HPCSA

Health Professions Council of South Africa

Professional Board for Emergency Care Practitioners

ADVANCED

LIFE SUPPORT PRACTITIONER

PROTOCOLS

SEPTEMBER 2006

PLEASE TAKE CAREFUL NOTE

These documents are intended to serve as guidelines for the treatment of patients by registered ALS paramedics and do not replace sound clinical judgement.

- Consultation with fellow paramedics, medical practitioners or colleagues in challenging or difficult situations is strongly advocated.
- It is your medico-legal responsibility to ensure that all the necessary and appropriate documentation is duly completed and processed.
- All doses, unless otherwise specified, must be calculated according to each patient's individual requirements.
- It is implied, that where applicable, intraosseous injection / infusion doses are as for intravenous doses.
- Tracheal drug administration is not recommended as a first line option - it is a last resort route of administration, and should only be used if intravenous or intraosseous routes are unavailable.
- The general principle of drug administration is that of titrating the minimum dose to the desired effect / response.
- The onus rests upon the ALS paramedic to ensure that he/she is adhering to the correct and most recently HPCSA approved protocols and guidelines.

PROFESSIONAL BOARD FOR EMERGENCY CARE PRACTITIONERS

HEALTH PROFESSIONS COUNCIL OF SOUTH AFRICA

IMPORTANT NOTICE TO ALL REGISTERED PARAMEDICS

Herewith the September 2006 booklet containing the most recently approved Medications, Guidelines, Capabilities, Regulations and Ethical Rules for Registered Paramedics as approved by the Professional Board for Emergency Care Practitioners (PBECP).

It is imperative that you familiarise yourself with the entire content thereof, as this document and the inherent recommendations and guidelines replace all previous versions and publications issued under the authority of the Professional Board for Emergency Care Practitioners.

It is the duty of every practitioner to maintain and update their knowledge and skills through active participation in continuing education activities.

Any comment or enquiries in this regard can be directed in writing to Mr E Chanza, the Board Manager of the Professional Board for Emergency Care Practitioners, at the address below or via email on emmanuelc@hpcsa.co.za

Lloyd Christopher
Chairperson
PBECP
P O Box 205 553 Vermeulen Street
Pretoria Arcadia 0001 Pretoria
Tel: (012) 338-9300 FAX (012) 328-4862
e-mail: emmanuelc@hpcsa.co.za
Website: http://www.hpcsa.co.za

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Scope of the Profession

GOVERNMENT NOTICE
DEPARTMENT OF HEALTH

NO.R 48 25 JANUARY 2002

HEALTH PROFESSIONS ACT, 1974 (ACT NO. 56 OF 1974)

REGULATIONS DEFINING THE SCOPE OF THE PROFESSION OF EMERGENCY CARE

The Minister of Health has, in terms of section 33(1) of the Health Professions Act, 1974 (Act No. 56 of 1974), on the recommendation of the Health Professions Council of South Africa, made the regulation in the Schedule.

SCHEDULE

1. **Definitions**

IIn these rules, any word or expression to which a meaning has been assigned in the Act shall bear such meaning and, unless the context indicates otherwise -

"approved ambulance service" means an ambulance service which has been approved by the Professional Board for Emergency Care Practitioners as suitable for the transportation of persons in emergency care situations;

"emergency care" means the rescue, evaluation, treatment and care of an ill or injured person in an emergency care situation and the continuation of treatment and care during the transportation of such person to or between health establishment(s);

2. Acts pertaining to the profession of emergency care

The following acts of emergency care practitioners shall, for the purposes of the Act, be deemed to the acts that pertain especially to the profession of emergency care;

(a) The identification of the emergency care needs of a person in an emergency care situation;

(b) the evaluation of the emergency care needs of a person in an emergency care situation with due regard to his or her safety and the implementation of precautions to ensure his or her safety;

(c) the rescue of a person from an emergency care situation or from a potential emergency care situation;

(d) the provision of emergency care to a person in an emergency care situation;

(e) the prevention of further injury to, and the combating of possible complications of an illness or injury, a person in an emergency care situation;

(f) the transportation in an emergency care situation of an injured or seriously ill person to, at or between health establishment(s) by an approved ambulance service,

3. Repeal

The regulations promulgated by Government Notice No. R. 670n of 15 April 1994 are hereby repealed

"emergency care personnel" means persons registered under section 17 of the Act as paramedics, ambulance emergency assistants, basic ambulance assistants, operational emergency care orderlies, emergency care assistants and/or persons who hold a valid first aid certificate issued by a first aid organisation accredited by the Professional Board for Emergency Care Practitioners;

"emergency care situation" means circumstances during which a person is injured or is for some other reason in mortal danger and in need of emergency care;

"health establishment" means the whole or part of a public or private institution, facility, agency, building or place, whether organised for profit or not, that is operated or designated to provide inpatient or outpatient treatment, therapeutic, interventions, rehabilitative, palliative, preventive or other health services;

"the Act" means the Health Professions Act, 1974 (Act No. 56 of 1974).

Ethical Rules

ANNEXURE

ETHICAL RULES OF CONDUCT FOR PRACTITIONERS REGISTERED UNDER THE HEALTH PROFESSIONS ACT, 1974

PROFESSIONAL BOARD FOR EMERGENCY CARE PRACTITIONERS
RULES OF CONDUCT PERTAINING SPECIFICALLY TO THE PROFESSION OF EMERGENCY CARE

A basic ambulance assistant, an emergency care assistant, ambulance emergency assistant, operational emergency care orderly, a paramedic, student basic ambulance assistant, student emergency care assistant, student ambulance emergency assistant or student paramedic shall adhere to the following rules of conduct in addition to the rules of conduct referred to in rules 2 to 27. Failure by such basic ambulance assistant, emergency care assistant, ambulance emergency assistant, operational emergency care orderly and paramedic or student basic ambulance assistant, student emergency care assistant, student ambulance emergency assistant, student operational emergency care orderly or student paramedic to comply with the additional rules of conduct listed herein shall constitute an act or omission in respect of which the board may take disciplinary steps in terms of Chapter IV of the Act.

1. Performance of professional acts by basic ambulance assistant, emergency care assistant, ambulance emergency assistant, operational emergency care orderly or paramedic

   Notwithstanding the provisions of rule 21, a basic ambulance assistant, an emergency care assistant, ambulance emergency assistant, operational emergency orderly or a paramedic –

   (a) shall not perform any professional act or exercise any capability in respect of any incident, other than the acts set out in the relevant protocol or annexure to such protocol approved by the board; and

   (b) shall not hand over the responsibility for the treatment of a patient to any person who is less qualified or experienced than himself or herself, unless such basic ambulance assistant, emergency care assistant, ambulance emergency assistant, operational emergency care orderly or paramedic assumes full responsibility for the acts falling within his or her scope of practice.

2 Performance of professional acts by student basic ambulance assistant, student emergency care assistant, student ambulance emergency assistant or student paramedic.

A student basic ambulance assistant shall perform professional acts only under the supervision of a registered emergency care assistant and, in the case of a student emergency care assistant, student ambulance emergency assistant, student operational emergency care orderly or student paramedic only under the supervision of a medical practitioner or a paramedic and shall limit such acts to acts directly related to his or her education and training.

GOVERNMENT NOTICE

DEPARTMENT OF HEALTH
NO. R.717 OF 4 AUGUST 2006

HEALTH PROFESSIONS ACT, 1974 (ACT NO. 56 OF 1974)

ETHICAL RULES OF CONDUCT FOR PRACTITIONERS REGISTERED UNDER THE HEALTH PROFESSIONS ACT, 1974

The Health Professions Council of South Africa in consultation with the professional boards, and with the approval of the Minister of Health, has, in terms of section 49, read with section 61(2) and 61A (2) of the Health Professions Act, 1974 (Act No. 56 of 1974), made the rules in the Schedule.

SCHEDULE

Definitions

1. In these rules, any word or expression to which a meaning has been assigned in the Act, shall bear such meaning and, unless the context indicates otherwise -

   "the Act" means the Health Professions Act, 1974 (Act No. 56 of 1974),

   "annexure" means an Annexure to these rules;

   "association" means a form of practising where two or more practitioners practise for their own account, but share communal assets or facilities;

   "board" means a professional board established in terms of section 15 of the Act;

   "canvassing" means conduct which draws attention, either verbally or by means of printed or electronic media, to one's personal qualities, superior knowledge, quality of service, professional guarantees or best practice;

   "close collaboration" means consultation by a practitioner at one stage or another in the treatment of a patient with another practitioner and the furnishing by the latter practitioner, at the end of such treatment, of a report on the treatment to the practitioner whom he or she consulted;

   "dental specialist" means a dentist who has been registered as a specialist in a speciality or subspeciality in dentistry in terms of the Regulations relating to the Specialities and Subspecialities in Medicine and Dentistry published under Government Notice No. R. 590 of 29 June 2001;

"dispensing optician" means a person registered as such in terms of the Act and the Rules for the registration of Dispensing Opticians published under Government Notice No. R. 2339 of 3 December 1976;

"general dentist" means a dentist not registered as a dental specialist;

"general medical practitioner" means a medical practitioner not registered as a medical specialist;

"impairment" means a mental or physical condition which affects the competence, attitude, judgement or performance of professional acts by a registered practitioner;

"independent practice" means the practising of a registered health profession by a health practitioner without being supervised by another health practitioner;

"itinerant practice" means a practice which a practitioner conducts on a regular basis at a location other than at his or her resident practice address;

"medical scientist" means a person registered under the Act as a biomedical engineer, clinical biochemist, genetic counsellor, medical biological scientist or medical physicist;

"medical specialist" means a medical practitioner who has been registered as a specialist in a speciality or subspeciality in medicine in terms of the Regulations relating to the Specialities and Subspecialities in Medicine and Dentistry published under Government Notice No. R. 590 of 29 June 2001;

"medicine" means medicine as defined in section 1 of the Medicines and Related Substances Control Act, 1965 (Act No. 101 of 1965);

"optometrist" means a person registered as such under the Act;

"pharmaceutical concern" means a company registered as such under the Pharmacy Act, 1974 (Act No. 53 of 1974);

"practitioner" means a person registered under the Act and, in the application of rules 5, 6 and 9 of these rules, also a juristic person exempted from registration in terms of section 54A of the Act;

"private practice" means the practice of a health practitioner who practises for his or her own account, either in solus practice, or as a partner in a partnership, or as an associate in an association with other practitioners, or as a director of a company established in terms of section 54A of the Act;

"public company" means a company registered as such under the Companies Act, 1973 (Act No. 61 of 1973);

"public service" means a service rendered by the State at the national, provincial or local level of government and includes organizations which function under its auspices or are largely subsidized by the State or recognized by a board for the purpose of these rules;

"resident practice" means a place where a registered health practitioner conducts his or her practice on a daily basis;

"section" means a section of the Act;

"specialist" means a practitioner who is registered as a specialist in a speciality or subspeciality (if any) in terms of the Regulations relating to the Specialities and Subspecialities in Medicine and Dentistry published under Government Notice No. R. 590 of 29 June 2001 and who confines his or her practice to such speciality or subspeciality;

"supervision" means the acceptance of liability by a supervising practitioner for the acts of another practitioner; and

"touting" means conduct which draws attention, either verbally or by means of printed or electronic media, to one's offers, guarantees or material benefits.

Interpretation and application

2. (1) Failure by a practitioner to comply with any conduct determined in these rules or an annexure to these rules shall constitute an act or omission in respect of which the board concerned may take disciplinary steps in terms of Chapter IV of the Act.

   (2) Conduct determined in these rules or an annexure to these rules shall not be deemed to constitute a complete list of conduct and the board concerned may therefore inquire into and deal with any complaint of unprofessional conduct which may be brought before such board.

   (3) At an inquiry referred to in subrule (2) the board concerned shall be guided by these rules, annexure to these rules, the ethical rulings or guidelines and policy statements which the board concerned or council makes from time to time.

Advertising and canvassing or touting

3. (1) A practitioner shall be allowed to advertise his or her services or permit, sanction or acquiesce to such advertisement: Provided that the advertisement is not unprofessional, untruthful, deceptive, misleading or causing consumers unwarranted anxiety that they are suffering from any health condition;

   (2) A practitioner shall not canvass or tout or allow canvassing or touting to be done for patients on his or her behalf.

Information on professional stationery

4. (1) A practitioner shall only print or have printed on letterheads, account forms and electronic stationery information pertaining to such practitioner's –

(a) name;
(b) profession;
(c) registered category;
(d) speciality or subspeciality or field of professional practice (if any);
(e) registered qualifications or other academic qualifications or honorary degrees in abbreviated form;
(f) registration number;
(g) addresses (including email address);
(h) telephone and fax numbers;
(i) practice or consultation hours;
(j) practice code number; and
(k) dispensing license number (if any).

(2) A group of practitioners practising as a juristic person which is exempted from registration in terms of section 54A of the Act or a group of practitioners practicing in partnership, shall only print or have printed on letterheads, account forms and electronic stationery information pertaining to such juristic person or partnership practitioners' -

(a) name;
(b) profession;
(c) registered category;
(d) speciality or subspeciality or field of professional practice (if any);
(e) registered qualification(s) or other academic qualification(s) or honorary degrees in abbreviated form;
(f) registration number;
(g) addresses (including email address);
(h) telephone and fax numbers;
(i) business hours;
(j) practice code number;
(k) exemption from registration in terms of section 54A of the Act; and
(l) dispensing license number (if any).

(3) A practitioner shall not use prescription forms or envelopes on which the name or address of a pharmacist is printed.

Naming of a practice

5. (1) A practitioner shall use his or her own name or the name of a registered practitioner(s) with whom he or she is in partnership or with whom he or she practices as a juristic person, as a name for his or her private practice.

(2) A practitioner referred to in subrule (1) may retain the name of such private practice even if another practitioner, partner of such partnership or member of such juristic person is no longer part of such private practice: Provided that the express consent of the past practitioner, or in the case of a deceased practitioner, the consent of the executor of his or her estate or his or her next-of-kin has been obtained.

(3) A practitioner shall not use, in the name of his or her private practice, the expression "hospital", "clinic" or "institute" or any other expression which may give the impression that such private practice forms part of, or is in association with a hospital, clinic or institute.

Itinerant practice

6. A practitioner may conduct a regularly recurring itinerant practice at a place where another practitioner is established if, in such itinerant practice, such practitioner renders the same level of service to patients, at the same fee as the service which he or she would render in the area in which he or she is conducting a resident practice.

Fees and commission

7. (1) A practitioner shall not accept commission or any material consideration, (monetary or otherwise) from a person or from another practitioner or institution in return for the purchase, sale or supply of any goods, substances or materials used by him or her in the conduct of his or her professional practice.

(2) A practitioner shall not pay commission or offer any material consideration, (monetary or otherwise) to any person for recommending patients.

(3) A practitioner shall not offer or accept any payment, benefit or material consideration (monetary or otherwise) which is calculated to induce him or her to act or not to act in a particular way not scientifically, professionally or medically indicated or to under-service, over-service or over-charge patients.

(4) A practitioner shall not share fees with any person or another practitioner who has not taken a commensurate part in the services for which such fees are charged.

(5) A practitioner shall not charge or receive fees for services not personally rendered, except for services rendered by another practitioner in his or her employment or with whom he or she is associated as a partner, shareholder or locum tenens.

Partnership and juristic persons

8. (1) A practitioner shall only practise in partnership or association with or employ a practitioner who is registered under the Act, and only in respect of the profession which such practitioner is registered under the Act.

(2) A practitioner shall only practise in or as a juristic person who is exempted from registration in terms of section 54A of the Act if such juristic person complies with the conditions of such exemption.

(3) A practitioner shall only practise in a partnership, association or as a juristic person within the scope of the profession in respect of which he or she is registered under the Act.

(4) A practitioner shall not practise in any other form of practice which has inherent requirements or conditions that violate or potentially may violate one or more of these rules or an annexure to these rules.

Covering

9. (1) A practitioner shall only employ as a professional assistant or locum tenens or in any other contractual professional capacity for a period not exceeding six months, a person -

(a) who is registered under the Act;

(b) whose name currently appears on a register kept by the registrar under section 18 of the Act; and

(c) who is not suspended from practising his or her profession.

(2) A practitioner shall only help or support a person registered under the Act, the Pharmacy Act, 1974 (Act No. 53 of 1974), the Nursing Act, 1978 (Act No. 50 of 1978), the Social Service Professions Act, 1978 (Act No. 110 of 1978), the Dental Technicians Act, 1979 (Act No. 19 of 1979) or the Allied Health Professions Act, 1982 Act No. 63 of 1982), if the professional practice or conduct of such person is legal and within the scope of his or her profession.

Supersession

10. A practitioner shall not supersede or take over a patient from another practitioner if he or she is aware that such patient is in active treatment of another practitioner, unless he or she –

    (a) takes reasonable steps to inform the other practitioner that he or she has taken over the patient at such patient's request; and

    (b) establishes from the other practitioner what treatment such patient previously received, especially what medication, if any, was prescribed to such patient and in such case the other practitioner shall be obliged to provide such required information.

Impeding a patient

11. A practitioner shall not impede a patient, or in the case of a minor, the parent or guardian of such minor from obtaining the opinion of another practitioner or from being treated by another practitioner.

Professional reputation of colleagues

12. A practitioner shall not cast reflection on the probity, professional reputation or skill of another person registered under the Act or any other health Act.

Professional confidentiality

13. (1) A practitioner shall only divulge verbally or in writing information regarding a patient which he or she ought to divulge -

    (a) in terms of a statutory provision;

    (b) at the instruction of a court of law; or

    (c) where justified in the public interest.

    (2) Any information other than the information referred to in subrule (1) shall only be divulged by a practitioner -

    (a) with the express consent of the patient;

    (b) in the case of a minor under the age of 14 years, with the written consent of his or her parent or guardian; or

    (c) in the case of a deceased patient, with the written consent of his or her next-of-kin or the executor of such deceased patient's estate.

Retention of human organs

14. (1) A practitioner shall only for research, educational, training or prescribed purposes retain the organs of a deceased person during an autopsy.

(2) The retention of organs referred to in subrule (1) shall be subject -

(a) to the express written consent given by the patient concerned during his or her lifetime;
(b) in the case of a minor under the age of 14 years, to the written consent of such minor's parent or guardian; or
(c) in the case of a deceased patient who had not previously given such written consent, to the written consent of his or her next-of-kin or the executor of his or her estate.

Signing of official documents

15. A student, intern or practitioner who, in the execution of his or her professional duties, signs official documents relating to patient care such as prescriptions, certificates (excluding death certificates), patient records, hospital or other reports, shall do so by signing such document next to his or her initials and surname in block letters.

Certificates and reports

16. (1) A practitioner shall only grant a certificate of illness if such certificate contains the following information -

(a) the name, address and qualification of such practitioner;
(b) the name of the patient;
(c) the employment number of the patient (if applicable);
(d) the date and time of the examination;
(e) whether the certificate is being issued as a result of personal observations by such practitioner during an examination, or as a result of information received from the patient and which is based on acceptable medical grounds;
(f) a description of the illness, disorder or malady in layman's terminology with the informed consent of the patient: Provided that if such patient is not prepared to give such consent, the practitioner shall merely specify that, in his or her opinion based on an examination of such patient, such patient is unfit to work;
(g) whether the patient is totally indisposed for duty or whether such patient is able to perform less strenuous duties in the work situation;
(h) the exact period of recommended sick leave;
(i) the date of issuing the certificate of illness; and
(j) the initial and surname in block letters and the registration number of the practitioner who issued the certificate.

(2) A certificate of illness referred to in subrule (1) shall be signed by a practitioner next to his or her initials and surname in printed or block letters.

(3) If preprinted stationary is used, a practitioner shall delete words which are not applicable.

(4) A practitioner shall issue a brief factual report to a patient where such patient requires information concerning himself or herself.

Issuing of prescriptions

17. (1) A practitioner authorized in terms of the Medicines and Related Substances Act, 1965 (Act 101 of 1965) to prescribe medicines shall issue typewritten, handwritten, computer-generated, pre-typed, pre-printed or standardized prescriptions for medicine scheduled in Schedules I, II, III and IV of the Medicines and Related Substances Act, 1965 (Act No. 101 of 1965), subject thereto that such prescriptions may only be issued under his or her personal and original signature.

(2) A practitioner authorized in terms of Medicines and Related Substances Act, 1965 (Act 101 of 1965) to prescribed medicines shall issue handwritten prescription for medicine scheduled in Schedules 5, 6, 7 and 8 of the Medicines and Related Substances Act, 1965 (Act No. 101 of 1965), under his or her personal and original signature.

Professional appointments

18. (1) A practitioner shall only accept a professional appointment or employment from employers approved by the council in accordance with a written contract of appointment or employment which is drawn up on a basis which is in the interest of the public and the profession.

(2) A written contract of appointment or employment referred to in subrule (1) shall be made available to the council at its request.

Secret remedies

19 A practitioner shall in the conduct and scope of his or her practice, only use –

(a) a form of treatment, apparatus or health technology which is not secret and which is not claimed to be secret; and

(b) an apparatus or health technology which proves upon investigation to be capable of fulfilling the claims made in regard to it.

Defeating or obstructing the council or board in performance of its duties

20. A practitioner shall at all times co-operate and comply with any lawful instruction, directive or process of the council, a board, a committee of such board or an official of council and in particular, shall be required, where so directed to -
    (a) respond to correspondence and instructions from the council, such board, a committee of such board or an official of council within the stipulated time frames; and
    (b) attend consultation at the time and place stipulated by the council, such board, a committee of such board or an official of council.

Performance of professional acts

21. A practitioner shall only perform, except in an emergency, a professional act -
    (a) for which he or she is adequately educated, trained and sufficiently experienced; and
    (b) under proper conditions and in appropriate surroundings.

Exploitation

22. A practitioner shall not permit himself or herself to be exploited in any manner.

Medicine

23. (1) A practitioner shall not participate in the manufacture for commercial purposes, or in the sale, advertising or promotion of any medicine or in any other activity which amounts to trading in medicine.
    (2) A practitioner shall not engage in or advocate the preferential use or prescription of any medicine, if any valuable consideration is derived from such preferential use or prescription.
    (3) The provisions of subrule (1) and (2) shall not prohibit a practitioner from -
        (a) owning shares in a listed company;
        (b) manufacturing or marketing medicines whilst employed by a pharmaceutical concern;
        (c) whilst employed by a pharmaceutical concern in any particular capacity, performing such duties as are normally in accordance with such employment; or
        (d) dispensing in terms of a license issued in terms of the Medicines and Related Substances Act, 1965.
    (4) A practitioner referred to in subrule (3) shall display a conspicuous notice in his or her waiting room and also, if appropriate, verbally inform his or her patient about the fact that he or she -

(a) owns shares in a listed public company which manufactures or markets the medicine prescribed to such patient; or

(b) is in the employ of the pharmaceutical concern which manufactures such medication.

(5) A practitioner may prescribe or supply medication: Provided that such practitioner has ascertained the diagnosis of the patient concerned through a personal examination of such patient or by virtue of a report by another practitioner under whose treatment such patient is or has been.

(6) In the case of a patient with a chronic disease the provision of subrule (5) shall not apply.

Financial interest in hospitals

24. (1) A practitioner who has a financial interest in a private clinic or hospital shall only refer a patient to such clinic or hospital while displaying a conspicuous notice in his or her waiting room indicating that he or she has a financial interest in such clinic or hospital and also verbally inform such patient about the fact that he or she has an interest in such clinic or hospital to which he or she is referring such patient.

(2) A practitioner referred to in subrule (1) shall not participate in the advertising or promotion of any private clinic or hospital, or in any other activity which amounts to such advertising or promotion for personal gain.

(3) A practitioner referred to in subrule (1) shall not engage in or advocate the preferential use of any private clinic or hospital, if any valuable consideration is derived by such practitioner from such preferential use.

(4) The provisions of subrule (3) shall not prohibit such practitioner from owning shares in a listed public company.

(5) A practitioner referred to in subrule (4) shall display a conspicuous notice in his or her waiting room and also verbally inform his or her patient about the fact that he or she -

(a) owns shares in a listed public company which manages such private clinic or hospital to which he or she referred such patient;

(b) is the owner or part owner of such private clinic or hospital; or

(c) is in the employ of such private clinic or hospital or the listed public company that owns such private clinic or hospital.

(6) A practitioner may admit a patient to such private clinic or hospital: Provided that such practitioner -

(a) has ascertained the diagnosis of the patient concerned through a personal examination of such patient or by virtue of a report by another practitioner under whose treatment such patient is or has been;

(b) informed such patient that such admission in such private clinic or hospital was necessary for his or her treatment; and

(c) has obtained such patient's consent for admission to such private clinic or hospital.

Reporting of impairment or unprofessional, illegal or unethical conduct

25. (1) A student, intern or practitioner shall -

(a) report impairment in another student, intern or practitioner to the board if he or she is convinced that such student, intern or practitioner is impaired;

(d) report his or her own impairment or suspected impairment to the board concerned if he or she is aware of his or her own impairment or has been publicly informed, or has been seriously advised by a colleague to act appropriately to obtain help in view of an alleged or established impairment, and

(e) report any unprofessional, illegal or unethical conduct on the part of another student, intern or practitioner.

Research, development and use of chemical, biological and nuclear capabilities

26. (1) A practitioner who is or becomes involved in research, development or use of defensive chemical, biological or nuclear capabilities shall obtain prior written approval from the board concerned to conduct such research, development or use.

(2) In applying for written approval referred to in subrule (1), such practitioner shall provide the following information to the board concerned:

(a) full particulars of the nature and scope of such research, development or use;

(b) whether the clinical trials pertaining to such research have been passed by a professionally recognized research ethics committee;

(c) that such research, development or use shall be permissible within the provisions of the World Medical Association's Declaration on Chemical and Biological Weapons; and

(d) that such research, development or use is permitted in terms of the provisions of the applicable international treaties or conventions to which South Africa is a signatory.

Dual Registration

27. A health practitioner who holds registration with more than one statutory council or professional board shall at all times ensure that -

    (a) no conflict of interest arises from such dual registration in the rendering of health services to patients;

    (b) patients are clearly informed at the start of the consultation of the profession in which the practitioner is acting;

    (c) informed consent regarding the profession referred to in paragraph (b) is obtained from the said patient;

    (d) patients are not consulted in a dual capacity or charged fees based on such dual consultation; and

    (e) the ethical rules applicable at a given moment to the profession in which the practitioner is acting, are strictly adhered to.

Repeal

28. The Rules Specifying the Acts or Omissions in respect of which Disciplinary Steps may be taken by a Professional Board and the Council published under Government Notice No. R. 2278 of 3 December 1976 and Government Notice No. R.1379 of 12 August 1994 as amended by Government Notice No. R.1405 of 22 December 2000 are hereby repealed.

DR M E TSHABALALA-MSIMANG

MINISTER OF HEALTH

Medications

ACETYL SALICYLIC ACID – ASPIRIN

DESCRIPTION:

- Classification : Non-steroidal anti-inflammatory / platelet aggregation inhibitor
- Schedule : 0

PHARMACOLOGICAL ACTION:

- Aspirin inhibits the enzyme cyclo-oxygenase thus inhibiting the production of prostaglandins including thromboxane; it has no effect on leukotriene production.

ADVERSE EFFECTS:

- Anaphylactic reaction (some patients, especially asthmatics exhibit notable sensitivity to aspirin, which may provoke various hypersensitivity / allergic reactions)
- Potential bronchoconstriction in asthmatics
- Gastric mucosa irritation (dyspepsia; peptic ulceration; peptic bleeding)
- Bleeding tendency
- Foetal distress due to obliteration of foetal ductus arteriosus
- Suppression of uterine contractions

INDICATIONS:

- Suspected myocardial infarction

CONTRA-INDICATIONS:

- Known hypersensitivity / allergy to aspirin
- Peptic ulceration with active bleeding
- Bleeding tendency
- Patients already receiving Platelet Aggregation Inhibitors or Anticoagulants
- Pregnancy
- Children <12 years of age
- Severe renal impairment/ renal transplant
- No longer recommended in decompression sickness

PRECAUTIONS:

- Bronchial asthma (asthma-sensitive asthmatic)
- Patient must be conscious

PACKAGING:

- Regular aspirin: 300mg tablet
- Extra strength: 500mg tablet
- Dispersible aspirin: 100mg & 300mg tablets

DOSAGE AND ADMINISTRATION:

- Administer 150mg - 300mg orally, chewed, crushed, or dissolved

WARNING:

Do **not** use high dose, such as full 500mg tablet.

Do **not** use enteric coated aspirin.

ACTIVATED CHARCOAL

DESCRIPTION:

- Classification : Carbon
- Schedule : 1

PHARMACOLOGICAL ACTION:

- Activated charcoal adsorbs many poisonous compounds to its surface, thereby reducing their absorption by the GIT

ADVERSE EFFECTS:

The patient may experience mild constipation

INDICATIONS:

To assist in the treatment of certain cases of overdoses and poisonings where the agent/s was/were orally ingested – within first hour of ingestion

CONTRA-INDICATIONS:

- SHOULD NOT BE USED IN POISONING WITH iron, organophosphates, ethanol, lithium, boric acid, cyanide, ethylene glycol, methanol, petroleum products, strong acids and alkalis
- Unprotected airway in a patient with decreased level of consciousness
- Do not use if the container was not properly sealed (de-activation due to moisture exposure)

PRECAUTIONS:

- Patients with a decreased level of consciousness need to be intubated before activated charcoal can be administered via a nasogastric tube

PACKAGING:

Fine black powder in bottles of 25g and 50g

DOSAGE AND ADMINISTRATION:

Adult and Paediatric: 0.5g/kg - 1g/kg mixed with water, given orally or administered via the nasogastric tube

ADENOSINE

DESCRIPTION:

- Classification : Supraventricular anti-arrhythmic; endogenous purine nucleoside
- Schedule : 4

PHARMACOLOGICAL ACTION:

- Conduction in SA and AV node: slows inward Ca^{2+} flow and therefore decreases automaticity and rate of discharge in SA and AV node cells
- Adenosine is produced from the breakdown (de-phosphorylation) of ATP
- It blocks the influx of Ca^{2+} by inhibiting cAMP formation
- The above therefore terminates supraventricular arrhythmias due to re-entry pathways involving the AV node (i.e. most PSVTs)
- SVT's that do not involve the AV node (e.g. Wolf-Parkinson-White syndrome) are usually not terminated by Adenosine; this is particularly true for atrial flutter, atrial fibrillation

PHARMACO-KINETICS:

- Half life: 5 – 10 seconds
- Onset of action: immediate
- Duration of action: 1-2 minutes

INDICATIONS:

Stable patients with narrow-complex Paroxysmal Supra-Ventricular Tachycardia, to terminate the reentry SVT.

CONTRA-INDICATIONS:

- Known hypersensitivity
- Sick sinus syndrome
- Underlying second or third degree AV heart block
- Poisoning / drug induced tachycardia
- Atrial flutter & atrial fibrillation
- Transplanted hearts
- Wolf-Parkinson-White syndrome
- Unstable asthmatics

ADVERSE EFFECTS:

- Transient
- CVS:
  - o Vasodilation
    - Flushing
    - Light-headedness
    - Headache
    - Hypotension
  - o Arrhythmias
    - Chest pain, Palpitations
    - Transient or prolonged sinus bradycardia / sinus arrest / heart blocks / asystole
    - Ventricular ectopics, non-sustained V Tach, sustained torsades de pointes, V Fib
    - Supraventricular tachyarrhythmias
- Other:
  - o Paresthaesia
  - o Diaphoresis
  - o Dyspnoea
  - o Bronchoconstriction
  - o Nausea
  - o Metallic taste in mouth
  - o Chest tightness

PRECAUTIONS:

- Adenosine has proarrhythmic potential, often inducing ventricular ectopics and V Tach

  (In most patients the V Tach is brief and self-terminating)
- Adenosine can cause clinically significant bradyarrhythmias (incl asystole) & tachyarrhythmias, which may be life threatening
- Extra caution is required with the elderly population & in patients with sinus node disease
- Constant ECG monitoring is to occur during administration
- Avoid in patients taking dipyridamole, carbamazepine (need to halve dose if required)

- Less effective in patients taking theophyllin – may need to double usual dose.
- May cause bronchospasm in asthmatics.
- Patient must be supine during administration

PACKAGING:

- 6mg/2ml glass vial

DOSAGE AND ADMINISTRATION:

Adults:

- 6mg rapid IV push (followed immediately by 20ml N/S IVI push)
  (Draw up adenosine dose and flush in two separate syringes)
- 12mg rapid IV push if no response after 2 minutes.
- 12mg rapid IV push may be considered if no response after 2 minutes

Children:

- 0.1mg/kg rapid IV push (followed immediately by 5ml N/S IVI push)
- 0.2mg/kg rapid IV push if no response after 2 minutes
- 0.2mg/kg rapid IV push may be considered if no response after 2 minutes
- Max. : First dose : 6mg
  : Subsequent doses : 12mg

NOTE:

- Adenosine is administered by an extremely rapid IVI push using the two syringe technique

ADRENALINE (EPINEPHRINE)

DESCRIPTION:

- Classification : Sympathomimetic
  Schedule : 4

PHARMACOLOGICAL ACTION:

- Both α and β adrenergic activity
- The primary beneficial effect of epinephrine in cardiac arrest is due to its potent α effects:
  - Increased peripheral vasoconstriction
  - Improved coronary and cerebral blood flow
  - Renders ventricular fibrillation more susceptible to defibrillation

α-EFFECTS

- Vasoconstriction (smooth muscle contraction):
  - Increased peripheral resistance
  - Increased systolic and diastolic blood pressure
  - Decreased skin, GIT and renal blood flow
- Mydriasis
- Diaphoresis, erection of hair (piloerection)
- Intestinal and urinary bladder sphincter constriction
- Increased breakdown of glycogen to glucose

β_1 -EFFECTS

- Myocardium:
  - Positive inotrope
  - Positive chronotrope
  - Positive dromotrope
  - Increased myocardial oxygen consumption

β_2 -EFFECTS

- Bronchial smooth muscle : relaxation
- Vascular smooth muscle : vasodilation
- Bladder smooth muscle : relaxation
- Intestinal smooth muscle : decreased peristalsis
- Uterine smooth muscle : relaxation
- Glycogen stores : breakdown of glycogen to glucose

PHARMACO-KINETICS:

- Onset of action: immediately

ADVERSE EFFECTS:

α-EFFECTS

- Acute hypertension (risk of cerebral haemorrhage or acute pulmonary oedema)
- Nausea and vomiting
- Cold skin
- Acute renal failure
- Urinary retention
- Diplopia
- Hyperglycaemia
- Vasoconstriction:
  - Gangrene of fingers, toes, nose or ear if administered locally
  - Tissue necrosis from extravasation

β_1 -EFFECTS

- Tachycardia / palpitations
- Arrhythmias / cardiac arrest
- Angina, Myocardial ischaemia

β_2 -EFFECTS

- Tremors, cramps
- Restlessness, anxiety, confusion, headache

INDICATIONS:

- Cardiac arrest
  - Ventricular fibrillation, Pulseless ventricular tachycardia, Pulseless Electrical Activity, Asystole
- Resistant symptomatic bradycardia
- Anaphylaxis (for all patients with signs of systemic reaction: hypotension, laryngeal oedema or definite difficulty breathing)
- Impending upper airway obstruction due to inflammation e.g:
  - Upper airway infection
  - Inhalational burns

  (With signs of stridor, cyanosis, dysphonia, etc)
- Life-threatening severe asthma
- Severe hypotension not due to hypovolaemia
- Beta-blocker / calcium channel blocker toxicity
- Croup (Laryngo-tracheo-bronchitis)

CONTRA-INDICATIONS:

- There are no absolute contra-indications in an emergency setting

PRECAUTIONS:

- Do not mix with alkaline solutions (e.g. sodium bicarbonate)
- Hypertension
- Angina, myocardial ischaemia, congestive cardiac failure
- Diabetes Mellitus
- Hyperthyroidism
- Pregnancy
- Stimulant abuse (e.g. cocaine) – AVOID adrenaline unless patient is pulseless!

PACKAGING:

- Ampoules: 1mg/1ml (1:1000) / 0.1%
- Various pre-filled syringes designed to deliver predetermined doses

DOSAGE AND ADMINISTRATION:

A. CARDIAC ARREST

Adults:

- Intravenous / Intraosseous : 1mg IVI push
- Tracheal : 2mg, diluted to 10ml with water for injection preferred.

  NOTE: Tracheal option is the last resort route of administration - IV/IO definitely preferred.
- Repeat : every 3 to 5 minutes
- Constant infusion : post-cardiac arrest hypotension (SBP<70 mmHg) 2-10µg/min – titrating to effect

  [add 1ml of 1:1000 to 200mls normal saline = 5µg/ml]

Children:

- Intravenous / Intraosseous : 0.01mg/kg IVI push (0.1ml/kg of 1:10 000)
- Tracheal : 0.1mg/kg, diluted to 3ml with water for injection.

  NOTE: Tracheal option is the last resort route of administration - IV/IO definitely preferred.
- Repeat : every 3 to 5 minutes
- Constant infusion : post-cardiac arrest hypotension:

  0.1-1µg/kg/min - titrating to effect

NOTE: It is acceptable to progress to higher doses in cardiac arrest due to anaphylaxis: 1mg, followed by 3mg, followed by 5mg.

B. RESISTANT SYMPTOMATIC BRADYCARDIA (SBP < 85mmHg)

Adult infusion:

- 2-10µg/min
- Titrate to effect

Children:

- Intravenous bolus : 0.01mg/kg IVI push every 3 minutes
- Tracheal bolus : 0.1mg/kg (tracheal route is last resort route of administration)
- Infusion: 0.1-1µg/kg/min – titrating to effect

C. ANAPHYLAXIS

Adults:

Intramuscular:

- Initial : 0.3mg of 1:1000 undiluted (ideally anterolateral thigh)
- Repeat : every 15 - 20 minutes if no clinical improvement
- Titrate to effect

Intravenous (only if life-threatening / unresponsive to IMI):

- Caution – extremely dangerous and must be diluted
- Continuous patient and ECG monitoring is required
- Initial : 0.1mg IVI diluted slowly over 5 minutes (see below)
- Repeat : every 5 minutes if no clinical improvement
- Carefully titrate to effect
- Bolus dilution options:
  - o Dilute 1mg to 10ml with N/S (i.e. 1:10 000)
  - o Further dilute 1 ml of 1:10 000 solution to 10ml with N/S (1:100 000)
  - o Alternatively : Dilute 2mg (1:1000) into 200 mls N/S = 10µg / ml (1:100 000)

    Administer 10µg every 30 seconds, titrating to effect.

    If 10 ml is administered slowly IV initially = 100µg = 0,1mg

Children:

Intramuscular:

- Initial : 0.01mg/kg (use 1:1000)
- Repeat : every 5 – 15 minutes
- Titrate to effect
- Undiluted

Intravenous (only if life-threatening / unresponsive to IMI):

- Caution – extremely dangerous and must be diluted
- Continuous patient and ECG monitoring is required
- Initial : 0.01mg/kg IVI diluted slowly
- Repeat : every 5 minutes
- Titrate to effect
- Dilution: same as adult dose above: 10µg / ml (1:100 000)

D. LIFE-THREATENING SEVERE ASTHMA (NEAR FATAL ASTHMA)

Adults

Subcutaneously/intramuscularly

- 0.01mg/kg divided into three dosis of 0.3mg given very 20 minutes, i.e:
- Initial : 0.3mg or 1:1000 undiluted
- Repeat : after 20 minutes if no clinical improvement, and then again at 40 minutes
- Titrate to effect

Children:

Only if unresponsive to nebulized β_2 agonist & anticholinergic therapy, and with increasing respiratory distress)[6]

Subcutaneous / Intramuscular:

- Initial : 0.01mg/kg (use 1:1000, to a maximum of 0.3ml per dose)
- Repeat : titrating to effect, every 20 minutes for a total of three doses maximum
- Use undiluted

E. CROUP / LARYNGEAL OEDEMA

Nebulization (Adult or Child) : Initiate with 1ml of 1:1000 + 4mls N/S

If necessary increase to 2 – 4mg adrenaline diluted with 5ml N/S

AMIODARONE HYDROCHLORIDE

DESCRIPTION:

- Classification : Anti-arrhythmic
  Schedule : 4

PHARMACOLOGICAL ACTION:

- Amiodarone (an iodine-containing agent) is a very effective anti-arrhythmic medication that has a profound effect on the sodium, potassium and calcium channels of the cardiac cells whilst simultaneously blocking both α and β adrenergic receptors

PHARMACO-KINETICS:

- Elimination half-life: 40 days

ADVERSE EFFECTS:

- Vasodilation / hypotension
- Negative inotropic effects
- Negative chronotropic effects
- Prolongation of QT interval

INDICATIONS:

- Defibrillation refractory – ventricular fibrillation and refractory pulseless ventricular tachycardia (i.e. unrespnsive to CPR, shock and vasopresssor)
- Control of haemodynamically stable ventricular tachycardia
- Polymorphic ventriculr tachycardia with normal QT interval, if this can be determined (i.e. EXCLUDING Torsades de Pointes)
- Narrow-complex tachycardias originating from a reentry mechanism (reentry SVT) if the rhythm remains uncontrolled by adenosine and vagal manoeuvres, or when these are contra-indicated.

CONTRA-INDICATIONS:

- Atrioventricular block
- Sinus bradycardia
- Sino-atrial block
- Allergy to Iodine
- Prior use of Lignocaine hydrochloride
- Torsades de Pointes (polymorphic VT with preceding or known long QT interval), if this can be determined

PRECAUTIONS:

- Never to be used with or following lignocaine
- Should preferably be diluted with 5% Dextrose

PACKAGING:

- 150mg/3ml ampoule

DOSAGE AND ADMINISTRATION:

A. CARDIAC ARREST:

DEFIBRILLATION REFRACTORY VENTRICULAR FIBRILLATION OR PULSELESS VENTRICULAR TACHYCARDIA

- Administer 300mg IVI as a rapid bolus
- Perform 2 minutes of CPR and reassess rhythm — deliver shock for VF / Pulseless VT
- If ventricular fibrillation or pulseless ventricular tachycardia does not respond to defibrillation, administration of initial 300mg IVI volus, and further defibrillation, then consider the administration of an additional dose of 150 mg in 3 to 5 minutes
- Infusion: following successful defibrillation with Amiodarone, a slow intravenous infusion of 1mg/minute (360mg IV over 6 hours) may be administered
- Maximum cumulative dose of 2.2g IV/24 hours

B. STABLE VENTRICULAR TACHYCARDIA / SUPRAVENTRICULAR TACHYCARDIA

- 150mg IVI over 10 minutes (15mg/min), followed by:
- Infusion: slow IVI of 1mg/minute (360mg over 6 hours)
- Maximum cumulative dose of 2.2g IV/24 hours

ATROPINE SULPHATE

DESCRIPTION:

- Classification : Anti-cholinergic, anti-muscarinic
- Schedule : 2

PHARMACOLOGICAL ACTION:

- Atropine acts as a competitive antagonist at muscarinic (cholinergic) receptor sites, blocking the stimulation of parasympathetic nerve fibres
- Atropine (anti-cholinergic) effects:
  - o Heart: supraventricular conductive tissue
    - Positive chronotrope
    - Positive dromotrope
  - o Eyes : mydriasis
  - o Exocrine glands : decreased sweat, tears, salivary and pancreatic secretions
  - o Lungs : reduction in bronchial secretions & some bronchodilation
  - o Digestive system : decreased peristalsis, sphincter constriction
  - o Urinary : bladder relaxation, sphincter constriction

PHARMACO-KINETICS:

- Half-life : 2 - 4 hours
- Onset of action : Immediate

ADVERSE EFFECTS:

- Confusion, restlessness
- Mydriasis (72hrs), diplopia, photophobia, blurred vision
- Dry mucous membranes: mouth, eyes, respiratory and digestive tract
- Tachycardia, palpitations, arrhythmias, paradoxical bradycardia
- Dry, hot, flushed skin
- Acute urinary retention
- Constipation, nausea, vomiting

INDICATIONS:

- Symptomatic bradycardia, associated with unstable signs or symptoms: (acute decreased level of consciousness, ongoing severe ischaemic chest pain, hypotension, pulmonary oedema, congestive cardiac failure)
- Bradycardia (< 60) associated with:
  - Frequent (> 6/minute) Ventricular Extra Systoles
- Asystolic cardiac arrest in adults
- Pulseless electrical activity with bradycardia
- Organophosphate poisoning

CONTRA-INDICATIONS:

- Not indicated for use in neonates
- There are no absolute contra-indications in an emergency setting (besides the precautions listed below)

PRECAUTIONS:

- First rule out other causes of bradycardia:
  - e.g. hypoxia, hypothermia, head injuries (raised intra-cranial pressure), hyperkalaemia and healthy, asymptomatic persons)
- Second degree type II and third degree AV heart blocks with wide QRS complexes (indicating a possible point of origin below the supra-ventricular conductive tissue) as atropine may induce a paradoxical slowing of the heart rate
- Paradoxical bradycardia may occur in reaction to small dosages
  - o < 0.5mg in adults
  - o < 0.1 mg in children
- Ischaemic heart disease, hypertension, heart transplant patients
- Toxins (e.g. β Blocker OD, Ca Channel Blocker OD)

PACKAGING:

0.5mg/1ml glass / plastic ampoule

0.6mg/1ml glass / plastic ampoule

1.0mg/1ml glass / plastic ampoule

1.2mg/1ml glass / plastic ampoule

DOSAGE AND ADMINISTRATION:

Treat reversible causes of bradycardia first

A. ASYSTOLE / SLOW Pulseless Electrical Activity

Adults:

- Intravenous/Intraosseous : 1mg IVI push
- Tracheal : 2mg diluted in water for injection

  NOTE: Tracheal option is the last resort route of administration - IV/IO definitely preferred.
- Repeat : every 3 to 5 minutes
- Maximum : 3mg IVI (0.04mg/kg)

  or 0.08mg/kg ET (if at all – tracheal route not recommended)

  Represents total vagolytic dose.

Children:

- Not recommended

B. REFRACTORY SYMPTOMATIC BRADYCARDIA

Adults:

- Intravenous : 0.5mg IVI push
- Repeat : 0.5 – 1mg every 3 to 5 minutes
- Maximum : 3mg (0.04mg/kg) = total vagolytic dose

Children:

- Intravenous : 0.02mg/kg IVI push
- Repeat : once, after 3 to 5 minutes
- Max single dose : 0.5mg (child); 1mg (adolescent)
- Min single dose : 0.1mg
- Maximum total : 0.04mg/kg IV = total vagolytic dose

C. ORGANOPHOSPHATE POISONING

Adults:

- Intravenous : 0.5 – 2.5 mg IVI
- Repeat : every 4 minutes until atropinization occurs (decreasing bronchial secretions is single most reliable factor)
- Titrate to effect
- No absolute maximum dosage

Children:

- Intravenous : 0.02mg/kg
- Repeat : every 4 minutes until atropinization occurs
- Titrate to effect
- Min single dose : 0.1mg
- No absolute maximum dosage

β_2 ADRENERGIC STIMULANTS

DESCRIPTION:

- Classification : Bronchodilators
- Schedule : 2 – Aerosol
  3 – Inhalant solutions and unit dose vials
  4 – Ampoules

PHARMACOLOGICAL ACTION:

- Hexoprenaline, Fenoterol & Salbutamol are selective β_2 stimulants acting on the β_2 receptors in the lungs:
  bronchial smooth muscle : broncho-dilation
- At higher/repeated dosages, the systemic absorption progressively increases, thus acting on other organs with β_2 receptors e.g.
  - Skeletal muscle : contraction
  - Vascular smooth muscle : vasodilation
  - Bladder smooth muscle : relaxation
  - Intestinal smooth muscle : decreased peristalsis
  - Uterine smooth muscle : tocolysis
  - Glycogen stores : break down of glycogen to glucose
- At higher/repeated dosages, the selectivity is also progressively lost and β_1 effects (myocardium) are experienced:
  - Positive inotrope
  - Positive chronotrope
  - Positive dromotrope
  - Increased myocardial oxygen consumption

PHARMACO-KINETICS:

- Onset of action : 5-15 minutes
- Duration of action : 3-6 hours

ADVERSE EFFECTS:

- Tremors, restlessness, anxiety, confusion, headache
- Hypotension
- Tachycardia, palpitations
- Cramps
- Nausea, vomiting
- Urinary retention
- Tocolysis
- Hyperglycaemia
- Hypokalaemia

INDICATIONS:

- Acute bronchospasm
- Premature or obstructed labour
- Suspected hyperkalaemia on ECG rhythm strip

CONTRA-INDICATIONS:

- Known hypersensitivity / allergy to β_2 stimulants
- Neonates

PRECAUTIONS:

- Special caution must be used when pulse rate exceeds 120 beats / minute
- Intravenous β_2 stimulants should be used with caution in patients with:
  - Ischaemic heart disease, cardiac arrhythmias, cardiac failure
  - Occlusive vascular disorders, hypertension, hypotension
  - Hyperthyroidism, diabetes mellitus
  - Prostate hypertrophy

PACKAGING:

- Fenoterol : Berotec aerosol : 100µg
  : Inhalant solution: 1mg/ml
  : UDV : 1.25mg/2ml or 0.5mg/2ml
  : IV solution : none

• Hexoprenaline Sulphate	:	Ipradol aerosol	:	100µg
	:	Resp. solution	:	0.25mg/ml
	:	UDV	:	none
	:	IV solution	:	5µg/2ml or 25µg/10ml
• Salbutamol	:	Ventolin aerosol	:	100µg
	:	Resp. solution	:	5mg/ml
	:	UDV	:	2.5mg/2.5ml or 5mg/2.5ml
	:	IV solution	:	0.5mg/ml or 1mg/ml

DOSAGE AND ADMINISTRATION:

A. ACUTE BRONCHOSPASM

Aerosol:

- 6 – 10 puffs should be administered during an episode, which may then be repeated every 15 minutes, using a spacer

Inhalant solution : (use half the dosage for paediatrics)

- 2ml Fenoterol (1.25mg/2ml)(UDV) + 3ml N/S
- 2ml Fenoterol (0.5mg/2ml) (UDV) + 3ml N/S (paediatric solution)
- 1ml Fenoterol solution (1mg/ml) + 4ml N/S
- 2ml Hexoprenaline (0.25mg/ml) + 3ml N/S
- 1ml Salbutamol (5mg/ml) + 4ml N/S
- Repeat continuously if necessary

Unit Dose Vials:

- UDV + N/S diluted up to 5 ml

Ampoules: (Note: adrenaline injection remains drug of choice for life-threatening asthma)

Salbutamol:

Adults:

- 250 µg/10min
  - o Dilute 500µg/1ml ampoule Salbutamol with 19ml N/S = 500µg / 20ml = 25 µg / ml
- Administer 1ml/min over 10min (total of 250µg / 10 min)

Paediatrics:

- 5µg/kg diluted, slowly IVI over 10 minutes
  - o Dilute 500µg/1ml ampoule Salbutamol with 19ml N/S = 500µg / 20ml = 25 µg / ml

B. PREMATURE / OBSTRUCTED LABOUR / PROLAPSED CORD

Hexoprenaline:

Bolus:

- Dilute 2 X 5µg/2ml IV Hexoprenaline with 16ml N/S = 10µg/20ml
- Administer 1ml/min until:
  - Total of 10µg / 20 min
  - Mother's heart rate > 120bpm
  - Contractions cease

Maintenance Infusion:

- 0.3µg – 0.45µg/min (monitor heart rate [keep < 120] and tocolysis)
  (**examples** of how to deliver this:
  1. dilute 25µg/10ml ampoule into 75ml N/S, making a total of 85ml; deliver at 1 drop/second using 60d/ml admin set, to give 0.3 µg/min, titrating to effect)
  2. dilute 20µg into 90ml N/S, making a total of 20µg in 100ml = 0.2 mg/ml deliver at 1 drop/second using 60d/ml admin set, to start at 0.2µg/min, titrating to effect)

Salbutamol:

Bolus:

- Slow IV 100 – 250 µg IV
  - Dilute 500µg/1ml ampoule Salbutamol with 19ml N/S = 500µg / 20ml = 25 µg / ml
- Administer 1ml/min until:
  - Total of 250µg/10 min has been given, i.e. 10ml.
  - Mother's heart rate > 120bpm
  - Contractions cease

Maintenance Infusion:

- Dilute 2mg [4 x 500mcg/ml] into 200ml N/S (10 µg/ml solution)
- Start with 10µg/min. May increase by 10µg/min every 10 min to a max of 45 µg/min

Note: Maternal & foetal heart rates & Inhibition of uterine contractions must be continually monitored during infusions.

CALCIUM CHLORIDE 10%

DESCRIPTION:

- Classification : Electrolyte/ mineral
- Schedule : 1

PHARMACOLOGICAL ACTION:

- Calcium is essential for the initiation and maintenance of normal muscular contractions
- Calcium has a positive inotropic effect on the cardiac muscle
- In addition, calcium aids general vasoconstriction (vascular smooth muscle)

ADVERSE EFFECTS:

- Tissue necrosis (if extravasation occurs)
- Thrombophlebitis
- Vasospasm (coronary and cerebral vessels)

INDICATIONS:

Any of the following suspected cardiac arrest / pre-arrest conditions:

- Hyperkalaemia (indicated by tall peaked t-waves, flattened p-waves, broadened QRS complexes, e.g. renal failure, severe tissue damage – crush syndrome)
- Calcium channel blocker toxicity (e.g. verapamil)
- β blocker toxicity (e.g. propanolol)

CONTRA-INDICATIONS:

- Not for routine use in cardiac arrest
- Not indicated for use in neonates

PRECAUTIONS:

- Rapid administration may cause bradycardia / asystole – administer over 5min when pulse present
- AVOID in patients receiving Digitalis – may induce increased cardiac irritability
- Never combine with sodium bicarbonate in the same infusion – may precipitate out
- Never administer via the tracheal route
- Well placed and free flowing IVI line is mandatory

PACKAGING:

1g/10ml (10%) glass/plastic ampoule

DOSAGE AND ADMINISTRATION:

Adults:

- 10ml of calcium chloride 10% solution, slowly IVI
- If being administered pre-arrest, administer at 1ml/min

Children:

- 0.2ml/kg of calcium chloride 10% solution, slowly IVI
- If being administered pre-arrest, administer at 1ml/min

CLOPIDOGREL

DESCRIPTION:

- Classification : Platelet aggregation inhibitor
- Schedule : 3

PHARMACOLOGICAL ACTION:

- Clopidogrel interferes with ADP binding to its platelet receptor, and the subsequent ADP-mediated activation of the GPIIb / IIIa complex, causing an irreversible, non-competitive inhibition of platelet aggregation, without influencing cyclo-oxygenase.
- Clopidogrel also inhibits platelet aggregation induced by other agonists by blocking amplification of platelet activation by released ADP.

ADVERSE EFFECTS:

- Haemorrhagic disorders and bleeding tendencies
- Thrombotic thrombocytopenic purpura (TTP)
- Gastro-intestinal disturbances – abdominal pain, dyspepsia, gastritis, constipation
- Skin rash and pruritis
- Hypersensitivity reactions

INDICATIONS:

- Used as antiplatelet therapy ONLY in patients who have true aspirin allergy (who cannot tolerate aspirin) with suspected acute myocardial infarction (acute coronary syndromes)

CONTRA-INDICATIONS:

- Known hypersensitivity / allergy to clopidogrel
- Active pathological bleeding, e.g. actively bleeding peptic ulcer, intracranial haemorrhage
- Safety and efficacy in children < 18 years not established (Not indicated)
- Safety and efficacy in pregnancy and lactation not established

PRECAUTIONS:

- Severe liver impairment
- Use with caution in patients with risk of bleeding

PACKAGING:

- 75mg tablets

DOSAGE AND ADMINISTRATION:

- Administer 300mg orally, i.e. four of the 75mg tablets stat

CORTICOSTEROIDS

DESCRIPTION:

- Classification : Corticosteroids
- Schedule : 4

PHARMACOLOGICAL ACTION:

- Inhibition of inflammatory / allergic reactions — slow onset of action: 6 to 12 hours
- Suppression of antibody production
- Stabilization of mast cell membranes
- Restoration of β_2 receptor responsiveness (up-regulation) of receptors in asthma
- Tablets taken via the oral route have as rapid an onset of action compare to IVI. There is no advantage to parenteral corticosterods in patients likely to absorb oral corticosteroids well, i.e. conscious, can swallow, not vomiting.

PHARMACOKINETICS:

	Hydrocortisone	Methylprednisolone
• Half-life	8-12 hours	18-36 hours
• Approximate equivalent IV dose	5 mg	1 mg

ADVERSE EFFECTS:

- Side effects occur following prolonged use and are of little consequence in an emergency setting

INDICATIONS:

- Severe allergy / anaphylaxis
- Acute asthma attack

CONTRA-INDICATIONS:

There are no absolute contra-indications in the emergency setting

PACKAGING:

- Hydrocortisone:
  100mg/2ml or 500mg/4ml
- Methylprednisolone:
  40mg/ml or 125mg/2ml or 500mg/8ml or 1000mg/16ml
- Prednisolone tablets: 5 mg tablets

DOSAGE AND ADMINISTRATION:

Adults:

- Hydrocortisone:
  200mg – 500mg IVI slowly
  5 mg/kg IVI slowly
- Methylprednisolone:
  125mg IVI slowly
- Prednisolone tablets: (to be administered when patient is able to take oral medication)
  0.5 – 1mg / kg

Children:

- Hydrocortisone:
  5mg/kg IVI slowly
- Methylprednisolone:
  1mg/kg IVI slowly (maximum dose 30mg)
- Prednisolone tablets: to be administered when patient is able to take oral medication)
  0.5 – 1mg / kg

DEXTROSE 50%

DESCRIPTION:

Classification : Carbohydrate
Schedule : 1

PHARMACOLOGICAL ACTION:

- Glucose is a monosaccharide — the most basic unit to which all carbohydrates are broken down — and glucose is thus immediately available as a source of energy

ADVERSE EFFECTS:

- Local irritation of vein
- Thrombophlebitis
- Local tissue necrosis
- Hyperosmolarity
- Diuresis
- Hyperglycaemia

INDICATIONS:

- Acute management of symptomatic hypoglycaemia
- Blood glucose < 3.5mmol/L and patient is clinically symptomatic
- Decreased level of consciousness of unknown cause, with suspicion of associated hypoglycaemia / blood glucose < 3.5 mmol/L

CONTRA-INDICATIONS:

- There are no absolute contra-indications in the presence of true symptomatic hypoglycaemia
- Do not administer dextrose routinely during resuscitation unless there is confirmed hypoglycaemia

PRECAUTIONS:

- Dehydration and hypovolaemia
  - High concentrations of IV dextrose cause an increase in osmolarity that draws H_2O from the cells and causes diuresis, aggravating dehydration
  - Dehydration / hypovolaemia and hypoglycaemia must be corrected simultaneously
- Intracranial haemorrhage
  - Glucose leaking into the cerebral tissue will aggravate the injury and result in cerebral oedema
  - Careful titration in all head injured patients is vital

Complications and adverse effects may be diminished by:

- Limiting the use of dextrose to symptomatic hypoglycaemic patients
- Administering dextrose slowly through a free-flowing IV line
- Re-assessing the blood glucose 5 minutes post administration
- Avoiding hyperglycaemia
- Never combine dextrose and sodium bicarbonate in the same infusion (i.e. hyperosmolarity)

PACKAGING:

- 20ml & 50ml ampoules of a 50% solution (0.5g/ml)
- 50ml vacolitre containing a 50% solution

DOSAGE AND ADMINISTRATION:

Adults:

- 10g (20ml of a 50% solution) slowly IVI
- Repeat every 5 minutes should blood glucose remain < 3.5mmol/L
- First give 100mg Thiamine if available and indicated

Children / Neonates:

- 1ml/kg of a 50% solution which is then diluted to a 12.5% solution with sterile water*
- Repeat every 5 minutes should blood glucose remain < 3.5mmol/L

NOTE:

- If blood glucose remains < 3.5mmol/L after 3 doses, reassess patient, equipment and administration technique
- Treat the patient and not the test result
- *Sterile water is indicated in neonates due to the risk of hypernatraemia with N/S boluses

ORAL GLUCOSE POWDER/ GEL

DESCRIPTION:

- Classification : Carbohydrate
- Schedule : 1

PHARMACOLOGICAL ACTION:

Administration of an oral glucose solution / preparation provides a source of soluble carbohydrates to the tissues in order to raise the blood glucose levels

ADVERSE EFFECTS:

Hyperglycaemia

INDICATIONS:

- Acute management of hypoglycaemia
- Blood glucose < 3.5mmol/L and patient is clinically symptomatic

CONTRA-INDICATIONS:

No absolute contra-indications

PRECAUTIONS:

- Patient must be lateral if unconscious
- Avoid aspiration

PACKAGING:

- 25g and 50g powder sachet
- 25g and 50g gel

DOSAGE AND ADMINISTRATION:

- 25g of gel applied to the oral mucosa of the patient with a gloved finger
- Preferably dilute powder in glass of water if patient is conscious
- Repeat after 5 minutes should blood glucose remain < 3.5mmol/L
- Should patient be unconscious, “liquid powder” may be administered via NG tube, if no IV access or glucagon IM is available

DIAZEPAM

DESCRIPTION:

- Classification : Sedative / hypnotic / anti-convulsant
- Schedule : 5
- Antidote : Flumazenil

PHARMACOLOGICAL ACTION:

- Diazepam is a benzodiazepine acting on the central nervous system
- These actions result from the potentiation of the neural inhibition that is mediated by GABA
- It has anxiolytic, sedative, sleep-inducing, anticonvulsant and muscle relaxant properties
- It can also cause anterograde amnesia

PHARMACO-KINETICS:

- Elimination half-life: 20 – 70 hours
- Onset of action : 1 – 5 minutes
- Duration of action : 15 – 120 minutes

ADVERSE EFFECTS:

- CNS: Depression
- Resp: Depression (rapid administration)
- CVS: Hypotension (large dosages and rapid administration)
- Nausea, vomiting
- Diplopia
- Thrombophlebitis
- Paradoxical excitation
- Physical and psychological dependence

INDICATIONS:

- Anti-convulsive therapy
- Sedation

CONTRA-INDICATIONS:

- Known hypersensitivity / allergy to benzodiazepines
- In a patient with persistent convulsions, there are no other absolute contra-indications, but due to its ability to cause respiratory depression, it must not be used if the patient cannot be artificially ventilated should the need arise

PRECAUTIONS:

- Respiratory disorders:
  - COPD / asthma / hypoventilation
- Cardiovascular disorders:
  - Hypotension / hypovolaemia / congestive cardiac failure
- Psychosis:
  - No anti-psychotic effects
  - May increase agitation
- Active Labour:
  - Neonatal suppression
- Rule out reversible causes of convulsions e.g. hypoglycaemia
- In IM injections absorption is erratic and unreliable
- Elderly, debilitated and paediatric patients are more sensitive to the adverse effects
- Alcohol, barbiturates, narcotics and other depressants acting on the central nervous system may enhance / alter the effects of diazepam
- Do not mix diazepam with any other drug or solution unless advised otherwise by the manufacturer's instruction brochure

PACKAGING:

- 10mg/2ml amber coloured ampoule

DOSAGE AND ADMINISTRATION:

- Only administer during active convulsions
- Do not dilute, unless advised otherwise by the manufacturer's instruction brochure

Adults:

- **Convulsions:** 5 mg/min slowly IVI (0.15mg/kg)
- Repeat every 2 - 5 minutes
- Titrate to effect (use the lowest effective dosage)
- Maximum 20mg
- Rectally 10mg (maximum 20mg)
- **Sedation:** 1mg every 30 seconds IV titrated to effect when necessary

Children:

- **Convulsions:** 0.2 mg/kg slowly IVI
- Repeat every 2 - 5 minutes
- Titrate to effect (use the lowest effective dosage)
- Maximum : children > 5 years : 10mg
  : children < 5 years : 5mg
- Rectally : 0.5 mg/kg
  : children up to 3yrs : 5mg
  : children > 3yrs :10mg

FLUMAZENIL

DESCRIPTION:

- Classification : Benzodiazepine antagonist
- Schedule : 5

PHARMACOLOGICAL ACTION:

- Binds to GABA receptors (competing with benzodiazepines)
- Flumazenil is a benzodiazepine antagonist that specifically blocks the central effects of agents acting through the benzodiazepine-receptor complex by competitive inhibition

PHARMACO-KINETICS:

- Half-life : 60 minutes
- Onset of action : 1-2 minutes
- Duration of action : 45 minutes

ADVERSE EFFECTS:

- CVS:
  - Flushed skin
  - Thrombophlebitis
  - Arrhythmias
  - Hypertension
  - Chest pain
- CNS:
  - Excitation
  - Convulsions
- General:
  - Acute benzodiazepine withdrawal in dependant patients
  - Tremors and involuntary movements

INDICATIONS:

- Reversal of central nervous system sedative effects and respiratory depression due to benzodiazepines alone

CONTRA-INDICATIONS:

- Known hypersensitivity
- **Suspected Tricyclic Anti-depressant overdose**
- Unknown mixed-drug overdose
- Patients with a high risk of convulsions
- Neonates

PRECAUTIONS:

- Suspected benzodiazepine addiction
- The half-life is shorter than that of most benzodiazepines (therefore monitor for recurrent respiratory depression)

PACKAGING:

- 0.1mg/1ml 10ml ampoule = 1.0mg
- 0.1mg/1ml 5ml ampoule = 0.5mg

DOSAGE AND ADMINISTRATION:

Adults:

- Initial bolus : 0.2mg slowly IVI over 15 seconds
- Repeat : 0.1mg at 1 minute intervals
- Max dose : 1mg

Children:

- Safety has not been established

FUROSEMIDE

DESCRIPTION:

- Classification : Diuretic
- Schedule : 3

PHARMACOLOGICAL ACTION:

- Furosemide is a loop diuretic acting primarily by inhibiting electrolyte (Na+) and fluid re-absorption in the ascending limb of the loop of Henlé
- Loop diuretics increase the excretion of sodium, chloride, potassium, calcium and magnesium. Water follows passively
- In patients with pulmonary oedema, furosemide increases systemic venous capacitance, thereby decreasing left ventricular filling pressure (pre-load)

PHARMACO-KINETICS:

- Half-life : 30-90 minutes
- Diuretic action : within 5 minutes
- Duration of action : 120 minutes

ADVERSE EFFECTS:

- Hyponatraemia
- Hypokalaemia
- Hypotension
- Hypovolaemia
- Hyperuricaemia / gout
- Tinnitus and deafness (following rapid IVI administration)

INDICATIONS:

- Acute pulmonary oedema of cardiac, hepatic or renal origin

CONTRA-INDICATIONS:

- Known hypersensitivity / allergy to furosemide or sulphonamides
- Systolic blood pressure < 90 mmHg
- Hypovolaemia / dehydration
- Patients with hypokalaemia – a contraindication out of hospital, if diagnosed

PRECAUTIONS:

- Urinary obstruction or retention
- Elderly patients are particularly susceptible to dehydration and hypotension

PACKAGING:

- 20mg in 2ml ampoule
- 50mg in 5ml ampoule
- 250mg in 25ml ampoule

  May be found in amber glass or colourless plastic ampoules/vials

DOSAGE AND ADMINISTRATION:

Adults and Children:

- 0.5mg - 1mg/kg IVI slowly over 1-2 minutes

GLUCAGON

DESCRIPTION:

Classification : Hyperglycaemic agent

Schedule : 4

PHARMACOLOGICAL ACTION:

- A biosynthetic form of glucagon (pancreatic hormone) which releases glucose from the liver by means of glycogenolysis, thereby increasing blood glucose levels.
- Glucagon inhibits motility on the GIT for about 15 minutes. It increases bile flow and decreases secretion of digestive enzymes.
- It has positive inotropic and positive chronotropic cardiac effects produced by direct adenylate cyclase stimulation, bypassing the beta-adrenoceptors. It thus enhances myocardial performance by increasing cAMP concentrations in a manner identical to that of catecholamines, but probably acting via its own receptor.

ADVERSE EFFECTS:

- Nausea & vomiting may occur – dose related (may be caused by the hypoglycaemia)
- Uncommonly, dizziness, light-headedness, skin rash, dyspnoea
- Hypokalaemia
- Myocardial ischaemia may be aggravated in patients with pre-existing cardiac disease

INDICATIONS:

- Acute management of symptomatic hypoglycaemia (blood glucose < 3.5mmol/L)

  Only if adequate IV access or IV dextrose is not available or effective.
- Severe anaphylactic reactions if patient is unresponsive to adrenaline, and especially if the patient is taking beta blockers.
- Severe symptomatic bradycardia from beta blockade overdose not responding to other medications e.g. adrenaline
- Calcium channel blocker OD

CONTRA-INDICATIONS:

- Phaeochromocytoma
- Must not be administered to patients who are hypersensitive to glucagon.
- History of allergy to beef or porcine protein
- Safety in pregnancy & lactation has not been established.

PRECAUTIONS:

- Glucagon for hypoglycaemia is not effective in patients with marked depletion of liver glycogen stores, as in starvation, adrenal insufficiency, or chronic hypoglycaemia.
- Insulinoma
- Ischaemic heart disease

PACKAGING:

- 1mg / vial freeze-dried glucagon plus syringe containing 1ml H_2O for injection
- Reconstitute with provided solution: Inject 1ml H_2O for injection into vial, shake to dissolve, then draw up solution. Do NOT mix with saline.

DOSAGE AND ADMINISTRATION:

Adults:

- 1mg IMI / IVI / SC for hypoglycaemia
- IMI is preferred route
- 3mg IV initially as adjuvant treatment of calcium channel blocker or beta blocker OD, followed by 3mg/hour infusion
- Seere anaphylactic reactions: 1 - 2 mg every 5 min IM or slow IV **if** unresponsive to adrenaline, & especially if on beta blockers

Paediatrics: Hypoglycaemia

- < 20kg (< 6 years) : 0.5mg IMI / IVI / SC
- > 20 kg : 1mg IMI / IVI / SC

Paediatrics: Severe anaphylactic reactions

- < 20µg/kg IM or slow IV (max 1 mg)
  if unresponsive to adrenaline, & especially if on beta blockers

NOTE:

- The patient may be able to take oral glucose 5 – 20 min after glucagon administration.
- IV dextrose 50% must be given promptly, as soon as possible.
- The effects of glucagon wear off rapidly – on regaining consciousness, oral glucose should be followed by complex carbohydrate foodstuffs for sustained effect & to replete liver & muscle glycogen stores. Beware of secondary hypoglycaemia.

GLYCERYL TRINITRATE

DESCRIPTION:

- Classification : Vasodilator
- Schedule : 3

PHARMACOLOGICAL ACTION:

- Nitrates cause dilation of the venous system, which decreases venous return (pre-load) and decreases myocardial wall tension
- This improves sub-endocardial perfusion
- Nitroglycerin dilates the coronary arteries, antagonises coronary vasospasm and increases coronary collateral blood flow to the ischaemic myocardium

PHARMACO-KINETICS:

- Half-life : 1-4 minutes
- Onset of action : 1-3 minutes
- Duration of action : 30-60 minutes

ADVERSE EFFECTS:

- Headache
- Hypotension
- Tachycardia
- Flushed skin

INDICATIONS:

- Angina pectoris
- Acute myocardial infarction
- Acute pulmonary oedema

CONTRA-INDICATIONS:

- Known hypersensitivity / allergy to nitrates
- Children
- Hypotension (SBP < 90 mmHg)
- Decrease in normal blood pressure > 10% or 30% if hypertensive
- Sildenafil (Viagra®) or Vardenafil (Levitra®) taken during the preceding 24 hours
- Tadalafil (Cialis®) taken in last 48 hours
- Bradycardia / severe tachycardia
- Right ventricular infarction

PRECAUTIONS:

- Patient must be positioned sitting / semi-fowlers prior to drug administration
- Do not administer simultaneously with other vasodilators
- Do not shake the aerosol prior to administration

PACKAGING:

- Nitrolingual® spray containing 200 x 0.4mg atomized sprays
- 0.5mg tablets, in amber coloured container

DOSAGE AND ADMINISTRATION:

- One table sublingual

  OR one spray (without inhaling) onto oral mucosa (preferably sublingual)
- Repeat every 5 minutes until pain is relieved, or max dose taken
- Maximum of 3 sprays/ tablets
- Terminate administration if systolic blood pressure (SBP):
  - Decreases by more than 10% in a normotensive patient
  - Decreases by more than 30% in a hypertensive patient
  - Measures lower than 90 mmHg

IPRATROPIUM BROMIDE

DESCRIPTION:

- Classification : Bronchodilators - anticholinergic
- Schedule : 2

PHARMACOLOGICAL ACTION:

- Ipratropium bromide causes relaxation of bronchial muscles due to its anticholinergic effects (blocks parasympathetic system)
- Its broncho-dilation action is particularly effective in conjunction with β_2 -stimulants

PHARMACO-KINETICS:

- Onset of action: 30 minutes
- Duration of action: 4-6 hours

ADVERSE EFFECTS:

- With larger / repeated dosages, it is absorbed from the lungs into the systemic circulation resulting in systemic anti-cholinergic effects
  - Tachycardia
  - Dry, hot skin
  - Mydriasis
  - Urinary retention

INDICATIONS:

- To be used in conjunction with β_2 -stimulants for acute bronchospasm

CONTRA-INDICATIONS:

- Known hypersensitivity to ipratropium bromide or other anti-cholinergic drugs
- Do not use in neonates

PRECAUTIONS:

- The onset of action is only after 20 minutes, which is much longer than the β_2 -stimulants; peak effectiveness at 60 - 90 minutes
- The duration of action is 4 - 6 hours, which is also longer than the β_2 -stimulants

PACKAGING

- Unit dose vial (UDV) containing 0.25 mg/2ml or 0.5 mg/2ml
- Metered Dose Inhaler (300 doses) 40 µg / inhalation (0.04mg)
- Nebulizer solution (bottle) 0.25mg/ml

DOSAGE AND ADMINISTRATION:

Adults:

UDV:

- Ipratropium bromide 0.5mg + appropriate β_2 stimulant + balance of N/S to a total of 5ml solution
- Nebulised over 10 minutes

Aerosol:

- The patient or paramedic may administer this during an episode. Two puffs of ipratropium bromide are administered if no improvement occurs following β_2 stimulant administration

  Use of a spacer device is recommended.

Children >5 years:

- Ipratropium bromide 0.5mg + appropriate β_2 stimulant + balance of N/S to a total of 5ml solution, nebulised over 10 minutes

Children 1 to 5 years:

- Ipratropium bromide 0.25mg + appropriate β_2 stimulant + balance of N/S to a total of 5ml solution, nebulised over 10 minutes

Children 1 month to 1 year:

- Ipratropium bromide 0.125mg + appropriate β_2 stimulant + balance of N/S to a total of 5ml solution, nebulised over 10 minutes

NOTE:

- Ipratropium bromide + β_2 stimulant have a synergistic effect
- May be particularly useful in patients with bronchospasm who have taken beta-blockers
- Typically given only once because of its prolonged onset of action; higher doses than those advocated above, or dosing intervals less than four hours confer no added benefits.

LIGNOCAINE HYDROCHLORIDE (LIDOCAINE) (Systemic)

DESCRIPTION:

- Classification : Ventricular anti-arrhythmic
- Schedule : 4

PHARMACOLOGICAL ACTION:

- Conduction in SA and AV node has a slow inward Ca^{2+} flow (adenosine and Ca^{2+} antagonists block the flow of Ca^{2+} and therefore mainly affect supra-ventricular conduction)
- All other myocardial tissues (including His-Purkinje system) have a fast inward Na^{+} flow. Lignocaine blocks the flow of Na^{+} and K^{+} ions in ischaemic cells and therefore mainly affects the ventricular conduction
- Lignocaine acts as a membrane stabilizer resulting in the following effects:
  - Inhibition of fast sodium channels
  - Termination of ectopic beats
  - Shortened action potential duration
  - Decreased myocardial excitability
  - Protection of myocardium against arrhythmias
  - In toxic doses though, lignocaine will cause generalised myocardial suppression
- Lignocaine will effectively suppress ventricular arrhythmias asociated with acute myocardial ischemia and infarction once they occur
- In emergency endotracheal intubation, Lignocaine administration prior to intubation mitigates the catecholamine effects of pharyngeal/laryngeal manipulation in patients with head injury, stroke, intracerebral bleeds or any situation where raised ICP, raised intra-ocular pressure or increased BP will be detrimental.

PHARMACO-KINETICS:

- Half-life : 1-2 hours
- Onset of action : Immediate
- Duration of action : 10-20 minutes

ADVERSE EFFECTS:

- Early signs of systemic toxicity include, numbness of the tongue and peri-oral region
- The main systemic toxic effects are central nervous system excitation evidenced by:
  - Restlessness
  - Muscle twitching
  - Convulsions
- This is followed by central nervous system depression evidenced by:
  - Drowsiness
  - Respiratory failure
  - Coma
- There is a simultaneous cardiovascular system depression:
  - Hypotension
  - Bradycardia
  - Cardiac arrest

INDICATIONS:

- Shock resistant ventricular fibrillation – only if amiodarone unavailable
- Ventricular tachycardia – only if amiodarone unavailable
- Control of haemodynamically compromising PVCs, i.e. complex ventricular ectopy (symptomatic / unstable patient) associated with AMI / ACS:
  - Multiform (multifocal)
  - Repetitive (couplets, salvos, or > 3)
  - R on T pattern

  Complex ventricular ectopy in the setting of myocardial ischemia or causing haemodynamic instability should be suppressed. (Only in the setting of symptomatic, complex ectopy is lignocaine likely to benefit a patient having an AMI / ACS).
- Torsades de pointes (evidence of long QT) – use lignocaine only if magnesium sulphate (the primary drug for torsades) is not effective or is unavailable.
- Intubation of patients with head injury, stroke, hypertensive encephalopathy or where increased intracranial pressure is detrimental.

CONTRA-INDICATIONS:

- Prior use of Amiodarone Hydrochloride
- Known hypersensitivity / allergy to lignocaine
- Heart blocks (second or third degree AV blocks)
- Bradycardia
- Hypotension not due to ventricular arrhythmia
- Severe sinus node dysfunction
- Accelerated idioventricular rhythm

PRECAUTIONS:

- Caution must be exercised with subsequent doses:
  - Geriatrics
  - Impaired liver function
  - Left ventricular failure
- Discontinue immediately if signs of toxicity occur

PACKAGING:

- 50mg/5ml (1%) ampoule 1% = 1g/100ml
- 100mg/5ml (2%) ampoule 2% = 2g/100ml
- 500mg/5ml (10%) ampoule
- 1000mg/5ml (20%) ampoule – Not for pre-hospital use

DOSAGE AND ADMINISTRATION:

ADULTS:

A. STABLE VENTRICULAR TACHYCARDIA / COMPLEX VENTRICULAR ECTOPY WITH MYOCARDIAL ISCHAEMIA OR CAUSING HAEMODYNAMIC COMPROMISE

- Loading dose : 1mg/kg slowly IVI
- Repeat loading dose : 0.5mg/kg every 5 minutes
- Maximum dose : 3mg/kg
- Follow with maintenance infusion of 1-4mg/min (20 – 50 µg / kg / min) upon restoration of a stable rhythm
- Reappearance of arrhythmias during a constant infusion of lignocaine should be treated with 0.5mg/kg slow IVI bolus dose, and an increase in the infusion rate in incremental doses (maximal rate = 4mg/min)

- Note: administration of bolus doses must be terminated when either:
  - A maximum of 3mg/kg has been administered, or
  - The blood pressure drops by >10%, or
  - Ventricular arrhythmias cease, or
  - Signs of toxicity develop
- In the presence of decreased cardiac output, in patients older than 70 years, and in those with hepatic dysfunction, the dose should be reduced: usual bolus followed by half the normal maintenance infusion.

B. UNSTABLE VENTRICULAR TACHYCARDIA

i.e. causing decreased level of consciousness, hypotension, pulmonary oedema, congestive cardiac failure or AMI)

- Synchronised cardioversion according to protocol
- Follow with a loading dose and maintenance infusion once cardioversion successful (see A)
- If the ventricular tachycardia recurs after successful cardioversion, cardiovert again using the last successful joule setting.
- Once cardioversion is successful, administer a further bolus dose (0.5mg/kg) of lignocaine and continue the infusion.
- Reappearance of arrhythmias during a constant infusion of lignocaine should be treated by:
  - ⁜ Reassessing patient stability
  - ⁜ Repeat cardioversion if patient is unstable (& instability is due to the tachycardia)
  - ⁜ 0.5mg/kg slow IVI bolus, and an increase in the infusion rate in incremental doses (maximal rate = 4mg/min)
  - ⁜ NOTE: Total IVI bolus dose not to exceed 3mg/kg
- Should the monitor not discharge on synchronous mode, defibrillation (i.e. asynchronous cardioversion) should be performed in order to avoid any further delays in an already seriously compromised patient

C. VENTRICULAR FIBRILLATION (Only if amiodarone unavailable)

- Refer to Cardiac Arrest protocol
- Administer a bolus dose of 1mg/kg IVI/IO push (or 2mg/kg ET as last resort) followed by 0.5mg/kg IVI/IO (or 1mg/kg ET) every 5 minutes
- Maximum total bolus dose = 3mg/kg IVI
- Following successful defibrillation, follow with maintenance infusion

D. ENDOTRACHEAL INTUBATION SEQUENCE (for raised ICP)

Specifically indicated for patients who may already have an element of raised intra cranial pressure, the addition to which would compromise the patient.

- Administer Lignocaine 1.5mg/kg 3 minutes before intubation.

CHILDREN:

- As for adults, except maintenance infusion is 20-50 µg/kg/min

LIGNOCAINE HYDROCHLORIDE/ LIDOCAINE (Local anaesthetic)

DESCRIPTION:

- Classification : Local anaesthetic
- Schedule : 1 – Spray
  : 4 – Injection

PHARMACOLOGICAL ACTION:

- Lignocaine spray has a local anaesthetic action when applied to mucous membranes
- The direct administration of a local anaesthetic agent into tissues induces the absence of sensation to a localized area of the body.
- The anaesthetic may be applied topically to the surface of the mucous membrane or injected subcutaneously
- Lidocaine spray is ineffective when applied to intact skin

PHARMACO-KINETICS:

- Onset of action : 2 – 5 minutes
- Duration of action : 10 – 15 minutes
- Effects may, however, last for up to 3 hours with the addition of a vasoconstrictor (e.g. adrenaline)

ADVERSE EFFECTS:

- Signs of toxicity are the same as for systemic lignocaine administration
- Early signs of systemic toxicity include numbness of the tongue and peri-oral region
- The main systemic toxic effect is central nervous system excitation evidenced by:
  - Restlessness
  - Muscle twitching
  - Convulsions
- This is followed by central nervous system depression evidenced by:
  - Drowsiness
  - Respiratory failure
  - Coma

- There is a simultaneous cardiovascular system depression:
  - Hypotension
  - Bradycardia
  - Cardiac arrest

INDICATIONS:

- Local anaesthesia
  - Tracheal intubation
  - Suturing

CONTRA-INDICATIONS:

- Known hypersensitivity / allergy to lignocaine
- Lignocaine (with adrenaline as a vasoconstrictor) must not be used in areas supplied by end arteries e.g. fingers, toes, nose and ears

PACKAGING:

- Aerosol : 10 mg/spray discharge
- Injection cartridge : 20mg/ml (1.8 ml)
- Multi-dose vial : 100mg/10ml (1% = 10mg/ml),
  200mg/10ml (2% = 20mg/ml)

DOSAGE AND ADMINISTRATION:

TOPICAL SPRAY:

- Administer 2 sprays onto mucous membranes
  - Wait for 3 minutes to take effect

INJECTION FOR LOCAL ANAESTHESIA:

- Infiltrate the skin with lignocaine, sufficient to produce local anaesthesia
  - Wait for 3-5 minutes to take effect.
- Dose
  - 1mg/kg (may be repeated to a maximum dose of 3mg/kg) without adrenaline
  - 1mg/kg (may be repeated to a maximum dose of 6mg/kg) with adrenaline

LORAZEPAM

DESCRIPTION:

- Classification : Anti-convulsant / Anxiolytic
- Schedule : 5
- Antidote : Flumazenil

PHARMACOLOGICAL ACTION:

- Lorazepam is a benzodiazepine with very similar effects to diazepam. It appears to suppress the propagation of seizure activity produced by foci in the cortex, thalamus and limbic areas of the CNS.
- Lorazepam has longer CNS activity than diazepam and is therefore preferable to diazepam as a first-line anticonvulsant in the fitting patient
- These actions result from the potentiation of the neural inhibition that is mediated by GABA
- It has anxiolytic, sedative, sleep-inducing, and anticonvulsant properties

PHARMACO-KINETICS:

- Onset of action : 3 minutes
- Duration of action : 12 – 24 hours

ADVERSE EFFECTS:

- CNS: Depression, drowsiness, lethargy, ataxia, vertigo
- Resp: Depression (rapid administration)
- CVS: Hypotension (large dosages and rapid administration)
- Nausea, vomiting
- Thrombophlebitis
- Paradoxical excitation
- Physical and psychological dependence
- Transient amnesia or memory impairment has been reported

INDICATIONS:

- First line anti-convulsive therapy for status epilepticus

CONTRA-INDICATIONS:

- Known hypersensitivity / allergy to benzodiazepines or to the vehicle (polyethylene glycol, propylene glycol and benzyl alcohol).

- In a patient with persistent convulsions, there are no other absolute contra-indications, but due to its ability to cause respiratory depression, it must not be used if the patient cannot be artificially ventilated, should the need arise
- Safety in pregnancy has not been established

PRECAUTIONS:

- Respiratory disorders:
  - COPD / asthma / hypoventilation / pulmonary disease with limited pulmonary reserve
- Cardiovascular disorders:
  - Hypotension / hypovolaemia / congestive cardiac failure
- Psychosis:
  - No anti-psychotic effects
  - May increase agitation
- Active Labour:
  - Neonatal suppression
- Rule out reversible causes of convulsions e.g. hypoglycaemia, etc.
- In IM injections absorption is erratic and unreliable – not recommended for seizures
- Elderly, debilitated and paediatric patients are more sensitive to the adverse effects
- Alcohol, barbiturates, narcotics and other depressants acting on the central nervous system may enhance / alter the effects of benzodiazepines
- Hepatic encephalopathy – may aggravate CNS dysfunction by potentiating GABA activity

PACKAGING:

- 4mg/ml ampoule
- **NB** Must be stored in a refrigerated bag at 2 – 8°C
- Protect from light

DOSAGE AND ADMINISTRATION:

- Only administer during active convulsions
- Only administer IVI for this indication
- To facilitate withdrawal of solution from the ampoule of Lorazepam Injection, a diluent of 1 ml of sterile water for injection or 0.9% sodium chloride for injection may be added to the ampoule immediately before injection (i.e. 1:1 dilution).

Adults:

- Convulsions: 2 – 4 mg slowly IVI (< 2 mg/min)
- If required an additional 4mg IVI may be administered after 10 minutes
- Titrate to effect (use the lowest effective dosage)
- Maximum 8mg / 12 hours

Children:

- Status epilepticus: 0.05 – 0.1 mg/kg **slowly** IVI
- Up to a maximum single dose of 4mg
- Repeat if necessary after 10 min
- Titrate to effect (use the lowest effective dosage)

MAGNESIUM SULPHATE

DESCRIPTION:

- Classification : Mineral
- Schedule : 1

PHARMACOLOGICAL ACTION:

Magnesium (Mg) is the second most abundant intracellular cation, after potassium. 50% of total body magnesium is found in bone. Mg is essential for the movement of sodium, potassium and calcium into and out of cells. Low potassium in combination with low magnesium is a risk factor for multiple dysrrhythmias, including VF.

Magnesium plays an important role in stabilizing excitable membranes.

INDICATIONS:

- Recommended for use in cardiac arrest if torsades de pointes or suspected hypomagnesaemia is present
- Life-threatening ventricular dysrrhythmias due to digitalis toxicity
- Acute severe asthma unresponsive to conventional therapy
- Control of seizures in toxaemia of pregnancy

PRECAUTIONS:

- Occasional fall in blood pressure with rapid administration.
- Use with caution if renal failure is present.
- Parenteral therapy should be undertaken with caution, particularly in patients with cardiac conduction defects or receiving digitalis therapy.
- Magnesium crosses the placenta and may produce respiratory depression in the neonate if used within 2 hours prior to delivery.

PACKAGING:

- 1g/2 ml ampoule (50% solution = 500mg/ml)

DOSAGE AND ADMINISTRATION:

CARDIAC ARREST & ACUTE SEVERE ASTHMA UNRESPONSIVE TO CONVENTIONAL THERAPY

ADULTS:

- 1 – 2g (2 to 4 ml of a 50% solution)
- Dilute 1g/2ml vial to 10ml with sterile water = 10% solution.
- Give slowly, not exceeding 1.5ml/min, with continuous careful monitoring.

PAEDIATRICS:

- 25 to 50 mg/kg (max dose 2g) over 10 to 20 minutes

CONVULSIONS IN TOXAEMIA OF PREGNANCY

BOLUS

- 2 – 4g of a 10% solution given very slowly, with careful monitoring not exceeding 1.5ml/min

  (10% solution is obtained by diluting the 1g/2ml vial to 10 ml with sterile water)

INFUSION

- 3g in 200 ml 0.9% sodium chloride solution at a rate not exceeding 3ml/min.

MEDICAL OXYGEN

DESCRIPTION:

Classification : Naturally occurring atmospheric gas

PHARMACOLOGICAL ACTION:

- Oxygen is an odourless, tasteless, colourless gas present in the atmosphere at a concentration of approximately 21% of local atmospheric pressure
- It reverses the deleterious effects of hypoxaemia on the brain, heart and other vital organs
- Expired air contains 16-17% oxygen
- During optimal active CPR only 25-30% of the normal cardiac output is maintained and for these reasons supplemental oxygen should be administered

INDICATIONS:

- Glasgow Coma Scale < 15/15
- P_AO_2 or S_AO_2 < 90%
- Any patient with abnormal vital signs
- Any respiratory insufficiency or arrest
- Acute decompensation of COPD / Asthma
- Confirmed or suspected hypoxia
- Severe anaemia
- Chest pain of medical or trauma origin
- Multiple or severe trauma
- Cardiac arrest / cardiac failure
- Toxic inhalations
- Prophylactically during air transportation
- Scuba diving accidents

CONTRA-INDICATIONS:

There are no absolute contra-indications for the use of oxygen in the emergency setting

PRECAUTIONS:

- High concentrations of oxygen may reduce the respiratory drive of a COPD patient; therefore, careful monitoring of the patient is required. Do not withhold oxygen from these patients if their prevailing condition is such that oxygen is required.
- Long exposures to high concentrations of oxygen may result in retrolental fibroplasia in neonates and pulmonary fibrosis
- Neonates with a patent ductus arteriosus (PDA); should cyanosis and signs of hypoxia develop after oxygen administration, remove oxygen. In some infants with a PDA and congenital heart disease, the presence of the PDA may be lifesaving because of ductal-dependent systemic or pulmonary blood flow. Increased oxygen concentration tends to constrict the foetal ductus arteriosus.
- Oxygen supports combustion - do not use in the presence of fire, smoke or cigarette smoking
- High pressure oxygen should not be used with oil or grease based substances as it causes an exothermic reaction with the risk of explosion
- Production of superoxide radicals in the presence of paraquat (herbicide) – paraquat and oxygen enhance each other's toxicity, causing severe pulmonary injury.
- Remove oxygen source to one metre away from defibrillation pads / paddles.

PACKAGING:

Pressurised cylinder containing 100% medical oxygen

DOSAGE AND ADMINISTRATION:

- Administered via:
  - Oxygen masks
  - Nasal cannulae
  - Bag-valve-mask / tube-reservoir device
  - Nebulizer device
  - Jet insufflation

- At the correct flow rate the following devices will deliver the following approx. F_iO_2:
  - Simple face mask = 35 - 60% at 6 - 10 L/minute
  - Venturi mask (manufacturer's instructions) = 24 – 50% at 4 - 12 L/minute
  - Nasal cannulae = 21 - 40% at 1 - 6 L/minute
  - Partial re-breather mask = 35 - 70% at 6 - 10 L/minute
  - Non-re-breather mask = 60 - 100% at 6 - 15 L/minute
  - Bag-valve-mask/tube = 50% at 12 - 15 litres/minute
  - Bag-valve-mask/ tube-reservoir device = 95 – 100% at 15 L/minute

  (Adequate flow rate = Reservoir bag inflated > 1/3 of its volume at all times)

METOCLOPRAMIDE MONOHYDROCHLORIDE

DESCRIPTION:

- Classification : Anti-emetic
- Schedule : 4

PHARMACOLOGICAL ACTION:

- Metoclopramide acts on the chemo-emetic trigger zone (CETZ) to produce a central anti-emetic effect
- With regard to the gastrointestinal tract, metoclopramide enhances the motility of smooth muscle from the oesophagus through the proximal small bowel and accelerates gastric emptying and the transit of intestinal contents from the duodenum to the ileo-caecal valve

PHARMACO-KINETICS:

- Half-life: 4-6 hours

ADVERSE EFFECTS:

- CNS
  - Extra-pyramidal effects
  - Depression
- GIT
  - Diarrhoea
  - Abdominal cramps

INDICATIONS:

- Nausea and vomiting due to:
  - Stimulation of CETZ by medication (e.g. morphine)
  - Motility disorders of the GIT (e.g. gastro-enteritis)

CONTRA-INDICATIONS:

- Known hypersensitivity / allergy to metoclopramide
- CNS: Epilepsy
- GIT: Haemorrhage, obstruction, perforation, or postoperative
- Children due to increased incidence of extra-pyramidal effects

PRECAUTIONS:

- Pregnancy and lactation
- Elderly
- Not effective against direct stimulation of Vomiting Centre (e.g. emotional, visual, olfactory or labyrinthine disorders or motion sickness)
- In Parkinson's disease, metoclopramide increases extra-pyramidal effects

PACKAGING:

- 10mg/2ml ampoule

DOSAGE AND ADMINISTRATION:

- Adults > 60 kg: 10 mg slowly IVI/ IMI
- Adults < 60 kg: 5 mg slowly IVI/ IMI

MIDAZOLAM

DESCRIPTION:

- Classification : Sedative / hypnotic / anti-convulsant / anxiolytic
- Schedule : 5
- Antidote : Flumazenil

PHARMACOLOGICAL ACTION:

- Midazolam is a benzodiazepine, acting on the central nervous system
- These actions result from the potentiation of the neural inhibition that is mediated by GABA
- It has anxiolytic, sedative, sleep-inducing, and anticonvulsant properties
- It causes anterograde and retrograde amnesia
- It is water-soluble allowing mixture and infusion as opposed to diazepam which has an oily base.

PHARMACO-KINETICS:

- Half-life : 1.5-2.5 hours
- Onset of action : 1-3 minutes
- Duration of action : 30 minutes
- 2-3 times more potent than diazepam

ADVERSE EFFECTS:

- CNS: Depression
- Resp: Depression (rapid administration)
- CVS: Hypotension (large dosages and rapid administration)
- Nausea and vomiting
- Diplopia
- Thrombophlebitis
- Paradoxical excitation
- Physical and psychological dependence

INDICATIONS:

- Sedation
- Induction agent for intubation
- Anticonvulsive therapy – Not first line therapy.
- It should not be administered in a patient with persistent convulsions unless lorazepam / diazepam unavailable.

CONTRA-INDICATIONS:

- Known hypersensitivity / allergy to benzodiazepines

PRECAUTIONS:

- Respiratory disorders:
  - COPD / asthma / hypoventilation
- Cardiovascular disorders:
  - Hypotension / hypovolaemia / congestive cardiac failure
- Psychosis:
  - No anti-psychotic effects
  - May increase agitation
- Active Labour:
  - Neonatal suppression
- Rule out reversible causes of convulsions e.g. hypoglycaemia
- Elderly, debilitated and paediatric patients are more sensitive to the side effects
- Alcohol, barbiturates, narcotics and other depressants acting on the central nervous system may enhance/ alter the effects of midazolam

PACKAGING:

- 5mg/5ml ampoule
- 15mg/3ml ampoule
- 50mg/10ml ampoule

DOSAGE AND ADMINISTRATION:

Adults:

- Sedation : 1mg/min slowly IVI
- Induction : 1mg / 15 to 30 seconds IVI
- Titrate to effect : use the minimum effective dosage
- Maintenance infusion : 0.03mg/kg/hr - 0.1mg/kg/hr when used in combination with narcotic analgesics
- Convulsions : 0.15mg/kg slowly IVI (maximum 0.3mg/kg)

  IMI not recommended as first line route – absorption too slow

  ONLY give IMI if no IV access available

  0.15mg/kg IMI (maximum 0.3mg/kg)

Children:

- Sedation : 0.5mg/min slowly IVI
- Induction : 0.5mg/30 seconds IVI
- Titrate to effect : use the minimum effective dosage
- Maintenance infusion : 0.03mg/kg/hr - 0.1mg/kg/hr when used in combination with narcotic analgesics
- Convulsions : 0.15mg/kg slowly IVI
  - Rectally : 0.4 – 1mg/kg
  - Nasally/ buccally : 0.4mg/kg
  - IMI : 0.15mg/kg

  IMI not recommended as first line route – absorption too slow; ONLY if no IV access available

MORPHINE SULPHATE

DESCRIPTION:

- Classification : Narcotic analgesic
- Schedule : 6
- Antidote : Naloxone hydrochloride

PHARMACOLOGICAL ACTION:

- Morphine is a centrally acting analgesic that binds to specific opioid receptors in the brain and spinal cord, resulting in an increase of the pain threshold
- Reduces myocardial oxygen consumption and workload
- Morphine dilates the capacitance vessels of the peripheral venous bed, reducing venous return to central circulation, and diminishing ventricular preload.
- Morphine also reduces afterload by causing mild arterial vasodilation – morphine thus is an acceptable adjunct for acute pulmonary oedema.

PHARMACO-KINETICS:

- Half-life : 2 hours
- Onset of action : 2-3 minutes
- Peak effect : 20 minutes
- Duration of action : 4-6 hours

ADVERSE EFFECTS:

- Resp:
  - Depression
  - Bronchoconstriction
- CVS:
  - Flushing, sweating
  - Hypotension
  - Bradycardia
- CNS:
  - Convulsions
  - Depression

- GIT:
  - Nausea, vomiting
  - Dry mouth
  - Biliary spasm
- Other:
  - Miosis, blurred vision
  - Tolerance
  - Dependence
  - Urinary retention
  - Histamine release

INDICATIONS:

- Acute severe pain
- Indicated for patients with continuing ischaemic chest pain (Acute Coronary Syndromes (ACS) that is NOT RELIEVED by Glyceryl Trinitrate
- Cardiogenic pulmonary oedema
- Concomitant use with benzodiazepines for synergism in induction

  CAUTION: When given together, the synergistic interaction results in effects (both desired and adverse) greater than the sum of each individual agent acting independently, allowing for reduced dosages of both drugs.

CONTRA-INDICATIONS:

- Known hypersensitivity/ allergies

PRECAUTIONS:

- CNS disorders:
  - Head injury, raised ICP
- CVS disorders:
  - Hypotension, hypovolaemia
- Resp disorders:
  - COPD, asthma
- GIT disorders:
  - Undiagnosed abdominal pain
- Children under the age of 1 year
- Elderly, debilitated patients
- The effects of opiates may be enhanced by alcohol, barbiturates, benzodiazepines, narcotics and other depressants acting on the central nervous system
- When given prior to / together with benzodiazepines (i.e. midazolam) for induction, morphine acts synergistically, and enhances the efficacy of the induction agent.

PACKAGING:

- 10mg/1ml amber coloured ampoule
- 15mg/1ml amber coloured ampoule

DOSAGE AND ADMINISTRATION:

Adults:

- Dilute to concentration of 1mg/ml and titrate to effect at 1mg/30 seconds slowly IVI

  (This approach reduces incidence of nausea, vomiting and other complications)
- Titrate to effect (use minimum effective dosage)

Children:

- 0.1mg/kg slowly IVI
- Titrate to effect (use the minimum effective dosage)
- Maximum 0.2mg/kg

NOTE:

- Strict register to be maintained by individual paramedics
- Paramedics are mandated to apply strict security measures to ensure control of schedule 6 medicines – best practice in the health industry requires these drugs to be secured behind two locks (The conviction when one is found guilty of negligence in relation to the control of Schedule 6 medicine is either R100 000 fine or 10 years in jail – this mandates the industry to take all possible precautions in this regard)

NALOXONE HYDROCHLORIDE

DESCRIPTION:

- Classification : Narcotic antagonist
- Schedule : 4

PHARMACOLOGICAL ACTION:

- Naloxone competes with narcotic drug's opiate receptors in the central nervous system to displace the narcotic analgesics from their receptor sites. It will thus reverse the effects of narcotic analgesics such as respiratory depression, stupor, etc., but it also has the ability, because of its action, to cause acute withdrawal in a patient who is dependent on narcotics

PHARMACO-KINETICS:

- Half-life : 60 minutes
- Onset of action : 2 minutes
- Duration of action : 45 minutes

ADVERSE EFFECTS:

- Acute withdrawal symptoms in opioid dependent patients
  - Sweating, piloerection, tremors
  - Agitation and convulsions
- Mydriasis
- Excessive lacrimation
- Nausea and vomiting
- CVS:
  - Ventricular tachycardia or fibrillation, hypotension or hypertension

INDICATIONS:

NOTE: The only therapeutic goal is to reverse any respiratory depression in a suspected narcotic overdose, and not to fully awaken such patients, who may become violent should acute withdrawal occur

- Only to be administered after adequate oxygenation and ventilation
- Reversal of respiratory depression due to acute opiate usage
- Neonatal respiratory depression secondary to the administration of opioids to the mother in the previous 4 hours

CONTRA-INDICATIONS:

- Known hypersensitivity / allergy
- Infants of opioid addicted mothers

PRECAUTIONS:

- Suspected narcotic dependence (may precipitate an acute withdrawal syndrome) – administer IV very slowly to reverse respiratory depression only.
- The effect of naloxone is usually shorter than that of many long acting narcotics and therefore repeated doses may have to be given in order to maintain the desired effect;

  Continued monitoring and observation of such patients is mandatory.
- Provide adequate ventilation until respiratory depression has been adequately reversed

PACKAGING:

- 0.4mg/ml ampoule
- 0.02mg/ml in a 2ml ampoule – this ampoule is <u>not recommended</u>

DOSAGE AND ADMINISTRATION:

<u>Adults:</u>

- 0.4mg slowly IVI/IMI (0,1mg/kg)
- Repeat every 5 minutes, up to 2mg
- Should 2mg fail to elicit the desired response, then overdose with agents other than opioids should be considered

<u>Children:</u>

- 0.1mg/kg slowly IVI/IMI
- Repeat every 5 minutes, to a maximum of 2mg

ENTONOX® (NITROUS OXIDE and OXYGEN)

DESCRIPTION:

- Classification : Analgesic gas
- Schedule : 4

PHARMACOLOGICAL ACTION:

- Colourless, sweet-smelling, non-irritant gas
- Heavier than room air / oxygen
- Nitrous oxide has mild analgesic and anaesthetic effects depending on the dose inhaled
- When inhaled it depresses the central nervous system causing anaesthesia
- In addition, the high concentration of oxygen delivered along with the nitrous oxide increases oxygen tension in the blood, thereby reducing hypoxia
- It provides rapid, easily reversible relief of mild to moderate pain

PHARMACO-KINETICS:

- Extremely blood-insoluble
- Not metabolised by the body
- Eliminated via lungs (small amounts are eliminated through the skin)
- Onset of action: 30-60 seconds (maximum 3-4 minutes)

ADVERSE EFFECTS:

- Light-headedness
- Drowsiness
- Nausea and vomiting

INDICATIONS:

- Relief of pain from:
  - Acute myocardial infarction
  - Musculoskeletal trauma
  - Burns - not including burns of the respiratory tract
  - Active labour
  - Any other condition requiring pain relief provided there are no contra-indications present

CONTRA-INDICATIONS:

- Neurological impairment:
  - Any altered level of consciousness
  - Inability to comply with instructions
  - Head injuries
- Air entrapment:
  - COPD/asthma patient during an acute episode
  - Acute pulmonary oedema
  - Chest injuries
  - Abdominal trauma
  - Diving accidents (specifically Acute Decompression Illness)
  - Burns to the respiratory tract
- Other limitations:
  - Hypotension (SBP < 90 mmHg)
  - Major facial trauma (anatomic)

PRECAUTIONS:

- The constituent gases nitrous oxide and oxygen disassociate at < 4°C. It is imperative that the cylinder is inverted a few times and then placed horizontal when used in cold conditions as the patient will otherwise inhale pure nitrous oxide
- Nitrogen has decreased solubility in blood. Once in a gas-containing space the gas dissociates and nitrogen diffuses out slower than nitrous oxide diffuses in, and there is a net increase in gas volume
- When the mask is removed after prolonged use, the gas will come out of solution in the lungs and displace the oxygen in the alveoli, causing hypoxia
- In order to prevent this, the mask must not be strapped to the patient's face, and the patient must receive oxygen for ± 5-10 minutes, especially after prolonged use
- Nitrous oxide is a non-explosive gas

PACKAGING:

- Pressurised cylinders containing a mixture of 52% nitrous oxide and 48% Oxygen (N_2O+O_2 52% : 48%)

DOSAGE AND ADMINISTRATION

- Entonox is predominantly a self-administered gas
- The administration procedure is to be explained to the patient carefully beforehand to prevent unnecessary complications
- Once the patient has inhaled enough Entonox to control the pain, they will remove the mask thereby preventing any chances of overdosing
- Registered paramedics are entitled to administer Entonox to a patient, but this requires careful monitoring of the patient in order to prevent complications arising
- If the patient becomes drowsy, remove the Entonox and replace immediately with oxygen

PROMETHAZINE

DESCRIPTION:

- Classification : Antihistamine
- Schedule : 5

PHARMACOLOGICAL ACTION:

- Promethazine is a non-selective antihistamine with considerable activity at other receptor sites: it combines potent H_1-antagonism with antiemetic, anticholinergic, and marked sedative activities, and some hypotensive effects.
- The role of promethazine in acute anaphylaxis is adjunctive to other core resuscitative approaches.

PHARMACO-KINETICS:

- Onset of action (IV) : 3 – 5 min
- Duration of action : 12 hours
- Half-life : 10 – 14 hours

ADVERSE EFFECTS:

- CNS effects are common: drowsiness, dizziness, fatigue, inco-ordination
- Paradoxical stimulation – with seizures, hallucinations, and nervousness – may occur, especially with high doses or in children.
- GIT effects include nausea, vomiting and epigastric pain.
- Anticholinergic effects such as dry mouth, blurred vision and urinary retention occur seldom.

INDICATIONS:

- Acute anaphylaxis/severe allergy

CONTRA-INDICATIONS:

- Not recommended for children under 2 years of age.
- Known hypersensitivity / allergy to promethazine

PRECAUTIONS:

- Epilepsy
- Cardiac disease
- Asthma
- Narrow-angle glaucoma
- Elderly patients – more susceptible to CNS and anticholinergic effects.

PACKAGING:

- 25mg/ml and 50mg/2ml ampoules
- Oral antihistamines: 10mg and 25mg tablets

DOSAGE AND ADMINISTRATION:

- Adults: 25mg deep IMI or
  slowly IVI after 10-fold dilution with water for injection
- Children: 0.5mg/kg
  > 12 yrs 25mg IM or **slow** IV
  6-12 yrs 12.5mg IM **or slow** IV
  2-5yrs 6.25mg IM **or slow** IV
  NOT RECOMMENDED IN CHILDREN < 2yrs

SODIUM BICARBONATE 8.5%

DESCRIPTION:

- Classification : Electrolyte / mineral
- Schedule : 1

PHARMACOLOGICAL ACTION:

Sodium bicarbonate is an electrolyte solution intended for intravenous use for restoring the balance of the bicarbonate-carbonic acid systems

ADVERSE EFFECTS:

- Hypernatraemia
- Metabolic alkalosis
- Tissue necrosis and thrombophlebitis (if extravasation occurs)
- Hyperosmolarity
- Hypokalaemia
- Hypocalcaemia
- Intracranial haemorrhage (children)

INDICATIONS:

Pre-hospital use of sodium bicarbonate is indicated in:

- 3-lead ECG diagnosis of suspected hyperkalaemia in protracted PEA that is not responding
- Known OD induced cardiac arrest with protracted PEA that is not responding (e.g. tricyclic anti-depressant OD, aspirin OD, cocaine OD
- Severe tricyclic anti-depressant OD,with acute decompensation / unstable patient, i.e. QRS complex > 100 milliseconds,or if hypotension develops
- Prior to release of prolonged entrapment to prevent acute crush syndrome collapse.

CONTRA-INDICATIONS:

- Respiratory hypercarbic acidosis
- Absence of effective ventilation and circulation

PRECAUTIONS:

- Never combine with calcium chloride in the same infusion and never administer via an infusion line with calcium containing solutions (e.g. Ringers Lactate or Haemaccell), unless the IV line is flushed with N/S before and after administration (it may otherwise lead to precipitation)
- Never combine with catecholamines (e.g. adrenaline) in the same infusion (this may lead to inactivation)
- Not recommended for routine use in cardiac arrest patients.
- Never administer via the ET route
- A well-placed and free flowing IVI line is mandatory

PACKAGING:

- 20 ml ampoule of 8.5% solution (1.7g/ 20ml)
- 50 ml ampoule of 8.5% solution (4.25g/50ml)
- 50ml infusion bag containing an 8.5% solution
- 200ml 4.2% glass bottle

DOSAGE AND ADMINISTRATION:

- 1ml/kg (8.5%) slowly IVI with free flowing line

THIAMINE HYODROCHLORIDE

DESCRIPTION:

Classification : Vitamin
Schedule: 1

PHARMACOLOGICAL ACTION:

- Thiamine is an important co-enzyme in cellular carbohydrate metabolism.
- In the absence of sufficient thiamine, some neuronal cells are vulnerable to ischaemia and necrosis, leading to Wernicke's encephalopathy and Korsakoff's psychosis.

ADVERSE EFFECTS:

- Anaphylactic reactions have been reported but are rare.
- Pruritus and dermal flushing with large doses.

INDICATIONS:

- Suspected Wernicke's encephalopathy.
- Prior to intravenous administration of 50% glucose, where the possibility of thiamine deficiency is suspected, e.g alcoholism, malnourishment

CONTRA-INDICATIONS:

- Known hypersensitivity/allergy to thiamine hydrochloride.

PRECAUTIONS:

None.

PACKAGING:

100mg/2ml ampoule.

DOSAGE AND ADMINISTRATION:

Adults

100mg IVI bolus, slowly.

Children

25 – 50mg IVI bolus, slowly.

Protocols

ALS PRACTITIONER PROTOCOLS

Systematic Approach: patient assessment & emergency management

Primary Survey:

- Assess Scene safety
- Assess Responsiveness
- **A**irway & alignment of c-spine prn
- **B**reathing, ventilation & oxygenation
- **C**irculation & external haemorrhage control
- **D**efibrillation prn

Secondary Survey:

- **A**irway: Adequate & Protected?
- **B**reathing: Confirm tube placement; Air movement? Oxygenation?
- **C**irculation: IV access & fluids prn; Monitors.
- **D**ifferential diagnosis
- History
- Vital signs
- Physical examination (head-to-toe survey)

The systematic approach above serves as a general guideline and memory aid for the assessment, management and re-evaluation of patients. The order of evaluation and intervention may be modified and adapted as the situation demands.

The above approach is implied in all the ALS protocols.

Specialist medical advice should be sought whenever possible and especially when deviations from protocol may be necessary.

RESUSCITATION COUNCIL OF SOUTHERN AFRICA

Treatment of Severe Anaphylactic Reactions

(Adult and Child)

ALLSA – Allergy Society of South Africa

RESPIRATORY DIFFICULTY
(Stridor, Wheeze, Distress)
and/or
SIGNS OF SHOCK/HYPOTENSION
(especially if skin changes are present)

↓

OXYGEN
MAINTAIN PATENT AIRWAY
(Intubate if necessary)

↓

ADRENALINE
(1mg/ml 1:1000)

>12 yrs	0,5 mg IM
6-12 yrs	0,3 mg IM
2-5 yrs	0,2 mg IM
< 2 yrs	0,1 mg IM

Repeat every 5-15 minutes if no improvement

PROMETHAZINE
(Antihistamine)

>12 yrs	25 mg IM or slow IV
6 - 12 yrs	12,5 mg IM or slow IV
2 - 5 yrs	6,25 mg IM or slow IV

CRYSTALLOID
(e.g. Ringers Lactate)
Rapid infusion of 1-4 litres (20ml/kg for children) if no response to adrenaline.
Repeat IV infusion as necessary, as large amounts may be required

HYDROCORTISONE
(Steroid)

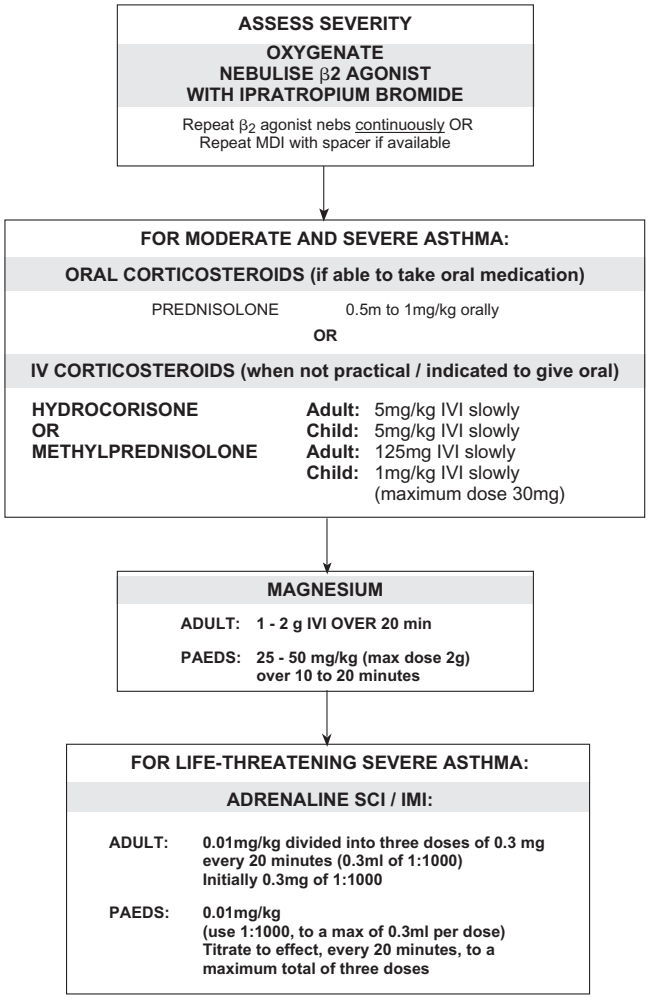
>12 yrs	200 mg IM or slow IV
6 - 12 yrs	100 mg IM or slow IV
2 - 5 yrs	50 mg IM or slow IV

GLUCAGON
Adult - 1-2 mg IM or slow IV every 5 min if unresponsive to adrenaline, and especially if on beta blockers.
Child 20 µg/kg (Max- 1 mg)

SALBUTAMOL
(Inhaled beta$_2$-Agonist)
5mg every 15 minutes if no response to drug treatment and severe bronchospasm

Resuscitation Council of Southern Africa
www. resuscitationcouncil.co.za

Treatment of Acute Asthma
(Bronchial asthma)
(Adult and Child)

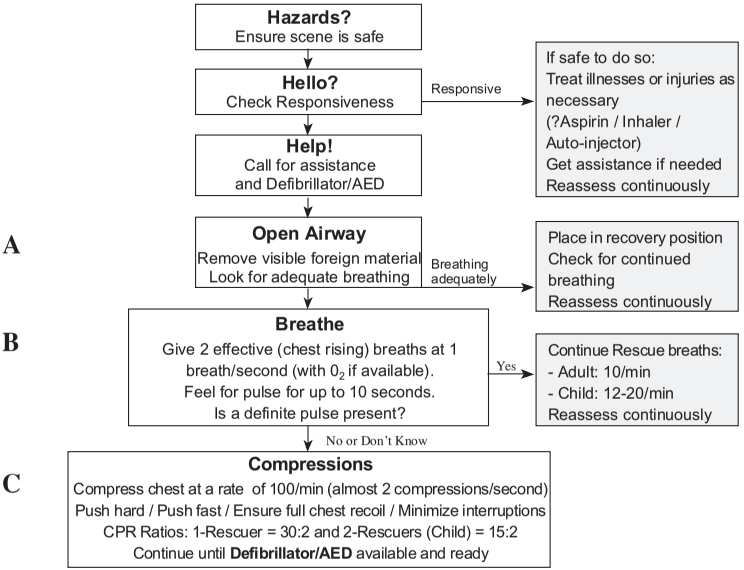


RESUSCITATION COUNCIL OF SOUTHERN AFRICA

EMSSA
Emergency Medicine Society of South Africa

Advanced Life Support for Healthcare Providers

(Adult and Child)



RESUSCITATION COUNCIL OF SOUTHERN AFRICA

Advanced Life Support for Healthcare Providers

(Adult and Child) (CONTD)

EMSSA Emergency Medicine Society of South Africa

D

If time from collapse > 5 minutes without CPR, first do 2 minutes of CPR before analysing

Analyse Rhythm

Shockable
(VF/Pulseless VT)

Give 1 Shock
Biphasic: 120-360J (4 J/Kg)
Monophasic - 360 J (4 J/Kg)

***Immediately* resume CPR**
for 2 minutes

During CPR
Check electrode/paddle position and contact

Attempt/Verify:
- Tracheal Intubation/Adjuncts
- Vascular access

Correct Contributing Causes
Give Adrenaline - 1mg (0,01 mg/kg) IV/IO every 4 min

Consider:
- Amiodarone - 300mg (5mg/kg) IV/IO if VF/VT
- Atropine - 1mg (0,02mg/kg) IV/IO every 4 min if brady/asystole (up to 3 doses)
- Magnesium - 2g (50 mg/kg) IV/IO if Torsades or hypomagnesaemic

Do not interrupt compressions unless absolutely necessary

Non-Shockable
(PEA/Asystole)

After 2 min of CPR, if organized electrical activity returns, check pulse:
- If present - provide post-resuscitation care
- If absent, continue CPR

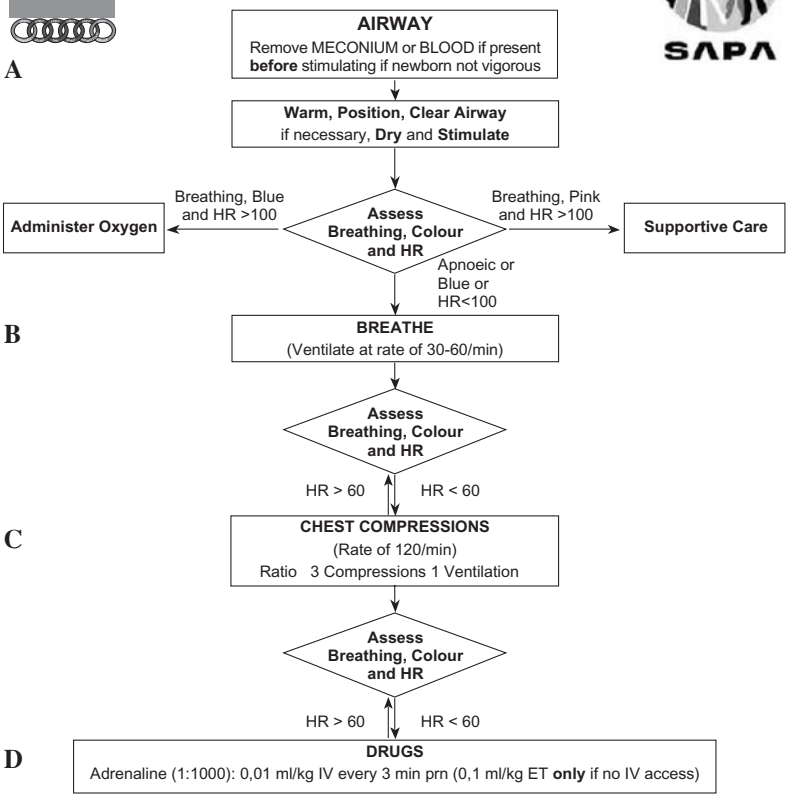
***Immediately* resume CPR**
for 2 minutes

Resuscitation Council of Southern Africa
www. resuscitationcouncil.co.za

RESUSCITATION COUNCIL OF SOUTHERN AFRICA

Newly-Born Life Support Algorithm

SAPA



ONLY IF SPECIFICALLY INDICATED:

¥	Normal Saline	10 ml/kg IV over 5-10 min if perfusion remains poor
¥	Naloxone	0.1 mg/kg IV/IM only if narcotics used within previous 4 hours
¥	Bicarbonate	1 mEq/kg IV (diluted) only for persistent metabolic acidosis in prolonged resuscitation
¥	Dextrose	0.2 g/kg IV (diluted) only if hypoglycaemia develops post-delivery

The algorithm follows the assumption that the previous step was unsuccessful and the newly-born is deteriorating

Resuscitation Council of Southern Africa
www. resuscitationcouncil.co.za

Emergency Management of Convulsions

(Adult and Child)

- **Protect head, Prevent further injury**
- **Turn lateral**
- **Administer oxygen**

ASSESS for & TREAT CAUSE of CONVULSION

- **Test blood glucose & give 50% dextrose if < 3.5mmol/l**
- **Consider 100mg thiamine pre-dextrose**
- **Test core temperature & cool if pyrexic**

EITHER LORAZEPAM

Adults:

¥ Lorazepam 2 - 4mg slowly IVI (<2 mg/min) during convulsions
If required an additional 4mg IVI may be administered after 10 minutes

Children:

¥ Status epilepticus: 0.05 - 0.1mg/kg **slowly** IVI
Repeat if necessary after 10 min

OR DIAZEPAM

Adults:

¥ 5mg/min slowly IVI (0.15mg/kg) Repeat every 2 - 5 minutes

¥ Maximum 20 mg

¥ Rectally 10mg (maximum 20mg)

Children:

¥ 0.2mg/min slowly IVI Repeat every 2 - 5 minutes

¥ Maximum: children > 5 years: 10 mg children < 5 years: 5 mg

¥ Rectally: 0.5 mg/kg (children up to 3 yrs, 5mg; > 3yrs, 10 mg)

ALTERNATIVELY IF ABOVE OPTIONS ARE NOT AVAILABLE

MIDAZOLAM (off-label use)

Adults:

¥ 0.15mg/kg slowly IVI (maximum 0.3mg/kg)

Children:

¥ Intravenously: 0.15mg/kg slowly IVI
¥ Rectally: 0.4 - 1mg/kg
¥ Nasally/Bucally: 0.4mg/kg

MAGNESIUM - CONVULSIONS of TOXAEMIA OF PREGNANCY

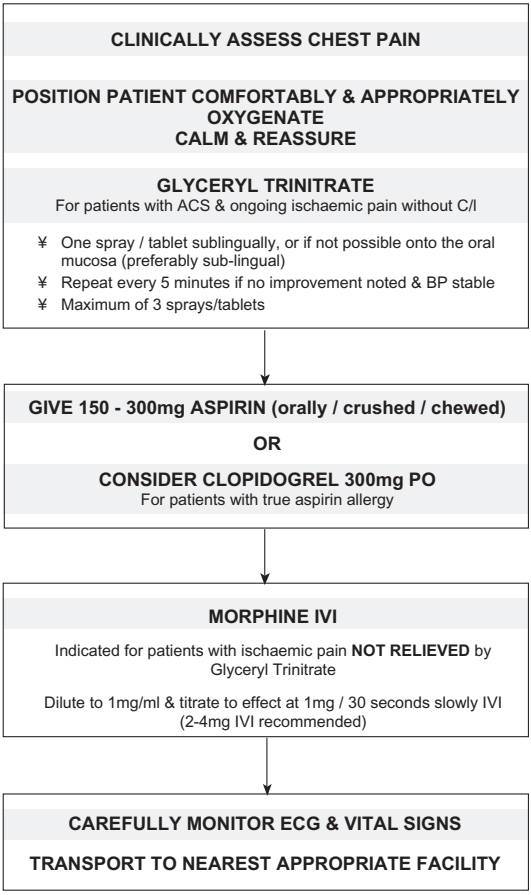
BOLUS:

¥ 2 - 4g of a 10% solution given very slowly, with careful monitoring not > 1.5ml/min (10% solution: dilute 1g/2ml vial to 10ml with sterile water)

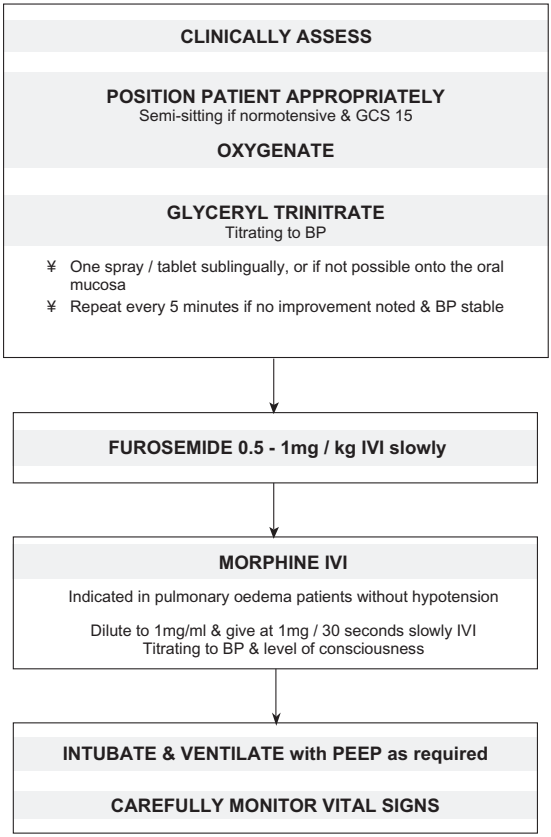
INFUSION:

¥ 3g in 200 ml 0.9% sodium chloride solution at rate not > 3ml/min

Treatment of Acute Coronary Syndromes (ACS)



Treatment of Acute Pulmonary Oedema (Suspected Cardiac Origin)



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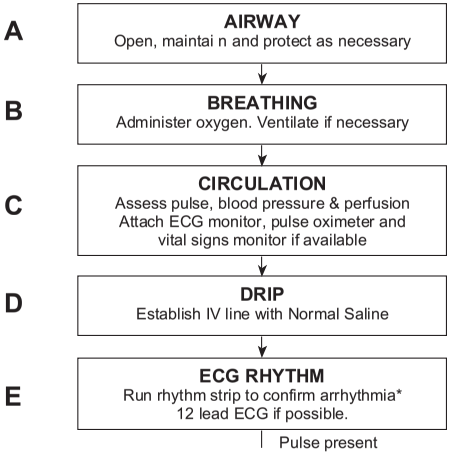
Adult Emergency Arrhythmia Management Algorithm

EMSSA Emergency Medicine Society of South Africa



(The algorithm follows the assumption that the previous step was unsuccessful and the patient is deteriorating)

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RESUSCITATION COUNCIL OF SOUTHERN AFRICA

Adult Emergency Arrhythmia Management Algorithm (Contd)

EMSSA Emergency Medicine Society of South Africa

Pulse present

Bradycardia

HR<60/min

Assess patient

Adverse Features

Symptoms	Signs
Chest pain	SBP < 90mm Hg
Short of breath	Heart failure
↓ LOC	HR < 40/min
	2° Block (Type II) or
	3° Block (wide QRS)

If unstable Wide QRS

If unstable Narrow QRS

Atropine

(Exclude hyperkalaemia/hypoxia/hypothermia/ head injury/heart block/heart transplant)
0,5mg IV every 3 min
(max - 3mg)

Pacing (as soon as possible)

Transcutaneous pacing

Chronotrope (if pacing unavailable)
Adrenaline 2-10µg/min IV or

Consider (if β-blocker or CCB overdose):
¥ Glucagon (3mg IV, then 3mg/hr)

Narrow Complex Tachycardia

(Supraventricular Tachycardia)
HR > 100/min with QRS complexes < 0,12 sec

Assess patient

Adverse Features

Symptoms	Signs
Chest pain	SBP < 90mm Hg
Short of breath	Heart failure
↓ LOC	HR > 200/min

If stable

If unstable

Vagal Manoeuvres

(Except varying R-R intervals/AF)
Cough/Valsalva/Breathholding/Trendellenberg
Carotid Massage (C/I with bruits, AMI, dig tox, elderly)
Facial application of ice water (C/I with AMI)

Adenosine (if available)
(Except varying R-R intervals/AF)
6mg IV rapidly, then 12mg IV after 2 min,
then 12mg IV again if necessary

Amiodarone
150mg over 10 min IV (15mg/min),
then 1mg/min infusion

Wide Complex Tachycardia

(Ventricular Tachycardia)
HR > 100/min with QRS complexes < 0,12 sec

Assess patient

Adverse Features

Symptoms	Signs
Chest pain	SBP < 90mm Hg
Short of breath	Heart failure
↓ LOC	HR > 150/min

If unstable

If stable

Synchronised Cardioversion

(Sedate if necessary)

Start with 100J initially
(monophasic or biphasic)

Narrow complexes

Wide complexes

Amiodarone
150mg over 10 min IV (15mg/min), then
1mg/min infusion
or

Lignocaine
(If Amiodarone unavailable)
1mg/kg IV every 5 min prn (Max=3mg/kg)
and 2mg/min infusion

Consider (if Torsades de Pointes):
¥ Magnesium (1-2g IV slowly) or
¥ Overdrive Pacing or
¥ Lignocaine (if IHD)

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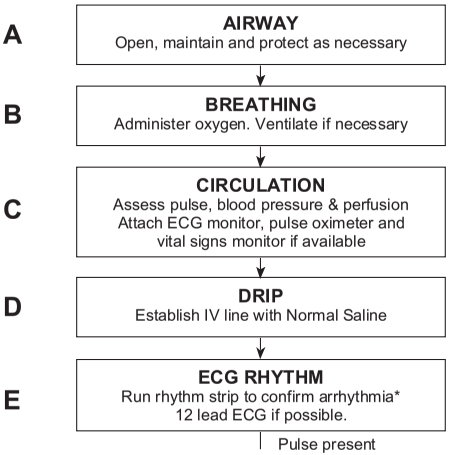
Paediatric Emergency Arrhythmia Management Algorithm



(The algorithm follows the assumption that the previous step was unsuccessful and the patient is deteriorating)

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Paediatric Emergency Arrhythmia Management Algorithm (Contd.)

EMSSA Emergency Medicine Society of South Africa

Pulse present

Bradycardia
HR<60/min despite effective oxygenation & ventilation

Assess patient

Adverse Features
Poor perfusion,
Hypotension
Respiratory difficulty
↓LOC
(Exclude hyperkalaemia/hypoxia/hypothermia/ head injury/heart block)

If unstable

Start CPR
1. Rescuer: 2 breaths: 30 compressions
2. Rescuers: 2 breaths: 15 compressions

Adrenaline (1:1000)
0,01 ml/kg IV/IO (0,1 ml/kg ET) every 3-5 minutes

Atropine
0,02mg/kg IV/IO if vagal tone or primary AV block
(Minimum - 0,1mg/Maximum total - 1mg)

Consider pacing

Narrow Complex Tachycardia
(Supraventricular Tachycardia)
HR > 220/min (infant) / > 180/min (child)

Assess patient

Adverse Features
Poor perfusion,
Hypotension
Respiratory difficulty
↓LOC
Abrupt HR change.
P-waves absent or abnormal

If stable

If unstable

Vagal Manoeuvres
(Except varying R-R intervals/AF)
Cough/Valsalva/Breathholding/Trendellenberg
Carotid Massage (older children)
Apply ice to face (infant & young child)

Adenosine (if available)
(Except varying R-R intervals/AF)
0,1mg/kg IV rapidly, then 0,2mg/kg IV after 2 min, (Do not exceed 6+12mg respectively)

Amiodarone
5mg/kg over 20-60 min
(Maximum - 300mg)

Wide Complex Tachycardia
(Ventricular Tachycardia)
HR > 200/min with QRS complexes < 0,08 sec

Assess patient

Adverse Features
Poor perfusion,
Hypotension
Respiratory difficulty
↓LOC

If unstable

If stable

Synchronised Cardioversion
(Sedate if necessary)

0,5 - 1 J/kg, then 2J/kg
(monophasic or biphasic)

Narrow complexes

Wide complexes

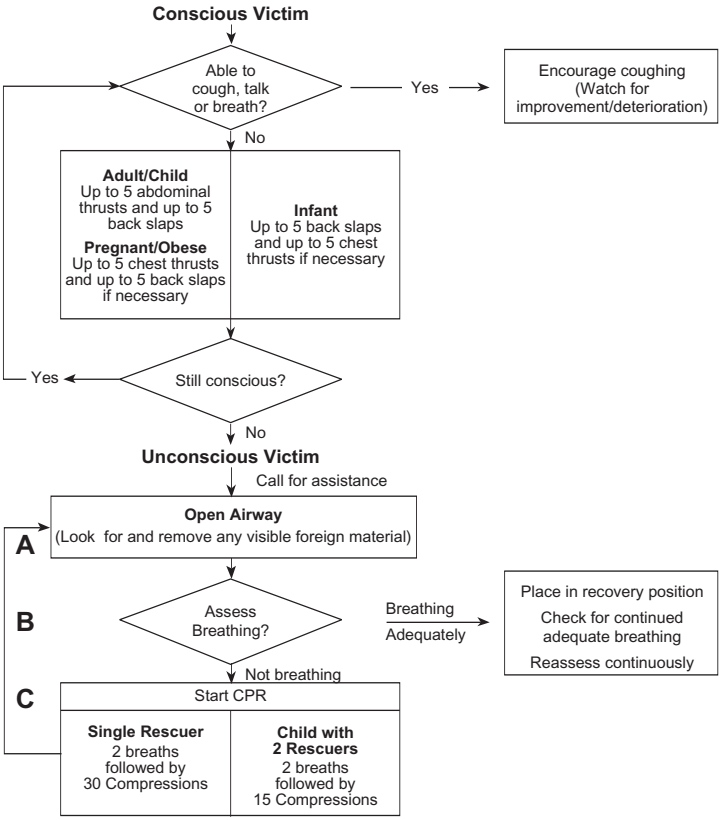
Amiodarone
5mg/kg IV over 20-60 min
(Maximum - 300mg)

RESUSCITATION COUNCIL OF SOUTHERN AFRICA

Choking Algorithm

(Adult and Child

EMSSA
Emergency Medicine Society of South Africa



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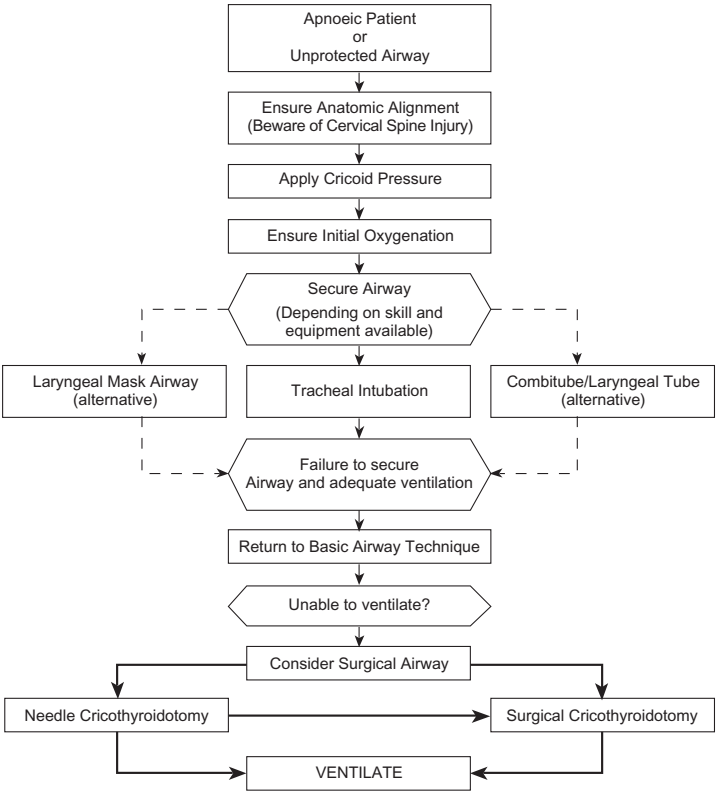
Advanced Airway Management Algorithm

(Adult and Child)



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DECLARATION OF DEATH

Death may be declared to have occurred by a registered ALS paramedic if:

A. The person is obviously dead due to / evidenced by:

1. Decapitation or mortal disfigurement
2. Rigor mortis
3. Putrefaction
4. Post mortem lividity

OR

B. 1. There is no evidence of cardiac electrical activity on electrocardiogram in all 3 leads for 30 seconds or more (if ECG available) **OR**
2. There are no palpable central pulses **and**
3. There are no audible heart sounds **and**
4. Bilateral fixed dilated pupils are present **and**
5. There has been no spontaneous breathing for the past 5 minutes **and**
6. Absent oculo-cephalic reflex **and**
7. Absent gag and corneal reflexes

Provided that:

The signs B 1 - 7 have been considered in terms of hypothermia, or possible drug effects.
If the above guidelines are adhered to, ALS paramedics may declare death and hence further declaration by a medical practitioner would not be necessary before removing the patient from the scene.

Abbreviations

COMMONLY ENCOUNTERED ABBREVIATIONS

ABBREVIATION	MEANING
α	Alpha
β	Beta
µg / mcg	Microgram
ACS	Acute Coronary Syndrome
ADP	Adenosine Diphosphate
ALS	Advanced Life Support
AMI	Acute myocardial infarction
AV	Atrio-ventricular
bpm	Beats per minute
Ca^{2+}	Calcium ion
cAMP	Cyclic adenosine mono phosphate
CCB	Calcium channel blocker
CETZ	Chemo-emetic trigger zone
CNS	Central nervous system
COPD	Chronic obstructive pulmonary disease
CPR	Cardiopulmonary resuscitation
CVS	Cardiovascular system
d	Drops
ECG	Electrocardiogram
ET	Tracheal Tube
g	Gram
GABA	Gamma-aminobutyric acid
GIT	Gastrointestinal tract
GUT	Genito-urinary tract
H_20	Water
HGT	Haemo-glucose test
hr/s	Hour/s
ICP	Intracranial pressure

ABBREVIATION	MEANING
IHD	Ischaemic heart disease
IMI	Intramuscular injection
IOI /IO	Intraosseous injection
IOI =IVI	Equivalent doses
IVI	Intravenous injection
K+	Potassium ion
kg	Kilogram
L	litres
LOC	Level of consciousness
max	Maximum
mcg	microgram
MDI	Metered Dose Inhaler
mg	Milligram
Mg	Magnesium
min	Minimum
min	Minute
ml	Millilitre
Na^+	Sodium
N/S	Sodium chloride 0.9%
prn	as required
p.o.	Per os
PSVT	Paroxysmal Surpra-ventricular tachycardia
Resp	Respiratory
SA	Sino atrial
SBP	Systolic blood pressure
SCI	Subcutaneous injection
SVT	Supra-ventricular tachycardia
UDV	Unit dose vial
VF	Ventricular fibrillation
5% D/W	5% Dextrose water solution

Capabilities

CAPABILITIES

These paramedic capabilities, as defined in the PBECP approved Critical Care Assistant and National Diploma EMC Curricula, apply to all emergencies falling within the scope of the profession of emergency care, and are applicable to patients of all ages. ALS capabilities include, & are in addition to, the BLS & ILS capabilities.

NO	CAPABILITY
1	ALS patient assessment, treatment, management and transportation
2	Orotracheal intubation
3	Nasotracheal intubation
4	Blind nasal tracheal intubation
5	Use of the Laryngeal Mask Airway
6	Eosophageal Tracheal Comitube® / Laryngeal tube
7	Retrograde intubation
8	Digital endotracheal intubation
9	Needle cricothyrotomy
10	Surgical cricothyrotomy
11	Nebulization
12	Use of ventilators
13	Nasogastric intubation
14	Orogastric intubation
15	Use of PEEP
16	Defibrillation: manual & AED
17	Synchronised Cardioversion
18	External pacing
19	Vagal manoeuvres
20	Use of IVI crystalloids and colloids

NO	CAPABILITY
21	Peripheral vein cannulation
22	External jugular vein cannulation
23	Femoral vein cannulation
24	Intraosseous cannulation
25	Umbilical vein cannulation
26	Pressure infusion devices
27	Infusion pumps
28	Syringe pumps
29	Blood pressure monitors
30	Capnography & capnometry
31	Pulse oximetry
32	Care of central venous lines
33	Use of Tourniquets
34	PASG - entire garment
35	Needle Thoracocentesis
36	Normal vaginal delivery
37	Mal-presentation management
38	Premature labour management
39	Obstructed labour management
40	Prolapsed cord management
41	Urinary catheterisation
42	Incubator transport and management
43	Drug administration as per medication schedules / standards / guidelines
44	Intravenous, intra-muscular, subcutaneous, endotracheal, intra-osseous routes of administration as per the HPCSA standards and guidelines
45	Use of 3-lead & 12-lead ECG

Patients' Rights Charter

PATIENTS' RIGHTS

1.1 HEALTHY AND SAFE ENVIRONMENT

Everyone has the right to a healthy and safe environment that will ensure their physical and mental health or well-being, including adequate water supply, sanitation and waste disposal, as well as protection from all forms of environmental danger, such as pollution, ecological degradation or infection.

1.2 PARTICIPATION IN DECISION MAKING

Every citizen has the right to participate in the development of health policies, whereas everyone has the right to participate in decision-making matters affecting one's own health.

1.3 ACCESS TO HEALTH CARE

Everyone has the right of access to health care services that include -

a. receiving timely emergency care at any health care facility that is open, regardless of one's ability to pay;

b. treatment and rehabilitation that must be made known to the patient to enable the patient to understand such treatment or rehabilitation and consequences thereof;

c. provision for special needs in the case of newborn infants, children, pregnant women, the aged, disabled persons, patients in pain, persons living with HIV or AIDS patients;

d. counselling without discrimination, coercion or violence on matters such as reproductive health, cancer or HIV/AIDS;

e. palliative care that is affordable and effective in cases of incurable or terminal illness;

f. a positive disposition displayed by health care providers that demonstrates courtesy, human dignity, patience, empathy and tolerance;

g. health information that includes information on the availability of health services and how best to use such services, and such information shall be in the language understood by the patient.

1.4 KNOWLEDGE OF ONE'S HEALTH INSURANCE/MEDICAL AID SCHEME

A member of a health insurance or medical aid scheme is entitled to information about that health insurance or medical aid scheme and to challenge, where necessary, the decisions of such health insurance or medical aid scheme relating to the member.

1.5 CHOICE OF HEALTH SERVICES

Everyone has a right to choose a particular health care provider for services or a particular health facility for treatment, provided that such choice shall not be contrary to the ethical standards applicable to such health care providers or facilities, and the choice of facilities in line with prescribed service delivery guide lines.

1.6 BE TREATED BY A NAMED HEALTH CARE PROVIDER

Everyone has a right to know the person that is providing health care and, therefore, must be attended to by only clearly identified health care providers.

1.7 CONFIDENTIALITY AND PRIVACY

Information concerning one's health, including information concerning treatment may only be disclosed with informed consent, except when required in terms of any law or any order of court.

2. INFORMED CONSENT

Everyone has the right to be given full and accurate information about the nature of one's illnesses, diagnostic procedures, the proposed treatment and the costs involved, for one to make a decision that affects any one of these elements.

3. REFUSAL OF TREATMENT

A person may refuse treatment and such refusal shall be verbal or in writing provided that such refusal does not endanger the health of others.

4. BE REFERRED FOR A SECOND OPINION

Everyone has the right to be referred for a second opinion on request to a health provider of one's choice.

5. CONTINUITY OF CARE

No one shall be abandoned by a health care professional worker or a health facility which initially took responsibility for one's health.

6. COMPLAIN ABOUT HEALTH SERVICES

Everyone has the right to complain about health care services and to have such complaints investigated and to receive a full response on such investigation.

7. RESPONSIBILITIES OF THE PATIENTS

Every patient or client has the following responsibilities:

- to advise the health care providers on his or her wishes with regard to his or her death.
- to comply with the prescribed treatment or rehabilitation procedures.
- to enquire about the related costs of treatment and/or rehabilitation and to arrange for payment.
- to take care of health records in his or her possession.
- to take care of his or her health.
- to care for and protect the environment.
- to respect the rights of other patients and health providers.
- to utilise the health care system properly and not abuse it.
- to know his or her local health services and what they offer.
- to provide health care providers with the relevant and accurate information for diagnostic, treatment, rehabilitation or counselling purposes.

References and Acknowledgements

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6. Cape Peninsula University of Technology, Programme: Emergency Medical Care
7. South African Paediatric Association
8. Allergy Society of SA

HPCSA

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