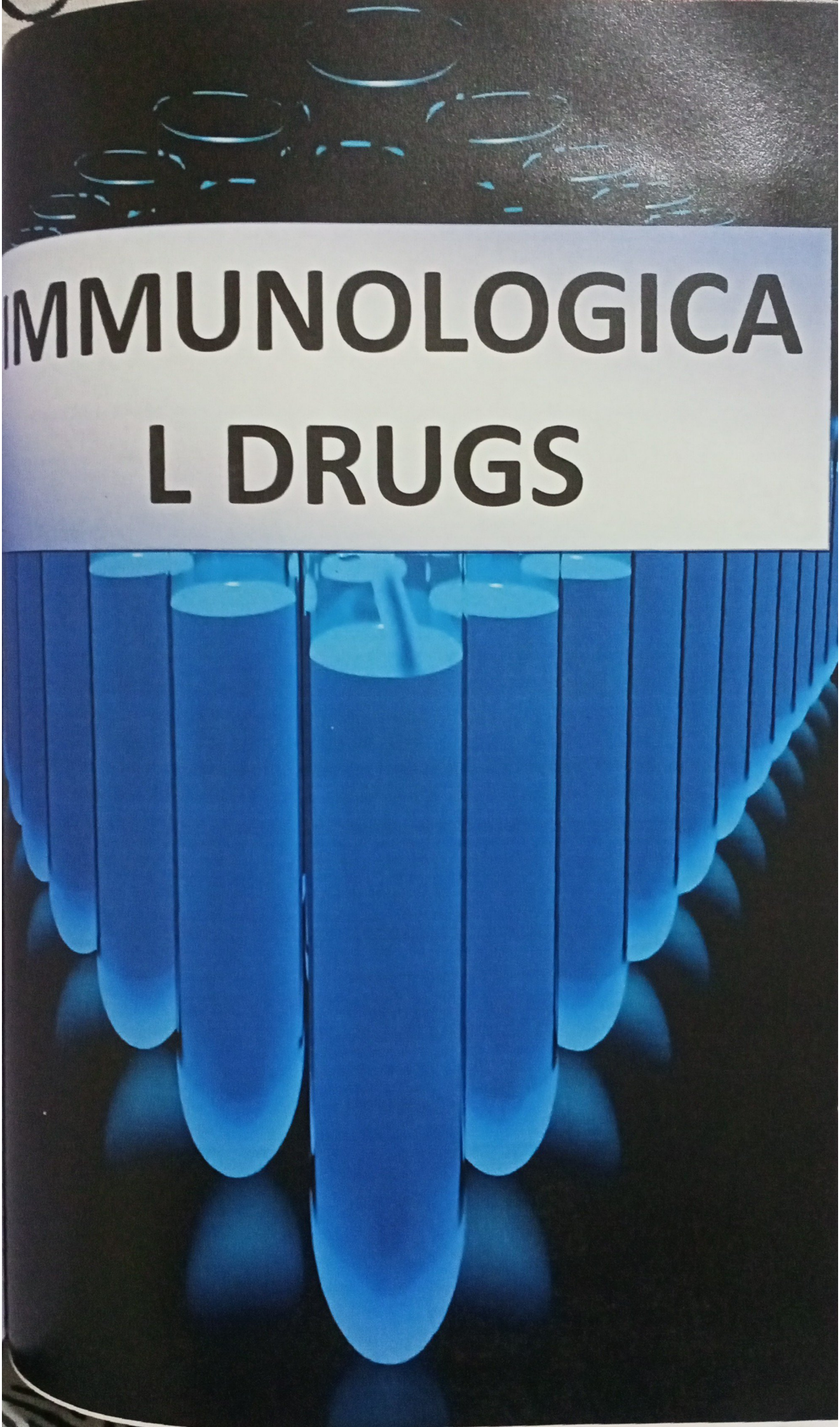


IMMUNOLOGICAL DRUGS

IMMUNOLOGICAL PREPARATIONS

Immunoglobulins

Immunoglobulins are preparations containing antibodies against infectious micro-organisms and are prepared usually from human plasma or serum.

Uses

- They are used for passive immunization, thus conferring immediate protection against some infectious diseases.
- They are preferred to antisera of animal origin as the incidence of adverse reactions is less.

Side effects:

- Local reactions with pain and tenderness at the site of intramuscular injection;
- hypersensitivity reactions, including rarely anaphylactic reactions,

Cautions:

- If immunoglobulins are given after administration of a live vaccine at interval of at least 3 weeks should be allowed to elapse.
- An interval of 3 months should be allowed between the use of live vaccines and the prior administration of immunoglobulins.

Antisera

Antisera (immunosera) are sterile preparations containing immunoglobulins obtained from the serum of immunised animals by purification.

Uses

- Antisera have the specific power of neutralising venoms or bacterial toxins, or combining with the bacterium, virus, or other antigen used for their preparation.

Side effects and cautions

- Anaphylactic reaction may occur, with hypotension;
- dyspnoea, urticaria, and shock;
- serum sickness frequently 7 to 10 days after the injection of serum of animal origin.

Cautions

- Before injecting serum, information should be obtained whenever possible as to whether previous injections of serum have been received and whether the patient is subject to hypersensitivity disorders.

Vaccines

Vaccines are preparations of antigenic materials which are administered with the object of inducing in the recipient active immunity to specific bacteria or viruses. They may contain living or killed microorganisms, bacterial toxoids, or antigenic material from particular parts of the bacterium, ricketssia or virus..

Side effects:

- Administration of a vaccine by injection may be followed by a local reaction, possibly with inflammation and lymphangitis.
- At the site of injected vaccine an induration or sterile abscess may develop.
- The administration of a vaccine may be followed by fever, headache, and malaise starting a few hours after injection and lasting for 1 or 2 days.

Cautions:

- Vaccination should be postponed in patients suffering from any acute illness although minor infections
- . Immunization should not be carried out in individuals who have previously had a severe local or generalized reaction to the vaccine.
- . Before injection of a vaccine any alcohol or disinfectant used for cleansing the skin should be allowed to evaporate otherwise inactivation of live vaccines may occur.

Live vaccines should not be given

- to patients receiving high-dose systemic corticosteroid therapy;
- to patients receiving immunosuppressive therapy including general irradiation;
- to patients suffering from certain malignant conditions such as lymphoma, leukemia, Hodgkin's disease, or other tumors of the reticuloendothelial systems;
- to patients with other types of impaired immunological responses, such as hypogammaglobulinaemia
- . Vaccination should also be postponed for at least 6 months after the cessation of antineoplastic chemotherapy and for at least 3 months after high-dose systemic corticosteroid therapy.
- Because of a theoretical risk to the fetus, live vaccines should not be administered during pregnancy unless it is considered there is a significant risk of exposure too infection.
- As with other causes of immunosuppression, the efficacy of vaccines may be reduced in HIV positive individuals.
- Any agent which is active against the bacterial or viral strain present in the vaccine may interfere with development of a protective immune response but treatment with antibiotics should not be considered to be a contraindication to immunization.

Anti-Rho (D) Immune Globulin

Available form
Injection, 2ml in vial

Indications: -

- to prevent a rhesus (Rh) negative mother actively forming antibodies to fetal rhesus positive (Rh+) red blood cells that may pass into the maternal circulation during child birth, abortion, or certain other sensitizing events causing disease of the new born (erythroblastosis fetalis).

Cautions: -

- Rho (D) immune globulin should be used with caution in individuals with a history of prior allergic reactions to preparation containing human immune globulins.
- Caution also in those with thrombocytopenia or bleeding disorders.

Contraindications: -

- Rho (D)- positive individuals,
- Rho (D) - negative individuals who have been previously sensitized to Rho (D) antigens,
- anaphylactic reaction to preparation containing human immune globulins.

Side effects:

- ; Pain tenderness, and discomfort at site of injection, slight temperature elevations, fever, myalgia, lethargy.

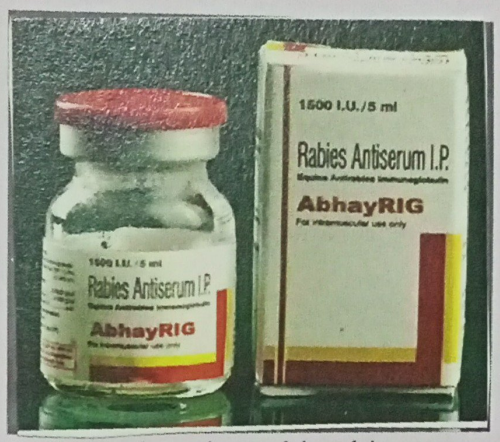
Dose and Administration

- After full-time delivery - *IM*, 500 units (100ug). A higher dose may be required depending on the amount of transplacental bleeding.
- Termination of pregnancy - Rh-negative women having spontaneous or induced up to 13 weeks of gestation or more - *IM*, 250 units (50ug) of anti (D) Immunoglobulin.
- Occurrence of risk of sensitization during pregnancy from threatened abortion, amniocentesis or external version - *IM* - 250-500 units (50-100ug) of anti Rho (d) immunoglobulin.

Storage –

at a temperature between 2°C and 8°C.

Human Antirabies Immunoglobulin



Available forms
Injection, 150 IU/ml, in 2 ml

Indications: -

- Passive immunization either post-exposure or in suspected exposure to rabies in high-risk countries in unimagined individuals (in conjunction with rabies vaccine)..

Dose and Administration

Immunization against rabies:

- Post-exposure (or suspected infiltration), Adult and Child 20 units/kg (half *by intramuscular injection* and half by wound infiltration)

Side effects:

- Local reactions with pain and tenderness at the site of intramuscular injection;
- hypersensitivity reactions, including rarely anaphylactic reactions,
- ;systemic reactions with fever, chills, facial flushing, headache, and nausea

Cautions:

If immunoglobulins are given after administration of a live vaccine at interval of at least 3 weeks should be allowed to elapse

Tetanus Immune-Human Globulin

Available forms
Injection, 3000 units

Indications: -

- for passive immunization against tetanus.

Note: - The use of tetanus immunoglobulins is recommended as part of the management of tetanus-prone wounds in persons unimmunized or incompletely immunized against tetanus, in persons whose immunization history is unknown, and in persons who received the last dose of tetanus vaccine more than 10 years previously

Dose and Administration:

- The usual dose of tetanus immunoglobulin is 250 units by *intramuscular injection* but if more than 24 hours have elapsed since the wound was sustained, if there is a risk of heavy contamination, or following burns 500 units should be given irrespective of the immunization history.
- Tetanus immunoglobulin is also used in the treatment of tetanus, a recommended dose being 150 units per kg body-weight given *intramuscularly* in to different sites.

ote: The pediatric dose is the same as for adults. Alternatively, in ildren younger than 7 years of age, tetanus immunoglobulin can be en in doses of 4 units per kilogram of body weight.

ide effects:

- Local reactions with pain and tenderness at the site of intramuscular injection;
- hypersensitivity reactions, including rarely anaphylactic reactions,
- ;systemic reactions with fever, chills, facial flushing, headache, and nausea

autions:

- If immunoglobulins are given after administration of a live vaccine at interval of at least 3 weeks should be allowed to elapse.
- An interval of 3 months should be allowed between the use of live vaccines and the prior administration of immunoglobulins
- Tetanus immunoglobulins should not be injected in to the same site or in the same syringe

torage: - store between 2 and 8°C. Do not freeze

Tetanus Antitoxin, Equine

vailable forms

jection, 1500 units, 20,000 units

ndications: -

- Temporary passive immunization against tetanus and
- To prevent tetanus infection that arise from the toxins produced by *Clostridium tetani*.

autions: -

- Allergic to the antitoxin. For this sensitivity testing should be performed.

ide effects –

- Anaphylaxis (with hypotension, dyspnoea, urticaria, shock),
- serum sickness (fever, vomiting, diarrhoea, bronchospasm, urticaria).

- **Dose and Administration:** - Adult - prophylaxis after injury of non-immune or partially immune persons - *SC, or IM* 3000 - 5000 units of tetanus antitoxin.
- Treatment of established tetanus - 50,000 - 100,000 units part of which is administered by *IV injection* with the remainder being given *intramuscularly.*

Vaccine

Haemophilus Influenza type B (Hib) vaccine

Available forms
Injection, 0.5 ml

Indications: -

For active immunization against Haemophilus influenzas type b infections, one of the major causes of meningitis and other sever systems illnesses in young children.

Dose and Administrations

By deep subcutaneous or intramuscular injection in doses of 0.5 ml; doses are given at 2, 3 and 4 months of age

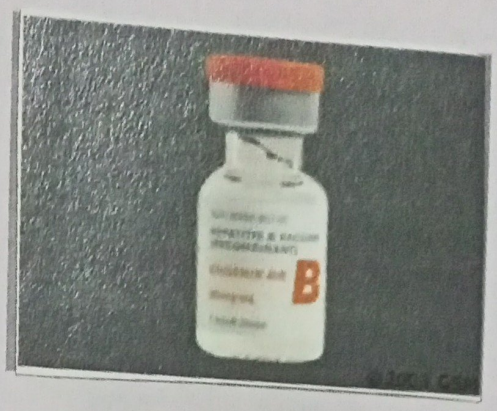
Side effects:

- Administration of a vaccine by injection may be followed by a local reaction, possibly with inflammation and lymphangitis.
- At the site of injected vaccine an induration or sterile abscess may develop. .

Cautions:

- Vaccination should be postponed in patients suffering from any acute illness although minor infections
- . Immunization should not be carried out in individuals who have previously had a severe local or generalized reaction to the vaccine.

Hepatitis B Vaccine, inactivated



Available forms
Injection, 16.5 % in 2 ml and 10 ml.

Indications: - for active immunization against hepatitis B infections in persons at high risk of contracting the disease.

Dose and Administrations:

Note: National Immunization schedules may vary; WHO schedule is written below.

- Immunization of Children against hepatitis B,
  - *by intramuscular injection*, infant 0.5 ml either at birth and at 6 and 14 weeks of age, or at 6, 10 and 14 weeks of age.
- Immunization of unimmunized high risk persons against hepatitis B, *by intramuscular injection*,
  - Adult and child over 15 years of age 3 doses of 1 ml, with an interval of 1 month between the first and second dose and 5 months between the second and third doses; child under 15 years, 0.5 ml.

Note: Different products may contain different concentrations of antigen per ml. Consult manufacturer's literature.

The vaccine should be given in the deltoid region in adults; anterolateral thigh is the preferred site in infants and children; it should not be injected into the buttock (vaccine efficacy reduced); subcutaneous route used for patients with hemophilia.

Side effects:

- Administration of a vaccine by injection may be followed by a local reaction, possibly with inflammation and lymphangitis.
- At the site of injected vaccine an induration or sterile abscess may develop.
- The administration of a vaccine may be followed by fever, headache, and malaise starting a few hours after injection and lasting for 1 or 2 days.

Cautions:

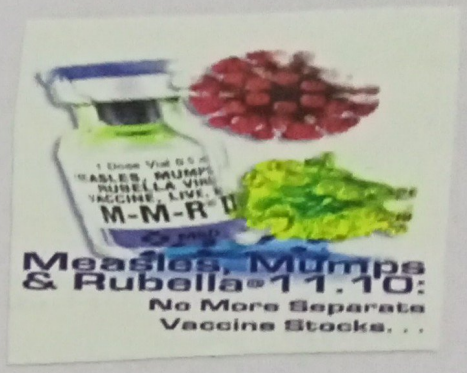
- Vaccination should be postponed in patients suffering from any acute illness although minor infections
- Immunization should not be carried out in individuals who have previously had a severe local or generalized reaction to the vaccine.

Before injection of a vaccine any alcohol or disinfectant used for cleansing the skin should be allowed to evaporate otherwise inactivation of live vaccines may occur

Storage:

Store at 2° to 8°C, not be allowed to freeze

Measles Virus Vaccine, Live Attenuated



Available Forms
Injection, 0.5 ml

Indications: -

- active immunization against measles.

Dose and Administration

- Immunization of children against measles, *by intramuscular or deep subcutaneous injection*, infant at 9 months of age, 0.5 ml
- Prophylaxis in susceptible children after exposure to measles, *by intramuscular or deep subcutaneous injection* within 72 hours of contact, child over 9 months of age 0.5 ml

Side effects:

- Fever and skin rashes may occur following the administration of measles vaccines.
- The fever generally starts 5 to 10 days after the injection, lasts for about 1 or 2 days, and has sometimes been accompanied by convulsions.

Cautions:

- pregnancy
- Vaccination should be postponed in patients suffering from any acute illness although minor infections

Contraindications:

- Hypersensitivity to any antibiotic present in vaccine - consult manufacturer's literature; hypersensitivity to egg.

Rabies Vaccine

ilable forms
ension, 100 ml in vial

cations:

- for active immunization against rabies.
- They are given, with rabies immunoglobulin or antisera, for post exposure treatment to patient who have been bitten by rabid animals or animals suspected of being rabid.
- They are also used for pre-exposure prophylaxis against rabies in persons at high risk of exposure to rabies vaccine.

se and Administration

- Prophylactic, *by deep subcutaneous or intramuscular injection* in the deltoid region, 1 ml on days 0, 7, and 28;
- Also booster doses every 2 - 3 years to those at continued risk

Side effects:

- Administration of a vaccine by injection may be followed by a local reaction, possibly with inflammation and lymphangitis.
- At the site of injected vaccine an induration or sterile abscess may develop.
- The administration of a vaccine may be followed by fever, headache, and malaise starting a few hours after injection and lasting for 1 or 2 days.

- . Before injection of a vaccine any alcohol or disinfectant used for cleansing the skin should be allowed to evaporate otherwise inactivation of live vaccines may occur

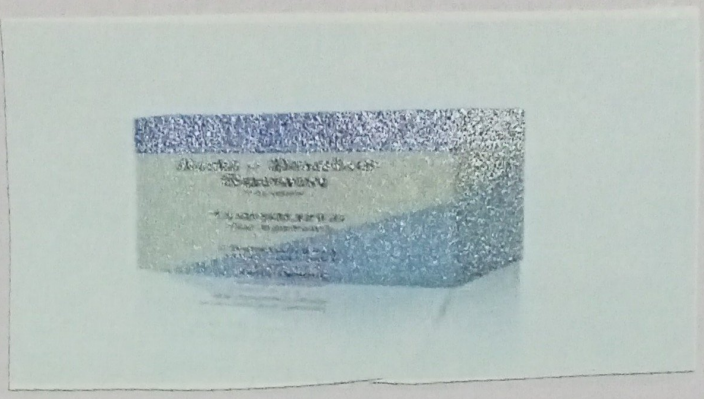
- patients may experience pain, eurhythmic, and in duration at the injection site after the use of any type of rabies vaccine; nausea, headache, fever, malaise, or myalgia may also occur.
- Neuroparalytic and hypersensitivity reactions have been associated with the vaccines derived from animal nerve tissues or duck embryos.

Cautions:

- Vaccination should be postponed in patients suffering from any acute illness although minor infections
- . Immunization should not be carried out in individuals who have previously had a severe local or generalized reaction to the vaccine

ntiserum

nake Venom Antiserum Polyvalent



ailable Forms
ection, 10ml

dications: -

- antivenin (crotalidae) polyvalent neutralizes absorbed venom of crotalid snakes (pit vipers), including the rattlesnake, copperhead, water moccasin and tropical and asiatic crotalids,
- prevent or minimize the effects of poisoning by these snakes.

Dose and Administration - For *IV infusion*, a 1:1 to 1:10 dilution of reconstituted antivenin in 0.9% sodium chloride or 5% dextrose injection is prepared.

Usual dose - *IV infusion*, 5-10ml of diluted antivenin, infused over 3-5 minutes with careful observation of the patient

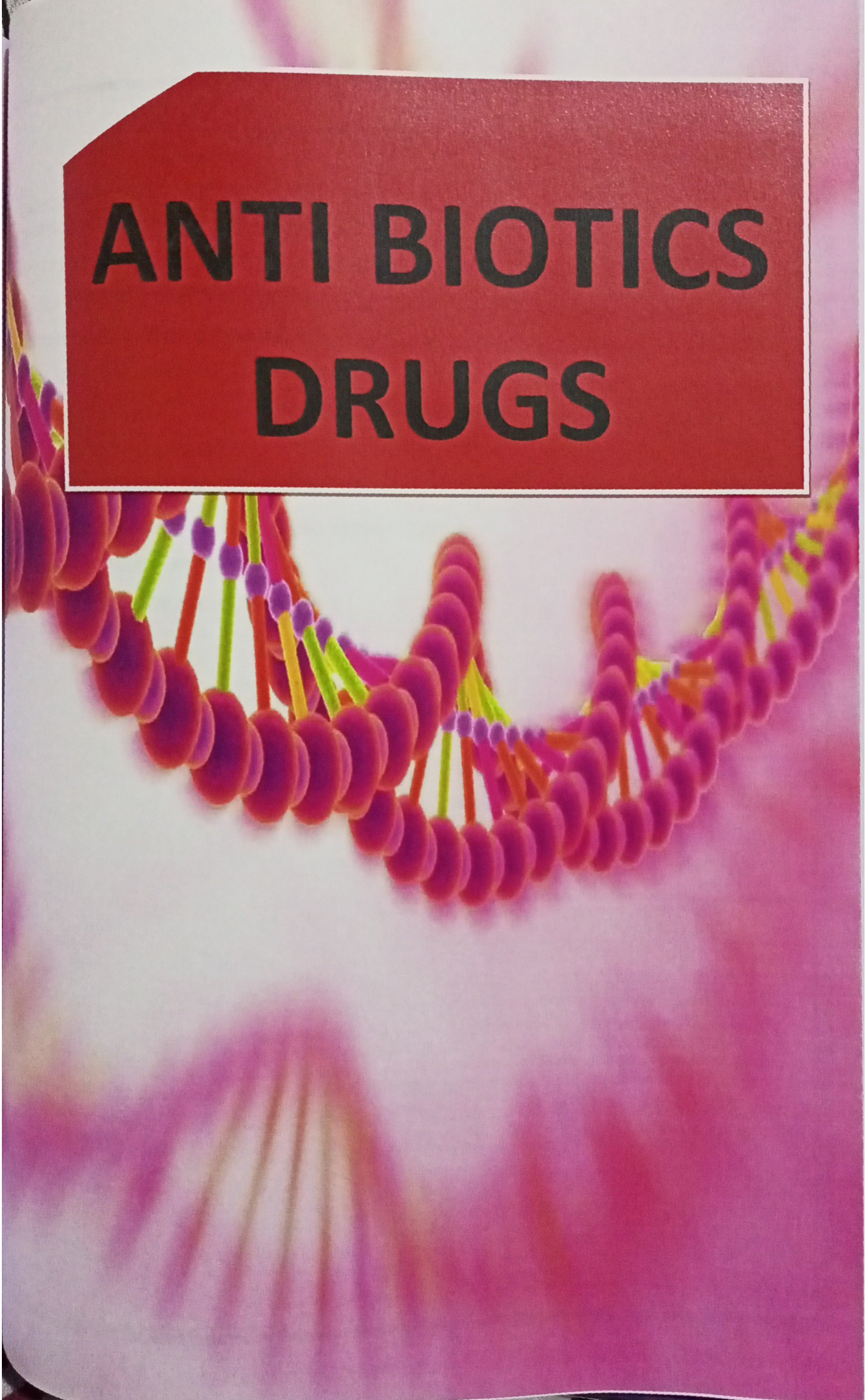
Side effect:

Itching, edema of the face, tongue and throat, cough, vomiting, cardiovascular collapse.

Cautions

- Before injecting serum, information should be obtained whenever possible as to whether previous injections of serum have been received and whether the patient is subject to hypersensitivity disorders.
- Sensitivity testing should be performed before the administration of antiserum

ANTI BIOTICS DRUGS



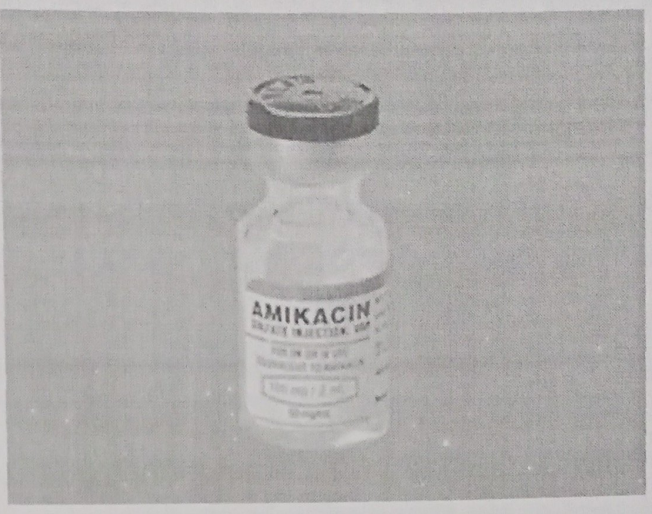
ANTIBIOTICS

CLASSIFICATION

- ANTIBIOTIC IN COMMON USE ARE CLASSIFIED BELOW :
- INHIBITORS OF PROTEIN SYNTHESIS: AMINOGLYSIDES ,TETRACYCLINS , CHLORAMPHENICOL ,MACROLIDES (ERYTHROMYCIN),LINCOSAMIDES (LINOMYCIN AND CLINDAMYCIN).
- INHIBITORS OF SYNTHESIS OF OR ACTIVATE ENZYMES THAT DESTROY BACTERIAL CELL WALL :PENICILLINS ,CEHALOSPORINS ,BACITRACINS.
- INHIBITORS OF NUCLEIC ACID METABOLISM :ACTINOMYCIN ,RIFAMPIN (INHIBIT DNA-DEPENDENT RNA POLYMERASE.)
- ALTER PROTEIN SYNTHESIS AND RESULT IN CELL DEATH : AMINOGLYCOSIDES.
- ANTIMETABOLITIES :SULPHOAMIDES AND TRIMETHOPRIM
- NUCLEI ACID ANALOGS :ACYCLOVIR.
- INHIBITORS OF DNA GYRASE :QUINOLONES.

AMINOGLYCOSIDES

AMIKACIN SULFATE, GENTAMYCIN SULFATE ,NEOMYCIN SULFATE).



- **Amikacin** (Amikin)
- **Gentamicin** † (Cidomycin , Garamycin , G-Mycin , Jenamicin)
- **Kanamycin** (Kantrex)
- **Neomycin**
  Mycifradin , Myciguent
- **Netilmicin**
  Netromycin
- **Streptomycin**
  tobramycin
  Nebcin , TOBI

†

CLASSIFICATION(S):
Therapeutic: anti-infectives
Pharmacologic: aminoglycosides

Pregnancy Category C (gentamicin, topical use of others), D (amikacin, kanamycin, netilmicin, streptomycin, tobramycin) .

INDICATIONS

- **Amikacin, gentamicin, kanamycin, netilmicin, and tobramycin:** Treatment of serious gram-negative bacillary infections and infections caused by staphylococci when penicillins or other less toxic drugs are contraindicated
- **Streptomycin:** In combination with other agents in the management of active tuberculosis
- **Kanamycin, neomycin:** Used orally to prepare the GI tract for surgery, to decrease the number of ammonia-producing bacteria in the gut as part of the management of hepatic encephalopathy, and to treat some forms of infectious diarrhea
- **Tobramycin by inhalation:** Management of Pseudomonas aeruginosa in cystic fibrosis patients
- **Gentamicin, streptomycin:** In combination with other agents in the management of serious enterococcal infections
- **Gentamicin IM, IV:** Part of endocarditis prophylaxis.
- **Unlabelled Uses:**
  - **Amikacin:** In combination with other agents in the management of Mycobacterium avium complex infections.

ACTION

- Inhibits protein synthesis in bacteria at level of 30S ribosome.

- **Therapeutic Effects:**
  - Bactericidal action.
- **Spectrum:**
  - Most aminoglycosides notable for activity against:
    - P. aeruginosa
    - Klebsiella pneumoniae
  - In treatment of enterococcal infections, synergy with a penicillin is required
  - Streptomycin and amikacin also active against Mycobacterium .

ROUTE AND DOSAGE

Amikacin

- **IM, IV (Adults and Children and Older Infants):** 5 mg/kg q 8 hr or 7.5 mg/kg q 12 hr. Urinary tract infections in adults —250 mg q 12 hr.

Gentamicin

Many regimens are used; most involve dosing adjusted on the basis of blood level monitoring and assessment of renal function. For endocarditis prophylaxis regimen.

- **IM, IV (Adults):** 1 mg/kg q 8 hr (up to 5 mg/kg/day in 3–4 divided doses); Once-daily dosing (unlabeled)— 4–7 mg/kg q 24 hr. .

Neomycin

- **PO (Adults):** Preoperative intestinal antisepsis —1 g q hr for 4 doses, then 1 g q 4 hr for 24 hr or 1 g 19 hr, 18 hr, and 9 hr before surgery; hepatic encephalopathy 4–12 g/day in divided doses.
- **PO (Children):** Preoperative intestinal antisepsis —14.7 mg/kg (417 mg/m^2) q 4 hr for 3 days; hepatic encephalopathy —50–100 mg/kg/day in divided doses.
- **Topical (Adults and Children):** Apply cream or ointment 1–5 times daily.

PHARMACOKINETICS

Absorption: Well absorbed after IM administration. IV administration results in complete bioavailability. Some absorption follows administration by other routes.

↓

Distribution: Widely distributed throughout extracellular fluid; crosses the placenta; small amounts enter breast milk. Poor penetration into CSF.

↓

Metabolism and Excretion: Excretion is >90% renal.
Half-life: 2–4 hr (increased in renal impairment).