
Standard Treatment Guidelines
for Medical Officers

Government of Chhattisgarh
Department of Health & Family Welfare

STANDARD TREATMENT GUIDELINES FOR MEDICAL OFFICERS

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Introduction

The doctor at the primary health centre is perhaps the only qualified modern medical personnel that most people in Chhattisgarh can access. However the medical officer posted there has been trained in a setting of relatively high availability of diagnostics and in a setting where a number of colleagues and seniors have been available for consultation. Thrust suddenly into the milieu of the village primary health centre with little diagnostics and no one to consult it is very difficult for the medical officer to cope with clinical decision making. This book is meant to reach out to professionals in such a situation and guide them in their daily clinical work.

The vast majority of diseases are self-limiting or can be treated with the knowledge and skills that a qualified medical doctor is trained for. Unfortunately because of lack of continuing medical education programmes, because of lack of standard treatment guidelines, because of lack of diagnostics and above all because of lack of confidence the medical doctor often contents himself with symptomatic treatment and treatment of simple illnesses. All the rest are referred to higher centres even when there is no need to do so. Of those who are referred to higher centres for diagnosis, majority of them can afterwards be followed up and provided treatment at the primary health centre level, provided a referral system is in place. Unless the quality of curative care provided is improved by the above measures, the public will perceive little difference between the curative care the health system provides and the curative care provided by the unqualified, hazardous practice of the so- called village doctor.

Another major function of a standard treatment guideline is - together with the essential drug list and the state drug formulary – to rationalise medical practice. Today, there is an urgent need to protect the population from irrational and hazardous therapy. Often unnecessary drugs and injections are given to patients merely to satisfy a wrong perception of health and health care. This is not only a major cause of ill health and danger to life; it has also become a major contributor to poverty. Educating people about the hazards of irrational curative care and the profession itself not falling prey to such temptations is another necessity of our times. Rationalising clinical health care also reduces costs for the public health system and makes the system more

effective for the same level of expenditure.

This book's design was formulated in a two-day workshop of professionals held by State Health Resource Centre at Raipur medical college, followed by written contributions from many of the leading practitioners in the respective specialities. Later it was also discussed with medical officers in the government system. This book is mainly meant to be used by the medical officer at the primary health centre level with some additional guidelines for its use at the secondary level- (the community health centre). We have not tried to cater to specialist services of the district hospital or the tertiary care services.

In writing this book the government is making a commitment to the level of diagnostics and the package of services that should be available at the primary health centre and community health centre. At present this is only recommendation and almost no CHC would have reached the level proposed. However if the health sector reform plan proceeds as envisaged by the department of health and the state advisory committee on health sector reform this level of diagnostics and services should become a reality. The adoption of this standard treatment guidelines is an important milestone on the way to achieving this goal.

This book should not be seen as a set of rules. It is a set of guidelines. This book needs to be used in conjunction with the Chhattisgarh State Drug Formulary wherein all guidelines for drug dosage and use and presentation was are elaborated on.

This is a first attempt at such a book in this state and as such should be considered more like a draft for discussion. We look forward to your feedback so that we could improve the book further.

DR. ALOK SHUKLA
Secretary to Government of Chhattisgarh
Department of Health & family Welfare

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SECTION-I

RECOMMENDED GRADED NORMS FOR SERVICES

CLINICAL SERVICES TO BE RENDERED AT DIFFERENT LEVELS OF PUBLIC HEALTH SYSTEM;

The list of services below is the draft of recommended norms. The understanding is that each block would make its own norms according to manpower and equipment available and would work towards the ideal norms (as suggested below) over this five-year plan period. The list below is indicative – not comprehensive.

The standard treatment guidelines to be issued will give details of drugs and tests needed for each specific service.

Note that all cases shown under PHC would be referred to CHC level for confirming diagnosis where diagnosis is in doubt; for inadequate response to treatment at PHC level or when hospitalisation is indicated.

Similarly all cases shown under CHC level would be referred to District hospital for confirming diagnosis where needed; for inadequate response at CHC level or when technologically more demanding hospitalisation is indicated.

An* indicates that this disease can be diagnosed and managed at this level once a diagnostic test or consultation is taken from next higher level- for which a two way referral arrangement is required. Two** indicates that diagnosis and treatment plan is to be established at this facility but subsequent follow up may be at lower facility. Grey Shaded rows indicate the diagnostic capability and other necessary facilities that should be available at that particular level, to provide specified level of service.

The list of service given below states the lowest level at which each service is available. It follows that specific service is available in all levels.

GENERAL MEDICINE & PAEDIATRICS

Clinical Services related to :	PHC	CHC	District Hospital and all 100 bedded hospitals
Viral Infection	<ul style="list-style-type: none"> • Simple fevers • Eruptive fevers: • Chicken Pox, • Measles, • Mumps 	<ul style="list-style-type: none"> • Fever with complications [e.g. pneumonia] • Viral encephalitis 	<ul style="list-style-type: none"> • Poliomyelitis - suspected
X-ray			
Bacterial Infection	<ul style="list-style-type: none"> • Typhoid* (presumptive) • Filariasis • Pulmonary Tuberculosis • Leprosy (for diarrhoea pneumonia, UTI etc. see appropriate system) 	<ul style="list-style-type: none"> • Typhoid fever • Diphtheria • Pertussis • Leptospirosis* • Acute Meningitis* • Extrapulmonary tuberculosis** • Lepra reactions • Tetanus 	<ul style="list-style-type: none"> • Tetanus
	<ul style="list-style-type: none"> • Microscopy- • Blood smear; • Sputum AFB • CSF examination for cells, • Grams stain 	<ul style="list-style-type: none"> • Widal test • Csf examination including biochemistry and stains 	<ul style="list-style-type: none"> • Culture • Serology • Histopathology • Ventilatory support
Protozoal	<ul style="list-style-type: none"> • Malaria- simple 	<ul style="list-style-type: none"> • Malaria complicated • Kala-azar 	
	<ul style="list-style-type: none"> • Blood smear examination- microscopy 		
STD	<ul style="list-style-type: none"> • Syphilis* • Gonorrhoea* 	<ul style="list-style-type: none"> • All forms of syphilis • All cases of chancres and chancroids, • Urethritis • HIV positive cases, not complicated 	<ul style="list-style-type: none"> • AIDS disease
	<ul style="list-style-type: none"> • Urine microscopy 	<ul style="list-style-type: none"> • HIV test for AIDS • VDRL 	<ul style="list-style-type: none"> • Serology

Clinical Services related to :	PHC	CHC	District Hospital and all 100 bedded hospitals
Poisoning cases	<ul style="list-style-type: none"> • General measures for poisoning • Initiate treatment in all, and manage mild cases fully 	<ul style="list-style-type: none"> • Organophosphorus • Other insecticide • Opioid • All others 	<ul style="list-style-type: none"> • All cases for Haemodialysis.
		<ul style="list-style-type: none"> • Ventilatory support 	<ul style="list-style-type: none"> • Haemodialysis.
Animal Bites	<ul style="list-style-type: none"> • Snake bite, • Dog bite & other animal Bite- first contact care 	<ul style="list-style-type: none"> • Snake bite with signs of envenomation 	<ul style="list-style-type: none"> • Snake Bite with ARF or DIC or respiratory paralysis
	<ul style="list-style-type: none"> • Bleeding time • Clotting time 	<ul style="list-style-type: none"> • Bleeding time, clotting time, • Basic ventilatory support 	<ul style="list-style-type: none"> • FDP; adequate ventilatory support
Environmental disorder	<ul style="list-style-type: none"> • Heat Syndromes, • Electrical Injury cases 	<ul style="list-style-type: none"> • Heat stroke 	
Gastro-intestinal Tract Disorder	<ul style="list-style-type: none"> • Gastroenteritis- including cholera, algid malaria • Bacillary Dysentery • Viral hepatitis • Enteric fever* • Acid peptic disease • Alcoholic Hepatitis • Amoebic liver abscess where clinically evident 	<ul style="list-style-type: none"> • Jaundice other than viral hepatitis; • Chronic Active Hepatitis;* • All Liver abscess ; • Hepato-cellular failure • G I haemorrhage; • Ruptured Oesophageal varices 	<ul style="list-style-type: none"> • Malignancies Fulminant Hepatic failure and coma
	<ul style="list-style-type: none"> • Stool microscopy • Blood counts, BSE 	<ul style="list-style-type: none"> • Liver function tests • HbsAg • Ultrasound • Liver biopsy* 	<ul style="list-style-type: none"> • Blood and stool culture • Endoscopy • Liver histopathology

Clinical Services related to :	PHC	CHC	District Hospital and all 100 bedded hospitals
Respiratory Disorder	<ul style="list-style-type: none"> • Pulmonary Tuberculosis, • Bronchial asthma pneumonia, Broncho-pneumonia, • Lung abscess • Chronic Bronchitis and emphysema • Pleural effusion- • Emergency care alone in Pneumothorax Hydro -pneumothorax 	<ul style="list-style-type: none"> • All cases referred from PHC Plus • Empyema chest • COPD or any of the above with threatened respiratory failure 	<ul style="list-style-type: none"> • All cases referred. from CHC • Plus malignancies • Plus those requiring prolonged ventilatory care
	<ul style="list-style-type: none"> • Sputum Grams stain and AFB stain microscopy • Blood counts • Nebulizer • Oxygen 	<ul style="list-style-type: none"> • X-rays • Basic Pulmonary function tests • Ultrasound • Pleural fluid • Biochemistry • Basic ventilatory care 	<ul style="list-style-type: none"> • Culture • Bronchoscopy • Adequate ventilatory care
Cardio- Vascular Disorder	<ul style="list-style-type: none"> • Hypertension • Rheumatic fever* • Rheumatic Valvular Disease* • Angina* 	<ul style="list-style-type: none"> • Acute myocardial Infarction • Angina** and unstable angina • Hypertensive Encephalopathy • T I A • cardiomyopathy • Pericardial effusion 	<ul style="list-style-type: none"> • Acute myocardial infarction with complications- • Diagnosis of congenital health disease
	<ul style="list-style-type: none"> • Blood pressure instrument 	<ul style="list-style-type: none"> • ECG • Ultrasound • X-rays • Serum enzymes-CPK-MB 	<ul style="list-style-type: none"> • Intensive cardiac care unit • Treadmill stress test
Haematological disorders	<ul style="list-style-type: none"> • Iron Deficiency Anaemia • Sickle Cell anaemia 		<ul style="list-style-type: none"> • Purpura* • Leukemia* • Aplastic Anaemia* • Haemolytic Anaemia*
	<ul style="list-style-type: none"> • Blood counts, blood • Hb, peripheral smear, • Sickling test 	<ul style="list-style-type: none"> • Bleeding time • Coagulation tests, 	<ul style="list-style-type: none"> • Bone marrow biopsy • Histopathology • Range of coagulation tests

Clinical Services related to :	PHC	CHC	District Hospital and all 100 bedded hospitals
Renal disorder	<ul style="list-style-type: none"> • UTI • Acute Pyelonephritis • Acute Glomerulonephritis 	<ul style="list-style-type: none"> • Nephrotic Syndrome • Conservative management of ARF • Chronic renal failure supportive care 	<ul style="list-style-type: none"> • Acute Renal failure cases requiring Haemodialysis
	<ul style="list-style-type: none"> • Urine examination including microscopy 	<ul style="list-style-type: none"> • Renal biopsy* • 24 Hr urine examination • Blood creatinine, uric acid, serum proteins, 	<ul style="list-style-type: none"> • Histopathology • Culture facilities • Urinary electrolytes • Serum electrolytes
Endocrine disorder	<ul style="list-style-type: none"> • Diabetes (uncomplicated) • Hypothyroid* or hyperthyroid* • Euthyroid goitre 	<ul style="list-style-type: none"> • Diabetic ketoacidosis • Thyrotoxicosis** • Myxoedema crisis** • Addison's disease • Cushing's disease 	<ul style="list-style-type: none"> • Other endocrine disorders
	<ul style="list-style-type: none"> • Urine sugar, ketones 	<ul style="list-style-type: none"> • T3 ,T4, TSH* • Blood sugar • Ultrasound • Blood electrolytes, 	<ul style="list-style-type: none"> • Serum cortisol; other serum hormones
Musculo-Skeletal disorder	<ul style="list-style-type: none"> • Osteo-arthritis Uncomplicated • Rheumatic arthritis • Rheumatoid arthritis 	<ul style="list-style-type: none"> • Complicated rheumatoid arthritis • All other arthritis. 	<ul style="list-style-type: none"> • Severe arthritis non responsive to first line drugs
		<ul style="list-style-type: none"> • ASLO; Rheumatic factor 	<ul style="list-style-type: none"> • Synovial fluid examination
Neurology	<ul style="list-style-type: none"> • Epilepsy* • Established stroke • Migraine 	<ul style="list-style-type: none"> • Non responsive epilepsy • Recent stroke 	<ul style="list-style-type: none"> • Acute flaccid paralysis • Other neurological conditions
			<ul style="list-style-type: none"> • EEG, CT scan
Paediatric disorders	<ul style="list-style-type: none"> • All as indicated for medicine above plus • Low Birth weight babies – above 1.5 kg • Malnutrition 	<ul style="list-style-type: none"> • All as indicated for medicine above plus • Low birth weight babies below 1.5 kg • Severe malnutrition requiring resuscitation measures • Complicated cases with stridor, wheezing and inability to feed or drink and unconscious patients. 	<ul style="list-style-type: none"> • All as indicated for medicine above plus • Congenital malformations, • Genetic diseases • Children requiring incubators, ventilation or prolonged hospitalization
		<ul style="list-style-type: none"> • Baby warmers 	<ul style="list-style-type: none"> • Neonatal care unit with incubators

SURGERY			
Clinical Services related to :	PHC	CHC	District Hospital and all 100 bedded hospitals
Basic Technique	<ul style="list-style-type: none"> • Incision & Drainage • Emergency patients of trauma etc. for Resuscitation & stabilization 	<ul style="list-style-type: none"> • Excision & Biopsy 	
Gastro Intestinal disorders		<ul style="list-style-type: none"> • Herniorrhaphy • Emergency Appendicectomy • Fistula • Piles • Fissure • Ano rectal Abscesses • Rectal prolapse 	<ul style="list-style-type: none"> • Exploratory Laparotomy • Obstructed Hernia • Chronic & acute Appendicitis • peptic perforation • Intestinal obstruction • Intussusception • Volvulus • Gastrojejunostomy • Drainage of abd. Abscess • Haemorrhoidectomy • Cholecystectomy
			<ul style="list-style-type: none"> • Proctoscopy, • Sigmoidoscopy, • Endoscopy, • Neonatal Surgery.
Genito-Urinary disorders		<ul style="list-style-type: none"> • Acute Urinary Retention • Supra-pubic cystostomy • Hydrocoele • Circumcision • Vasectomy** 	<ul style="list-style-type: none"> • Ruptured Urethra & bladder • Nephrectomy. • Hypospadias • Cases requiring cystoscopy
Chest disorders	<ul style="list-style-type: none"> • Tracheostomy if possible – where indicated prior to referral 	<ul style="list-style-type: none"> • Pneumothorax, • Haemothorax, • Pyothorax: • Breast Abscess 	<ul style="list-style-type: none"> • Mastectomy (Ca. Breast) • Penetrating injury of chest
Head Injury	<ul style="list-style-type: none"> • refer to CHC 	<ul style="list-style-type: none"> • Observation to determine whether referral required 	<ul style="list-style-type: none"> • All head injuries
Burn Injury	<ul style="list-style-type: none"> • Minor burns- 	<ul style="list-style-type: none"> • Minor burns -upto 20%. 	<ul style="list-style-type: none"> • In burns ward above 40%

Clinical Services related to :	PHC	CHC	District Hospital and all 100 bedded hospitals
Cancers	<ul style="list-style-type: none"> • First aid measures and arranging for proper transport 	<ul style="list-style-type: none"> • Biopsy to establish diagnosis 	<ul style="list-style-type: none"> • Surgery with • Chemotherapy. • Refer to tertiary level hospital for Radiotherapy.
Orthopaedic disorder		<ul style="list-style-type: none"> • Simple fracture plastering & • Reduction under GA • Shock resuscitation • Finger amputation • Dislocation under GA. 	<ul style="list-style-type: none"> • Lacerated injury of limbs. • Amputation • pin & plating and screw of both bone leg and hands • Prosthesis. • Open reduction of elbow. • Patellectomy • Skeletal traction. • Needle aspiration of joint & synovial fluid. • penetrating Rib Fracture • Refer to Tertiary level Hospital for Spinal Trauma
		<ul style="list-style-type: none"> • X-ray 	

PSYCHIATRY, DERMATOLOGY, OPHTHALMOLOGY, ENT, DENTISTRY			
Clinical Services related to :	PHC	CHC	District Hospital and all 100 bedded hospitals
Mental Health Disorders	<ul style="list-style-type: none"> • Anxiety Neurosis • Depression • Acute Psychosis-emergency care 	<ul style="list-style-type: none"> • Psychoses • Bipolar disorders • Intoxication • Drug withdrawal cases. 	<ul style="list-style-type: none"> • All cases where diagnosis in doubt or poor response – needs counselling and care
Dermatological disorders	<ul style="list-style-type: none"> • Pediculosis • Impetigo • Scabies • Fungal infection esp. ring worm • Herpes Simplex • Herpes Zoster • Urticaria and Drug induced Allergies • Yaws 	<ul style="list-style-type: none"> • Psoriasis • Candidiasis • Eczema • Dermatitis 	<ul style="list-style-type: none"> • Diagnosis other than those listed earlier.
	<ul style="list-style-type: none"> • Skin scraping for microscopy 	<ul style="list-style-type: none"> • Microscopy 	<ul style="list-style-type: none"> • Culture facility • Histopathology
Ophthalmology	<ul style="list-style-type: none"> • Conjunctivitis • Dacryo-Cystitis • Night blindness • Cataract detection • Hordeolum externum • Refractive Errors-gross detection. • External FB removal 	<ul style="list-style-type: none"> • Corneal Ulcer, • Uveitis • Scleritis • Cataract surgery • Lacrimal fistula, • Abnormality of ocular motility. • Glaucoma • Any orbital disease 	<ul style="list-style-type: none"> • Disease of post segment of eyeball. • Orbital tumour. • Intra ocular F.B,
	<ul style="list-style-type: none"> • Vision chart- both near and far, • Torch, • Pinhole, • Ophthalmoscope 	<ul style="list-style-type: none"> • If ophthalmologist available slit lamp provided – or else in monthly visit to CHC 	<ul style="list-style-type: none"> • Cryoplasty, • Fluoroangiography, • USG.

Clinical Services related to :	PHC	CHC	District Hospital and all 100 bedded hospitals
Ear, Nose throat Problems	<ul style="list-style-type: none"> • Wax • Furuncle • Perichondritis • Otitis externa • Otomycosis • ASOM • CSOM • Epistaxis • Rhinitis, viral, allergic, rhinitis • Sinusitis • Aphthous ulcers • Acute tonsillitis , pharyngitis 	<ul style="list-style-type: none"> • ASOM severe • CSOM unsafe type • Polypectomy; • Incision & Drainage of Retropharyngeal abscess and peritonsillar Abscess • Laryngitis, • Epiglottitis 	<ul style="list-style-type: none"> • Tonsillectomy, • Deviated nasal septum. • Tympanoplasty, • Stapedectomy • Rehabilitation & speech Therapy • Post traumatic Bleeding .or discharge – • Refer to tertiary Hospital any symptom of malignancy.
	<ul style="list-style-type: none"> • Ear speculum, Nasal speculum, torch, 	<ul style="list-style-type: none"> • Otoscope • General surgical expertise needed 	<ul style="list-style-type: none"> • Audiometry : ENT specialist needed
Dentistry	<ul style="list-style-type: none"> • Tooth aches • Caries tooth • Acute gingivitis 	<ul style="list-style-type: none"> • Filling & preservation of all Caries tooth, • Tooth Extraction, impaction & other minor surgery • All periodontal Diseases: • Scaling and Curettage ulcers of oral origin. 	<ul style="list-style-type: none"> • Artificial prosthesis. • Diag. of Oral Ca & other Neoplasms - refd.

In all the above areas each CHC receives a visit on a fixed day every month by a specialist. The specialist could be from private sector if none are available in public sector.

OBSTETRICS & GYNAECOLOGY

Clinical Services related to :	PHC	CHC	District Hospital and all 100 bedded hospitals
Ante natal care	<ul style="list-style-type: none"> • Diagnosis of pregnancy • Normal antenatal care • Management of mild and moderate anaemia • Pre-eclampsia • Rhesus incompatibility detection, • Induction of labour • Emergency care in ante or post partum haemorrhage 	<ul style="list-style-type: none"> • All cases refd. from PHC as high risk cases. • Evacuation of retained products. • Laparotomy for Ectopic pregnancy, • Induced labour. • Prophylaxis for Rh incompatibility. • Management of haemorrhagia. • Management of severe anaemia. • Eclampsia. 	<ul style="list-style-type: none"> • Severe medical complications- jaundice, Heart disease, uncontrolled diabetes
	<ul style="list-style-type: none"> • Blood Hb, • Peripheral smear counts, • Urine examination • Pregnancy testing • Blood grouping • Suction apparatus 	<ul style="list-style-type: none"> • Ultrasound • Operation theatre and all accessories as needed for a caesarean section • Blood transfusion facilities, • forceps; 	
At child birth	<ul style="list-style-type: none"> • Normal Delivery 	<ul style="list-style-type: none"> • All cases needing Emergency Caesarian section or forceps Delivery. • Complicated delivery; (Obstructed Labour, Malpresentation etc.) • Maternal and foetal distress • Laparotomy for Ruptured uterus 	<ul style="list-style-type: none"> • Elective caesarean sections in certain high risk cases – like low placenta previa etc • Laparotomy for ruptured uterus. etc.

Clinical Services related to :	PHC	CHC	District Hospital and all 100 bedded hospitals
Postpartum care	<ul style="list-style-type: none"> • Normal Neonatal care. • Neonatal care pre-term upto 1.5 kg. • Puerperal fever • Contraception 	<ul style="list-style-type: none"> • All neonates less than 1.5kg weight. • Severe puerperal infections 	
		<ul style="list-style-type: none"> • baby warmer 	<ul style="list-style-type: none"> • Baby warmer and incubator
Abortion	<ul style="list-style-type: none"> • Conservative treatment for threatened abortion 	<ul style="list-style-type: none"> • MTP; • D&C for incomplete abortion 	<ul style="list-style-type: none"> • Management for habitual abortion.
		<ul style="list-style-type: none"> • D&C set, • Blood transfusion facilities, • operation theatre and accessories 	
Vaginal and External Genitalia	<ul style="list-style-type: none"> • Cervical erosion • Cervix Biopsy 	<ul style="list-style-type: none"> • Abscess Drainage • Excision of Bartholin's Cyst. • E.U.A 	<ul style="list-style-type: none"> • Vesico-vaginal Fistula (VVF) • Recto Vaginal fistula • Complete Perineal Tear (CPT) • Prolapse of Uterus • Pelvic floor repair. • Incontinence • Polypectomy,
	<ul style="list-style-type: none"> • PAP smear* 	<ul style="list-style-type: none"> • Endometrial Biopsy.; • cervix biopsy* 	<ul style="list-style-type: none"> • Histopathology • Adequate surgical facilities
Menstrual irregularity	<ul style="list-style-type: none"> • Presumptive treatment 	<ul style="list-style-type: none"> • Polymenorrhoea • Menorrhagia • Amenorrhoea: Diagnosis and D&C, Drug therapy 	<ul style="list-style-type: none"> • Myomectomy, • Hysterectomy
Malignancy			<ul style="list-style-type: none"> • Ovarian Tumour* • Tumours of the Reproductive Organs
	<ul style="list-style-type: none"> • PAP smear* 	<ul style="list-style-type: none"> • Endometrial Biopsy.; • cervix biopsy* 	<ul style="list-style-type: none"> • Histopathology

Clinical Services related to :	PHC	CHC	District Hospital and all 100 bedded hospitals
Primary & secondary Infertility		<ul style="list-style-type: none"> • Dilatation & Curettage (D&C). • Tubal Insufflation 	
		<ul style="list-style-type: none"> • Semen analysis • Laparoscope • Hystero - salpingiogram 	<ul style="list-style-type: none"> • Hormone tests*
Pelvic Inflammatory disease (P.I.D) and Reproductive Tract infection		<ul style="list-style-type: none"> • Detailed examination and specific treatment 	<ul style="list-style-type: none"> • Laparoscopic investigation
Contraception	<ul style="list-style-type: none"> • IUCD insertion • Condoms and diaphragm supply • Initiating and monitoring on OC pills • During Special visits tubectomy and vasectomy 	<ul style="list-style-type: none"> • Laparoscope tubectomy • Conventional tubectomy • Vasectomy 	<ul style="list-style-type: none"> • Refer All cases requiring Microsurgical Reconstruction of Fallopian Tube and Vas to tertiary centre

SECTION-II

SYMPTOM ANALYSIS IN PRIMARY HEALTH CENTRE SETTING

Symptom Analysis in Primary Health Centre Setting

This section deals with symptoms patients present with. It helps the medical officer to identify those clinical patterns, which indicate what disease the patients have and when they can treat it and when they must be referred to a higher centre. Once this analysis is made the appropriate page of the other sections are indicated where more details of the treatment or drug are described. This section on symptoms is written only for the primary health centre (PHC) setting where the only diagnostic tools proposed and at present available are a simple laboratory with basic microscopy. Where further investigations are required they are discussed along with the disease condition in the subsequent sections. This section becomes necessary because often in the PHC setting medical officers can not make definite diagnosis. Yet in this context too, standard guidelines on treatment and referral are required.

1. PAIN

Why do we get pain?

When any part of the body is overused or injured or diseased, we feel pain. Pain is thus, a warning to us of disease. So that we can rest that part and take necessary corrective measures. It follows that not all pain is bad. It serves a purpose. It tells us of the need for rest or indicates an underlying disease. Treating pain alone is not enough. But if the pain is too much one can get relief from pain relieving drugs.

2. HEADACHE

Clinical pattern	Likely Diagnosis	Action Required
<ul style="list-style-type: none">• Acute headache• Headache of recent origin that is not recurrent	<ul style="list-style-type: none">• Secondary to fever and infectious disease• Secondary to local inflammatory cause	<ul style="list-style-type: none">• See Fever –Page 29• Eye problem Page 75• Ear problem Page 79• Tooth related Page 88• Sinusitis Page 84• Symptomatic treatment with paracetamol.
<ul style="list-style-type: none">• Chronic HeadacheIntermittent, Non Progressive• Often severe, lasts a few hours to a couple of days and then is alright till the next attack- which may occur days or even weeks later Maybe associated with visual symptoms and with vomiting :– likely to be migraine :• If it occurs for a few days and then is asymptomatic for a few days and then recurs for a few days – may be cluster headache	<ul style="list-style-type: none">• Migraine• Cluster Headache	<ul style="list-style-type: none">• For acute attacks : Give tablet paracetamol. If not controlled go on to ibuprofen or other NSAIDS.• For prevention and control of attacks : course of atenolol 25 mg once daily• Tab. Paracetamol
<ul style="list-style-type: none">• Chronic Headache;Continuous but not progressive	<ul style="list-style-type: none">• Tension Headache	<ul style="list-style-type: none">• Tab. ParacetamolCounselling
<ul style="list-style-type: none">• Chronic Headache;continuous and progressiveMay or may not be associated with vomiting and difficulty in vision or fits as well. May develop mild neurological deficits	<ul style="list-style-type: none">• Rule out space occupying lesions	<ul style="list-style-type: none">• Referral to district hospital indicatedTab. Paracetamol.

3. ABDOMINAL PAIN

3.1 UPPER ABDOMINAL PAIN :

Clinical pattern	Likely Diagnosis	Action Required
<ul style="list-style-type: none"> • Pain related to eating food- • Relieved with eating food or occurring one or two hours after eating. 	<ul style="list-style-type: none"> • Dyspepsia • Gastritis 	<ul style="list-style-type: none"> • Treat for gastritis with baking soda or antacid (Aluminium hydroxide)
<ul style="list-style-type: none"> • If persistent 	<ul style="list-style-type: none"> • Peptic ulceration 	<ul style="list-style-type: none"> • If persistent ranitidine 150 mg twice daily for at least a month or three months • Counselling :quit smoking, avoid spicy foods, improved lifestyle
<ul style="list-style-type: none"> • Pain as above, but persistent over three months 	<ul style="list-style-type: none"> • Peptic Ulcer-Refractory 	<ul style="list-style-type: none"> • Refer for endoscopy • Consider anti campylobacter pylori treatment in endoscopy proven ulcers.
<ul style="list-style-type: none"> • Pain as above with <ul style="list-style-type: none"> - Blood in stools - Abdominal rigidity most constipation, vomiting - Ball rolling movements vomiting 	<ul style="list-style-type: none"> • Peptic ulcers with complications <ul style="list-style-type: none"> - Haemorrhage - Perforation - Obstruction 	<ul style="list-style-type: none"> • Refer for surgery in cases with complications
<ul style="list-style-type: none"> • Acute and recurrent pain in right upper quadrant, often with vomiting, may radiate to right shoulder, 	<ul style="list-style-type: none"> • Gallbladder disease <ul style="list-style-type: none"> - Cholelithiasis - Cholecystitis 	<ul style="list-style-type: none"> • Referral to centre with ultrasound facility • Can start on Cap amoxicillin as interim measure.
<ul style="list-style-type: none"> • Chronic recurrent abdominal pain 	<ul style="list-style-type: none"> • Inflammatory Bowel disease • Chronic pancreatitis • Lead poisoning • Diabetic autonomic neuropathy 	<ul style="list-style-type: none"> • Referral for ultrasound, biochemical and endoscopic investigations as indicated

3.2 LOWER ABDOMINAL PAIN :

Clinical pattern	Likely Diagnosis	Action Required
<ul style="list-style-type: none"> • Pain associated with diarrhoea or constipation 	<ul style="list-style-type: none"> • Intestinal involvement • Helminthiasis 	<ul style="list-style-type: none"> • Give dicyclomine • For diarrhoea Page 36 • For constipation Page 38
<ul style="list-style-type: none"> • Colicky pain in abdomen.- no diarrhoea or constipation No abdominal stiffness 	<ul style="list-style-type: none"> • Colitis – maybe amoebic or other cause 	<ul style="list-style-type: none"> • Give dicyclomine • Give course of metronidazole as for amoebiasis. Page 37 • Search for other causes • Refer if persistent.
<ul style="list-style-type: none"> • Pain just before or during menstruation- 	<ul style="list-style-type: none"> • Dysmenorrhoea • Endometriosis 	<ul style="list-style-type: none"> • Give paracetamol and/or dicyclomine See Page 117
<ul style="list-style-type: none"> • Mainly over lower abdomen and back. And associated with excessive white discharge in women. 	<ul style="list-style-type: none"> • Pelvic Inflammatory Disease 	<ul style="list-style-type: none"> • See Page 122
<ul style="list-style-type: none"> • Pain during urination- the frequency of passing urine may be increased. Especially in a woman 	<ul style="list-style-type: none"> • Urinary tract infection. • Urinary Calculi 	<ul style="list-style-type: none"> • Give plenty of fluids See Page 40

When to refer at once?

- All Acute abdominal pain when accompanied by
 - vomiting and no passing of stools or flatus.
 - On examination there is Stiffness of abdominal wall or distension and severe pain.

This is likely to be an acute abdomen requiring surgery.

Refer to a surgical centre at the earliest.

4. CHEST PAIN

Clinical pattern	Likely Diagnosis	Action Required
<ul style="list-style-type: none"> • Sudden chest pain or discomfort, especially in those above 45 years of age. <ul style="list-style-type: none"> · Pain retrosternal · Burning, crushing or dull aching in type · Radiating to left arm or to root of neck or back · Aggravated or coming on during exercise · Relieved by rest or spontaneously in a few seconds to minutes 	<ul style="list-style-type: none"> • Angina 	<ul style="list-style-type: none"> • Cease all exercise. • Tab. isosorbide dinitrate 5 mg sublingual. • After the episode advise tab. 5 mg or 10 mg four times daily. • Look for and if present treat co- morbidity like hypertension and diabetes mellitus. <p>See Page 202</p>
<ul style="list-style-type: none"> • Pain as above but persists for over five minutes or occurs many times a day or occurs even while at rest, or occurring for first time; or occurs with exercise but is not relieved by rest 	<ul style="list-style-type: none"> • Unstable angina (can also be myocardial infarction) 	<ul style="list-style-type: none"> • See Page 203
<ul style="list-style-type: none"> • As above but with crushing pain and sweating and excessive anxiety 	<ul style="list-style-type: none"> • Myocardial Infarction 	<ul style="list-style-type: none"> • See Page 204
<ul style="list-style-type: none"> • If pain is retrosternal, burning in nature and more after meals – 	<ul style="list-style-type: none"> • Gastro- oesophageal reflux disease (reflux oesophagitis), 	<ul style="list-style-type: none"> • One may be able to differentiate it from angina on clinical grounds but in some cases especially the elderly investigations to rule out angina is a must. • Treat as for gastritis (antacids and ranitidine 150 mg twice daily) with a tab. metoclopramide -10 mg half hour before meals and at bedtime or tab. domperidone taken similarly.
<ul style="list-style-type: none"> • Pricking or aching chest pain aggravated with deep breaths and coughing. Auscultation may show a pleural rub. 	<ul style="list-style-type: none"> • Pleuritis – pleural pain 	<ul style="list-style-type: none"> • Tablet paracetamol for relief. Treat cause. • X-rays may be needed if pain persists beyond 2 days.
<ul style="list-style-type: none"> • Pricking pain with local tenderness or aggravation with movement 	<ul style="list-style-type: none"> • Costochondritis or other superficial muscular causes 	<ul style="list-style-type: none"> • Tablet paracetamol
<ul style="list-style-type: none"> • Other causes of chronic persistent pain 	<ul style="list-style-type: none"> • Pericarditis • Lung infections • Lung tumours- later stages. 	<ul style="list-style-type: none"> • Treat as for main disease

General measures –

- ♦ Daily mild exercise.
- ♦ Avoid smoking.
- ♦ Avoid fats in food.
- ♦ Weight reduction if overweight.
- ♦ Reducing mental tensions or physical strain.

are all essential steps that must go along with drug treatment.

5. OTHER PAINS

Clinical pattern	Likely Diagnosis	Action Required
• Joint pains with or without backache	• Arthralgia and Arthritis	• Give aspirin or paracetamol + local heat. • Do not move affected part. • If there is inadequate relief one can give ibuprofen. See section on joint pains. (see page 52)
• Generalized body ache	• may be excessive work or lack of sleep. • Calcium deficiency • Hypothyroidism • Part of chronic fatigue syndrome	• Advise rest. • Give Paracetamol • Calcium carbonate if indicated
• Pain due to local infection		• Use paracetamol and warm fomentation. • If fever or pus is present, antibiotic may be needed.
• Pains due to injury		• Use paracetamol- attend to injury.
• Eye pain and ear pain.		• See appropriate section

General Precautions

1. Do not use aspirin for abdominal pain or those with nausea and vomiting.
2. In most situations, one must ensure an early referral especially if it does not cure within three days or if one of the above features are present.
3. Note – a lot of new painkillers available in the market offer little or no advantage over paracetamol. All of them have much more side effects than paracetamol. Always prefer paracetamol.

6. FEVER

Fever is usually a symptom of an infection. It is in a sense a sign of the body trying to overcome an infection. Since it causes discomfort, we treat fever but the aim must be to find out what infection is causing the fever and to treat that.

Very often, fever subsides by itself in 3-4 days. These self-limiting fevers are generally caused by viruses. All other fevers need treatment.

General guidelines

- Advice rest in bed as long as there is fever.
- Give plenty of fluids to drink-water, rice water, soup, buttermilk etc.
- Meals should be light. Avoid oily, spicy food. But do not starve the patient.
- Record the fever using a thermometer. If it is more than 37° Celsius, there is fever. If it more than 39.5° Celsius, then one must sponge the patient with tepid water to lower the temperature and refer the patient if the fever does not come down.
- If patient is uncomfortable or has bodyache or headache, give paracetamol thrice a day.
- Undress the patient. Small children may be undressed completely.

6.1 FEVER WITH LOCAL/OTHER SYMPTOMS

Clinical pattern	Likely Diagnosis	Action Required
<ul style="list-style-type: none"> • With running nose and head ache, body ache 	<ul style="list-style-type: none"> • Common cold or influenza 	<ul style="list-style-type: none"> • Tab. Paracetamol
<ul style="list-style-type: none"> • With cough and sputum and sore throat or mild difficulty in breathing. • Lungs are clear on auscultation and throat is of congested appearance. • If lungs show crepitations on auscultation and if breathing is fast 	<ul style="list-style-type: none"> • Respiratory tract infection: upper or lower respiratory • Consider upper respiratory infection. • Lower respiratory infection: To consider pneumonia 	<ul style="list-style-type: none"> • Usually self-limiting. Needs paracetamol. • Usually requires antibiotic- Co-trimoxazole or Amoxicillin • See Page 147 for pneumonia
<ul style="list-style-type: none"> • With sore throat and cough 	<ul style="list-style-type: none"> • Upper respiratory infection 	<ul style="list-style-type: none"> • See Page 84 • Tab. Paracetamol
<ul style="list-style-type: none"> • With rash 	<ul style="list-style-type: none"> • Chicken pox, • Measles, • Drug rash • Rubella, • Typhus, 	<ul style="list-style-type: none"> • See Page 132, 134 • Tab. Paracetamol
<p>With Jaundice :</p> <ul style="list-style-type: none"> • Blood smear to be done for malarial parasite. • If smear negative consider infectious hepatitis. • Rule out typhoid by Widal/ cultures. • If high grade fever and myalgia and above possibilities ruled out treat as leptospirosis 	<ul style="list-style-type: none"> • Malaria • Infectious Hepatitis • Typhoid Fever • Leptospirosis 	<ul style="list-style-type: none"> • See Page 127 • See Page 158 • See Page 125 • See Page 141
<ul style="list-style-type: none"> • With signs of infection like that of an abscess 	<ul style="list-style-type: none"> • Abscess- local infection 	<ul style="list-style-type: none"> • give co-trimoxazole or amoxicillin. • If big consider Incision & Drainage.
<ul style="list-style-type: none"> • With frequent urination and pain while urination or pain in loin- suspect urinary tract infection. 	<ul style="list-style-type: none"> • Urinary tract Infection Confirm with urine microscopy. 	<ul style="list-style-type: none"> • Give appropriate antibiotic. See Page 40
<ul style="list-style-type: none"> • With history of abortion or child birth in last 2 weeks, and pain in lower abdomen or foul vaginal discharge- 	<ul style="list-style-type: none"> • Pelvic Inflammatory Disease 	<ul style="list-style-type: none"> • See page 122
<ul style="list-style-type: none"> • If there is testicular pain and swelling, or some swelling of a limb – 	<ul style="list-style-type: none"> • Consider filariasis. Confirm by blood smear 	<ul style="list-style-type: none"> • See page 139

6.2 FEVER WITHOUT ANY LOCAL SYMPTOMS

If the fever for only one or two days :

- Get a blood smear done for malaria
- Give paracetamol and if needed sponging to lower the fever.
- Treat with chloroquine as if it is malaria. (page 128)
- If smear turns out to be positive for Malaria
- give primaquine also. (page 129)
- If smear if negative repeat blood smear and look for other causes.

If the fever is of more than a week :

- If there are typical features of chills and shivering, followed by high fever and then sweating; often has headache also, is probably malaria–treat as malaria.
 - Get a blood smear done: if it shows malarial parasites treat as advised
- If smear is negative or report is delayed more than one day or not available and chloroquine has been given consider the following :

- If fever is persistent; patient is sick and worsening; has headache; sometimes replies slowly and in a confused manner to questions, sometimes diarrhoea/constipation is present : think of typhoid. refer to a centre which has Widal test.

If no referral centres available then start presumptively for treatment with antibiotics for typhoid while blood is sent for the Widal report or patient is persuaded to go to higher centre. (See **page 125**)

- If there is loss of weight and appetite – it may be tuberculosis affecting an organ other than lung- Sometimes esp. in children cough may not be present.
for tuberculosis, see **page 151**
- Consider filariasis. see **page 139**
- Consider abscess in hidden location – behind liver, in bone, beneath tooth etc.
- Consider noninfectious causes – auto-immune disease, drug fevers, and malignancy.

When to refer ?

- Refer all fevers where no diagnosis is established and if after one round of antibiotics over three to five days there is no improvement of fever.

- Even before 5 days, one must refer if one sees that :
 - Patient is drowsy or confused or incoherent or unconscious or has fits.
 - If there is severe headache and vomiting.
 - If the patient is very ill, too weak to eat or drink or is dehydrated and needs admission.
 - If child has rapid breathing (over 40 breaths/minute or above for 1 year old 50/minute for infants below 1 year old) or chest indrawing or there is great difficulty in breathing.
 - Significant Lymph node enlargement.

7. COUGH

Why do we cough ?

Most types of cough do not require drug treatment. Basically cough cleans the windpipe throwing out irritating material, which may reach it from outside or is produced locally. Therefore, cough is a friend not an enemy. Some of the cough is due to allergy due to irritants. Some common irritants are smoke, dust particles, pollen grains, germs.

General guidelines

1. Try to avoid irritants. Do not suppress the cough.
2. Cold dry air worsens cough. Warm, humid air is beneficial. Simple steam inhalation and lots of warm fluids provide the best relief. Few drugs are better than this.
3. In case there is plenty of sputum, encourage patient to cough voluntarily. The sputum must come out.

Clinical pattern	Likely Diagnosis	Action Required
<ul style="list-style-type: none"> If the cough is dry (i.e. without sputum) and no fever: 	<ul style="list-style-type: none"> Allergic or due to irritant or mild upper respiratory illness- 	<ul style="list-style-type: none"> Avoid irritants, give steam inhalation. Normal saline nasal drops
<ul style="list-style-type: none"> History of allergy - running nose - sneezing patient not ill 	<ul style="list-style-type: none"> Allergic rhinitis, allergic bronchitis 	<ul style="list-style-type: none"> Give Tab. Chlorpheniramine. Ask patient to avoid substances that provoke this- like house dust. Often it is not easy to find the offending substance and one has to learn to manage with the occasional sneezing bouts and running nose.
<ul style="list-style-type: none"> Repeated attacks of cough, with wheezing, but no fever 	<ul style="list-style-type: none"> Bronchial asthma 	<ul style="list-style-type: none"> Give Tab. Salbutamol Page 207, 208
<ul style="list-style-type: none"> Fever, rapid breathing, chest in-drawing 	<ul style="list-style-type: none"> Pneumonia 	<ul style="list-style-type: none"> Give antibiotic and treat as for pneumonia Page. 147
<ul style="list-style-type: none"> Cough is with sputum which is yellowish, pus like and there is fever 	<ul style="list-style-type: none"> Acute bronchitis or pneumonia 	<ul style="list-style-type: none"> Page 210, 147
<ul style="list-style-type: none"> Blood in sputum and/ or irregular fever with loss of weight and appetite 	<ul style="list-style-type: none"> Suspect tuberculosis 	<ul style="list-style-type: none"> Page 151
<ul style="list-style-type: none"> Large quantity of sputum, very foul smelling 	<ul style="list-style-type: none"> Lung abscess or bronchiectasis- (page 211) 	<ul style="list-style-type: none"> Needs X-ray Advice to stop smoking. Page 211
<ul style="list-style-type: none"> Chronic cough with no fever, May have • wheezing, especially if the patient is a chronic smoker 	<ul style="list-style-type: none"> Chronic bronchitis likely to also rule out malignancy 	<ul style="list-style-type: none"> (Needs X-ray) • Page 210
<ul style="list-style-type: none"> Chronic cough; may have • hoarseness of voice • chest pain, • fever • loss of appetite • malaise 	<ul style="list-style-type: none"> May be malignancy or chronic bronchitis 	<ul style="list-style-type: none"> (Needs X-ray) • Page 210

In all cases having cough with sputum and fever it is useful to do a sputum microscopy after grams stain and in all cases with cough and sputum over two weeks it is essential to do sputum microscopy after staining for AFB. Both give invaluable information.

Refer

- Patients whose diagnosis cannot be confirmed by sputum microscopy should take an X-ray and a consultation at the appropriate level and come back to the primary centre for follow up. Any cough that does not respond in two weeks should be worked up for tuberculosis, chronic bronchitis and malignancy.
- Any person looking ill, or is cyanosed and has difficulty in breathing requiring admission would need to be sent to a suitably equipped CHC.

8. BREATHLESSNESS

Breathlessness on exercise or at rest is a manifestation of lung or heart disease or of severe anaemia. Breathlessness of sudden onset especially in younger persons is usually due to asthma or respiratory infection or a foreign body in respiratory tract. Acute breathlessness also occurs in heart failure.

8.1 IF IT IS SUDDEN OR RAPID IN ONSET

Clinical pattern	Likely Diagnosis	Action Required
• Ask if child became breathless while playing or eating	• Suspect a foreign body aspiration causing choking	• Invert child by holding it with legs. Give a tap on the back between shoulder blades. If not relieved, rush to doctor. For an adult, one has to do what is called the Heimlich’s manoeuvre.
• Breathlessness with fever and cough with or without sputum	• Suspect acute respiratory infection	• See section on cough above. (see page 33)
• With wheezing, history of asthma and no fever	• Bronchial asthma	• Give salbutamol. • Add Steroids • Chlorpheniramine if history of allergy is there. (see chapter on bronchial asthma -page 206)
• If breathlessness increases on lying down and there may also be chest pain, sweating, giddiness. Basal lung crepitations present and JVP is raised	• Cardiac cause. - heart failure and its various causes	• See page 194 for cardiac failure.

8.2 IF BREATHLESSNESS IS CHRONIC

Clinical pattern	Likely Diagnosis	Action Required
<ul style="list-style-type: none"> History of blood loss (maybe due to heavy menstrual flow, piles, hook worms etc) and patient looks pale; Signs of anaemia present 	<ul style="list-style-type: none"> Suspect anaemia 	<ul style="list-style-type: none"> Start oral Iron and refer. (See page 175)
<ul style="list-style-type: none"> Chronic cough for at least two months in a year History of smoking, With or without wheezing 	<ul style="list-style-type: none"> Suspect chronic obstructive pulmonary disease (chronic bronchitis or emphysema) Asthma 	<ul style="list-style-type: none"> Stop smoking; see page 210 Give salbutamol and steam inhalation. (See page 206). Prompt treatment with antibiotics for intercurrent infections
<ul style="list-style-type: none"> If chest pain, swelling of feet and breathlessness increasing on lying down (may be known high blood pressure or diabetes patient). 	<ul style="list-style-type: none"> Suspect heart failure- 	<ul style="list-style-type: none"> Bed rest. Antifailure measures, salt restricted diet. (see page 194)

When to refer ?

- If foreign body swallowed does not come out on coughing and Hemlich's manoeuvre; rush the patient.
- If heart failure (acute and chronic) or ischemic heart disease is suspected, then the patient needs to be referred to higher centre for establishing diagnosis after which routine follow up can be done at primary health centre.
- If wheeze is severe, or is not relieved within 12 hours and patient may need admission for treatment with nebulizer/ventilation.
- Any anaemia that is severe enough to cause breathlessness and/or haemoglobin is less than 5 gm/100 ml. Or anaemia not responding to oral iron over a month, for fixing cause of anaemia.

9. VOMITING

Vomiting occurs due to a wide variety of illness. Some of them are trivial and self-limiting. Some of it is serious and needs immediate attention.

Repeated vomiting causes loss of salt and water. Persistent over days, it results in starvation & electrolyte imbalance.

Treatment

• Vomiting during travel	<ul style="list-style-type: none">• Advice travel after light meal and not on empty stomach.• Pinch of ginger may help.
• Vomiting due to pregnancy-	<ul style="list-style-type: none">• Reassure the patient.• Advice plenty of fluids.• If severe, see page 93
• Vomiting associated with injuries, sprains, fractures	<ul style="list-style-type: none">• Give rest to injured part.• Give paracetamol and refer.• Tab. metoclopramide Adult 10mg thrice daily may help. Child from 30-60 kg 5 mg thrice daily. 10-30 kg 1-2.5 mg thrice daily. Child below 1 year 1 mg twice daily.
• Vomiting due to eating spoilt, irritating food or some drugs.	<ul style="list-style-type: none">• It is self-limiting /• Stop the offending food or drugs.• Give sips of cold water or ORS fluid.• Antacids /H2 Blockers.• Give metoclopramide as stated above
• Vomiting with diarrhoea	<ul style="list-style-type: none">• See section on diarrhoea Page 37
• Vomiting with fever-	<ul style="list-style-type: none">• See page 30
• Vomiting with unilateral headache	<ul style="list-style-type: none">• Suspect migraine- rest in bed. Tab. Paracetamol and plenty of fluids. Page 24
• Projectile vomiting with headache and sometimes fits	<ul style="list-style-type: none">• Suspect raised intracranial pressure• Meningitis consequent to space occupying lesion
• Vomiting with abdominal pain, distension of abdomen, foul smell of vomit	<ul style="list-style-type: none">• Suspect acute abdomen like acute appendicitis or obstruction in intestines. -• Refer to surgical centre at once.
• Vomiting with Chest pain, perspiration	<ul style="list-style-type: none">• It may be ischemic heart disease – treat as described page 202

When to refer?

- If vomiting is part of suspected acute abdomen or acute myocardial infarction or raised intracranial pressure secondary to space occupying lesion.
- If the vomit contains blood. - haematemesis.
- If the vomit is dark coloured and foul smelling.
- If vomiting is not controlled in a day and the patient is dehydrated and oliguric despite fluids and needs admission.

10. DIARRHOEA (Also see page 181 for management of dehydration)

The bowel moves rapidly and tries to expel irritant substance or germs. This leads to loose or watery stools. Expelling the germs is good. But along with it, water and salt is lost which could be dangerous if not replaced. Usually, the diarrhoea itself is self-limiting but the dehydration needs treatment. Malnourished children get diarrhoea easier. Frequent diarrhoea leads to dehydration.

Clinical pattern	Likely Diagnosis	Action Required
<ul style="list-style-type: none"> Loose watery diarrhoea. No blood or mucous. No fever 	<ul style="list-style-type: none"> Acute gastroenteritis likely. May be viral or bacterial 	<ul style="list-style-type: none"> In all these cases give fluids and ORS to correct dehydration. If diarrhoea persists over two days one may add furazolidone 200 mg thrice daily for 3 days. See the management of dehydration Page 181
<ul style="list-style-type: none"> Same as above but watery diarrhoea Rice water stool is profuse leading to early severe dehydration and shock 	<ul style="list-style-type: none"> Suspect cholera Confirmation by "hanging drop" microscopic examination. 	<ul style="list-style-type: none"> Same as above Doxycycline : Adult 300 mg single dose, Child over 8 year 100 mg single dose. Ciprofloxacin : Adult 500 mg single dose
<ul style="list-style-type: none"> With watery stools, and blood and mucous in stool and fever 	<ul style="list-style-type: none"> Suspect bacillary dysentery 	<ul style="list-style-type: none"> Give plenty of ORS and furazolidon or co-trimoxazole for 5 days or ciprofloxacin for 3 days.
<ul style="list-style-type: none"> With foul smelling stools containing blood and sticky material. Fever may or may not be present. 	<ul style="list-style-type: none"> Suspect amoebic dysentery Confirmation by stool microscopy. 	<ul style="list-style-type: none"> Give ORS and metronidazole 400 mg thrice daily for 5-10 days.
<ul style="list-style-type: none"> With abdominal pains but no fever. Stools have mucous, but no blood. Stools may be watery or more often semi-solid. 	<ul style="list-style-type: none"> Suspect giardiasis Confirmation by stool microscopy. 	<ul style="list-style-type: none"> Give metronidazole 200 mg thrice daily for 5 days or one dose of four tablets of tinidazole 300mg.

General Guidelines

It is always advisable to do a microscopic examination of stools.

- It may confirm giardiasis or amoebiasis.
- If both these protozoa are not seen but plenty of pus cells are seen it is likely to be bacterial bacillary dysentery.
- Cholera can also be looked for when suspected by microscopic examination of a hanging drop preparation made from a stool sample.

When to refer ?

- In severe dehydration despite oral and intravenous dehydration correction.
- If diarrhoea does not stop in two weeks despite antibiotics and anti amoebicides.
- If the patient is oliguric despite adequate fluid therapy.

Precautions

- Do not give drugs like Imodium or loperamide that stop diarrhoea by slowing bowel movements. Dicyclomine can be given for cramping abdominal pain.
- Do not stop feeding. Give non-oily, non-spicy mashed foods.

11. CONSTIPATION

A person passing dry hard stools less than once a day. It may develop suddenly (acute) or be long-standing (chronic).

Acute constipation is usually serious, especially if there is also vomiting, abdominal pain and distension of abdomen and the patient does not pass flatus at all. Such cases may be referred at once.

Constipation after a bout of diarrhoea also needs no treatment. It becomes all right on its own.

Diagnose as constipation only if stool frequency is less than once a day.

Causes of Chronic constipation

- Faulty bowel habits- habitually not going for defecation, on time, or lack of convenient place.
- Faulty diet-low in roughage or water.
- Lack of exercise.
- Painful lesions near anal region. - If needed do a rectal examination to confirm this.
- In pregnancy and in old people because of difficulty in straining.
- In children due to poor diet or poor training of bowel habits.

General guidelines

- Almost never are drugs an answer. Indeed one must be careful not to get dependent on drugs. One may give drugs for a few days and slowly withdraw as changes in diet and habits improve.
- Advise patients to eat lots of green and leafy vegetables and bananas, drink lots of water, and go for at least an hour's daily walk.
- Let him or her spare an hour each morning at the same time, to go to a toilet till the problem improves.

Treatment

- Bisacodyl can be given for a few days. Dose: Adult Two tablets at night.

When to refer ?

- Any acute constipation-especially with vomiting, abdominal pain. Suspect acute abdomen.
- Chronic constipation not responding after 2 weeks- suspect malignancy.
- In children with persistent constipation.

12. CHRONIC FATIGUE

Fatigue is one of the most common causes of consultation. Such patients may have many other vague symptoms - the most common being a generalised body ache.

In most of cases it cannot be attributed to any specific cause. However note that many diseases may start with fatigue. Therefore this symptom requires a full, methodical examination.

Diagnosis

- Look carefully for anaemia. In both men and women this is one of the commonest causes of fatigue and is often associated with body ache and mild breathlessness on walking some distance.
- Check weight and look for signs of malnutrition. (Calculate BMI – Body Mass Index- weight in kg. / Ht in m². If below 18 the patient is malnourished. Normal is 20 to 25 range)
- Ask for any immediate cause like excessive work, loss of sleep, recent illness, travel etc
- Ask if there are any associated symptoms which points to fatigue being secondary to a disease: is there loss of appetite, weight loss, fever, cough, dyspnoea, abdominal pain, jaundice, swelling of body or lymph nodes or enlarged liver or spleen.
- Check blood pressure for hypertension. - It maybe the cause of fatigue
- Ask if patient is feeling depressed and has problem sleeping. It may be due to depression.

Treatment

- If the fatigue is associated with any of the symptoms of other disease mentioned above go to the corresponding page and treat accordingly.
- If not, talk to the patient whether any 'personal causes' could be responsible. If a "placebo" is required better to choose.
 - a low dose of the Ferrous sulphate with folic acid (see **page 175**) since anaemia is so common anyway and since anaemia is associated with fatigue.
 - Calcium is also a good choice especially if there is much body ache and in women, children and adolescents.

13. URINARY PROBLEMS

The major complaints possible are :

13.1 PAIN OR BURNING SENSATION

- Pain or burning sensation while passing urine- this signifies urinary tract infection. Increased frequency of passing urine may also be there.
- It is desirable to confirm the diagnosis with microscopic examination of urine. In urine infection pus cells will be present.

Treatment of urinary tract infection

- If this is not associated with fever likely to be - lower urinary tract infection - treat with Amoxicillin or co-trimoxazole or ciprofloxacin for 5 to 7 days .
- If this is associated with fever (which means that infection may have spread to kidneys) then treatment is with Amoxicillin or trimoxazole should go on for 14 days. Ciprofloxacin is another good choice for UTI give for 14 days.
- Always advise to drink plenty of water so that there is a high output of urine.

When to refer

- In males after a single episode & in females with recurrent UTI refer to the CHC for ultrasound to rule out urinary stones.
- If fever does not subside within three days

13.2 EXCESSIVE URINE FLOW

- The commonest cause is drinking lots of water. This is normal.
- The next common cause is diabetes mellitus. A urine sugar test would confirm this. If it is positive refer it to a doctor in the community health centre to confirm the diagnosis, to check for complications and to start the drugs. Subsequently it can be followed up at the primary health care centre.
- Rarely there are other causes of excessive urine flow like diabetes insipidus and some types of kidney disorders for which person would need to go to a tertiary care hospital.

13.3 DECREASED URINE FLOW

- The commonest cause is lack of drinking water and hot weather. Correct by drinking lot of water.
- If it is not corrected by drinking water or occurs along with swelling of the feet and/or face then consider oliguria and anuria.

Oliguria is less than 400 ml urine output over 24 hours.

Anuria is less than 50 ml urine output over 24 hours.

The causes of oliguria may be renal, cardiac or others.

- Test the urine for albumin (if albumin is present heating the urine will cause it to turn white). If albumin is present it likely to be a renal problem. (Page 219).
- If the urine is dark coloured and microscopic examination of urine shows red or white blood cells this is also due to a kidney problem. (See page 218, 219).
- If urine is scanty and there is breathlessness on lying down with JVP elevated with pedal oedema with or without basal lung crepitations - a heart problem is likely (see page 194).

13.4 PAIN WHILE PASSING URINE OR LOWER ABDOMINAL PAIN WITH HAEMATURIA

- This may be due to stones.

Refer to a tertiary care centre with facilities for managing this.

- If there is no decrease in pain advise to drink large amounts of water regularly.

13.5 PAINLESS HAEMATURIA

- suspect malignancy –

Refer to urologist for further tests.

13.6 RETENTION OF URINE

- Refer to higher centre equipped for surgery.
- One can relieve bladder distension by putting catheter
- Percutaneous drainage - draining the urine from the bladder from the suprapubic area before referring - if the distension is excessive and painful.
- If needed Suprapubic Cystostomy can be done in CHC before sending to district hospital

In all cases with urinary symptoms urine examination including urine microscopy is a must.

14. PEDAL OEDEMA (SWOLLEN FEET)

Clinical pattern	Likely Diagnosis	Action Required
<ul style="list-style-type: none"> • Unilateral, • Painful, • May be pitting, • With redness and heat 	<ul style="list-style-type: none"> • Lymphangitis, - maybe early filarial oedema • Cellulitis 	<ul style="list-style-type: none"> • Start on antibiotic- Amoxicillin 500mg 8 hourly – may add Metronidazole. If open ulcers are present. • Inj Procaine Penicillin is an alternative (see page 137)
<ul style="list-style-type: none"> • Unilateral or bilateral, • Painful, • Non-pitting 	<ul style="list-style-type: none"> • Deep vein thrombosis 	<ul style="list-style-type: none"> • Inj heparin 5000 units subcutaneously to be repeated every 6 hours with clotting time to be kept within 2 to 2.5 times the normal.
<ul style="list-style-type: none"> • Usually Unilateral or asymmetrical, -does not pit on pressure, -long-standing 	<ul style="list-style-type: none"> • Late filariasis, elephantiasis 	Page 139
<ul style="list-style-type: none"> • Bilateral, • Pitting, with • Generalised swelling – Face, abdomen. 	Differentiate between these four conditions <ul style="list-style-type: none"> • Kidney disease • Heart disease • Liver disease • Severe Anaemias 	Page 218 Page 194 Page 175
<ul style="list-style-type: none"> • Bilateral Pedal oedema associated with pregnancy often normal but to rule out pre-eclampsia by checking blood pressure and urine for albumen. 	<ul style="list-style-type: none"> • Normal • Secondary to anaemia • Pre- eclampsia 	Page 94 Page 103

15. JAUNDICE

It is a yellowish discoloration of the sclera of eyes and mucous membranes, especially of the inside of mouth and when severe of all the skin. It occurs due to liver disease. Rarely mild jaundice may also occur as part of blood disease.

Differential Diagnosis of Jaundice

15.1 ACUTE HEPATITIS

- Onset is gradual or sometimes rapid.
- There is fever, fatigue and nausea for a few days followed by jaundice accompanied by dark urine and sometimes clay- coloured stools.
- The severity of jaundice varies.
- On examination liver may be mildly enlarged with mild tenderness.
- This being the most common cause one must always make this clinical diagnosis after the exclusion of obstructive or haemolytic jaundice. In most cases this can be done on clinical grounds alone.

There are five viruses that are commonly associated with hepatitis called Hepatitis A, B, C, D and E virus. Of these two, hepatitis A and E spread through faecal contamination of water. When there is an outbreak of jaundice in a village it is probably this virus. Almost always this jaundice becomes alright on its own. Except in pregnant women where it can be life threatening. Three other types of viruses spread through the blood and through unprotected sexual contact (hepatitis B, C, D). These types are more severe, tend to worsen and have more long term complications.

15.2 ACUTE FULMINANT HEPATITIS

- Sometimes, especially with hepatitis B and D hepatitis turns severe due to cell necrosis.
- Patient develops confusion, stupor and then coma and it is difficult to save his or her life.
- Pregnant women are prone to develop this picture with all viruses but commonly with hepatitis E.

15.3 CHRONIC HEPATITIS

- Sometimes the liver disease goes on for years without becoming well.
- Such patients have frequent intermittent episodes of jaundice.
- Elevated liver enzymes over 6 months is enough to make this diagnosis.
- Eventually it can become well but more often leads to cirrhosis of the liver and portal hypertension and end stage liver disease develops.

15.4 OBSTRUCTIVE JAUNDICE

- Sometimes jaundice is due to obstruction to flow of bile and not due to a virus.
- In such cases the yellowing of eyes is very marked and may even be greenish.
- There is much itching and the stools are always whitish in colour.
- Usually the liver is enlarged.
- Ultrasound of the liver confirms obstruction best and the patients should be referred to a centre with ultrasonography facilities.
- Refer to higher centre as these cases need surgery.

15.5 HAEMOLYTIC JAUNDICE

- Sometimes jaundice is due to increased breakdown of haemoglobin secondary to destruction of RBCs in a haemolytic anaemia.
- Jaundice is invariable light coloured, and urine is also normal in colour.
- Diagnosis needs to be established by blood smear examination, by ruling out hepatitis by liver function tests and by specific tests for haemolytic anaemia.

15.6 JAUNDICE AND FEVER

- Jaundice and Fever may be
 - Malaria,
 - Hepatitis,
 - Typhoid,
 - Leptospirosis
 - Amoebic liver disease.

When fever is the dominant symptom look for the above causes.

Investigations for jaundice

These tests are needed to establish diagnosis & monitor improvement.

At PHC

- Urine examination for bile salts & pigments can be done even level.

At CHC

- Serum bilirubin & Serum liver enzymes level are advised & should be available at CHC level.

Treatment for hepatitis

- Only supportive : rest, hydration, correct but not specific diet.
- Avoid oily spicy foods that are ill tolerated.
- Avoid corticotherapy. NEVER give steroids.

There are no specific drugs to cure jaundice. Fortunately most persons become well on their own.

Remember many drugs commonly used are harmful when given to a person with jaundice.

Treatment for Acute fulminant hepatitis

- Patient needs hospitalization.
- Treatment is supportive & consists of maintaining parenteral fluids.
- Care is taken to treat infections or other precipitating factors like haematemesis.
- Gut sterilization with
 - capsule amoxicillin
 - and/or
 - metronidazole may help.

for more details see page 158

Treatment for obstructive jaundice

- Refer for Surgery

Treatment for Haemolytic anaemia

- Referral for further work up in higher centre with tests for type of haemolysis.

Vaccine

- Vaccine against hepatitis B is available.
- However it is not essential except for those in some special occupations or those whose spouse has had jaundice and tested positive for hepatitis B virus while they themselves are still testing negative.

16. LOSS OF CONSCIOUSNESS

This is always serious and needs to be referred to a secondary hospital. The following advice is given to identify causes that can be helped at once and which may be life saving as well as a note on how to manage the unconscious patient till they reach a doctor.

Clinical pattern	Likely Diagnosis	Action Required
<ul style="list-style-type: none"> • Sudden in an otherwise normal person. • On examination there is usually some neurological deficit – hemiplegia, facial paralysis 	<ul style="list-style-type: none"> • Usually this is due to a stroke. 	<ul style="list-style-type: none"> • See page 216
<ul style="list-style-type: none"> • Slow in onset with person first confused or drowsy, especially in person with known diabetes on treatment 	<ul style="list-style-type: none"> • Hypoglycaemia (only in diabetics on treatment) • Diabetic hyperglycaemia 	<ul style="list-style-type: none"> • Try an injection of 25% or 50% glucose. • If there is relief set up a drip. • If on the other hand it does not improve one must look for hyperglycemia. • Test urine Benedict's- if brick red for sugar then treat as for hyperglycaemia (Page 187). • If ketones are also positive initiate treatment for ketoacidosis & refer.
<ul style="list-style-type: none"> • Slow in onset, • history of pre existing – renal or hepatic disease, • may be precipitated by infections 	<ul style="list-style-type: none"> • Uraemia • Hepatic encephalopathy 	
<ul style="list-style-type: none"> • Associated with fever, • no neck stiffness, 	<ul style="list-style-type: none"> • Cerebral malaria • typhoid encephalopathy • viral encephalitis 	<ul style="list-style-type: none"> • Blood smear examination and Widal test • treatment as indicated in fever/malaria/typhoid (Page 125, 127). • Lumbar puncture also needed.
<ul style="list-style-type: none"> • Associated with fever and neck stiffness 	<ul style="list-style-type: none"> • Acute or chronic meningitis 	<ul style="list-style-type: none"> • Lumbar puncture and examine the cerebrospinal fluid and start treatment according to the gram stain report as well as the cells seen. (See acute meningitis Page 143) • Even if this cannot be done empirical antibiotics is justified.

- If no diagnostic even at this simple level is available and one would take over 12 hours to reach the CHC and there is fever with loss of consciousness then
If patient is still able to swallow one can give
 - One dose of amoxicillin 500 mg
and
 - Four tablets chloroquine
and
 - Some glucose or sugar solution to drink and then send the patient.If not able to swallow
 - One can give the above as injection - or through a ryles tube
- If the patient is unconscious and febrile and diagnostics are unavailable
One can treat with
 - intravenous penicillin and ciprofloxacin and refer.
- Intravenous quinine for cerebral malaria should be started only.
 - If the smear report is positive,
 - If a course of antibiotics has not worked
 - Or there is other reason to suspect it to be cerebral malaria.

Looking after an unconscious patient

The most important concern is that the patient does not choke on any vomit or even aspirate saliva or even choke by his tongue falling back. The key to this is putting the patient in "safety position" (see book on first aid).

17. WEAKNESS OF ONE OR MORE LIMBS

Clinical pattern	Likely Diagnosis	Action Required
<ul style="list-style-type: none"> • Flaccid paralysis of rapid onset - in only one limb or asymmetrically in both limbs 	<ul style="list-style-type: none"> • Poliomyelitis 	<ul style="list-style-type: none"> • See page 134
<ul style="list-style-type: none"> • Flaccid paralysis of one limb or part of a limb, - of insidious onset and gradual progression 	<ul style="list-style-type: none"> • Leprosy likely, check for thickened nerves. • All other causes of Peripheral neuropathy to be considered 	<ul style="list-style-type: none"> • See Page 155
<ul style="list-style-type: none"> • Paraparesis/Quadriparesis • Spastic limbs, • Bladder involved, sensations lost. • Tendon jerks exaggerated 	<ul style="list-style-type: none"> • Acute myelitis (spinal cord disease) 	<ul style="list-style-type: none"> • Course of steroids is advised if it is still progressing.
<ul style="list-style-type: none"> • Paraparesis/Quadriparesis • Flaccid limbs, • Bladder spared, • Sensations normal, • Tendon jerks lost, 	<ul style="list-style-type: none"> • Gullian Barre syndrome • Hypokalemic periodic paralysis 	<ul style="list-style-type: none"> • Plasmapheresis and immunoglobulin is useful but very costly and presently no centre in Chhattisgarh has these facilities. • If it is still progressing a course of steroids is advisable.
<ul style="list-style-type: none"> • Slow onset and slow progression of weakness, • Tone normal, • Jerks preserved, • Bladder spared, • sensations spared 	<ul style="list-style-type: none"> • Acute or chronic myopathies 	<ul style="list-style-type: none"> • Usually no treatment. But some myopathies like polymyositis respond very well to steroids and may be tried.
<ul style="list-style-type: none"> • Slow onset, progressive weakness, • episodic, • worsening on exercise and with evening 	<ul style="list-style-type: none"> • Myasthenic syndromes 	<ul style="list-style-type: none"> • Referral to establish diagnosis. • Neostigmine may be started if immediate relief is required and as a test to confirm diagnosis. Referral to tertiary care centre for immunosuppressives and thymectomy
<ul style="list-style-type: none"> • If only one half of face is paralysed with a lower motor type paralysis of rapid onset 	<ul style="list-style-type: none"> • Bell's palsy • Exclude other causes of facial Nerve palsy 	<ul style="list-style-type: none"> • Start on short course of steroids, protection for eyes,

In all the above three situations the critical decision to make is whether it is still progressing and may lead on to respiratory paralysis. If there is doubt of this the patient is best referred to a centre, which has a ventilator.

18. FITS OR CONVULSIONS

These are involuntary jerky movements that occur in episodes and then become completely normal. This is usually accompanied by loss of consciousness. Often there is biting of tongue and/or urinary incontinence.

Diagnosis

Clinical picture of the seizure is adequate for diagnosis.

18.1 Generalised tonic clonic seizures : Episodic involuntary jerky movements of the limbs, followed by loss of consciousness, lasting from a few seconds to a few minutes. Tongue biting causing bleeding, foaming at the mouth, urinary incontinence , a typical epileptic cry preceding the fits, and exhaustion and deep sleep after the fits, and occurrence during sleep all are features that confirm the diagnosis. Diagnosis is based only on a good history or observing the fits.

18.2 Atypical generalised seizures : Rarely the typical tonic clonic phase is not seen. There may be only a tonic phase or only a clonic phase.

18.3 Complex Partial Seizures : There is impairment- not loss- of consciousness with or without complex stereotyped movements (like smacking of lips) and a typical aura which gives a diagnosis of complex partial seizures. The characteristic clonic jerky motor seizures are not present or develop later.

18.4 Simple partial seizures : Jerky movements of a part of the body with normal consciousness.

18.5 Absence Seizures : If there is just a momentary stare or jerk or fall, with quick recovery, occurring in children, often many times a day then one may suspect absence seizures.

18.6 Status Epilepticus : If fits are sustained or there is no recovery of consciousness between fits then a diagnosis of status epilepticus has to be made.

18.7 Symptomatic Seizures : in an adult

- **Fever and Seizures** : If there is fever along with fits one must ask the patient to proceed immediately to the CHC as it maybe cerebral malaria or other brain infection.
- **Febrile Seizures** : In children this is a frequent presentation. It is important to keep fever down by frequent sponging as high fever often provokes fits. This is particularly important in children who have had fits associated with high fever before. For treatment see page 215.

- **Eclampsia** : If fits occur with pregnancy – check for blood pressure- if elevated manage as eclampsia (Page.#)
- **Intracranial space occupying lesion** : Consider if fits occurs with neurological deficit, and /or severe progressive headache and projectile vomiting. After immediate management of fits refer to higher centre.

Treatment (see page 212-215 for more details)

has two steps :

- Look for treatable causes and if present treat them.
- Stop the convulsions if they are continuing without recovery of consciousness in between seizures. (This is called status epilepticus).

Stopping the convulsions

- Inj. Diazepam IV –0.2 mg/kg at 5 mg/min upto 10 mg. For adults 10-20mg, repeat if necessary after 30-60 mts. and then infusion up to 3 mg/kg over 24 hrs.
- or**
- Phenytoin IV 15 mg/kg as a bolus at about 50 mg/min in adults or in a saline drip (never in dextrose solution) as loading doses, then 100 mg repeated 8 hrly
- or**
- Inj. Phenobarbitone IV 10 mg/kg at less than 100 mg/min in adults can be given as increments as 5 mg/kg. upto a total of 1 gm

If IV fluids are not available :

- Diazepam (intrarectal)
 - Child 0.5 mg/kg rectal administration. Use the parenteral form and inject by means of a syringe without a needle and if available a piece of nasogastric tube.
 - For adult give 10 to 20 mg.
 - For rectal route dilute the dose – 2 ml of diazepam with 8 ml of saline or dextrose solution.
 - If ineffective after 10 minutes, repeat the dose. Do not give more than 2 doses within six hours.

Always put in “safety position”

When to refer ?

- If fits do not stop
- Eclampsia
- Suspicion of intracranial space occupying lesion

19. THE CRYING BABY :

Sometimes we are called to see a baby, less than a year old, that is constantly crying.

Here is how you can try to help ?

- Ask the mother to breast-feed. If the cry stops it is likely to be hunger cry.
- Check whether his neck is rigid and its anterior fontanelle (soft spot on the head) is bulging (check for this in the upright position)– if so *refer at once* to a CHC. - it may be meningitis.
- Check if there is fever and cough – if there is it is likely to be respiratory problem:
 - Check for signs of pneumonia- rapid breathing and in-drawing of chest- if so. (see page 147).
 - Check whether the throat is congested and tonsils enlarged and inflamed- may be throat infection. see page 84
 - If there is stuffy or running nose. It is probably just a cold. Some warm salt water in nostrils and using a syringe without needle to suck out the mucus may give relief. (see page 83). Remember to check for breathing rate anyway.
- Check if child pulls on ear- maybe its an earache- see page 79
- Check if there is any swelling and pus anywhere- maybe its an infection- see page 28
- Check if there is any fracture of the bones-on touching that part the child's crying increases; there may or may not be a history of injury. If there is refer
- Check if the child is passing stools. If not try oil syringing. If she passes stools and crying stops then it is constipation .If she still does not pass stools it may be serious. Especially if there is vomiting as well. Refer at once.
- Check if child cries intermittently and prefers to sleep on abdomen. It may be abdominal pain and cramps. (See page 25-26).
 - If there is diarrhoea with or without blood or vomiting treat accordingly. (See page 36, 37)
 - If child is not passing stools or gas and abdomen is distending then refer at once to CHC. If not give tablet or syrup paracetomal for pain relief.
 - If between one year and two years of age and pain is not severe, also give half tablet albendazole treatment for worms. If above two years give one tablet albendazole.

20. JOINT PROBLEMS

If there is pain and swelling in the joints : Look at pattern of involvement of joints

Clinical pattern	Likely Diagnosis	Action Required
<ul style="list-style-type: none"> Mainly involves the large joints : knees, ankles, hip, shoulder, elbow. Joint pain is migratory : that is -joint that is involved swells up painfully but within a short time that joint pain lessens – meanwhile another joint starts paining It usually occurs in children and young adults. 	<ul style="list-style-type: none"> Suggestive of rheumatic arthritis. (see also pg 199) 	<ul style="list-style-type: none"> Bed rest, High dose of aspirin. 100mg/kg/day Paracetamol and ibuprofen may also help but not as effectively. Prompt response to aspirin confirms diagnosis. Injection Procaine penicillin one dose daily for ten days. . Note this disease may affect the heart. To prevent heart involvement one needs to prevent recurrent attacks and this one can do by giving an injection of benzathine penicillin once every three weeks for at least five years or till the age of 25 years.
<ul style="list-style-type: none"> Involvement of small joints Deformities of the joints and smaller bones Little or no fever. Response to aspirin is present but less Pain has been recurring for years 	<ul style="list-style-type: none"> Rheumatoid arthritis; Consider other auto-immune arthritis also 	<ul style="list-style-type: none"> Patient needs a high dose of aspirin and warm fomentation of the joints. - Paracetamol is a less effective alternative. - Ibuprofen is more effective but has more side effects than paracetamol,
<ul style="list-style-type: none"> Involvement of a single joint which is swollen; painful; warm; tender 	<ul style="list-style-type: none"> Septic arthritis -Infection of the joint is likely: - Other possibilities • severe painful • monoarticular arthritis – • Gout; • trauma, • haemarthroses in • haemophilia etc. 	<ul style="list-style-type: none"> One can aspirate some fluid from the joint. If it shows frank pus or many pus cells in microscopy then the diagnosis is confirmed. • Start amoxicillin 500 mg 8 hourly and refer. • Also give aspirin or paracetamol and rest as advised earlier
<ul style="list-style-type: none"> If there is no swelling, mild to moderate pain largely affecting knees • more common in older persons and with obesity. • ESR is normal in contrast to most other arthritis 	<ul style="list-style-type: none"> May be osteo-arthritis 	<ul style="list-style-type: none"> Warm fomentation, • weight reduction, exercises to strengthen thigh muscles and avoiding the squatting position all help. • One can add an analgesic like paracetamol or ibuprofen if needed.

21. THE UNKNOWN POISONING

If you suspect poisoning, and cannot find out what the poison is: do the following immediately :

If the patient is conscious.

- Make the person vomit. Put your finger in his throat or tickle the back of his throat with a spoon, or make him drink warm water with a lot of salt in it.

You may also give him a tablespoonful of syrup of ipecac, followed by one glass of water.

If you have it, give him a cup of activated charcoal mixed in a cup of water in case of a child. (for an adult, give 2 glasses of the mixture).

- If the person does not vomit, lay the person on a cot.

Put in a well-greased stomach tube through mouth and pour in 2 litres of salt water through the funnel.

Lower the end of the stomach tube below the level of the bed. The liquid in the stomach will come out.

Continue this till the liquid coming out is clean.

- Have him drink all he can of milk, beaten eggs, or flour mixed with water.
- If you have it, give him a tablespoon of powdered charcoal. Keep giving him more milk, eggs, or flour and water and make him vomit till the vomit is clear.
- Seek medical help at once.
- **DO NOT MAKE PERSON VOMIT IF KEROSENE OR ACID POISONING IS SUSPECTED.**
- Look for signs indicating specific poisons:
 - Pin point pupils, excessive sweating, frothing at mouth and salivation maybe with widespread fasciculations- suspect organophosphorus or organo-carbamate insecticide poisoning
 - If there is some mild constriction of pupils and deep loss of consciousness then consider barbiturate poisoning;
 - If the pupils are dilated widely and skin is dry and hot suspect dhatura or atropine like substance causing poisoning;
 - If there are convulsions and a typical smell like organophosphorus without any of the signs of organophosphorus poisoning consider organochlorine poisoning.

- Most often we can find out the poison only by understanding the situation, the possible poisons the patient had access to and asking the relatives to get any empty chemicals or drugs container from their house – from which we can make a guess.

If the patient is unconscious

- Try to find the poison taken by examination of the patient and from talking to relatives and friends and start treatment accordingly. Do not make him vomit.
- If he has stopped breathing, then give him mouth-to-mouth breathing. Seek help at once.
- If the patient has to be shifted after ventilatory arrest best to put in an endotracheal tube and shift him with artificial respiration done with an Ambu's bag.

22. UNKNOWN BITES

Sometimes we get patients who say they have been bitten by something but do not know what it is. They did not see what bit them. It could be a poisonous snake bite for which they should rush to the hospital or some insect bite which is not dangerous. Here are some tips to diagnose :

Look at the site of bite :

- If there are two fang marks- it is a snake bite and a poisonous one
- If there are no fang marks it could still be a snake bite. Often the fang marks are not seen or missed. It could also be a scorpion sting or insect bite.
- If there is a wound – think of an animal bite – rat or dog usually – almost always the patient knows what has made a wound. Treat accordingly (page 165)

Look for the pattern of symptoms :

- Suspect poisonous snake bite
 - If the bitten area is swollen and this area is spreading
 - If there is any bleeding from any site – gums, in urine, in stools etc
 - If the eye lid droops and eye movements side to side become less or if there is difficulty in breathing.
 - If patient stops passing urine.

Treat accordingly. (Page 167)

Even without the above, one should treat as snakebite if one know:
strongly suspects it is a snakebite. (See page 167)

- Suspect scorpion sting
 - If there is lot of pain but little swelling locally.
Sometimes patients further develop
 - Profuse sweating
 - Heart rate and pulse rate increases very much.
 - Difficulty in breathing and frothy sputum
See page 170 for treatment

- Suspect insect bite
 - If there are one or many raised indurated patches of the skin
 - Often there is a small dot marking the site of bite in the middle of
the swollen area.
Rarely
 - One may develop swelling of the face including eye lids
 - And difficulty in breathing
See page 171 for treatment.

SECTION III

**PRIMARY CARE IN MENTAL ILLNESS, SKIN DISEASES AND IN EYE,
EAR, NOSE, THROAT PROBLEMS**

1. PRIMARY CARE IN MENTAL ILLNESS

Mental illness is common in the community. Often it is not recognised. Often, even if recognised it is not seen as something for which medical help is to be sought. Hence health care providers may have to detect this in the families when they visit them, or during school health programs or during health camps. Or when they present to medical officers with various physical complaints. At times relatives or patients themselves come to medical officers with complaints and since there are few psychiatrists available we would need to manage them. If there is a Psychiatrist accessible at least one consultation to establish diagnosis and start drugs is advisable.

Mental illness may be recognised by the following :

- Talking nonsense and acting in a strange manner considered abnormal.
- Becoming very quiet and not talking or mixing with people.
- Claiming to hear voices or see things others cannot hear or see.
- Becoming very suspicious and claiming that some people are trying to harm them.
- Becoming unusually cheerful, cracking inappropriate jokes and saying that they are very wealthy and superior to others when it is not really so.
- Becoming very sad and crying without reason.
- Talking of suicide or having attempted it.
- Getting possessed by god or spirit and being said to have become victim of black magic.
- "Dull" and not mentally grown up like others of their age and slow development since birth.

Further we would, on enquiring, find that they may have:

- Sleep disturbance
- Poor appetite and very irregular food intake
- Not doing any work
- Not being able to maintain personal hygiene
- Disturbed relationship with family members and others
- Exhibiting behaviour that is harmful to themselves or others- suicidal; abusive, assaultive, homicidal
- Exhibiting socially unacceptable or inappropriate behaviour- undressing in public, collecting rubbish, wandering away from home.

Whenever we find a person with mental illness we should discuss it with the family. Often they have not so identified it and may be calling it evil eye or/are just angry with the person for misbehaviour or have quietly ignored her.

What can the Primary care doctor do to help if the patient is :

1.1 NOISY AND/OR EXCITED

Find out if the patient has insight.

- Is he aware that he is mentally unwell and needs help or does he think himself to be normal. If he knows he is abnormal it may be only a behavioural problem.
- On the other hand if he is frankly abnormal in behaviour but himself does not recognise it then we are dealing with a **psychosis**.

General Guidelines

- Advise others not to talk or act in way that provokes him further. Keep away individuals whom patient does not like.
- Do not argue or scold the patient.
- Try to gain confidence by asking " what are your problems" "what is troubling you" "Let me try and help" etc.
- When he calms see that he takes some food and fluids.

Drug Treatment

- Try to convince him that medicines would help and that he should regularly see the doctor. If there are symptoms like: flight of ideas, feeling of grandeur, hearing voices talking amongst themselves- start on an antipsychotic drug like -
 - Haloperidol - 1 to 5 mg P.O. or IM or IV.
 - or
 - Chlorpromazine - 50 to 300mg per day in three divided doses.if violent and difficult to control.
 - Injection haloperidol 5mg IM stat

When to refer

- If he does not calm down and is getting violent.
He has to be tied down use a long towel or long cloth to tie hands. Do not use a chain or rope.
In the worst situation One can throw a blanket on him and hold him with others help and take to a referral hospital.

1.2 DULL AND WITHDRAWN

- **This is usually due to depression.**
- The other symptoms that characterise depression are : Sleep is poor. Patient usually goes to sleep without problem but wakes up early and frequently.
- Appetite is usually very poor and they feel that their energy to do any work is very low.
- Interest in sexual relationship (libido) is also decreased.
- There may be frequent crying and patient may admit that mood is very depressed & suicidal thoughts are common.
- If they have a clear suicidal plan, that is a life-threatening emergency.

General Guidelines

- Take time to talk to the patient. Often there are immediate causes for the depression but the extent of depression is out of proportion to the known causes. Counsel him/her to understand that he or she needs help.
- Persuade him to eat something.

Drug Treatment

Anti depressant drugs are valuable and should be started.

the drug of choice is

- Imipramine 75 to 150 mg per day in divided or a single dose.
Start at 25mg/day and increase by 25 mg every third day till 150mg/day.

Avoid in epliepsy and heart disease, glaucoma or prostatic hypertrophy.

1.3 ABNORMALLY SUSPICIOUS

- This is often a feature of **paranoid schizophrenia**. Look for other features of schizophrenia.
- Typically the patient person also talks of hearing voices.
- Often paranoia does not have other such features and then the doctor has to consider whether the patients' belief has a basis.
- But usually the patient supports his belief by frankly abnormal reasoning and ideas, which helps decide on treatment.

General Guidelines

- Be fair and honest. Do not tell lies as this patient trusts no one and it is very easy to lose his trust.
- Do not question his beliefs or suspicions. Do not state that his or her beliefs are wrong.
- Allow him or her to talk about their suspicions. Collect information without passing judgement.
- Draw his attention to other problems – sleeplessness, poor appetite etc and use that to convince him or her to see a psychiatrist if needed.

Drug Treatment

Treat as for schizophrenia starting with lowest doses.

- Haloperidol - 5 to 10 mg/day in 2 divided doses.
- or
- Chlorpromazine - 150 - 300 mg/day in 3 divided doses.

1.4 CONFUSED AND DELIRIOUS

All abnormally confused persons must be examined for organic causes of delirium immediately. If the confusion is with :

- Fever : it may be due to early infection of brain (encephalitis or meningitis see page 143)
- During or after fits : delirium or frankly psychotic behaviour lasting from few minutes to few hours is well known, Treat accordingly see page 212
- High blood pressure – then it may be hypertensive or uraemic encephalopathy – treat accordingly : see page 196, 198
- A diabetic person on treatment- hypoglycaemia may present and be cause of abnormal behaviour or vague confusion - see Page 46
- Ask whether he or she has taken any drugs – some drugs can cause this confusion.

Refer all the cases after initiating the treatment.

1.5 ANXIETY AND PANIC

- Complains of anxiety and panic out of proportion to known causes suggests anxiety neurosis.
- Insomnia – often initial (problem in going to sleep) is common.
- Palpitations, excessive sweating, choking sensation, dysphagia may be present.

General Guidelines

Counselling is important.

Drug Treatment

Anxiolytic drugs can be tried for short periods.

- diazepam 5mg HS or SOS

Other common presentation of mental illness

- Episode of mania (excited behaviour) alternating with depression and periods of normalcy
- Suicidal patient
- Insomnia
- Recurrent obsessive thoughts.
- Unexplained abnormal fears.
- Alcohol or other drug dependence.
- Mental retardation.

for all these refer to a specialist or consult text on mental illness.

When dealing with mental illness remember :

- That family members make the decision.
- That a male health care provider never examines or talks to female patient alone- always keep another woman or the husband with you. (This is true for all medical examination of women)
- Do not blame or criticise anyone as a cause for the illness, nor encourage them to do so.
- Reassure them but do not over promise on what you or anyone else can do for the patient.

Follow up of the patient :

After the diagnosis has been established preferably at a specialist centre the primary health care centre should provide regular follow up and adjustment of drug dosage.

If no psychiatry specialist is available, a physician is the next choice. Where neither is available even diagnosis can be made by a basic medical officer.

- Check whether patient is taking medicines regularly.
- How much improvement has been made. Is it enough to going to start work again.
- Has any side effect developed with drugs.
- Whether they have gone to see the specialist as scheduled.

2. PRIMARY CARE DERMATOLOGY

Diagnostic Guidelines for Skin Problems

There are many types of Skin lesions :

- Macules - Flat lesions-same level as of skin- maybe small or big
- Papules - The skin is raised- usually small but may be large also.
- Vesicles - The skin is raised and there is fluid inside
- Bullae - The skin is raised and ballooned and there is fluid inside
- Abscess - The skin is raised and there is pus inside
- Pustule - The skin is raised, there is pus and the pus is draining out.
- Squamous lesion - The skin is dry and scaly
- Weeping lesion - there is watery fluid oozing from the lesion
- Crusts - the fluid and dead skin form flakes that stick and can be peeled off.
- Also look for scratch marks - indicates it is itchy.
- Also look for the black dot of the insect bite.

Most patients with skin problems present late. By then they have scratched and this has got secondarily infected and now the feature is of the secondary bacterial infection. We need to treat this secondary infection and examine again to find out the primary cause.

Diagnosis rests usually on recognising the clinical pattern. Sometimes microscopy of scrapings of the lesion can confirm the diagnosis.

Here are some hints for diagnosis :

- Did it **start suddenly** (over one or two days or even over one or two hours)?
If yes :
 - Think of **urticaria** – may start over minutes; presents with many papules that often change shape over hours; is always itchy: and often associated with insect bite or allergy. Rarely there maybe an associated difficulty in breathing. If this develops it is an emergency
 - If not think of **herpes simplex** – vesicular lesions start over a few hours. Often occurs as part of fever and some other serious infection. Often around or in mouth, on face, or in eyes.
 - If the same type of vesicular lesions are in one or more lines and they are very painful think of **Herpes Zoster**.

➤ Have **skin lesions been there long-** over a few weeks?

If Yes, the possibilities are:

- **Impetigo** : Presents with pustules and crusts and scratch marks. This is usually secondary bacterial infection. (See page 64)
- **Scabies** : Presents with many scratch marks and few small papules especially between fingers or toes. This usually comes along with impetigo. (See page 65)
- **Ring worm** (not due to a worm but due to fungus) : Tinea cruris
 - If there is large macule with scaling towards the edges And it is very itchy-. (See page 73)
 - Ringworm can also present as distorted nails, wet reddish lesions between toes, or area of loss of hair and itching over scalp (tinea capitis)

Skin scrapings for microscopy show plenty of small hyphae that confirm diagnosis.

- **Pityriasis (tinea versicolor)** : if there are large macules which are of lighter colour than surrounding skin - this is a type of ringworm infection - but it does not itch and there is no loss of sensation. (See page 72)
- **Leprosy** : If there are large macules of lighter colour, which on pricking with a pin does not feel pain or the pain is less than elsewhere. (See page 155)
- **Leg Ulcers** : If over the leg or foot or ankle there is an ulcer that does not heal— think of chronic leg ulcers. (See page 251)
- **Eczema** : If there are large macules and small papules in the lower limb or elsewhere that is full of weeping vesicles, with lot of itching and scaling of skin; then consider eczema. This may also present with impetigo. (See page 69)
- **Psoriasis** : extensive plaques covered by loosely adherent silvery scales

➤ Other common skin disorders are the dry scaly skin of malnutrition and hypothyroidism.

2.1. IMPETIGO OR PYODERMA

This is an infection of skin by bacteria. It affects those who because of water scarcity or other problems bathe less and live in crowded spaces. It spreads easily especially amongst children. It commonly occurs in patients with lice or scabies or tinea infection.

Clinical Presentation

- Multiple pustules with crusts, accompanied by scratching marks.
- Sometimes bullous lesions in children.
- Sometimes lesions are superficial with surrounding redness. Sometimes deep.

Management

- Explain planned treatment to mother and child.
- Cut fingernails, wash child daily with soap.
- Clean lesions with disinfectant - chlorhexidine.
 - Pierce vesicles,
incise and drain pus,
remove crusts.
- Apply gentian violet solution twice daily.
- Never put an occlusive dressing with adhesive tape.
- Look for lice, scabies or ringworm and if present treat for the same. If it is present on the scalp, shave head before treatment for more effectiveness.
- Avoid antibiotics unless there is a spreading redness or increasing pus or fever develops. If any of the above three signs are there add a five to seven day course of antibiotics.
 - In antibiotics the choice is for penicillin,
 - Second choice may be cloxacillin.
 - Amoxicillin can be used too.
 - Cotrimoxazole is less effective but that too can be tried if the above three drugs are not available.

2.2. SCABIES

This is an infection of the skin caused by a small insect mite. It occurs commonly where there is a lack of water, overcrowding or poor hygiene.

Clinical Presentation :

- Itching more at night.
- On examination one can see scratch marks and small papules between and on the fingers and toes. Also seen in genital area, armpits and under folds of skin.
- Often whole family has got signs of infestation.

Management :

- Wash the whole body with soap and water.
- Then apply gamma BHC solution (or benzyl benzoate emulsion) to the whole body – except for face. Do not apply near or into orifices. Allow to dry on skin.
- Wash after 12 hours. Repeat after a week.

If there is impetigo in addition to scabies treat that first and then only treat scabies.

Treat the whole family at a time. After the treatment wash all clothes and bedding in boiling water and dry in sun.

2.3. HERPES SIMPLEX INFECTION

This is Viral infection of the skin.

Clinical Presentation

- A number of vesicles that come suddenly. Commonly they are seen around the mouth or even within it when the person is having high fever due to pneumonia or other cause.
- Sometimes it affects the eyes causing redness, watering and decreased vision. This needs to be seen by an eye specialist.

Management

- Clean the lesions with chlorhexidine - 4 to 6 times a day.
- If pus or spreading surrounding redness develops treat as suggested for impetigo.
- If it affects the eye acyclovir drops are indicated- but this is better prescribed by eye specialist.

2.4. HERPES ZOSTER INFECTION

This is another viral infection of the skin caused by the same virus that causes chicken pox. Usually the affected person has had chicken pox before. Persons especially children who have not had chicken pox can catch it from such patients.

Clinical Presentation

- A number of vesicles that come suddenly. Commonly they appear in a line along a nerve – on the face, on the chest, on the back or on a limb.
- There is very severe pain that comes with these vesicles. It may start one or two days before and last months after the vesicles have healed.
- Sometimes it affects the eyes causing redness, watering and decreased vision. This needs to be seen by an eye specialist.

Management

- Treatment as for herpes simplex but also add paracetamol for pain relief.
- If pain is severe can be referred to tertiary care centre for pain relief Acyclovir started at once is believed to reduce duration & severity but in view of cost little effectiveness in most it need not be insisted on.

2.5. URTICARIA

This is an allergic reaction of the skin. One needs to find out what the person was allergic to and remove it now and avoid it later.

Clinical Presentation

- The lesion start over minutes; Many papules form that may change shape and size over hours; It is always itchy; The insect bite can often be seen as a small dark dot on the popular area.
- Rarely there may be an associated difficulty in breathing. If this develops it is an emergency

Management

- Give a tablet of chlorpheniramine at once. This tablet may have to be repeated every twelve hours till the urticaria has become less. Usually one dose is enough.
- If the offending allergen is identified and avoided no further treatment is required. But often this is difficult.
- If breathlessness develops best to give an injection of 1 ml of 1:1000 adrenaline, and of hydrocortisone 100 mg IV.

2.6. YAWS

This is an infection of the skin and bones that is spread by flies. More in forest areas.

Clinical Presentation

- Presents with an ulcer on the skin with small surrounding ulcers and frambesiomias-small crinkled swellings.
- It can affect mucous membranes as well.
- It can cause chronic lesions on bones usually in the limbs.

Management

- Benzathine penicillin
Children : 50,000 to 100000 IU in single injection.
Adults : 1.2 MIU in a single injection.

2.7. CANDIDIASIS

2.7.1 PARONYCHIAL LESIONS

Diagnostic features

- Common in people who do wet work
- Commonly affects the posterior nail folds more than lateral folds
- Nail fold shows erythema, boggy swelling, and occasionally discharge of pus on pressing
- Nail may show ridging and become discoloured
- Gram stain of pus shows gram-positive oval shaped budding yeast cells

Treatment

- Clotrimazole (1%) lotion to nail folds b.i.d. for 4 to 6 weeks

General Guidelines

- To stop all wet work
- Use of cotton gloves

2.7.2 INTERTRIGINOUS LESIONS

- Occur over infra-mammary, axillary, groin, perianal or interdigital areas.

Diagnostic features

- Present as moist, red macerated lesions with well defined peeled borders (overhanging scales/surrounded by satellite papules or pustules)

Treatment

- Clotrimazole dusting powder

General Guidelines

- Eliminate conditions leading to moisture and maceration
- Expose the areas for drying up of the lesions and avoid tight clothes Wear loose cotton clothes
- If lesions are inflammatory, tepid water compresses 3 to 4 times a day help to cool and soothe

2.7.3 THRUSH/PERLECHE

Diagnostic features

- Whitish plaques loosely attached to oral or vaginal mucosal membranes. On removal, the underlying mucosa is bright red and moist.

Treatment

- Clotrimazole mouth paint 2 to 3 times/day for 2 weeks, if it persists (usually there is association with oesophageal candidiasis)
- Tab. Fluconazole (200 mg) one tablet on day 1. followed by Tab. Fluconazole (100 mg) one tablet per day for 14 days.

2.7.4 VULVOVAGINITIS

Diagnostic features

- Vulva shows erythema and oedema with severe itching and vaginal discharge
- Scraping of lesions shows presence of fungal forms especially on mucous membranes, but usually not seen with infection on skin.
- Cultures show growth of *Candida albicans* within 48 to 72 hours

Treatment

- Clotrimazole vaginal tablet (100 mg) one tablet at bedtime for 7 days
Recurrent vulvovaginal candidiasis
- Tab. Fluconazole (200 mg) one tablet as single dose.
- Tab. Ketoconazole (200 mg) 2 tablet per day for 2 weeks at bed time half an hour before dinner. Ketoconazole is used to decrease the recurrence rate.

General Guidelines

- To wear cotton underwear and avoid tight clothes.

2.8. DRUG ERUPTIONS

Diagnostic features

- Due to injected, ingested, inhaled, instilled or applied drug.
- The chemical either can be a formulation or in processed foods or milk.
- Manifestation may be immediate (within one hour) accelerated (1-72 hours) late (>2 days)
- Lesions may be exanthematous, macular, urticarial, petechial, purpuric, bullous, erosions, exfoliative or erythematous plaques

Treatment

- Tab. Chlorpheniramine (4 mg) one tablet t.i.d.

And

- Calamine lotion to be applied locally

If severe,

- Tab. Prednisolone (20 mg) (maximum of 40-60 mg) per day in divided doses for 2 weeks.

General Guidelines

- If due to a drug, try to pinpoint the drug to stop its use
- Suspect recently started drugs or those, which are statistically more common offenders

2.9. ECZEMA/DERMATITIS

- These are synonymous terms signifying inflammatory response of skin to different factors.
- Caused by exogenous or endogenous factors
- Generally, 3 stages - acute, subacute and chronic
- Acute stage - characterised by erythema, oedema, vesicles and oozing.
- Subacute stage - erythema, oedema, vesicles decrease and are replaced by moderate oozing, crusting & scaling
- Chronic stage - mainly consists of pigmentation and lichenification.
- Highly pruritic in all stages.

General Guidelines

- Avoid exposure to trigger or precipitating factors where applicable. Management includes establishing the cause of dermatitis by patch testing and removing the contactant if possible. common contactants are synthetic fabric plastic chromium plating etc.
- Good personal hygiene to avoid introducing an infection.

Treatment

Treatment It is according to stage of dermatitis.

Infected eczema

- Emollients e.g. aqueous cream applied daily
 1. Mild cases: Hydrocortisone 1% ointment daily
 2. Moderate cases: Betamethasone 0.1% cream or ointment daily
 3. Severe cases: Systemic antibiotics, e.g.
Cap. Amoxicillin (250 mg) 8th hourly for 5 days
- Or**
For Penicillin - allergic patients
Tab Erythromycin stearate (500 mg) t.i.d. for 5 days
- Wet dressings with light weak pink Potassium Permanganate soaks for 5 days where indicated.
- Symptomatic relief by Antihistamines, e.g.
 1. Tab. Chlorpheniramine (4 mg.) t.i.d. as needed OR
 2. Tab. Promethazine (10-25 mg) 6th - 8th hourly, as needed, in severe cases
- Refer to higher centre to confirm diagnosis, and for management of complicated cases.

Acute eczemas

Mild or Moderate	Severe
<ul style="list-style-type: none">● Soaks or compresses of plain tepid water OR normal saline	<ul style="list-style-type: none">● Tab Prednisolone (5 or 10 mg) 0.5 - 1 mg/kg with gradual tapering of
<ul style="list-style-type: none">● Condy's lotion (1:8000 Potassium Permanganate) 3-4 times per day till oozing stops	<p>If Infection Present</p> <ul style="list-style-type: none">● Tab. Erythromycin (250 to 500 mg) one tablet q.i.d. for 5 days● Tab. Chlorpheniramine Maleate (4 mg) one tablet t.i.d. for 5 to 10 days

Subacute eczemas

- Zinc Oxide cream or paste, applied on gauze piece, which is then applied to the skin and dressed
- Or**
Calamine lotion
- Plus if infection present.
- Tab. Erythromycin (250 or 500 mg) one tablet q.i.d. for 5 days.
- Tab. Chlorpheniramine Maleate (4 mg) one tablet q.i.d. for 5 to 10 days.

Chronic eczemas

- Tab. Chlorpheniramine (4 mg) one tablet t.i.d. for 10 days

For children and facial lesions

- Hydrocortisone (2.5%) cream two or three times a day
or
Betamethasone 0.1% cream

For adult and for lichenified lesions

- Clobetasol Propionate (0.05%) cream once a day
Plus
- If infection present antibiotics as for infected eczema (see page 70)

2.9.1. SEBORRHOEIC DERMATITIS

Diagnostic features

- Chronic greasy scaling and erythema of scalp, naso-labial folds, retro-auricular folds, axillae or groins

Treatment

- Miconazole cream (2%) apply locally b.i.d. for 3 weeks
- Topical steroid lotion - Betamethasone Dipropionate (0.05-.1%) once or twice daily for 3 weeks.

General Guidelines

- Review patient after 3 weeks

2.9.2 NUMMULAR DERMATITIS

Diagnostic features

- Coin shapes, well-circumscribed plaques of eczema over dorsa of hands, forearms, legs or other areas of body.

Treatment

- Tab. Chlorpheniramine (4 mg) one tablet t.i.d. for 5 days

And**For acute stage-exudative phase**

- Compresses with potassium Permanganate solution (1 to 5000 parts of water) locally over oozing lesions or Calamine lotion.

For Subacute & chronic stage

- Betamethasone Dipropionate cream (0.05%) topically for 2 weeks
- Or
- Betamethasone Dipropionate cream (0.05%) with Neomycin for 2 weeks locally if bacterial superinfection is suspected.
- And
- Inj. steroids intralesionally 0.1 0.3 ml in each site in very thick lesions

General Guidelines

- Avoid dryness of skin
- Review patient after 2 Weeks

If improvement is not seen; refer the patient to dermatologist.

2.9.3. ATOPIC DERMATITIS

Diagnostic features

- Chronic pruritic dermatitis, over face, neck and flexures

Treatment Guidelines

- Control pruritus with Tab. Chlorpheniramine (4 mg) one tablet t.i.d. for 3 days
- Clobetasone Butyrate cream (0.05%) topically for 2 weeks.

General Guidelines

- Soft non-irritating clothing
- Use of emollients
- Avoiding eggs
- Avoid irritating strong soaps or chemicals
- Exclusive breast-feeding in infants.
- Review patient after 2 weeks.

2.10. FUNGAL INFECTIONS/RINGWORM

2.10.1 TINEA VERSICOLOR

This is fungal infection of the skin.

Diagnostic features

- Superficial scaly hypopigmented macules often large and irregular, occurring on face neck, trunk or limbs.

Treatment

- Miconazole cream 2%
- or
- topical clotrimazole 1% Cream
twice a day for a few weeks
- Tab. Fluconazole 400mg - single dose.

2.10.2 RING WORM (TINEA CRURIS, CAPITIS, UNGUM)

Diagnostic features

- Non-hairy skin : lesions starts as erythematous macules, spread peripherally and develop into arciform or annular lesions, margin active, erythematous, vesicular and scaly, while centre heat showing scaling & discoloration.
- Hairy skin; scalp or beard shows patchy hair loss and underlying skin shows broken stumps, erythema, scaling or pustulation
- Nail infection manifests with nails becoming brittle, friable, thickened and later eaten up.

Drug Treatment

- Miconazole cream (2%)
- Or
- Clotrimazole cream (1%) locally twice a day
- And
- In extensive, recurrent or steroid treated infections
- Tablet Fluconazole 400 mg or 6 mg/kg weekly for 6 to 8 weeks
- Refer to higher centre if no response

2.11. PSORIASIS

Diagnostic features

- Erythematous, sharply marginated plaques covered by loose adherent, silvery scales, which on removal may show pinpoint bleeding.
- Classical sites of involvement are the bony areas and pressure sites, along with the extensors. Nails may show pitting.
- If lesions can occur - pustular psoriasis
- Joint involvement of psoriasis is called psoriatic arthropathy affecting the distal inter phalangeal joints, and large joints along with spondyloarthritis

General Guidelines

- Counselling with regards to precipitating factors.
- Avoid stress, sunlight, drugs like NSAIDs, Chloroquine and Lithium, and infections.

Drug Treatment

Local plaques :

- Salicylic Acid (3%) in white soft Paraffin t.i.d.
- Or
- Dithranol (0.1 - 1.0%) In soft Paraffin (occasionally up to 5%) daily for 0.5 - 1 hour prior to a bath
- Or
- Coal tar, 2-6% plus Salicylic Acid 2% combination, in soft Paraffin for the body or in an emulsifying ointment for the face.

Severe localised pustular psoriasis.

- Topical steroids e.g. Hydrocortisone, 1% for the face. Apply sparingly once daily
- And
- Betamethasone Dipropionate 0.1% diluted in aqueous cream to make a 1:10 or 1:5 concentration. Apply twice daily (for palms and soles)

This is an irritant - avoid contact with eyes, tender areas or open wounds

Refer if

- No response to treatment
- Uncertain diagnosis
- Severe psoriasis and complications

3. PRIMARY CARE OPHTHALMOLOGY

There are five common complaints with eyes :

- The Red Eye
- Pain in eyes
- Diminution of Vision
- Watering or Discharge from Eyes
- Swelling of the lid

Less common complaints are night blindness and injuries to the eye

The primary health centre should have

- A vision chart, (both near vision and for distant),
- Pinhole
- Torch
- An ophthalmoscope.

3.1. REDNESS OF THE EYE

Redness usually indicates infections.

Differential Diagnosis

- **Acute conjunctivitis :**

Inflamed conjunctiva with turbid discharge- may be viral, bacterial or allergic.

➤ Treat with Gentamycin eye drops 4 times a day

Plus

➤ Chloramphenicol applicaps at bedtime.

If there is no improvement in three days refer to an ophthalmologist.

- **Acute corneal ulcer :**

- There is redness and pain in the eye and photophobia.

- Staining with fluorescein and slit lamp examination is confirmatory.

- If this is not available examination with an ophthalmoscope with appropriate settings maybe adequate.

- This requires experience and it is best done by an ophthalmologist.

- Once diagnosis is made the PHC medical officer can follow up.

- Do not give steroids

- Can start antibiotics drops hourly and atropine sulfate 1 % ointment if referral is likely to get delayed

3.4. WATERING OF THE EYE

- If the discharge is watery and there is no redness of the eye it can be due to infection of tear glands or blocking of tear ducts:

- Clean eye with clean water
- Add gentamycin eye drops 4 times a day

If no improvement – refer to an ophthalmologist.

- If the discharge is watery and there is redness on the eye

- Treat as advised for redness of eye above.

- If the discharge is not watery but turbid

- Treat as for redness of eye –
- In newborn and small children: one may just apply gentamycin drops

3.5. SWELLING OF EYELID

- If the whole lid is involved:

It may be insect bite or allergy

- Give tablet chlorpheniramine one tablet twice daily for two days.
If no improvement refer to PHC

- If the swelling is localised :

- And there is pain: it is a sty: Hordeolum externum :

- Give capsule amoxicillin 500mg twice daily

And

- tablet paracetamol 500mg twice daily

And

- gentamycin eye drops 4 times a day

- Also warm fomentation twice daily.

If still no improvement in two days refer to the nearest ophthalmologist. If it persists & causes much discomfort it needs to be incised and drained. Exclude diabetes mellitus in recurrent cases.

- And there is no pain : it may be chalazion.

- Hot fomentation may be enough for small lesions.

- Larger chalazion (> 6 mm) or those present for over 3 months may be excised/or have incision and curettage done

3.6. NIGHT BLINDNESS

Inability to see only in the night: This is common in children and is due to lack of vitamin A. Check also if there are Bitot's spots and xerophthalmia

In adults, even if malnourished night blindness due to vitamin A deficiency alone is rare and is due to other causes

- focus is needed on dietary changes.
- In children : Give Vitamin A syrup 5000-10000 units daily for at least 4 weeks or up to 25000 units weekly.
- In Adults : refer to district hospital.
Injection of Vitamin A may be given if available.

Send to Ophthalmologist if they have severe night blindness or xerophthalmia and threatened blindness.

4. PRIMARY HEALTH CARE IN ENT PROBLEMS

4.1. EAR PROBLEMS

4.1.1 WAX

- | | |
|---|---|
| <ul style="list-style-type: none"> • Dark brown mass seen in ear canal. • Decreased hearing blocking of ear with pain in ear. | <ul style="list-style-type: none"> • Soda glycerine ear drops 2-3 drops thrice daily for 4 days. • Tab Ibuprofen as required. <li style="text-align: center;">↓ • Later cleaning of ear locally for 5 days. |
|---|---|
-

4.1.2 FURUNCLE

- | | |
|---|--|
| <ul style="list-style-type: none"> • Small boil in ear canal. • Pulling ear causes pain. • Bursting may lead to purulent discharge | <ul style="list-style-type: none"> • Cap Amoxycillin 500mg thrice daily for 5 days • Tab Ibuprofen 400 mg thrice daily for 5 days. |
|---|--|
-

4.1.3 PERICHONDritis

- | | |
|---|--|
| <ul style="list-style-type: none"> • Severe pain over ear. • Movement of pinna causes pain. • Swelling and inflammation over pinna | <ul style="list-style-type: none"> • Ciprofloxacin 500mg twice daily for 5 days. • Tab Ibuprofen 400 mg thrice daily for 5 days • Local dressing glycerine magasulf ointment Refer to District. Hospital if not cured. |
|---|--|
-

4.1.4 FOREIGN BODY IN EAR

- | | |
|--|---|
| <ul style="list-style-type: none"> • History of foreign body insertion / Mild pain present / Blocking sensation in ear. | <ul style="list-style-type: none"> • If foreign body is obvious & easily removed it may be attempted. • Else refer to ENT surgeon in District. Hospital/Medical College Hospital. |
|--|---|
-

4.1.5 OTITIS EXTERNA

- | | |
|--|---|
| <ul style="list-style-type: none"> • Severe pain in ear on movement of pinna • Diffuse inflammation of ear canal with crusts and discharge from ear. | <ul style="list-style-type: none"> • Clean ear with cotton wick. • Glycerine magsulf soaked ribbons gauze dressing of ear canal for 5 days. • Cap Amoxycillin 500 mg thrice daily for 5 days. • Tab Ibuprofen 400 mg thrice daily for 5 days. • If not responding or skin over ear canal thickened to cause obstruction. |
|--|---|
-

4.1.6 OTOMYCOSIS

- Intense itching in ear canal with pain in ear.
 - White filter paper like debris or blackish debris in ear canal.
 - Refer to ENT surgeon at District Hospital or at Medical College Hospital
 - Dry mopping of ear with sterile cotton wick
 - 2% Acetic acid ear drops 2 drops thrice daily for 5 days
 - Tab Ibuprofen 400 mg SOS
 - keep ear dry with cotton wool in ear. Avoid dip in pond/river
- If not responding *Refer to District Hospital*
-

4.1.7 ACUTE SUPPURATIVE OTITIS MEDIA

- Severe pain in ear and deafness.
 - High-grade fever with mucopurulent discharge and then relief in pain.
 - Dry mopping of ear canal with sterile cotton wick if discharge present.
 - Cap Amoxicillin 250 mg thrice daily for 5 days.
 - Tab Ibuprofen 400 mg thrice daily for 5 days.
 - Tab Chlorpheniramine 4 mg thrice daily for 5 days.
 - Tab Paracetamol 1 tab as required.
 - Keep ear dry and avoid pond/river bath.
- If not responding Refer to ENT surgeon in District Hospital
-

Chronic Ear Discharge >14 Days

4.1.8 CHRONIC SUPPURATIVE OTITIS MEDIA SAFE TYPE

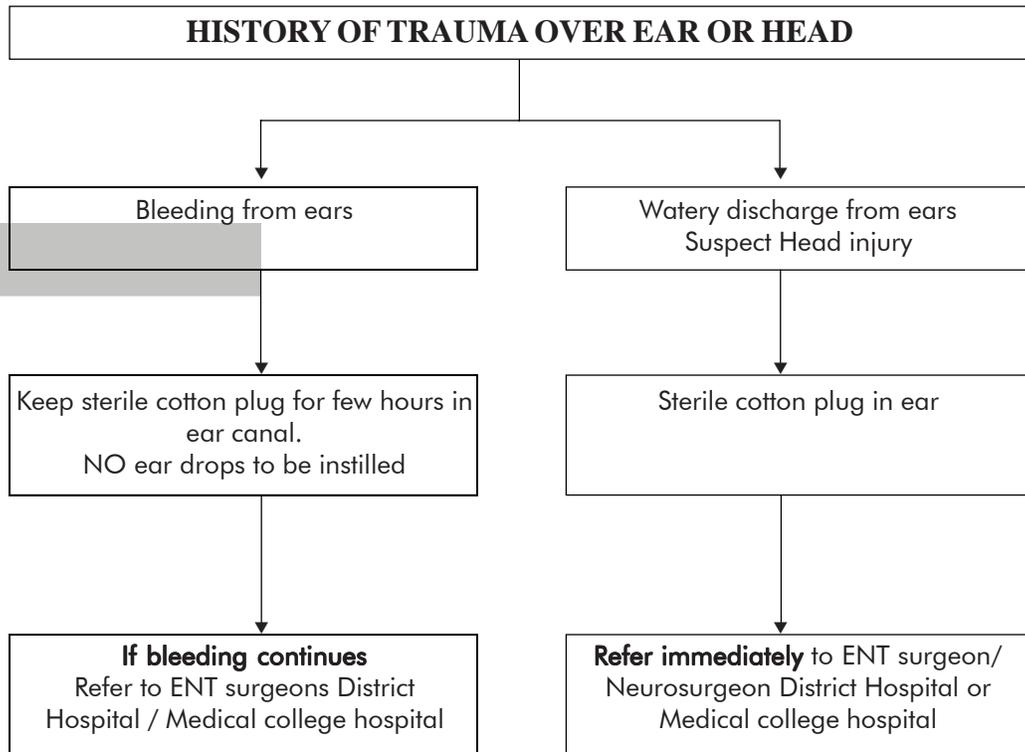
- Recurrent mucoid or mucopurulent discharge onset with cold/moisture in ear.
- Non foul smelling, copious in amount
- Reduced hearing
- 2% boric spirit ear drops 2 drops thrice daily for 7 days after dry mopping of ear with cotton wick.
- Keep ear dry and avoid pond/river bath.
- Treat associated infections of pharynx/nose/sinuses

If not responding :

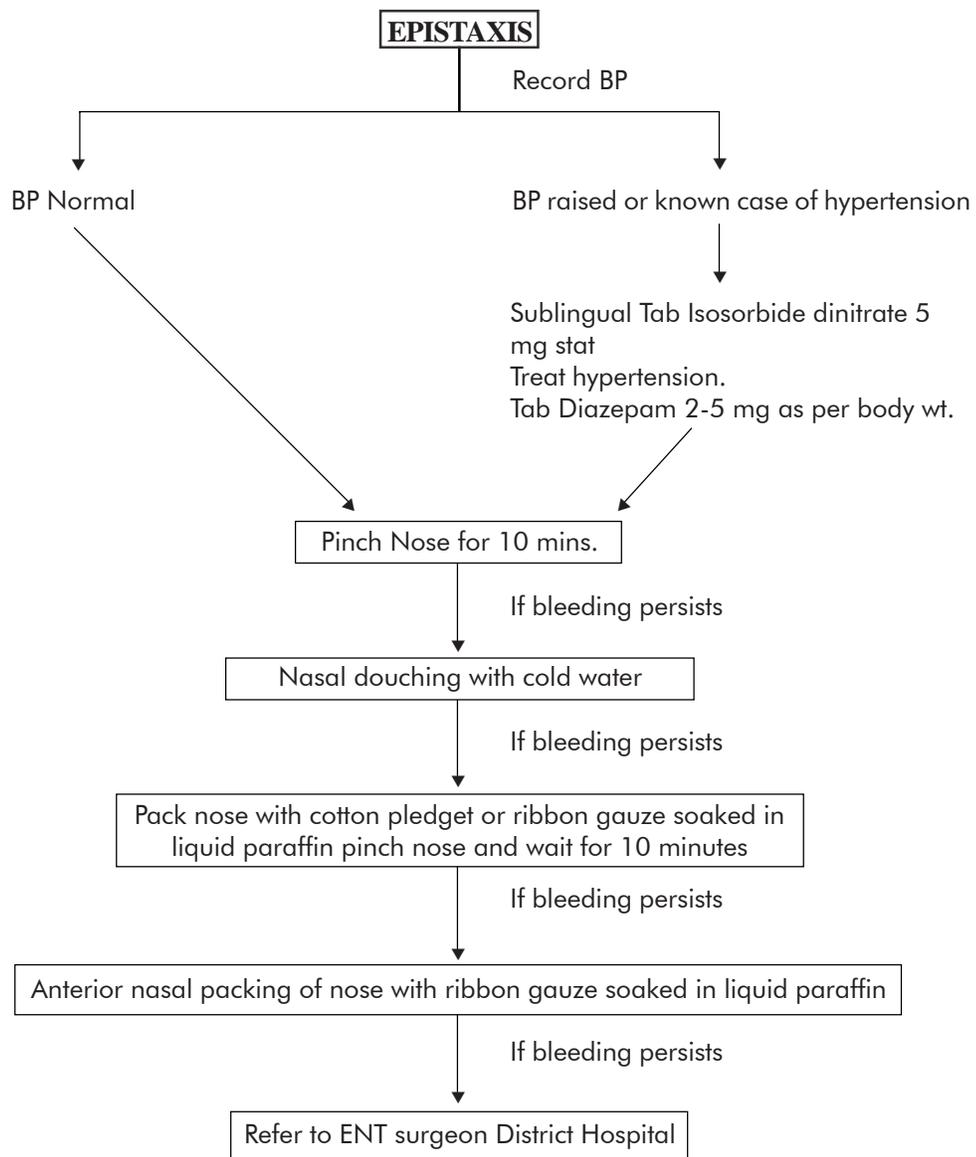
Refer to ENT surgeon in District Hospital/
Medical college hospital

4.1.9 CHRONIC SUPPURATIVE OTITIS MEDIA UNSAFE TYPE

- When discharge is continuous but scanty purulent and foul smelling.
- 2% boric sprit ear drops.
Refer to ENT surgeon District Hospital/ Medical college hospital.
- History of mucopurulent discharge; foul smelling with fever swelling behind ear
- persistent unilateral headache vomiting/giddiness loss of consciousness blurring of vision mass in ear canal.
- Refer **immediately** to ENT surgeon in District Hospital/Medical College hospital. As it may have spread internally to cause mastoiditis and then Meningitis. Start antibiotics meanwhile.



4.2. NOSE PROBLEMS



Also examine thoroughly for cause of bleeding and treat accordingly.

TRAUMA: OVERFACE NOSE

History of ROAD TRAFFIC ACCIDENT with external injury

- Cap amoxycillin 500 mg thrice daily for 5 days
 - Tab Ibuprofen 400 mg SOS
- Pack nose with ribbon gauge soaked in liquid paraffin

If deformity or obstruction present or if bleeding from nose continues beyond a few hours
Refer to ENT surgeon District Hospital/ Medical College Hospital

4.2.1 SIMPLE VIRAL RHINITIS

- Watery nasal discharge
- Watering from eyes
- Nasal stuffiness
- Malaise, fever and headache

- Tab Paracetamol 500 mg as required.
- Steam inhalation
- Tab chlorpheniramine 4 mg thrice daily if there is relief or if cold is allergic.

4.2.2 ALLERGIC RHINITIS

- Watery nasal discharge
- Frequent bouts of sneezing about 10 to 20 sneezes at a single time
- Blockage of nose, Palatal itching
- Watering from eyes with redness & itching

- Tab chlorpheniramine 4 mg thrice daily for 1 to 5 days.
- Steam inhalation
- Avoid dust and known allergens

4.2.3 ATROPHIC RHINITIS

- Greenish crusts present in nasal cavity
- Foul smell from nose and patient not aware of it
- Nasal blockage, roomy nasal cavity, nasal deformity, history of maggots

- Nasal douching with
 - sodium bicarbonate solution (1 tsf. in 250 ml. distilled water)
 - solution of 25% glucose in glycerine (glucose 25 gm. distil water 35 ml glycerine 100 ml.)
 2 – 3 times a day which is to be continued
- If not responding refer to District Hospital.

4.2.4 SINUSITIS

<ul style="list-style-type: none">• Headache, blocked nose, purulent nasal discharge• Frontal/ maxillary/ ethmoidal tenderness	<ul style="list-style-type: none">• Steam inhalation 2-3 times a day.• Tab Ciprofloxacin 500 mg twice daily for 5 days• Tab paracetamol 500 mg or ibuprofen 400 mg for 5 days. If not responding refer to District Hospital
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4.3. THROAT PROBLEMS

4.3.1 APHTHOUS ULCERS

<ul style="list-style-type: none">• Painful ulcers in oral cavity	<ul style="list-style-type: none">• Avoid mucosal irritants like beetle nut/ tobacco /lime chewing. Usually self limiting. No treatment needed Usual practice is to give- <ul style="list-style-type: none">• Tab vitamin B complex 1 tab once daily for a week And / Or <ul style="list-style-type: none">• A. Chlorhexidine mouth wash 2-3 times a day for a week and• B. Local application of boroglycerine gel or paste. and• C. Tab metronidazole 400 mg TDS x 5 days If severe one can try: A, B, C.
---	--

4.3.2 ACUTE TONSILLITIS/ACUTE PHARYNGITIS

<ul style="list-style-type: none">• Pain in throat• Pyrexia, difficulty in swallowing• Inflamed and swollen tonsils may be with pus points	<ul style="list-style-type: none">• Cap Amoxicillin 500 mg TDS x 5 days• Chlorhexidine mouth wash 2-3 times a day• Paracetamol 1 tab SOS• Plenty of fluids• Warm saline gargle
--	--

4.3.3 PERITONSILLAR ABSCESS

<ul style="list-style-type: none">• Severe pain in throat• Pyrexia, difficulty in swallowing, difficulty in opening mouth• Muffled thick voice• O/E Bulging of soft palate deviation of uvula	<ul style="list-style-type: none">• Incision and Drainage• Cap Ampicillin 500 mg TDS X 5 days• Tab Ibuprofen 400 mg TDS X 5 days• Chlorhexidine mouth wash 2-3 times a day• Paracetamol 1 tab SOS• Plenty of fluids• Warm saline gargles If not responding/recurrent episodes Refer to District Hospital
--	--

4.3.4 ACUTE EPIGLOTTITIS

<ul style="list-style-type: none"> ● Severe pain in throat ● Pyrexia, ● Difficulty in swallowing. ● Difficulty in breathing or noisy breathing. ● Muffled thick voice 	<ul style="list-style-type: none"> ● Injection Penicillin according to age/ weight ● Injection Ibuprofen according to age/ weight ● Injection Dexamathasone 4-8 mg BD X 2 days ● IV fluids <p>if respiratory distress</p> <ul style="list-style-type: none"> ● O₂ inhalation ● If needed tracheostomy <p>if not responding Refer to District Hospital</p>
--	--

Refer to District Hospital for the following possible signs of malignancy :

- Swelling of face/ cheek/ neck for more than 1 week.
- Ulcer in oral cavity/ neck for than 1 week.
- Change in voice for than 2 weeks.
- Progressive stridor and noisy breathing in children.
- Progressive difficulty in swallowing for more than 2 weeks.

Refer immediately to ENT Surgeon District Hospital/ Medical College Hospital

- History of foreign body ingestion/ inhalation followed by respiratory distress/ dysphagia/ vomiting.
- History of foreign body in ear or nose.
- Ear discharge with fever/ giddiness/ headache/ vomiting/ blurring of vision/ loss of consciousness.
- Watery discharge from nose following trauma which increases on bending down or coughing (To rule out CSF leak)
- Inability to open mouth.

5. PRIMARY CARE IN MOUTH PROBLEMS

The common problems are soreness and redness inside the mouth, white plaques, and ulcers

5.1 STOMATITIS, GLOSSITIS AND ANGULAR CHEILITIS :

Vitamin B deficiency likely

If tongue is reddened and sore
and /or

If angles of mouth are white and sore consider vitamin B deficiency-

- Give vitamin B supplements; suggest to drink cooked rice water from parboiled or other unpolished rice

5.2 WHITE PLAQUES SEEN

with no fever

- **Fungal infection** common in infants: clean mouth with gauze swab: apply gentian violet with cotton brush;

If fever is also there

- consider **diphtheria** – patches over the throat , very high fever– start treatment with antibiotics :Refer if it needs admission.
- in adults oral **candidiasis** may be seen in malnourished, in pregnancy, in diabetes and nowadays increasingly in AIDS patients Rule out diabetes and send for testing for AIDS.

5.3 MANY SMALL VESICLES IN OR NEAR MOUTH: HERPES INFECTION

- Usually occurs along with other serious infection.
- Often painful and person may have difficulty in swallowing
- Application of gentian violet should suffice.

5.4 PAINFUL ULCER IN MOUTH

- look at ulcer - small ,one or two, centrally white, with surrounding redness and pain more while eating
- **Aphthous ulcer** is most likely diagnosis

This heals by itself Treatment is not essential

If needed give

- Chlorhexidine mouth wash 2-3 times a day x 5 days
- Tab vitamin B complex 1 tab daily x 5 days.
- Avoid tobacco chewing/lime/betel nut/gutkha

5.5 PAINLESS ULCER IN MOUTH

- This could be oral cancer. This is commonest form of cancer in India.
- Always refer to district hospital. This cancer is curable if referred early. Finding this cancer early and referring it in time is a major goal of the health system.

5.6 PAIN AND SWELLING INSIDE THE MOUTH AND FEVER- **with or without white plaques**–

- Refer it could be diphtheria.

6. PRIMARY CARE IN TEETH PROBLEMS

Tooth ache is the commonest problem.

6.1 CARIES

most common cause - the bad tooth-

- One can see that the tooth surface is irregular with small holes or even broken down.
- The pain is more while eating. Once advanced the pain can occur at any time.
- Sometimes the ache is due to infection of the gums surrounding the tooth. Pain is severe and throbbing, exacerbated by food or by tapping on tooth.

For caries :

- Tab. Paracetamol
- When possible person should go to dentist.
If mild, tooth is filled so that it does not worsen further.
If severe- tooth may have to be removed.

Prevention :

- Advice on teeth maintenance – especially washing mouth well after eating anything and daily brushing

6.2 GINGIVITIS

- When gum around the tooth is infected and swollen and sometimes one can see pus
- Tablet paracetamol
plus
- Capsule amoxicillin –
three doses per day for six days- 250 mg for adult and half that for children. thrice a day better to refer to a doctor.

6.3 CELLULITIS / DENTAL ABSCESS

- If pain associated with painful swelling inside mouth and redness start on antibiotic and consider whether it is an abscess which requires draining with a dentist or still in the cellulitis stage where antibiotics would be adequate.

SECTION IV

PRIMARY CARE IN OBSTETRICS & GYNAECOLOGY



OBSTETRIC PROBLEMS

1. CONFIRMATION OF PREGNANCY

- Usually based on clinical grounds
- Further confirmed by examination
- If facilities available reliably done by urine test for pregnancy: 6 weeks after last menstrual period or 15 days after missing period.
Collect a sample of morning first voided urine and send for pregnancy test (agglutination inhibition for detection of HCG in urine),

2. CARE IN NORMAL PREGNANCY –ANTENATAL, INTRA-PARTUM & POST-PARTUM

2.1 ANTE NATAL CARE

Usually done by (female multi purpose worker by i.e. ANM) - but in high risk cases and in those who so desire to be done by medical officer:

• First trimester	• one visit	
• Second trimester	• Ideally once a month	• but at least once
• Third trimester	• Ideally twice a month	• but at least monthly

Main interventions in normal pregnancy

- Check for anaemia- get at least blood haemoglobin test done once
- Check BP regularly for picking up pre-eclampsia early and pregnancy related hypertension
- Check urine at every visit for albumin as early indicator of preeclampsia
- Check Urine for sugar at 24 to 30 weeks (6th to 8th month) to rule out gestational diabetes
- Check weight at every visit
- Check for high risk signs
- Check for position of baby in last trimester and at term

Antenatal counseling

General Advice

- On diet
- Light exercise
- Avoid heavy work
- Rest

Drug Treatment

Inj. Tetanus Toxoid 0.5 ml	2 doses in first pregnancy or unimmunised patients	1 st dose in first visit, followed by 2 nd dose after 4 weeks of the first dose.
	at least one dose in subsequent pregnancies	

To be effective 2nd dose must be given at least 3 weeks before child birth.

- Daily Iron supplementation during pregnancy (from second trimester)
- Tab. Ferrous Sulphate + Folic Acid combination-
100 mg Ferrous Sulphate with .5 mg Folic Acid
- Tab. Calcium Lactate (500 mg) or calcium carbonate one tablet daily is also advisable.

2.2 INTRAPARTUM CARE

- Psychological support
- Assistance at birth of child and till expulsion of placenta.
- Instrumental assistance where indicated
- Regional blocks& episiotomy where needed
- Prompt neonatal care & assessment

Drug treatment**In first Stage**

The most distressing time during the whole labour is just prior to full dilatation of the cervix. The ideal procedure should produce efficient relief from pain but should not depress the respiration of the foetus and should not depress the uterine activity causing prolonged labour. To achieve this following drugs can be used if needed -

- In CHC - Regional anaesthetics,
 - epidural anaesthesia
 - caudal block with Bupivacaine without Adrenalin

In Second Stage

Facilitate Gentle Gradual delivery so as to prevent forceful sudden expulsion of the baby avoiding perineal tears.

In PHC - for suturing episiotomy or vaginal tears

- Perineal analgesia is achieved by infiltration with Lidocaine (1% or 2%), locally or by a pudendal block.

2.3. POST PARTUM CARE

- Neonatal care
- Review for uterine involution & complications
- Analgesics and anti-inflammatory like
Paracetamol 500 mg t.i.d or / and Ibuprofen 400 mg t.i.d.

3. INDUCTION OF LABOUR

Induce after assessing

- Maternal condition,
- Foetal condition
- Favorability of cervix. (Bishops Score)

If induction is medically indicated - induce by Inj. Oxytocin in dextrose 5 %

Watch the patient for

Uterine contractions-frequency of contractions

Maternal condition - BP pulse hydration, nutrition
and for signs of Exhaustion

Foetal condition - listen foetal heart every 30 min. If foetal heart
rate is less than < 100/min. stop infusion

Women receiving oxytocin should never be left alone

Use oxytocin with great caution as fetal distress can occur from hyperstimulation and, rarely, uterine rupture can occur. Multiparous women are at higher risk for uterine rupture.

Give according to the following regimen

Dose of Oxytocin	Solution used	
Start with 2.5 units	Dextrose 5%	Start with 10 drops/min upto 60 drops/min. Increase drop rate at intervals of 30 min till good contractions are achieved Uterus should relax in between
If there is no response		
Start with 5 units	5% Dextrose	give same as above

Maintain Oxytocin infusion when effective uterine contractions are attained
3 contractions in 10 minutes lasting more than 40 Seconds.

However, refer to FRU where caesarean section capability is present. in an unresponsive state

For use in CHC

- Dinoprostone gel, intravaginally 0.5-1 mg;

4. HIGH RISK PATIENTS

All high risk patients should be referred to secondary level with caesarean section capability for institutional childbirth.

High risk cases can be grouped into the following categories:

Chances of difficult labour or poor outcome by history

- Short statured primi
- Age less than 18

- Interval between children less than 2 years
- Fourth child or above, Elderly primigravida
- Bad obstetric history
 - Previous Caesarean section
 - Prolonged labour-If duration is more than-

Normal	1 st stage	2 nd stage
Primi	12 hours	1 hour
Multi	6 hours	30 minutes

- Preterm labour
- Intrauterine foetal death (even if single)
- No Progress after 6 hours after rupture of membrane

Chances of difficult labour or complications by present examination

- Anaemia Hb < 8 gm% - Needs vigorous treatment for anaemia- establish cause of anaemia. If poor response to treatment or if severe anaemia (need to treat as high risk). At term severe anaemia would require blood transfusion.
- Pregnancy induced hypertension – manage hypertension (page103)
- Heart disease – rest from 30 weeks-manage heart disease; shorten delivery time by assisting it appropriately.
- Diabetes mellitus – tight control of diabetes preferably with insulin.
- Twins.
- Insufficient weight gain (suggestive of intrauterine growth retardation)- try nutritional improvement and ensure delivery where incubator for preterm neonatal care is available.
- Malpresentation after 28 weeks gestation – needs institutional delivery where facilities for Caesarean section are available.
- B.P. > 140/90 mm Hg or presence of urine albumin and/or oedema feet – treat as for preeclampsia
- Rh Iso-immunization - see page 107
- Ante-partum haemorrhage - see page 109
- Any other medical disorders e. g. Systemic hypertension, renal disease – manage condition appropriately

5. VOMITING IN PREGNANCY & HYPEREMESIS GRAVIDARUM

Vomiting related to pregnancy.

In the first trimester simple vomiting is normal i. e. complaints of nausea and occasional sickness in the morning or it may occur at any time during the day. Occasionally however this vomiting is severe enough to prevent normal work and may cause dehydration and threaten pregnancy : This is called Hyperemesis gravidarum i.e. pernicious vomiting.

Non-drug treatment

- Counselling
- Reassurance
- Emotional support
- Rest
- Life-style adjustments – e.g.- change of home to visit parents etc.
- Restrict oral intake for 24-48 hours, but ensure adequate hydration.
- Frequent small carbohydrate meals

Drug treatment in PHC

- If essential – one can try -Tab. Metoclopramide 10 mg 6 hourly.- if not responsive needs to be referred to a CHC for admission.

Treatment in CHC

In severe cases of hyperemesis gravidarum hospitalization is mandatory.

- Inj. Metoclopramide, 10 mg IV 6 hourly; and/or Inj. Promethazine IM (25mg)
- For sedation 8 hourly Tab. Promethazine (25-50 mg); six hourly as needed.
- Hydration with IV fluids 4-5 Pints in 24 hours Dextrose or RL
- Correct electrolyte imbalance;
- Complicated cases should be managed accordingly.

Investigations in CHC

If ultrasound is available Rule out molar pregnancy and twins; complicated cases should be managed accordingly.

Refer

The following cases should be referred to the tertiary centre

- Hematemesis
- If diagnosis is in doubt

6. ANAEMIA IN PREGNANCY

Hb level less than 11 gm%

mild	8-11
moderate	5-7
severe	below 5

Always get the blood Hb level estimated, investigated & determined.

General Guidelines

- Treat until Haemoglobin is normal. Haemoglobin is expected to rise by at least 0.3 to 1g per week unless diagnosis is incorrect
- Associated vitamin deficiencies should be identified and treated accordingly
- Iron and folic acid supplementation should be continued during lactation.
- Other causes of anaemia should be treated according to the diagnosis.
- Avoid antacids, Calcium and Magnesium compounds, as these inhibit the absorption of iron.

Non-drug treatment

- Diet rich in protein and iron to be recommended

Drug treatment**Prophylaxis**

- Tab. Ferrous sulphate (100 mg elemental iron) once daily
And
- Tab. Folic acid 0.5 mg daily

Treatment of Folic Acid deficiency

- Tab. Folic acid 5 mg daily

Treatment of Iron deficiency

- Tab. Ferrous sulphate (100 mg) 2-3 times daily until cure and then for 6 more months
- After first three months of pregnancy, repeat Haemoglobin.
If < 11 gm%
- Tab. Ferrous Sulphate (60 or 100 mg elemental iron) once daily till lactation is complete.
- Tab. Folic Acid 0.5 mg 1 tablet once daily till lactation is complete if patient is non-compliant to oral therapy.
- If there is gastritis then reduce doses & give it after meals

REFER TO A CHC-

- Hb less than 7 gm
- Associated with congestive cardiac failure
- Late in pregnancy, third trimester
- Haemolysis or evidence of bone marrow suppression
- Cases not responding to treatment
- Pancytopenia
- Sickle cell disease and other Haemoglobinopathies

Treatment at CHC

- Confirm iron deficiency anaemia Inj. Iron Dextran (50 mg / ml elemental iron) 2 cc IM on alternate day after test dose x 10 injections
- Blood transfusion if Hb < 5 gm & in last trimester.
- Diagnosis & management of sickle cell disease, Haemoglobinopathies, Pancytopenia in cases not responsive to iron.
- Manage congestive cardiac failure where indicated.

7. ABORTION

7.1. THREATENED ABORTION

Where process of abortion has started but has not progressed to a state from which recovery is impossible.

Diagnosis

- Uterine size corresponds to the period of amenorrhoea.
- External os is closed.

Investigations

In PHC

- Haemoglobin for anaemia.
- Blood group & Rh typing for Rhesus incompatibility
- Urine routine & microscopic.
- Urine pregnancy test.
- VDRL for syphilis

In CHC

- Ultrasonography – for viability of foetus.
 - Normal findings - well formed gestational sac with central echoes from foetus.
 - Blighted ovum- loss of definite gestational sac absent foetal echoes & absent foetal heart.

Treatment for threatened abortion

- Bed rest.
- Micronised Progesterone 100 mg BD.

Advice -

- To report if bleeding or pain increases.
- Reexamination after 1 month for evaluation of foetal growth.

Treatment for Blighted ovum**Treatment At CHC**

- The uterus must be evacuated.
- The products of conception should be sent for histopathological examination.
- For Prevention of Infection

Inj. Ampicillin (1 gm) IV immediately, followed by oral (500 mg)
6 hourly

And

Inj. Gentamicin (3-5 mg/kg), IV as a bolus, followed by (1.5 mg/kg)
8 hourly

And

Tab. Metronidazole (400 mg) 8 hourly or (500 mg) per rectum
8 hourly if oral administration is unsuitable.

This may be continued for ten days.

7.2. INEVITABLE ABORTION

Where the changes have progressed to a state, from where, continuation of pregnancy is impossible.

Diagnosis

Features of threatened abortion, with the following manifestations.

- Increased vaginal bleeding.
- Aggravation of pain in lower abdomen.
- Os is dilated & products of conception are felt.

Investigation

Same as threatened abortion.

Treatment**General**

- To take care of general condition.
- Maintain strict asepsis.

Active management-at CHC

- Before 12 weeks-
Dilatation & curettage, evacuation of the uterus with blunt curette.
- After 12 weeks-
Induction By syntocinon drip
Rarely by Hysterotomy

7.3 INCOMPLETE ABORTION

When the entire products of conception are not expelled, instead a part of it is left inside the uterine cavity is called incomplete abortion.

Diagnosis

History of expulsion of a fleshy mass per vaginum followed by

- Continuous abdominal pain
- Persistent bleeding
- On examination os may be open

Treatment

- Dilatation & evacuation

7.4 MISSED ABORTION

When foetus is dead & retained inside the uterus for more than 4 weeks.

Diagnosis

Features of threatened abortion followed by

- Brownish vaginal discharge
- Cessation of uterine growth
- Non-audibility of foetal heart sound

Management – In CHC

Maintain strict asepsis

- Below 12 weeks
 - Dilatation & evacuation
- After 12 weeks
 - Induction By syntocinon drip
 - Rarely by Hysterotomy

7.5 SEPTIC ABORTION

An abortion associated with clinical evidence of infection of the uterus & its contents is called septic abortion.

Commonly associated with, illegal induced abortion.

Diagnosis

- Pyrexia- Temperature 100'.4" F for 24 or more
- Purulent vaginal discharge
- Pain in lower abdomen
- Per-vaginal examination- shows patulous os & boggy feel of uterus & purulent discharge

Investigations

In PHC

- Haemoglobin for anaemia
- Total & differential leukocyte count
- Blood group & Rh typing
- Urine- routine & microscopy

In CHC

- Blood urea
- Serum creatinine
- Coagulation profile
- Ultrasound if needed

Treatment

Refer to CHC

If there would be a significant time loss to CHC then, before referring to CHC start

- Inj. Ampicillin 1 gm
- Inj. Gentamicin 80 mg
- IV Metrogl 100 ml

Check for ruptured uterus or other complications as septic abortion is usually seen in illegally done and unsafe abortions.

Treatment in CHC

Drug Treatment

- Inj. Ceftazidime or Inj. Cefotaxime or Inj. Cefoperazone 1 gm 12 hourly
And
- Inj. Gentamicin 80 mg IM 8 hourly
And
- Inj. Metronidazole 100 ml IV 8 hourly

Surgical

- If needed Evacuation of uterus.
- Management of complications like perforation etc. as needed.

7.6 HABITUAL ABORTION

It usually as a sequence of 3 or more consecutive spontaneous abortions

Investigations for patients with past history of abortions.

In CHC

To rule out the cause

- Blood haemoglobin for anaemia
- Blood group & Rh testing for incompatibility
- VDRL for syphilis.
- Urine- Routine and microscopic examination
- Test for cervical incompetence
- Hysterosalpingiogram to rule out congenital malformations of uterus

Also one needs referral in repeated abortion or mid trimester abortion to a Tertiary care center to rule out the following :

- Uterine congenital abnormalities
- Severe cervical incompetence
- Congenital anomalies of the foetus
- Immunological problems
- Diabetes mellitus
- Parental genetic defects and SLE

Treatment

As per specific diagnosis of underlying diseases, in consultation with a gynaecologist.

The aim is to reduce chances of abortion in current pregnancy

General advice in next pregnancy

- Rest
- Reassurance

- Improve general health
- Avoid travelling and intercourse

Drug treatment in pregnancy

- Tablet Micronised Progesterone 100 mg BD.
- Tab. Aspirin soluble (150 mg) daily. This may be used when pregnancy has stabilize

Surgical treatment in CHC

- Consider cervical circlage in pregnancy
Remove sutures at term or at the onset of labour
- Advice delivery in CHC

8. MEDICAL TERMINATION OF PREGNANCY

Separate guidelines have been issued

9. ECTOPIC PREGNANCY

Implantation of fertilized ovum out side the uterine cavity, commonly the fallopian tube

Symptoms and Signs

Unruptured ectopic pregnancy	Ruptured ectopic pregnancy
<ul style="list-style-type: none"> ● Symptoms of early pregnancy there may be spotting ● Abdominal and pelvic pain 	<ul style="list-style-type: none"> ● Acute Abdominal and pelvic pain ● Collapse and Weakness, Pallor ● Abdominal distension ● Fast, weak pulse (110 per min. or more) ● Hypotennsion ● Rebound tenderness

If rupture is diagnosed or even suspected patient has to be rushed to nearest centre where surgery with blood transfusion can be done.

In PHC

- Start IV line with dextrose & normal saline;

Investigations - in CHC

- Ultrasonography;
- Colpocentesis;

Surgical Management

In CHC

- Arrange blood;
- Laparotomy & surgical management;

10. TROPHOBLASTIC NEOPLASIA (Hydatidiform Mole)

It is an abnormal condition of the ovum where there is partly degeneration and partly hyper plastic changes in the young chorionic villi. These result in the formation clusters of small cysts of varying sizes. Because of its superficial resemblance to hydatid cyst, it is named as hydatidiform mole .It is best regarded as a benign of neoplasia of the chorion with malignant potential.

Diagnosis

- Height of uterus more than the period of gestation.
- Foetal heart sound not audible.
- Vaginal bleeding with expulsion of grape like vesicles per vaginum is diagnostic of vesicular moles

Patient should be referred to district hospital or tertiary care centre.

Investigations

- HCG value
- Estimation of uterine size
- Ultrasonography
A large for date uterine size with no evidence of foetus on ultrasound with raised HCG value is confirmatory.
and
- X-ray Chest

Treatment

Evacuation of the uterus is to be done as soon the diagnosis is established

in CHC/District Hospital

For expulsion of mole

where facilities for blood transfusion is available

- D & C
- Inj. Oxytocin (20 MU/ minute) IV adjusted as required:
Dilute 20-40 IU/ L of dextrose 5%. This gives a Solution containing 20-40 MU/ ml. Give @ 30 drops/mt

Surgical Management

- Hysterectomy

Indications

- Profuse bleeding with cervix not dilated;
- Age more than 35 years;
- Completed family life;
- Profuse bleeding;
- Sepsis or Perforating mole.

Prophylactic chemotherapy

- Methotrexate - 5 mg thrice daily for 5 days

Follow up

- After evacuation of mole repeat USG after 48 hrs and 15 days

Contraception

Advice contraception by **Barrier method**: for at least one year.

A repeat pregnancy soon after is both dangerous & should be avoided.

11. PRE-ECLAMPSIA / ECLAMPSIA (Pregnancy induced hypertension)

11.1 PRE-ECLAMPSIA

Usually manifests after the 20th week of pregnancy

Diagnostic features

- Absolute rise of B.P equal to or more than 140/90 mm Hg. (rise in systolic pressure of at least 30 mm Hg or a rise in diastolic pressure or at least 15 mm Hg more than the previously known blood pressure). The rise should be evident on at least two occasions 6 hours apart or a single reading of B.P. of 160/110 mm Hg or more.
- Urinary proteinuria
- Pitting oedema over the ankles.
- Rapid gain in weight of more than 0.5 Kg/week or more than 2 Kg

Difference between mild and severe Pregnancy induced hypertension.

Abnormality	Mild	Severe
Diastolic B.P.	< 100mm Hg	100 mm hg or higher
Proteinuria	Trace or 1 +	Persistent 2+ or more
Headache	Absent	One or more of these conditions may be present
Visual disturbances	Absent	
Upper abdominal pain	Absent	
Hyperflexia	Absent	
Oliguria	Absent	
Pulmonary oedema	Absent	
Foetal growth restriction	Minimal	Marked
Convulsions		Present (eclampsia)

All cases of severe pre-edampsia should be managed actively. Symptoms and signs of "impending eclampsia" (blurred vision, hyperreflexia) are unreliable.

Severe pre-eclampsia, complicated pre-eclampsia (organ failure, foetal complications), imminent eclampsia and eclampsia to higher centre.

Management of mild pre-eclampsia

Monitor maternal well-being by-

In PHC

- Daily weight gain
- Check B.P. twice a day
- Oedema
- Maintain urine output chart
- Check urine for proteins twice a week
- Daily questionnaire for headache, visual disturbances, epigastric pain, foetal movements

Foetal well-being is assessed by foetal growth by

- Clinical evaluation (fundal height and abdominal girth)

Investigations done at CHC

- Presence of protein in 24 hour urine of more than 0.3 g per liter in the absence of urinary tract infection
- Fundoscopy
- Do baseline and serial blood urea / creatinine, uric acid, serum bilirubin, liver enzymes and platelet count - coagulation profile.

Foetal growth assessment is done by

- Serial Ultrasonography

Non-drug treatment

- Bed rest, preferably in hospital,
- Lifestyle adjustment
- Low salt diet.

Drug treatment

- Diuretics in general are contraindicated.
- Antihypertensive treatment if diastolic blood pressure > 100 mm Hg
- Tab. Methyldopa (250 mg) b.i.d. increase to 500 mg t.i.d. maximum 1500 mg per day accordingly

or / and

- Nifedipine 10 mg BID or TDS.

The dose of Nifedipine may be increased up to 10 mg four times daily.

- Pre-eclamptic and eclamptic patients are hypovolemic (particularly when the haematocrit exceeds 40%). Consequently, hypotension is to detect important & correct guided by a well-functioning CVP-catheter. Blood-loss at caesarean section should be limited.
- Generally, an epidural block is contraindicated in pre-eclamptic patients on account of hypovolemia. However, with careful fluid transfusion prior to the block and by limiting the dose of Bupivacaine, an epidural block may be applied by an experienced person.
- Ergot-containing drugs are contraindicated in hypertensive patients (including pre-eclampsia) following delivery of the baby. Instead Inj. Oxytocin (5-10 IU) is given as a bolus IM once.

Criteria for delivering patients with severe PIH at CHC

- Severe persistent proteinuria Albumin 2+ more.
- B.P. persistently 160/100 mm Hg or more despite treatment.
- Urine output less than 400 ml in 24 hours
- Other signs or symptoms of impending eclampsia like persistent urine protein of 4+, visual disturbances.
- Repetitive foetal heart rate deceleration with poor variability.
- Severe Intra Uterine Growth Retardation with oligohydramnios
- Decreased foetal movement

Plan of management for PIH at CHC

If any of the above criteria are abnormal or deteriorate, then decide depending on gestational age (GA)

- GA > 36 weeks - Deliver the patient
Induction by using syntocinon drip or prostaglandins
- GA < 36 weeks - Transfer the patient to FRU or Dist. hospital at proper where neonatal intensive care is available

11.2 ECLAMPSIA

Pre-eclampsia when complicated with a convulsion and /or coma is called eclampsia.

Drug Treatment

This may begin at PHC for and no time should be lost on initiating treatment.

- Control of convulsions

Magnesium sulfate schedule

Loading dose

- Magnesium sulphate 4 gm in 20 ml of Dextrose 5% IV over 5 minutes
And
- Inj. Magnesium Sulphate 10 gm or 50% (5 gm IM on each buttock) preferably with 2% lidocaine
- If convulsion recur after 15 minutes, give 2g magnesium sulfate (50% solution) IV over 5 minutes.

Maintenance dose

- Magnesium Sulfate 5 g (50% solution) +1 ml lidocaine 2% IM every 4 hours into alternate buttocks.
- Continue treatment with magnesium sulfate for 24 hours after delivery or the last convulsion, whichever occurs last.

Before repeat administration, check for Signs of Magnesium Sulphate toxicity :

- Knee and ankle reflexes depressed
- Urine output < 30 cc/hour over preceding 4 hours
- Respiratory rate < 16/min.

Withhold the next dose of Magnesium sulphate if any of the above signs are present ● Give inj. calcium gluconate 10% 10 ml slowly. to antagonize the effect of magnesium sulphate

- Control of hypertension by antihypertensive drugs.
 - Tab Nifedipine (10 mg) Sublingual if blood pressure is greater than 110 mm Hg
Sublingual Nifedipine can cause a sudden fall in B.P.

Management at CHC

Delivery should take place as soon as the woman's condition has been stabilized. Delaying delivery to increase fetal maturity will risk the lives of both the woman and the fetus. Delivery should occur regardless of the gestational age.

Induction by Oxytocin or Prostaglandins

If the cervix is favourable (soft, thinned, partially dilated), rupture the membranes and induce by syntocinon (see page 92)

Caesarean Section

If vaginal delivery is not anticipated within 12 hours (for eclampsia) or 24 hours (for severe pre-eclampsia).

If there is foetal distress foetal heart rate is < 100 or > 160 /minutes.

If cervix is unfavourable

Postpartum Care

- Continue anticonvulsive therapy for 24 hours after delivery or last convulsion, whichever occurs last.
- Continue antihypertensive therapy as long as the diastolic pressure is 110 mmHg or more
- Continue to monitor urine output.
- Watch carefully for the development of pulmonary oedema, which often occurs after delivery.

12. RHESUS INCOMPATIBILITY**Prevention**

If the mother is Rhesus negative and the child when tested after birth tests Rhesus antigen positive it is imperative to give anti D immunoglobulin to the mother within 72 hours of delivery. This prevents Rhesus incompatibility in the next child. If this is not done or despite it a Rhesus negative patient develops foetal loss or severe IUGR in subsequent pregnancy one can suspect Rhesus incompatibility.

- If mother is Rh-ve delivering Rh +ve foetus, Anti D immunoglobulin 300 microgram IM should be administered within 72 hours of delivery
- For abortion in Rh-ve mother 100 microgram of Anti D immunoglobulin is given IM

Investigations in CHC

Indirect Coomb's test to detect antibody

For multigravida who is not immunized

Refer to district hospital or tertiary care centre for investigation and treatment

13. PRETERM LABOUR AND PRETERM RUPTURE OF MEMBRANES**13.1 PRETERM LABOUR**

Preterm labour is where labour start after completion of 28 wks and before 37 weeks. These patients are best managed at CHC level. However one may have to initiate treatment at PHC while referral arrangements are being made.

Management to arrest premature labour

- absolute bed rest

Drug treatment

➤ Tocolytic Agents

This is indicated when

- the duration of pregnancy is 28-32 weeks.
- membranes are intact and labour is not advanced. Cervix dilation is not >3 cm.

Inj. Isoxsuprine (Beta adrenergic stimulants) is used in the acute suppression of labour.

Dose

Isoxsuprine HCl 40 mg in 500 cc of Dextrose. @30 drops./mt

Watch for fall of B.P. and tachycardia. The maternal pulse should not exceed more than 100/minute.

Maintenance therapy- Isoxsuprine orally 10 mg 6 hourly

➤ Corticosteroid therapy given to the mother to enhance foetal lung maturation

GA 30-32 weeks - give injection Dexamethasone 12 mg 12 hourly
4 doses

Wait for 48 hours, and then deliver the patient

Management during labour

- Birth should be gentle and slow
- Liberal Episiotomy
- In case of delay or expected traumatic delivery it is better to perform caesarean section.

13.2 PREMATURE RUPTURE OF MEMBRANES (PROM)

Spontaneous rupture of membranes beyond 28 wks but before the onset of labour is called PROM.

Management

- Bed rest
- Strict Asepsis is to be maintained
- Sterile vulval pad
- Beyond 37 weeks
 - If labour does not start within 6 hrs induce by oxytocin drip
- If GA is less than 37 weeks
 - Give injection Dexamethasone 12 mg 12 hourly doses for Foetal lung maturity.
Wait for 48 hours, and then deliver the patient
 - Give Inj Ampicillin 500 mg 6 hourly or cap Ampicillin 500 mg 6 hourly to Prevent infection.
- If signs of infection are present –Induce immediately.

Care of premature babies after birth

- Keep the Baby warm
- Do not give bath
- Maintain asepsis
- Maintain nutrition

If the baby's general condition is good and weight is more than 1500 gms then the baby can be treated at PHC.

If less than 1500 gms refer to CHC/nearest neonatal unit.

14. ANTE PARTUM HAEMORRHAGE

Bleeding from genital tract after the period of viability of the foetus (28 weeks) until term when patient goes in to labour. Main causes are Abruption placenta and Placenta praevia

14.1 ABRUPTIO PLACENTAE

Abruption placenta is the detachment of a normally located placenta from the uterus before the foetus is delivered

Causes are

- Short cord
- Pregnancy induced hypertension & Pre-eclamptic toxemia
- Sudden jerk or assault over abdomen

Diagnosis

- | | |
|--------------------------|---|
| • Nature of bleeding | • Painful, dark in colour. |
| • Abdominal examination: | • Uterus may be larger than gestational and age |
| | • May feel tense, tender or rigid. |
| | • Foetal heart sound may or may not be present. |

Treatment in PHC

- No conservative line of treatment
- Start IV Line with normal saline and refer to CHC.
- Explain the need of blood transfusion and send the relatives along with patient for donating blood.

Treatment in CHC

- If bleeding is heavy (evident or hidden) deliver as soon as possible Patient has to be delivered within 8 hours by Artificial rupture of membrane and Oxytocin 2.5 units (not more than 5 units) in 500 cc of Dextrose. For induction of labour (see page 92)
- If cervix is fully dilated deliver by forceps or vacuum extractor.
- If vaginal delivery is not imminent or foetus is alive deliver by caesarian section.

In every case of abruptio placentae, be prepared for postpartum haemorrhage.

14.2 PLACENTA PRAEVIA

Placenta praevia is implantation of placenta at or near the cervix

Clinical features

-
- | | |
|-------------------------|--|
| • Nature of bleeding | • Painless, recurrent, bright red. |
| • Abdominal examination | • Ht of uterus proportionate to gestational age. |
| | • Feel is soft. |
| | • Malpresentations, usually present |
| | • Foetal heart sound usually present. |
-

Investigations done at the level of CHC

- Ultrasound examination in the third trimester in all pregnancies, where this facility is available, is advised to diagnose these conditions early.

Ultrasonography Rules out Four types of placenta praevia

Type I- Dips in to lower segment

Type II - Reaches lower border of uterus up to cervical os but not covering completely.

Type III- covers the internal os

Type IV - Covers the internal os, even on full dilatation of the cervix.

However in most of our situations the condition is diagnosed only after profuse life threatening bleeding has started. Once such bleeding has started the only course is to start on blood transfusion and plan for early caesarean section to deliver the child.

If you suspect placenta praevia, do not perform a vaginal examination unless preparations have been made for immediate caesarean section.

Treatment

No conservative line of treatment at PHC. all cases are to be referred to CHC

- Assess the amount of bleeding.
- Start IV Line, Restore blood volume by infusing normal saline and refer.

at CHC

➤ Type I and Type II anterior

- vaginal delivery can be expected.

➤ Type II -b, III & IV.

- Elective/emergency caesarean section has to be done at the earliest.

Explain the need of blood transfusion and send the relatives for donating blood

15. POST – PARTUM HEMORRHAGE

Excessive blood loss after the child is born. If blood loss is more than 500 cc in normal delivery and 1000 cc in Lower segment caesarean section & twins is called Post-partum Hemorrhage.

ATONIC PPH (80%) failure of the uterus to contract after delivery results in excessive bleeding This is more often seen in Multiple pregnancy. Hydramnios; Big baby; Multiparity & Induction with Oxytocin.

TRAUMATIC PPH (20%) Tears in the genital tract cause bleeding. This is seen with Instrumental delivery, Malpresentations and Malpositions and with Episiotomy wounds.

A well contracted uterus per abdomen rules out Atonic Post-partum haemorrhage. Then one would need special examination to diagnose cervical tear and vaginal tear.

Management

Patient should be assessed for general condition, amount of blood loss whether placenta is expelled or not and condition of uterus whether contracted or atonic.

PPH requires prompt and effective management, failing which it may result in complications like hypovolemic shock, coagulation failure, renal failure, hepatic failure, adult respiratory distress syndrome and may also result in maternal death.

Resuscitative measures should be instituted immediately.

15.1 ATONIC POST-PARTUM HEMORRHAGE

Treatment

At PHC

- Continue to massage the uterus
- Start infusion to replace blood loss
- Give 20 units of Oxytocin in 1000 ml Saline. Give @ 60/mt or fast.
continuing dose : infuse 20 units Oxytocin in 1000ml saline @ 40drops/mint.
- Methyl ergometrine maleate 0.2 mg IV may be repeated IM after 15 mint. (Caution. Contraindicated in heart disease, hypertension).

Refer to CHC

If bleeding is not controlled

- Refer with Blood grouping and Rh typing and arrangement of blood

Practise active management of the third stage of labour on all women in labour since it reduces the incidence of PPH due to uterine atony.

Prophylaxis for Atonic Post - Partum Haemorrhage

This has to be given in all anticipated Post-partum haemorrhage cases or to the patients with past history of PPH.

- Prophylactic Methylergometrine (after the delivery of anterior shoulder of baby)
0.2 mg of IV.

15.2 TRAUMATIC POST-PARTUM HEMORRHAGE

Management

- Meticulous repair of Episiotomy, Vaginal laceration and cervical laceration with chromic catgut No. 1
- Small oozing from vaginal mucous membrane - pack with sterile Povidone-Iodine gauze.

Refer to CHC

If bleeding is not controlled or tears which cannot be sutured at PHC where suturing may be done by the gynaecologist.

16. POST - PARTUM FEVER

Diagnostic features

- A rise of temperature reaching 100.4° F for more, (measured orally) on two separate occasions at 24 hours) within first 10 days after delivery.
- During delivery the woman's protective barrier against infections is temporarily reduced and this may lead to infections the cause of fever may be a serious complication and is often preventable.

Drug treatment

Antibiotic treatment, where appropriate, should be guided by the presumed source of infection. Empiric therapy consists of:

- Inj. Ampicillin (1000 mg) IV, immediately, followed by 500 mg IV 6 hourly
And
- Tab. Metronidazole (400 mg) 8 hourly OR rectal 500 mg 8-12 hourly
And
- Inj. Gentamicin (3-5 mg/kg) IV bolus followed by 1.5 mg/kg 8 hourly

After defervescence,

- Inj. Ampicillin IV can be changed to Cap. Amoxicillin (500 mg)
8 hourly.

Non-drug treatment

- Attention to breast engorgement
- Complete evacuation of uterine content
- Rarely Hysterectomy may be indicated

Treat until cure is evident clinically and by laboratory tests

A case of puerperal pyrexia is considered to be due to genital sepsis unless proved otherwise.

Antibiotics are to be given till the infection is controlled or for at least 10 days.

17. CONTRACEPTION**TEMPORARY METHODS**

- Oral contraceptive pills
- Condoms & Diaphragm
- IUCD

17.1 ORAL CONTRACEPTIVE PILLS

Before starting on Oral contraceptive pills

- Check Blood Pressure
- Do per vaginal examination - normal size uterus is a prerequisite.
- Ensure there is no history of any contraindications like deep vein thrombosis.

Dose

- Tab. Mala - N (Norethisterone acetate 1 mg and Ethinyl estradiol 30 mcg) one tablet every day at bed time.
 - The first tablet (while starting OC pills) should be taken on the 5th day of menstruation and then to be continued every day without any interruption till contraception is desired. (Some strips have it labelled so that one can start on day one of menses).
 - Do blood sugar and check for hypertension after 6 months of usage
- See state drug formulary for further details.**

17.2 DIAPHRAGM AND CONDOMS

counsel patient adequately, ensure easy availability of supplies.

17.3 IUCD - COPPER T 200 (CU-T 200)

Kits and instructions are available with ANMs

Some notable points on IUCD insertion

- Do a per vaginal examination – ensure normal size uterus to rule out pregnancy.
- Rule out past history of pelvic inflammatory disease and ectopic pregnancy, which are contraindications for IUCD.
- Insert IUCD ideally postmenstrually.
- Follow up after 1st menstrual period post - insertion and then yearly.
- Remove Cu T 200 after 3 years of insertion, postmenstrually.

Contraindications for IUCD insertion

- Presence of pelvic inflammation in the form of cervicitis, parametritis or salpingitis
- Dysfunctional uterine bleeding
- Within six weeks following caesarian section
- Past history of ectopic pregnancy
- Suspected pregnancy
- Prolapse uterus
- Suspected malignancy
- Nullipara

PERMANENT METHODS

There are vasectomy for males & tubectomy for females. Detailed instructions on the procedure is given to surgeons trained on this.

17.4 VASECTOMY

Investigation before Vasectomy

- Haemoglobin
- Urine - Routine & microscopy surgery.

Treat for anaemia or hyperglycaemia or UTI if present

Advise for protected sexual intercourse for at least three months after surgery.

17.5 TUBECTOMY/TUBAL LIGATION

done by

- Mini laparotomy
- Laparoscopic Sterilization

Investigation before Tubectomy

- Complete Blood counts
- Haemoglobin
- Urine - Routine & Microscopy.

Start treatment for anaemia, UTI or hyperglycemia before referring for the procedure & while awaiting it.

MEDICAL DISORDERS IN PREGNANCY

1. DIABETES MELLITUS AND GLUCOSE INTOLERANCE IN PREGNANCY

All pregnant women should be screened for gestational diabetes mellitus around 24 to 30 weeks of gestational age.

If positive this should be confirmed by fasting blood sugar (FBS) and postprandial blood sugar estimation.

All such cases should be seen by specialist but follow up till delivery can be done at primary health care center however send the patient to CHC for delivery.

Interpretation

- FBS value more than 120 mg/dl is suggestive of diabetes
- One hour glucose tolerance test i.e. measuring blood sugar one hour after oral intake of 50 g of glucose: A value more than 200 mg/dl is suggestive of diabetes.
- A value greater than 140 mg/dl - further screening with GTT is required

Women at increased risk of gestational diabetes should be screened earlier at 18 to 22 weeks gestational age and later.

Following factors increase risk of gestational diabetes

- | | |
|--|--------------------------|
| ● Obesity | ● History of still birth |
| ● Glycosuria | ● History of prematurity |
| ● Polyhydramnios | ● Bad obstetric history |
| ● Chronic hypertension | ● Recurrent UTI |
| ● Recurrent severe moniliasis | ● Age > 30 years |
| ● Positive family history of diabetes (sibling or parent) | |
| ● History of delivery of a large infant (>4 kg) | |
| ● History of unexplained neonatal death | |
| ● History of congenital anomaly | |
| ● History of preeclampsia as a multipara | |
| ● History of traumatic delivery with associated neurological disorders in the infant | |
| ● History of diabetes in previous pregnancy | |

-
- Do not use oral anti-diabetic drugs during pregnancy
 - The newborn is at risk of hypoglycaemia (very common), respiratory distress, hyperbilirubinemia, and congenital abnormalities
 - Best to have institutional delivery at a CHC
 - Counsel for Postpartum contraception
Sterilization should be considered.
 - In well-controlled cases a low-dose combined contraceptive pill is allowed.
 - If the control is unstable, Progesterone-only preparation or intra-uterine device is acceptable.
-

The couple should be explained

- The risk of congenital anomalies in the foetus
- Importance of blood glucose control
- Importance of self monitoring
- Importance of continuous foetal surveillance throughout pregnancy, in labour and of the neonate & the financial cost of the diabetic pregnancy.

Drug treatment and Management

Oral hypoglycaemics have no role in treatment of gestational diabetes

- Drug Treatment is with Insulin
- Urine Sugar Monitoring daily, after which Insulin should be administered by doctor.
- Counselling regarding diet should be done

Management during labour at CHC or DH

- Serum glucose should be monitored at short intervals, (preferably half hourly.)
- Short-acting insulin is administered to maintain physiological blood glucose levels.
- The postpartum insulin requirements decrease rapidly.
- During the first 48 hours blood sugar levels are maintained by regular short-acting insulin administration.

2. HEART DISEASE & HYPERTENSION IN PREGNANCY

Refer the patient to CHC

- Evaluation of patient for type and grade of disease.
- Consultation with physician / cardiologist.
- Consider for prophylactic antibiotic - Benzathine penicillin 2.4 MU every 3 weeks .if it is rheumatic heart disease
- Prompt and adequate Treatment of infections.

Treatment Same as discussed in pre-eclampsia

3. JAUNDICE IN PREGNANCY

Jaundice associated with pregnancy may be due to one of the following:

- Intrahepatic cholestasis of pregnancy
- Acute fatty liver of pregnancy (acute yellow atrophy of the liver)
- As a result of severe or eclampsia
- As a result of hyperemesis gravidarum

More often jaundice in pregnancy is due to viral hepatitis which has a more fulminant course in pregnancy.

Management

Referred to CHC

Manage as for jaundice, keeping three points in mind.

- Maternal Mortality is increased as compared to non pregnant status
- PPH is more common and life threatening & should be anticipated.
- Fresh blood transfusion is best for PPH

GYNAECOLOGY

1. DYSMENORRHOEA

- Excessive pain during menstruation is a common complaint.

Treatment

- Best treated with life style management measures like -
Mild exercise, warm water bottle, good diet, less stress etc.
- If still relief from pain is required tablet paracetamol as required is first choice analgesic.
- Antispasmodics like dicyclomine 1 BD tablet may give relief when given in addition to paracetamol in some cases.

2. WHITE DISCHARGE OR VAGINAL DISCHARGE

All women have a small amount of vaginal discharge. This is clear milky or slightly yellow. There is no itching or bad smell. Such discharge is more during pregnancy and after child birth and during sexual activity. This is not to be confused with abnormal white discharge. Often the patient with such a complaint only needs to be reassured. However if one of the following symptoms is there in addition she must be examined :

- Excessive white discharge at all the time
- Itchiness
- Foul smell
- Burning sensation or pain
- Any blood

Diagnostic steps

- In all cases Per Vaginal & Per Speculum examination should be done necessarily to rule out early malignancy.
- Also where possible especially in a woman above 45 years Paps smear in CHC is also indicated and swab is taken for microscopy and if possible culture.

The general approach to diagnosis is as follows :

- If the discharge is bloody or admixed with even a few spots of blood (not to be confused with periods)

If answer is, yes then refer to district hospital or tertiary care centre as it may be an early stage of cancer or other serious infections. Since often such blood spots may go unnoticed especially with coloured garments it is advisable to look for malignancy with a PV & PS examination all women with such a complaint.

- If the woman has fever or tenderness or pain in lower abdomen and /or childbirth/abortion in last two weeks then it may be a serious infection of uterus or related parts.

This too needs urgent referral to CHC. See section on pelvic inflammatory disease in page 122.

- If the woman has only a yellowish, badly smelling discharge with varying amounts of itching then it may be a trichomonal infection or bacterial infection or chlamydial infection.

Diagnostic confirmation is by microscopy but this is not sensitive enough.

- Treat with Metronidazole 200 mg thrice daily for seven days with husband also getting the same dose during the same period.
- Ensure that the woman is not pregnant before metronidazole is prescribed.
- Note these are sexually transmitted diseases & sexual partners must be treated where possible.
- If the discharge looks like curd or spoilt milk and itching and burning sensation is severe with inside of vagina becoming very red – it may be due to yeast (candidial infection). This is more common in women who are immuno-depressed, like in pregnancy or diabetes or sick, malnourished women or women getting steroid drugs etc. Usually candidial white discharge is not sexually acquired.

Treatment

- Douche of gentian violet(2 parts in 100)
 - Or
 - Clotrimazole vaginal pessary 100 mg 1 HS x 7 days.
 - and
 - Tab fluconazole 150 mg
 - ↳ Husband – 1 Tab
 - ↳ Wife – 1 Tab
- Repeat after 1 week for both partners.

3. DYSFUNCTIONAL UTERINE BLEEDING

It is abnormal uterine bleeding in the absence of organic disease of the genital tract.

Main Features are

- Disturbances of the menstrual cycle, regular and irregular uterine bleeding.
- Alteration in the amount of duration of the menstrual blood loss.

3.1 IF AGE < 20 YEARS

- If Clinical examination (Necessarily PV & PS) shows no abnormality beyond excessive bleeding during menstruation.

Treatment

- If anaemia is present treat with iron & folic acid tablets.
- Tab medroxyprogesterone acetate 10 mg 1 Tab daily from day 15 to day 25 x 3 Cycles.
- Or
- Tab Mefenamic acid 500 mg 1 Tab thrice daily for 5 days at the time of menstruation x 3 cycles.
- Ultrasound examination of the pelvis (if available).

If Clinical examination and Ultrasound findings are abnormal –

Refer to gynaecologist.

3.2 IF AGE 20-35 YEARS

- **If clinical examination Per vaginal & per speculum examination is normal.**

Treatment

- Combination pills of oestrogen and progesterone like Mala-D given for three cycles.
- If there is
 - Severe bleeding
 - Bleeding for many days
 - No response to initial medical management
- Do a D & C and send for histopathology

Treat according to the Histopathology report

- **If findings are normal & patient desires contraception give**

Treatment

- Tab medroxyprogesterone acetate 10 mg 1 Tab TDS x 21 days.
From the 5th day of menstruation x 3 cycles.
- Or
- Oral Contraceptive pills from the 5th day of menstruation x 3 Cycles

- **If patient desires child bearing or there are abnormal findings on examination refer to gynaecologist**

3.3 IF AGE MORE THAN 35 YRS.

- Always do a D & C
- If normal endometrial histopathology-

Treatment

- Tab Medroxy Progesterone Acetate 10 mg 1 Tab daily from Day 15 to Day 25
x 3 cycles.

If findings are abnormal: Refer to tertiary centre.

4. MENOPAUSE

Refer to District Hospital.

5. FIBROID

Diagnosis

This may present as

- Abnormal bleeding
- Dysmenorrhoea
- As anaemia,
- Asymptomatic with lower abdominal mass discovered on examination.

Investigation

- Ultrasound is helpful for diagnosis

Treatment

Diagnosis & definitive treatment is done at the level of CHC or District Hospital where a gynecologist is available

- If patient is asymptotic/ Uterine size < 12 weeks
 - No further treatment
 - Only surveillance
- If patient is having dysmenorrhoea or abnormal uterine bleeding then,
 - Tab paracetamol (500 mg) 1 Tab 3 times a day for 5 days.
 - Tab medroxyprogesterone acetate 10 mg 1 tab once daily for 21 days.
- Treat for anaemia with Iron and folic acid tablets symptomatic care at primary level
- If patient requires child bearing or is symptomatic refer to gynecologist for myomectomy or hysterectomy.

Surgical Options: in district hospital

Myomectomy / hysterectomy / resection of submucous fibroid by:

- Hysteroscope
- Laparoscope
- Conventional surgery

6. PROLAPSE OF UTERUS

Refer to District Hospital

7. PELVIC INFLAMMATORY DISEASE

Diagnostic features

- Pain in lower abdomen/ Backache
- Fever
- Usually no history of missed period
- Dysmenorrhoea, dyspareunia, dysuria, rectal tenesmus
- H/o IUCD insertion may be there.
- H/o any vaginal procedure done in recent past.
- Vaginal discharge present with pain in abdomen
- Tenderness or mass in one of the fornices.

Investigations

- Complete blood count
- Urine microscopy and albumen, sugar
- Pregnancy test.
- Ultrasound examination of pelvis where available.

Treatment – Acute PID

➤ Cap Doxycycline 100 mg 1 BD x 14 days

Or

➤ Cap Tetracycline 500 mg QID

Or

➤ Tab ciprofloxacin 500 mg 1 BD x 10 days.

And

➤ Tab Metronidazole 400 mg 1 TDS x 7 days.

And

➤ Tab Brufen 400 mg 1 TID x 5 days.

If no response or Severe Pelvic Inflammatory Disease refer to CHC

Treatment at CHC or DH

General Guidelines

Admit

Monitor daily vital signs and abdominal girth,

- Give treatment for symptomatic relief.
- Also ensure Hydration with IV fluids if needed.

Drug Treatment

- Inj. Ciprofloxacin 200 mg IV twice daily
 - Inj. Metronidazole 500 mg IV three times a day.
 - Or
 - Injection cefazolin I/v 3 times daily
 - Injection Gentamicin 60 mg I/v 3 times daily
- After fever subsides switch to oral treatment (as described earlier)
- Continue Cap. Doxycycline 100 mg 1 BD x 14 days.

Refer

If per vaginal examination or ultrasound shows tubo-ovarian mass-
Refer to tertiary care centre.

Remember to rule out the following causes before making a diagnosis of pelvic inflammatory disease:

- Ectopic pregnancy
- Acute appendicitis
- Torsion of ovarian cyst
- Corpus luteum cyst
- Amoebic colitis
- Endometriosis
- Cystitis

8. INFERTILITY

Only after two to three years of regular family life if there is still no pregnancy does infertility needs to be investigated.

In PHC

Begin by counselling and encouraging regular relationships timed for maximum chance of impregnation – 14 days before the next expected periods.

If still investigations are requested insist that both husband and wife must be investigated

Investigations In CHC

- | | | |
|---------------|---|-------------------------------|
| ➤ For husband | - | ● Semen analysis |
| | - | ● VDRL Test |
| ➤ For wife | - | ● Hb |
| | - | ● VDRL test |
| | - | ● Urine-routine & microscopic |
| | - | ● D and C |
| | - | ● Cervical mucus examination |

All patients of infertility should be referred to a gynecologist where the above tests are done and further specific treatment is given

SECTION V

PRIMARY CARE IN INFECTIOUS DISEASES

1. TYPHOID FEVER

This is an infection of the blood and organs caused by a bacteria called *Salmonella typhi*, which is transmitted either directly (dirty hands) or indirectly (contaminated food or water) from faeces to mouth.

Clinical features

- Fever for over one week duration.
- No focal signs of infection like abscess, cough, burning urination etc.;
- Additional features like
 - Headache,
 - Abdominal pain or diarrhoea
 - In severe cases a confusional state.
 - Rarely a rash also.
- Blood smear done twice and both times negative for malaria. (if smear is not available failure to respond to full course of chloroquine is also adequate).

Diagnosis

- Needs a positive Widal test and/or
- Blood culture positive for *Salmonella typhi*.

If tests are not available or will take time one should

- Start treatment with antibiotics presuming typhoid-if the above four clinical features are present and refer to a CHC or district hospital which has facilities for confirming diagnosis are available.
- If no such facilities exists which patient can reach then continue with treatment and decide on clinical response.

Diagnostic criteria at the CHC setting

- Clinical Picture suggestive of typhoid fever with laboratory diagnosis
- Diagnosis can be based on the positive Widal test. This test usually becomes positive around the 8-10th day. It takes two days to read even if the laboratory is available locally.
- Supportive laboratory test — Leucopenia seen in a blood smear would favour a diagnosis of typhoid if malaria has been ruled out.
If however Widal test is not available even at the CHC or district hospital one can treat presumptively at the CHC and decide on further treatment depending on response.

- Ideally needs a blood culture also. This facility is not available in most districts. It should become available in the district hospital.

Complications

which may appear during illness and during convalescence even under therapy include :

- Lower G. I. tract bleed
- Severe abdominal pain and vomiting
- Loss of consciousness.

Treatment at the PHC setting

- Hydration (see pages 181)
- Treat fever (see pages 29)
- Oral antibiotics are more effective than parenteral ones.

Add on one of the two antibiotics mentioned below (each district should have a six monthly updated advisory on antibiotic choice). Remember the fever takes days to stop but by third day patient should be feeling a bit better and fever should be less.

- Chloramphenicol (PO)

Adult and Child	-	50-100 mg/kg/day in 4 divided doses.
Child 2 weeks to 1 year	-	50 mg/kg/day in 4 divided doses.
Infants under 2 weeks	-	25 mg/kg/day in 4 divided doses.

Duration : 14 days or alternatively three to five days after total resolution of fever

Alternatives (If resistance or contraindication to chloramphenicol) :

- Ciprofloxacin (PO)

Adult and Child - 10-20 mg/kg/day in 2 divided doses. maximum adult dose 1.5 gm/day

Normally contraindicated for children below 15 years : risk of lesions of the weight bearing joints. But can be used in typhoid fever.

If patient cannot take antibiotics by mouth, use IV but change to oral route as soon as possible.

Steroids are contraindicated. It may worsen the symptoms. It is indicated only in severely ill patients (shock, depressed level of consciousness). Where an antibiotic is being given intravenously a qualified doctor may choose to add it.

Prevention

- Isolation of the patient.
- Individual and collective hygiene (hand washing, safe water and sanitation).
- Special care in those handling food as they would spread it to many.
- If there is a confusional state we presume it is the severe form and shift to district hospital at once.

2. MALARIA

This is an infection due to the protozoa Plasmodium transmitted by the female anopheles mosquito.

There are four plasmodial species of which in Chhattisgarh state we see two species commonly : P. falciparum and P. vivax.

Incubation period : is about 9 to 12 days for P. falciparum and more than 15 days for the other three species.

Clinical Features

Simple malaria

- It commonly presents with typical chills and rigor followed by high fever and then sweating.
- This occurs daily in Plasmodium falciparum and once in two days for Plasmodium vivax.
- Headache and bodyache are also invariably present.
- Sometimes they may present with continuous fever, malaise and headache.

Severe Malaria

- It is solely due to the Plasmodium falciparum species.
- It occurs more frequently in persons i.e. new subjects, non-residents, or children below 5 years of age, pregnant women, debilitated patients, or in subjects living in an area of seasonal transmission.

The severe forms may present in the following ways :

- Encephalopathy :
 - Clouding of consciousness,
 - Coma (lasting more than 1/2 hour in children who just had convulsions)
 - convulsions (more than 2 times/24 hours, in children – to exclude febrile convulsions: see page 49)
 - delirium
 - focal neurological deficits.

- Haemolysis : Mild jaundice, sudden worsening of pallor; bleeding diathesis in the form of DIC.
- Renal : Decreased urine output or oliguria
- Pulmonary : Severe breathlessness, acute pulmonary oedema.
- Hyperpyrexia > 40.5° C.

Chronic malaria

It presents as

- Low-grade fever,
- Weight loss,
- Splenomegaly
- Severe anaemia with pancytopenia

All of which should persist over two weeks or even longer.

Diagnosis

- One of the above clinical features supported by positive blood smear examination for malarial parasites:
- Fever with Splenomegaly in a patient with the above mentioned clinical features make diagnosis of malaria more likely.
- Confirmation of diagnosis always depends on seeing the parasite in the blood
In all cases thick and thin smears should be done.

That blood smears may be negative in the severe and chronic forms and this would need repeated smears.

Treatment

Simple malaria

➤ Chloroquine Tablets 150 mg base :

For **child**: 10 mg/kg for first two days and then 5 mg/kg for next day.

Age Group	First Day		Second Day		Third Day	
below 1 year	75 mg	1/2 tab.	75 mg	1/2 tab.	37.5 mg	1/4 tab.
1 - 4 years	150 mg	1 tab.	150 mg	1 tab.	75 mg	1/2 tab.
5 - 8 years	300 mg	2 tab.	300 mg	2 tab.	150 mg	1/2 tab.
9 - 14 years	450 mg	3 tab.	450 mg	3 tab.	225 mg	1+1/2 tab.
> 14 years	600 mg	4 tab.	600 mg	4 tab.	300 mg	2 tab.

The dosage written on the boxes is sometimes expressed as chloroquine salt and sometimes as chloroquine base. This leads to frequent confusion. Equivalence between salt and base: 100 mg base = 130 mg sulphate = 150 mg phosphate or disphosphate 150 mg base = 200 mg sulphate = 250 mg phosphate or disphosphate.

- In children, if the temperature is lowered before taking the drug (antipyretics, cold tepid sponging), it would decrease frequency of vomiting.
 - If fever does not respond by third day and blood smear still shows parasites then suspect drug resistance.
- **Primaquine :**
 In high risk areas known for over 30% P. falciparum or any death add Primaquine in every case
 If blood report will become available within 24 hour reliably and no epidemic is ongoing one can wait for the report and treat with primaquine only if it is positive.

Age	Plasmodium vivax		Plasmodium Falciparum	
	Primaquine base - 2.5 mg		Primaquine base - 7.5 mg	
	Daily Dose for 5 days		Single Dose	
Pregnancy & 0 to 1 years.	Contraindicated		Contraindicated	
1 to 4 years.	2.5 mg	1 tablet.	7.5 mg	1 tablet.
5 to 8 years.	5.0 mg	2 tablets.	15.0 mg	2 tablets.
9 to 14 years.	10.0 mg	4 tablets.	30.0 mg	4 tablets.
14 years & above	15.0 mg	6 tablets.	45.0 mg	6 tablets.

Resistance to chloroquine

Before considering a diagnosis of resistant malaria, check :

- That treatment has in fact been taken.
- That the correct dose for weight has been prescribed.
- That there has not been under-dosage due to confusion between the expression of the dosage as chloroquine base and as chloroquine salt.
- whether there has been diarrhoea or vomiting within one hour of taking the medication.
- the expiry date of the drug.

To diagnose resistance

- we must have a falciparum positive blood smear on the first and the third/seventh day of treatment.
- One must also suspect resistance if the same person comes back repeatedly with a diagnosis of malaria.

Chloroquine resistance has also been recently described with *P. vivax* also.

Management of chloroquine resistance infection

➤ Sulfadoxine + Pyrimethamine

Tablets available containing 500 mg sulfadoxine + 25 mg. of pyrimethamine :

Dose	Single dose
< 1 year	1/4 tablet
1-4 years	1 tablet
5-8 years	1 1/2 tablet
9-14 year	2 tablet
> 14 years	3 tablets

It may be given for smear positive cases of falciparum malaria, which did not improve with chloroquine :

It is **contraindicated** in :

- Pregnant women
- Lactating women
- Children < 2 months verity.
- Not to be given in association with chloroquine or cotrimoxazole.
- Must not be used for prophylaxis.

For cases of chloroquine and/ or sulfadoxine - pyrimethamine treatment failure,

- quinine is the next course (in pregnancy it is the second recourse)
 - Quinine (PO) : 30 mg / kg / d divided in 3 doses x 7 days;
It has to be strictly given at 8 hours interval between each dose
in association with
 - Tetracycline (PO)
Child and adult : 25 mg/kg/ d x 10 days
or
 - Doxycycline (PO)
Adult and Child above 8 years : 200 mg/ d in 2 divided doses x 7-10 days

Tetracyclines are usually contraindicated for pregnant or lactating women and for children <8 years, but the risk of death during a severe malaria attack may outweigh the side effects.

SEVERE MALARIA

All patients need admission and may need to be referred to CHC.

If the patient is found unconscious refer the patient in a "safety position"

Treatment of cerebral malaria and multiple-drug resistant *P. falciparum* malaria

(in patients unable to take quinine by mouth)

- Inj. quinine in 5% dextrose and give by slow intravenous infusion (over 4 hours)

ADULT 20 mg/kg (quinine dihydrochloride)

followed by

10 mg/kg (quinine dihydrochloride) every 8 hours

CHILD 20 mg/kg (quinine dihydrochloride)

followed by

10 mg/kg (quinine dihydrochloride) every 12 hours

Initial dose should be halved in patients who took oral quinine, quinidine or mefloquine in previous 12 to 24 hours.

Switch to oral quinine as soon as patient is able to swallow.

Complementary treatment

- Convulsions : It can be treated with diazepam -intra rectal or intravenous (see page 50)
- blood sugar estimation is needed and treatment is indicated if patient is hypoglycaemic.
Intravenous glucose 50% should be given. If blood sugar estimation is not available one can presume hypoglycaemia in all cases of severe and complicated malaria especially cerebral malaria and treat with intravenous glucose 50%.
- oral glucose or sugar solution can be given once the patient recovers consciousness after fits.

Prevention

- **Chloroquine (PO)** : 300 mg (two tablets) in a single dose each week.

Pregnant women : In highly malarial areas the risk of pregnant women getting malaria and having a fatal outcome is so high that preventive medication is advised.

3. MEASLES

Measles is a highly contagious viral illness that spreads through droplets in the air. The disease mainly affects children under 3 years. The younger the patient, the higher the risk of death. Malnutrition increases this risk.

Epidemics can occur only if the number of un-immunised children at risk is large enough. Hence the spacing of outbreaks largely depends upon immunization coverage. Refugees, displaced people, slum inhabitants, malnourished and hospitalised children are particularly at risk.

The incubation period is about 10 to 12 days. It is spread by infected persons (from 3 to 4 days before the appearance of the rash to 3 days after).

Clinical features

- High fever with rhinorrhoea (running nose) and conjunctivitis and cough in first three days.
- Next three to four days a characteristic maculo- papular rash develops all over the body. The rash is reddish and on pressure becomes pale. It usually starts over the face and spreads down to neck, chest and then to abdomen and legs over the next four days. Once the rash reaches the feet there is no fever and the skin starts to peel. Look for koplicks spots in the mouth.

Diagnosis

Based on clinical features

Complications

- Respiratory: Laryngitis, Otitis, Bronchitis and Pneumonia.
- Severe diarrhoea
- Conjunctivitis, Vitamin deficiency leading to blindness.
- Malnutrition.
- Encephalitis

Treatment

- Treat fever (see page 29).
- Check and correct hydration status (oral rehydration salts if necessary, see page 181).
- Prevent vitamin A deficiency : vitamin A supplementation 2,00,000 IU
If xerophthalmia or corneal involvement is seen
 - Infant 6 months to 1 year: 100000 IU / dose at d1, d2, d8
 - Child over 1 year: 200 000 IU/ dose at d1, d2, d8
- Prevent ocular complications : tetracycline eye ointment 1% : 2 applications/d x 5 days
- Prevent mouth ulcers : gentian violet, 2 applications/ d for 5 days.
- Maintain adequate food intake and continue breast-feeding.
- Preventive antibiotic treatment should be given to children with a high risk of complications like severe malnutrition, HIV infection, night blindness.
- If complications occur, treatment of secondary respiratory infections at least for 5 days with :

Cotrimoxazole (PO) :

- Adult sulfamethoxazole 800 mg with trimethoprim 160 mg every 12 hours,
in more severe infections; increased to sulfamethoxazole 1.2 g with trimethoprim 240 mg every 12 hours
- Child 6 weeks - 5 months. sulfamethoxazole 100 mg with trimethoprim 20 mg every 12 hours;
6 months - 5 years, sulfamethoxazole 200 mg with trimethoprim 40 mg every 12 hours;
6-12 years, sulfamethoxazole 400 mg with trimethoprim 80 mg every 12 hours.

or

Amoxicillin (PO) : 50 mg/kg/ d divided in 2-3 doses

Adult and child over 10 years, 250 mg every 8 hours.
doubled in severe infections;

Child up to 10 years, 125 mg every 8 hours.
doubled in severe infection.

Prevention

Immunisation :

Measles vaccine one single dose as soon as possible after 9 months of age.

During an epidemic :

immunize children between 6 months and 5 years of age.

Children first immunised between 6 and 9 months of age must receive a booster dose, which will be given after their first birthday.

In population at risk and in refugee camps :

immunize children from 6 months to 5 years.

Children first immunized between 6 and 9 months of age will have to receive a booster dose after their first birthday.

4. CHICKEN-POX

This is a viral disease presenting as fever with vesicular rash.

Diagnosis

- It usually presents as a macular rash which soon becomes a vesicular rash which gets infected to form pustules and finally crusts, dries and falls off leaving scars most of which are temporary.
- At any given time the rashes are at different stages of evolution - Some of the rashes are vesicular while others are pustules).

Complications

- Complications are the same as listed for measles.

Treatment

Treatment remains the same as for measles except that there is no immunisation recommended.

- Acyclovir can be tried in severe cases and in malnourished children if available. Dose in children 80 mg/ kg/day in 4-5 divided doses for five days.
- Prevent secondary skin infection with antibiotics as it can lead to post streptococcal glomerulonephritis.

5. POLIOMYELITIS

It is an acute viral infection spread through the faeco-oral route. It affects young children (under 5 years of age) more. Increasingly young adults are affected (shift towards an older age range).

Paralytic poliomyelitis (acute flaccid paralysis, AFP) occurs in children less than 17 years of age. Of those infected with the virus few develop paralysis : for each paralytic case, 100 to 200 others are inapparent. Active surveillance to detect new paralysis cases is therefore crucial for epidemic control.

Clinical Presentation

Paralytic poliomyelitis

Can be precipitated by intra muscular injection.

- Paralysis, asymmetrically and affecting one or more limb (“morning paralysis”), often for two days prior to onset of paralysis patient is febrile, which is accompanied by headache, vomiting or diarrhoea.
- At the initial stage, though rare, urinary retention may occur.
We have to differentiate this from the Guillain-Barre syndrome, where there is symmetrical quadriparesis and associated respiratory difficulty.
All cases of paralysis must be referred to a doctor and polio surveillance officer.

Diagnosis

Based on clinical features

Treatment

- Bed rest and analgesics if paralysis is mild or absent.
- **No intramuscular injections**
- The paralytic forms must be hospitalised as they often need respiratory assistance
- Early physiotherapy to prevent deformities and contractures.
- Keep limbs in functional position using pillows or sand bags.

Prevention

The oral vaccine is recommended.

Immunization schedule

Before 1 year, 4 doses : At birth, and at 6, 10 and 14 weeks.

Booster 1 year later, and at 6 years of age.

Public health measures

Consider every case of weakness in one or more limbs occurring rapidly as acute flaccid paralysis and therefore as a suspected poliomyelitis case. –Confirm diagnosis based on clinical pattern and take a second opinion from a specialist if available
If diagnosis is confirmed, immunize all children under 5 in the community without considering their former immunization status.

All cases of acute flaccid paralysis have to be reported.

6. DIPHTHERIA

Disease caused by the local proliferation (usually Upper Respiratory Tract Infection) of the diphtheria bacillus and by the diffusion of the diphtheria toxin into the body.

Clinical features

- Commonly presents as pseudomembranous tonsillitis (white patch seen over reddened Tonsils) and / or accompanied by toxic signs
 - Fever > 39°C, oliguria,
 - Enlarged cervical lymph nodes and oedema of the neck
 - Haemorrhagic signs : cervical or thoracic purpura, gingival haemorrhage, epistaxis)
- May also have Laryngitis (croup) often secondary to tonsillitis, which can lead to asphyxia and death.
- Sometimes other localization: rhinitis often unilateral, mucous membranes or skin lesions.

Diagnosis

- Based on the clinical features.
 - Confirmation is by collection of pharyngeal swabs and culture will allow the isolation of the toxigenic strain of *Corynebacterium diphtheria*.
- All cases suspected of diphtheria must be notified and referred to district hospital.

Complications :

caused by the toxin; determine prognosis.

- Cardiac -Myocarditis : arrhythmia, atrio-ventricular blocks.
- Polyneuritis: can begin up to 3 months after the onset of diphtheria: palatal and oculomotor paralysis (muscles of accommodation) as well as paralysis of the diaphragm and limb muscles.
- Renal function may also be affected : oligouria,-anuria, haematuria.

Treatment

If diphtheria is strongly suspected clinically initiate the treatment before receiving the results of the laboratory investigations.

- Serotherapy Inj. Diphtheria antitoxin
Antitoxin obtained from horse serum.

Drug regimen depends upon severity and duration of symptoms :

- Rhinitis : 10-20 000 units I.M..
- Tonsillitis : 15-25 000 units I.M. or I.V..
- Laryngitis-Pharyngitis : 20-40 000 units I.M. or I.V..
- Toxic signs : 40-60 000 units I.V..

- Antibiotic treatment during 14 days :
 - Benzathine Penicillin (I.M.)
 - Child < 6 years : 600 000 IU single dose
 - Adult : 1.2 MIU single dose
 - or
 - Erythromycin estolate to be given for 7 days.

Adult and child over 8 years,	250-500 mg every 6 hours;
	up to 4 gm daily in severe infections;
child up to 2 years,	125 mg every 6 hours.
	doubled in severe infections;
child 2-8 years,	250 mg every 6 hours,
- Check immunization status
 - If < 3 injections : booster dose of diphtheria toxoid containing vaccine, then complete the full immunization series.
 - If > 3 injections : booster dose, unless the last dose has been given in the previous twelve months.

For close contacts

- Pharyngeal swabs and cultures.
 - Daily physical examination (throat and temperature) for 7 days.
- Same precautions for close contacts of asymptomatic carriers.

Immunization

- Diphtheria toxoid, associated with tetanus toxoid. Two dosages :
 - Child < 7 years : D T (containing 30 IU diphtheria toxoid)
 - Child > 7 years : d T (containing 3 IU diphtheria toxoid)

7. PERTUSSIS

Whooping cough is a childhood disease due to *Bordetella pertussis*.

In poor living conditions, it can contribute to malnutrition and to increased childhood mortality.

This emphasises the role of immunization.

Diagnostic Clinical features

- A typical whooping cough occurring in paroxysms
The whooping cough is often preceded by fever and naso-pharyngeal paroxysmal discharge and a mild cough which increases in severity over one to two weeks till the typical whoop develops.

- Infants less than 3 months may develop apnoeic or cyanotic attacks, which may lead to death this implies close and permanent surveillance of the sick infant.

Complications

- Coughing may impair feeding and precipitate malnutrition.
- Subconjunctival haemorrhages, epistaxis, haemoptysis, pneumothorax.
- Secondary infections of the upper and lower respiratory system.
- Encephalitis. Risk of death.

Treatment

Some authors recommend antibiotic treatment during the catarrhal stage (only).

- Erythromycin (PO) to be given for 7 days
dose as on page no. 137

or

- Chloramphenicol (PO)
dose as on page no. 126

- Can use salbutamol - 0.1 ml /kg/dose for cough.

During the paroxysmal stage, antibiotics are useless.

Advise the mother to ensure

- adequate hydration.
- to humidify air if possible.
- above all to ensure adequate nutrition (continue breast-feeding and give supplements) in spite of the child's anorexia and vomiting.
- Advise the mother to feed the child after each fit of coughing associated with vomiting.

for secondary infections

antibiotics (PO, IM or IV depending on severity):

- Amoxicillin (PO)
Child : 50 mg/kg/ d divided in 2-3 doses x 5-10 days
dose as on page no. 133

If amoxicillin is not available

- give ampicillin (PO) : 100 mg/kg/ d divided in 2-3 doses x 5-10 days
Adult 500 mg every 4-6 hours;
Child under 10 years, half the adult dose

or

- Chloramphenicol (PO)
dose as on page no. 126

or

- cotrimoxazole (PO)
dose as on page no. 133

Infants less than 3 months should be admitted to hospital and observed continuously: be cause of risk of apnoea or asphyxia.

Prevention

- Immunization integrated into the Expanded Program on Immunization. A good protection requires 3 injections, each at least one month apart.
- First year of life- three doses of anti-tetanus vaccine at 6, 10 and 14 weeks.
- Booster dose. In Second year of life (at 18 months)
- Immunization of non-immune infants, who have been in contacts with pertussis cases and are not yet ill, will attenuate the disease.

8. FILARIASIS

This is a disease caused by microfilarial species transmitted by the Culex mosquito.

Clinical Picture at different stages

1. Early

- Fever with chills and sweating.
- Dull aching testicular pain.
- Lymphangitis may be present.
- Unilateral pitting pedal oedema

2. Later

- Persistent Pedal oedema.
- The swelling may be more on one leg. Rarely upper limbs may be involved. The oedema may become non-pitting.
- There may be areas of redness and even pus formation with pain over the swelling. This indicates bacterial infection occurring on the swelling.

3. Much later

- The swelling is gross and the leg is thickened (Elephantiasis)
- The scrotum may also be swollen
- There are repeated episodes of fever and leg pain and eventually the infection may spread to the blood.

Diagnosis

- **Early stage** - Peripheral smear examination during the febrile period which may show microfilaria.
- **Later stages** - Micro-filariae may not be seen on the peripheral smear as the adult forms are lodged deep inside. There maybe micro- filaria in the blood during fever but this is not certain. It is for the doctor to consider various possibilities and decide whether to treat for filariasis.

Treatment

Early stage

- Albendazole : 400 mg dose once

And/or

- Diethylcarbamazine.

Diethylcarbamazine is essentially a drug that kills the microfilaria.

Adult & Child above 10 years : 6 mg/kg/ d x 12 days. Preferably in divided doses x 12 days

Child Under 10 years : half the adult dose.

Contra-indications child < 5 years, pregnant women, lactating women during the first week.

Side effects are due to breaking up of microfilaria (allergic manifestations, pain, fever) and respond well to anti-histaminics and paracetamol.

Postural hypotension may occur which responds to corticosteroids. (single dose for 1 to 2 days).

Later stages

- Foot end elevation during sleep.
- Tie a crape bandage firmly around the leg to prevent oedema formation. Massage the leg at night.
- Promptly treat infection as soon as possible. Most of the disfigurement is due to such repeated infections.
- When there is no active infection (that is no redness or pain) then one can give a tablet of albendazole and then 7 days of diethyl carbamazine. This can be repeated every month for 6 or more months. (check)

Supplementary Treatment

- Lymphangitis
 - Paracetamol (PO)
Adult : 1500 mg/d divided in 3 doses
or
 - Ibuprofen 400 mg thrice a day
- If there is associated fever and/or spreading redness or pus: treat as for impetigo
 - Add Amoxicillin 500 mg thrice daily for 7 days.
 - Start on anti-microfilaria drugs only after impetigo and lymphangitis is controlled.

- Allergic symptoms in the form of pruritis
 - Chlorpheniramine (PO)

Adult	4 mg every 4-6 hours (maximum 24 mg daily)
Child under 1 years,	not recommended
1-2 years	1 mg twice daily,
2-5 years,	1 mg every 4-6 hours (maximum 12 mg daily).

9. LEPTOSPIROSIS

A zoonosis that sometimes affects humans caused by leptospire (spirochaetes) characterised by fever and acute hepato-renal failure of infectious origin. The reservoir is an animal - usually rodents (especially the sewer rat), cattle, pigs, dogs, horses, and wild mammals. Contamination may be direct (contact with animals) or indirect through skin or mucosal contact with water contaminated with urine of infected animals (swimming, poor hygiene). Its incubation period is of 7-14 days.

Clinical features

- Fever with Jaundice, often recurring with three peripheral smears which are *negative* for malarial parasite (which is a commoner cause of fever and jaundice).

May also have :

- Conjunctival haemorrhage
- Hepatosplenomegaly
- Severe renal insufficiency : oligouria,-anuria
- Pulmonary symptoms: cough, haemoptysis
- Bleeding diathesis
- Aseptic meningitis.

Diagnosis

- Ideally needs serological tests for confirmation : Dark ground microscopy even if available is not as reliable and culture is difficult. Send fresh specimens of Blood, Urine and CSF to a referral centre indicated.
- Otherwise treat for malaria and then if no response and other diagnosis are ruled out treat presumptively for leptospirosis.

Treatment

- Rest and treatment of fever with paracetamol (do not give acetylsalicylic acid because of the risk of haemorrhagic disorders).

Antibiotics : Must be started early for being effective.

- Crystalline Penicillin
 - Child : 100 000 IU / kg / d in 2 - 4 divided doses x 7 days
 - Adult : 5-6 Million IU / d 2 - 4 divided doses x 7 days

If allergic to Crystalline Penicillin :

- Tetracycline (PO)
 - Child > 8 years : 50 mg / kg / d divided in 3 doses x 7 days
 - Adult : 1.5-2 g/ d divided in 3 doses x 7 days

Prevention

- Rat control, sanitation of working places (drainage) and water hygiene.
- Avoid swimming in endemic areas.

10. ARBOVIRAL DISEASES (INCLUDING VIRAL ENCEPHALITIS)

Viral diseases transmitted by arthropods, mosquitoes or ticks (Arthropod, Borne) :
Over 100 viruses are grouped in 6 different families.

Clinical features

Heterogeneous clinical manifestations have been classified and 4 main groups identified :

- Encephalitis -Japanese encephalitis
- Fever, neck stiffness, stupor, disorientation, paralysis
- Flu-like syndrome Dengue
- Fever lasting 3 to 5 days, muscle and joint pain, headache
- Arthritis accompanied with rash
- Haemorrhagic fevers.

Treatment

- No definitive treatment is available
- No effective antivirals against arboviruses and no role of steroids
- Treatment is supportive and symptomatic. This is often life saving in an unconscious patients.
 - Maintain airway
 - Maintain adequate hydration and nutrition
 - Prevent aspiration
 - Prevent bedsores.
- Paracetamol, intravenous fluids if needed.

Usually self limiting, it may leave various degrees of residual defects and occasionally it is life threatening.

Prevention

- Vector control
 - Individual : mosquito nets, repellents...
 - Collective : sanitation, destruction of vector breeding sites...
- Veterinary control

11. ACUTE MENINGITIS

It is an acute inflammation of the meninges, usually of bacterial origin which may progress towards encephalitis.

Clinical features**In adults and in children over 1 year**

- Fever
- Intense headache
- Neck stiffness.
- Positive Brodzinski and Kernig's signs : (with the patient recumbent, flex the neck forward, in reaction to this manoeuvre, knees will involuntary flex, likewise full extension of knees is impossible (pain and resistance).
- In severe cases: loss of consciousness and convulsions, may be seen.
- In many cases – focal signs – weakness in one or more limbs may be seen.

In children under 1 year

- Classical meningeal signs often missing
- Child has fever and refuses to eat
- Child may have diarrhoea, vomiting, drowsiness, moaning and other unusual behaviour
- Often child has generalised or localised convulsions and coma
- Infant may be hypotonic, neck is often not stiff, fontanelle is bulging even when the child is not crying.

Diagnosis

- Requires Lumbar puncture and cerebrospinal fluid examination.
- Cerebrospinal fluid (CSF) in normal; is clear, and has cells- lymphocytes less than 1 per cu.mm and proteins < 0.40 g/, CSF sugar/ plasma sugar ≥ 0.4 .
- In bacterial meningitis is cloudy "rice water" fluid, polymorphs > 100/ mm though even a single polymorph is significant, proteins > 1 g/l
CSF sugar/ plasma sugar ≤ 0.4 .

Whenever possible, ask for Gram staining and direct microscopy.

If all above signs and symptoms are there and CSF has some of the features as listed above but with lesser intensity it could be a viral meningitis.

If the patients illness is long standing and the CSF shows high proteins and predominantly lymphocytes it may be tuberculous meningitis.

Differential diagnosis

Where malaria is endemic, it is important to consider cerebral malaria (rule out with blood smear examination using both thick and thin blood smears).

Treatment

- Meningitis cases need hospitalisation. If microscopy and LP set is available, this level of diagnosis should be done at any PHC which has beds. However given present constraints all cases may need to be referred to and managed at CHC. CSF biochemistry is useful but not as essential as microscopy.

Antibiotic treatment

Bacterial Meningitis

Ideally based on grams stain and culture and sensibility. Though cultures are envisaged only at district level, grams stain should be done wherever microscopy is available.

Antibiotic treatment is then based on this :

- Meningococcus – gram negative cocci
- Pneumococcus – gram positive diplococci
- Hemophilus – gram negative bacilli
- Streptococcus – gram positive cocci in short chains
- Staphylococcus – gram positive cocci

With the exception of Ceftriaxone the valuable antibiotics chloramphenicol, ampicillin, penicillin are short acting and need to be given intravenously every 6 hours. If this cannot be done then give 1 injection every 8 hours The main point is that injections be given at regular intervals.

Choose the antibiotic according to the microorganism :

Meningococcus Or Pneumococcus (Gram negative coccus or gram positive diplococci)

- The treatment of choice is penicillin
penicillin 300,000 units/kg/day upto maximum of 24 M units per day to be given in divided doses every 4 hours –

or even every two hours in severe cases
 continue for at least five days after the patient has become afebrile
 Children - Penicillin : 4 L unit/kg/day IV every 3 hours

Also consider if allergic to penicillin :

- Oily suspension of Chloramphenicol I.V.
 - Dose as on page no. 126
- or**
- Ceftriaxone :

Adult	2-4 g daily.
Infant and child	20-50 mg/kg daily; Up to 80 mg/kg daily.
	By intravenous infusion (over 60 minutes),
Neonates	20-50 mg/kg daily.

If necessary, chloramphenicol (PO) can be used : 100 mg/kg/ d divided in 3-4 doses x 7 days.

Duration of antibiotics – 7 to 10 day or 5 a febrile days.

Haemophilus Influenza (Gram negative bacilli)

- Chloramphenicol (IV)
 - Dose as on page no. 126
- Ampicillin (IV)
 - Adult : 1-2 g every 3-6 hours (maximum 14 g/d).
 - Child : 150-200 mg/kg/d in divided doses.

In both cases, switch to oral treatment as soon as possible; total duration 8-10 days.

If lumbar puncture is not sterile on the 3rd day, treatments can be combined. Then chloramphenicol must be given 1 hour after the ampicillin, otherwise antagonism will result.

or

- Ceftriaxone (1M)
 - Dose as stated above

Because of the high incidence of Pneumococcus in this age group, ceftriaxone is recommended for child below 3 years when laboratory facilities are not available

Tuberculous meningitis

Treat as for extrapulmonary tuberculosis in category-I (see page 151)

Aseptic meningitis

Antibiotics are not needed. However due to lack of reliability in making the diagnosis it is advisable to empirically treat with penicillin and chloramphenicol as indicated above.

If organism is not known and therapy has to be started :

First choice – A combination of penicillin and chloramphenicol (dosages as given above)

Second choice – is penicillin with gentamicin 3 to 5 mg/kg /day.

- If staphylococcus is suspected cloxacillin should replace penicillin or be given in addition to it. 200 mg / kg /day in 4 divided doses in children.
- Also can consider ampicillin or amoxicillin in place of penicillin and ciprofloxacin in place of gentamicin.
- In resistant cases where one expects gram negative organisms ceftriaxone may be considered. With focal seizures /increasing head circumference, recurrence of fever - Suspect subdural infection/hydrocephalous.

As a general rule give antibiotics for at least 14 days or till patient has been afebrile for 5 to 7 days.

District hospitals should (based on culture reports) release six monthly advisory on antibiotic choice in meningitis.

Supportive therapy

- Ensure adequate nutrition and hydration (infusions, gastric tube if necessary).
- Convulsions : Diazepam I.V.. or Intra rectal 0.25 mg - 0.3 mg/kg/dose. (see page 50)
- Coma : nursing care (prevention of bedsores, mouth and eyes care)
- Purpura associated with shock :
Treat shock by restoring blood volume
plus
Dexamethasone (direct IV) :
 - Child : 0.5 mg/kg.
 - Adult : 16-20 mg.Otherwise steroids have no role. Sometimes in severe cases with grade III coma steroids has been advocated to buy time for antibiotics to act. Steroids are helpful in Influenzae meningitis.
- **To Prevent GI-Bleeding - Ranitidine 2 mg/kg/day.**

12. PNEUMONIA

Infection of pulmonary alveoli sometimes also involving bronchial mucosa.
May be viral, bacterial or rarely parasitic (*Pneumocystis carinii* in AIDS) origin.

Clinical Features

- Clinical picture of High fever ($> 39^{\circ}\text{C}$)
- Cough
- Difficult breathing
- Chest pain
- Tachypnea with
- Dullness to percussion
- Diminished breath sounds
- Inspiratory crepitations
- Sometimes bronchial breath sounds on examination.

Diagnosis

- Diagnosis is confirmed by a chest X-ray.
- Sputum Grams staining can help identify the causative bacteria.

Treatment

Depends on age and presence of clinical signs indicating respiratory distress :

Signs of severity :

- Chest indrawing
- Tachypnea (respiratory rate $> 60/\text{min.}$ in infants under 2 months, $>50/\text{min.}$ from 2 to 11 months, $> 40/\text{min.}$ from 1 to 5 years)
- Intercostal recession
- Alar flare, stridor
- Cyanosis, respiratory pauses.

Each district should have its advisory for choice of antibiotics updated at least six monthly or as and when need arises.

Broad guidelines for antibiotic choice

Classical pneumonia in adult and child >5 years (absence of serious signs)

➤ Benzyl Penicillin

- Neonate 80,000 units/kg daily in 2 doses.
- Infant 1 to 4 wks 1.2 lakh units/kg/day in 3 doses
- Child 1 month to 12 yrs 1.5 lakh units/kg/day in 4 doses
- Adult 1.5 to 4 MIU / d divided in 3 doses x 5 days (500 mg 6 hourly for 7-10 days)

or

➤ **Co-trimoxazole (PO)**

- Dose as on page no. 133

Pneumonia in child aged 2 months to 5 years

Haemophilus influenzae is common at this age.

➤ **Co-trimoxazole (PO) :**

- Dose as on page no. 133 x 5 days

or

➤ **Amoxicillin (PO) :**

- Dose as on page no. 133 x 10 days

Pneumonia in infant < 2 months or where gram negative organism is suspected

Admit to hospital (risk of rapid decompensation).

➤ **Amoxicillin (PO) :**

- Dose as on page no. 133 x 5 days

➤ **Injection gentamicin**

Adult : 2-5 mg/kg/day in 3 divided doses for 7-10 days

Child - upto 2 weeks : 3 mg/kg/day in 2 divided doses for 7-10 days

2 - 12 years : 2 mg/kg/day. in 3 divided doses for 7-10 days

➤ **Treat fever and ensure adequate hydration**

Pneumonia with respiratory distress (signs of severity present)

Admit to hospital

First choice antibiotic is :

➤ **Injection benzylpenicillin**

- Dose as on page 147

and

➤ **Injection gentamicin**

- Dose as stated above. Can go upto 7.5 mg/kg/day

or

➤ **Combination of**

Ceftriaxone Dose 1 -2 gm /d x 5 days)

with

another antibiotic

either

➤ **Gentamicin**

- Dose as stated above for 7-10 days

or

➤ **Chloramphenicol**

- Dose as on page no. 126 for 7-10 days
- or
- Ciprofloxacin injectable
 - 10 mg/kg/day in 2 divided doses, Adult upto 1.5 gm daily for 7-10 days

13. TETANUS

This is a disease caused by a toxin released from a bacteria clostridium tetanii. It causes repeated spasms and eventually death in most cases. It has an incubation period of 14 days- time between onset of injury to the first symptom which usually is trismus.

Clinical features

The characteristic symptoms and signs are :

- Trismus. (lockjaw)
- Rigidity- abdominal, neck, opisthotonus
- Period of onset of spasms - Time between the first symptom to onset of spasm is usually 7 days
- Provoked spasms (Any bright light or sound) as well as spontaneous spasms in later stages
- Respiratory paralysis requiring ventilatory support
- Autonomic disturbances- Sweating, inappropriate tachycardia or bradycardia, hypothermia or hyperthermia, hypotension or hypertension.

Diagnosis

Diagnosis rests on clinical picture.

Diagnosis in Neonates -

Tetanus is particularly common in new born of mothers who have not received tetanus toxoid injection during pregnancy

In such children a refusal to take feeds (due to difficulty in sucking) and then generalised rigidity are the main features.

Treatment

Treatment depends on the grade of tetanus.

- Grade 1 - Only Trismus, no Spasms
 - Grade 2 - Trismus + Infrequent Spasms
 - Grade 3 - Trismus + frequent Spasms
 - Grade 4 - Trismus + spasms + Autonomic disturbances
- Grade 3 and Grade 4 Tetanus may require tracheostomy and ventilatory care.

General Guidelines

- Keep the patient in calm, dark room
- Ask patient to rest on one side on a smooth surface with soft bedding if possible, so that they do not hurt themselves during the spasms
- Arrange to transport patient to a CHC
- If there is a wound- clean, disinfect with chlorhexidine solution and dress the wound.

Drug Treatment

- While in transport sedation for the patient
Diazepam tablet can be given
Injectable sedatives may be given taking care that Respiratory failure does not occur
- Amoxicillin can be Started if transportation will take time. This is not a major part of treatment but plays a minor role and can be given.

For grade 1 Tetanus

sedation and hospitalization in a quiet room is adequate.

For grade 2 Tetanus or above ideally needs in addition to the above :

- Anti tetanus immunoglobulin (which is very costly and difficult to avail)
250 units IV.
OR
- Anti tetanus serum
AND
- Tracheostomy
a surgically made hole in the windpipe Where an endotracheal tube should be kept inserted : (so that if during a spasm air entering the lungs is blocked by laryngeal spasm. He can breathe through the hole.)

For Grade 3 and Grade 4 Tetanus

- may require tracheostomy and ventilatory care

Severe patients

Severe patients would require intravenous sedation and often neuromuscular paralysis with artificial ventilation which is available in very few centres.

Even with all this chances of survival in severe tetanus is low. Hence the focus is on prevention.

Prevention of tetanus

Immunization Schedule

- First year of life- three doses of anti-tetanus vaccine at 6, 10 and 14 weeks.
- Booster dose. In Second year of life (at 18 months)
- Then a booster dose at the age of 5 years and after that it should be taken once in five years- life long.

Since the latter prescription is difficult to meet the advise is to take an anti tetanus injection after an injury however minor, if one has not had such an injection in the last five years. And for those who have never had anti-tetanus injection even in childhood it is better they take three doses one and half months apart. Remember that tetanus can come at any age not only in children and prevention is equally important in all ages.

- Prompt - cleaning and dressing of wounds is also essential and goes a long way to prevent tetanus.

14. TUBERCULOSIS

This is caused by *Mycobacterium tuberculosis* bacteria. Often it lies dormant for years until the body's immunity is suppressed, whereupon it spreads again to cause the disease. In children the disease can manifest soon after infection. It usually affects the lungs but it may affect almost any other organ. Untreated it is fatal.

Clinical features

For Pulmonary Tuberculosis

Main Clinical features

- Cough and expectoration lasting for more than two weeks.
- Intermittent fever with evening rise in temperature and associated with sweating— for over two weeks.
- Loss of weight and appetite.
- Haemoptysis

Supportive clinical features

- Pleuritic - Chest pain
- Close contact with Tuberculosis patient (specially children)
- Past history of Tuberculosis

Diagnosis

Pulmonary Tuberculosis

- Any patient with sputum for AFB is positive irrespective of what above mentioned symptoms he has.
- Any patient with clinical features given above and who has an X-ray appearance suggestive of tuberculosis even if he is sputum AFB negative.
- Any child who has one or more of the symptoms of tuberculosis as given above on whom a PPD skin test (montoux) is positive – even if it is sputum negative.

- In cases where X-ray cannot be organised and sputum is negative a clinical examination by a qualified doctor can be done and the doctor can decide on empirical treatment with ATT and given for 2 months. If clinical symptoms improve then treatment can be continued till full course of treatment is given. If there is no improvement patient must be referred to a higher centre for reassessment.

Extra-pulmonary tuberculosis

Diagnosis based on clinical picture

Confirmation

- By examination and culture of body fluid showing AFB or growing AFB on culture (pleural fluid, cerebrospinal fluid, ascites, etc.)
- Or mantoux positive in young child
- Tissue biopsy showing typical granuloma or AFB.

Treatment

Treatment depends on categorization

Category	Treatment of Tuberculosis
Category I	New Sputum smear positive Seriously ill sputum smear-negative Seriously ill extra-pulmonary [☞]
Category II	Sputum smear positive relapse ^{☞☞} Sputum smear positive failure ^{☞☞} Sputum smear positive treatment after default
Category III	Sputum smear negative, not seriously ill Extra pulmonary, not seriously ill

☞ Examples of seriously ill extra pulmonary T.B cases are meningitis disseminated T.B., Tuberculous pericarditis, peritonitis, bilateral or extensive pleurisy, spinal T.B. with neurological complications and intestinal and genito-urinary T.B.

☞☞ In rare and exceptional cases patient are sputum smear negative or who have extra pulmonary disease can have relapse or failure. This diagnosis in all cases should always be made by an MO and should be support of histological evidence of current, active tuberculosis. In these cases the patient should be categorized as other and given category two treatment.

Relapse

A patient declared cured of TB by a physician, but who reports back to the health service and is found to be bacteriologically positive.

Failure

A smear-positive patient who is smear positive at 5 months or more after starting treatment. Failure also includes a patient who was initially smear-negative but who becomes smear-positive during treatment.

Default :

A patient who, at any time after registration, has not taken anti-TB drugs for 2 months or more consecutively.

Drugs used for treatment

The doses are as per the following table :

Medicines	Denoted by	Dose (thrice a week)	Dose/Kg Body Weight
Isoniazid	H	600 mg	10-15 mg/kg
Rifampicin	R	450 mg	10 mg/kg
Pyrazinamide	Z	1500 mg	35 mg/kg
Ethambutol	E	1200 mg	30 mg/kg
Streptomycin	S	0.75 g/day	15 mg/kg

Drug regimen

Category	Intensive phase	Continuation Phase
Category I	2 months HRZE Thrice a week 8 Weeks -24 doses	4 months HR thrice a week 18 Weeks- 54 doses
Category II	2 months + 1 month HRZES + RHZE thrice a week 12 Weeks-36 doses	5 months HRE thrice a week 22 weeks -66 doses
Category III	2 months HRZ thrice a week 8 Weeks-24 doses	4 months HR thrice a week 18 Weeks-54 doses

DECISION ON STARTING CONTINUATION PHASE

		Get sputum tested after month	If result is	Then
Category I	New Sputum Smear positive	2	-VE	Start continuation phase, test sputum again at 4 and 6 months
			+VE	Continue intensive phase for one more month
	Seriously ill sputum Smear-negative	2	-VE	Start continuation phase, test sputum again at 6 months
			+VE	Continue intensive phase for one more month, test sputum again at 3,4 and 7 months
Seriously ill Extra-pulmonary	2	-VE	Start continuation phase, test sputum again at 5 and 6 months	
		+VE	Continue intensive phase for one month, test sputum again at 4,6 and 9 months	
Category II	Sputum smear Positive relapse	3	-VE	Start continuation phase, test sputum again at 5 and 6 months
	Sputum smear Positive failure		+VE	Continue intensive phase for one month, test sputum again at 4,6 and 9 months
Category III	Sputum smear negative,not seriously ill	2	-VE	Start continuation phase, test Sputum again at 6 months
	Extra pulmonary, not seriously ill		+VE	Re-register the patient and begin Category II treatment

Any patient treated with category one or category three who has a positive smear at 5, 6 or 7 of treatment should be considered a Failure and started on category II treatment afresh.

Patient Education

- Ensure importance of good nutrition is understood.
- Importance of living and working conditions needs to be understood.
- Importance of completion of course of drugs and how to access the drugs regularly needs to be explained.

15. LEPROSY

This is an infectious disease caused by *Mycobacterium leprae* that affects the skin, mucous membranes and peripheral nerves.

Man is the only significant reservoir of infection and transmission often occurs through household contacts.

Screening for the disease

- The entire skin surface must be examined.
- Note the appearance of any skin lesions.
- Test the sensation (fine touch and pin-prick) of the lesions.
- Palpate the main peripheral cutaneous nerves like greater auricular, ulnar, etc.
- Examine peripheral nervous function : Motor, Sensory.
- Examine the nasal mucosa to detect chronic rhinitis.

In endemic areas, every hypode-pigmented skin lesion must be assessed using touch and pin-prick.

Examining temperature sensation using Mildly warm water and ordinary water in a test tube or glass bottle is also desirable, as loss of appreciation of temperature is lost early.

Clinical Features

Paucibacillary type

- One to Five hypopigmented patches may be seen which have decreased sensation.
- No nerve involvement/One of the peripheral nerves may be thickened.
- There may be muscle weakness and wasting.
- Skin smear may be negative or show few bacteria

Multibacillary type

- There are Six or more hypopigmented skin patches, which are usually thickened and have decreased sensation.
- Patients have thickening of skin and nodules.
- More than one peripheral nerves are thickened.
- Patients have marked wasting of one or more muscle groups.
- Skin smear shows plenty of bacteria.

Diagnosis

Confirmation is best done by Skin scraping with Microbiological examination using Ziehl's stain

- Scraped incision method to obtain tissue but no blood. Pinch a fold of skin with a Kocher forceps so as to make it bloodless. Incise and scrape the scalpel blade along the inside of the incision. Take one specimen from the edge of a lesion, one from the earlobe. Also take a nasal swab.

Currently this testing is not considered mandatory unless there is a doubt about the diagnosis.

Treatment

Principles of management

The increasing frequency of strains of Hansen's bacillus resistant to dapsone poses a serious threat to leprosy control programmes. There is also a need to reduce duration of therapy.

Therefore the strategy is of multiple drug therapy.

The patients with multi-bacillary forms of leprosy are the most exposed to the risk of drug resistance. They are also the most contagious persons.

The treatment of multi-bacillary leprosy has two objectives :

- To reduce transmission in the community.
- To cure the patient.

Moreover, the emergence and spread of drug resistant strains of Hansen's bacillus has to be prevented.

Furthermore therapy exposes to the risk of severe adverse reactions. For this reason, as well as to ensure compliance, supervision of patients under treatment is necessary.

The program therefore must be well planned, organised and must include.

- Ensuring therapeutic compliance.
- Management of complications.
- Good patient education

MDT Regimens for treatment of Leprosy**PB adult treatment**

- Once a month : Day 1
 - 2 Capsules of Rifampicin (300 mg x 2)
 - 1 tablet of Dapsone (100 mg)
- Once a day : Day 2-28
 - 1 tablet of Dapsone (100 mg)
- Full Course : 6 blister packs over 6 months

PB child treatment (10-14 years)

- Once a month : Day 1
 - 2 Capsules of Rifampicin (300 mg + 150 mg)
 - 1 tablet of Dapsone (50 mg)
- Once a day : Day 2-28
 - 1 tablet of Dapsone (50 mg)
- Full Course : 6 blister packs over 6 months

For children younger than ten the dose must be adjusted according to body weight.

MB adult treatment

- Once a month : Day 1
 - 2 Capsules of Rifampicin (300 mg x 2)
 - 3 Capsules of Clofazimine (100 mg x 3)
 - 1 tablet of Dapsone (100 mg)
- Once a day : Day 2-28
 - 1 Capsule of Clofazimine (50 mg)
 - 1 tablet of Dapsone (100 mg)
- Full Course : 12 blister packs over 12 months

MB child treatment

- Once a month : Day 1
 - 2 Capsules of Rifampicin (300 mg + 150 mg)
 - 3 Capsules of Clofazimine (50 mg x 3)
 - 1 tablet of Dapsone (50 mg)
- Once a day : Day 2-28
 - 1 Capsule of Clofazimine every other day (50 mg)
 - 1 tablet of Dapsone (50 mg)
- Full Course : 12 blister packs over 12 months

For children younger than ten the dose must be adjusted according to body weight.

Treatment of adverse reactions

- Clofazimine (PO) : 100 - 300 mg/ d x 3 months

If severe, add :

- Prednisone (or prednisolone) (PO) :

D1 - 80 mg;

D2 - 75 mg;

D3 - 70 mg;

D4 - 65 mg;

D5 - 60 mg.

Continue to decrease by 5 mg every day.

16. ACUTE HEPATITIS AND FULMINANT HEPATITIS

This is usually due to viral infections with one of the hepatotropic viruses. Acute viral hepatitis is the most common form though chronic hepatitis is also prevalent.

Diagnosis

- Clinical jaundice
- Serum liver enzymes elevated with high serum bilirubin on blood test.
- For chronic hepatitis: one or both of the above persistent over six months.
- Also where possible check for hepatitis B antigen presence
- If there is hepatic failure or altered sensorium suspect that the patient has fulminant hepatitis and hepatic encephalopathy.

Treatment

No specific treatment available currently.

General Guidelines

- Rest
- low fat, low protein diet
- Avoidance of alcohol
- Nausea and vomiting may require treatment
- If hepatitis B antigen positive do the same test for the spouse
If negative in spouse immunize spouse against hepatitis B.
(Ideally one should recommend hepatitis B immunoglobulin. which however is too costly)
- Steroid have NO role in acute hepatitis or fulminant hepatitis.

Treatment at CHC or DH

- If the patient has developed hepatic encephalopathy :
 - fluid and electrolyte management,
 - vitamin supplements, especially vitamin K.
 - Fresh frozen plasma or blood maybe needed if there is haemorrhage.
- Lactulose given at 15 to 45 ml per oral twice to four times daily may help or metronidazole 200 to 400 mg 8 hourly can be tried.
- To prevent or slow down hepatic encephalopathy some of these measures may help :
 - low protein diet
 - avoidance of sedatives
 - prompt management of constipation
 - prompt management of infections.

17. AMOEBIC LIVER ABSCESS

This is formation of an abscess in the liver due to entamoeba histolytica.

This is more common in men and those with high alcohol intake.

A history of amoebic dysentery is often not present.

Diagnosis

- Pain and marked tenderness in right hypochondrial region of abdomen and on pressure over right lower rib cage.
- Enlarged tender liver on palpation.
- Diagnosis is confirmed by ultrasound.

Treatment

- Abscess needs drainage through a wide bore needle as used for pleural aspiration. Ideally done under ultrasound guidance.
- Tablet metronidazole 400 mg thrice daily for ten days.

18. TRACHOMA

Specific keratoconjunctivitis due to Chlamydia trachomatis which can lead to blindness.

It is endemic and contagious, its occurrence is associated with poor hygiene, lack of water and overcrowding.

Flies are also a vector of the disease.

Clinical features

Always examine the patient by everting the upper eyelid and searching for follicles (whitish granulations on an inflammatory base) before commenting on trachoma.

Stage I

- Bilateral conjunctivitis (with some follicles present).

Stage II

- Characteristic follicular conjunctivitis associated to a vascular pannus across cornea. : Frank trachoma

Stage III

- Trachomatous scarring : diffuse infiltration and thickening of the palpebral conjunctiva and of the cornea with scarring pannus. Complete cure is no longer possible.

Stage IV

- Trachomatous scarring is complicated by the inversion of the edge of the lids producing an entropion. Irritation by eyelashes (trichiasis) causes more severe ulceration and scarring of the cornea. Blindness results.

Diagnosis

Based on clinical features

Treatment

Treatment is always local.

Systemic antibiotics are not recommended.

Stage I

- Tetracycline 1% eye ointment 2 times/ d x 4 to 6 weeks.

Stage II

- Same treatment as above, for 2 to 3 months.

Stage III

- Local disinfection and tetracycline 1% ointment.

Stage IV

- Only surgical treatment can be effective even if scarring remains.
- If necessary local disinfection and tetracycline 1% eye ointment.

Prevention

- Personal hygiene (hand and face washing).
- Control of flies.

19. SYPHILIS AND CHANCROID

19.1 SYPHILIS

It is a sexually transmitted disease due to *Treponema pallidum*.

Clinical features

- Single painless ulcer on the genitals with rounded, well-defined edge and indurated base. Often accompanied by inguinal lymphadenopathy.
A history of exposure to sexually transmitted disease 3 weeks prior to symptoms (range : 9 to 90 days) is common and makes the diagnosis more likely.
Diagnosis is often missed in women. Exclude PID : routine bimanual and abdominal examinations should be carried out on all women with a presumptive STD.
- Secondary syphilis presents with mucocutaneous rash, adenopathy, arthritis and constitutional symptoms.
- Tertiary syphilis presents usually as a differential diagnosis for cardiovascular or neurological disease.

Diagnosis :

- Confirmation by Blood VDRL test.
- Other serological tests may become available at district hospital.

Treatment

For primary, secondary and early latent cases

- Benzathine benzylpenicillin (I.M..) : 2.4 Million Units in a single dose (half dose in each buttock).

For tertiary disease this dose should be repeated weekly for three weeks.
If allergy to penicillin

- Doxycycline (PO) : 200 mg/ d divided in 2 doses x 14 days.

or

- Tetracycline (PO) : 2 g/ d in 4 divided doses x 14 days.

For pregnant and lactating women,

- Erythromycin (PO) : 2 g / d in 4 divided doses x 14 days

19.2 CHANCROID

Clinical Features

It is a sexually transmitted disease due to Ducrey bacillus : *Haemophilus ducreyi*

- Deep, painful single or multiple ulcers on the genitals, with a soft irregular base usually accompanied by painful and voluminous inguinal lymphadenopathy. Fistula formation may develop.
Incubation period is of 3 to 5 days after exposure (range: 1 to 8 days).

Treatment

- Erythromycin : 1.5 - 2 g/ d in 4 divided doses x 7 days
or
- Ciprofloxacin 500 mg twice daily for 3 days.
or
- Ceftriaxone 250 mg IM single dose

Fluctuant lymph nodes may require needle aspiration through adjacent intact skin. Ulcer should show objective signs of healing within 7 days.

If no clinical improvement is evident, consider whether :

- the diagnosis is correct,
- treatment is taken as instructed,
- micro-organism is drug-resistant (a high degree of resistance to standard therapy has been reported in HIV patients).

20. A.I.D.S.

AIDS, or Acquired Immunodeficiency Syndrome, is the most serious form of HIV infection (Human Immunodeficiency Virus).

HIV affects the immune system and particularly the CD4 + T-Lymphocytes (T4), leading to T4-cells depletion and qualitative dysfunction.

HIV transmission is largely sexual transmission and through blood and blood products and foeto-maternal transmission.

The HIV virus is not transmitted through... saliva, mosquitoes, air, water, food, skin contact, clothes, cooking ,utensils and more generally everyday routine.

Two serotypes have been identified: HIV-1 and HIV-2.

HIV-1 is the most widespread. HIV-2 is mainly found in west Africa and is not spreading as fast as HIV-1. -

Categorisation

Different stages of infection are recognised :

- **Primary infection**
It is estimated that approximately 50 to 70% of individuals experience a mononucleosis-type syndrome corresponding to the stage of intensive viraemia during seroconversion (from 15 days to 3 months after exposure).
- **Asymptomatic HIV infection**
This stage succeeds seroconversion. In western countries the average time before the development of AIDS is ten years. This period appears to be shorter in developing countries.
- **Symptomatic HIV infection**
During this period different diseases of varying severity develop (e.g. herpes zoster, candidiasis, diarrhoea, general signs).
- **AIDS disease**
This is the most serious form of HIV infection characterised by the occurrence of opportunistic infections and neoplasia.
Once AIDS develops, the disease tends to progress rapidly especially if no treatment is given.

Clinical features

MAJOR SIGNS

- Weight loss of more than 10% of baseline body weight
- Chronic diarrhoea for more than a month
- Continuous or intermittent fever for more than a month

MINOR SIGNS

- Persistent cough for more than a month
- Generalised pruriginous dermatitis
- History of herpes zoster
- Repeated minor infections
- Oropharyngeal candidiasis
- Progressive or generalised chronic herpetic infection
- Generalised lymphadenopathy
- Confirmed HIV infection in mother
- Generalised adenopathy

Diagnosis

Clinical WHO definition of AIDS cases for the purposes of surveillance.

Adult And Adolescent (> 12 Years) Child.

- Severe malnutrition in the absence of cancer.

Plus

- Two Major Signs.
- At least one of Minor Signs.

Investigation

- A positive ELISA test with (ideally)
- Confirmation by western blot.

Treatment of the HIV infection

- Specific therapy -Antiretroviral therapy : These are as yet no such drugs on the Chhattisgarh state Essential Drug list. A policy decision on these drugs is awaited.

Currently, the marketing of antiviral treatment is expanding, and new therapies are emerging.

Hope for successful treatment lies upon combined pharmacotherapy.

Such therapy requires strict surveillance owing to side-effects.

Presently, both the cost of drugs and the lack of laboratory resources for surveillance result in limited use of such treatment in developing countries.

- Treatment of opportunistic or associated infections.

21. DOG BITE; RABIES AND OTHER WILD ANIMAL BITES

Rabies is a disease that usually affects dogs and many wild animals. Sometimes when an infected animal bites human beings it can spread in them and become fatal. Inoculation can be by bite or lick of dog or cat or bite by many types of wild animals.

Incubation period varies from 2 weeks to several months depending on the severity and site of inoculation. An animal infected with rabies sheds rabies viruses in its saliva for upto 14 days in dogs and cat) before the animal develops signs of the disease.

Treatment

Once rabies disease starts it is invariably fatal.

The aim of treating a dog bite or wild animal bite is to prevent rabies or tetanus from occurring by post-exposure immunization given early after the bite or lick of the infected animal.

- Wash the wound well with soap and water and the dry.
- Clean wound with chlorhexidine solution or other antiseptic solution. Do not stitch up the wound.
- Give tetanus vaccine (toxoid) one dose. Repeat another dose after six weeks if person has not had any tetanus vaccine ever.
- As far as possible observe the animal for 14 days. If the animal is normal then there are no chances of it being rabies. No need to give rabies vaccine.
- If within the next 10 to 14 days the animal develops rabies then give a full course of rabies vaccine available at the PHC.
- If the animal bit without provocation or was known to be biting many others and is suspected of being rabid do not wait 14 days. Start rabies vaccine at once if there has been any bite or lick. If after 10 days the animal is alive and well we can then stop the vaccine.
- If the bite was a serious bite and the animal is suspected to have rabies give not only the vaccine but rabies immunoglobulin as well.
- If the animal is not to be seen again then we have to assume that it had rabies and give treatment with a full course of vaccines. If the bite was a serious bite then in addition give rabies immunoglobulin. This is costly and seldom available.

There are two types of bite :

Benign : localised : not on head, nor on hands or feet. : Giving rabies vaccine is enough.

Serious : localised on head, neck, hands, feet, genitals; wild animal bite; licking and contact of saliva with mucous membranes. Give both rabies vaccine and rabies immunoglobulin.

Rabies Immunoglobulin (RIG)

- Give either
Human, at the dose of 20 IU /kg
or
Equine, at the dose of 40 IU/kg
one single dose as soon as possible after the exposure.
The RIG should be infiltrated around and into the wound. Any remaining RIG should be injected at a site distant from the site of vaccine inoculation.

Those administering equine RIG should always be ready to treat early anaphylactic reactions with epinephrine (adrenaline). Follow national recommendations for skin testing.

Rabies vaccine

Intra-muscular injection in the deltoid, never in the buttocks.

The old vaccines (e.g. duck embryo, horse serum) are much less expensive but require a lot of injections (7 to 14) and can be followed by allergic and / or neurological complications.

The current vaccines made on cell cultures are much less prone to adverse side effects.

The recommended regimens for vaccine administration :

- 1 dose at Day 0 (day of initiation of therapy), and then further doses on Day 3, Day 7, Day 14, Day 28.

Depending on the exposure :

- **Benign exposure :**

Simple rabies vaccination

- **Serious exposure :**

Immunoglobulin + vaccination

Give both immunoglobulin and the first dose of vaccine at Day 0.

Then continue the immunization schedule as indicated above.

If the patient previously had complete course of vaccine and gets bitten again or wants to take protection against another bite :

- Within previous 5 years : one dose of vaccine at Day 0 and Day 3.
- More than 5 years ago : treat as if not immunised earlier.

Both drugs given above are costly and often not available. Often for lack of availability rabies immunoglobulin is not given but it is important that where indicated a full dose of rabies vaccine is certainly given.

All wild animal bites do not require anti rabies vaccine unless there is a known association. Wild dogs and foxes and wolves have known associations.

Bear bites , which are quite common have on the other hand no known association with rabies and anti tetanus vaccine is adequate.

In most situations when in doubt the line of action would be to give anti rabies vaccine but not give anti- rabies immunoglobulin.

22. SNAKE BITE

If one sees fang marks, then one knows that it is a poisonous snakebite. Most often, the bite marks are not so clear. There may be just one fang mark, or just a row of teeth marks, or a ragged tear at the site of the wound. When in doubt, always look for the local and general signs of poisoning.

Commonly three types of Snakebites are seen.

- Haematotoxic- Viper.
- Neurotoxic- Cobra
- Both Haemato and Neurotoxic- Krait

Clinical features - Signs of poisonous snakebite

Common cobra or snakebite

Main signs

- Muscle weakness in the form of ptosis , external ophthalmoplegia (causing diplopia) dysphagia and dysphonia may occur. Later it may progress to complete paralysis of limbs and neck flop also.
- Difficulty in Coughing, respiratory paralysis/failure leading to death. Difficulty in coughing or breathing indicates severe poisoning and may not appear until 10 hours after the bite.

Supplementary features

- Pain at the site of bite. There may also be pain in abdomen as well as diarrhoea.
- There is seldom any local swelling.
- Vomiting, hypotension and collapse may occur.

Russels viper and saw-scaled viper

- Pain and local swelling starts almost immediately but may not develop upto two hours after the bite. Increase in local swelling, which may become severe/ massive over 2-3 days with bruising.
- Vomiting, hypotension and abnormal bleeding from or into any site may occur within 15 minutes. Untreated shock and haemorrhage may occur upto a week after the bite.
- Blister formation around the site and spreading blister suggests a large dose of venom and this may precede tissue death. Tissue death (necrosis) at site of bite presents often with an offensive, rotten smell.
- Patient may develop decreased urine output and subsequently overt renal failure.
- Respiratory involvement in the form of acute pulmonary oedema may develop.

Diagnosis & criteria for starting antsnake venom

Begin treatment with anti-snake venom for poisonous snakebite if one of the following signs are there :

- Fang marks present and/or cellulitis, blister formation present.
- Clotting time is prolonged more than 10 minutes
- Patient has active bleeding from any site.
- Patient has ptosis and external ophthalmoplegia.

Treatment maybe started at PHC, but patient must be referred at the earliest to a CHC

Impending onset of life threatening respiratory failure or haemorrhage or renal failure may be suspected if patient has

- Neck flop and loss single breath count indicating for impending respiratory failure.
- Oliguria indicating renal failure.
- Tachypnoea and signs of pulmonary oedema indicating renal failure.
- Persistent elevation of clotting time or bleeding despite antivenom indicating haemorrhage.

If the patient has any of these above signs, patient requires to be initiated on treatment and at same time referred to a district hospital.

Treatment

General Guidelines

- Keep the surroundings quiet; do not move the bitten part. The more it is moved, the faster the poison will spread through the body. If the bite is on the foot, the person should not walk at all.
- Wrap the bitten area with a wide bandage or clean cloth to slow the spread of poison. Wind the bandage over the hand or foot, and up the whole arm or leg. Keeping the arm or leg very still, wrap it tightly, but not so tight that it stops the pulse at the wrist or on top of the foot. If you cannot feel the pulse, loosen the bandage a little.
- Then, put on splint to prevent the limb from moving. Keep the wounded part below the level of the heart.
- Also, ice helps to reduce pain and slow the poison. Wrap the arm or leg with a plastic sheet and a thick cloth. Then pack crushed ice around it. (Too much cold can damage the skin. If it gets so cold it aches, let the person decide when to remove ice for a few minutes).

- Transport the person, to the nearest centre which has anti snake venom and start on an adequate dose at once. If signs of severe envenomation are present give anti-snake venom (ASV) before one transports the patient further to CHC.
- Give
 - Paracetamol, not aspirin, for pain.
 - Tetanus Toxoid.
 - If the bite becomes infected, give penicillin.
- If respiratory paralysis is imminent (low single breath count), accompany the patient ,keeping an Ambu's bag and face mask ready.

Specific Treatment

Antisnake venom (ASV)

- Only cellulitis with clotting time normal -
 - Inj. ASV 70 ml in 500 ml Normal Saline IV infusion over 6 hrs.
- Haematotoxic- Cellulitis with prolonged clotting time-
 - Inj. ASV 70 ml in 500 ml Normal Saline IV infusion at once.

Followed by

Inj. ASV 30 - 50 NS IV infusion over 4-6 hrs. every 6 hourly till 2 clotting times are normal.

It is common in severe envenomation to need upto 400 ml of ASV for achieving this.

Beyond such a level there is seldom any further gain from anti-venom though if clotting times remain prolonged one may decide to try more ASV.

- Neurotoxic—
 - Inj. ASV 100 ml in 500 ml NS IV infusion at once.

If there is no improvement with this further ASV may not make for further improvement.

 - Neostigmine - Many physicians believe that neostigmine helps reverse neuromuscular paralysis and it may be tried.
Neostigmine-0.5 mg every 30 min. x 5 doses;
 - use Atropine concurrently 0.01 mg/kg.

However in most neurotoxic cases the effect of the venom is self limiting and if ventilatory support is provided to cope with paralysis of ventilation then patient recovers in 48 to 72 hours.

The focus on treatment is in looking for and identifying ventilatory paralysis early (by repeatedly looking at single breath count or breath holding time) and instituting support for this. If respiratory paralysis ensues remember to start ventilation with face mask and ambu's bag and transport patient with this.

Even If lesser amount of ASV is available give the amount available before referral.

Treatment of Adverse reaction to ASV

- Inj. Chlorpheniramine 1 amp I.V. stat
- Inj. hydrocortisone 100 mg I.V. stat

Antibiotics for treating Cellulitis

- Amoxicillin. 250 mg Q8H
or
- Penicillin 50000 units/kg/dose Q8H
and
- Metronidazole 30 mg/kg in 3 divided doses
- Inj Tetanus toxoid

Do not give steroids as prophylaxis for adverse reaction. People often believe that all snakes are poisonous. DO NOT KILL NON-POISONOUS SNAKES because they do no harm. On the contrary, they kill mice and other pests that do a lot of damage. Some even kill poisonous snakes. Even poisonous snakes are not to be killed except in defending ourselves, for they too play a very useful role in nature.

23. SCORPION STING

Some scorpions are far more poisonous than others. To children under 5 years, scorpion stings can be dangerous, especially if the sting is on the head or body.

Clinical features

In adults, the first time is rarely dangerous. But if it is for the second time, the person may die, if not treated soon. The body becomes allergic after the first sting. So it is important to find out if he had an earlier scorpion sting.

- Severe pain, redness and swelling at the site of the sting.
- Profuse sweating
- Tachycardia
- Children especially may have signs of shock, sweating, nausea, vomiting and difficulty in breathing and occasionally develop pulmonary oedema.

Management

If it is for the first time in an adult, do the following :

- Give paracetamol and if possible, put ice on the sting or apply firm pressure bandage to prevent spread of venom.
- Infiltration of the site with local anaesthetics may relieve pain and anxiety.
- Antihistamine tablets can also be given.

If the sting is for a second time in an adult, or is in children under five, do the following.

- If breathing has stopped, give mouth to mouth breathing.
- If the person is in shock, treat the shock.
- Shift to a centre with inpatient facilities fast.
- If there is evidence of myocarditis and pulmonary oedema, strict bed rest and management of heart failure is indicated.
- Prazosin (1 mg p.o. tid for adults) has been tried by physicians and is acceptable therapy.

There is no anti venom or effective antidote available for scorpion stings. Treatment is aimed only at countering the effects of the venom on vital organs till the venoms effect wears off. Fortunately in most cases except for severe pain there is no effect and within a day the person is back to normal.

24. BEE, WASP AND OTHER INSECT STINGS AND BITES**Bee and wasp stings**

Most of these stings, are not dangerous.

But they can be extremely painful. In some patients, they cause allergic shock.

Itching and urticaria are the most common features.

The area of the sting may become red, swollen and painful.

There can be hypotension, bronchospasm and life threatening laryngeal spasm.

Most reactions occur within minutes but may be delayed for 4 to 8 hours.

Treatment

- Apply hot compress on the area of the sting.
- For pain give paracetamol and chlorpheniramine tablets.

If signs of shock develop or there is respiratory compromise due to laryngeal oedema, treat as allergic shock.

Treatment of anaphylactic shock

- In adrenaline 1:1000 – give 0.5 ml (0.5 mg) subcutaneously and repeat at 20 minutes if needed.
If patient has major airway compromise or hypotension then adrenaline can be given sublingually, via femoral vein or via an endotracheal tube.
- Supplement oxygen if needed.
- IV fluids for volume expansion if hypotension persistent.
- Hydrocortisone or other steroids have no immediate effect but they may prevent relapse of severe effects and hydrocortisone 100 mg may be given for severe reactions.
- Antihistamines also have no immediate effect and are most effective against skin symptoms. It also helps shorten duration of reaction and can be used. Chlorpheniramine is the usual choice.
- Maintain observation for 6 hours for mild reactions. Severe reactions need admission.

SECTION VI

PRIMARY CARE IN NON - COMMUNICABLE DISEASES



Primary Care In Non - Communicable Diseases

The Primary health centre must play an active role in managing non-communicable diseases. The failure to do so is a major underutilization of state resources – largely in the form of underutilising the qualified medical doctor posted there. Also non-communicable disease may contribute anywhere from 20 to 40% of the disease load and the failure to respond to these health issues is a major ethical issue. These are also diseases of the poor and the poor have nowhere else to go. In the absence of fulfilling the felt need for curative care for such diseases the primary health centres credibility is undermined and this in turn results in diminished co-operation for programmes like family planning or immunisation.

The primary health care doctor should :

- Be able to provide adequate relief or treatment for most non-communicable disease.
- Provide follow up primary care to cases diagnosed and initiated on treatment at higher centres. This requires a two way referral arrangement.
- Providing emergency care to many types of cases and to help provide relief while patient is reaching the higher centre.
- Be able to identify & refer that subset of cases that need referral for establishing diagnosis or receiving specialised treatment.

GENERAL DISEASES

1. ANAEMIA

This is caused by deficiency of haemoglobin, the red pigment in the red cells responsible for transport of oxygen.

Anaemia is usually caused by both malnutrition and prolonged blood loss. Often they go together and the poor diet cannot make up the haemoglobin loss. Repeated pregnancies also cause anaemia. Another common cause of prolonged blood loss is hookworms. In women, heavy menstrual flow plus dietary deficiency makes anaemia a very common disease.

Sickle cell anaemia and thalassaemia are more common in this state and this is discussed below.

There are many other less common causes for anaemia, not discussed in this section.

Clinical presentation

- Severe anaemia causes general pallor and oedema of feet.
- Often, especially if anaemia is moderate or severe, pallor of conjunctiva, the tongue and the nails is enough to make out a diagnosis.
- The patient may present with signs of heart failure.

Diagnosis

A blood test is essential to confirm the diagnosis, to assess severity and to assess response to treatment.

- The common test is blood haemoglobin test.
 - If Haemoglobin is less than 13 gm/100 ml it is anaemia. Some books prefer level of 11 gm/ 100 ml. But "11gm/100ml" patients have easy tiredness for which treatment is needed.
 - If less than 8 gm/100 ml, it is, moderate anaemia.
 - If less than 5 gm/100 ml, it is severe, life threatening anaemia.
- A peripheral blood smear examination is also essential to study the cause of anaemia.
 - If the cells are microcytic and hypo chromic it would support a diagnosis of iron deficiency anaemia or thalassaemia.
 - If not it could be normocytic (due to peripheral red cell destruction or Bone marrow failure or secondary to chronic disease.
 - it could be macrocytic due to folic acid and B-12 deficiency.
- With a cell count,
 - An RBC & WBC cell count & platelet count helps differentiate between pancytopenia & all other anaemias.

- The sickling test also needs to be done in moderate & severe anaemias
Other desirable tests at DH
- Serum iron levels
- Bone marrow examination.

Treatment

Patient Education

- All patients with anaemia need to increase eating of foods that contain iron. Green leafy vegetables, bajra, ragi, beans, jaggery, meat and fish are all good sources.

Specific drug therapy for iron deficiency anaemia

- Give iron and folic acid tablets. At least one, preferably two tablets per day till blood haemoglobin levels reach normal and Continue iron therapy for six months (even if the patient feels all right after a month or two) to build up body iron stores.
Most tablets are of ferrous sulphate and contain 65 mg of elemental iron. Public health supply is often of tablets which contain 100 mg of elemental iron.
- All women in pregnancy & who are breastfeeding should be given iron and folic acid tablets to prevent anaemia.

Side effects of Oral Iron

- Warn patients that on taking iron tablets one's stool will be black and sometimes there is stomach upset, loose stools or constipation.
- If there is stomach upset, give after food and reduce the dose.

Treatment of Specific causes

Remember to try and find cause of blood loss or look for other cause of anaemia. Treating anaemia is not enough without treating the cause.

- Suspect hookworms : Give one tablet Albendazole 400 mg as a one-time dose.
- Excessive blood loss due to other cause: Manage accordingly.
- Blood loss per anus: Suspect haemorrhoids (piles). Examine stools for occult blood loss –refer for endoscopy to consider peptic ulcer or malignancy if test is positive. See pg 249 for specific management of haemorrhoids.
- With chronic diarrhoea - consider malabsorption syndromes or chronic inflammatory conditions.

Refer to CHC

- All severe anaemia with Hb less than 5 gm% and / or having cardiac failure for whom blood transfusion should be done.
- Anaemia that does not respond to iron and folic acid tablet treatment, even after one month.
- Anaemia that is not microcytic hypochromic.
- Anaemia associated with other illnesses such as tuberculosis.
- Patients who do not tolerate iron tablets.

Refer to District hospital

- Anaemia where after BSE, leukemias and other malignancies are suspected.
- When bleeding is heavy and does not stop or keeps recurring.

2. SICKLE CELL DISEASE

Sickle Cell disease is commonly found in Scheduled Caste and Scheduled Tribe population of central and southern Chhattisgarh, with the prevalence rates ranging from 10 to 30%, especially covering the districts of Bastar, Kanker, Dantewara, Dhamatri, Kawardha, Raipur, Mahasamund, Durg, Rajnandgaon and Bilaspur. Possibly disease is also common in various other communities and areas but not studied adequately in these contexts.

Clinical Presentation

Generally symptoms appear in the patients from the age of 3-5 yrs.

- Recurrent painful crisis of extremities, joint pain and bony pains.
- Moderate to severe grade of anaemia.
- Mild to moderate level of Jaundice.
- May suffer from recurrent episodes of fever along with painful crisis.
- Spleen is enlarged from mild to moderate grade (3 cm - 9 cm) but in many patients there is massive spleen, which may be tender.
- Eventually the disease causes damage of vital organs i.e. heart, kidney, liver.

Diagnostic confirmation**Blood tests**

- Peripheral smear - may show sickle shaped RBCs; RBCs of varied size and shape
- Sickling test
- Electrophoresis at (alkaline and Acidic pH).

Treatment

For those with anaemia

- Patients should be given folic acid tablets regularly for the lifetime 1 mg four times daily.
- Antibiotic prophylaxis with oral penicillin 125 mg twice daily till 3 yrs. then 250 mg twice daily till 5 years of age is advised to reduce infections

To decrease frequency and intensity of attacks of sickling crisis

- Adequate intake of water specially in the summer,
- Avoid sudden exposure to cold climate,
- Not to take iron supplementation,
- Prompt treatment of mild fever and pain,
- Avoid gastritis and acidity.
- Prompt treatment of common opportunistic infections like worm infestation, viral fever which worsen the clinical profile of the patients.
- Vaccinated, if possible, against all the common vaccine preventable diseases along with Hepatitis and Pneumococcal.

For an acute attack

- Give symptomatic treatment as per the clinical profile.
- For severe body or back pain or joint pains or priapism give plenty of fluids to drink and drugs to relieve pain. For severe pain morphine may be required.
- For acute chest pain, the same as above with supplemental oxygen and transfusion of packed cells.

Most of the patients have a short life span i.e. 15-25 yrs. but some patients do survive upto the age of 40-50 yrs.

Genetic counselling : High risk couples should be identified in the community and prenatal diagnosis should be provided to the couples.

3. MODERATE / SEVERE MALNUTRITION

This is more common in children but can occur at any age.

Diagnosis of malnutrition rests on having a BMI (Body Mass index) less than 18. (BMI=weight in kg/ht² in metres.)

In children a malnutrition level of grade three or four as measured in the weight for age chart needs medical attention.

Ideally even lesser degrees of malnutrition should be seen by a doctor.

The diagnosis of acute malnutrition requires corroboration with history as elicited from relatives, neighbours.

It is difficult to differentiate between primary and secondary malnutrition, especially in chronic malnutrition even with a good history.

In all cases we have to search for co-existing diseases and the presence of a disease should never exclude formally recording malnutrition as an additional diagnosis.

General Guidelines

Phases of management

- Resuscitation (if required) – 1 day
- Acute phase – 1 week
- Rehabilitation – 1 month

Resuscitation (For all patients too weak to walk or talk normally)

- Treat dehydration if present. Often patients are potassium deficient. ORS would suffice. ORS may have to be given by nasogastric tube if it cannot be taken orally and intravenous is not possible.
- Look for hypoglycaemia – 10% dextrose 1- 2 ml / kg bolus. 10% dextrose in N/5 saline for 24 hours in maintenance dose.
- Look for hypothermia – keep warm, if a child let it sleep next to mother.
- Infections may manifest as hypothermia, convulsions, apathy.

Aggressively manage infection starting with broad spectrum antibiotics by injection for 5-10 days while awaiting more information (Penicillin +Gentamicin) or amoxicillin.

- If anaemia is severe give blood. Otherwise withhold oral iron for 2 weeks and start iron after that.
- Vitamin A deficiency – give 1 lac unit IM on days 1,2 and 28 if child more than 1 year and more than 10 kg. in weight. If less than that give half that dose.
- Restrict sodium to start with especially in kwashiorkor type malnutrition in which congestive cardiac failure may exist or get exacerbated by management.
- Give measles vaccination at admission if not given or in doubt.
- Look specifically for tuberculosis and malaria. If there is fever and it is an endemic zone presumptive treatment with chloroquine for malaria may be given even as blood smear is done to confirm.

Acute phase (for child that has completed resuscitation stage and is still too weak to eat)

- Nutrition must be progressive – not aggressive.
- Breast feeding child - allow to breastfeed.
- Give small frequent meals orally by spoon. If child too apathic – try 2-3 days of nasogastric feeding.
- Start trial of milk based therapeutic diet providing 100 Kcal and 3 gm protein / 100 ml. Totally about 100 ml/kg/day to be given over 8 to 10 small feeds with at least one in the night as well
- A model acute phase diet

sugar	20 gm		80 Kcal
oil	30 ml		270 Kcal
milk to make	1000 ml	30 gm protein	650 Kcal
total	1000 ml	30 gm protein	1000 Kcal

- On day 1 : 50 ml/kg
- Increase slowly : 10-20 ml/kg /day to reach 150 ml/kg/day by 7th day (150 Kcal/kg and 3 gm protein/kg per day)

If milk intolerance is present, try skimmed milk base or cereal based formulas :

dried skimmed milk	60 gm		
sugar	12 gm		
veg. oil	15 gm		
total	87 gm	20 gm protein	400 Kcal

OR

rice	50 gm		
glucose	45 gm		
oil	30 gm		
egg	1		
1 litre water			
total		10 gm protein	710 Kcal

When to shift to rehabilitation stage :

- Medical complications under control
- Pedal oedema if it was there has started coming down
- Appetite has started recovering

Rehabilitation phase (This is how most grade three & four patients of chronic malnutrition are also managed)

- Start with semisolid foods on day 7 and move to solids. If it has to be done at home advice to feed child as done for weaning at two hourly intervals for a month. The aim is to provide about 200 kcal/kg/day and 5 gm/protein/kg/day.
- Deworm : give albendazole tablets.
- Start iron and vitamins.
- Rule out tuberculosis & malaria.
- Repeat measles vaccination at discharge
- Bring immunization up to date within shortest time period.
- Regular growth monitoring
- **Nutrition training and counselling for mother as described in Book 3 of Mitanin series.** Ideally grade three & four chronic malnutrition need 2-3 weeks stay in rehabilitation centre. But in current context intensive home visits and counselling by health workers would have to suffice.
Teach diarrhoea and ARI management, by counselling to those providing care to the child (mitanin model). Local recipes and food, variety is essential.
- **Reinforce the six key messages of feeding**
 - Exclusive breast feeding for first six months.
 - Adequate supplementary feeding from six months of age.
 - Feeding 5 or 6 times daily in the child below five.
 - Adding adequate fats and oils.
 - Adding adequate 'green,yellow and reds'
 - Feeding through an illness and extra meal for a week.

Aviod Prscription of commercial health foods and tonics

4. THE MANAGEMENT OF DEHYDRATION

Diagnosis of Dehydration

- Deficiency of water in the body is usually made up by thirst activated increased water intake. However in many situations like acute diarrhoea or burns there is excessive loss and inadequate intake.
- Diagnosis of dehydration categorises it into mild, moderate and severe.

Mild dehydration consciousness is normal, thirst is intact, the skin pinched up becomes normal immediately. The eyes are also moist and tears are present and mouth is not dry.

Moderate dehydration the patient may be irritable but is conscious, the skin pinched up takes two seconds for folds to disappear, the eyes are sunken, tears are absent and the mouth is dry.

Severe dehydration the skin pinched up remains in folds for over two seconds, the eyes are sunken, tearless and dry and so is the mouth. In severe dehydration there is also oliguria (urine less than 400 ml per day).

Management

Oral Replacement

Replacement of fluid and electrolytes orally can be achieved by giving oral rehydration salts—solutions containing sodium, potassium and glucose. Acute diarrhoea in children should always be treated with oral rehydration solution according to plans A, B, or C as shown.

- Plan A : Mild or no dehydration. Nutritional advice and increased fluid intake are sufficient (soup, rice, water and yoghurt, or even water). For infants aged under 6 months who have not yet started taking solids, oral rehydration solution must be presented before offering milk. Mother's milk or dried cow's milk must be given without any particular restrictions. In the case of mixed breast-milk/formula feeding, the contribution of breastfeeding must be increased.
- Plan B: moderate dehydration. Whatever the child's age, a 4-hour treatment plan is applied to avoid short-term problems. Feeding should not therefore be envisaged initially.
It is recommended that parents are shown how to give approximately 75 ml/kg of oral rehydration solution with a spoon over a 4-hour period, and it is suggested that parents should be watched to see how they cope at the beginning of the treatment.
A larger amount of solution can be given if the child continues to have frequent stools. In case of vomiting, rehydration must be discontinued for 10 minutes and then resumed at a slower rate (about one teaspoonful every 2 minutes). The child's status must be re-assessed after 4 hours to decide on the most appropriate subsequent treatment. Oral rehydration solution should continue to be offered once dehydration has been controlled, for as long as the child continues to have diarrhoea.
- Plan C: severe dehydration. Hospitalization is necessary, but most urgent priority is to start rehydration.
In hospital (or elsewhere), if the child can drink, oral rehydration solution must be given pending, and even during, intravenous infusion (20 ml/kg every hour by mouth before infusion, then 5 ml/kg every hour by mouth during intravenous rehydration).

For intravenous supplementation, it is recommended that compound solution of sodium lactate is administered at a rate adapted to the child's age (infant under 12 months: 30 ml/kg over 1 hour then 70 ml/kg over 5 hours; child over 12 months : the same amounts over 30 minutes and 2.5 hours respectively).

If the intravenous route is unavailable, a nasogastric tube is also suitable for administering oral rehydration solution, at a rate of 20 ml/kg every hour. If the child vomits, the rate of administration of the oral solution should be reduced.

Oral rehydration salts

Oral rehydration solution	
sodium chloride	3.5 g/litre of clean water
trisodium citrate	2.9 g/litre of clean water
potassium chloride	1.5 g/litre of clean water
glucose (anhydrous)	20.00 g/litre of clean water

- When glucose and trisodium citrate are not available, they may be replaced by

Glucose salt solution	
sucrose (common sugar)	40.00 g/litre of clean water
sodium bicarbonate	2.5 g/litre of clean water.

- The solution may be prepared either from prepackaged sugar/salt mixtures or from bulk substances and water. Solutions must be freshly prepared, preferably with recently boiled and cooled water. Accurate weighing and thorough mixing and dissolution of ingredients in the correct volume of clean water is important. Administration of more concentrated solutions can result in hypernatraemia

Dosage

Fluid and electrolyte loss in acute diarrhoea,

by mouth,

ADULT 200–400 ml solution after every loose motion

INFANT and CHILD according to Plans A, B or C (see above)

Adverse effects : vomiting—may indicate too rapid administration; hypernatraemia and hyperkalaemia may result from overdose in renal impairment or administration of too concentrated a solution.

Parenteral solutions

Solutions of electrolytes are given intravenously, to meet normal fluid and electrolyte requirements or to replenish substantial deficits or continuing losses, when the patient is nauseated or vomiting and is unable to take adequate amounts by mouth. In an individual patient the nature and severity of the electrolyte imbalance must be assessed from the history and clinical and biochemical examination. Sodium, potassium, chloride, magnesium, phosphate, and water depletion can occur singly and in combination with or without disturbances of acidbase balance.

Isotonic solutions may be infused safely into a peripheral vein. More concentrated solutions, for example 20% glucose, are best given through an indwelling catheter positioned in a large vein.

- Sodium chloride in isotonic solution provides the most important extracellular ions in near physiological concentrations and is indicated in sodium depletion, which may arise from conditions such as gastroenteritis, diabetic ketoacidosis, ileus and ascites. In a severe deficit of from 4 to 8 litres, 2 to 3 litres of isotonic sodium chloride may be given over 2 to 3 hours; thereafter infusion can usually be at a slower rate.

Excessive administration should be avoided; the jugular venous pressure should be assessed and the bases of the lungs should be examined for crepitations to detect excessive fluids.

The more physiologically appropriate **compound solution of sodium lactate** can be used instead of isotonic sodium chloride solution during surgery or in the initial management of the injured or wounded.

- Sodium chloride and glucose : solutions are indicated when there is combined water and sodium depletion. A 1:1 mixture of isotonic sodium chloride and 5% glucose allows some of the water (free of sodium) to enter body cells which suffer most from dehydration while the sodium salt with a volume of water determined by the normal plasma Na^+ remains extracellular. Combined sodium, potassium, chloride, and water depletion may occur, for example, with severe diarrhoea or persistent vomiting; replacement is carried out with sodium chloride intravenous infusion 0.9% and glucose intravenous infusion 5% with potassium as appropriate.
- **Glucose** : solutions (5%) are mainly used to replace water deficits and should be given alone when there is no significant loss of electrolytes. Average water requirement in a healthy adult are 1.5 to 2.5 litres daily and this is needed to balance unavoidable losses of water through the skin and lungs and to provide sufficient for urinary excretion. Water depletion (dehydration) tends to occur when these losses are not matched by a comparable intake, as for example may occur

in coma or dysphagia or in the aged or apathetic who may not drink water in sufficient amount on their own initiative.

Excessive loss of water without loss of electrolytes is uncommon, occurring in fevers, hyperthyroidism, and in uncommon water-losing renal states such as diabetes insipidus or hypercalcaemia. The volume of glucose solution needed to replace deficits varies with the severity of the disorder, but usually lies within the range of 2 to 6 litres.

Glucose solutions are also given in regimens with calcium, bicarbonate, and insulin for the emergency treatment of hyperkalaemia. They are also given, after correction of hyperglycaemia, during treatment of diabetic ketoacidosis, when they must be accompanied by continuing insulin infusion.

A concentrated solution of glucose (50%) is used to treat hypoglycaemia.

- Sodium hydrogen carbonate (sodium bicarbonate) is used to control severe metabolic acidosis (as in renal failure). Since this condition is usually attended by sodium depletion, it is reasonable to correct this first by the administration of isotonic sodium chloride intravenous infusion, provided the kidneys are not primarily affected and the degree of acidosis is not so severe as to impair renal function. In these circumstances, isotonic sodium chloride alone is usually effective as it restores the ability of the kidneys to generate bicarbonate. In renal acidosis or in severe metabolic acidosis of any origin, for example blood pH < 7.1, sodium hydrogen carbonate (1.4%) may be infused with isotonic sodium chloride when the acidosis remains unresponsive to correction of anoxia or fluid depletion; a total volume of up to 6 litres (4 litres of sodium chloride and 2 litres of sodium hydrogen carbonate) may be necessary in the adult. In severe shock due for example to cardiac arrest, metabolic acidosis may develop without sodium depletion; in these circumstances sodium hydrogen carbonate is best given in a small volume of hypertonic solution (for example 50 ml of 8.4% solution intravenously); plasma pH should be monitored. Sodium hydrogen carbonate is also used in the emergency management of hyperkalaemia.
- Intravenous potassium chloride and sodium chloride infusion is used to correct severe hypokalaemia and depletion when sufficient potassium cannot be taken by mouth. Potassium chloride may be added to sodium chloride 0.9% infusion and given slowly over 2 to 3 hours with specialist advice and ECG monitoring in difficult cases. Repeated measurements of plasma potassium are necessary to determine whether further infusions are required and to avoid the development of hyperkalaemia, which is especially likely to occur in renal impairment. Initial potassium replacement therapy should **not** involve glucose infusions because glucose may cause a further decrease in the plasma-potassium concentration.

Management of acidosis & hypokalemia needs to be done at CHC level as it cannot be detected at the PHC level. Even at CHC potassium imbalance would often depend on ECG & proper clinical assessment as blood electrolyte & pH assessments are not widely available.

ENDOCRINE DISEASES

5. DIABETES MELLITUS

This is a disease that is due to an imbalance in the body in its inability to change food especially sugars and starch to energy and use it well. It occurs because the key substance insulin is produced inadequately.

- **Type 1** : Diabetes or insulin-dependent diabetes mellitus is due to a deficiency of insulin caused by auto-immune destruction of pancreatic beta cells. Patients require administration of insulin. If onset of diabetes is before 40 it is likely to be type-1 diabetes.
- **Type 2** : Diabetes or non-insulin dependent diabetes mellitus is due to reduced secretion of insulin or to peripheral resistance to the action of insulin. Patients may be controlled by diet alone, but often require administration of oral antidiabetic drugs or if more severe insulin. Onset is often ,but not always, after the age of 40.

Symptoms and Signs

Any person presenting with

- Excessive urine, excessive thirst and excessive appetite with unexplained weight loss,
- Non healing ulcers.
- Quite often patients present only when they have reached the stage of altered sensorium.

Diagnosis

Diagnosis is based on Investigations

Investigations

At the PHC

- Based on a positive urine Benedict's test.
- One must also do further tests for complications – test for ketones in urine to rule out ketoacidosis if it seems clinically likely.
- Check urine for albumen to detect renal involvement.

For monitoring treatment urine benedict's test done with double emptying of bladder is useful.

At the CHC

- Fasting blood sugar and postprandial blood glucose level.
Fasting levels above 126.
Two hour post- prandial level above 200. is Diagnostic of diabetes mellitus.
- Levels lower than this but still raised are labelled as impaired glucose tolerance.

Further investigations for complications include :

- Fundoscopy (for diabetic retinopathy),
- Urinary protein (24 Hour) for diabetic nephropathy,
- Examination for loss of sensation or weakness to rule out peripheral nerve involvement (for diabetic neuropathy)
- ECG for ischemic heart disease.
- Hypertension is also to be looked for.

Complications

- Emergencies - Diabetic ketoacidosis, Hyperglycaemic coma, Hypoglycaemia
- Long term complications - Diabetic Neuropathy, Nephropathy, Retinopathy

Treatment

The aim of treatment is to achieve the best possible control of plasma glucose concentration and prevent or minimize complications including microvascular complications (retinopathy, albuminuria, and neuropathy).

Patient Education

- The energy and carbohydrate intake must be adequate but obesity should be avoided. In type 2 diabetes, obesity is one of the factors associated with insulin resistance.
- Diets high in complex carbohydrate and fibre and low in fat are beneficial.
- Emphasis should be placed on exercise and increased activity.
- Diabetes mellitus is a strong risk factor for cardiovascular disease. Other risk factors such as smoking, hypertension, obesity and hyperlipidaemia should also be addressed.
- Patient needs counselling for proper foot care to prevent ulcers (similar measures as foot care in leprosy).
- Once on drug treatment one must advice patient so as to detect hypoglycaemia early-Giddiness, sweating, palpitations clouding of consciousness or loss of consciousness) or hyperglycaemia (excessive thirst, later loss of consciousness).

Drugs used in treatment

➤ **Insulin**

- Soluble insulin is a short-acting form of insulin. When injected subcutaneously, it has a rapid onset of action (after 30–60 minutes), a peak action between 2 and 4 hours, and a duration of action up to 8 hours. When injected intravenously, soluble insulin has a very short half-life of only about 5 minutes.
- **Intermediate-acting insulins** have an onset of action of approximately 1–2 hours, a maximal effect at 4–12 hours and a duration of action of 16–24 hours. They can be given twice daily together with short-acting insulin or once daily, particularly in elderly patients. They can be mixed with soluble insulin in the syringe, essentially retaining properties of each component.

The duration of action of different insulin preparations varies considerably from one patient to another and this needs to be assessed for every individual.

The type of insulin used and its dose and frequency of administration depend on the needs of each patient.

For patients with acute onset diabetes mellitus, treatment should be started with Soluble insulin given 3 times daily with medium acting insulin at bedtime.

For those less seriously ill, treatment is usually started with a mixture of premixed Short and medium acting insulins given twice daily.

Presentation

- Soluble insulin Injection (Solution for injection 40 units/ml, 10-ml vial; 100 units/ml, 10-ml vial.
- Isophane insulin Injection (Suspension for injection), 40 units/ml, 10-ml vial; 100 units/ml, 10-ml vial

➤ **Oral hypoglycaemics**

The most commonly used are the sulfonylureas (glibenclamide) and the biguanide, (metformin).

- Glibenclamide 5 mg : by mouth, ADULT initially 5 mg once daily with breakfast (half the dose but prefer to avoid in elderly) adjusted according to response (maximum 15 mg daily)
- Metformin 250 mg, 500 mg, by mouth, ADULT 250 to 500 mg every 8 hours or 850 mg every 12 hours with or after food (maximum 2 g daily in divided doses)

Treatment

Steps in Treatment

In type-2 diabetes

- Start with diet control.
- If not controlled add oral hypoglycaemic drugs.
- First glibenclamide & then metformin.
- Monitor with urine sugar done frequently till control is obtained, then once monthly.
- If still not controlled start on insulin.

In type-1 diabetes

- Start with an intermediate acting insulin given once a day and increase till control is obtained at least over part of the day.

If needed and feasible, add a second dose of soluble insulin with it or intermediate acting insulin 12 hours later depending on nature of control achieved.

During medical and surgical emergencies

Insulin treatment is almost always required; soluble insulin should be used & it must be substituted for oral drugs before elective surgery.

Treatment of diabetic ketoacidosis

Needs hospitalization- CHC level care

- Correct dehydration – this is the main step and may need rapid infusion of normal saline. Infusion of Normal saline with Potassium supplementation to continue till CVP is corrected to 8-11 cms or clinically dehydration abates.
- Get the blood sugar value and start on Plain Insulin infusion @ 8-10 units per hour. Increase from second hour as required.
- Give sodium bicarbonate if there are clinical signs of acidosis.
- Once blood sugar is corrected to below 250 mg, start on 8 to 12 units plain insulin in 5% Dextrose till blood sugar comes below 160 mg, increase insulin in drip if required.
- Then change over to split dose insulin by calculating the total Insulin that was required to bring sugar to normal values

6. ENDEMIC GOITRE AND THYROID DYSFUNCTION

Goitre is a swelling of the neck due to the enlargement of the thyroid gland.

Goiter is mainly caused by iodine deficiency. Goiter is in fact an adaptive process. Impaired thyroid hormone synthesis due to the lack of iodine is compensated by hypertrophy of the gland. Most cases are euthyroid.

Other causes of goiter are numerous and include endogenous thyroid dysfunction Grave's disease (hyperthyroidism due to excess long-acting thyroid stimulator - LATS) or neoplasia. Hypothyroidism may or may not be associated with goitre.

Clinical features

WHO propose a classification according to different grades:

- Grade 0 : Thyroid is neither palpable nor visible.
- Grade 1 : Thyroid is palpable, but not visible when the neck is in the normal position.
- Grade 2 : Thyroid is palpable and visible when the neck is in the normal position.

Complications

- Local : swallowing disturbances, collateral circulation, and compression of the trachea, which can lead to severe respiratory disorders.
Malignant transformation of a goiter induced by iodine deficiency is rare.
- Cretinism in neonates : iodine deficiency during pregnancy may lead to hypothyroidy during foetal life.
2 types of cretinism are described :
 - Myxoedematous cretinism (severe hypothyroidy, growth disorders (stunting), myxoedema).
 - Neurologic cretinism (severe mental retardation, deafness, muteness, psychomotor deficiencies) as well as cretinism.
- Iodine deficiency during pregnancy increases the risk of spontaneous abortion, of foetal and perinatal deaths and of low birth weight.

Therefore it is a very serious public health problem in areas where iodine deficiency is endemic.

6.1 HYPOTHYROIDISM

Clinical Features

Presents with chronic fatigue, bodyache, obesity, intolerance to cold, constipation, and menorrhagia in women. For any of these symptoms one must exclude hypothyroidism.

Diagnosis

Diagnosis can be made in advanced cases clinically by typical symptomatology, hypothyroid appearance, skin and hair changes and hung up ankle reflexes. There may be pericardial effusion as well.

Investigation

Thyroid hormone assay-T₃, T₄, TSH for confirmation.

Earlier presentations can be made out only by blood tests for thyroid hormone levels, to be made available at district level.

6.2 HYPERTHYROIDISM

Clinical Features

This presents with intolerance to heat, increases appetite and loss in weight, chronic fatigue, fine finger tremors, palpitations and typical eye signs- lid lag, stare, retraction of upper lid.

Diagnosis

Typical clinical presentation in advanced cases

Investigation

For confirmation. Earlier presentations can be made out only by blood tests for thyroid hormone levels.

Thyroid hormone testing should become available at district level. Blood samples may be sent for the same in those cases where diagnosis is suspected but not certain.

Treatment

If clinically diagnosis is certain one can start on treatment. Without hormonal assay. But it is always better to conform by getting T_3 , T_4 , TSH done.

Euthyroid goiter

Goiter results from an adaptation to chronic iodine deficiency. Therefore treatment is not urgent.

- Women in reproductive age group who have not completed their family & adolescent girls must be given iodine therapy.
- All females in such villages are well advised to take iodised salt.
- Surgery should not be considered except in cases with severe complications (obstruction of the trachea...).

Hypothyroid goitre

Drugs are aimed at correcting hypothyroidism if it exists and restoring a normal thyroid function. Usually, the thyroid function comes back to normal within 2 weeks. In children, goiter can disappear after several months. In adults it takes more time or it does not subside at all, even if the thyroid function comes back to normal. Iodine treatment can be harmful in patients suffering from a chronic hypothyroidic goiter. Hypothyroidism often presents without goitre.

- Levothyroxine (0.1 mg) – The main drug for treating hypothyroidism. Start with half tablet (0.05 mg) increase to one tablet a day and go up to two tablets depending on clinical response.

Thyrotoxicosis

- Propylthiouracil and Carbimazole (Antithyroid drugs) are used in the management of thyrotoxicosis.

These drugs are also used to prepare the patient for thyroidectomy.

These drugs are usually well-tolerated, with mild leucopenia or rashes developing in a few percent of cases, usually during the first 6–8 weeks of therapy. During this time the blood count should be checked every 2 weeks or if a sore throat or other signs of infection develop.

The drugs are generally given in a high dose in the first instance until the patient becomes euthyroid, the dose may then be gradually reduced to a maintenance dose which is continued for 12–18 months, followed by monitoring to identify relapse.

There is a lag time of some 2 weeks between the achievement of biochemical euthyroidism and clinical euthyroidism.

Presentation

Propylthiouracil tablet

Tablets. 50 mg, 100 mg by mouth,

Dose :

ADULT 300–600 mg daily

until patient becomes euthyroid; dose may then be gradually reduced to a maintenance dose of 50–150 mg daily.

- Beta-adrenoceptor antagonists (beta-blockers) (usually propranolol) may be used as a short-term adjunct to antithyroid drugs to control symptoms but their use in heart failure associated with thyrotoxicosis is controversial.

Endemic goitre is not usually associated with thyrotoxicosis.

Prevention

Prevention programs are recommended in areas where iodine deficiency is proven and recognised as a major public health problem. The two main objectives are to prevent cretinism and to reduce foetal and perinatal mortality.

Different methods are used :

- **Salt iodization**

This is the most effective method. Nevertheless it requires national commitment, technical resources, marketing for the entire country, and a system of quality assurance.

In this state the focus is on iodised salt and this should be insisted on in all high endemic goitre areas and where cretinism is reported. Focus should be on children in first years of life and on adolescent girls and pregnant women.

- **Distribution of iodised oil**

Such programs can be appropriate in situations where rates of iodine deficiency are moderate or high, salt iodization programs are not feasible, or cases of cretinism and hypothyroidy in neonates have been identified. The target groups are (in order of priority):

Women of childbearing age (including pregnant women),
children at school (from 5 to 15 years).

2 forms of iodised oil are currently available.

Dose is the same for preventive or curative care.

Currently, WHO recommends using oral forms :

lipoidal capsules (200 mg of iodine)

	Every year
child less than 1 year	1 cap.
Child from 1 to 5 years	2 cap.
Child over 5 years and adult	3 cap.

Injectable lipoidal (1 ml = 480 mg of iodine)

	Every 3 years
child less than 12 years	0.5 ml
child over 12 years and adult	1 ml

- **In pregnancy**

Iodine can be administered during pregnancy without any adverse effect, especially in endemic areas (WHO recommendations).

Prevention of cretinism and hypothyroidy is optimised if given before conception or during the first trimester of pregnancy.

Prevention given later or during pregnancy will reduce myxoedematous cretinism but will have limited impact on neurologic cretinism.

CARDIOVASCULAR DISEASES

7. CARDIAC FAILURE

This is a condition caused by the inability of the heart to pump out as much blood per minute as it should.

Diagnosis

Clinical Features

- Orthopnoea/pedal oedema
- Tachycardia,
- Elevated jugular venous pressure. Enlarged tender liver, pedal oedema, auscultation showing basal lung crepitations

Investigation

In a CHC

- Chest X –Ray to confirm failure and look for predisposing pulmonary disease,
- ECG to rule out any ischemic causes for cardiac failure
- echocardiogram to diagnose:
 - rheumatic valvular disease,
 - ischemic heart disease
 - cardiomyopathy is underlying cause of disease. Echo cardiography also helps assess severity of ventricular dysfunction and rule out endocarditis.

Differential Diagnosis of causes

- Rheumatic valvular disease (detected on auscultation and ultrasound)
- Ischemic heart disease (detected on ECG)
- Myocarditis and cardiomyopathies (detected on ultrasound)
- On occasion it can be secondary to
 - Severe anaemia
 - Hypertension
 - Chronic lung disease.
 - Consider thiamine deficiency (beriberi) where appropriate.

Treatment

General Guidelines

- **Ensure salt is excluded or at least limited in diet.**
 - In mild cases for restricting salt in diet it may be enough to avoid highly salted items like pickles, papads etc. and put a bit less salt in cooking and not to add any salt while eating.

- For severe cases cook separately without salt and give the day's quota of salt- about half spoon of salt in a small container, leaving to the patients choice to add it to whatsoever he chooses. The more the leg swelling and breathlessness the more the need to restrict salt.)
- Avoid exertion- more severe cases would need bed rest.
- Treat Anaemia if present
- Prevention and prompt treatment of infections especially respiratory infections :
- Encourage to take prescribed drugs;
- Treat cause – see relevant sections.

Drug Treatment

- Tablet furosemide five days a week.
Adults 40 mg once daily
Children 1 to 2 mg/kg for preferably given in the morning hours, preferably
- Tablet digoxin
0.25 mg orally daily – skipping dose on the last two weekend days
may start initially with 0.125 mg.
- Tablet enalapril
2.5 mg once daily if blood pressure is maintained (above 100 systolic),
to be increased to 2.5 mg twice a day
then further based on clinical judgement in two divided doses per day.
- Potassium substitute
liquid 0.5 to 1 daily – as one teaspoon thrice daily.
Especially if long standing treatment with furosemide and digoxin is being undertaken to prevent hypokalemia and digoxin toxicity.

Treatment In emergency in severe cardiac failure (e. g. left ventricular heart-failure, acute pulmonary oedema)

When breathlessness is considerable

- Oxygen if available

If blood pressure is maintained

- Put person in Half-sitting position, legs hanging down.
- Give a diuretic like furosemide (IV)
Adult: 20 to 80 mg/ direct IV; to be repeated after 2 hours following clinical state Check blood pressure, pulse and urine output.
Child: 1 mg / kg / direct IV; to be repeated after 2 hours following clinical state
- Give isosorbide dinitrate or glyceryl trinitrate (sublingual): 0.25 to 0.5 mg, to be repeated after 30 minutes if necessary.

- Give Digoxin 0.25 mg orally; if patient is not on digoxin, then the dose can be repeated after 12 hours for digitalization.
- Enalapril 2.5 mg once daily to be increased to 2.5 mg twice a day then further as required- may be given if not hypotensive
- If blood pressure is not maintained – treat as shock.

Transport to a hospital certified for this purpose (functional CHC/district hospital)

If no definite cause is ruled out

- Add Injection thiamine 100 mg/day for two days and continue with oral thiamine at same dose for several weeks.

If there is evidence of endocarditis :

Treat with two antibiotics :

- Benzyl penicillin 4 to 6 m. units IV 4 hrly
and
- Gentamicin (3 to 5 mg/kg as a loading dose followed by 1.5- 3 mg./kg/ day) in 3 divided doses
for at least three to six weeks
or
AMOXICILLIN 250-500 mg thrice a day
and
- Ciprofloxacin (if oral treatment is essential as daily injection over along period cannot be organised).
If culture reports are available then choice of antibiotics would be guided by this.

8. HYPERTENSION

Hypertension is defined by a blood pressure consistently above 160/90 mm Hg in adult and 140/90 mm Hg in pregnant woman.

Blood pressure (BP) must be measured several times with the subject lying down and at rest before we confirm the diagnosis. Just one reading is not enough.

Diagnosis

Blood pressure above 160/90 on more than three occasions at least.

	A diastolic between
Grade I (mild) hypertension,	Between 90 to 99
Grade II (moderate hypertension).	Between 100 and 109
Grade III hypertension.	Above 110

For systolic the cut off is 180 for Grade II, above which it is Grade III.

Criteria to suspect secondary hypertension

- Asymmetry of pulses,
- radiofemoral delay;
- pedal oedema or oliguria,
- mass per abdomen.
- Orthostatic fall of BP (diastolic).

Many cases of hypertension present with head ache or giddiness or even angina and dyspnoea. Often patient just feels easily tired and restless and ill without having fever or pain. Most cases are asymptomatic and diagnosed incidentally.

Even then it needs to be treated.

Untreated hypertensive patients are at increased risk of developing stroke, renal failure or myocardial infarction. That is why it is advisable for everyone after the age of 45 to check the blood pressure of every patient visiting the health centre for whatever reason -at least once a year. This is much more important if the person is male, is overweight or is a smoker.

Similarly secondary hypertension may have no clinical indicators. Hence though most cases of hypertension can be managed adequately at the primary health centre level, one consultation with a specialist is desirable and should be made through the referral system.

Investigations

- Urine for albumin for acute renal dysfunction
 - Blood urea
 - Serum Creatinine
- } for renal dysfunction
- ECG and echocardiogram to assess impact on heart,
 - For other causes of secondary hypertension it would need referral to tertiary care centre.

Treatment

Therapy must be regularly supervised and not abruptly interrupted; otherwise side-effects can be serious. Often the treatment is lifelong.

Patient Education

- Low salt diet.
- Weight reduction if obese.
- Stop smoking if a smoker.
- A regular isotonic exercise schedule especially if by nature of work one has to sit at one place all day long.(like a 30 minute walk daily).

Drug Treatment-at PHC level

The drugs preferred and on the Essential drug list for primary health centres are :

One or two drugs that must be taken regularly. - As prescribed.

- Atenolol (PO) : one or two tablets once daily (25 to 100 mg, doses; never interrupt or abruptly stop the treatment.

And / or

- Hydrochlorothiazide (PO) : 25 to 50 mg/ d divided in 2 doses
- Potassium supplementation (PO) or better advise eating potassium rich food (bananas for example)

If no improvement after two weeks add either :

- Methyldopa (PO) : start with one tablet 250 mg. thrice daily and increase progressively to reach 1500 mg per day or till BP is normalised.

or

- Amlodipine (PO) in single daily dose starting from 2.5 mg going upto 10 mg per day.

or

- Enalapril (PO) in two divided doses, starting from 5 mg going upto 20 mg per day.

If atenolol is contraindicated one can start with amlodipine or enalapril.

If still uncontrolled refer to a specialist

Hypertensive crisis

Abrupt, marked increase in blood pressure, usually over 200/130 which may lead to rapid damage to kidneys, heart and the eye or lead to encephalopathy and coma. This needs urgent lowering of blood pressure.

- Tab. Nifedipine 5 mg to be chewed and swallowed or if in soft capsule to be squeezed under the tongue. Repeat after half hour till blood pressure gets controlled. Meanwhile start on oral antihypertensive medication as indicated earlier.
- In a CHC setting one can choose to add
Inj hydralazine 10 mg IV every 10 to 15 minutes upto a maximum of 50 mg
or
Injection sodium nitroprusside 0.25 to 10 micrograms/kg/min. as an IV infusion- diluting in 5% dextrose.

All such cases need to be evaluated for secondary hypertension later.

9. ACUTE RHEUMATIC FEVER AND RHEUMATIC HEART DISEASE

9.1 ACUTE RHEUMATIC FEVER

Disease affecting the heart valves and the joints due to antigenic cross reactivity between components of cardiac tissue and Group B streptococci.

Diagnosis

Jones criteria

- Major Carditis, migratory joint pains, chorea, subcutaneous nodules and erythema marginatum.
- Minor Clinical-Fever, Arthralgia,
Laboratory-Elevated acute phase proteins including ESR
Prolonged PR interval on ECG
- Essential - Evidence of recent Group B Streptococcal infection by one of the two ASLO titres > 400 IU.

Or

Throat swab culture positive for Group B Streptococci

Presence of two major or one major and two minor plus one essential criterion required for diagnosis. Where essential criteria test not available, one can initiate treatment based on major & minor Jones criteria alone.

Of these signs in most cases it is the typical migratory (flitting and fleeting) joint pains which is diagnostic). For diagnosis of carditis the presence of tachycardia, new diastolic cardiac murmurs or muffling of heart sounds, any evidence of pericarditis, or a persistent cardiac failure in a patient with rheumatic valvular disease must be taken as "active carditis present". An elevated ESR is the only available laboratory test in most contexts.

Treatment

Anti streptococcal antibiotic therapy

- Oral Penicillin V 500 mg twice a day for 10 days
or
- Procaine penicillin 8 lac units once daily IM for 7-10 days
or
- Injection Benzathine Penicillin 1.2 million units single dose
or
- Erythromycin 500 mg 6 hourly

Medical therapy for rheumatic fever

- Aspirin -2 gm four times a day for 4-6 weeks, for children 100mg/kg/day in divided doses
After these taper depending on falling ESR or clinical improvement
or
- Prednisolone 1 mg per kg if active carditis is present. Carditis also needs strict and absolute bed rest.

Prophylaxis in rheumatic fever (to prevent further attacks)

Treatment for at least 5 yrs. following initial episode or 18 yrs. of age whichever is later.

Drugs

- Benzathine Penicillin Adult - 1.2 Million units of every 3-4 weeks
Child - 0.6 Million units of every 3-4 weeks

Or

- Oral Penicillin V - 250 mg twice a day.

If documented rheumatic valvular heart disease is present, prophylaxis should be for life

9.2. RHEUMATIC HEART DISEASES

Presence of valvular heart disease – especially if multivalvular, most common form is stenosis of mitral valve.

There may be past history of rheumatic fever.

Clinical presentation

Signs of early cardiac dysfunction or failure

- Dyspnoea
- Orthopnoea
- Tachycardia
- bilateral pitting pedal oedema

Signs of cardiac failure :

- Elevated JVP
- Bilateral crepitations over base of lungs
- Tender hepatomegaly
- Ascites in long standing and severe cases.

They may also present with only :

- Signs of stenosis
 - Fatigue
 - Syncope etc.
- Arrhythmia (irregularly irregular pulse)
- Endocarditis (fever).

Diagnosis

at **PHC**

is by auscultation clearly showing valvular heart disease.

may be referred to CHC for confirmation and to initiate treatment.

Investigations and confirmation at CHC

- Chest X ray showing pulmonary oedema, and helps assesses cardiac chamber enlargement most often of left ventricle, left atria or right ventricle.
- ECG showing atrial fibrillation, chamber enlargement.
- Echocardiography showing stenotic or incompetent valves

Treatment**General Guidelines**

Precipitating factors causing congestive cardiac failure to be identified and treated, these include :

- Excessive exertion to be allayed by bed rest
- excessive salt in diet to be reduced
- diuretics added
- Anaemia to be corrected (blood transfusion with packed cells if needed)
- antibiotics for respiratory or other intercurrent infections
- Prophylaxis and prompt treatment against infective endocarditis
- control of rate in chronic atrial fibrillation with (digoxin)
- treatment of carditis (with prednisolone)

Drug Treatment

Ensure regular drug intake

- Tablet furosemide preferably five days a week.
Adults 40 mg once daily
Children 1 to 2 mg/kg
Preferably given in the morning hours.
- Tablet digoxin 0.25 mg orally daily – skipping dose on the last two weekend days- may start initially with 0.125 mg.
- Tablet enalapril 2.5 mg once daily if it is a predominantly regurgitant lesion and blood pressure is maintained (above 100 systolic), to be increased to 2.5 mg twice a day and then further based on clinical judgement in two divided doses per day.
- Potassium substitute – potassium chloride liquid 0.5 to 1 daily – as one teaspoon thrice daily. Especially if long standing treatment with furosemide and digoxin is being undertaken to prevent hypokalemia and digoxin toxicity.

Definitive treatment

Early surgery if symptoms progress despite medical control :

Should be referred to a tertiary care centre, where the patient should be evaluated for the level of ventricular function, valvular orifice area and the feasibility of surgery to correct the valvular defect.

Tertiary Prevention

The prevention of further complications. This is a role for the PHC to which the case should be referred back.

- Encourage him or her to continue the medicines without interruption.
- Help the patient get a weekly supply of drugs from the PHC
- Ensure that once in three weeks the patient takes an injection of benzathine penicillin which is to be kept and taken at the PHC. Alternatively he can take oral penicillin tablets as prescribed by doctor.
- Educate to avoid excessive salt intake, or excessive exertion or anaemia or infections.
- Prompt treatment of respiratory infections and antibiotics(amoxicillin) if there are any wounds or cuts
- If pregnant treat as high risk case and put under medical care.

Rheumatic heart disease can be prevented

Prompt treatment with full dose of antibiotics for sore throat with fever in children. If a child or adolescent has fever with joint pains of the type seen in acute rheumatic fever this person must immediately take a full course of amoxicillin or penicillin and then take once in three weeks an injection of benzathine penicillin .Alternatively they can take oral penicillin tablets as prescribed by doctor.

Other than surgical correction and intractable failure all other aspects of treatment must be undertaken at CHC level, once a specialist has confirmed diagnosis.

Even at PHC level prompt management of precipitating causes and tertiary prevention can be life saving.

10. ISCHEMIC HEART DISEASE

Compromise of heart function secondary to coronary insufficiency. This may take the form of recurrent chest pain due to myocardial ischemia as in angina or may cause necrosis of myocardium as in myocardial infarction.

10.1 STABLE ANGINA

Diagnosis

Diagnosis is based on clinical pattern.

- Chest pain – Retrosternal, dull aching, constricting or burning, radiating to neck, jaw, shoulders or arms; usually precipitated by exertion or stress and relieved by rest or nitrates.
- Other symptoms may include Dyspnoea, mild sweating, nausea or palpitations
- On examination : Blood pressure may be high

Investigations and confirmation at CHC

- ECG taken at that time may show ST elevation or depression or T inversion. In between anginal episodes the ECG may be normal.

at District Hospital

- A treadmill stress test would confirm angina in over 95% of these cases.
- Echocardiography to measure left ventricular function and rule out segmental dyskinesia suggestive of earlier myocardial infarction would be useful.

Treatment

General Guidelines

- Daily exercise
- Stop smoking
- Dietary modification – low cholesterol ,low fat diet with high roughage
- Control of hypertension and Diabetes Mellitus.

Drug Treatment

- Aspirin to be given for all the patients- half standard tablet once daily after meals. 75 – 300 mg PO once daily
- Nitrates : Isosorbide dinitrate 10 mg thrice a day.
When pain occurs one tablet can be kept sublingually.
If there is headache lower dose of 5 mg twice or thrice daily can be tried.
- Betablockers : First line of therapy along with aspirin
 - Atenolol 25 – 100 mg / day (PO)
 - Metoprolol 50 – 450 mg / (PO)
- If despite maximal medical treatment, angina is frequent enough to interfere with quality of life and ischemia is confirmed by ECG with or without stress test then refer to higher centre for consideration of coronary angiogram and revascularisation therapy.

10.2 UNSTABLE ANGINA

Diagnosis

Based on Clinical Features

- Angina of new onset
- Angina at rest or with minimal exertion
- or
- A crescendo pattern of angina with episodes of increasing frequency, severity and duration

Investigation and Confirmation

at CHC

To differentiate from acute myocardial infarction.

- ECG – Transient ST elevation or ST depression; T wave inversion during pain

at DH

- Positive treadmill stress test.

Treatment

at CHC

If ECG facility is available

- Hospitalisation is advisable
- Rest
- Secure IV access
- Sedation Diazepam 10 mg, If pain is severe morphine 2 - 4 mg IV
- Aspirin - 160 – 325 mg PO once a day
- Heparin - Unfractionated 5000 units IV followed with 1000 to 2000 units hourly – continued for 48 hours
Bolus 60 – 80 units / kg given as infusion 14 units / kg / hour with clotting time monitoring.)
- Nitrates - isosorbide dinitrate 5 mg sublingually immediately and 10 mg thrice a day.
- For uncontrolled pain one can give Injection nitroglycerine 5-100 micrograms/ min. IV diluted in 5% dextrose titrated for 24 to 48 hours
- Add morphine also if myocardial infarction is suspected.
- ACE inhibitors – Enalapril 2.5 – 20 mg / day in divided doses twice a day.
- Stool softeners – dulcolax 10 mg at night

refer to District hospital

- For risk stratification and revascularisation planning

10.3 MYOCARDIAL INFARCTION

Diagnosis

Diagnosis is based on clinical presentation and ECG with enzyme studies contributing in case of doubt.

Clinical Presentation

- Retro-sternal crushing Chest pain radiating to neck, arms, lasting for more than ½ hours during rest.

Associated with

- Nausea and vomiting
- Increased sweating
- Dyspnoea
- Symptoms not reduced by rest or nitrates

Note that the pain can often present in atypical patterns including like heartburn or as epigastric discomfort.

In addition there may be

- Elevated JVP
- Hypo / hypertension
- Bilateral lung crepitation suggestive of pulmonary oedema
- Presence of murmurs on auscultation

Investigations

at CHC

- ECG : diagnosis rests on ECG pattern - Convex ST – segment elevation with either peaked upright, or Inverted T waves. Q waves in prolonged ischemia

at District hospital

- Cardiac enzymes elevated: CK MB;
- Echocardiogram : regional wall motion abnormality seen.

Treatment

- Bed rest.
- Sedation & pain relief : Morphine : 10 mg by slow intravenous injection (2 mg/mt) followed by a further 5-10 mg if necessary.
- Oxygen therapy : 2 – 4 l /min. via a nasal cannula.
- Aspirin : 150 – 300 mg PO once a day.
- Beta blockers : Atenolol 25 to 100 mg once daily. if pulse rate > 60/mm , BP > 90/60 mm Hg , and lung fields are clear.
- Reperfusion therapy :

If presenting within 12 hours of chest pain with ECG showing ST elevation > 1 mm then give

- Inj. Streptokinase 1.5 million units over 1 hour

Contra indications (of pre-perfusion therapy) include :

- Active bleeding from any site.
- Stroke/TIA < 1 year.
- Pregnancy.
- Active peptic ulcer disease etc.

- Heparin : after 6 hours of completing the reperfusion therapy
Dose : same as that for unstable angina.
- Nitroglycerin Infusion (as stated for unstable angina) :
If chest pain persists, to be followed by :
- Isosorbide dinitrate 10 mg thrice a day.

Complications : require referral to ICU setting at DH or tertiary care centre

- Arrhythmia
- Ventricular ectopics
- Supraventricular arrhythmias
- Conduction blocks
- Ventricular tachycardia and fibrillation
- Left ventricular dysfunction and Cardiogenic shock

If ECG machine & necessary drugs are available, acute myocardial infarction may be managed at CHC, especially as it is risky to transfer patient. However as complications are frequent best to transfer in an ambulance to intensive cardiac care unit at the district hospital after initiating treatment as indicated above.

In PHC too all the above treatment except reperfusion therapy can be started and patient transferred at once by vehicle. Patient should not walk even for short distances. Absolute physical rest is a must.

RESPIRATORY DISEASES

11. BRONCHIAL ASTHMA

Bronchial disease presenting as paroxysms of dyspnoea of allergic origin. Can also be induced by infections

Diagnosis

- Clinical picture of recurrent wheezing, episodic in nature with rhonchi heard on auscultation of the lungs during the episode. May present with cough and breathlessness also.
- If secondary infection present – fever and purulent sputum may be present.
- Tachypnoea, cyanosis, elevated JVP, pulsus paradoxus indicate severe episode and in some this may go on to respiratory arrest.

Differential Diagnosis

- Chronic bronchitis,
- Left Ventricular failure,
- allergic bronchitis

TREATMENT OF CHRONIC ASTHMA
INFANTS AND YOUNG CHILDREN UNDER 5 YEARS OLD

Preferred treatments are in bold print

	Long-term Preventive	Quick Relief
STEP 4 Severe persistent	Daily medications Consider short course of soluble prednisolone tablets, plus Syrup salbutamol or modified-release theophylline Tablets Also, nebulized salbutamol + nebulized corticosteroids if available	Inhaled salbutamol as needed for symptoms, not to exceed 3– 4 times daily
STEP 3 Moderate Persistent	Daily medications Consider short course of soluble prednisolone tablets, plus Syrup salbutamol or modified-release theophylline + nebulized corticosteroids if available	Inhaled salbutamol as needed for symptoms, not to exceed 3– 4 times daily
STEP 2 Mild Persistent	Daily medications Either inhaled corticosteroid, beclometasone dipropionate, 400–800 mcg, (use MDI with a spacer and face mask or use a nebulizer) or syrup salbutamol	Salbutamol inhaled as needed for symptoms, not to exceed 3– 4 times daily
STEP 1 Intermittent	No medication needed	Inhaled salbutamol agonist as needed for symptoms, but not more than once daily Intensity of treatment will depend on severity of attack
Step down Review treatment every 3 to 6 months. If control is sustained for at least 3 months, a gradual stepwise reduction in treatment may be possible.		Step up If control is not achieved, consider step up. But first: review patient medication technique, compliance and environmental control.

If inhaled medication is unaffordable, one can choose salbutamol syrup. However oral steroids are not to be chosen unless there is status or for a very short course.

TREATMENT OF CHRONIC ASTHMA
ADULTS AND CHILDREN OVER 5 YEARS OLD

Preferred treatments are in bold print

	Long-term Preventive	Quick Relief
STEP 4 Severe; Persistent	Daily medications Inhaled corticosteroid, beclometasone dipropionate 0.8–2mg AND Tablets theophylline, AND/OR Tablets salbutamol 4 mg thrice a day PLUS Prednisolone short course	Short-acting bronchodilator: inhaled salbutamol as needed for symptoms,
STEP 3 Moderate Persistent	Daily medications Inhaled corticosteroid, and modified release tablet theophylline daily. or salbutamol	Short-acting bronchodilator: inhaled salbutamol as needed for symptoms, not to exceed 3–4 times daily
STEP 2 Mild Persistent	Daily medications Either inhaled corticosteroid, OR modified release tablet theophylline	Short-acting bronchodilator: inhaled salbutamol as needed for symptoms, not to exceed 3–4 times daily
STEP 1 Intermittent.	No daily regular medication needed.	Short-acting bronchodilator inhaled salbutamol as needed for symptoms (up to once daily). Intensity of treatment will depend on severity of attack. Inhaled salbutamol or sodium cromoglicate before exercise or exposure to allergen

Step down

Review treatment every 3 to 6 months. If control is sustained for at least 3 months, a gradual stepwise reduction in treatment may be possible.

Step up

If control is not achieved, consider step up. But first :
review patient medication technique, compliance and environmental control.

If inhaled drugs not affordable or available or if theophylline is not available one can advise tablet salbutamol 4mg intermittently or in step 2 & 3 on a regular basis. Oral corticosteroids be avoided unless there is threat of status asthmaticus or a limited short course is planned.

Status Asthmatics

Severe asthma (also known as status asthmaticus) can be fatal and must be treated promptly and energetically.

Acute severe asthma attacks require hospital admission where resuscitation facilities are immediately available.

Severe asthma is characterized by persistent dyspnoea poorly relieved by bronchodilators, exhaustion, a high pulse rate (usually more than 110/minute) and a very low peak expiratory flow.

As asthma becomes more severe, wheezing may be absent.

Treatment

- Oxygen 40–60% (if available)
- Corticosteroids -
 - for adults,
 - Prednisolone 30–60 mg by mouth
 - or
 - Hydrocortisone 200 mg (preferably as sodium succinate) intravenously
- for children
- Prednisolone 1–2 mg/kg by mouth (1–4 years, maximum 20 mg, 5–15 years, maximum 40 mg)
- or
- Hydrocortisone 100 mg (preferably as sodium succinate) intravenously

If the patient experiences vomiting the parenteral route may be preferred for the first dose.

Patients should also be given

- Salbutamol or terbutaline via a nebulizer.
- In emergency situations where delivery via a nebulizer is not available, salbutamol 100 mcg by aerosol inhalation can be repeated 10–20 times preferably using a large volume spacing device.

If there is little response, the following additional treatment should be considered :

- Aminophylline : By slow intravenous injection if the patient has **not** been receiving theophylline, or administer the beta2-selective adrenoceptor agonist (salbutamol or terbutaline) by the intravenous route.
- If patient continues to worsen, ventilatory support at a tertiary care centre is advisable but it is difficult to transport patient under prevailing facilities.

12. CHRONIC BRONCHITIS

Cough and production of copious mucopurulent sputum for over two months a year for at least three years.

It is along with chronic emphysema also known as the chronic obstructive lung disease syndrome where there is chronic breathlessness.

Most common in smokers.

Diagnosis

Diagnosis is mainly a clinical diagnosis with X-ray excluding other causes and pulmonary function test confirming diagnosis and assessing severity.

Clinical Features

- Persistent cough with expectoration
- Dyspnoea on exertion
- Occasional wheezing
- In more severe cases - Tachypnea, pursed lip breathing, intercostal indrawing, cyanosis

On examination :

- Chest hyper resonant on percussion.
- Decreased breath sounds.
- Rhonchi, with mid inspiratory crackles on auscultation.
- Asterixls in acute exacerbation.
- If the patients has gone into cor pulmonale - Elevated JVP and signs of right side failure may appear.

Investigations

- Chest X Ray- in emphysema it shows hyper luscent lung fields with flattened dome of diaphragm. Decreased vascular markings over lung fields with upper lobe predominance and sometimes bullae may be seen. In chronic bronchitis the lung markings are increased. X-ray also exclude tuberculosis, effusions etc.
- Pulmonary function tests; both vital capacity and forced expiratory volumes are reduced, functional residual capacity, and residual volume increased. Differentiate from bronchial asthma
- Arterial blood gas analysis if available shows increased PCO₂ compensated for by raised HCO₃.

Most often the diagnosis is clinical and an X-ray and sputum AFB to rule out tuberculosis is adequate to start treatment. Once treatment is established at a CHC further case can be treated in PHC.

Management

For Acute exacerbation-Usually precipitated by respiratory infection by H. influenzae, Streptococcus Pneumonia

- Antibiotic of choice –
Cotrimoxazole DS 1 twice a day x 5 days
or
Amoxicillin 500 mg thrice a day x 5 days
or
Doxycycline 100 mg twice a day x 5 days
- Oxygen by mask
- Inhaled Salbutamol hourly
or
Oral tablets salbutamol 4 mg 8 hourly.
- Glucocorticoids to tide over the crisis
Inj Methyl Prednisolone 125 mg IV. 6 hourly for 3 days
or
inj dexamethasone 2 mg 6 hourly.
or
tablet prednisolone 15 mg thrice daily orally.
- Inj Aminophylline infusion, followed by 8 hourly injections
- Chest physiotherapy

Long term management

- Stop smoking,
- Chest physiotherapy
- Prompt treatment of infections
- Beta adrenergic agonists - inhaled Salbutamol 2 puffs twice a day

13. BRONCHIECTASIS

Bronchiectasis presents similar to above presentation except that sputum is purulent and often foul smelling.

Diagnosis is based on clinical features

- Typical coarse crepitation heard on auscultation
- X-ray is needed to rule out lung abscess which also presents similarly.

Management

Acute exacerbation and long term management is as above except that antibiotics are needed for longer periods of 14 to 21 days or longer.

NEUROLOGICAL DISEASE

14. EPILEPSY

This is a sudden excitation of a part of the brain leading to jerky movements of parts of the body usually with loss of consciousness.

The main types are Generalised Tonic – clonic, Generalised Absence Seizures, Complex Partial Seizures and Simple Partial Seizures (see page 49)

Differential diagnosis

- Ensure that there are enough typical features of epilepsy to rule out pseudo – seizures(hysterical).
- Generalised seizures typically are associated with injuries due to sudden fall, frothy at mouth, occurrence at sleep, incontinence, an epileptic cry.
- In recent onset seizures, in seizures which are progressive and in seizures having onset in the elderly consider whether the seizures are symptomatic- that is indicative of underlying structural disease. These cases must be referred to tertiary centre for investigation. In most cases after a single specialist consultation they can follow up at the primary health centre.

Investigation

- In a tertiary care centre, patients suspected of symptomatic epilepsy can be further investigated with an EEG, CT Scan and anti epileptic drug levels (if the patient is already on anti epileptics)

Treatment

General Measures

- Help patient to take drugs regularly for at least three years – after the last episode of fits
- Educate to avoid stress factor that precipitate fits like lack of sleep or alcohol or excessive physical or mental stress
- Educate the family to relate to the sick child or adult as a normal person with a curable disease and not treat it as if he is crippled .To avoid going into traffic alone or swimming or going near exposed fire so that they do not hurt themselves if they have fits. But at the same time not to be afraid and over protect the patient. Particularly do not stop children from school and do not let misunderstand about the disease wreck a marriage.

When the patient is having a fit (if you are there) this is what one can do :

- Make sure the patient does not hurt himself by a fall or hitting objects nearby.

- Loosen clothes, especially around the neck so that the patient does not choke.
- If tongue is being bitten and bleeding place a spoon or hard object wrapped around with a handkerchief in the mouth to prevent it.
Do not try to insert anything into the mouth if the tongue is not obviously being bitten.
- After the fit place the patient in recovery position so that he or she does not choke on their own saliva.
- Stay with the patient till he or she recovers consciousness and help him to go home or to a known person as they may be confused and disoriented and even be behaving abnormally for some time after.

Drug Treatment

- Start with a single drug, if not controlled with the maximum dosage of that drug, substitute with another single drug upto its maximum dosage. If still uncontrolled then only, give combination therapy.
- Monitor closely for the adverse effects of the anti-epileptics.
- Drugs are to be given at least till 3 years after the last episode of seizure thereafter it should be gradually withdrawn.

Choice of Anti Epileptics

For Generalised Tonic - Clonic Seizures , simple partial and complex partial seizure:

- Carbamazepine, by mouth,
 - **ADULT**
Initially 100 mg twice daily,
Increased gradually according to response
Maintenance dose of 0.8–1.2 g daily in divided doses;
ELDERLY reduce initial dose;
CHILD 10–20 mg/kg daily in divided doses.
- Phenobarbitone
 - ADULT 60–180 mg at night;
CHILD up to 8 mg/kg daily
 - Febrile convulsions, by mouth,
CHILD up to 8 mg/kg daily
 - Neonatal seizures, by intravenous injection (dilute injection 1 in 10 with water for injections),
NEONATE 5–10 mg/kg every 20– 30 minutes up to plasma concentration of 40 mg/litre.

Do not give for seizures of porphyria, and absence seizures

- Phenytoin Sodium
 - by mouth,
 - **ADULT** initially 3–4 mg/kg daily as a single dose or in 2 divided doses
Increased gradually by 25 mg at intervals of 2 weeks as necessary (with plasma-phenytoin concentration monitoring);
Usual dose 200–500 mg daily;
CHILD initially 5 mg/kg daily in 2 divided doses; usual dose range 4–8 mg/kg daily (maximum 300 mg).
- Sodium Valproate
 - **ADULT** initially 600 mg daily in 2 divided doses, preferably after food.
increased by 200 mg daily at 3-day intervals to maximum of 2.5 g daily in divided doses;
Usual maintenance dose 1–2 g daily (20–30 mg/kg daily);
CHILD up to 20 kg, initially 20 mg/kg daily in divided doses, may be increased cautiously. (monitor haematological parameters);
CHILD over 20 kg, initially 400 mg daily in divided doses, increased until control (usually in range of 20–30 mg/kg daily);
maximum 35 mg/kg daily.

Absence Seizures (Petitmal) Sodium valproate

Tonic-seizures phenobarbitone, phenytoin

Atonic seizures valproate or clonazepam

Myoclonic seizures valproate or clonazepam

Management of Status Epilepticus

- maintain airway
- keep patient away from hard metallic objects
- keep mouth gag to prevent injury to the tongue.

Drug treatment

➤ Diazepam

Intravenous along with loading dose of Phenytoin sodium by slow intravenous injection (at rate of 5 mg/minute),

ADULT 10–20 mg, repeated if necessary after 30–60 minutes; may be followed by intravenous infusion to maximum 3 mg/kg over 24 hours; by slow intravenous injection,

by rectum as suppository,

CHILD 200 to 300 micrograms/kg (or 1 mg per year of age);

ADULT and CHILD over 10 kg, 0.5 mg/kg;

ELDERLY - 0.25 mg (1/4th of supp.)/kg; repeated if necessary every 12 hours;
If convulsions not controlled, other measures should be instituted.

For rectal route

One can use the parenteral form and inject by means of a syringe without a needle or if available a piece of nasogastric tube.

For rectal route dilute the dose – 2ml of diazepam with 8 ml of saline or dextrose solution. If ineffective after 10 minutes repeat the dose.

Do not give more than 2 doses within six hours.

and

- Phenytoin Sodium : by slow intravenous injection or by intravenous infusion (with blood pressure and ECG monitoring),
 - ADULT 15 mg/kg at a rate of not more than 50 mg/minute, as a loading dose;
 - maintenance doses of about 100 mg by mouth or by slow intravenous injection should be given thereafter at intervals of 6–8 hours, dose reduced according to clinical response.
 - CHILD 15 mg/kg as a loading dose at rate of 0.5–1.5 mg/kg/ minute;
 - NEONATE 15–20 mg/kg as a loading dose at rate of 1–3 mg/kg/minute.

Or / And

if still not controlled

- Phenobarbitone by intravenous injection (dilute injection 1 in 10 with water for injections),
 - ADULT 10 mg/kg at a rate of not more than 100 mg/minute up to maximum total dose of 1 g
 - CHILD 5–10 mg/kg at a rate of not more than 30 mg/minute.

If still persistent one may require general anaesthesia with muscle relaxants if all these are refractory. Patient should be referred for this to centre where such facilities are available.

Febrile Convulsions

- Tepid water sponging
- Antipyretic - Paracetamol Syrup
- Diazepam :
 - by rectum as solution,
 - CHILD over 10 kg, 0.5 mg/kg (maximum 10 mg), with dose repeated if necessary
 - (Alternative treatment), by slow intravenous injection,
 - CHILD 0.2 to 0.3 mg/kg (or 1 mg per year of age)

Convulsions associated with drug or alcohol withdrawal

- Diazepam by slow intravenous injection (at rate of 5 mg/minute),
ADULT 10 mg; higher doses may be required depending on severity of symptoms

15. CEREBRO - VASCULAR ACCIDENTS

Diagnosis

Based on clinical presentation

- Abrupt onset of weakness or other neurological deficit that corresponds to interruption of vascular supply to a specific region of the brain.
- Associated features that may be present include head ache, seizures, vomiting, loss of consciousness.

Further diagnostic decisions

- Determine if there is an obvious cause (like severe dehydration or hypertension) that needs to be remedied for preventing future attacks and even for preventing worsening.
- From history look for risk factors: Risk factors commonly present includes smoking, hypertension, old age, diabetes mellitus.
- On examination look for causes: high blood pressure, asymmetry of carotid pulse, hypertensive changes in the fundus or Cardiac murmurs on auscultation

Determine type of interruption of vascular supply helps in management and prognosis.

- Haemorrhage- weakness maximum soon after at onset, associated with headache, often catastrophic with deep coma coming on, but sometimes presents like thrombosis,
- Thrombotic stroke-slowly progressing neurological deficit, develops over hours to days, may have had transient ischemic attacks in the past.
- Embolic stroke-weakness is maximum at onset with usually a rapid recovery. The source of the embolus must be identified and managed.

Investigations

- ECG if available to rule out coexisting ischemic heart disease and look for left ventricular hypertrophy suggestive of established hypertension.
- May be referred for CT scan brain where diagnosis is in doubt or where there is a need to rule out haemorrhagic stroke in view of proposed treatment- like anticoagulants for cardiac source of embolus. Routine CT in all cases of stroke is wasteful.

- Echocardiogram to rule out cardiac source of embolism.
- If ophthalmic examinations of fundus shows no papilloedema a lumbar puncture may be done to detect subarachnoid or large intracerebral haemorrhage.

Treatment

Supportive management in an acute stroke includes :

- Anti oedema measures with Inj Mannitol.
- Control of hypertension (Less aggressive reduction of blood pressure.).
- Bowel and bladder care.
- Preventing bed sores.

Thrombotic stroke

- Aspirin -300 mg per day.

In cases of embolic stroke with a cardiac source for an emboli, chronic anticoagulation with warfarin is given.

Embolic stroke

Identify source of embolus. Usually it is left atrial thrombus developing in a situation of mitral stenosis with atrial fibrillation.

This is confirmed by echocardiography.

- Oral Anticoagulation of these patients is essential to prevent recurrent stroke.
- But one needs rule out haemorrhagic stroke at a tertiary care centre before starting anticoagulation.

Haemorrhagic stroke

- Control hypertension effectively and early.
- Withhold Aspirin, warfarin

If still neurological deficit is progressive referral to a neurosurgical unit may be life saving.

Patients with stroke need to be referred to specialist and can subsequently in most cases be followed up at the PHC level. If CT is not indicated or referred to CT is not possible then treatment can be undertaken at CHC level itself.

GASTRO INTESTINAL DISEASES

16. PEPTIC ULCER DISEASE

Disease characterized by ulcers in the stomach or duodenum, associated with epigastric pain and discomfort.

High association with infection with H. Pylori and with excessive intake of drugs especially NSAIDs.

Diagnosis

- Epigastric pain or discomfort related to food intake. Clinical assessment may be adequate to make diagnosis and initiate treatment.
- Upper gastro-intestinal endoscopy confirms diagnosis and is advised in all non responsive patients.

Treatment

- Non-drug measures :
 - stop smoking and alcohol
 - avoid food associated with dyspeptic symptoms
 - avoid all pain killer drugs.
- Antacids : more effective if in liquid form and more effective at about 20 to 30 ml given four times a day. To be given about 20 minutes after a meal. If taken as tablet it is to be chewed and not swallowed.
- Tablet ranitidine : 150 mg twice daily for at least three months.
Other antiulcer drugs are better prescribed only after endoscopic confirmation of ulcer

Complications include Gastro-intestinal bleeding, gastric outlet obstruction and perforation all of which would require hospitalization for acute supportive management and surgery.

RENAL DISEASES

17. ACUTE NEPHRITIS

This is clinical syndrome due to glomerular disease which may be a primary disease or secondary to a systemic process.

Note that sickle cell disease can also present as nephropathy.

Diagnosis

Clinical presentation

- Oliguria
- Haematuria
- Facial puffiness
- occasionally pedal oedema

On examination

- patient has hypertension
- Urine examination which shows proteinuria and RBCs.

Investigation

- The presence of RBC casts in urine is diagnostic- however one can diagnose acute nephritis even in its absence.

Treatment

General Guidelines

- Bed rest at home
- Adequate fluids – taking care that excess is not given which would increase oedema but enough is given to ensure at least 400 ml of urine per day. If one can estimate the previous days urine volume – a water intake of that plus about 800 to 1000 ml would be adequate.
- Salt restriction- especially if oedemas present

Drug Treatment

- A tablet of frusemide may be tried if there is water logging and hypertension. Not to be given if there is no obvious evidence of fluid excess.
- Other antihypertensive is required.
- Treatment of infections. Especially if there is impetigo a course of penicillin is indicated.

Refer

Refer to district hospital if urine flow decreases further or if hypertension is not controlled.

18. NEPHROTIC SYNDROME

This too is due to glomerular disease that can be primary or secondary. The type of lesion that is most common in children and most responsive to treatment in both adults and children is called minimal testing disease.

Diagnosis

- Proteinuria more than 3.5 gm in 24 hrs. (this is best done by collecting a 24 hrs. sample and then using Esbach's method to estimate protein in a sample of the same. If this is not available a 4 + albumin on simple urine heating may be taken as proteinuria in the nephrotic range.)
- Hypo-albuminaemia, hyperlipidaemia
- Oedema.

Treatment (to be initiated at CHC/DH/tertiary care centre)

- in all adults a renal biopsy is indicated . If this is not available one would have to treat this presumptively as we treat minimal change disease. But as most cases in adults are not steroid responsive, the next course of action if there is no response to steroids becomes a problem in the absence of a biopsy report.
- in young children since minimal change disease is more common one could treat presumptively for the same and biopsy only if there is no response.
- Treatment for minimal change disease is with prednisolone 1 mg/kg/day. To be given till proteinuria normalizes and then tapered over three months. Failure to response usually indicates that it is not minimal lesion. If after tapering steroids there is relapse then restart prednisolone. If steroid dependence develops refer to tertiary centre for cytotoxic drugs. If there is non-response also refer to tertiary care centre.

POISONING

19. ORGANOPHOSPHORUS POISONING

Most common insecticide poisoning. Usually suicidal or accidental.

One needs to differentiate this from pyrethroid poisoning and organochlorine poisoning which are also similar insecticides based on clinical presentation.

Organocarbamate poisoning has the very same clinical presentation as organophosphorus.

The poison is usually ingested but it may be absorbed through skin and lungs as well.

Diagnosis

The presence of the following is adequate to make a diagnosis

- The history,- of taking insecticides or exposure to the same
- Pinpoint pupils
- Excessive secretions- sweating, bronchial secretions and salivation appearing as foam at the mouth
- Fasciculation and twitching of muscles- leading to weakness in the muscles
- Respiratory depression

Patient may also have :

- Nausea, Vomiting Abdominal cramps, Wheeze, Dispnoea

On examination

The patient would have bradycardia, hypotension and pulmonary edema,

Organochlorine poisoning

Patients in contrast have anxiety, restlessness, Confusion, delirium Seizures and Coma. Tremor and weakness may be present but none of the other symptoms.

For medico- legal purposes the stomach contents sample would have to be sent for analysis to the public health laboratory designated for the purpose.

Treatment

- Prevention of further Absorption : Gastric lavage and Body wash
- Supportive Care: Airway protection, Nutrition and when indicated Ventilation
- Administration of antidotes-
 - Atropine : Dose: 0.5 to 2 mg/every 15 min. till fully atropinized. Watch for atropine overdose.

Very high doses of atropine may be needed- one has to increase dose till pupils dilate and tachycardia develops or signs of atropine toxicity supervene- confusion, dryness, hyperthermia etc.

Also note that atropine reverses some toxic effects (called muscarinic actions) : miosis, bradycardia, secretions but does not reverse others (nicotinic actions) esp. respiratory depression. Thus a patient who appears to be improving may slip into ventilatory arrest. It is essential to observe patient closely for ventilation sufficiency.

If there is worsening shift patient to where there is provision for ventilatory care – if possible along with an escort who can manage respiratory arrest with face mask and ambou’s bag.

- Pralidoxime (PAM) is a specific antidote
 - Dose : 1 to 2 gm/over 5-30 min, 6 hourly; max 12 gm in 24 hrs.; effective in first 4 days;
 - Not to be used for carbamates (this can be made out only if the label of the insecticide taken is available).
- Watch out for skin absorption—effective body wash of patient and gloves for nurses etc.
- Watch for delayed/persistent action
- Avoid aminoglycosides and other neuromuscular agents
- Manage complications like infection.

SECTION VII
PRIMARY SURGICAL CARE

1. DRESSINGS

Dressing is a set of procedures for treating a wound. A wound is an interruption in the continuity of the skin secondary to trauma or surgery.

Objectives

- Protection
 - To prevent contamination from the external environment.
 - To protect against possible trauma
- Cicatrization.
 - To favour tissue regeneration
- Absorption
 - To absorb serous discharge
- Disinfection
 - To destroy pathogenic organisms.
- Compression
 - To stop hemorrhage

Warning : a dressing occludes a wound and in certain conditions (humidity, heat) and can encourage multiplication of pathogenic organisms.

Equipment

- 1 box of sterile instruments
 - 1 dissecting forceps no teeth
 - 1 Kocher forceps with teeth
 - 1 pair of scissors
- 1 dressing tray (clean)
- 1 drum of sterile gauze pads
- 1 kidney dish
- Cotton wool only to disinfect the tray (never use cotton wool directly on a wound).
- Adhesive tape-
- Flasks containing antiseptics: chlorhexidine, cetrimide, polyvidone iodine

Never use polyvidone iodine with soaps containing mercurial derivatives.
Solution preparation must be rigorous. Solutions must be renewed every week.

General rules of asepsis

- Wash hands carefully after each dressing and after removal of soiled bandages and adhesive tape.
- A room should be kept for dressings. It should be carefully cleaned everyday and dressing tables should be disinfected between each patient.
- Use a sterile box of instruments for each dressing, or at least for each patient.
- Always start from the cleaner area and move to the dirtier one.

Techniques

Instrument preparation and cleaning of the dressing tray.

- Use a chlorhexidine-cetrimide solution

Removal of the previous dressing

- Removal of bandages and adhesive tape (not the gauze pads).
- Hand washing (clean water + soap).
- Removal of gauze pads, using Kocher forceps.
 - If the dressing adheres, soak it with normal saline solution or an antiseptic.
 - Act gently not to remove the granulating epidermis.

Wound examination

- **Sutured wound and/or aseptic wound**
 - Observe the stage of cicatrization, presence of weeping, appearance of an hematoma or of an infection.
- **Septic wound**
 - Check the nature of secretions and if there are new fleshy pimples.
 - A bluish pus indicates the presence of pyocianic (very resistant bacillus, spreading very quickly).
 - Look for any signs of lymphangitis (reddish streaks).
 - Use new Kocher forceps after removal of the dirty dressing and the first cleaning of the wound.

Cleaning of the wound

- Use the sterile dissection forceps to remove sterile gauze pads from the container and place them on the tray.
- To make a sterile sponge fold the pads twice using the Kocher and dissection forceps (as illustrated) in figure-1.
- Pour an antiseptic solution on the pad
Infected wound, burns, abscess, ulcers : chlorhexidine-cetrimide.
On non-infected surgical wound, pour : polyvidone iodine; on mycosis, eczema, impetigo, superficial burns.
Small and superficial wounds : gentian violet.

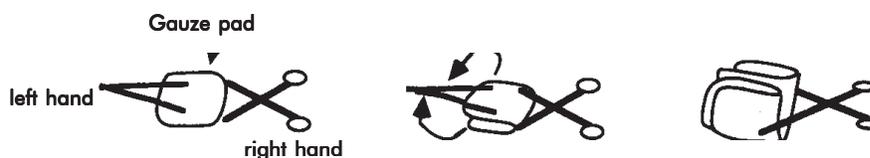


Figure-1

- Clean the periphery of the wound either with a circular movement, or from top to bottom. Change gauze pads as often as necessary.
- Clean the wound from top to bottom with a new gauze pad.
- Dry the periphery of the wound and then the wound itself with different gauze pads.

Dressing a wound

- Apply one or several gauze pads to the wound.
- Apply strips of adhesive tape
 - Perpendicularly to the axis of the limb or the body
 - Leaving the central part free to avoid maceration.

Frequency of dressings

As a general rule (few exceptions) :

- **Surgical wounds, or non-infected sutures :**
 - First day dressing should be well protected.
 - Further dressings, every 48 to 72 hours. If the level of hygiene is poor. In the case of a clean wound, the less one touches it, the less it will become infected. Nevertheless the general state of the patient being also often poor, the process of recovery has to be observed regularly.
- **Infected wounds**
 - Dress every 24 hours.
- **Deep or large burns**
 - Dress on the first day, then leave until the 7th day (unless obvious infection).

Associated antibiotic treatment

As a rule, systemic antibiotic treatment should not be prescribed routinely. Even topical antibiotics are optional.

But in some situations they are essential such as :

- Deep and soiled wounds, to prevent gas gangrene

- Procaine benzylpenicillin
 - Child** : 100000 I.M. /kg/ d x 5 days at least
 - Adult** : 4 or 5 Mill / d once a day x 5 days at least.

Or

- Amoxicillin (PO) : 1-2 gm/ d divided in 2-3 doses x 5 days
- If Amoxicillin is unavailable, give
- Ampicillin (PO) : 2-4 gm/ d divided in 2-3 doses x 5 days

- **Abscess**

- Antibiotic treatment is useless before incision, but may be needed later.

- **Burns**

- Only if they are infected.

- During conflicts; disaster relief conditions, or other situations where access to health care and patient's follow-up are unlikely :

- The systematic use of amoxicillin should be considered.

Wastes

All soiled disposable materials (gauze, cotton, dressings...) should be collected and burned daily.

2. ABSCESS

This is a collection of pus in the soft tissues. An abscess cavity is not accessible to antibiotics. Treatment is thus surgical only.

Treatment

- Incision and drainage should be performed once the abscess is "ripe" i.e. red and inflammatory swelling, painful, sometimes with fistula, fluctuant upon gentle palpation.

Material

- Sterile scalpel blade and handle.
- Surgical gloves.
- Plain curved forceps without teeth (Kelly forceps).
- Sterile corrugated drain.
- Antiseptic solution e.g. Chlorhexidine-cetrimide solution.
- 5 or 10 ml. syringe.

Anesthesia

Local anesthesia of an abscess by infiltration with lidocaine is not effective.

Furthermore, the needle may spread the infection further.

If anesthesia is a must - general anesthesia is preferred

Ketamine (IM), 10 mg/kg.

For superficial abscesses, the skin can be briefly numbed using ethyl chloride spray.

Technique

Scalpel : the correct way to hold a scalpel is between the thumb and middle finger with the handle resting against the palm (see Figure-2.a). The forefinger must press the blade. It should not be held as one holds a pen or a dagger. The plane of the scalpel blade should be perpendicular to the plane of the skin.

Incision: the free hand immobilizes the wall of the abscess between thumb and forefinger. Incise in the long axis of the abscess with a single stroke to breach the skin. The incision should be long enough to allow insertion of an exploring finger.

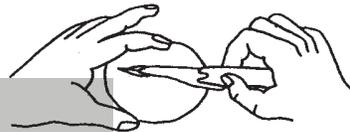


Figure-2.a
Position of the hands for incision of an abscess



Figure-2b
Exploration of the cavity with a finger in order to break down loculations



Figure-2c
Drain fixed to the skin

Figures2 : Technique for incision and drainage of an abscess

Precautions : take care not to incise too deeply if the abscess overlies major blood vessels (the carotid, axillary, humeral, femoral and popliteal regions). After breaching the skin, blunt dissect down to the cavity using Kelly forceps without teeth.

Explore : the cavity with the forefinger, breaking any loculating adhesions and evacuating the pus (see figure- 2 b).

Abundant lavage of the cavity using a syringe filled with *Chlorhexidine-cetrimide* solution.

Insert a drain, if possible fixing it with a single suture at the edge of the incision. The drain is withdrawn progressively then removed altogether after 3 to 5 days (see figure -2 c).

3. BREAST ABSCESS

The management of breast abscess is slightly different. Usually the abscess is superficial but deep ones, when they occur, are more difficult to diagnose and to treat.

Treatment

Early in the infection, non-surgical measures should be applied

Antibiotics

➤ Amoxicillin (PO) : 1-2 gm/ d divided in 2-3 doses x 5 days

If Amoxicillin is unavailable, give

Ampicillin (PO) : 2-4 gm/ d divided in 2-3 doses x 5 days

or

➤ Chloramphenicol (PO) : 1-3 gm / d divided in 3 doses x 5 days.

Anti-inflammatory drugs

➤ Ibuprofen 400 mg thrice daily.

➤ Apply constricting bandage, stop breast-feeding from this side and expression of milk with a breast pump to avoid engorgement.

Where abscess is formed

incision and drainage should be performed (see figure 3 a to 3 d)

Material

➤ Same material as for other abscesses (see above).

Technique

➤ **Incision :**

• for superficial abscess : radial incision.

• For abscess near nipple : peri-alveolar incision.

• For deep abscess : beneath the breast

➤ Gentle exploration with finger or Kelly forceps.

➤ Abundant lavage with chlorhexidine-cetrimide solution.

➤ Insertion of a corrugated drain.

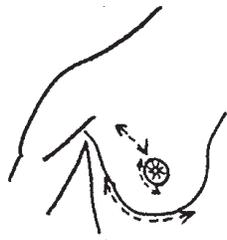


Figure-3a
Incisions : radial,
peri-areolar or submammary

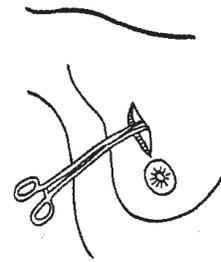
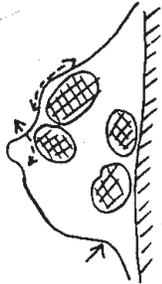


Figure-3b
Exploration (gentle)
with a finger or forceps



(figure3c)
Common sites for breast abscess



(figure3d)
Submammary incision

4. PYOMYOSITIS

Infection and eventually abscess formation within muscle. At the beginning of infection, when the muscle is swollen, hot and painful, medical treatment may prevent abscess formation:

- immobilize,
 - anti. Inflammatory medication - Ibuprofen 400 mg thrice daily
- and
- Antibiotics

Amoxicillin (PO):

Child : 50 mg/kg/d divided in 2-3 doses x 7 days;

Adult : 2 gm/d in divided 2-3 doses x 7 days.

If amoxicillin is unavailable, give

- Ampicillin (PO) :

Child : 100 mg/kg/d divided in 2-3 doses x 7 days;

Adult : 4 gm/d divided in 2-3 doses x 7 days).

Confirmation

Collection is not always easy to diagnose : conduct an exploratory puncture with a large-bore needle to confirm diagnosis which will reveal pus.

Material

The same, as for an abscess.

Anesthesia

Use Ketamine (1M) if needed .10 mg/kg.

Technique for abscess drainage

- Generous skin incision with a scalpel, avoiding underlying neurovascular tracts, and incision of the fascia and muscle sheath! (see figure 4 a)
- Blunt dissection with Kelly forceps (without teeth) or with scissors (mayo, curved) inserted closed, down to the abscess cavity and withdrawn slightly opened (see figure 4 b).
- Exploration with a finger to break adhesions and evacuate the pus (see figure 4 c)
- Abundant lavage with chlorhexidine-cetrimide solution.
- Where possible, counter-incision of the skin near the edge of the abscess, cutting down onto a finger that is inserted deep in the cavity. The counter-incision should be anatomically posterior to the abscess to allow gravity drainage (assuming the

Figure-4
Technique for incision of muscle abscess



Figure-4a
Generous incision

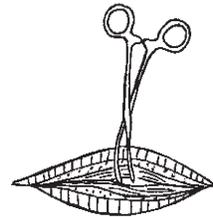


Figure-4b
Blunt dissection of muscle using Kelly forceps : insert closed then withdrawn slightly opened

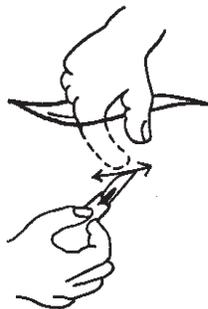


Figure-4c
Counter-incision for drain, cutting down onto a finger inserted deep in cavity



Figure-4d
Drain passing through the two incisions

patient will be supine during recovery). A strip of corrugated drain is threaded through the two incisions (see figure 4-d), fixed with a suture to the edge of the incision and withdrawn around the 5th day.

Myositis of the right psoas muscle may present in a manner identical to that of acute appendicitis. Surgical evacuation is necessary.

5. BURNS

Burns are very common, particularly among children who fall onto or roll into cooking fires. Any burn that affects greater than 10% of the body surface area is considered extensive and is thus serious and life-threatening because of fluid loss catabolism and the risk of secondary infection.

Assessing severity

Burns are classified according to depth and extent and each stage of evolution needs new evaluation.

"Rule of nines" for calculating percentage of body surface burned

Body area	Adult (%)	Child (%)
Entire head	9	18
Upper limb	9	9
Anterior or posterior surface of trunk	18	18
Lower limb	18	14
Perineum	1	1

The younger the child, the more severe the burn.

Depth of burns according to degree classification and clinical signs.

1st degree	Skin red and painful on palpation.
2nd degree	Skin red with blistering, painful on palpation.
2 nd degree, deep	Skin white, dry and soft.
3rd degree	Black skin, indurated, insensitive.

Treatment

No severe signs

- Clean with chlorhexidine-cetrimide (see table page 245).
- Apply gentian violet.
- Do not cover.

Shock following burns

- Calculate the fluid requirements for the first 24 hours :

Patient's body weight x % of surface burned x 2 = quantity of fluid required in ml.

e.g. : patient 60 kg (body weight) x 20% (extent of burn)

$$60 \times 20 \times 2 = 2400 \text{ ml.}$$

75% of fluid should be given through ringer lactate, the remainder as volume expanders or blood transfusion.

During the first 24 hours, half the fluid requirements should be given in the first 8 hours.

First dressing of the burn

Analgesia

- Pentazocine (IM)
Child > 3 years: 1 mg/kg/injection
Adult: 30 mg / injection

and sedation if necessary:

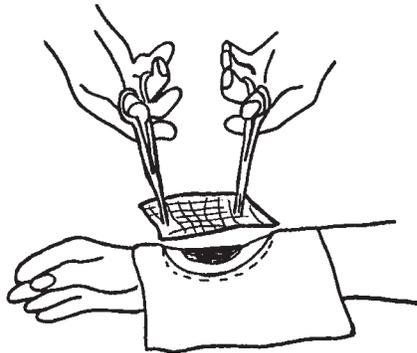
- Diazepam (IM)
Child: 0.3 mg/kg/injection
Adult: 10 mg/injection
- Tetanus prophylaxis if available.
- Strict aseptic technique : surgical towels, gloves and instruments all sterile (Figure 5).
- Gently clean the burn with normal saline (*NaCl 0.9%* or *ringer lactate*)
or
Chlorhexidine-cetrimide solution.
- Use a scalpel to debride blisters and non-viable tissue.

- Apply sterile Vaseline gauze on burned areas then on top of that, two layers of non-sterile gauze pads. Do not use either antibiotic ointment or gauze impregnated with antibiotics or corticosteroids.
- Apply a bandage, **not tightly**. Do not wrap limbs, especially at the flexures as this will encourage contractures. **Bandage each finger separately**, never together.
- Immobilize limbs in the position of function.
- Alternatively, "open method". After wound cleaning leave the burn covered only with the sterile Vaseline gauze or nothing. Patient is naked and protected by a fine mesh mosquito net.

Subsequent dressings

- Analgesia and aseptic technique as for the first dressing.
- Unless infection ensues (ill-smelling, pus), the first dressing should be left undisturbed for 5 to 7 days. The subsequent dressings should be done every 5 to 8 days.
- Remove any black eschars (which may hide purulent areas) and use scalpel to excise any necrotic tissue: skin, aponeurosis, muscle or even tendon.
- Systemic antibiotics if obvious infection (never use topical antibiotics):

Same dressing as the first time. Healing is signalled by granulation tissue: pink, mat and clear.

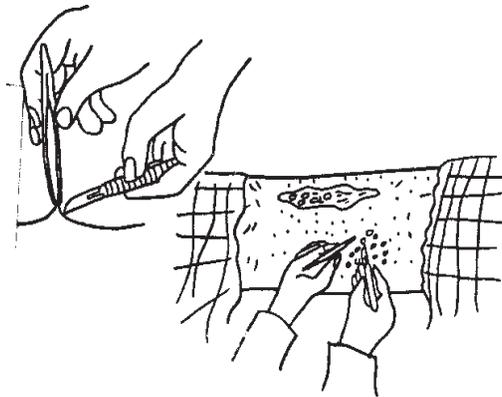


(Figure 5)
Dressing a burn : sterile technique, use of vaseline gauze.

PATCH GRAFTING

- Skin grafting is necessary for deep second degree and third degree burns, when the wound is slow to heal but is clean, and flat.
- Aseptic technique. Shave the area where patches will be taken (usually anterior thigh or forearm) and disinfect with povidone-iodine .Infiltrate with lidocaine 1%, subcutaneous.
- Lift up a patch of skin with fine forceps with teeth and excise it with a scalpel. It should be full-thickness i.e. epidermis plus dermis.

- Spread each patch out. Remove fat if necessary.
- Apply carefully to the wound.
- Do not place them too close together : further healing will bridge the gaps and this allows a larger area to be grafted.
- Dress with sterile Vaseline gauze, then layers of ordinary gauze pads.
- The graft will need 8 days to be successful. No further dressing before that time .Strict immobilization of the patient is required.
- Patch grafting can also be used for treating tropical ulcers once the base is clean and granulating.



(Figure 6)
Full-thickness patch skin graft :
 sterile technique, taking patches using a fine forceps with teeth and a scalpel

6. WOUNDS

Surgical indications –Precautions

This chapter concerns only wounds that can be treated at the primary health center level.

- Immediate suture of wounds is desirable but not always feasible and in some circumstances it may be dangerous.
 - Do not suture a wound later than 8 hours after the accident.
 Secondary suturing can be resorted after 8 hours in CHC.
 - Do not suture an infected wound.
 - Do not suture a war wound or due to animal bite.
- Any break in the skin overlying a fracture is an “open fracture”.
- A wound that communicates with a joint is an open joint wound.
- Always give tetanus prophylaxis if available (see tetanus).

Preparation

Wound toilet

Shave if necessary, then clean the wound and its periphery with *povidone iodine*.

Material

(Figures 7 a to 7 g and 8 a to 8 d)

- Sterile gloves and fenestrated surgical towels.
- Material for local anaesthesia.
- Suture set (sterilized box of instruments): needle holder, suture needles, scalpel blade and handle, one or two artery forceps, fine curved scissors with rounded ends, plain scissors for cutting sutures, retractors (), sutures, gauze pads.

Local anaesthesia

- Only necessary for large or deep wounds requiring more than 2 stitches.
- Lidocaine 1 % without adrenaline.
- Infiltrate subcutaneously via the wound edges.

Exploration

Have an assistant using retractors if necessary. Explore the wound and look for:

- Foreign body.
- Underlying fracture.
- Involvement of nerves, major blood vessels, tendons or joints.
- For scalp wounds : underlying fracture (if serious may contain brain tissue).

Closure

- Use interrupted sutures (not continuous).
- Non-absorbable sutures for skin, absorbable thread for subcutaneous tissues.
- Some suture material is already mounted on a needle, others have to be mounted.
- For skin use a "cutting" needle (triangular in cross-section).
- For subcutaneous tissues use a "round" needle (circular in cross-section).

Suture materials recommended for different wounds

Skin of face	Nylon (non-absorbable)	dec. 2.5 (=3/0*)
Skin of scalp	Nylon (non-absorbable)	dec. 3 (= 2/0)
Skin of limbs or trunk	Nylon (non-absorbable)	dec 2.5 or 3 (=3/0 or 2/0)
Subcutaneous tissue	Absorbable synthetic**	dec. 3 (= 2/0)
Aponeurosis	Absorbable synthetic	dec. 3 (= 2/0)
Muscle Tissue	Absorbable synthetic	dec. 3 (= 2/0)

*The more zeros there are, the finer the suture material is.

**Absorbable synthetic: resorbs slowly (over 3 weeks), e.g. vicryl@, ErceDex@, Dexon@, Ligadex@...

Technique

Schemes on the following pages show the main techniques for suture. (figures 8 to 16)

Drainage

- Never use a drain for wounds of the face
- Always insert a drain in wounds of the scalp and whenever an hematoma can be expected or if the wound may weep.

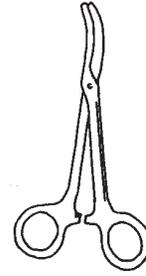
Removal of sutures

- Face : day 5.
- Other wounds : day 7 or 8.

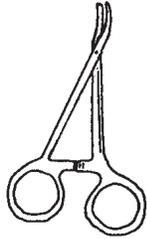
DIFFERENT INSTRUMENTS



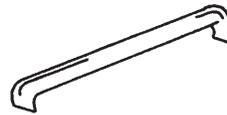
(figure 7a)
Kocher forceps
with teeth



(figure 7b)
Kelly clamp
curved, no teeth

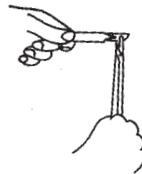


(figure 7c)
Mosquito forceps curved, no teeth
(also called clamp or hemostat)

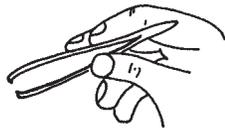


(figure 7d)
Retractor (Farabeuf type)

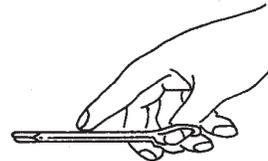
HOW TO HOLD INSTRUMENTS



(figure 7e)
Always mount a scalpel blade using a needle holder.
Change blades for each different operation.

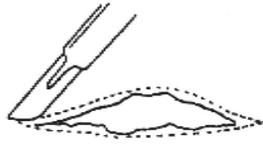


(figure 7f)
Dissecting forceps should not be held
in the palm but between the thumb and
index finger. Dissecting forceps with
teeth should be used on skin only.



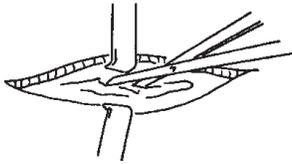
(figure 7g)
Insert the thumb and the ring into the handle
of a needle holder (or scissors) and stabilise
the instrument using the index finger.

DEBRIDEMENT



(figure 8a)

Debridement of a contused, messy wound :
straightening of wound edges with a scalpel,
Be very careful on the face.



(figure 8b)

Excision of torn edges of
aponeurosis to avoid necrosis.

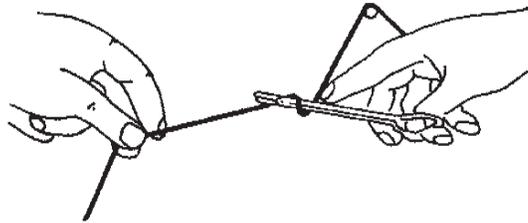


(figure 8c)

Excision of torn or contused muscle.

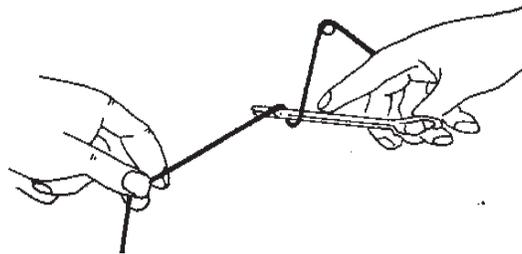
Figure 8 : Debridement
(this should be sparing, limited to excision of severely contused or
lacerated tissue that is evidently destined for necrosis)

PRACTICE WITH KNOTS



(figure 9a)

Loop the suture material around the needle-holder in one direction (e.g. "over towards me") and remember this direction. Take the loose end with the needle holder and pull it through to make the first knot.



(figure 9b)

The second loop should be in the opposite direction ("under towards me"). Repeat a third knot, changing direction once again.

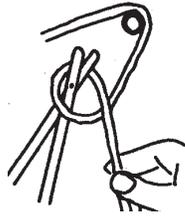
KNOTS



(figure 10a)
The first knot should be flat.

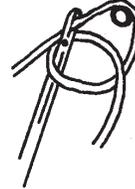


(figure 10b)
Second knot : opposite direction.



(figure 10c)

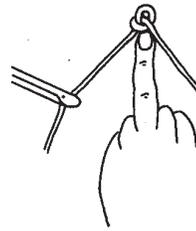
Catching the loose end with the needle-holder.



(figure 10d)



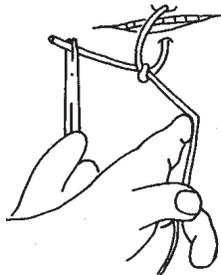
(figure 10a)



(figure 10b)

Slip the knot up towards the nail using the hand that holds the free end, holding the other length of suture with the needle-holder.

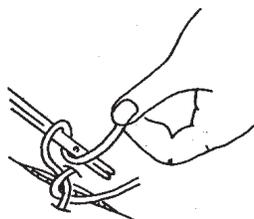
TYING KNOTS ON SKIN



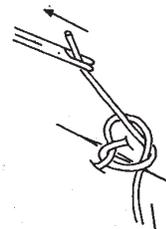
(figure 11a)
First knot flat



(figure 11b)
Tighten without causing ischemia (pallor)

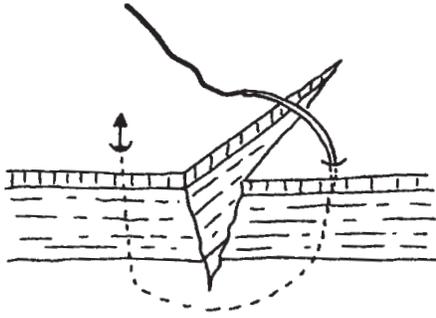


(figure 11c)
Loose end pulled through

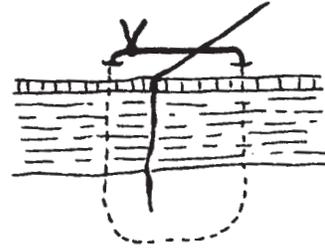


(figure 11d)
Second knot in opposite direction

PARTICULAR PROBLEMS IN SUTURING

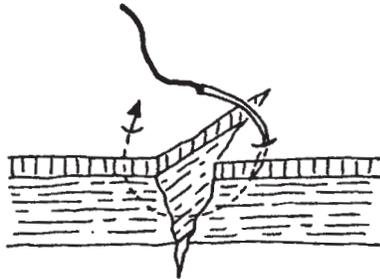


(figure 12a)

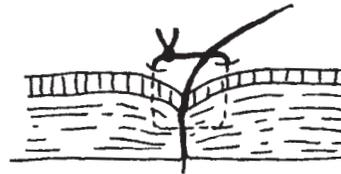


(figure 12b)

The "bite" taken must be sufficiently deep.

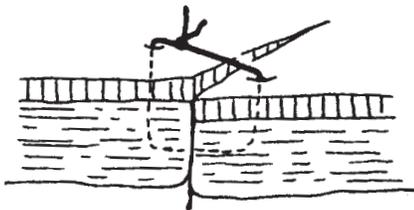


(figure 12c)



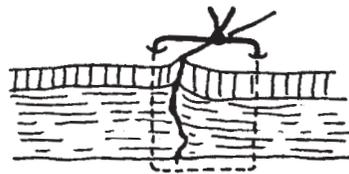
(figure 12d)

Incorrect : bite too shallow, so the edges invaginate.



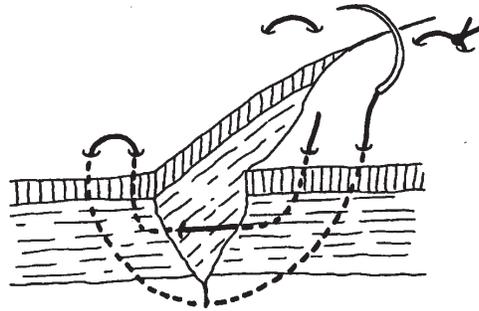
(figure 12e)

Incorrect : Poor opposition of the edges

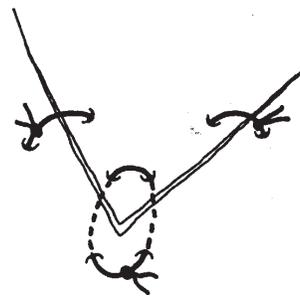
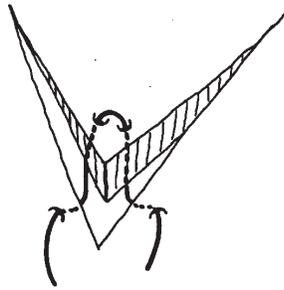


(figure 12f)

Incorrect : the knot should be beside the wound, not over it.



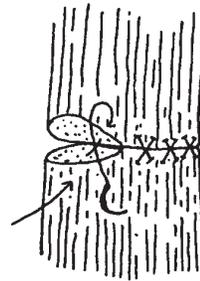
(figure 13)
Vertical mattress suture (also called Blair-Donati technique) :
allows good apposition of the wound edges.



(figure 14)
Closing a corner



(figure 15)
Close skin using interrupted silk or nylon.
In case of deep wound, a drain is usually
advisable (emerging via a
counter-incision to avoid hematoma.



(figure 16)
Repair of muscle using interrupted
sutures through the full thickness.
Use chromic (or Vicryl) crossed in X.

7. HEAD INJURY

Initial assessment is made by asking about

- Period of loss of consciousness
- Period of post traumatic amnesia
- Cause and circumstances of injury
- Presence of headache and vomiting.

The initial evaluation is made by looking for the following

- Signs of fracture
- Assessment of :
 - Level of consciousness
 - Neurological assessment
 - Evidence of focal Neurological lesion
 - Respiration
 - Circulation- Blood Pressure, Pulse
- Associated injury to cervical spine, thorax, abdomen and other injuries.
- Haematoma on scalp and on face
- CSF leak from ear or nose

Treatment-at PHC

- Maintenance of airway and breathing.
- Stabilize pulse and blood pressure. If required intravenous access should be established.
- Associated injuries to cervical spine, thorax, abdomen and other musculoskeletal injuries are taken care of.

REFER to District hospital/Surgical Centre

- Patient showing features of raised intra-cranial pressure in the form of bradycardia, dilated pupils, persistent headache or vomiting or any neurological deficit should be referred for further neuro-radiological assessment and management.
- Patient should be referred to neuro-surgical management if they have remained comatose (Glasgow coma scale 8 or less) or their level of consciousness has deteriorated.
- Also refer for other soft tissue injury or orthopaedic emergencies.

Before transferring the comatose patient ensure :

- Cardiovascular stability.
- Establish IV access.
- Maintain airway and respiration.

- Check for and stabilize extra-cranial injuries.
- Ensure adequate monitoring, clinical notes, and equipment, to deal with complications in transit.
- If spinal injuries are excluded then transfer the patient in lateral position with head down.
- If spinal injuries suspected then transfer the patient on hard board.
- Place two sand bags on either side of the head, in case of cervical spine injuries.

Due to the risk of intracranial haematoma associated with head injuries the patient even with minor head injury requires observation. Specially observe the patients with :

- History of loss of consciousness
 - History of vomiting
 - Scalp haematoma is present
 - When skull fracture is present
 - Patient with altered consciousness
 - Patient under the effect of alcohol
 - Black eye and bleeding or CSF discharge from ear and/or nose.
 - If spinal injury is suspected then transfer the patient on hard board
 - Place two sand bags on either side of the head in case of cervical spine injuries.
-

For the following topics some types of procedures performed are included. However the decision can be taken by the surgeon. The procedure of the surgery is not described here.

8. THORACIC EMERGENCIES

8.1 PNEUMOTHORAX

Presence of air between the pleural layers.

This may be associated with either serous fluid (Hydropneumothorax), pus (Pyopneumothorax) or blood (Haemopneumothorax)

The emergency arises when it is associated with trauma

Clinical Features

- Evidence of fracture of ribs
- Air hunger
- Hyper-resonant percussion note with absent breath sounds over the affected side of the chest.

Investigation

- Chest X-ray shows absence of lung markings and a strip of collapsed lung medially.
- Trachea may be deviated to opposite side.

Treatment

- Maintain airway and respiration.
- Simple aspiration with a wide bore needle to decompress the pleural cavity.
- If rapid re-accumulation occurs, introduce intercostal tube with under water seal drainage.

REFER

- Should be referred to higher centre under water seal drainage

8.2 TENSION PNEUMOTHORAX

In lung injuries the air escapes into the pleural cavity and gets accumulated causing the collapse of lungs.

Clinical Features

- Decreased Air entry
- Increased percussion note
- Decreased breath sounds

Investigation

- Chest X-ray shows absence of lung markings and a strip of collapsed lung medially.
- Trachea may be deviated to opposite side.

Treatment guidelines

- Aspirate the pleural space of affected side with a wide bore needle and insert intercostal tube in an under water seal drainage bottle.

Refer

Refer the patient to higher centre with under water seal drainage bottle

9. LUMP IN BREAST

Commonly found lump in breast in young females is Fibro adenoma

9.1 FIBROADENOMA**Clinical Features**

Solitary, firm, well defined, lobulated, extremely mobile, painless lump in the breast (mouse in breast)

Treatment

Drug treatment-none

- Surgery is the choice of treatment.
- Excision of the fibroadenoma in CHC. The excised mass should be sent for histopathological examination.

9.2 MALIGNANCY

Common in older women.

Clinical Features

- Mass firm, ill defined, usually painless; not mobile. Suspect malignancy.
- Sometimes presents late when ulcerated or lymphnodes involved.

Treatment

REFER IMMEDIATELY to district hospital/tertiary care hospital

10. ACUTE ABDOMEN

All the cases of acute abdomen are to be referred to CHC, which has necessary surgical facilities. Details of management protocol are not included at present.

The common causes of acute abdomen are :

- Biliary colic
- Appendicular colic
- Renal or Ureteric colic
- Intestinal Colic - due to worm infection and intestinal obstruction uncommon but
- Acute pancreatitis
- Peritonitis
- Strangulation of gut
- Referred pain of male or female genital organs inflammation or torsion
- Vertebral retroperitoneal causes

Diagnosis

- Diagnosis is made on good history and through clinical examination.
- X-ray may be needed in some cases.

-
- Do not give pain relieving injection or sedative to a patient of abdominal colic; if
 - Patient is being referred to specialist for consultation ;
 - Diagnosis of the abdominal pathology is not clear ;
 - There are features of acute intestinal obstruction and strangulation.
 - Do not give enema or purgative to a patient of
 - Peritonitis
 - Strangulated bowel
 - Acute appendicitis.
 - Abdominal massage is harmful and contraindicated in all abdominal colic.
 - In case of doubt : start IV infusion of Normal Saline, observe and examine the patient repeatedly without giving analgesic.
 - In case of increasing pain and progressive generalized and local features refer the patient to specialized centre for further management.
-

Of all conditions causing acute abdomen only acute appendicitis is discussed here.

10.1 APPENDICITIS

Salient diagnostic features

- Pain in abdomen, usually around the umbilicus which later shifts to the right iliac fossa
- Anorexia, nausea, vomiting
- Tachycardia, low grade fever may be present
- Localized tenderness and rigidity in the right iliac fossa
- Evidence of indirect pain in RIF by applying pressure at colon, extension at right hip or on per rectal examination.

Treatment

- Treatment of acute appendicitis is appendicectomy, if the diagnosis is made at an early stage usually within 48 hrs.
- The surgery is deferred if appendicular mass is formed.

11. ABDOMINAL TRAUMA

Any patient with distension of abdomen or shock after trauma, shift to higher centre with IV line.

11.1 LIVER TRAUMA

- Liver Trauma is uncommon due to position of liver. In all lower chest and upper abdominal stab wounds on right side, suspect liver injury.
- Haemorrhage leading to haemoperitoneum and shock may occur.
- Start IV line and fluids. Shift to higher centre.

11.2 SPLENIC TRAUMA

- Suspect rupture of spleen when there is direct injury to left upper quadrant of abdomen resulting in massive haemorrhage in to peritoneal cavity causing shock.
- Start IV line and shift to higher centre.

12. HERNIA

Treatment

- Treatment of choice is surgery, (elective) in CHC
- Prior to elective surgery all factors contributory to raised intra abdominal pressure like cough, constipation, and difficulty in passing urine should be treated and controlled
- Elective hernia surgery is a clean surgery, which may be herniotomy in children and herniorrhaphy or hernioplasty in an adult.

12.1 COMPLICATIONS OF HERNIA

- Requiring emergency surgery are
 - Obstruction and strangulation

Diagnostic features

- Irreducible Hernia which is tense and tender
- Abdominal pain and rigidity may appear
- There are associated features of intestinal obstruction and strangulation

Treatment

- Taxis (physical pressure to reduce) is unjustifiable

Refer

As emergency surgery is required; refer to appropriate surgical centre

13. HYDROCOELE

Diagnosis

- Unilateral or bilateral scrotal swelling. Possible to get above the swelling;
- Transillumination - positive

Treatment

- Treatment of choice is surgery
May be done at CHC

14. PERIANAL ABSCESS

Acutely tender rounded swelling at anal verge.

Treatment

- Drainage of the abscess. If not drained, it may form a fistulous tract resulting in fistula in ano. This may be done at PHC level also.
- For permanent treatment refer the case to CHC for surgical excision of fistulous tract if formed.

15. FISSURE IN ANO

Diagnosis

Clinical Features

- Constipation
- Sharp agonizing pain during defecation
- Bright streaks of blood in stools
- Ulcer at the lower end of the anal canal seen when tightly closed puckered anus is stretched apart.

Drug treatment

- Lignocaine jelly or ointment (5%) applied locally 3-4 times a day;
And
- Tab. Metronidazole (400 mg) for 5 days, twice a day.
And
- Tab Ibuprofen (400 mg) one tablet 8 hourly
And
- Sitz bath (Warm water with potassium permanganate 1:10000 or Povidone iodine) twice a day
And
- Isapgghula husk 1-2 teaspoon in water one or two times a day for control of constipation and straining during defecation
Or
Liquid paraffin (5-15 ml) at bed time for one month, if no relief with local Lignocaine application

Surgical Treatment

Aim of therapy is to cause complete relaxation of the anal sphincter that will relieve pain and slowly heal the fissure.

- Anal dilation under general anaesthesia;
- Fissurectomy & sphincterotomy if needed.

16. PILES (HAEMORRHOIDS)

Haemorrhoids are swollen but normally present blood vessels, in and around the anus and lower rectum, that stretch under pressure, similar to varicose veins in the legs.

The increased pressure and swelling may result from straining to move the bowel. Other contributing factors include pregnancy, heredity, aging, and chronic constipation or diarrhoea.

Haemorrhoids are either inside the anus (internal) or under the skin around the anus (external).

Haemorrhoids usually are not dangerous or life threatening. In most cases, haemorrhoidal symptoms will go away within a few days.

Diagnosis

- Many anorectal problems, including fissures, fistulae, abscesses, or irritation and itching (pruritis ani), have similar symptoms and are incorrectly referred to as haemorrhoids. Diagnosis rest on clinical features and, rectal examination.

- Although many people have haemorrhoids, not all experience symptoms. The most common symptom of internal haemorrhoids is bright red blood covering the stool or in the toilet bowl.
However, an internal haemorrhoid may protrude through the anus outside the body, becoming irritated and painful. This is known as a protruding haemorrhoid. Symptoms of external haemorrhoids may include painful swelling or a hard lump around the anus that results when a blood clot forms. This condition is known as a thrombosed external haemorrhoid.
- In addition, excessive straining, rubbing or cleaning around the anus may cause irritation with bleeding and/or itching, which may produce a vicious cycle of symptoms. Draining mucus may also cause itching.
- Examination of the anus, per digital examination of the anal canal and viewing the anal canal and rectum through a proctoscope helps define the extent of the lesion and differentiate from other anal conditions.
If other causes of bleeding suspected, then sigmoidoscopy also needed.

Treatment

Medical treatment

Medical treatment of hemorrhoids initially is aimed at relieving symptoms.

- Warm tub or Sitz baths several times a day in plain, warm water for about 10 minutes.
- Ice packs to help reduce swelling.
- Application of a haemorrhoidal cream for suppository to the affected area for a limited time. (many such creams available e.g. Anovate, Faktu or Proctosedyl ointments)

Surgical Treatment

In some cases, hemorrhoids must be treated surgically. These methods are used to shrink and destroy the hemorrhoidal tissue and are performed under anaesthesia. A number of surgical methods may be used to remove or reduce the size of internal hemorrhoids. These techniques include:

- Anal stretching - the anal sphincter is stretched under General Anaesthesia.
- Rubber band ligation - A rubber band is placed around the base of the hemorrhoid inside the rectum. The band cuts off circulation, and the hemorrhoid withers away within a few days.

- Sclerotherapy - A chemical solution is injected around the blood vessel to shrink the hemorrhoid.

Techniques used to treat both internal and external hemorrhoids include;

- Electrical or laser heat (laser coagulation) or infrared light (infrared photo coagulation) Both techniques use special devices to burn hemorrhoidal tissue.
- Haemorrhoidectomy - Occasionally, extensive or severe internal or external hemorrhoids may require removal by surgery known as hemorrhoidectomy. This is the best method for permanent removal of hemorrhoids.

Prevention of hemorrhoids and the recurrence of hemorrhoids

Prevention of the recurrence of hemorrhoids is aimed at changing conditions associated with the pressure and straining of constipation.

- Increasing fiber and fluids in the diet. Eating the right amount of fiber and drinking six to eight glasses of fluid (not alcohol) result in softer, bulkier stools. A softer stool makes emptying the bowels easier and lessens the pressure on hemorrhoids caused by straining. Good sources of fiber are fruits, vegetables and whole grains.
- Eliminating straining also helps to prevent the hemorrhoids from protruding.

17. LEG ULCERS

Also known as tropical ulcer or rice picker ulcer

Found commonly in village communities who suffer repeated trauma to their legs during their daily work at fields or rain forest.

Repeatedly trauma and infection leads to chronicity.

Definition

Full thickness necrotizing bacterial infection of the skin of lower limb preceded by stage of cellulitis.

Common sites

On leg below knee, Commonly lower third of leg just above malleoli,
Skin of dorsum of foot.

Clinical feature

The disease progresses in following sequence. The clinical picture will depend on stage of patient's presentation to hospital. There is often a history of thorn prick or laceration.

Clinical features depend on stage :

- Bacterial Cellulitis
- Redness, Oedema and fever
- Necrosis
- Foul Smelling discharge.
- Line of demarcation and Slough separation
- Infection with dead skin, black in the colour.
- Same + Fever
- Ulcer with foul smell discharge with foul yellow Or grey-green pus adherent to granulation tissue

Treatment

- Early diagnosis and prompt treatment is needed.

Supportive Treatment

- Bed rest
- Elevation of Limb
- Frequent dressing

Drug Treatment

Early cellulitis with papules

- Procaine Penicillin—Inj 6 lacs IU 12 Hourly After sensitivity test for 4-5 days.
- Metronidazole 400 mg TID x 4-5 days.

If infection does not improve refer to higher centre.

In Necrosis with slough formation

Surgical removal of slough and gangrenous tissue. Local dressing with polyvidone iodine or chlorexidine. Avoid moisture.

Extensive Ulcer may require a qualified surgeon for skin grafting

18. VARICOSE VEINS

Varicose veins is the most common vein disorder.

They are large, twisted veins, usually in the legs and feet, that are not transporting blood effectively. They appear as bulging, bluish cords beneath the surface of the skin.

If ignored, varicose veins can cause not only discomfort and cosmetic concerns, but also problems such as phlebitis (inflammation of the veins, skin ulcers, and blood clots.

Varicose veins develop when veins stretch and their valves, which prevent back flow of blood, fail.

It affects women, obese and those who stand for long periods – more than others.

Clinical Features

- Prominent dark-blue blood vessels, especially in the legs and feet (not “spidery” looking veins)
- Aching, tender, heavy, or sore legs
- Swelling in the ankles or feet, especially after standing

Treatment

Prevention

- Regular exercise improves vein functioning, and weight loss and exercise decreases the likelihood of blood clots.
- Avoid prolonged sitting, standing, or walking, getting regular exercise, elevate legs on a periodic basis, and wear compression stockings.
- At night, keep legs raised on a pillow, (above the level of the heart).

Surgery

Surgical and other Procedures can be tried if the veins are cosmetically unacceptable to the patient or if there is frequent bleeding and ulceration.

Referral for

- Sclerotherapy - injection of a solution into a varicose vein, followed by application of a compression dressing, in order to obliterate the veins-or surgery for removal of the varicose vein can be done. At a centre that is undertaking such work.

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