Adrenaline Auto-Injectors for Self-Administration
Summary for Prescribers

Cambridgeshire and Peterborough CCG Recommendations

- An adrenaline auto-injector (AAI) should be prescribed for those at risk of anaphylaxis.
- An auto-injector allows early administration of adrenaline as this improves outcomes. It is considered a first-aid measure combined with calling for help (ambulance/emergency medical services).
- Due to the recent supply shortages of AAs we recommend that all formulations of the adrenaline auto-injectors are available across the Cambridgeshire and Peterborough health system to ensure that patients can remain on the brand they are familiar and used to.
- Where a patient is newly INITIATED on an AAI, EMERADE® is the first line formulary choice.
- Epipen® and Jext® are second line formulary choices and can be considered for patients who are unable or unwilling to use the Emerade® device.
- It is important that when these products are prescribed there is consistency of prescribing and patients maintained on the same brand wherever possible. The patient and their representatives should be counselled completely with the device that is being prescribed.
- If there is a supply issue and patients need to be temporarily transferred onto another brand of AAI, the patient (or representative where appropriate) should be counselled BEFORE any change is made on how to use the new device.

Background

- Adrenaline is the first-line treatment for anaphylaxis. It should be used in patients with significant airway involvement or hypotension, occurring as part of an anaphylactic (IgE- or non-IgE-mediated) reaction.
- The onset of anaphylaxis can be very fast. Signs of a severe reaction include:
Swelling in the throat (altered voice, difficulty swallowing or breathing),
- Wheezing
- Dizziness, feeling faint, tiredness (symptoms of low blood pressure).

- An adrenaline autoinjector (AAI) should be prescribed for those at risk of anaphylaxis and should be considered for long-term provision in these patients because early administration of adrenaline improves outcomes.
- It should be considered a first-aid measure in addition to calling for emergency services.
- After acute anaphylaxis, an AAI should be prescribed in the Emergency Department or Primary Care before the patient is sent home and a specialist allergy appointment referral triggered. This is for emergency use in case of another reaction prior to the specialist allergy appointment, in line with NICE guidance.
- Prescribing an auto-injector cannot be a substitute for allergy referral.
- Specialist allergy experience is required to make a risk assessment to determine the continuing need for an AAI and where long-term provision may be required.
- Prescribing an AAI is only one step in managing anaphylaxis risk. It should be combined with specialist allergy advice on avoidance of triggers, a written treatment plan and re-training in the use of the auto-injector.
- Carrying adrenaline long term is not required if the trigger can be avoided, even when the reaction was severe, for example oral prescription drugs, injection-administered drugs, foods which are avoidable, for example prawns (depending on setting) or in venom allergy patients who have been desensitized, unless there are additional risk factors.
- AAI should be discontinued if the original prescription was inappropriate, the allergy resolves or after successful venom immunotherapy except when there are additional risk factors such as raised baseline tryptase, risk of multiple stings or occupational hazard.
- Discontinuation should be considered if the allergy becomes less severe, for example milk allergy of initial severity requiring an AAI, but now partially resolved.
### Table 1 – Adrenaline auto-injector devices for self-injection licensed in the UK

<table>
<thead>
<tr>
<th>Name of the Auto-injector</th>
<th>Prescribe by BRAND</th>
<th>How to use the device</th>
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<tbody>
<tr>
<td><strong>Emerade®</strong></td>
<td></td>
<td><strong>Counsel patient, carers and relatives</strong></td>
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<td></td>
<td></td>
<td>• Remove the cap (needle shield) protecting the needle.</td>
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<td>• Hold <strong>Emerade®</strong> against the outer side of your thigh and press it against your leg.</td>
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<td>• You will hear a click when the adrenaline is being injected.</td>
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<td>• Keep holding the pen against your leg for about 5 seconds. This allows the full dose of adrenaline to be injected.</td>
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<td>• Massage the area for 10 seconds. This helps the adrenaline to work more quickly.</td>
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<td>• Call 999, ask for an ambulance and state “ANAPHYLAXIS”, even if symptoms are improving.</td>
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<td>• If your symptoms do NOT improve, you can use a SECOND <strong>Emerade®</strong> after 5-15 minutes.</td>
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<tr>
<td><strong>Epipen®</strong></td>
<td></td>
<td><strong>Grasp your EpiPen® in your dominant hand with thumb nearest the blue safety cap closest to your thumb and form first around Epipen® and pull off the blue safety cap. Remember “Blue to the sky, orange to the thigh”</strong>.</td>
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<td>• Hold your <strong>EpiPen®</strong> about 10cm away from your outer thigh on your leg. The orange tip should point towards your outer thigh.</td>
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<td>• Jab the orange tip of the <strong>EpiPen®</strong> into the upper outer thigh at a 90° angle. Hold firmly against thigh for 3 seconds.</td>
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<td>• The orange needle cover will extend to cover the needle.</td>
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<td>• Remove the EpiPen® and massage injection site for at least 10 seconds.</td>
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<td>• Call 999, ask for ambulance and state “ANAPHYLAXIS” even if symptoms are improving.</td>
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<tr>
<td></td>
<td></td>
<td>• If your symptoms do NOT improve, you can use a SECOND <strong>EpiPen®</strong> after 5-15 minutes.</td>
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<td>• Lie flat with legs raised to maintain blood flow. If breathing is difficult sit up to make breathing easier.</td>
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<tr>
<td><strong>Jext®</strong></td>
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<td><strong>Grasp the Jext® in your dominant hand (the one you use to write with), with your thumb closest to the yellow cap.</strong></td>
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<td>• Pull off the yellow cap with your other hand.</td>
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<td>• Place the black injector tip against your outer thigh, holding the injector at a right angle (approx. 90°) to the thigh.</td>
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<td>• Push the black tip firmly into your outer thigh until you hear a ‘click’ confirming the injection has started, then keep it pushed in.</td>
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<td>• Hold the injector firmly in place against your thigh for 10 seconds (a slow count to 10) then remove. The black tip will extend automatically and hide the needle.</td>
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<td>• Massage the injection area for 10 seconds.</td>
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<td></td>
<td>• Seek immediate medical help.</td>
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<td></td>
<td>• Call 999 ask for an ambulance and state “ANAPHYLAXIS”. If you are unable to make the call, get someone else to call for you.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• If your symptoms do NOT improve, you can use a SECOND <strong>Jext®</strong> after 5-15 minutes.</td>
</tr>
<tr>
<td>Name of the Auto-injector Prescribe by BRAND</td>
<td><strong>Emerade®</strong></td>
<td><strong>Epipen®</strong></td>
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<tr>
<td><strong>Dose for self-administration</strong></td>
<td>Adults &gt; 60kg: 300mcg – 500mcg depending on clinical judgement. &lt;br&gt;Adults, adolescents and children over 30kg: 300mcg. &lt;br&gt;Children between 15kg – 30kg: 150mcg.</td>
<td>Adults, adolescents and children over 25kg: 300mcg. &lt;br&gt;Children between 7.5kg – 25kg: 150mcg</td>
</tr>
<tr>
<td><strong>Mechanism, needle length and gauge</strong></td>
<td>Triple spring (pre-filled syringe) 0.5mg: 25mm, 23G 0.3mg: 25mm, 23G 0.15mg: 16mm, 23G</td>
<td>Cartridge 0.3mg: 15mm, 21G 0.15mg: 13mm, 21G</td>
</tr>
<tr>
<td><strong>Appearance</strong></td>
<td>Emerade is a clear and colourless solution for injection inside a glass syringe. Emerade is latex free.</td>
<td>Clear and colourless solution in a pre-filled pen (Auto-injector).</td>
</tr>
<tr>
<td><strong>Storage</strong></td>
<td>Store below 25°C. Do not freeze (0°C).</td>
<td>Do not store above 25°C. Do not refrigerate or freeze.</td>
</tr>
<tr>
<td><strong>Expiry</strong></td>
<td>18 months from date of manufacture.</td>
<td>18 months from date of manufacture.</td>
</tr>
<tr>
<td><strong>Disposal</strong></td>
<td>All pens should be returned to a local community pharmacy for safe disposal. However, when Emerade pen is removed from the thigh after use a protective sheath covers the needle allowing safe disposal in household waste.</td>
<td>All pens should be returned to a Pharmacy for safe disposal.</td>
</tr>
</tbody>
</table>
Resuscitation Council UK Statement

- Due to recent press coverage from a coroner’s report regarding doses of adrenaline via auto-injectors and needle lengths within these devices the Resuscitation Council UK (RC UK) issued a statement clarifying misinterpreted information:
  - The RC UK Emergency treatment of anaphylactic reactions is specifically written for healthcare professionals.
  - The RC UK does not provide guidance for the use of auto-injectors as they are not universally used in a healthcare setting as a method of administering adrenaline.
  - Both the length of the needle and the dose recommendations of adrenaline referred to in recent press coverage are intended for healthcare professionals treating an anaphylaxis reaction.
  - For intramuscular injections, the needle needs to be long enough to ensure that the drug is injected into the muscle. A 25mm needle is best and is suitable for all ages based on recommendations from the Department of Health UK.
  - The guidance only refers to auto-injectors if they are the only available adrenaline preparation when treating anaphylaxis in a healthcare setting.
  - RC UK stressed that 500 mcg is the dose healthcare professionals should give to patients over 12 years of age and is not, as has been incorrectly quoted, an RC (UK) recommendation for the provision of adrenaline through auto-injectors.

Adrenaline auto-injector delivery devices

- The main difference between the auto-injector devices is the type of delivery system, which is either cartridge based or a syringe delivery system:
  - Emerade® is a triple spring pre-filled syringe delivery device,
  - Epipen® and Jext® are cartridge-based delivery systems.
• The cartridge device has a compression force delivering the adrenaline deeper than the needle length, hence needles lengths are shorter with these devices. However, it is now apparent that this is only if the needle tip has penetrated the fascia and the delivery was intramuscular. Training patients and their relatives or carers, as appropriate, is imperative to ensure adrenaline is self-administered correctly.1

### Quantity to prescribe

• The MHRA (2017) recommend that 2 adrenaline auto-injectors are prescribed, and these should be carried by the patients at all times.4
• This is particularly important for people who also have allergic asthma because they are at increased risk of a severe anaphylactic reaction.4
• Very young children and certain patients’ groups e.g. those with learning disabilities cannot be expected to be responsible for carrying their own emergency medication in the way that older children and adults might. Relatives and carers should ensure that the emergency medication for their individual is always packed to accompany them. If the AAI(s) are not carried by the patient, then they should be kept in a central place in a box marked clearly with the patient’s name but NOT locked in a cupboard or an office where access is restricted.5,6
• It is not uncommon for schools (often primary schools) to request a pupil’s AAI(s) are left in school to avoid the situation where a pupil or their family forgets to bring the AAI(s) to school each day. Where this occurs, the pupil must still have access to two AAI(s) when travelling to and from school. Therefore initial supplies for these scenarios may be for FOUR AAI(s) – TWO for the child to carry at all times and TWO to be left at school. Subsequent supplies should be made as TWO AAI(s).
• **Adrenaline auto-injectors should not be on repeat prescription.** A prescription should be issued on the basis of need i.e. evidence of approaching expiry or use. If the latter, record anaphylaxis event in patient’s Primary Care record.

### Education and training for patients with allergies and/or their carers1,4

• Patients, parents or carers should be trained in both when and how to use the auto-injector device at the time of prescribing and the training reinforced when the device is dispensed by the pharmacist and during allergy clinic appointments.
• If you prescribe AAI, you should review and ensure that the patient or carer thoroughly understands the indications and use of their particular device – technique varies between injectors. See table 3 for individual manufacturers links below for patient resources to support prescribers and patients with AAI use:

Table 3 – Resources available for adrenaline auto-injectors

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Patient information leaflet</th>
<th>Educational material produced by the manufacturer</th>
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<tbody>
<tr>
<td>Emerade 150 µg, 300 µg, and 500 µg solution for injection in pre-filled pen</td>
<td>Emerade adrenaline auto-injectors</td>
<td>Emerade patient brochure and instruction video</td>
</tr>
<tr>
<td>EpiPen 0.3 mg and EpiPen Jr. 0.15 mg adrenaline (epinephrine) auto-injector</td>
<td>EpiPen and EpiPen Jr auto-injectors</td>
<td>EpiPen user guide and instruction video</td>
</tr>
<tr>
<td>Jext 150 µg and Jext 300 µg solution for injection in pre-filled pen</td>
<td>Jext pre-filled pens</td>
<td>Jext instructions for use and instruction video</td>
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</tbody>
</table>

• MHRA have issued an advice sheet which should be given to each patient and/or their carers when an adrenaline auto-injector is issued. View this advice sheet here: MHRA 2018 : Adrenaline auto-injectors - advice on use.

• Healthcare professionals in particular pharmacists should be encouraged to undertake device training at every opportunity with patients and their representatives.

• It is important that healthcare professionals encourage people with allergies and their carers to obtain and practice using a trainer device (available for free from the manufacturers’ websites).

• In the case of children, education of parents/carers and school staff is required (see section on prescribing adrenaline auto-injectors in early years and school education setting).

• Successful prevention of anaphylaxis, thus not needing to use the auto-injector, should not be taken to mean the auto-injector prescription is not required or will not be required in the future.

• The following advice MUST be given to people with allergies and their carers:
  o It is recommended that you carry 2 adrenaline auto-injectors at all times; this is particularly important for people who also have allergic asthma because they are at increased risk of a severe anaphylactic reaction.
○ Check the expiry date of the adrenaline auto-injectors and obtain replacements before they expire; expired injectors will be less effective.
  (Manufacturers can send reminders to patients when their auto-injectors are due to expire – see individual websites).
○ Use the adrenaline auto-injector at the first signs of a severe allergic reaction.
○ Take the following actions immediately after every use of an adrenaline autoinjector:
  1. Call 999, ask for an ambulance and state “anaphylaxis”, even if symptoms are improving
  2. Lie flat with legs raised to maintain blood flow. However, if you have breathing difficulties, you may need to sit up to make breathing easier.
  3. Seek help immediately after using the auto-injector and if at all possible, make sure someone stays with you while waiting for the ambulance
  4. If you do not start to feel better, use the second auto-injector 5–15 minutes after the first one.

**Prescribing adrenaline auto-injectors in early years and school education setting**

- Staff caring for children should be familiar with the signs of anaphylaxis.
- A written management plan (also called a care plan) should be drawn up for that individual child, in consultation with the parents, the child’s doctor or allergy specialist.
- A child at risk of anaphylaxis may be prescribed adrenaline auto-injectors and members of staff should be trained to administer it in an emergency.
- Regular training is needed to ensure correct technique – technique varies between brands.
- It is the parents’ responsibility to ensure that medication is within its use-by date and they are advised to check dates regularly.
- Very young children cannot be expected to be responsible for carrying their own emergency medication in the way that older children and adults might. Parents should ensure that the emergency medication for their child is always packed to accompany them to their nursery or playschool. If the AAI(s) are not carried by the pupil, then they should be kept in a central place in a box marked clearly with the pupil’s name but NOT locked in a cupboard or an office where access is restricted.
- Depending on their level of understanding and competence, children and particularly teenagers should carry their AAI(s) on their person at all times or they should be quickly and easily accessible at all times.
• It is not uncommon for schools (often primary schools) to request a pupil’s AAI(s) are left in school to avoid the situation where a pupil or their family forgets to bring the AAI(s) to school each day. Where this occurs, the pupil must still have access to two AAI(s) when travelling to and from school.

• Ideally there should be a spare emergency kit available on the premises, with in-date AAI(s). These emergency kits must be safely stored but accessible to early years or school staff at all times.

• For more guidance on the use of AAI(s) in schools and spare AAI(s) in schools visit the following links: Guidance - Adrenaline auto-injectors in schools and Spare pens in schools.
7. Spare pen for schools. Available at: https://www.sparepensinschools.uk/ (Accessed 18 April 2019)
12. Summary of product characteristics. Epipen Adrenaline Auto Injector 0.3mg. Date of first authorisation: 03/96. Date of revision: 03/18. Available at: https://www.medicines.org.uk/emc/product/4289/smpc (Accessed 18 April 2019)
Appendix 1: Prescriber checklist - Adrenaline auto-injectors for anaphylaxis

Please complete the following checklist prior to prescribing adrenaline auto-injectors for self-administration.

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
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<tbody>
<tr>
<td>1</td>
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<tr>
<td>Confirm need for AAI to be prescribed:</td>
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<td>Patient used previous AAI for anaphylaxis,</td>
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<td>Anaphylaxis – first occurrence and awaiting specialist review,</td>
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<td>Expiry of previous devices.</td>
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<tr>
<td>Prescribe patients usual BRAND of AAI by BRAND name (except if shortage of usual brand and alternative is required). If any doubt which brand to prescribe check with patient.</td>
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<td>Prescribe dose appropriate to patients age and weight.</td>
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<tr>
<td>Prescribe TWO AAIs and counsel that patient must carry TWO AAIs (both) with them at all times.</td>
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<tr>
<td>Demonstrate the correct use of the AAIs (the side of the thigh, in the middle between hip and the knee) and counsel on signs of anaphylaxis.</td>
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<tr>
<td>Advise patient how to obtain a trainer device so patient and relatives can practice technique. Signpost to the AAI brand website for video to reiterate technique and provide PIL on how to use.</td>
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<tr>
<td>Ensure patient has an anaphylaxis allergy plan and a copy of the MHRA advice sheet for patients.</td>
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<tr>
<td>Advise that if an AAI is used an ambulance must be called stating ‘ANAPHYLAXIS’ so that additional treatment and monitoring can take place.</td>
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<tr>
<td>Advise patient to check EXPIRY of their devices regularly. Manufacturers offer a free text alert service that reminds patients that the pens are coming up to expiry. It is the patient’s responsibility to replace pens before expiration.</td>
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