There are a few drugs that are indicated during the initial management of a cardiac arrest. They can be considered once defibrillation has been performed (if indicated) and CPR has started.

### Routes for Drug Administration

**Intravenous (IV)**

This is the most reliable route for drug administration during resuscitation. If one is already in situ, a central venous cannula (CVC) is quicker and more reliable than a peripheral cannula (Resuscitation Council UK, 2006).

If intravenous (IV) access needs to be obtained, a peripheral route, such as the anti-cubital fossa, is usually preferred because it is least invasive, has a lower risk of complications and should not hinder CPR.

**Intraosseous**

Intraosseous (IO) access can be used if IV access cannot be established. This route will be described in detail in a later article.

**Tracheal**

The tracheal route can be considered if IV or IO access is delayed or cannot be secured (Nolan et al, 2005). Only certain resuscitation drugs, such as adrenaline, can be administered via this route.

Absorption is variable, so higher doses are needed (Hornchen et al, 1987): at least three times the standard IV dose should be used (RCUK, 2006). The drug should be diluted with sterile water rather than 0.9% normal saline. Some drugs cannot be administered via the tracheal route, including amiodarone and calcium.

### Resuscitation Drugs

- **Adrenaline** – to improve coronary and cerebral bloodflow.
- **Amiodarone** – an antiarrhythmic.
- **Magnesium sulphate** – indicated in refractory VF if hypomagnesaemia is suspected.
- **Atropine** – antagonises the action of the vagus nerve and is indicated in asystole and in pulseless electrical activity (PEA) when the QRS rate is <60 a minute.
- **Calcium** – indicated if PEA has been caused by hyperkalaemia, hypocalcaemia, or calcium-channel blockers or magnesium overdose (RCUK, 2005). It should not be administered with sodium bicarbonate via the same route.
Sodium bicarbonate – indicated if cardiac arrest is associated with hyperkalaemia or tricyclic antidepressant overdose (Nolan et al, 2005).

PROCEDURE FOR PREPARATION

There are two main products that are used for drug administration during CPR.

Product 1

- Check drug details on the pre-filled syringe box and open the pre-filled syringe box with a slight twisting action (Fig 1).
- Remove the pre-filled syringe and check the drug details.
- Remove the cap from the pre-filled syringe and expel air (Fig 2).

Product 2

- Check drug details on the pre-filled syringe box and open the pre-filled syringe box by ripping one end off as indicated.
- Remove the vial and syringe barrel and check the drug details on the vial.
- Remove the cap from the vial and the lower end of the syringe barrel (Fig 3).
- Thread the vial into the syringe barrel, turning it 3.5 times; resistance will be met (Fig 4).
- Remove the cap from the top of the syringe barrel and expel any air.

PROCEDURE FOR ADMINISTRATION

- Ensure that the drug has been prescribed. Some nurses can administer unprescribed drugs – local protocols should be followed.
- Ask a colleague to check all drug details.

IV injection

- Administer the drug ideally via a central venous catheter, although in practice it will usually be via a peripheral cannula.
- Flush with a minimum of 20ml of fluid (Fig 5). Some trusts’ policy is to set up an IV infusion for this purpose (‘chaser fluid’).
- Elevate the limb for 10–20 seconds to aid drug delivery (Emerman et al, 1988) (Fig 6).

Tracheal tube route

- Prepare the recommended dose – 3mg diluted with sterile water to a volume of 10ml (RCUK, 2006).
- Disconnect the bag-mask device from the tracheal tube.
- Administer the drug into the tracheal tube (RCUK, 2006) using a quill or a similar instrument – ventilations will then disperse the drug into the lungs.

POST-ADMINISTRATION PROCEDURE

- Record the drugs administered during CPR (including timings) and ensure sharps are disposed of following local policy.

REFERENCES


PROFESSIONAL RESPONSIBILITIES

This procedure should be undertaken only after approved training, supervised practice and competency assessment, and carried out in accordance with local policies and protocols.