

ACE Group World Emergency Kit



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Abstract:

Many complications that occur in aesthetic practice require Prescription Only Medicines (POMs) to successfully manage them. Some of these should be immediately available to the practitioner in the event of a complication, as it could be detrimental to the health of the patient if the problem is not dealt with immediately. Aesthetic Complications Expert Group World have produced guidelines to manage the most serious and common complications that can occur in non-surgical aesthetic practice and a recommended Emergency Kit for aesthetic practitioners.

Practitioners should refer to the latest evidence-based guidelines for the management of complications in non-surgical aesthetic practice (<https://uk.acegroup.online/guidelines/>).

Keywords:

Aesthetic Complications Expert Group World, Emergency Kit, hyaluronidase, adrenaline, aspirin, timolol, vascular occlusion, visual loss, anaphylaxis, infection.

Definition:

Emergency: 'A serious, unexpected, and often dangerous situation requiring immediate action.'¹

Introduction:

Aesthetic practitioners have a professional and moral duty to be not only trained and competent in performing treatments, but also to understand, and be able to manage possible risks and complications that may occur during and after the procedure. Practitioners should have the skills and knowledge to risk assess their practice and take appropriate steps to mitigate risk, considering product and patient characteristics. One of the key aspects of successfully managing a complication is to be able to identify where a complication occurs and to correctly diagnose the problem. Practitioners should seek the help of a more experienced colleague if the diagnosis is in doubt as providing an incorrect remedial treatment may result in further harm and a worse outcome. Training and regular updates in the management of

aesthetic complications is essential for all practitioners working in aesthetic medicine.

Some complications require immediate attention either because they are life threatening, can have catastrophic consequences or because a delay in treatment could result in greater harm to the patient. Managing these emergency events requires competency, a safe environment, familiar and reliable management protocols and access to necessary medicines and devices. It is recommended that quick reference guides and treatment algorithms are available within their Emergency Kit and practitioners should be familiar with them. In order to provide safe treatments and correctly manage adverse events, practitioners must have and be competent to use and administer essential medicines and devices. The management of an aesthetic complication may require intervention from a more specialised practitioner and referral pathways should be in place if this is needed. Except for certain complications, such as anaphylaxis and visual loss, sending a patient to an Accident and Emergency department is often detrimental to their care as they often do not have the necessary experience or medication to successfully manage the problem.

Reporting of complications in aesthetic practice is lacking and it is only by greater reporting that problems associated with products, procedures, training and injectors can be identified and managed appropriately. ACE Group World is a strong advocate for the reporting of complications and provides a function for this on their website, although this is not intended to replace the recommended reporting to the MHRA (Medicines and Healthcare products Regulatory Agency) and the manufacturer's regulatory affairs department.

Although the ACE Group World Emergency Kit covers the most widely performed aesthetic treatments, it is not intended to be all encompassing. The Emergency Kit contains medicines to deal with common aesthetic procedures, however practitioners should carry out a risk assessment for every procedure they provide and ensure they have the appropriate equipment and/or drugs to manage an adverse reaction. Practitioners conducting surgical procedures are likely to need additional prescription medications and equipment, such as AEDs, oxygen and cardiac monitoring, to manage potential complications.

Background:

Whilst it is considered vital to have an Emergency Kit available, it is equally important that the practitioner is competent to use it appropriately. As complications in aesthetic practice are rare, regular CPD activities to maintain and demonstrate competency are essential. Basic Life Support and anaphylaxis training should be undertaken annually to refresh and update knowledge and skills in line with guidelines from professional bodies. In an instance where a patient's life or sight is threatened, emergency services should be called to attend immediately, and the patient transferred to hospital for further treatment or monitoring. Even if the patient appears to have recovered from an anaphylactic event, the patient must go to hospital for observation.

Quick reference guides and management algorithms are useful aide memoires when an adverse event occurs, and these should be kept with the Emergency Kit and at other identified sites where they are easily at hand if a complication arises.

Since the Emergency Kit contents are likely to be used infrequently, it is important that it is checked regularly, to ensure the medicines and devices are present, have not passed their expiry dates, have not been damaged and are in proper working order. A chart is useful to record these checks have been made and this should be completed at least monthly (Appendix 1).

Adrenaline:

The Resuscitation Council recommends the use of adrenaline ampoules, rather than auto-injectors, for healthcare workers who should have the competency and skills to draw up and administer from ampoules². The ampoules offer significant cost benefits to the practitioner, particularly when they will need to be discarded and replaced when they reach their expiry date. Auto-injectors are designed primarily for lay people to be simple and efficient to use and they often have a shorter shelf-life of about 6 months. The brands, EpiPen® and Jext® are preloaded with a 300mcg dose which is less than the 500mcg recommended for adults, the needle length of 15/16mm risks subcutaneous rather than intramuscular injection which may affect efficient absorption³. The brand Emerade® supplies auto-injectors with a choice of doses which includes the adult dose of 500mcg, it also has a 23mm needle

increasing the likelihood of an intramuscular injection in most adults.

Doses may need to be repeated at 5-minute intervals until the emergency services arrive on scene. Based on the 10-minute national standard for emergency services to attend, a minimum of two doses should be contained within the emergency kit and more than this if ambulance services are likely to take longer than ten minutes to arrive in more rural locations.

Exclusions:

According to the latest guidance from the Resuscitation Council, the administration of chlorphenamine and hydrocortisone should be restricted to practitioners who are experienced in their use and not administered first line². It is unlikely that practitioners who are working solely in aesthetic medicine would be considered experienced and therefore the recommendation would be to call an ambulance and carry out Basic Life Support until help arrives.

ACE Group World no longer recommends the inclusion of 2% glyceryl trinitrate (GTN) paste in the Emergency Kit for the management of a vascular occlusion. GTN paste induces vasodilatation and can increase blood flow, however it may also allow embolised filler material to diffuse into surrounding vessels, leading to more congestion, and worsening of perfusion⁴.

Prescription medication that does not need to be administered immediately can be issued via a prescription. ACE Group World provides a list of formulary items that can be referred to for this purpose.

Non-prescribing practitioners:

Non-prescribing practitioners must discuss policy with their prescriber and agree a protocol for prescription, supply, and administration of emergency Prescription Only Medicines. Prescribers and those who administer are equally accountable to the patient, their professional bodies and they must be aware of relevant legislation.

Adrenaline can be administered without a prescription according to Regulation 238 of the Human Medicine Regulations 2012⁵. In an emergency, anybody can inject adrenaline and other drugs listed in Schedule 19 of the Regulations for saving a life.

ACE Group World Emergency Kit:

The following table outlines the medicines and devices the emergency kit should contain:

Drug/Item	Adrenaline
Dosage	1:1000/ml
Quantity	2 ampoules
Guidelines	Anaphylaxis

Drug/Item	Hyaluronidase
Dosage	1500 I.U.
Quantity	4 ampoules
Guidelines	Use of Hyaluronidase Vascular Occlusion Visual Loss Delayed Onset Nodules Tyndall Effect Management of Oedema

Drug/Item	Aspirin
Dosage	300mg
Quantity	4 x 75mg
Guidelines	Vascular Occlusion Visual Loss

Drug/Item	Timolol Eye Drops 0.5%
Dosage	1-2 drops
Quantity	5ml
Guidelines	Visual Loss

Drug/Item	Loratadine or Cetirizine
Dosage	10mg
Quantity	5
Guidelines	Allergy/Angioedema

Drug/Item	Sodium Bicarbonate
Dosage	8.4%
Quantity	Powder for dissolving/Liquid
Guidelines	Neutralising Chemical Peel Burn

Drug/Item	Saline Eye Wash
Dosage	10ml
Quantity	2
Guidelines	Sharps and Splash Injuries

In addition, it is good practice to include in the kit any needles, syringes or diluents needed to administer emergency drugs:

Item	Quantity
Bacteriostatic saline, normal saline or water for injection.	4 x 5ml
10ml Luer-lok Syringe	2
5ml Luer-lok Syringe	2
1ml Luer-Lok Graduated Syringe	5
21G 1½" Green Needles	2
27G 1½" Grey Needle	2
30G ½" Yellow Needle	5
Baxter Rapidfill Luer-Lok Connector	1

Other essential items include:

- Telephone to call 999 or ACE Group World Emergency Helpline
- Strong paper bag (for re-breathing for visual loss)
- Hot/Cold gel packs

Also consider the following desirable items:

- Oxygen with mask and tubing
- Guedel airway/mask
- Pulse oximeter
- Blood pressure machine

Formulary for the Management of Complications:

1. Adrenaline

Adrenaline is required in the event of an anaphylactic reaction and should be always available when performing non-surgical aesthetic procedures. Although auto-injection devices are available, healthcare practitioners should stock adrenaline ampoules for drawing up and administering when required.

Adrenaline is an alpha-receptor agonist and reverses peripheral vasodilation and reduces tissue oedema. Its beta-receptor activity dilates the bronchial airways, and it suppresses the release of histamine and leukotrienes. It also acts directly on beta-2 adrenergic receptors on mast cells and inhibits their activation (RCUK,2021).

2. Hyaluronidase

Hyaluronidase is licensed in the UK for enhancing permeation of subcutaneous or intramuscular injections, local anaesthetics, and subcutaneous infusions and to promote resorption of excess fluids and blood. There is considerable evidence for the off-label use in aesthetic medicine for dealing with

vascular compromise (due to inadvertent intravascular injection or external compression), over-correction, asymmetry, lumps, and nodules, caused by the injection of hyaluronic acid filler.

Hyaluronidases are enzymes that can depolymerise hyaluronic acid leading to its degradation by hydrolysing the disaccharides at hexosaminidic beta (1-4) linkages.

In the UK, Hyalase® (Wockhardt UK Ltd) is available in a 1500 I.U. powder for solution ampoule.

3. Aspirin

Aspirin should be immediately available in the instance of a vascular occlusion or visual loss after the injection of soft tissue filler. The evidence base recommends the immediate use of aspirin and to continue this until the vascular occlusion has resolved. This limits platelet aggregation, clot formation and further vascular compromise. ACE Group World recommends a stat dose of 300mg followed by 75mg a day until the vascular occlusion has resolved and where there are no contra-indications to the use of aspirin, such as aspirin allergy or gastric ulcer.

4. Timolol Eye Drops

If visual loss occurs following the injection of soft tissue filler, initial treatment involves strategies to reduce intraocular pressure, dislodge the embolus to a more peripheral location and dissolve the hyaluronic embolus. Timolol is a beta-adrenergic antagonist that reduces intraocular pressure by reducing aqueous humor production. Administering Timolol 0.5% (1-2 drops in the affected eye) is recommended by ACE Group World to be used immediately in the management of visual loss secondary to cosmetic filler injection.

5. Apraclonidine 1% Ophthalmic Solution

Apraclonidine 1% ophthalmic solution, often referred to by its brand name, Iopidine®, is sometimes used for the management of an upper eyelid ptosis following botulinum toxin treatment. Apraclonidine eye drops can be prescribed at a dosage of 1-2 drops three times a day. It is an alpha-adrenergic receptor agonist and a mydriatic agent which causes contraction of Müller's muscle, also known as the superior tarsal muscle. This is an adrenergic muscle situated beneath the levator muscle and is an involuntary muscle supplied by sympathetic

nerves and may elevate the lid by 1-2 mm⁶. There is a risk of causing miosis and closed angle glaucoma in susceptible individuals and it is essential to check whether a patient wears glasses and review their ophthalmic medical history. Apraclonidine is generally well tolerated but may cause some sensitivity of the eye with longer term use.

6. Tetracyclines

Tetracyclines are antibiotics used for the treatment of both Gram-positive and Gram-negative bacteria and certain other micro-organisms. They are bacteriostatic and exert their effects by inhibition of protein synthesis. They also have additional anti-inflammatory and immunomodulatory effects⁷ and have a high degree of lipid solubility, making them particularly useful in aesthetic medicine. They should not be used in children or during pregnancy and be used cautiously in hepatic or renal impairment. Tetracyclines can lead to photosensitivity and patients should be advised on UV protection. They are recommended first line by ACE Group World when managing a Delayed Onset Nodule.

Tetracyclines include Doxycycline 100mg OD and Minocycline 100mg OD.

7. Macrolides

Macrolides are highly potent against certain aerobic and non-aerobic Gram-positive and Gram-negative bacteria. They exert their effect by suppressing protein synthesis in susceptible bacteria. They also have high tissue penetration and localise in adipose tissue. The most common side-effects include abdominal pain, diarrhoea, nausea, and vomiting. There are several contra-indications and drug interactions which the prescriber should be familiar with.

Macrolides include Clarithromycin 500mg BD and Azithromycin 500mg TDS.

8. Fluoroquinolones

Fluoroquinolones are used for skin and soft tissue infections caused by Gram-negative bacteria. They work by inhibition of bacterial enzymes responsible for DNA replication, transcription, repair, and recombination. Due to the risks of adverse events, including tendon rupture, visual disturbance, neurological effects, cardiac disturbances, hepatic

monitoring, and aortic rupture, ACE Group World recommend that this class of antibiotics is used 3rd line.

Fluoroquinolones include Ciprofloxacin 500mg BD.

9. Antihistamines

Antihistamines may be used in non-surgical aesthetic practice where patients experience a histamine mediated side-effect which may include itching, swelling or erythema. Antihistamines are antagonists that act on the H1-histamine receptor. They are rapidly and well-absorbed giving a fast onset of action. They are generally well tolerated with few side-effects. ACE Group World recommends the use of non-sedating antihistamines, such as Loratadine 10mg OD or Cetirizine 10mg OD.

10. Oral corticosteroids

Oral corticosteroids are widely used in medicine for a variety of conditions and may be prescribed in aesthetic medicine to manage angioneurotic oedema. They have anti-inflammatory and immunosuppressive effects on the body. Dosage may vary according to the needs of the patient and abrupt withdrawal should not occur if they have been prescribed for a period longer than 3 weeks. Side-effects include severe psychiatric reactions, adrenocortical insufficiency, immunosuppression, and sleep disturbance. According to ACE Group World guidelines, oral corticosteroids may be used to treat inflammatory reactions following soft tissue filler treatments or the management of oedema in certain instances.

Oral corticosteroids include Prednisolone and Dexamethasone.

11. Guanine nucleoside analogues

Guanine nucleoside analogues are antiviral drugs that inhibit viral replication and are converted into their active drug component within an infected cell by the action of viral thymidine kinase. They are prescribed in non-surgical aesthetic medicine for the prevention and treatment of herpetic infections. Most viral replication occurs within the first 24 hours of infection so prompt treatment at the prodromal stage, prior to lesions erupting, is recommended to limit epithelial damage and possible secondary complications⁸. The most frequent side-effects of guanine nucleoside analogues are headache, abdominal pain, diarrhoea, and vomiting.

Examples include Aciclovir, Valaciclovir and Famciclovir.

Key points:

- Ensure that the Aesthetic Complication Expert Group World complications guidelines folder is kept with the Emergency Kit in the case of a complication. This will allow easy reference to treatment algorithms and dosages and reconstitution for the drugs that may be required.
- Display Resuscitation/DRABC laminated posters in all clinical rooms.
- Ensure that patients are fully informed of common and serious complications that may occur with a specific treatment and that if a patient has an increased risk, this is highlighted on the consent form that they sign.
- If a patient requires resuscitation or has been treated for an anaphylactic reaction, they should be admitted to hospital via ambulance conveyance as further anaphylaxis may occur when the initial dose of adrenaline wears off.
- In the event of a complication, ensure contemporaneous records and photographs are made. After a complication has occurred, ensure that there is appropriate follow up until it has fully resolved.
- Complete a significant event form and inform your medical defence insurance company at the earliest convenience.
- For complications caused by a certain medical product, consider whether this needs reporting via the Yellow Card scheme to the MHRA and/or reporting to the manufacturer.
- Seek more expert help from a practitioner experienced in managing complications when needed. For immediate assistance, contact the Emergency Helpline of ACE Group World.
- Grab packs should have been prepared by the Laser Protection Advisor in clinics who are offering Laser/IPL treatments which provides details on the laser device and power output and wavelength which should be sent with the patient to the Eye Casualty in the event of an eye injury.

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Appendix 1: ACE Group World Emergency Drug Stock & Checklist:

YEAR:				Clinic to complete monthly stock check, checking expiry date and initial box below to confirm.											
Item	Dose	Batch Number	Expiry Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Hyaluronidase	1500 I.U.														
Hyaluronidase	1500 I.U.														
Hyaluronidase	1500 I.U.														
Hyaluronidase	1500 I.U.														
Adrenaline	1:1000														
Adrenaline	1:1000														
Aspirin	75mg														
Timolol Drops	0.5%														
Loratadine/Cetirizine	10mg														
Saline/Water	20ml														
ITEMS USED/EXPIRED DURING CURRENT YEAR OR ADDITIONAL ITEMS WITHIN THE EMERGENCY KIT															

