Summary of Product Characteristics

1 NAME OF THE MEDICINAL PRODUCT

Adrenaline (Epinephrine) 1:10,000 Sterile Solution Minijet

2 QUALITATIVE AND QUANTITATIVE COMPOSITION

Adrenaline (Epinephrine) 0.1 mg per ml, in total volume presentations of 0.3 mg / 3 ml and 1 mg / 10 ml.

Excipients with known effect: sodium metabisulfite (E223) 1 mg in 1 ml and total sodium 2.7mg in 1 ml.

For the full list of excipients, see section 6.1.

3 PHARMACEUTICAL FORM

Solution for injection.

Clear, colourless solution.

4 CLINICAL PARTICULARS

4.1 Therapeutic Indications

Adjunctive use in the management of cardiac arrest.

In cardiopulmonary resuscitation. Intracardiac puncture and intramyocardial injection of adrenaline may be effective when external cardiac compression and attempts to restore the circulation by electrical defibrillation or use of a pacemaker fail.

4.2 Posology and method of administration

Ventricular fibrillation (pulseless ventricular tachycardia)

Adults:
Intravenous injection
10ml (1mg) by intravenous injection repeated every 3-5 minutes as necessary.

Endotracheal
20-30ml (2-3mg) via an endotracheal tube, repeated as necessary.

Intracardiac injection
1 to 10ml (0.1 to 1mg), direct into the atrium of the heart.
Intracardiac injection should only be considered if there is no other access available. It should be undertaken by personnel trained in the technique.

Children:

Intravenous injection
Initially 0.1ml/kg body weight (10mcg/kg); e.g. 2kg infant would receive 0.2ml of Adrenaline 1:10,000. Subsequent doses should be 1ml/kg (100mcg/kg).

Intraosseous
0.1ml/kg body weight (10mcg/kg).

Endotracheal
A dose has not been established; 10 times the intravenous dose may be appropriate.

Asystole

Adults:

Intravenous
10ml (1mg) by intravenous injection repeated every 3-5 minutes as necessary. If there is no response after three cycles, consider injections of adrenaline 5mg.

Endotracheal
20-30 ml (2-3mg) via an endotracheal tube, repeated as necessary.

Children:

Intravenous
0.1ml/kg initially (10mcg/kg). If no response give 1ml/kg (100mcg/kg). After 3 cycles consider alkalising or antiarrhytmic agents.

Intraosseus
0.1 ml/kg initially (10mcg/kg). If no response give 1ml/kg (100mcg/kg). After 3 cycles consider alkalising or antiarrhythmic agents.

Electromechanical Dissociation (EMD)

Adults:

Intravenous: 10ml (1mg) by intravenous injection repeated every 3-5 minutes as necessary. If normal rhythm does not return after standard measures, consider adrenaline 5mg intravenous.

Children:
Intravenous: 0.1ml/kg initially (10mcg/kg) every 3 minutes, until underlying cause identified. Subsequent doses should be 1ml/kg (100mcg/kg).

4.3 Contraindications

Contraindications are relative as this product is intended for use in life-threatening emergencies.

Other than in the emergency situation, the following contraindications should be considered: Hyperthyroidism, hypertension, ischaemic heart disease, diabetes mellitus, closed angle glaucoma and hypersensitivity to sympathomimetic amines.

4.4 Special warnings and precautions for use

These special warnings and precautions are relative as this product is intended for use in life-threatening situations.

Administer slowly with caution to elderly patients and to patients with ischaemic heart disease, hypertension, diabetes mellitus, hyperthyroidism or psychoneurosis.

Use with extreme caution in patients with long-standing bronchial asthma and emphysema who have developed degenerative heart disease. Anginal pain may be induced when coronary insufficiency is present.

Use with caution in patients with pre-existing cardiac arrhythmias.

Tissue necrosis at injection site may arise if this product is administered to an inappropriate injection site such as digits or buttocks.

Intravenous administration should be performed with caution in order to avoid an accidental intra-arterial injection.

Administer with caution: In patients suffering from autonomic dysreflexia (hyperreflexia), particularly in spinal cord injury (e.g., tetraplegics). Patients with hypersensitivity to sulfites and patients with prostatic hypertrophy or urination difficulty.

Endotracheal administration of adrenaline can contaminate the colorimeter carbon dioxide detector and lead to its false positive colour change (fixed yellow discoloration).

4.5 Interaction with other medicinal products and other forms of interactions

The effects of adrenaline may be potentiated by tricyclic antidepressants.

Volatile anaesthetics such as halothane increase the risk of adrenaline-induced ventricular arrhythmias and acute pulmonary oedema if hypoxia is present. Severe hypertension and bradycardia may occur with non-selective beta-blocking drugs such as propranolol. Propranolol also inhibits the bronchodilator effect of adrenaline. The risk of cardiac arrhythmias is higher when adrenaline is given to patients receiving digoxin or quinidine. Adrenaline –induced hyperglycaemia may lead to loss of blood-sugar control in diabetic patients treated with hypoglycaemic agents.

The vasoconstrictor and pressor effects of adrenaline, mediated by its alpha-adrenergic action, may be enhanced by concomitant administration of drugs with similar effects, such as ergot alkaloids or oxytocin.

Adrenaline specifically reverses the antihypertensive effects of adrenergic neurone blockers such as guanethidine with the risk of severe hypertension.

Concurrent use or use within 2 weeks of monoamine oxidase inhibitor increases risk of adverse events. Sympathomimetic drugs (e.g. isoproterenol) increase the risk of serious cardiac arrhythmias. Alpha blockers increase the risk of hypotension and tachycardia. Drugs which cause potassium loss (corticosteroids, potassium-depleting diuretic, aminophylline, theophylline) increases the risk of hypokalemia. Levodopa increases the risk of cardiac adverse effects of levodopa

Use of Entacapone may potentiate the chronotropic and arrhtmogenic effects of adrenaline.

4.6 Fertility, pregnancy and lactation

Adrenaline crosses the placenta. There is some evidence of a slightly increased incidence of congenital abnormalities. Injection of adrenaline may cause foetal tachycardia, cardiac irregularities, extrasystoles and louder heart sounds. In labour, adrenaline may delay the second stage. Adrenaline should only be used in pregnancy if the potential benefits outweigh the risks to the foetus.

Adrenaline is excreted in breast milk, but as pharmacologically active plasma concentrations are not achieved by the oral route, the use of adrenaline in breast feeding mothers is presumed to be safe.

4.7 Effects on ability to drive and use machines

Not applicable; this preparation is intended for use only in emergencies.

4.8 Undesirable effects

The potentially severe adverse effects of adrenaline arise from its effect upon blood pressure and cardiac rhythm. Anginal pain, ventricular fibrillation , myocardial ischaemia and myocardial infarction may occur .

Severe hypertension may lead to cerebral haemorrhage and pulmonary oedema. Local vasoconstriction and hypoxia of mucosa, which may lead to compensatory rebound congestion of the mucosa (in case of endotracheal administration). Stress cardiomyopathy, bowel necrosis, pallor and thrombocytosis.Symptomatic adverseeffects areanxiety, dyspnoea, restlessness, palpitations, tachycardia, tremor, weakness, dizziness, headache and cold extremities.

Other effects that may occur include difficulty in micturition and urinary retention.

Biochemical effects include inhibition of insulin secretion, stimulation of growth hormone secretion, hyperglycaemia (even with low doses), gluconeogenesis, glycolysis, lipolysis and ketogenesis.

Please cross refer to section 4.4

Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via HPRA Pharmacovigilance, Earlsfort Terrace, IRL - Dublin 2; Tel: +353 1 6764971; Fax: +353 1 6762517. Website: www.hpra.ie; E-mail: medsafety@hpra.ie.

4.9 Overdose

Symptoms
Cardiac arrhythmias leading to ventricular fibrillation and death; severe hypertension leading to pulmonary oedema and cerebral haemorrhage.

Treatment
Combined alpha- and beta-adrenergic blocking agents such as labetalol may counteract the effects of adrenaline, or a beta-blocking agent may be used to treat any supraventricular arrhythmias and phentolamine to control the alpha-mediated effects on the peripheral circulation. Rapidly acting vasodilators such as nitrates and sodium nitroprusside may also be helpful.

Immediate resuscitation support must be available.

5 PHARMACOLOGICAL PROPERTIES

5.1 Pharmacodynamic properties

ATC code: C01 CA24

Adrenaline is a direct-acting sympathomimetic agent exerting its effect on alpha- and beta-adrenoceptors. The overall effect of epinephrine depends on the dose used, and may be complicated by the homeostatic reflex responses. In resuscitation procedures it is used to increase the efficacy of basic life support. It is a positive cardiac inotrope. Major effects are increased systolic blood pressure, reduced diastolic pressure(increased at higher doses), tachycardia, hyperglycaemia and hypokalaemia.

5.2 Pharmacokinetic properties

Adrenaline is rapid in onset and of short duration. After i.v. infusion the half-life is approximately 5-10 minutes. It is rapidly distributed to the heart, spleen, several glandular tissues and adrenergic nerves. It crosses the placenta and is excreted in breast milk. It is approximately 50% bound to plasma proteins.

Adrenaline is rapidly metabolised in the liver and tissues by oxidative deamination and O-methylation followed by reduction or by conjugation with glucuronic acid or sulfate. Up to 90% of the i.v. dose is excreted in the urine as metabolites.

5.3 Preclinical safety data

Not applicable since Adrenaline (Epinephrine) Injection has been used in clinical practice for many years and its effects in man are well known.

6 PHARMACEUTICAL PARTICULARS

6.1 List of excipients

Citric Acid Monohydrate
Sodium Citrate (E331)
Sodium Chloride
Sodium metabisulfite (E223)
Dilute Hydrochloric Acid (for pH adjustment)
Water for Injection

6.2 Incompatibilities

In the absence of compatability studies, this medicinal product must not be mixed with other medicinal products. Adrenaline should not be mixed with sodium bicarbonate; the solution is oxidised to adrenochrome and then forms polymers.

6.3 Shelf life

3ml - 18 months unopened.
10ml - 15 months unopened.

The solution should be used immediately after opening. Discard any unused portion.

6.4 Special precautions for storage

Do not store above 25°C. Keep the container in the outer carton in order to protect from light.

6.5 Nature and contents of container

The solution is contained in a 10 ml Type I glass syringe with a polycarbonate Leur lock connector, polystyrene plunger rod and latex-free bromobutyl rubber plunger stopper. One syringe per carton.

The solution of the 3ml pack is contained in a Type I glass vial with a rubber elastomeric closure for use with a separate injector.

Not all pack sizes maybe marketed.

6.6 Special precautions for disposal of a used medicinal product or waste materials derived from such medicinal product and other handling of the product

For single use only. Do not use if discoloured. Discard any unused solution.

Any unused product or waste material should be disposed of in accordance with local requirements.

7 MARKETING AUTHORISATION HOLDER

DLRC Pharma Services Limited
Chesterfield House
Clonmannon
Ashford
Wicklow
Ireland

8 MARKETING AUTHORISATION NUMBER

PA22684/001/002

9 DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION

Date of first authorisation: 25th January 1978

Date of last renewal: 25th January 2008

10 DATE OF REVISION OF THE TEXT

May 2019