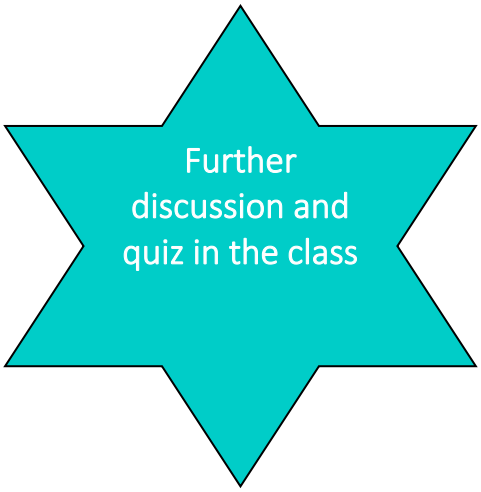
Chequers Academy




# Cannulation and IV Infusion Management

# Contraindications and Cautions

Updated Nov 24 - JM

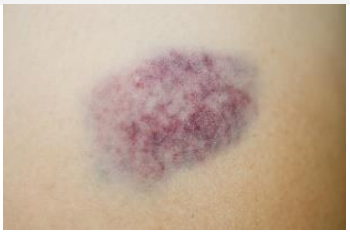
## Introduction

A contraindication is the presence of a condition, which may make the client unsuitable for the treatment. The treatment may not be able to take place, or the treatment will need to be adapted. When treating a client, if they show any signs of contra-indications, you should tactfully refer them to their GP for treatment or advice. You should never make a diagnosis even if you are sure of the condition as you may be wrong. If you are unsure about any contra-indications, then do not treat the client and refer them to their GP. Be careful if you deal with a contra-indication, and they can often be contagious. Make sure you clean the work area and any implements between clients to prevent cross-infection.

The information provided is not exhaustive and further training/education for specific medications or specific areas of medicine should be undertaken prior to treating patients. It is the clinician's responsibility to have a good understanding of the risks and benefits, including cautions and contraindications for any treatment or procedure they provide.

## Skin

When choosing the site for the cannula, care an consideration must be taken, particularly where there is previous trauma to the skin. Below are some common skin conditions that you may come across in practice. Where these are present, a different site should be chosen or a delay in treatment where appropriate until resolved. Always stay within your scope of practice; where unsure, refer to the appropriate person for advice, i.e GP. *There will be a short quiz on these skin conditions.

| CONDITION | IMAGE | DESCRIPTION & CAUSE |
|---|---|---|
| PSORIASIS |  | Scaling and inflammation of the skin.<br><br>Cause unknown but thought to be related to the nervous system |
| ECZEMA |  | Atopic eczema is a common skin condition that causes patches of skin that are itchy, cracked and sore. |
| CUTS & ABRASIONS |  | Broken skin caused by an injury. |
| BRUISING |  | Black, green. Yellow or red marks appear on the skin.<br><br>They are generally caused by an injury. |
| RECENT OPERATIONS (SCARS) |  | Scar tissue raised or flat undergoing the healing process.<br><br>Scar tissue is very sensitive. |
| SUNBURN |  | Sunburn is a red, painful skin that feels hot to the touch. It usually appears within a few hours after too much exposure to ultraviolet (UV) light from sunshine or artificial sources, such as sunbeds. |

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| HERPES SIMPLEX |  | Cold sores are painful lumps or blisters on the face. They're caused by a virus and are very contagious.<br><br>The Herpes virus can also appear on the genitals, eyes and on the hands in a condition called Herpes Whitlow. It is very contagious the same as cold sores and genital warts of the same virus. |
| MOLES |  | *Moles* are small, coloured spots on the *skin*. Most people have them, and they're usually nothing to worry about unless they change size, shape or colour. |
| RINGWORM |  | Ringworm is a fungal infection on the skin. It causes a rash that is often ring-shaped. |

## IV Therapy Specific Contraindications

The following cautions and contraindications are noted below. This will be expanded on in the learning where questions can be raised that are specific to your provision.

Treatment should not be given without a clear care plan from the supervising clinician in the following cases:

- Current or history of cancer, especially malignant melanoma or recurrent non-melanoma skin cancer, or pre-cancerous lesions or after recovery from cancer till off medication for 6 months and have GP approval prior to commencing treatment
- Any active infection
- Diseases such as a history of recurrent Herpes Simplex, Systemic Lupus Erythematous or Porphyria
- Immunosuppressive diseases including AIDS and HIV infection or use of immunosuppressive medications
- Diabetes unless under control
- Pregnancy and breast feeding
- Liver conditions
- Kidney conditions

There have been rare reports of anaphylactic reactions following large intravenous.

There have also been rare reports of the following types of reactions:

- Dermatologic — rash, erythema, pruritus
- CNS — headache, dizziness, agitation, anxiety
- Ophthalmic — diplopia
- Allergic — urticaria, periorbital and digital edema

Please note no client should be treated while intoxicated in any way

# IV Therapy - Cautions

## 1. Patient Allergies

- Allergy to Medications or IV Components: If a patient has a known allergy to the medication or any component of the IV solution (such as preservatives or additives), alternative routes of administration or medications should be considered.

*When providing parenteral medications, give consideration to the plan in the event of a reaction or anaphylaxis. Where you are not in a clinical setting with a crash trolley, consider an adrenaline auto injector (Epipen) as a first line procedure. These tend to have short expiry dates, but are an easy and appropriate treatment that could sustain an anaphylactic patient until the ambulance arrives.

## 2. Existing Medical Conditions

- Severe Peripheral Vascular Disease: Patients with significant vascular disease may have compromised veins, making IV access difficult and increasing the risk of complications.
- Conditions Prone to Fluid Overload: Conditions like congestive heart failure or renal failure can be exacerbated by the rapid administration of fluids, leading to pulmonary oedema or worsening of heart failure.

| *Condition* | *Description* | *Treatment* |
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| *Diabetes* | Diabetes is a lifelong condition that causes a person's blood sugar level to become too high.<br>There are two main types of diabetes:<br>type 1 diabetes – where the body's immune system attacks and destroys the cells that produce insulin<br>type 2 diabetes – where the body does not produce enough insulin or the body's cells do not react to insulin.<br><br>Type 2 diabetes is far more common than type 1. In the UK, around 90% of all adults with diabetes have type 2. | Can often be treated if the client is managing their diabetes well. Check with your insurer as their criteria may not allow treatment. A GP note may be required.<br><br>Treatments that cause injury to the skin can increase the risk of infection. Those with diabetes will need to understand wound management and |

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| | The amount of sugar in the blood is controlled by a hormone called insulin, which is produced by the pancreas (a gland behind the stomach). When food is digested and enters the bloodstream, insulin moves glucose out of the blood and into cells, where it's broken down to produce energy. However, with diabetes, the body is unable to break down glucose into energy. This is because there's either not enough insulin to move the glucose, or the insulin produced does not work properly. | treatments should be done under extreme caution as to not injure the skin if necessary.<br><br>Diabetics have a slower wound healing response and have a higher risk of infection. |
| *Epilepsy* | Epilepsy is diagnosed when a person has had more than one epileptic seizure and could have more in the future.<br><br>A seizure happens when there is a sudden burst of intense electrical activity in the brain. This causes a temporary disruption to the way the brain normally works, meaning that the brain's messages become mixed up. The result is an epileptic seizure.<br><br>There are many different types of seizure, and each person will experience epilepsy in a way that is unique to them. Some things make seizures more likely for some people with epilepsy. These are often referred to as 'triggers. Triggers are things | If well-managed treatments may be able to be undertaken. It is worth assessing the client and finding out what triggers a fit and when as well as how it is managed and their last episode.<br><br>You may also need to check your insurer's terms and refer the client to a GP for a letter of approval. |

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| | like stress, not sleeping well and drinking too much alcohol. Some people say they have more seizures if they miss meals. Not taking epilepsy medicine is another common trigger. A very small number of people with epilepsy have seizures triggered by lights that flash or flicker. Avoiding triggers can stop them from having seizures. | |
| *Heart conditions* | Heart disease describes a range of conditions that affect the heart. Heart diseases include:<br>• Blood vessel disease, such as coronary artery disease<br>• Heart rhythm problems (arrhythmias)<br>• Heart defects you're born with (congenital heart defects)<br>• Heart valve disease<br>• Disease of the heart muscle<br>• Heart infection<br><br>Risk of fainting, risk of slow healing or chances that the client may be medicated to keep their condition under control are some risks you will need to be aware of when treating the client. Clients may also have a heart catheter or a pacemaker. | Treatments that do not involve electrical currents being passed through the body are usually safe.<br><br>Advice should be sought where there is concern around fluid balance or oedema.<br><br>Fluids should not routinely be given to a patient with high blood pressure.<br><br>You will need to check the terms of your insurance policy. A referral to a GP may be required. |

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| *Deficient Immune System* | Immunodeficiency disorders prevent the body from fighting infections and diseases. This type of disorder makes it easier to catch viruses and bacterial infections.<br><br>Immunodeficiency disorders are either congenital or acquired. A congenital, or primary disorder is one you were born with. Acquired, or secondary, disorders you get later in life. Acquired disorders are more common than congenital disorders.<br>Your immune system includes the following organs:<br>• spleen<br>• tonsils<br>• bone marrow<br>• lymph nodes<br>These organs make and release lymphocytes. These are white blood cells that fight invaders cells called antigens. Cells release antibodies specific to the disease the body detects. White blood cells destroy foreign or abnormal cells.<br>Examples of antigens that white cells might need to fight off include:<br>• bacteria<br>• viruses<br>• cancer cells<br>• parasites | A deficient immune system can increase the risk of infection.<br><br>Treatments that break the skin may increase the risk of infection. Clients may need a GP referral and understand wound management. |

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| *Pregnancy* | Pregnancy is a period of considerable changes in a woman's body. These changes, affecting virtually every part of the body, are all geared towards growing and delivering a healthy baby, without harming the mother.<br><br>Pregnancy is divided into three periods of three months each. These periods are known as the first, second and third trimesters. Each trimester brings with its own unique set of experiences. Some medications will include contraindications depending on the<br><br>Risks of pregnancy include:<br>• Miscarriage<br>• Increased/decreased blood flow<br>• Risk of fainting<br>• Oedema | All prescriptions must be checked as many medications are contraindicated in pregnancy or in certain trimesters.<br><br>If in doubt check with a pharmacist, midwife or obstetrician. |
| *Breastfeeding* | Anything the mother consumes or applies to her skin could be absorbed into the bloodstream and through into the milk ducts, where this can pass to the baby. Great care should be taken with what is being applied to the skin as well as avoiding treatments that could cause open wounds. During breastfeeding, hormones are still active within the body. | Treatments that break the skin are strictly contraindicated. The client also has a high amount of hormone imbalance. Invasive procedures should be avoided until a few months after the mother has stopped producing milk. |

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| *Electrical implants or pacemakers* | A small battery-operated device called a pacemaker is placed into the chest. It sends regular electrical impulses, which help keep the heart beating regularly.<br><br>The pacemaker is a small metal box weighing 20–50g. It is attached to one or more wires, known as pacing leads, that run to the heart.<br><br>If the pacemaker senses that the heart has missed a beat or is beating too slowly, it sends signals at a steady rate. If it senses that the heart is beating normally by itself, it does not send out any signals.<br><br>An implantable cardioverter-defibrillator (ICD) is a device similar to a pacemaker. An ICD delivers an electrical shock to the heart during a life-threatening heart rhythm. The aim is to 'reboot' the heart to get it back into a normal rhythm again. Some modern devices contain both a pacemaker and an ICD. | Electrical implants contra-indicate any treatment that involves an electrical current. Other treatments that may affect blood pressure may also contra-indicate a procedure. Check your insurer's terms and refer the client to GP for a letter of approval. |
| *Anticoagulant medicines such as warfarin or aspirin* | Anticoagulants are medicines that help prevent blood clots. They're given to people at a high risk of getting clots, to reduce their chances of developing serious conditions such as strokes and heart attacks. | The client will be at higher risk of bruising. Treatments that injure the skin or cause trauma will need to be avoided. |

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| | A blood clot is a seal created by the blood to stop bleeding from wounds. While they're useful in stopping bleeding, they can block blood vessels and stop blood flowing to organs such as the brain, heart or lungs if they form in the wrong place.<br><br>Anticoagulants work by interrupting the process involved in the formation of blood clots. They're sometimes called "blood-thinning" medicines, although they don't actually make the blood thinner.<br><br>Although they're used for similar purposes, anticoagulants are different from antiplatelet medicines, such as low-dose aspirin and clopidogrel. | A GP letter may be required for some services. |
| *Steroids, antidepressants, antibiotics and other medications* | Many drugs can affect the skin. For example, prescription antidepressants, especially the popular class of medications called selective serotonin reuptake inhibitors (SSRIs), can cause a wide variety of adverse skin reactions, including bruising.<br>Acne medications and certain antibiotics may make the skin more sensitive to sunlight and light or heat-based procedures. | Medications can have numerous effects on the skin. A patch test may be required or a letter from the clients GP.<br><br>Where the side effects may be photosensitivity or thinning of the skin, then treatments should be avoided until the client has come off their medication for three |

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| | It is vital that we find out the medications both prescription and over the counter drugs that the client is taking. | months at their GPs request. |
| *Chemotherapy/ radiotherapy* | Chemotherapy is a form of cancer treatment where a patient is given drugs designed to kill cancer cells. Radiation is a type of cancer treatment where high doses of radiation are delivered to cancerous tumours in the body. | Some treatments may be too much for the client to handle and cause unwanted side-effects.<br><br>If unsure, you may wish to ask for a letter from the client's oncologist. |

## 3. Patient Refusal or Inability to Give Consent

- Lack of Consent: If a patient refuses IV therapy or is unable to give informed consent (and no legal surrogate is available to consent on their behalf), the procedure should not be performed.
- Psychological Barriers: Patients with severe needle phobia or anxiety may not tolerate IV therapy well, necessitating alternative approaches or additional support.

## 4. Specific Drug-Related Contraindications

- Drug-Specific Issues: Certain medications have specific contraindications when administered intravenously, such as known hypersensitivity reactions, specific organ dysfunctions, or interactions with other medications the patient is taking.

## 5. Technical Limitations

- **Inadequate Venous Access**: In some patients, especially those who are very young, elderly, or have a history of extensive IV therapy, suitable veins for IV access may be extremely limited or difficult to find.
- **Previous Complications**: History of severe complications from IV therapy (e.g., severe phlebitis, extravasation injury) may warrant reconsideration of the use of IV therapy.

## 6. Hemodynamic Instability

- **Severe Hypotension or Shock**: In some cases, central venous access might be more appropriate than peripheral IV access to ensure adequate drug delivery and monitoring.
- **Severe Coagulopathy**: Patients with bleeding disorders or those on anticoagulant therapy may be at increased risk for bleeding at the IV site or development of hematomas.

## 7. Specific Patient Populations

- **Paediatrics and Geriatrics**: Children and the elderly may have unique physiological considerations and fragile veins that complicate IV therapy.
- **Pregnant Women**: Certain medications and fluids administered intravenously may pose risks to the fetus, requiring careful consideration and alternative approaches when possible.

## 8. Risk of Fluid Overload

- **Conditions like Hypertension**: Patients with uncontrolled hypertension may experience exacerbation of their condition with fluid overload.

- **Severe Oedema**: Conditions characterized by severe oedema, such as nephrotic syndrome, may be worsened by IV fluid administration.

### 9. Administration of Irritant or Vesicant Drugs

- **Risk of Tissue Damage**: Drugs that are known irritants or vesicants can cause severe tissue damage if extravasation occurs, requiring careful administration and monitoring, often preferring central venous access.

## Most Common Complications:

### 1. Infiltration

- **Definition**: The IV fluid or medication leaks into the surrounding tissue instead of going into the vein.
- **Signs and Symptoms**: Swelling, discomfort, coolness, and blanching at the insertion site.
- **Prevention and Management**: Regular monitoring of the IV site, proper insertion techniques, and immediate removal of the IV catheter if infiltration is suspected.

### 2. Phlebitis

- **Definition**: Inflammation of the vein, often caused by irritation from the catheter or the IV fluid/medication.
- **Signs and Symptoms**: Redness, warmth, swelling, pain along the vein.

- **Prevention and Management**: Use of appropriate IV catheter size, proper aseptic technique, and rotation of IV sites every 72-96 hours. If phlebitis occurs, the catheter should be removed, and a warm compress applied.

## 3. Infection

- **Local Infection**: Infection at the site of catheter insertion.
    - **Signs and Symptoms**: Redness, swelling, pain, and discharge at the site.
    - **Prevention and Management**: Strict aseptic technique during insertion and site care, regular monitoring, and timely removal of the IV catheter if infection is suspected.
- **Systemic Infection (Sepsis)**: Bacteria enter the bloodstream through the IV site, leading to a systemic infection.
    - **Signs and Symptoms**: Fever, chills, hypotension, altered mental status.
    - **Prevention and Management**: Same as local infection, plus immediate medical intervention with antibiotics if sepsis is suspected.

## 4. Extravasation

- **Definition**: Leakage of vesicant (irritant) drugs into the surrounding tissue, potentially causing severe tissue damage.
- **Signs and Symptoms**: Pain, burning, redness, and blistering at the site.
- **Prevention and Management**: Careful selection of veins, regular site monitoring, and immediate discontinuation of the infusion if extravasation is suspected. Antidotes and other treatments may be required.

## 5. Air Embolism

- **Definition**: Air enters the bloodstream through the IV line, potentially causing blockage of blood vessels.
- **Signs and Symptoms**: Sudden shortness of breath, chest pain, light-headedness, and signs of stroke.
- **Prevention and Management**: Proper priming of IV lines to remove air, using air detection devices on infusion pumps, and immediate medical intervention if an air embolism is suspected.

## 6. Thrombosis

- **Definition**: Formation of a blood clot in the vein where the IV catheter is placed.
- **Signs and Symptoms**: Swelling, pain, and decreased mobility of the limb.
- **Prevention and Management**: Using the smallest gauge catheter necessary, proper insertion techniques, and avoiding areas with previous thrombosis. If thrombosis occurs, the IV line should be discontinued, and the patient may require anticoagulant therapy.

## 7. Fluid Overload

- **Definition**: Excessive administration of IV fluids, leading to an overload in the circulatory system.
- **Signs and Symptoms**: Edema, increased blood pressure, difficulty breathing, and signs of heart failure.
- **Prevention and Management**: Careful calculation and monitoring of fluid administration, especially in patients with heart or kidney conditions. Diuretics and other treatments may be necessary if fluid overload occurs.

## 8. Allergic Reactions

- **Definition**: Hypersensitivity to the IV medication or components of the IV solution.
- **Signs and Symptoms**: Rash, itching, fever, anaphylaxis (severe cases).
- **Prevention and Management**: Thorough patient history to identify potential allergies, monitoring for signs of allergic reactions, and immediate discontinuation of the IV therapy if an allergic reaction occurs. Administering antihistamines, steroids, or epinephrine as required.

## 9. Catheter Embolism

- **Definition**: A piece of the IV catheter breaks off and enters the bloodstream.
- **Signs and Symptoms**: Sudden pain at the IV site, chest pain, palpitations, and symptoms of embolism.
- **Prevention and Management**: Proper insertion and handling techniques to prevent catheter breakage. If catheter embolism occurs, immediate medical intervention is necessary.

## 10. Hematoma

- **Definition**: Accumulation of blood outside the blood vessels, usually caused by improper insertion or removal of the IV catheter.
- **Signs and Symptoms**: Swelling, discoloration, and pain at the IV site.
- **Prevention and Management**: Gentle insertion and removal techniques, applying pressure after catheter removal, and using smaller gauge needles when appropriate. If a hematoma occurs, a cold compress can be applied initially, followed by a warm compress to promote absorption.

# Anaphylaxis

Some allergies can lead to a severe allergic reaction - known as anaphylaxis. **Anaphylaxis can be life-threatening.** Symptoms can occur quickly or within hours following contact with an allergen. Prompt treatment can save a life. If you have an adrenaline auto-injector - use it immediately. **Further training should be done specific to medicines management and anaphylaxis if you intend to administer IV medication.**

## Common causes

Common causes of anaphylaxis are **wasp and bee stings** as well as **food**, such as peanuts, nuts, sesame seed, fish and shellfish, dairy products and egg. Other causes include **latex, penicillin and some other medications**.

## Symptoms

- Itching, especially under the feet, in the hands or on the head
- A stinging feeling in the mouth
    - Swelling in the mouth, throat, lips or eyes
    - Itching, redness or nettle-rash anywhere on the body
    - Dizziness, anxiety, cold sweating
    - Abdominal pain, nausea or vomiting
    - Shortness of breath or asthma symptoms
    - Sudden fatigue, decreased blood pressure or fainting
    - Disorientation or loss of consciousness

**Critical symptoms:** difficulty to breath, mouth and throat swell, sudden fatigue or dizziness, experiencing a steady worsening of symptoms. If your client experiences these critical symptoms, inject adrenaline immediately. Call 999 and say “anaphylaxis”.

### Treatment

Call 999 and say “anaphylaxis.” State your name, location and telephone number. If possible, someone should wait outside to show the ambulance crew where you are. Let ambulance personnel know about the client’s medical history and treatment undertaken.

**Adrenaline -** Do not underestimate the severity of an allergic reaction. Use your adrenaline auto-injector according to its instructions. **If in doubt, use your adrenaline auto-injector** - it can save their life. Adrenaline injected into the outer mid-thigh muscle, works rapidly to reduce throat swelling, open up the airways and maintain heart function and blood pressure. It is the only medication available for the immediate treatment of severe allergic reactions. Then lay them down with their legs slightly elevated.

**Antihistamine and steroid tablets**. Antihistamine reduces hives, itching and irritation. Cortisone reduces the risk of late-onset reactions that can occur some hours following contact with allergens.

## Vaso-Vagal Reaction / Fainting

The highest risk of this treatment is a non-life-threatening condition such as Fainting (vaso-vagal episodes), a Panic attack, a Breath-holding episode or Idiopathic (non-allergic) urticaria or angioedema (swelling just under the skin), all of which will usually respond to simple measures.

### What is a vaso-vagal reaction?

When the heart rate slows, the blood pressure drops and the resulting lack of blood to the brain causes fainting and confusion. There can be uncertainty in diagnosing an anaphylactic reaction or a panic attack or vaso-vagal reaction, but the absence of rash, breathing difficulties,

and swelling are useful distinguishing features, as is the slow pulse of a vaso-vagal attack compared with the rapid pulse of a severe anaphylactic episode.

## How to manage a vaso-vagal reaction.

Fainting will usually respond to lying the client down on the floor and raising their legs. The mechanism of treatment for vaso-vagal syncope focuses on restoring blood flow to the brain during an impending episode. The main danger of vaso-vagal syncope (or dizzy spells from vertigo) is the risk of injury by falling while unconscious. However, the main focus should be to be vigilant and recognise the contributing factors as well as the early signs of a vaso-vagal reaction and to intervene before the full-blown “attack” occurs.

It will most likely happen in a hot room; where needles are involved, and blood is taken. The Client will become pale; restless; verbalise feeling funny and feeling hot; they may want to try and sit up or even go out to get air. If you let them sit up or walk, they will almost always faint. If they or someone else tries to get them to stand-up, they may also have a light fit/convulsion as the brain protests against not getting enough oxygen. Keep the Client flat; give them some cold fruit juice through a straw and lift their legs if they do not respond quickly. There are several variations of the recovery position, each with advantages. No position is perfect for all clients. It should be stable, near a true lateral position with the head-dependent, and with no pressure on the chest to impair breathing.

## Managing Complications

Anyone undertaking treatments that break the skin, i.e. injectables or involve the injection of application of a product that could cause an allergic reaction, should undertake appropriate training in managing complications. Training should be taken regularly to ensure you stay up to date with current regulations and feel confident in dealing with any issues that should arise. Complications training is usually in addition to first aid and anaphylaxis training. Understanding the array of issues that could be presented from procedures will allow you to

confidently provide for your patients. Invasive procedures always carry more risk, and it is important that we are able to identify risk and know how to avoid it.

## Emergency Plan

**The emergency plan is the responsibility of the regulated independent prescriber**. The emergency plan includes the appropriate onsite response, healthcare referral process and access to an emergency kit suitable to deal with adverse reactions or incidents. The regulated independent prescriber has a duty of care to their patients to follow regulatory guidelines set by their Professional, Statutory and Regulated Body. The patient may contact you directly with any issues, and you must also raise any concerns to the prescriber to arrange a care plan for the patient.