUSION is a kinetic process which occurs when a high concentration of a compound is introduced to an area with a lower concentration. This is a slow process which could explain why the full benefits of treatment are often seen days later. Remember Botulinum toxin A has a diffusion radius of about 1cm.

SPREAD is the physical motion of molecules moving from one area to another, which is more dependent on injection technique rather than the product itself.

Factors that can influence spread include

- Volume of product injected.
- Concentration of product injected.
- Tissue being injected.
- Depth and rate of injection.
- Needle gauge.
- Forces applied to tissue after injection e.g. touching the area.

ADDITIONAL VARIABLES AFFECTING DOSING

- Gender - generally men require higher dosing - up to 50% higher.
- Muscle mass - the more muscle there is the higher the dosing required.
- Area to be treated - the larger the area the higher the total dosing e.g. forehead.
- Patient aesthetic preferences - some patients will view any movement as treatment failure.

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