

## ***TEACHING OBJECTIVES and METHODOLOGY***

### **Chapter 1 - PRINCIPLES OF PHC, MEDICAL/DENTAL ETHICS AND JURISPRUDENCE**

**DURATION** - 56 HOURS

**PRE-TEST** - Multiple Choice Questions or Short Answer Questions. These two methods are recommended for all pre-tests.

#### **OBJECTIVES**

- 1.1 - discuss the principles of PHC and relate it to the countries PHC system. They should be able to:
  - 1.1.1 - define PHC
  - 1.1.2 - discuss the principles and concepts utilised in providing PHC services
  - 1.1.3 - describe approaches to PHC in different political systems and development levels (developed/developing)
  - 1.1.4 - describe the country's health administrative and service structure
- 1.2 - determine ethical considerations in dealing with members of the community.
  - 1.2.1 - discuss the history and philosophy of medical/dental ethics
  - 1.2.2 - discuss the relationship between medical/dental ethics and religion.
  - 1.2.3 - explain the role of ethics in doctor-patient relationship as well as in relationship to colleagues or a medical/dental team.
  - 1.2.4 - describe the elements of informed consent in medical/dental practice and research.
  - 1.2.5 - discuss ethical issues in the management of women
  - 1.2.6 - explain ethical issues in relation to the dead and dying (Thanatology).
  - 1.2.7 - discuss cultural and psychosocial aspects of ethics
- 1.3 - explain legal implications of his/her conduct and of medical/dental findings.
  - 1.3.1 - explain the Professional code of conduct (Geneva oath), the Medical and Dental Acts and professional insurance.
  - 1.3.2 - describe the functions of Professional Conduct and Disciplinary Boards or Councils.
  - 1.3.3 - discuss different aspects of the legal importance of blood

- 1.3.4 - describe types of wounds and injuries and their legal implications
- 1.3.5 - discuss the "abortion law"
- 1.3.6 - describe basic signs that may lead to suspicion of murder in neonatal, infant and adult deaths.
- 1.3.7 - describe a death certificate and the coroner's procedure

### **LECTURES**

- Principles of Primary Health Care
- Primary Health Care in developing countries
- Primary Health Care in developed countries
- Appropriate use of resources and technology
- Community Participation, Strategies and Coverage
- History and philosophy of medical/dental ethics
- Ethical issues in PHC
- Ethics and the care of women, the dying and the dead
- Informed consent in medical/dental care and research
- Blood stains, groupings, tests and use in identity and disputed paternity, and HLA typing.
- Types of injuries and wounds and their legal implications (abrasions, bruises, lacerations including stab wounds, firearm wounds)
- Abortion law: therapeutic and criminal
- Rape, incest, burglary and bestiality
- Asphyxia including drowning, thermal burns
- The death certificate and coroners procedure
- Murder including suspicious neonatal and infant deaths

### **PANEL DISCUSSIONS**

1. Principles of PHC
  - Structure of the (Nigerian) Health System
  - Administration of (Nigeria's) Health services
  - Evolution of PHC (in Nigeria)
2. Medical/dental ethics and jurisprudence
  - Relationship between the doctor/dentist and his/her patients, and colleagues
  - Religion and medical/dental ethics
  - Cultural and psychosocial issues in ethics

### **FILM SHOW ON PHC - optional**

**GROUP WORK ON ASSESSMENT OF PHC SERVICES IN DEVELOPED AND DEVELOPING COUNTRIES** - Materials to be supplied on PHC in different political systems: Welfare State System (e.g. Norway), Transitional System (e.g. Peru), a Socialist System (e.g. former Soviet Union), Pluralistic System (e.g. USA). Each group of about 10 to 12 trainees should read about the different systems and write a report comparing them. Each group for grading should submit reports. Each trainee should supervise each group work session to determine contribution. Grades should be awarded to each group but some trainees in a group may score less than the maximum grade for their group based on a checklist of participation in-group work.

**POST TEST** - preferably Multiple Choice Questions and/or Short Answer Questions.

#### **EVALUATION OF TRAINING CONTENT AND METHODS**

#### **Chapter 2 - COMMUNITY DIAGNOSIS**

**DURATION:** 112 HOURS

#### **PRE-TEST**

#### **OBJECTIVES**

- 2.1 - collect and collate data needed for planning and delivering health services to a community with particular reference to socio-economic, political, environmental and health resources data. They should be able to:
  - 2.1.1 - state the kinds of data needed to plan health services for a given community.
  - 2.1.2 - describe at least four sources of data for a given community
  - 2.1.3 - use appropriate methods to select a representative sample for data collection from a given community.
  - 2.1.4 - design and administer a survey instrument to collect valid and reliable data.
  - 2.1.5 - utilise at least 3 other methods for the collection of valid and reliable data.
  - 2.1.6 - describe at least 4 sources of bias, which may occur during informal as opposed to formal data collection.
  - 2.1.7 - compare and contrast the process of diagnosis and health action at the levels of the individual and the community.

- 2.2 - utilise the knowledge and skills acquired to identify and describe the structure and functions of the community by being able to:
  - 2.2.1 - collect and analyse data to describe the demographic structure and vital statistics of the community.
  - 2.2.2 - describe its ethnic and religious composition, pattern of marriage, decision making and health roles within the family and community.
  - 2.2.3 - discuss the pattern of economic activities and the effects of migration on it and on life in the community.
  - 2.2.4 - describe the environment with particular reference to water, sanitation, housing, infrastructure and communication.
  - 2.2.5 - describe the community's food chain
  - 2.2.6 - discuss the traditional and modern political structure
  - 2.2.7 - compare the quality of life in the community with others within or outside the country
- 2.3 - identify present and potential health resources within the community
  - 2.3.1 - list and describe the activities of modern and alternative health services within the community
  - 2.3.2 - estimate utilisation and coverage of both services for preventive, curative and promotive health.
  - 2.3.3 - discuss the integration of alternative health care services into Primary Health Care services
  - 2.3.4 - identify and describe other health-related services available such as education, agriculture, social welfare.
- 2.4 - identify the nature and magnitude of health problems in the community.
  - 2.4.1 - identify and discuss the reliability of sources of information on the morbidity of the community
  - 2.4.2 - plan a morbidity survey
  - 2.4.3 - use network approach to identify formal and informal, modern and traditional leaders.
  - 2.4.4 - gather information on the nature and magnitude of health problems prevalent in the community from relevant sources
  - 2.4.5 - carry out a screening survey to determine the prevalence of health problems in the community.
- 2.5 - describe factors contributing to health problems in a community

- 2.5.1 - identify and describe environmental, behavioural and attitudinal factors contributing to at least 4 common health problems in a community.
- 2.5.2 - describe the patterns of illness behaviour especially for common health problems in the community.
- 2.6 - determine the felt health needs of the community
- 2.6.1 - discuss with community leaders, household heads and selected community members to find out the felt health needs of the community.
- 2.6.2 - compare the felt needs with identified needs
- 2.6.3 - prioritise and discuss solutions to the health problems of the community.
- 2.6.4 - analyse and present data from surveys using acceptable methods.
- 2.6.5 - organise and carry out a feedback session to inform the community and its health staff about the findings of the community diagnosis exercise.

### **LECTURES**

- Introduction to Community Diagnosis
- Sources of information on morbidity
- Alternative Health Care Services in the community
- Planning of a morbidity survey
- Beliefs, practices, attitudinal, behavioural and socio-economic factors affecting health
- Environmental factors contributing to health problems
- Demography and vital rates
- Prioritisation of health problems
- Bias
- Coverage, Efficiency, Effectiveness

**GROUP WORK TO DESIGN SURVEY INSTRUMENTS** - trainees design interview schedules relevant to assigned survey topics, this should be graded and corrected before reproduction for fields work. Pre-designed ones may be used where reproduction of the newly designed ones is a problem.

**SURVEYS:**

Trainees will be supervised by lecturers during all field work activities. They will collect data, using formal and informal data gathering techniques from target areas assigned to each group. They will interview samples of relevant persons in the community and carry out physical examination of representative proportions of assigned communities as well as general observation of factors affecting health in the community. Where necessary, students may treat minor illnesses using "Standing Orders" or refer patients to nearby health facilities or to the Community Health Worker for appropriate follow-up. Places to visit may include health facilities (modern, traditional and other alternatives), schools, markets, churches/mosques, police station, offices of relevant government officials, traditional rulers and leaders etc.

Each group will write a report and present it to other trainees and a panel of lecturers (supervisors) who will grade them. Feedback to the health care providers and members of the community should be organised by trainees with the assistance of their supervisors.

**POST TEST**

1. Individual performance in MCQ and written tests
2. Group work grade
3. Grade on attitude and performance during community exercises and teamwork using a pre-designed checklist.

**EVALUATION OF TRAINING CONTENT AND METHODS****Chapter 3 - ORGANISATION OF PHC HEALTH SYSTEMS****DURATION:** 40 HOURS**PRE-TEST****OBJECTIVES**

- 3.1 - enumerate and describe various health systems available for efficient delivery of PHC services
  - 3.1.1 - identify factors within the community, which influence the types of health system utilised for the delivery of PHC services.
  - 3.1.2 - discuss the advantages and disadvantages of the different health systems within and outside the country.

- 3.1.3 - determine the type of health service system/s most suitable to the needs and resources of a community.
- 3.1.4 - discuss how to organise an appropriate health service delivery system, highlighting how to overcome political, cultural and economic situations which may impede delivery of health care to a community.
- 3.1.5 - explain how a community may be assisted to practise self-reliance through appropriate use of available resources at individual and community levels.
- 3.2 - describe the service activities in a Primary Health Care delivery system.
  - 3.2.1 - describe practical ways of providing services, which meet the requirements of the components of PHC.
  - 3.2.2 - explain the rationale for integration of services in a PHC system
  - 3.2.3 - discuss the advantages and disadvantages of integration of PHC services at facility and community levels.
  - 3.2.4 - describe the skills required for the various services in a PHC setting and recommend suitable staff categories.
  - 3.2.5 - design appropriate registration and referral systems for a PHC service.
  - 3.2.6 - discuss the importance of smooth patient flow and described how to maintain it and reduce waiting time in a PHC service setting.

#### **LECTURES/VIDEO/SLIDES**

- Types of Health Care Systems
- Merits and demerits of health care systems
- Factors contributory to adoption of a health system
- Advantages of integrated services
- Patient flow for integrated services

#### **CLINIC VISITS**

Trainees visit clinics with different service systems to assess utilisation of PHC concepts and principles.

A checklist for clinic observations should be designed by trainees in-groups before visits. Trainees' activities during visits to different service systems should be supervised.

#### **GROUP EXERCISE**

Design of patient flow

**POST TEST** (knowledge and attitude, using an objective structured observation checklist).

#### **EVALUATION OF TRAINING CONTENT AND METHODS**

#### **Chapter 4 - MOBILISING COMMUNITY RESOURCES**

**DURATION** - 8 HOURS

##### **PRE-TEST**

##### **OBJECTIVES**

- 4.1 - Discuss different levels of community participation
- 4.2 - Describe how to use existing community resources (traditional and modern) to establish self support systems systems for Primary Health Care.
- 4.3 - Determine the composition of a community organisation , which will be instrumental in identifying and solving the basic health problems of the community.
- 4.4 - Enumerate situations which may impede the delivery of health care to a community (e.g. cultural beliefs, practices, politics etc.) and develop a plan of action to correct them using community mobilisation techniques.

##### **LECTURES**

- Levels of Community Participation
- Encouraging participation and community self-reliance

##### **PRACTICALS**

The practicals on Community Participation start during the practicals in Community Diagnosis and continue into planning with the community members and implementing some of the interventions suggested for solving problems identified during community diagnosis, e.g., health education and community action on environmental sanitation, nutrition, immunisation etc.

**POST TEST** - individual's knowledge (Short Answer Questions, Essay).

#### **EVALUATION OF TRAINING CONTENT AND METHODS**

#### **Chapter 5 - DRAWING UP A PHC HEALTH INTERVENTION PLAN**

**DURATION** - 40 HOURS

##### **PRE-TEST**

##### **OBJECTIVES**

- 5.1 - develop a PHC service plan for a community using data obtained during Community Diagnosis.
- 5.1.1 - state criteria to be used in deciding the composition of the planning team bearing in mind the need for full community participation
- 5.1.2 - assemble data and information required for planning, including statements of government policies and goals relevant to primary health care delivery.
- 5.1.3 - plan solutions to identified problems taking priority problems into consideration in setting objectives, targets and standards.
- 5.1.4 - write out a detailed plan showing organisational framework, required resources and expected benefits.
- 5.1.5 - draw a timetable of activities

## **LECTURES**

- Introduction to the planning process
- Mobilising communities for effective participation in the planning process
- Data and information required for planning a PHC programme for a target population (population estimations /projections, demography, health manpower projection etc)
- Policy issues to be considered in project formulation
- Steps of project formulation in PHC
- Cost and financial planning for PHC projects (budgeting) - health care financing, cost benefit and cost effectiveness analysis, economic and political considerations)
- Activity scheduling

## **GROUP WORK**

- critique of existing project formulation document/s provided and presentation to class.
- role playing and project formulation based on data and information on the community (Chapter 2) and presentation. During group work, trainees will actually play the roles of members of a planning committee. They may

form sub-committees which will sift through and use information provided on the community for planning. A copy of the National Health plan should be provided so that plans are in line with national objectives.

**POST TEST** individual's knowledge and group grade.

**EVALUATION OF TRAINING CONTENT AND METHODS**

## **Chapter 6 - MANAGERIAL PROCESS FOR IMPLEMENTING PHC**

**DURATION - 80 HOURS**

**PRETEST**

### **OBJECTIVES**

- 6.1 - describe how to manage PHC services efficiently.
- 6.1.1 - define and identify the functions of management
- 6.1.2 - draw an organisational chart for PHC services based on plans for the target community in chapter 5
- 6.1.3 - write job descriptions for each position on the organisational chart based on task analysis
- 6.1.4 - discuss communication and steps of problem-solving
- 6.1.5 - discuss job delegation and motivation in relation to effective leadership
- 6.1.6 - draw up a supervisory list
- 6.1.7 - estimate drug, equipment and supplies requirement as well as supply maintenance for the community above
- 6.1.8 - describe common causes of resource wastage
- 6.1.9 - explain efficient maintenance of facility and equipment
- 6.1.10- prepare an annual budget for a health facility
- 6.1.11- discuss staff development

### **LECTURES**

- theories and development of management
- role of management in the delivery of PHC services
- organisational charts of (Nigerian) health systems
- design of a job description
- leadership, delegation, motivation, supervision and control in management (of health services)
- communication as a management tool
- management of resources (facility supplies and inventory for drugs, equipment etc) in a PHC system.

- budgeting (basic book keeping and accounting)
- staff development
- diagnosing organisational problems and steps for solving them in efficient management.

**CASE STUDIES** (classroom exercises in groups)

Trainees will use information from the community diagnosis exercise and relevant information about the health system of the country to prepare the following:

- organisational chart for the PHC health system of a given community (group work).
- individual write-up on a job description for one of the positions on a health system organisational chart
- a supervisory checklist (group work)
- budget for running a PHC facility for one year for a specified community (group work)

**FIELD EXERCISE**

- use a supervisory checklist to assess PHC health facilities or services in a target community (as allocated for Community Diagnosis)

**POST TEST** - individual's knowledge and grades for write-up and group work.

**EVALUATION OF TRAINING CONTENT AND METHODS**

**Chapter 7 - NUTRITION**

**DURATION - 32 HOURS**

**PRETEST**

**OBJECTIVES:**

- 7.1 - Explain good nutrition and the means to achieve it.
  - 7.1.1 - Define nutrition and related factors of over-nutrition and under-nutrition in general terms.
  - 7.1.2 - State the normal nutritional requirements for different ages and conditions e.g. infancy, adolescence, pregnancy, lactation, old age and for some specific diseases.
  - 7.1.3 - Identify local foods which can produce a balanced diet.
  - 7.1.4 - Describe the steps of the food chain in a target population and indicate points where nutrient destruction can take place.
- 7.2 - Discuss the importance of good nutrition to growth, development, and prevention of disease.

- 7.2.1 - discuss weaning practices and their dangers
- 7.2.2 - explain the role of nutrition in protecting against infections such as Measles, Tuberculosis, diarrhoeas etc.
- 7.2.3 - explain the role of nutrition in maternal health with particular reference to pregnancy and lactation.
- 7.2.4 explain the dangers of bottle feeding to a child's health.
- 7.3 - Evaluate nutritional status at clinic / community levels
- 7.3.1 - assess the nutritional status of a child directly by weighing, measurement of mid-upper-arm circumference and observation of the physical signs of malnutrition.
- 7.3.2 - interpret nutritional values (growth curves, blood indices, etc).
- 7.3.3 - take a diet history and recognise factors which dictate the general nutritional status of a community e.g. individual or family prejudices, taboos, seasonal availability of foods, socio-economic status etc.
- 7.3.4 - plan and carry out a nutritional survey in a defined community.
- 7.4 - manage malnutrition at clinic and community levels
- 7.4.1 - recognise and treat different presentations of malnutrition at clinic and community levels.
- 7.4.2 - discourage harmful feeding practices and suggest acceptable alternatives.
- 7.4.3 - identify cheap, locally available foods for the promotion of balanced diet.
- 7.4.4 - describe how to carry out/demonstrate nutrition education programmes at clinic and community levels.
- 7.4.5 - describe how to evaluate the effectiveness of a nutrition intervention programme.

#### **TEACHING METHODOLOGY: Lectures/discussions**

##### **LECTURES**

- good nutrition (normal nutritional requirements for different age groups and conditions e.g. pregnancy)
- locally available foods and their nutritional values
- the food chain and nutrient loss
- comparison of breastfeeding and bottle feeding
- weaning
- nutrition and maternal health

- assessment of nutritional status (dietary history, anthropometry, laboratory tests)
- growth monitoring and promotion in nutrition surveillance
- the growth graph and laboratory indices in prevention and detection of malnutrition
- planning and carrying out a nutritional survey
- management of different presentations of malnutrition
- design of nutrition intervention programmes
- evaluation of nutrition intervention programmes.

**PRACTICALS:** may be done at the same time with other Child Health topics e.g immunisation in order to have meaningful collection of data on the nutritional and immunisation status of community members, especially children and mothers. This will encourage holistic management. Factors contributory to poor coverage or poor status for both are interrelated and can be easily identified. Students are expected to counsel families and suggest appropriate solutions. Nutrition will also be emphasised in chapters on Maternal Care Services, Child Care Services and School Health Services.

**CLINIC ACTIVITIES** - trainees need to learn how to perform the skills required for nutritional assessment and administration of immunisations before going to carry them out in the community. Practicals on nutrition, immunisation and child health should first be done under supervision in assigned clinics. Each trainee must observe at least 5 babies being weighed and the same or another set of babies receiving BCG, DPT, Polio and Measles vaccine. . After observing, each trainee will weigh 5 babies and administer the different types of immunisation.

**COMMUNITY SURVEY:**

A survey to find out community practices which affect the nutritional status of its members should be carried out by each group of 10-12 trainees. Information should be obtained from a representative sample of the community, especially women of child bearing age on feeding practices, food security and cultural, attitudinal or behavioural practices which affect nutrition. The PHC Child Health card should be checked where available for the child's growth graph, immunisation status and medical record.

The nutritional status of a sample of children aged 0-5 years allocated to students should be assessed either in the homes or at a central point chosen for convenience by the community; each pair examining 20 children (or at least 5 each) by relevant anthropometric methods (weight-for-age, weight-for-height, and Mid-Upper-Arm circumference, Haemoglobin estimation and inspection for other manifestations of malnutrition (micronutrient deficiencies). Percentage deficits in weights and heights should be calculated and the prevalence of malnutrition determined.

Mothers should be counselled as necessary and any outstanding immunisation administered to the children. A health talk on one area of identified educational needs should be organised by each group of trainees.

A nutritional history must be obtained from the mother or guardian of each child. Each group of students will chart the weights of all the children examined on each child's growth chart and on a "master" growth chart to see the distribution of weights. The group will analyse all data gathered together and write a report which is presented to the class and submitted for grading.

**School Survey:**

Each student assesses the nutritional status of at least 5 school children using anthropometric methods. A 24 hour dietary recall must be obtained from each child in the sample population. The weights and heights should be charted on master (standard) charts to show distribution. Counselling must be done after examination and if necessary contact with parents arranged.

Comments and suggestions for improvement should be mentioned in the group report and a feedback given to the school authority.

**Health Education:**

Each group of students must:

1. identify a community need for health education derived from the assessments made on the nutritional status of pre-school and school children.
2. design a health education session on nutrition for an identified target group in the community in need of health education.
3. present the designed health education program and evaluate it.

**Supervision:** Each group of students will be accompanied to the field by at least one academic member of staff from relevant

departments (clinical departments) of the college and one field staff of the ICHPC.

**Students Assessment:**

Students' performance will be graded by awarding marks for:

- i. performance of all procedures according to established protocol.
- ii. assessment of pre-school and school children including relevant comments.
- iii. performance in a post-test.
- iv. Accuracy of the master growth chart.
- v. Expertise at identification of health education needs, design of a health education session and class presentation.

Performance in the field is assessed by facilitators and performance on presentation by a panel of judges.

Students are awarded scores for group report based on their contribution which will be judged by a chosen member of the group (may be the group captain) and the group's facilitator. A student who scores 'A' for contribution receives the full mark awarded to the group, 'B' - 75%, 'C' - 50%, and 'D' - 25%. No mark will be awarded to students who are absent from group sessions.

Groups will present their findings to the class and later to the community members and staff of the LGA. They will submit a written report for grading.

**POST TEST**

1. Individual's knowledge
2. Attitude and performance during community work (predesigned checklist to be provided for facilitators)
3. Group grade for group report

**EVALUATION OF TRAINING CONTENT AND METHODS**

**Chapter 8 - IMMUNISATION**

**DURATION - 32 HOURS**

**PRETEST**

**OBJECTIVES**

8.1 - At the end of this chapter, trainees will possess the knowledge and skills required to provide immunisation services in Primary Health Care. They will be able to:

8.1.1 - discuss basic principles of immunity and immunisation

8.1.2 - recognise those diseases that are currently preventable by immunisation.

8.1.3 - describe the properties of commonly used vaccines, their mode of administration, side effects, storage requirements (the cold chain).

8.1.4 - describe an immunisation schedule

8.1.5 - assess the immunisation status and needs of children 0-5 years old, women of child bearing age, and of a given community.

8.1.6 - administer immunisations including BCG, DPT, Polio, Measles and Tetanus Toxoid)

8.1.7 - discuss causes of vaccine failure, how to improve immunisation coverage and maintain it at a desirable level.

#### LECTURES

- principles of immunity and immunisation
- diseases preventable by immunisation
  - . Tuberculosis, Heaf test and BCG
  - . Diphtheria, Pertusis and Tetanus
  - . Measles
  - . Poliomyelitis
  - . Typhoid, cholera and meningitis
  - . Rubella and Yellow fever
  - . Rabies and mumps
  - . Small pox
  - . Hepatitis A and B
- vaccines and toxoids and the cold chain
- immunisation schedules and immunisation status (failure to complete immunisation)
  - Vaccine failure (Measles, Poliomyelitis)
  - immunisation coverage including Blitz method, Expanded Programme of Immunisation (EPI), National Immunisation Programme and National Immunisation Days (NIDs)

#### CLINIC ACTIVITY

Trainees must observe administration of BCG, DPT, Polio and Measles and under supervision, administer each type of immunisation in a recommended clinic. Each one should assess the immunisation needs of 5 babies and give the required immunisation.

COMMUNITY ACTIVITY (to be done with Nutrition and Child Health)

Each pair of trainees will assess the immunisation needs of 20 children and administer necessary immunisations.

A group report of activities must be presented by each group for grading and feedback to the community and health staff organised with that for the feedback on nutrition.

#### POST TEST

1. individual's knowledge
2. performance during clinic and community activities
3. grade for group report

#### EVALUATION OF TRAINING CONTENT AND METHODS

### **Chapter 9 - CHILD HEALTH**

#### **DURATION - 32 HOURS**

#### **PRETEST**

#### **OBJECTIVES**

9.1. - determine the physical, mental and social well-being of children in a community

9.1.1 - assess the health, growth, nutrition and immunisation status of children in the community.

9.1.2 - relate assessment findings to socio-economic and environmental factors.

9.1.3 - screen for a specific problem e.g anaemias among 0-5 year olds in the community

9.1.4 - identify children who are "at risk" for specific disease conditions

9.2 - provide Primary Child Health services in the clinic and the community.

9.2.1 - recognise possible health hazards to children in the home and community and suggest preventive measures based on available resources.

9.2.2 - manage and provide necessary health care actions based on the findings of physical examination of children

9.2.3 - describe how to organise child health care services to meet the needs of pre-school children in a community.

9.2.4 - design a health education programme for one of the problems of children in a community.

#### **LECTURES**

- common health problems of the Under-five and recommended management (using the "Standing Orders").

- the discharging ear
- the red eye and other common eye problems
- skin problems and allergies
- assessment of the health status of a child
- screening for anaemias and Tuberculosis
- recognition of the "at risk" child
- socio-economic and environmental factors which may contribute to the health problems of children in a community and how to prevent or control them.
- organisation of child health services in the clinic and the community.
- care of the newborn at community level
- detection of child abuse
- management of fevers in the home
- children and drug abuse
- manifestations of AIDS in children
- Effective use of the "Child-to-child" programme.

Panel discussion - care of the handicapped/mentally retarded

#### CLINIC ACTIVITY

Each trainee will examine and manage 10 ill children with as many different problems as possible.

#### COMMUNITY SURVEY

Children assessed for nutritional and immunisation needs by each pair of student will be examined for other physical and social problems. Their mothers will be interviewed where necessary. A group report of clinic and community activities must be submitted for grading and feedback to the community and its health staff organised with that for nutrition and immunisation.

POST TEST - individual's knowledge.

#### EVALUATION OF TRAINING CONTENT AND METHODS

### **Chapter 10 - HEALTH EDUCATION AND TRAINING**

#### **DURATION - 40 HOURS**

#### **PRETEST**

#### **OBJECTIVES**

10.1 - plan and demonstrate health education to individuals, groups of mothers and the community.

10.1.1 - discuss the goals of health education

- 10.1.2 - identify the basic steps involved in organising a health education programme for individuals or a group.
- 10.1.3 - design a health education programme based on identified learning needs
- 10.1.4 - prepare relevant audio-visual aids
- 10.1.5 - use appropriate and effective communication methods
- 10.2 - design an appropriate training programme for health personnel and members of a community.
  - 10.2.1 - identify the learning needs of a health worker
  - 10.2.2 - describe the process for curriculum design for Primary Health Care workers
  - 10.2.3 - state instructional objectives for skills needed for the identified learning needs
  - 10.2.4 - identify criteria for selection and evaluation of teaching methods and aids.
  - 10.2.3 - demonstrate the appropriate teaching technique for an identified learning need of a community.

#### LECTURES

- principles and goals of learning and health education
- writing of instructional objectives
- principles of communication, facilitators and barriers
- preparation of visual aids and teaching materials
- steps in planning a training programme and sharing of teaching responsibilities
  - identification of the learning needs of trainees
  - selection of teaching and evaluation methods
  - design of learning units and teaching (lesson) plans
  - design of evaluation tools

#### Class exercises/group work

- preparation of learning units
- design of appropriate visual aid for a teaching session
- design of a lesson plan
- practicals on teaching sessions to be presented by each group of 10-12 trainees.

Group work must be submitted for grading

POST TEST - individual's knowledge and grade for group work

EVALUATION OF TRAINING CONTENT AND METHODS

## **Chapter 11 - MATERNAL HEALTH INCLUDING FAMILY PLANNING**

DURATION - 120 HOURS

PRETEST

OBJECTIVES

11.1 - describe and manage maternal health problems

11.1.1 - discuss the relationship between socio-economic status, education and the health of mothers and their families

11.1.2 - discuss early recognition of pregnancy and initiation of prenatal care.

11.1.3 - identify women at risk and refer them appropriately.

11.1.4 - diagnose and treat common maternal health problems using Standing Orders at clinic and community levels.

11.1.5 - discuss how to reduce maternal morbidity and mortality

11.1.6 - describe the management of puerperium, including establishment of breastfeeding.

11.1.7 - describe how to evaluate maternal health services.

11.2 - discuss fertility, the family planning concept, available methods and the implications for communal well being.

11.2.1 - describe the historical development of the family planning concept.

11.2.2 - discuss the relationship of family planning to global population control and socio-economic well being of a community

11.2.3 - compare the National family planning policy with those of other countries.

11.2.4 - define the determinants of human fertility and discuss the management of infertility.

11.2.5 - discuss the health and socio-economic benefits of family planning in a culturally relevant manner.

11.2.6 - describe religious and cultural beliefs and practices which affect acceptance of the family planning concept and methods.

11.2.7 - state the mode of action, indications and contraindications for family planning methods.

11.2.8 - describe how to counsel eligible clients for family planning and for infertility.

11.2.9 - describe the management of complications of contraceptive methods.

11.2.10- describe how to evaluate the family planning service of a community.

#### LECTURES

- social status and maternal/family health
- antenatal and postnatal care
- maternal health problems and services
- risk factors in maternal health
- management of the puerperium
- Life Saving Skills (LSS) in maternal health (maternity).
  - \* LSS during pregnancy
  - \* LSS during labour and puerperium.
  - \* learning needs of Traditional Birth Attendants

(TBAs)

- fertility and family planning concept/global population control

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- history of contraception, religious and traditional beliefs affecting it.

- women empowerment through reproductive choice

- types of contraception, indications and contraindications

- selection and sterilisation of equipment for family

planning.

- female circumcision

- Sexually Transmitted Diseases including AIDS

- evaluation of maternal health and family planning services

**Classroom exercises**

- demonstration of the counselling session
- demonstration and practicals on IUD insertion on dummies

**Clinic activities**

- small groups of students practice treating maternal health problems and provision of family planning services.

**Field activities**

- groups collect data on maternal health and contraception from assigned communities.

Each group submits a report for grading and presents its findings to the rest of the class.

POST TEST - individual's knowledge, attitude and performance in clinic and community activities.

**EVALUATION OF TRAINING CONTENT AND METHODS****Chapter 12 - MANAGEMENT OF COMMON DISEASES AND CONTROL OF LOCALLY ENDEMIC DISORDERS**

DURATION - 120 HOURS

PRETEST

OBJECTIVES

12.1 - use the "Standing Orders" to manage common conditions at clinic and community levels.

12.1.1 - discuss the physiology and pathophysiology of common signs and symptoms.

12.1.2 - obtain relevant history and perform necessary physical examination at clinic and community levels.

12.1.3 - refer patients to the appropriate health care level

12.1.4 - counsel patients on treatment and prevention of presenting illness.

12.2 - describe appropriate preventive measures for locally endemic disorders in a given community.

12.2.1 - using data obtained during community diagnosis, determine which conditions are locally endemic.

12.2.2 - design feasible and acceptable control measure/s for identified locally endemic disorders.

LECTURES - physiology and pathophysiology of:

- pallor -
- weakness -

dizziness -yellow eyes/urine  
 -blue hands/feet -body swellings -headaches -abdominal pain  
 -vomiting and diarrhoea -difficulty with swallowing  
 -frequent micturition -painful micturition  
 -blood in urine -loss of appetite -blood in stool -  
 passing of worms -red/discharging eye -discharging ear  
 -cough -breathing difficulty -chest pain/palpitation  
 -general body pain -fits -mouth problems -itching body -  
 fever -vaginal/penile discharge -leg ulcers  
 -weight loss -sight/hearing problems

#### CLINIC ATTACHMENT

Trainees are assigned to clinics where under supervision they will manage patients in PHC and/or general practice setting. They are graded with a checklist for correct clinical skills, accuracy of diagnosis, attitude to patients and management.

POST TEST - individual's knowledge, attitude and performance in clinic/hospital as assessed by supervisor.

#### EVALUATION OF TRAINING CONTENT AND METHODS

### Chapter 13 - WATER, SANITATION AND THE ENVIRONMENT

**DURATION - 32 HOURS (part of the time for Community Diagnosis)**

#### PRETEST

#### OBJECTIVES

**13.1 - assess the environmental sanitation and level of personal hygiene in a community and suggest measures for improving them.**

**13.1.1 - identify and describe the components of environmental sanitation in the community.**

**13.1.2 - discuss the effects of environmental sanitation on health, ecology and the ecosystem with particular reference to emerging issues e.g. ozone layer, green house effect).**

**13.1.3 - determine short and long term intervention measures to improve the environmental sanitation of a community**

**13.1.4 - use the principles of environmental sanitation to plan an intervention programme for a community.**

**13.1.5 - design a hygiene education programme for a community**

**13.2 - identify the sources of water and determine the proportion of a community having access to potable water**

**13.2.1 - carry out an observatory survey to determine the sources of water for a community.**

**13.2.2 - determine the proportion of rainwater collection containers and wells that are covered.**

**13.2.3 - estimate the proportion of people having access to potable water.**

**13.2.4 - suggest ways for improving the water supply of a community and accessibility to potable water.**

**LECTURES**

- water supply in urban and rural communities
- Environmental factors affecting health
  - air, noise, and radiation pollution (urban and indoor)
- solid waste management
- sewage disposal
- housing
  - control of animal reservoirs of infection
  - control of insect vectors and other pests
  - ecology and the concept of ecosystem (Emerging issues in environment and health - ozone layer, green house effect, desertification and soil erosion, sustainable development, biodiversity)
- improving environmental sanitation, water supply and personal hygiene.

**COMMUNITY SURVEY** - to be carried out during survey for Community Diagnosis.

**POST TEST** - individual's knowledge

**EVALUATION OF TRAINING CONTENT AND METHODS**

**Chapter 14 - MENTAL HEALTH**

**DURATION** - 12 HOURS

**PRETEST**

**OBJECTIVES**

**14.1 - discuss the range of abnormal behavioural conditions from the neuroses to the psychoses, their psychosocial determinants and management at clinic and community levels.**

- 14.1.1 - recognise the interface between normality and abnormality (for mental illness and subnormality)
- 14.1.2 - explain the psychopathological tendencies inherent in a broad range of human and social activities
- 14.1.3 - discuss the influence of cultural beliefs, practices and customs, heredity, socio-economic status, nutrition and the environment on personality
- 14.1.4 - take appropriate history from a mentally sick patient at clinic and community levels
- 14.1.5 - manage mental illness according to Standing Orders.

#### LECTURES

- community mental health
- minor psychiatric disorders
- psychosocial factors and juvenile delinquency
- psychosocial problems of the elderly
- psychosocial and legal aspects of suicide
- problems of urbanisation and social mobility
- management of mental illness
- mental subnormality
- crisis intervention and counselling
- helping families of the elderly

POST TEST - individual's knowledge

#### EVALUATION OF TRAINING CONTENT AND METHODS

### **Chapter 15 - PRIMARY ORAL HEALTH**

**DURATION - 40 hours**

#### **PRETEST**

#### **OBJECTIVES**

- 15.1 - recognise normal dentition and describe common dental disorders and how to prevent them.
  - 15.1.1 - describe the anatomy of the mouth in relation to teeth and gingivae.
  - 15.1.2 - discuss the history of periodontal disease and dental caries
  - 15.1.3 - distinguish between normal and inflamed gingivae
  - 15.1.4 - recognise dental plaque, calculus and caries
  - 15.1.5 - describe in general terms the composition of dental plaques and calculus.
  - 15.1.6 - explain the aetiology of periodontal disease and caries

15.1.7 - examine school children, personnel and members of the community for dental problems

15.2 - discuss the role of diet and flouride in dental health

15.2.1 - describe the inter-relationships between the tooth, gingiva, diet, dental plaque, time and common oral diseases

15.2.2 - discuss harmful foodstuffs and dietary habits

15.3 - describe ways of preventing dental and peridontal disorders including use of flouride.

15.3.1 - demonstrate appropriate oral cleansing methods

15.3.2 - design an oral health education programme for clinics and the community.

#### LECTURES

- Normal dentition
- Natural history of peridontal diseases and dental caries
- diagnosis of common dental problems
- calculus, dental plaque and plaque control
- preventive measures in dentistry including dietary

#### instruction

- personnel and their functions in a dental team
- oral examination for a child and for an adult
- normal and abnormal occlusion
- aetiology and epidemiology of dental caries
- oral manifestations of systemic disorders
- common indications for extraction, method and post

#### extraction instructions

1. indications and contraindications for drugs in dentistry
2. emergency oral conditions and their management
3. CLINICAL DEMONSTRATIONS on oral examination

#### COMMUNITY EXERCISE

Trainees screen for dental problems among school kids and personnel during the School Health posting. Some problems would have been identified among community members earlier, during the Community Diagnosis exercise.

POST-TEST - individual's knowledge

#### EVALUATION OF TRAINING CONTENT AND METHODS

## **Chapter 16 - SCHOOL HEALTH**

**DURATION - 40 HOURS**

### **PRETEST**

#### **OBJECTIVES**

16.1 - determine health problems of school children and school health personnel.

16.1.1 - conduct medical education and screen school children and school personnel (teachers, food vendors, cleaners etc. for health problems.

16.1.2 - relate the health problems of school children and personnel to circumstances in their environment.

16.1.2 - manage health problems or suggest solutions to the health problems identified using resources available in the school, home and community.

16.1.3 - state with reasons, the content of an adequate First Aid Box for a school.

16.1.4 - discuss the responsibilities of school children in ensuring good health in their families and community. 16.2 - design a school health programme using available human and material resources.

16.3 - describe how the records of school health services can be utilised for national planning.

#### **LECTURES**

- Introduction to school health services
- medical examination of school children
- screening for disabilities
- routine daily inspection of school children
- school health education (personal hygiene, accident prevention, nutrition, family life, immunisation etc.)
- emergency care ( First Aid ) in schools
- immunisation in schools
- responsibilities of school children in maintaining healthy homes and community.
- health assessment for school food vendors
- school vendors' home and kitchen inspection
- The First Aid Box in school health service

#### **PRACTICALS**

Trainees visit schools to screen and examine school children and personnel for health problems. Problems identified are managed

or relevant solutions suggested. Home visits are carried out to assess the home environment of some school children and the food vendors. The kitchens of food vendors are also inspected. The teachers are taught what to look for during daily routine health inspection of school children, how to manage emergencies and topics to cover during health education talks. The First Aid Box is inspected where available or suggestion given to the school authority to make one available.

GROUP REPORT - a group report of the activities carried out in the schools and findings must be submitted for grading.

POST TEST - individual's knowledge attitude and performance during activities in schools.

EVALUATION OF TRAINING CONTENT AND METHODS

## **Chapter 17 - MONITORING AND EVALUATION**

**DURATION - 40 HOURS**

### **PRETEST**

#### **OBJECTIVES**

17.1 - evaluate PHC service activities and staff performance.

17.1.1 - define monitoring and evaluation correctly

17.1.2 - explain the purpose of monitoring and evaluation

17.1.3 - develop a checklist using the principles of PHC to assess the service objectives of a facility or community based programme

17.1.4 - define and discuss the concept of coverage with reference to availability, accessibility and acceptability

17.1.5 - distinguish between efficacy, efficiency and effectiveness

17.1.6 - explain systematic observation techniques in staff performance assessment

17.1.7 - discuss how to evaluate the coverage and impact of a PHC programme

17.1.8 - discuss the use of qualitative research methods in evaluation

17.1.9 - describe appropriate methods for feedback on monitoring and evaluation of a PHC programme

17.1.10 - discuss the required attitudes for an effective monitoring and evaluation system

17.1.11 -describe data collection methods

17.1.12 - design data collection instruments

#### LECTURES

- the concept and purpose of monitoring and evaluation
- efficiency, efficacy and effectiveness in PHC
- assessment of the implementation and impact of PHC
- evaluation of staff performance
  - evaluation of coverage and impact
  - qualitative research methods in evaluation
  - data collection methods and instruments
- how to give feedback on findings of monitoring and evaluation to health staff, community or government

**CLASSROOM EXERCISES** - small groups of trainees are given case studies to analyse. They develop a checklist for assessment of staff performance, coverage and achievement of objectives. A group report is submitted for grading.

**POST-TEST** - individual's knowledge

**EVALUATION OF TRAINING CONTENT AND METHODS**

## ***CHAPTER 1***

### **THE PRINCIPLES OF PRIMARY HEALTH CARE (PHC)**

At the Alma Ata International conference in 1978, Primary Health Care (PHC) was conceived and adopted by the World Health Assembly as the key to achieving a health care level that will ensure that all the peoples of the world live socially and economically productive lives. Expressing the need for urgent action by all governments, all health and development workers, and the world community to protect and promote the health of all the people of the world, the conference made some declarations (Appendix - ).

The declarations stated clearly that by the Year 2000, every country should have attained the desired level of health care.

In response, many countries have reflected the Key to the goal, PHC in their National Health Policies. PHC is defined as " essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families in the community through their full participation and at a cost that the community can afford to maintain at every stage of their development in the spirit of self-reliance and self determination. It forms an integral part of both the country's health system, of which it is the central function and main focus, and of the overall social and economic development of the community.

It is the first level of contact of individuals, the family and community with the national health system bringing health care as close as possible to where people live and work, and constitutes the first element of a continuing health care process. PHC is therefore designed to provide such services that will reduce morbidity and mortality caused by common, often preventable diseases.

The principles of PHC include:

- i. Equity
- ii. Appropriate technology
- iii. Community participation
- iv. Intersectoral collaboration
- v. Integrated services

1. **EQUITY**

This means distribution of health services without bias for or against any segment of the community. Service coverage equity can be ensured by making services universally accessible to individuals and families in a community. Health services should be available in every community and where static facilities or clinics are used, they should be sited within the stipulated PHC radius of 5 kilometers from every member of the community. For curative services people are willing to travel up to 5 kilometers or even more, but for preventive services e.g. immunisation people will travel less than

two kilometers. That facilities are available does not totally predict accessibility coverage. The staff in health facilities must be approachable and have respect for the cultural values of the community otherwise, the services will not be patronised and coverage will be poor. A health facility or service may be close enough to the people but not acceptable because of cultural taboos. There is also equity where only a few are able to pay the cost of services.

## **2. APPROPRIATE TECHNOLOGY**

A technology is appropriate if it is as simple as possible and can be maintained easily at the point of application. It may evolve out of the traditional medical practices of a community and is therefore culturally acceptable. It must however be effective in tackling the major health problems of the community.

In view of the fact that Primary Health Care desires self-reliance, any technology used should be such that it can be handled effectively by members of the community.

This applies to all resources used in delivering health care services:

- human resources
- equipment
- drugs and materials
- static facilities et cetera

It should be "based on practical, scientifically sound and acceptable methods and technology - - - at a cost that the community and country can afford and maintain". Donkeys or bicycles for example may be used in moving from static facilities to communities where roads are unmotorable or vehicles are unaffordable. Static facilities may be a room in one of the houses in the community or a simple structure e.g. a shed.

## **3. COMMUNITY PARTICIPATION**

PHC encourages full participation of members of the community in the thinking, planning, deciding, implementing and evaluation of their development projects (health, agriculture, economic, education, housing et cetera). The advantages are promotion of self reliance, reduction of costs, improvement of community members skills and

sense of responsibility as well as accessibility, acceptability and utilisation of services.

There are many levels of community participation. **Manipulation and therapy**, that is, professionals "educating" or "curing" rather than allowing members of the community to participate in identifying and solving their own problems are undesirable and actually constitute "non-participation". Plans are designed by the power holders (government or professionals or International Agencies) based on their own ideas and imposed on the people.

**Tokenism** (practice of making only a token effort or doing no more than is minimally necessary) is only a little better than manipulation and therapy. There are 3 types (i) **informing** - a one-way process in which the power holders simply inform the community about steps that will be taken in solving their health problems (ii) **consultation** in which community members' views are solicited but there is no guarantee that any use will be made of them during implementation of plans and (iii) **placation** that is some representatives of the community are actually picked to sit on committees to plan and implement a project but they have no decision making prerogatives.

Other levels of community participation in order of appropriateness are (iv) **partnership** in which case the community negotiates and compromises with professionals on a fifty-fifty basis (v) **delegated power** where decision making authority is partly in the hands of the community and (vi) **"citizens control"** in which the community has full managerial power over its projects and/or services.

#### **4. INTERSECTORAL COLLABORATION:**

In order to maximise the use of human and other resources, various sectors which directly or indirectly affect health care must collaborate. Administrative walls and other not so visible walls which separate them must be broken down so that communication is free and there is cross-fertilisation of ideas. Doing things in a parallel fashion often results in replication of efforts, wasteful spending and sometimes "reinventing the wheel". Projects or syllabi which should be implemented jointly take more time and require more funds.

Sectors may for example be various departments or ministries dealing with:

- \* Education
- \* Works and Housing
- \* Environmental sanitation
- \* Health
- \* Finance
- \* Agriculture
- \* Technology et cetera.

## **5. INTEGRATED SERVICES**

Many static facilities, instead of providing different health services every day, prefer to limit services to specific ones on different days. For example, they may provide immunisation services on Mondays, antenatal care on Tuesdays, family planning on Wednesdays, food demonstration on Thursdays, et cetera. Some have reasons such as inadequate number of babies for immunisation every day of the week, so pooling of the babies together on one clinic day may seem more economical.

With integrated services, a mother and child(ren) or all members of a family are able to receive all necessary services on one visit to a facility any day of the week. Time spent going to the facility is reduced and there are fewer "missed opportunities" especially concerning immunisation, antenatal care and family spacing which are not usually sought after.

The approach adopted by a facility must be determined by the cost-effectiveness of the choice. For example, one may be concerned about vaccines which will be wasted if there are not many children at a clinic each day, but when one considers "missed opportunities", it may be better to lose some vaccine but have a better coverage.

### ***COMPONENTS OF PHC***

#### **HEALTH EDUCATION**

Every society needs to know about the health problems prevalent in its geographical area. The type of information communicated with the people must be tailored to their educational level and be relevant to available technology. Health care providers who organise health

education programmes must have appropriate knowledge and skills in communication and teaching methodology.

### **MATERNAL AND CHILD HEALTH (including FAMILY PLANNING)**

Emphasis on maternal and child health does not mean exclusion of the rest of the family. Mothers and children are the primary beneficiaries of most health services because they are usually the ones mostly at risk of common health problems and have high mortality rates.

### **FOOD SUPPLY AND NUTRITION**

Food production, storage and distribution have a great impact on nutrition. Even with the best attitude, knowledge and skills of food processing and utilisation, non-availability will lead to malnutrition. On the other hand, where there is abundance of food but knowledge is lacking on appropriate nutrition or the **food chain** is not maintained, there will be malnutrition.

### **IMMUNISATION**

Many communicable diseases are preventable by immunisation. Research has helped in the eradication of some diseases through immunisation e.g. smallpox. The WHO has global plans for the eradication of more diseases by immunization e.g. yellow fever and poliomyelitis.

### **WATER AND SANITATION**

Maintenance of good health is impossible without the provision of potable water and appropriate sanitary disposal of waste. Many diseases are transmitted through water and water contamination results from improper sanitation. Improved technology has led to better housing, good sources of water and recycling of waste which would have constituted health hazards in many developed countries.

### **SCHOOL HEALTH**

There is a lot more information that school children must be exposed to because of the changing world environment, technology which makes the world a very small place and changing moral values. Curricula at different levels of education must allow for health

knowledge so that there are healthier citizens and better parents in the future.

### **TREATMENT OF COMMON DISEASES**

Not all illnesses require the attention of doctors or nurses at the health facility level. Some can be effectively managed by other health care providers at the community level. Management of an illness may not require drugs but when it does, appropriate ones must be used.

### **ESSENTIAL DRUGS**

This component promotes effectiveness of health care delivery through rational use of drugs. For optimal effectiveness, the drugs must be available at all levels of the health care system. They must be the right drugs, for the right diagnosis and their prescription must be for the correct duration.

Based on identified prevailing health problems, standard schedules are drawn in order to ensure appropriate use of drugs as well as scientific estimation of drug requirements. Health problems are prioritised according to criteria including prevalence, severity, treatability, preventability, infectivity and cost of treatment.

Essential drugs must:

- cure or prevent health problems of a majority of any community
- have significant therapeutic value
- be acceptably safe
- provide satisfactory value for money
- be available at all times for all levels of health care facilities
- be accessible and affordable

### **APPROACHES TO PHC IN DIFFERENT POLITICAL SYSTEMS**

#### **AND DEVELOPMENT LEVELS**

PHC is relevant to all countries but the approaches depend on the level of development and availability of resources. For example, who the PHC provider is depends on available health manpower and their distribution. The political system of a country, also, to some extent, determines the PHC system. The system in the former USSR is quite different from what obtains now in the various countries which formerly constituted the republic.

The Welfare state system, Socialist, Transitional and Pluralistic systems are described in Chapter 3 (Organisation of PHC Health Services).

#### PHC IN NATIONAL HEALTH POLICY AND ADMINISTRATIVE STRUCTURE

In Nigeria, the functions of the Federal Ministry of Health and Social Services are guided by the provision of the 1979 Constitution of the government, the National Health Policy of 1988 (revised in 1996) and the Social Development Policy of 1989. The National Health Policy is based on the principle of equity and social justice and relies on the strategy of PHC to achieve Health For All Nigerians by the Year 2000. The health services include all the components of PHC and the health systems are designed to reflect the economic, socio-cultural and political characteristics of her various communities, as well as the application of relevant results of social, biomedical and health systems research and public health experiences. They must as much as possible, address the prevailing health problems, utilise appropriate technology, intersectoral resources and promote maximum community and individual self reliance and participation.

#### **EVOLUTION OF PHC IN NIGERIA**

The Nigerian health system has evolved from the British Army Medical Services which on integration of the Army with the Colonial Government offered treatment services for local civil servants and eventually the local population close to Government stations. Various religious bodies and private agencies established hospitals, dispensaries and maternities.

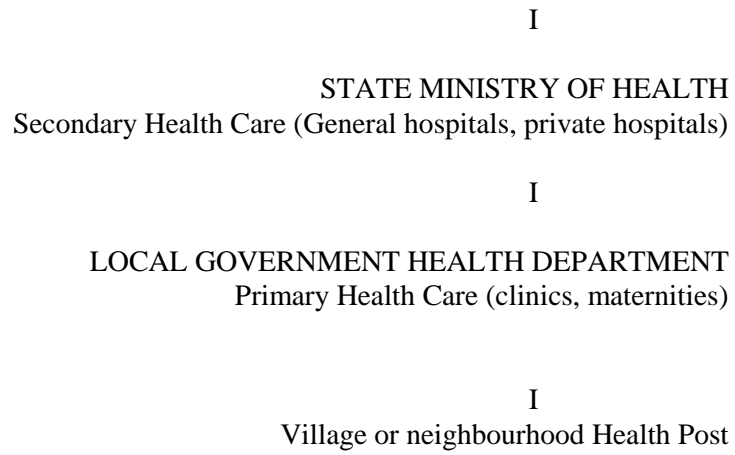
The first Ten-Year-Plan for Development and Welfare (1946-56) which covered all aspects of governmental activities was mainly for expatriate officials but provided the basis for subsequent health plans. Since her independence in 1960, health policies have aimed at correcting some of the deficiencies of the health system.

The 3rd Development Plan of 1975-80 was a giant attempt at comprehensive health care. An Agency, The Basic Health Services Implementation Agency was set up to translate the plan into activities that addressed health manpower development, disease control, efficient utilisation of health resources, medical research, health planning and management. In spite of this attempt, coverage remained inadequate, services were disproportionately oriented with high investment on curative services, coordination of health services at various levels was poor, community involvement minimal, basic health statistics was lacking, health budget inadequate and basic infrastructure and logistic support defective.

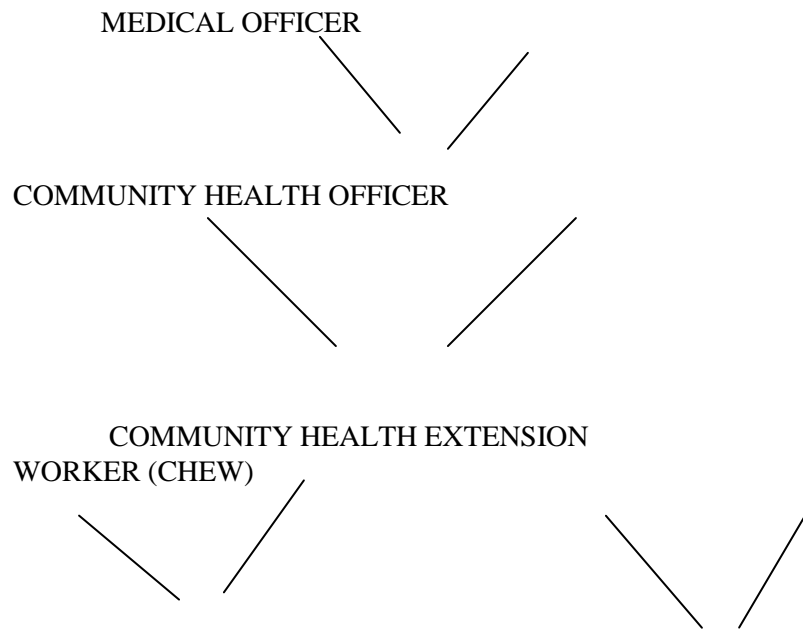
In 1986, 52 LGAs were chosen as models to correct these anomalies. The strategies adopted were: i. promotion of community participation ii. involvement of health related sectors in the planning and management of the health system iii. strengthening of functional integration of all levels and iv. strengthening of the managerial process. All the LGAs in the country now have the basic PHC infrastructure.

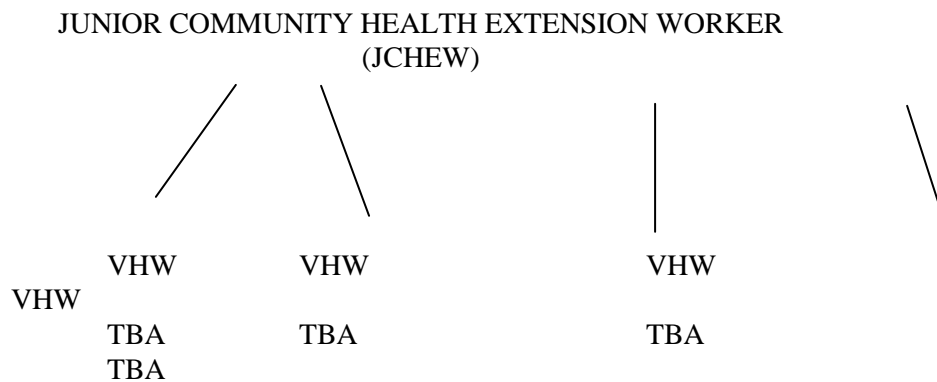
The three tiers of health care in Nigeria are the Federal, State and Local Government Authority (LGA) levels. Health reforms at national and state levels now provide guidelines for implementing PHC-Under-One-Roof. State Primary Health Care Boards/Agencies are responsible for PHC coordination at state level while at the LGA level the Local Government Health Authorities (LGHAs) are to take over the responsibilities of the erstwhile LGA Health Department and oversee activities at Ward (formerly District) level. The Medical Officer of Health (MOH) is the secretary to the LGHA. A ward (smallest geo-political unit from where a Councillor is elected) has a population of 10,000 to 30,000 and comprises streets in urban or groups of villages in the rural area. The Ward Health Committee is responsible for PHC activities in the ward. The Health Facility Management team operates from the Ward PHC which serves as the first point of referral from the community.

FEDERAL MINISTRY OF HEALTH  
Tertiary health care (Teaching and specialist hospitals)



*Figure 1 - Levels of Health care in Nigeria*





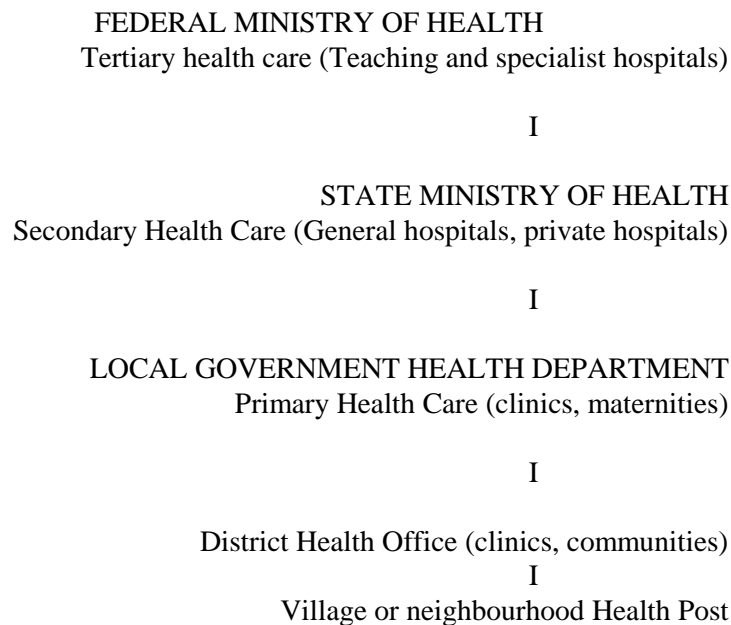
**Figure 2 Organisational Chart For PHC Health Resource**

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There are three major tiers of health care in Nigeria; The Federal, State and Local Government Authority (LGA) levels. The LGA Health Department oversees activities at District and Ward/Village

levels. A district has a population of 10,000 to 30,000 and comprises wards made of groups of villages in the rural area or streets in the urban area. The district health team operate from the district health centre, which serves as the first point of referral from the community.



*Figure 1 - Levels of Health care in Nigeria*

### **PRIMARY HEALTH CARE COMMITTEES**

PHC Committees at the various levels must choose members who reside in the community, understand and speak the local language, know and share the community's culture, attitudes and beliefs, are respected and are willing to contribute selflessly to community programmes.

#### **LGA Primary Health Care Committee:**

Each LGA PHC Committee should have the following members:

- the LGA chairman or the supervisory councillor for health as chairman of committee
- LGA PHC coordinator as secretary
- PHC coordinator of University or School of Health Technology assisting LGA
- the most senior Community Health Officer in LGA
- representatives from International Agencies assisting LGA

The terms of reference of the committee are to:

1. plan, manage, monitor and evaluate PHC services at LGA level;
2. identify the training needs of health workers and send them to appropriate training institutions;
3. budget and manage PHC finances at LGA level; and
4. mobilise community for effective participation in health.

**District PHC Health Committee:**

A district is made up of many wards. A ward in the rural area may be a group of small villages, a large village and in the urban area, the smallest unit comprising many streets or neighbourhoods.

The district health team must be supported by a district PHC committee whose membership should comprise:

1. influential people from a cross-section of the district.
2. representatives of intersectoral agencies (agriculture, education, works and housing et cetera).
3. women representatives
4. representatives of religious organisations in the district.
5. representatives of traditional practitioners in district.

The terms of reference of the committee are to:

1. act as the local government of the district in matters of health, welfare and other development activities.
2. identify health and social needs of the district.
3. identify community resources available for dealing with identified needs.
4. mobilise community for planning and implementation of intervention activities.
5. assist in fund raising activities for community projects.

6. act as liason between community and government or agencies
7. provide feedback to community on various issues that affect its health, welfare and development.

#### **Village/Neighbourhood or Ward Health Committee**

This committee should perform functions 1 to 4 as for the District Health Committee and in addition do the following:

5. organise community to select those to be trained as volunteer community based health workers.
6. determine the type and level of support for volunteers
7. recommend pricing of drugs sold by community based worker
8. determine how to utilise profit from drug sale
9. monitor and evaluate PHC services in the community

### **HISTORY AND PHILOSOPHY OF MEDICAL/DENTAL ETHICS**

Ethics has always been a fundamental aspect of the practice of medicine. Its inclusion as a specific subject of interest to medicine and dentistry however started in the post world war 2 era. Before then, medical ethics dealt with the obligations and responsibilities of the physician (Hippocratic oath 5BC). The principal concern of the doctor for the welfare of his patient and emphasis on doing no harm are significant aspects of this oath and subsequent medical codes.

The principle of the autonomy of the patient has been a subject of discussion since the early periods of this century. In 1914, Justice Cardozo, an American jurist said "Every human being of adult years and sound mind has a right to determine what shall be done with his own body". This principle is applied in contemporary ethical issues on human experiments.

The code of Hammurabi, 2,500 years before Christ, echoed during the Nuremberg war criminal trials of 1947 in which the Nazi doctors who carried out experiments on concentration camp prisoners were found guilty of conduct contrary to the accepted values of humanity.

Considerable responsibility and trust is given to physicians and dentists who must be worthy of the trust. This responsibility is sometimes beyond the individual but extends to a group or community. Decisions taken in such situations call for more judgement and moral considerations. Prevention of the use of the power that has been conferred on the individual or group to commit criminal acts under the excuse of scientific interest is the import of medical/dental ethics.

Although many bioethical issues were discussed even in the early centuries, the introduction of modern technologies especially in the 1950s have raised or intensified ethical questions and given rise to newer, perplexing problems for example on euthanasia, right to privacy, prolongation of life, abortion and prenatal diagnosis, genetic interventions, reproductive technologies and various aspects of human experimentation and interference with nature (psychosurgery, allocation of resources, environmental pollution, definition of death, etc.)

Today, more questions are being raised even on matters that were considered irrefutable, for example abortion and family planning in population control which even religious authorities are discussing and no longer have a unified voice on. Several medical and paramedical associations continue to establish codes. Some of the earlier ones are embodied in the Declaration of Geneva, issued by the General Assembly of the World Medical Association in 1948 and the International Code derived from it in 1949; The Helsinki Declaration issued by the 18th World Medical Assembly in 1964 and revised by the 29th in Tokyo in 1975 established standards for experiments on volunteers and clinical trials of patients undergoing treatment. Since 1976, the World Health Organisation has taken the responsibility to ensure the adoption of ethical standards.

#### **THE ROLE OF MEDICAL AND DENTAL COUNCILS**

Medical and dental councils have an important role to play when considering ethical issues in any country. They ensure that high ethical standards are maintained. The Nigerian Medical Council for example, according to the country's Parliamentary Act of 1963 has three functions:

1. regulation of the medical and dental profession
2. registration of qualified practitioners
3. discipline of practitioners

It presides over ethical issues because its functions are based on the International Code of Ethics which is reflected in "The Physicians Oath", a pledge which every medical and dental practitioner must keep. Basically it dictates that every practitioner must maintain the highest standard of professional conduct, practising without having profit making as the primary motive.

The Council comprises respected medical and dental practitioners. In Nigeria, it has 42 members as follows:

- A chairman appointed by the President after recommendation by the Federal Ministry of Health.
- Two representatives of the Federal Ministry of Health (doctor and dentist).
- The Chief Medical Officer of each state of the country
- One representative of the Military Medical Corp who must be a doctor or dentist.
- One representative of the Nigeria Postgraduate Medical College
- Three representatives of the Colleges of Medicine and Dentistry in the country.
- Two representatives of the Medical and Dental profession nominated by the Federal Minister of Health.
- Eleven members from the Nigerian Medical Association.

#### **ETHICAL CONSIDERATIONS IN DEALING WITH MEMBERS OF THE COMMUNITY**

One major objective of medical /dental ethics and jurisprudence is to stimulate the establishment of conditions which will ensure that the health and welfare of community members are safeguarded, while promoting scientific methods and research. Methods must be acceptable to the communities, and research findings communicated promptly to them so that they can participate effectively in the planning of their own health programmes.

Clinical and community trials of drugs must have clearance of the Ethics Committee or relevant body. Community members must be

informed of the actions, possible side effects, usefulness, quality and safety of drugs for trial.

### **DOCTOR - PATIENT RELATIONSHIP**

The relationship between a doctor and a patient is a contract which must be quite clear to both parties before any action is taken. The doctor must look after the patient according to acceptable medical standards and does not have to obey the patient. A patient has the right to choose a doctor and a doctor has the right to refuse to see a patient provided he has good reasons and there is an alternative for the patient. He cannot however refuse to treat an emergency.

In good medical practice, trust is maintained between the doctor and the patient and their families. Confidentiality must be maintained and consent obtained before information is disclosed by the doctor. Full implications of the disclosure must be clearly explained to the patient. Disclosure without permission is only allowed if:

- it is in the interest of the society at large
- it is for the purpose of research that has approval of the local ethics committee.
- the judge or lawyer requires the information but it is important for the doctor to remind the court of the need for the patient's consent.

A dying patient **MUST** be informed of the prognosis of his condition but in a way and time appropriate for the situation.

### **INFORMED CONSENT IN MEDICAL PRACTICE AND RESEARCH**

Informed consent means that a client or patient is given adequate information and explanations before agreeing to cooperate with the doctor/dentist. Explanations must be made on expected benefits, discomforts, risks and alternatives to procedures or treatment methods. Clients'/patients' questions must be answered and all relevant information disclosed but in such a way that there is persuasion rather than fright.

Consent must be obtained from a patient or client before procedures or operations for diagnosis, treatment or research purposes are done. For a minor (not yet adult), operations may be done for emergencies

without the consent of a parent or recognised guardian only if they cannot be reached easily.

A spouse's permission should be obtained before treatment or surgery of reproductive organs.

For the totally insane or mentally defective, the responsibility for treatment is that of the parents or relations.

#### **THE SIX BASIC ELEMENTS OF INFORMED CONSENT**

1. A fair explanation of the procedures to be followed, and their purposes including identification of any procedures which are experimental.
2. A description of any attendant discomforts and risks reasonably to be expected.
3. A description of any benefits reasonably to be expected.
4. A disclosure of any appropriate alternative procedures that might be advantageous for the subject.
5. An offer to answer any inquiries concerning the procedures.
6. An instruction that the person is free to withdraw his consent and to discontinue participation in the project of activity at any time without prejudice to the subject.

#### **RELIGION AND ETHICS**

Medical practice and religion have always complemented each other except for a few instances where they clash e.g. refusal of blood transfusion by the Jehovah's Witnesses sect or the stand of the Catholics and some other sects on family planning and abortion. In spite of these oppositions, it is important to note that no court has ever upheld the view that a patient should be allowed to die because of his religious beliefs.

#### **THE DOCTOR/DENTIST AND THE LAW**

**Road Traffic Accidents** Even though desirable, the doctor/dentist is not liable to an offence if he does not stop to help with victims of an accident.

**Malpractice** - Negligence of duty or malpractice may be charged where the degree of knowledge or skill reasonable to be expected of

an ordinarily skilled member of a profession (of same experience and/or status) is not practised. For example, denial of prompt attention, incompetent assessment, incorrect diagnosis or not giving the patient adequate information before a procedure and mistakes in treatment.

- Certain procedures e.g. abortion are still illegal in some countries.

- **Assault** is a threat or an attempt to make bodily contact with another person without his consent. It could be charged if a person is threatened or forced to do things or submit to care against his will.

- **Battery** is assault carried out e.g. procedures done without consent of the client/patient.

- **Improper conduct** sometimes gives rise to civil proceedings e.g. adultery with a patient, being under the influence of alcohol or drugs, advertising, criminal offences e.g. false certification et cetera.

#### **DOCTOR/DENTIST - COLLEAGUE OR ALLIED HEALTH STAFF RELATIONSHIPS**

- all practitioners must treat colleagues with respect.
- seniors must be accorded due respect
- comments derogatory to a colleague or his practice should never be said in front of the client/patient.

- a patient already being managed by a colleague should not be seen by another without the former being informed.

- a doctor/dentist should not practice "split fees" with pharmacists or other allies e.g. dental auxiliary.

- a general practitioner should know his limitations and refer patients to appropriate specialists promptly.

- a doctor acts in leadership and/or supervisory capacity to allied professionals (nurses, midwives, Community Health Officers et cetera) and should not expect them to perform duties beyond their competence.

#### **DOCTOR/DENTIST - FAMILY RELATIONSHIP**

Minor illnesses of members of the family can be treated by the doctor/dentist but persistent or severe ones must be referred to colleagues.

1. no fee should be charged when a colleague's family is treated.

### **OATH OF HIPPOCRATES**

I swear by Apollo the Physician, and Aesculapius and Health and All-Heal and all the gods and goddesses, that, according to my ability and judgment, I will keep this Oath and this stipulation - to reckon him who taught me this Art equally dear to me as my parents, to share my substance with him and relieve his necessities if required; to look upon his offspring in the same footing as my own brothers, and to teach them this Art, if they wish to learn it, without fee or stipulation; and that by precept lectures and every other mode of instruction, I will impart a knowledge of the Art to my own sons and those of my teachers to disciples bound by a stipulation and oath according to the law of medicine, but to none others.

I will follow that system of regimen which, according to my ability and judgment, I consider for the benefit of my patients and abstain from whatever is deleterious and mischievous. I will give no deadly medicine to anyone if asked nor suggest any such counsel; and in like manner I will not give a woman a pessary to produce abortion. With purity and holiness I will pass my life and practice my Art.

I will not cut persons labouring under the stone but I will leave this to be done by men who are practitioners of this work. Into whatever houses I enter I will go into them for the benefit of the sick and will abstain from every voluntary act of mischief and corruption, and further from the seduction of females and males, of freemen and slaves.

Whatever, in connection with my professional practice or not in connection with it, I see or hear in the life of men which ought not to be spoken of abroad, I will not divulge, as reckoning that all such should be kept secret. While I continue to keep this Oath unviolated, may it be granted to me to enjoy life and the practice of the art, respected by all men, in all times! But should I trespass and violate this Oath, may the reverse be my lot!

### **THE PHYSICIAN'S OATH**

I SOLEMNLY PLEDGE myself to concentrate my life to the service of humanity;  
I WILL GIVE to my teachers the respect and gratitude which is their due;  
I WILL PRACTICE MY PROFESSION WITH conscience and dignity;  
THE HEALTH OF MY PATIENT will be my first consideration;  
I WILL RESPECT the secrets which are confided in me, even after the patient has died;  
MY COLLEAGUES will be my brothers;  
I WILL NOT PERMIT considerations of religion, nationality, race, party politics or social standing to intervene between my duty and my patient;  
I WILL MAINTAIN the utmost respect for human life from the time of conception; even under threat, I will not use my medical knowledge contrary to the laws of humanity;  
I MAKE THESE PROMISES solemnly, freely and upon my honour.  
I WILL MAINTAIN by all means in my power, the honour and the noble traditions of the medical profession;

Declaration of Geneva (Physicians' Oath Declaration),  
adopted by the General Assembly of the World Medical  
Association at Geneva, Switzerland, September 1948  
and amended by 22nd World Medical Assembly, Sydney,  
August, 1968.

### **DECLARATION OF HELSINKI**

Recommendation guiding medical doctors in  
biomedical research involving human subjects

Adopted by the 28th World Medical Assembly, Helsinki, Finland,  
1964 and As Provided by the 29th World Medical Assembly, Tokyo,  
Japan, 1975.

#### Introduction

It is the mission of the medical doctor to safeguard the health of the people. His or her knowledge and conscience are dedicated to the fulfillment of this mission.

The declaration of Geneva of the World Medical Association binds the doctor with the words: "The health of my patient will be my first consideration," and the International Code of Medical Ethics declares that, "Any act or advice which could weaken physical or mental resistance of a human being may be used only in his interest."

The purpose of biomedical research involving human subjects must be to improve diagnostic, therapeutic and prophylactic procedures and the understanding of the aetiology and pathogenesis of disease.

In current medical practice most diagnostic, therapeutic or prophylactic procedures involve hazards. This applies a fortiori to biomedical research.

Medical progress is based on research which ultimately must rest in part on experimentation involving human subjects.

In the field of biomedical research a fundamental distinction must be recognised between medical research in which the aim is essentially diagnostic or therapeutic for a patient, and medical research, the essential object of which is purely scientific and without direct diagnostic or therapeutic value to the person subjected to the research.

Special caution must be exercised in the conduct of research which may affect the environment, and the welfare of animals used for research must be respected.

Because it is essential that the results of laboratory experiments be applied to human beings to further scientific knowledge and to help suffering humanity. The World Medical Association has prepared the following recommendations as a guide to every doctor in biomedical research involving human subjects. They should be kept under review in the future. It must be stressed that the standards as drafted are only a guide to physicians all over the world. Doctors are not relieved from criminal, civil and ethical responsibilities under the laws of their own countries.

## Basic Principles

1. Biomedical research involving human subjects must conform to generally accepted scientific principles and should be based on adequately performed laboratory and animal experimentation and on a thorough knowledge of the scientific literature.

2. The design and performance of each experimental procedure involving human subjects should be clearly formulated in an experimental protocol which should be transmitted to a specially appointed independent committee for consideration, comment and guidance.

3. Biomedical research involving human subjects should be conducted only by scientifically qualified persons and under the supervision of a clinically competent medical person. The responsibility for the human subject must always rest with a medically qualified person and never rest on the subject of the research, even though the subject has given his or her consent.

4. Biomedical research involving human subjects cannot legitimately be carried out unless the importance of the objective is in proportion to the inherent risk to the subject.

5. Every biomedical research project involving human subjects should be preceded by careful assessment of predictable risks in comparison with foreseeable benefits to the subject or to others. Concern for the interests of the subject must always prevail over the interest of science and society.

6. The right of the research, subject to safeguard his or her integrity must always be respected. Every precaution should be taken to respect the privacy of the subject and to minimize the impact of the study on the subject's physical and mental integrity and on the personality of the subject.

7. Doctors should abstain from engaging in research projects involving human subjects unless they are satisfied that the hazards involved are believed to be predictable. Doctors should cease any

investigation if the hazards are believed to be predictable. Doctors should cease any investigation if the hazards are found to outweigh the potential benefits.

8. In publication of the results of his or her research, the doctor is obliged to preserve the accuracy of the results. Reports of experimentation not in accordance with the principles laid down in this Declaration should not be accepted for publication.

9. In any research on human beings, each potential subject must be adequately informed of the aims, methods, anticipated benefits and potential hazards of the study and the discomfort it may entail. He or she should be informed that he or she is at liberty to abstain from participation in the study period and that he or she is free to withdraw his or her consent to participation at any time. The doctor should then obtain the subject's freely given informed consent, preferably in writing.

10. When obtaining informed consent for the research project the doctor should be particularly cautious if the subject is in a dependent relationship to him or her or may consent under duress. In that case the informed consent should be obtained by a doctor who is not engaged in the investigation and who is completely independent of this official relationship.

11. In case of legal competence, informed consent should be obtained from the legal guardian in accordance with national legislation. Where physical or mental incapacity makes it impossible to obtain informed consent or when the subject is a minor, permission from the responsible relative replaces that of the subject in accordance with national legislation.

12. The research protocol should always contain a statement of the ethical consideration involved and should indicate that the principles enunciated in the present Declaration are complied with.

**BLOOD STAINS, GROUPINGS, TESTS AND USE IN IDENTITY, DISPUTED PATERNITY, AND HLA TYPING.**

Blood samples are legal evidence for some criminal proceedings. Blood stain identification is one of the most highly specialised aspect of forensic sciences. The scientist is dealing with individuals whose identity he is completely unaware of. He carries a heavy load of responsibility as life and liberty may hang upon his findings. Each case he deals with is unique and his material once lost is completely irreplaceable.

The situation in which the participation of the laboratory is required if justice is to be based on competent medical opinion falls into two categories:

- (i) Civil Cases - Non violent crimes e.g. burglary  
accidental cuts, disability
  - (ii) Criminal cases - Violent crimes - Rape, murder, suicide.
- Spots, smears and stains may be seen as blood but they require proof for legal purposes.

#### ACCURATE DETECTION OF BLOOD STAINS

Accurate detection of blood stains must be performed at the scene of crime, on the body of the victim (if still there) and all the surrounding objects and weapon(s). From the blood stain, important information (i) concerning reconstruction of the crime, the circumstance of death or of wound, the phases of a struggle and finally the identity of the criminal can be obtained.

#### FACTORS WHICH OBSURE BLOOD STAINS ARE:

- (A) The size - Some stains may be too small. Careful examination under daylight, use of lens and in some cases suitable artificial light (Ultra violet or Infra-red) are needed to detect minute stains.
- (B) The age - Blood stains are usually red when they are fresh but become brown due to oxidation; Haemoglobin changes to haematin becoming dark/black.
- (C) Rust on the weapon - the brownish colour of rust may be confusing.
- (D) Washing - Washing of stains are precautionary measures taken by criminals to hide crime. Laboratory examinations of such stains distinguishes them from other stains.

The place, shape and size of the stain must be accurately

registered, photographs should always be taken before stains are removed and analysed.

Various shapes of blood stains are produced by different conditions:

- (a) Blood streaks are caused by venous haemorrhages
- (b) Pools of blood of irregular shape are formed by abundant haemorrhages
- (c) Circular stains are produced when drops of blood fall on horizontal surface from a small height. Points appear on the border of the circular stains when the height increases, and the number depends on the height and on the nature of the surface.
- (d) Oval or clublike stains whose end indicates the direction of the drops are formed by blood drops hitting vertical or oblique surface. The more oblique the fall, the more elongated are the stains.
- (e) Splashes, often "exclamation marks" or line-shaped stains are usually produced by the projection of arterial blood or when a blood pool is trampled on, or a bloody weapon is quickly lifted.
- (f) Smears are formed when the blood is wiped-off.
- (g) Hand, finger or foot print on blood stain can also be of particular value for identification of a suspect.

In some cases the material to be analysed is abundant, but in others the stains are small and methods requiring very little material are needed for every step.

- i.e
- (1) the identification of the stain as blood (presence of red cells, white cells, haemoglobin and its derivatives)
  - (2) the diagnosis of the species
  - (3) age of the stain
  - (4) the sex
  - (5) the age of the individuals involved (new born or adult)
  - (6) Blood group

It is a good rule to preserve and give part of the sample to other analysts so that results can be compared.

## **BLOOD GROUP INHERITANCE**

The rules guiding blood group inheritance (depending on one gene from each parent) are:

1. a blood group gene cannot appear in a child unless present in one or other or both parents.
2. if an individual is homozygous (e.g AA), then the blood group gene must appear in all the children's blood.

The following are examples of possible blood groups

<b>Parents groups</b>	<b>Possible groups for children</b>
O X O	OO
O X A (AO or AA)	OO, AO,AA
O X B (BO or BB)	O, BB, BO
A X B (AO,AA and BB,BO)	OO, AO,BO,AB

et cetera since a child takes one gene from each parent.

Grouping test can NEVER establish paternity but it can confirm impossibility of an alleged one (i.e exclude some men).

#### **THE USE OF HLA IN DISPUTED PATERNITY**

The court is allowed to issue a direction and with the consent of an individual use HLA typing to determine paternity. Paternity can be disproved on genetic basis if:

1. a gene product appears in a child but is absent in putative father e.g mother is group O, father is O but child is A.
2. putative father is homozygous for a gene whose product does not appear in a child e.g Rh system in which father is CC and child cc.
3. putative father is heterozygous for two alleles neither of whose products appear in the child e.g father AB and child O.

Exclusion of 1 and 3 are called **first order exclusion** and those based on 2, **second order**.

#### **TYPES OF WOUNDS AND FORENSIC RELEVANCE**

Wounds sustained by a person may give legal clues before and after death. The type of wound gives a lot of information about the circumstances surrounding an incident. They are **Abrasion, bruise,**

**laceration, incised wound, stab or puncture wounds, wounds from glass and burns.**

**Important features** to take note of include the:

- \* size of the victim
- \* size of the wound
- \* shape of the wound
- \* type of wound
- \* what the margins of the wound look like
- \* the number of wounds
- \* surface and floor of the wound (may contain broken glass, hair, sand etc.)
- \* colour of the wound
- \* age of the injury (ante-mortem/post-mortem)

These features may help differentiate **between suicide, homicide, accidental and fictitious wounds.**

**Abrasion** - this is a scratch (e.g. from finger nails) or grazing of the outer layer of the skin. The wound is usually at the site of blunt injury. It may show the pattern of the object causing the injury e.g. tooth from bite, tyre, hammerlike object etc.

**Bruise** - this results from an escape of blood into tissues. The skin remains intact and the bruise may not be at the point of impact, usually from a blunt object. Bruises may be found on the neck in cases of strangulation or hanging or in the inner part of the thighs in a case of rape. There may be no sign of external bruising even when extensive damage has been done to internal organs e.g following a blow to the abdomen.

The colour of a bruise is significant. If bright red, there is suspect of carbon monoxide poisoning, dark red or black (less than 24 hours old), greenish (about 1 week old) and yellowish (about 2 weeks old). Bruises may resolve completely by the end of a month.

**Laceration** - tearing of tissue, usually by a sharp edge e.g of a wall, pavement, blunt axe, hammer, wood, pistol butt, fist etc. The wound is not neatly cut as with an incision and is usually in a prominent part of the body. The size and depth vary with the thickness of the soft parts in the area of injury. The wound is prone to infection from the object causing the injury.

**Incised wound** - caused by sharp instruments e.g razor, knife, scalpel etc. The wound edges are straight and neat and usually accompanied by profuse bleeding. There may be a zig-zag if the skin in the area is not tight. The position of the wound may differentiate between suicide and homicide.

**Wounds from glass** - these are usually lacerations with scratches or abrasions. They may look like incisions or stab wounds depending on how sharp the glass is, and the direction of the impact on the affected area.

**Stab or puncture wound** - these are made by pointed instruments e.g knives, nails, bullets, scissors etc. The wounds have clean cut margins and are deep.

**Burns** - from hot objects or fire. The shape of the hot object may be marked on the skin. Blisters may form in various sizes and the skin may peel off.

The age of a wound may be determined by certain features. Antemortem wounds show vital reactions, that is, evidence of inflammatory or repair reactions. Leucocytes are at the site and there may be vascular and fibroblastic repair evidences. A wound that is less than 12 hours old is red and swollen. By 24 hours, it has vascular buds, 36 hours, capillary network and between 24 to 48 hours, epithelium migrates in. Firm union occurs at about 5 to 6 days.

#### **CORONERS CASE AND PROCEEDING**

Circumstances in which a physician must report a death to the coroner include:

- \* sudden deaths within 24 hours of admission
- \* death from unnatural causes
- \* death following abortion
- \* death from fatal accident
- \* alcoholism
- \* anaesthesia or at operation

- \* drugs/poisoning
- \* death of a foster child
- \* still birth if there is any possibility baby was born live

### **THE ABORTION LAW**

The English law stems from two Acts (1861 and 1929).

**1861** - Offences Against Persons Act gave protection to the unborn foetus.

**1929** - states that the act of causing the death of a child must be done in good faith and only for preserving the life of the mother. It is generally accepted that if two competent medical practitioners decide that the physical or mental and therefore, life of a pregnant woman is jeopardised, the termination of her pregnancy will be within the Law (Beatie, 1967).

Nigeria has no Abortion Law but has Criminal and Penal codes. A draft decree "Termination of Unsafe Pregnancy" has been recommended to the Nigerian Institute for Policy and Strategic Studies. For now, the following are in operation:

- \* Criminal Code Sections 228 and 230
- \* Penal Code Section 232

(see official documents for details).

A draft decree states that a person shall not be guilty of offence if termination is done in the following circumstances:

- \* pregnancy as a result of unnatural offences or rape, confirmed by a registered medical practitioner and reported to the police appropriately.
- \* pregnancy of a minor, idiot, imbecile or mentally or physically handicapped.
- \* pregnancy of a person certified by a social worker of a Public Health Institute (registered hospital or social welfare department of a Ministry of Health) to be a destitute or vagrant or pauper, not having any normal place of abode or residence.
- \* pregnancy due to contraceptive failure in a woman who has had four or more deliveries or is advanced in age (>35 years).
- \* risk to the life of the pregnant woman or of injury to her physical/mental health or of any existing children

- \* risk that the child when born will suffer from physical or mental abnormality or handicap.
- \* unborn child has congenital malformation or medical disability
- \* termination must be done in government or registered private hospital/clinic by a specialist in that field.
- \* pregnancy up to the 12th week of pregnancy may be terminated by a registered medical practitioner but by an Obstetrics/gynaecologist thereafter.
- \* all institutions providing termination services must also provide counselling and family planning services and Family Life education.
- \* the pregnant person must be allowed to take a final decision before treatment is given
- \* confidential statistical report must be sent on quarterly basis to the Commissioner of Health of the state.

#### **THE MEDICAL CERTIFICATE OF DEATH**

A medical certificate of the cause of death must be obtained before a body is buried. This helps in determination of the common causes of death in a community, a very useful information for health planning. A certificate provides information on:

- \* the name
- \* the age
- \* date last seen by person certifying
- \* what the dead person was suffering from
- \* date of death
- \* primary and secondary causes of death
- \* signature, name, medical qualification and address of person certifying

#### **V.S. Registry 34**

#### **MEDICAL CERTIFICATE OF DEATH**

I HEREBY CERTIFY

That I have medically attended  
 -----of<sup>□</sup>-----who was apparently<sup>2</sup>  
 or stated to be aged-----years, that I last saw-----on  
 the-----20---, that---was suffering from-----that--

---died as I am aware<sup>3</sup>, or informed on the -----day of ----- 20---at<sup>4</sup>  
-----and that the cause of death was to the best of my  
knowledge and belief as herein stated, vis:-

Primary cause-----

Secondary cause-----and<sup>5</sup> that the  
diseased had continued-----  
-----

Witness my hand this---day ----of -----20---

-----  
*Signature*

Name (*in Block Letters*)-----

Medical Qualification-----

Address-----  
-----

---

1 State Address

2 Omit “apparently or “or stated to be” as the case may be

3 Omit “aware of” when hour of death is known from report

4 State the time

5 State duration of illness if possible

Note that by primary cause of death is meant the disease  
present at the time of death, which initiated the train of events  
leading thereto and not a secondary contributory or immediate cause  
or terminal condition or mode of death

*Figure 2 - The Medical Certificate of Death*

## **CHAPTER 2 COMMUNITY DIAGNOSIS**

To provide necessary health services for a community, health  
personnel must be able to identify prevailing health problems and  
determine their priority. Even where a health care facility is in  
existence, rather than just continue to provide prototype services

(often mostly curative) it is better to continually reassess the health problems of the community and plan services appropriate to the priority health problems of the area.

Every health care provider must therefore possess the skills necessary for diagnosing the health problems of any given community. This chapter does not go into details of the structure and functions of the community but makes mention of them where applicable. It is important to remember that there are 3 main ways of seeing a community. (a) as a geographical location (b) as a collection of people and (c) as a social system.

#### **BASELINE SURVEY/SITUATION ANALYSIS**

When services are to begin in a community, it is very important to have a careful assessment of existing situations in the community. One would need information on the:

- \* **geography** of the area (major settlements, seasons, type of vegetation, location in relation to other communities).

- \* **demography** (distribution of the population by sex, age, ethnic and religious groups) as this will help in determining how many people will later require specific services.

- \* **socio-economic conditions** in the community (occupations, income levels, housing types, availability of potable water, educational levels and opportunities etc).

- \* **environmental, attitudinal and behavioural factors** affecting health.

- \* **epidemiology** (types of diseases and infections prevalent in the community, their magnitude and distribution by sex, age, ethnicity etc. and seasonal variations).

- \* **situation of existing services** (utilisation, coverage, effectiveness, efficiency) - details in chapter 17.

#### **Health problems**

Health problems may be health status or health service problems.

**Health status problems** are those that directly affect the physical

and emotional status of individuals for example, infections like malaria, measles, pneumonia and non infective problems like hypertension, diabetes et cetera. **Health service problems** for example non-availability of required materials, manpower shortage, poor coverage, acceptance and utilisation, effectiveness, efficiency, communication constraints, bad management et cetera affect the health service system and therefore affect health status indirectly.

### **SERVICE UTILISATION**

That a service is available in a community is not proof that it is being used. The wrong information, superstition, negative attitude or previous bad experience about a service may prevent those for whom it has been provided to benefit from it. Intervention programmes which have not sought the opinion of the beneficiaries or involved them from the planning stage are more vulnerable to poor utilisation. During the Community diagnosis exercise, questions should be asked about utilisation of available services and observation made on the extent of utilisation as can be assessed during the diagnosis exercise. The factors contributing to non or poor utilisation should be identified.

### **STEPS OF COMMUNITY DIAGNOSIS:**

The steps one needs to take in arriving at the diagnosis of the health problems of a community are in many respects similar to those for diagnosing an individual's health problems even though the data required is greater (Appendix 3).

#### **STEP 1 - GENERAL STUDY OF THE COMMUNITY:**

As with preliminary history taking to find out how a complaint started and what the signs and symptoms are for an individual patient, one needs to collect general information on the following: geographical, demographic and socio-economic characteristics, vital rates, service utilisation, nutrition and agricultural practices, causes of morbidity and mortality by sex, age, occupation, tribal or ethnic group, locality and religion. Such general information may be obtained from the national map, national and international statistics et cetera and even though not detailed could still be used in planning intervention programmes for a community.

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As with in-depth interview of a patient to eliminate differential diagnoses, interview schedules should be designed to obtain information from relevant sources within the community, including health care alternatives, leaders and other members of the community. It is often not possible to interview or examine every member of a community so one must decide on how to obtain a sample of the population that is representative of the whole.

A lot of information can be obtained from interviews with the leaders in the community whether formal or informal and from alternative health care resources whether modern or traditional. The **felt needs** of the community, that is what the members see as their needs and their **health demands** that is, what they expect the health system or government to provide must be identified. These are usually more important to the community than the needs identified by health workers during observatory and morbidity surveys.

STEP 3: RECORDS:

A physical examination is done in order to ascertain some of the signs and symptoms a patient complains of. The equivalent in community diagnosis is checking available data from different sources e.g. from health care alternatives in the community, clinic/hospital records and cross-checking information obtained through interviews by observation. It is important to remember that information from health facilities may not be kept accurately and may be misleading because it is only cases presented at the facilities which are recorded and not necessarily the prevalent conditions in the community. A morbidity survey on a representative sample of the community and an observatory study of factors contributory to the health problems (environmental, behavioural, attitudinal, socio-economic) should be done including health services utilisation, nutrition practices e.g food production, processing and distribution as well as food security.

Other important aspects of the community to be studied are the culture, socio-economic stratification, means of communication, available facilities such as post office and schools, patterns of leadership, knowledge, attitudes practices and resources.

Sampling may be random, systematic or stratified. It may be by clusters or according to households. A household is a group of people who live together and eat from the same economic source.

#### STEP 4; SURVEYS:

As with an individual, specific investigations may be required to further confirm a tentative diagnosis. Since interviewing may not reveal all the health problems of a community especially where certain conditions are not considered to be diseases or are concealed because of the stigma attached to them, surveys or specific screening tests on samples of the community are often required for better diagnosis of the problems.

#### SOURCES OF INFORMATION ON THE HEALTH PROBLEMS OF A COMMUNITY:

All communities whether developed or developing have

their own traditional and/or modern health care resources. In most developing countries today, community members may patronise a mixture of such health care alternatives.

Common health care alternatives in Nigerian communities and other sources of health information include:

1. **Respected elders** - community leaders, household heads who take decisions on health matters and may give treatment.
2. **Traditional practitioners**  
for example:
  - a. the herbalist
  - b. the diviner
  - c. the spiritual healers
  - d. the bone setters
  - e. the Traditional Birth Attendants
  - f. the Berber Surgeons etc.
3. **Chemists shops**
  - a. dispensing pharmacists
  - b. patent medicine sellers
  - c. medicine hawkers
4. **Public Health Services at Primary ( e.g Local Government Authority level:**
  - a. health clinics
  - b. dispensaries
  - c. maternity centres
  - d. dental hospitals
  - e. infectious disease hospitals
5. **Health Services at Secondary (e.g State) level:**
  - a. general or state hospitals
  - b. government specialist hospitals e.g Infectious Diseases Hospital
6. **Health Services at Tertiary (e.g Federal) level:**
  - a. University teaching hospitals
  - b. special treatment and research clinics e.g dialising, ophthalmology or cancer clinics

7. **Private licensed practitioners**

- a. dispensaries
- b. maternity centres
- c. hospital (specialist or general)
  - d. physiotherapy clinics
- e. diagnostic clinics
- f. dental clinics
- g. eye clinics
- h. ear, nose and throat clinics

Other sources:-

8. **The police**

9. **Insurance corporations records**

10. **Members of the community (neighbours, friends)** from whom advice is sought on health matters).

Information on the morbidity of any community is best obtained from a combination of data collected by observations, from records and from interviews e.g. Interview of community leaders, members of the community and from the health care alternatives used by members of the community.

RELIABILITY OF SOURCES OF INFORMATION:

1. **COMMUNITY LEADERS:** These may be formal or informal, the later having been democratically elected into office. Formal leaders include for example:-

- a. Traditional leaders (The Oba or Chief)
- b. Government officials e.g. Governors, Local Government Chairmen, Commissioners, Ministers etc.
- c. Union leaders e.g. Transporters' union, Union of Market women etc.

Leaders who have not been officially elected but who are opinion leaders or decision makers in matters concerning their families or other members of the community are the informal leaders. These may include:-

- a. family heads
- b. school teachers\headmasters
- c. church leaders et cetera

### Identification of Community Leaders:-

Leadership in a community is based on prestige as well as certain kinds of "majority systems powers" (economic, religious, political etc). Identification of leaders can be done using a network approach. This means starting from one identified leader and seeking information from him/her about other key leaders and from these, gathering information about other dominant personalities who may be influential on health matters in the community. (figure 3).

Information obtained from leaders is usually reliable because they know the general if not specific problems of members of the community, illnesses that have caused deaths or disabilities and often have specific names for the conditions.

Reliability becomes doubtful when one considers their diagnostic abilities, knowledge of causation of disease and tendencies to conceal information on diseases which carry stigmata. Also, some communities do not relate to each other as the typical village community. In many urban areas, the "local community" simply comprises the groups of homes and families in a defined area or restricted neighbourhood so that elders in the community may not have illnesses reported to them.

**2. TRADITIONAL PRACTITIONERS:** (The herbalist, the diviners, spiritual healers, bone setters, traditional birth attendants, barber surgeons et cetera).

In Nigeria, many people whether educated or not patronise traditional healers in spite of availability of orthodox medical practitioners. (Ademuwagun, 1975).

Some conditions for example psychosocial problems, snake bites, fractures etc are reported to traditional practitioners who are specialists in these areas. Often cases initially managed in hospitals end up with traditional practitioners but more commonly, conditions

are first presented to the traditional practitioner and taken to hospital only if management at the later level becomes unsatisfactory.

It is important to obtain information from these practitioners because they live within the community and are more likely to see mild or borderline cases of conditions which never get to the hospital. However, one must recognise the fact that information obtained from them may not give the true picture of the community's health problems. Their diagnoses are often not scientifically acceptable and information may be withheld on cases that could not be cured or who died.

### **3. CHEMISTS AND PATENT MEDICINE STORE ATTENDANTS:**

The majority of common minor illness episodes are treated by this alternative health care resource. Gestler W. 1979 (2) Found in a study in Calabar of the Cross-River State of Nigeria that this group of health care providers was the most popularly patronised.

Also, the need to wait long hours before seeing doctors in government hospitals and the high charges by private ones has forced many people to resort to self-medication. A wide variety of drugs are available for "over-the-counter sale" without prescription to treat many conditions which normally require expert management but are treated symptomatically.

Results of delay of proper care is often disastrous.

### **4, 5, 6 and 7 HOSPITALS, CLINICS AND MATERNITY RECORDS:**

Whether these institutions are at Local, State or Federal levels, they are expected to keep records of cases treated and to write reports on them. The larger ones may have mortuaries from which data can also be obtained. However, data collected give information on only those who utilise the facilities and it is not unusual to find that records are not kept accurately. Diagnosis may not be confirmed after death and some records may be missing.

### **8. THE POLICE:**

Information on road traffic accidents involving human

injuries and homicide cases can be obtained here. Civil cases of rape, human bite, poisoning etc, are also recorded. The records are certainly not representative of the community but contribute to the overall picture of its problems.

#### **9. INSURANCE CORPORATIONS, CLUBS:**

These may have some records on their clients which may not be available elsewhere. They are however not interested in common causes of morbidity such as malaria, colds, skin problems etc but in those that are life-threatening.

#### **10 COMMUNITY MEMBERS:**

A representative sample of the community may be interviewed to find out about illnesses in the family, especially those which have been treated by using home remedies and not reported to any health care alternative. Self-medication for minor, everyday complaints is undoubtedly a common practice the world over such that episodes of malaria, skin problems common cold etc may not be recorded. The fact that they are thought to be minor problems does not make them any less important than other health problems especially if they can be easily prevented. Data from surveys may be unreliable if there is any form of bias or if members deliberately conceal vital information.

### **ENVIRONMENTAL, BEHAVIOURAL, ATTITUDINAL, SOCIO-CULTURAL AND ECONOMIC FACTORS CONTRIBUTORY TO HEALTH PROBLEMS**

#### **Environmental factors:**

An interview schedule should be designed to find out about environmental ills even though most of the findings will be based on observation. Areas to focus attention on include water supply, disposal of refuse and human excreta, vectors of disease, housing, food hygiene, environmental pollution or destruction and accidents.

Findings may be unexpected for example, in Nigeria it may

be surprising for some to find that in Lagos, the former capital and largest, economic city, many homes still relied on wells for water and used bucket latrines until the 1990s. In the Shomolu target area of the Family Health Clinic of the Institute of Child Health, Lagos, Medical Students in 1983 found that 41% of homes had bucket latrines and only 24% of the homes had running pipe bore water. At Ifo some of the villages had no toilets and used the bush. Some had no wells because the soil was rocky therefore, used available streams for different domestic purposes. Water was stored in uncovered pots which became breeding sites for mosquitoes and most homes cooked with firewood or kerosine in poorly ventilated rooms. Drains were more often than not stagnant because they were poorly constructed (Medical students field work report).

**Behavioural and attitudinal factors:**

What an individual does when he\she is ill is commonly referred to as "illness behaviour". It depends on many factors including age, educational level, sex, perceptions of health and health services in different situations, general life values, priorities placed on spending of family income, knowledge of disease causation et cetera.

These factors determine whether an individual would self-medicate, consult a traditional practitioner or an orthodox doctor\health worker. Delay in getting appropriate treatment at the right time is one of the major factors responsible for chronicity of diseases and resultant disabilities.

**Socio-cultural factors:**

These are factors connected with the pattern of living i.e. language, communication, leadership, laws, beliefs, e.g. about foods, pregnancy, female circumcision, malnutrition, stigmas, the "evil eye" et cetera.

**Economic Factors:**

These include occupation and earning power (income), education and general standard of living.

**FACTORS CONTRIBUTORY TO SOME HEALTH PROBLEMS IN A COMMUNITY**

CONDITION	CONTRIBUTORY FACTORS	
	ENVIRONMENTAL	BEHAVIOURAL
<b>Respiratory infections</b>	*Polluted air, soot, dust, smoke *overcrowding*	Indiscriminate spitting, without covering mouth. *, drinking utensils. *eating same bowl/plate at the same time
<b>Gastroenteritis/diarrhoea</b>	*Dirty environment. *fly infested area *poor food hygiene *improper excreta disposal* *poor food hygiene *bottle feeding *indiscriminate defaecation *Dirty environment. *fly infested area *poor food hygiene *improper excreta disposal* *poor food hygiene *bottle feeding *indiscriminate defaecation	*indifference to dirt *determination to bre *unconcern contamination*illiteracy *ignorance about germs /causation of diseases
<b>Malnutrition</b>	*drought *dirt *pests *worms* *Poor feeding habits *improper food processing	*indifference to nutrition education and demonstrations*ignorance

*Table 1 - Factors Contributory To Some Health Problems In a Community*

PLANNING AND IMPLEMENTATION OF A MORBIDITY SURVEY

Morbidity is "any departure, subjective or objective from a state of physiological well-being" (WHO expert committee). Its pattern in a community should be determined or confirmed by survey/s which must be carefully planned by stating clearly:

1. the objective/s
2. Type of morbidity survey - Prevalence (Cross-sectional, point or period) or incidence longitudinal
3. Methods: a Interview (in-depth or Focus group)
  - b. physical examination/screening
  - c. observation
  - d. laboratory investigations
  - e. questionnaire
  - f. report analysis
4. Manpower (e.g. chief investigator, field workers, trained technicians etc).
5. Equipment:- general e.g. stethoscope, auriscope sphygmomanometer etc. specific e.g. scales, Shakir Arm Circumference strip. haemoglobinometer, head gun, serological reagents
6. Time of survey - (taking into consideration seasonal variations and availability of target population)
7. Funds
8. Target population (how to choose representative sample or specific groups)
9. Geography of area (physical structures, boundaries)
10. General information about area e.g. religions, taboos, cultural background etc.

## TYPES OF MORBIDITY SURVEY

**Prevalence** - this reveals information on old and new cases of a disease. **Point prevalence rate** is defined as:

The number of cases of a particular disease or condition  
existing in a population at a specified time x 100  
**Population at risk at that time.**

Period prevalence rate: is the percentage of a population having an illness or condition over a certain period of time.  
Number of illness episodes (spells or persons) over a  
specified period x 100  
**Population at risk.**

**Incidence rate**: shows the frequency at which new cases of a disease or condition arise i.e.  
Number of illness (spells or persons) beginning within a  
period of time x 100  
**Population at risk.**

## METHODS

QUALITATIVE - (ethnographic, participant observation, unstructured interviews, Focus Group Discussion)

QUANTITATIVE - (structured interviews, sample surveys, Knowledge, Attitude and Practice (KAP) studies).

Data collection may be by:

Questionnaire:- relies entirely on information filled in by the respondent. A major disadvantage is that it may not be returned. It mostly relies on memory and therefore common events such as diarrhoea, cough, cold are often easily forgotten. Also translation of symptoms and signs from the local vernacular into English and vice versa may be a problem. Wording of questions should be tried out in pilot studies using health personnel and/or local interviewers. Some of them should translate the English version into vernacular and

another group translate this back into English. Only when the translations mean the same thing should the questions be used.

Also when wording questions, one must take into consideration subjects which are socially or culturally sensitive in order not to cause embarrassment or offence.

Report or data analysis: reports or data from the various health care alternatives in the community should provide information on cases seen or treated by them. They may include in-patient and out-patient records, antenatal record etc.

Interview (In-depth, Unstructured): One of the easiest ways of obtaining morbidity information is through interview but the disadvantage is that it is often of doubtful reliability because it is based on recall. Information can be obtained on causes of morbidity and mortality, KAP (Knowledge, Attitude and Practice), and patterns of "illness behaviour" from:

- (1) Community leaders
- (2) available modern health facilities (clinics, hospitals, maternity homes)
- (3) chemists/patient medicine store attendants.
- (4) traditional healers and birth attendants
- (5) school clinic
- (6) police records
- (7) faith healing homes.

**"Illness behaviour"** is what a person does when he/she or member of the household is ill and depends heavily on the decision maker on health matters.

**Structured interviews** (sample surveys, KAP) have an advantage of investigator's ability to handle large communities e.g a country. An Interview schedule is used in order to ensure that all necessary questions are asked, for replicability and for uniformity where more than one interviewer will carry out a survey.

**Focus Group Discussion (FGD);** is another qualitative method which can be used to obtain individual or group attitudes, opinions

and beliefs on specific topics. Interaction of the group often brings out the much needed feelings and attitudes which may not be assessible with other methods. The group (preferably not more than ten) may include people of similar characteristics or may be a mix of those whose interaction on the topic may be more revealing. The investigator has guidelines on the topic so as to keep the discussion focused but does not offer own opinions or turn the session into a question-answer one.

Qualitative methods are more difficult to analyse but their combination with quantitative ones strengthens survey results. They provide relevant information which may be necessary for appropriate interpretation of quantitative data. More testable hypothesis and structured questions can be derived from them. Local language use, idioms and terminologies which will not offend or confuse respondents can be identified. Also, background factors which influence responses to sensitive formal questions e.g number of children born/dead may be easier recognised and variables which are local/specific to a particular group better controlled in hypothesis testing.

**Coding of Questionnaires and Interview Schedules:**

Open-ended questions may result in voluminous data and difficult analysis. Unless for specific reasons, close-ended (grouped responses) are preferable. A pilot study may be necessary for identification of possible groupings. The space for recording on data sheets or computer can be further reduced by coding. For example, the response for religion or a more confidential reponse may be recorded as an alphabet or a number:

- Religion ( )
- 1 or A = Christian (Catholic, Protestant, Pentecostal etc),
- 2 or B = Moslem (Ahmadiya, etc)
- 3 or C=Traditional/pagan
- 4 or D = other, 5 or E = No religion.

**Dating of events:**

The exact dates of births, deaths, onset of illness may be difficult to recall especially for illiterates. A helpful method is to mention some popular International, national or community events.

Physical Examination: general physical examination of a representative sample of a community or for specific conditions helps to confirm some interview findings.

Observation: an observatory tour to assess the environment, water supply et cetera is essential for determination of factors contributory to health problems.

Laboratory Investigations: samples of water, blood, urine, sputum and stool may be necessary for further (microscopic) investigations.

Screening:- Screening to detect those suffering from specific health problems may involve the use of special instruments and for this purpose there are criteria which screening tests must satisfy; they should be:

1. acceptable to the community
2. ethical
3. reproducible.
4. of reasonable sensitivity
5. specific
6. simple.
7. easy to perform.
8. as cheap as possible

Tests which are not sensitive may pick healthy individuals as having a disease or miss out some who are actually diseased. The following parameters are used in calculations for screening tests.

**True positive** - number of persons who truly have a disease

**false positive** - number not diseased but picked as positive

**true negative** - number of persons who truly do not have disease

**Total diseased** - all persons picked by test as having disease (but some may be false positives)

**Total healthy** - all persons picked as not having disease

**Total population:** - all persons screened

**Sensitivity** = true positive

**The predictive value** =  $\frac{\text{True positive}}{\text{Total diseased}}$

$$\text{Negative predictive value} = \frac{\text{Total positive}}{\text{True negative} + \text{Total negative}}$$

**Prevalence** is generally expressed as the total number of persons with disease i.e.

$$\frac{\text{Total diseased in a population}}{\text{Total population at risk}}$$

but for a screening test, it is

$$\frac{\text{Total positive}}{\text{Total population}}$$

This may be higher or lower than true prevalence depending on the sensitivity of the screening equipment.

## **BIAS**

General sources of bias:

The four sources of bias in informal data collection are i. season ii. space iii. person and iv. topic. Seasonal, spatial and person bias affect reliability of findings, i.e. the extent to which the findings can be replicated on another occasion or by other investigators.

### **Seasonal bias**

The rainy season has been described as the "unseen season" because communities, especially rural ones are often inaccessible during the rainy season and there is a tendency for investigators to carry out surveys when they can reach the community. During the rainy season, malnutrition, diarrhoeas, malaria and respiratory infections are more prevalent because food is scarce, sources of drinking water get polluted and mosquitoes breed in stagnant water.

**Spatial bias:** The proximity of a community to an investigator may make it the choice for surveys when in fact the problem being investigated may be more common in another community. Choice of

villages or houses by the roadside commonly leads to roadside bias or preference of people "at the center of things" to central-place bias.

**Person bias:** Culture and tradition often lead to Person bias; young mothers, persons with stigmatised problems or women generally are not consulted even for investigations that directly affect them.

**Topic bias:** Limitation of the subject matter affects the validity of data collection i.e. the extent to which a "real" or "true" picture of problems as perceived by the community is obtained.

#### FOLLOW UP ON FINDINGS:

This is an integral part of community diagnosis; a health worker's job is incomplete if the community is not made aware of its problems and plans outlined to tackle them. Ideally, Community Development Committees, if they exist or equivalents should be fully involved with data collection and informed of the findings from field surveys so that community participation is ensured from the planning phase of any intervention programme.

#### ANALYSIS OF FINDINGS

On analysing the information gathered during community diagnosis one may be able to determine:

##### **Demographic information and vital rates**

**Population** (Mid year, urban, rural, by sex, occupation, tribe or ethnic group, religion, literacy)

**Age sex pyramid** from which can be obtained:

Proportion of preschool children

Under 15 population

Females of reproductive age (15-64)

Proportion of the elderly

Labour force (15-64 or less than 64 in some countries)

##### **Crude birth rate and crude death rate**

**Rate of Natural Increase** (crude birth minus crude death rate)

**Population doubling time** (70 divided by RNI)

**Life expectancy at birth**

**Total fertility rate**

**Maternal, Infant and Under five mortality rates**

Number of live births delivered by traditional practitioners, doctors or midwives.

**Accessibility to safe water**

**Morbidity pattern** by age, sex, ethnicity, occupation etc.

**Marriage, family and household structure**

**Migration pattern**

**Socio-economic distribution**

**Culture and traditional practices**

**Political structures (governmental and traditional)**

**The environment**

**Health service acceptability and utilisation**

**Efficacy, effectiveness, efficiency and coverage of services.**

**PRIORITISATION OF HEALTH PROBLEMS:**

It may be impracticable to tackle all the problems listed for a community at the same time and decisions must be taken on which ones to start with as priorities. The decision makers must be representative of the community and preferably those resident in the community.

Leaders or representatives of various relevant groups meet and score certain aspects of each health problem. The average score for each is recorded. Each problem or health need is scored on the level of awareness to it, the magnitude, ease of implementation and cost. The magnitude of a health need according to the Schwarz model (1975) can be expressed as:

$M = F \times (HV + EV)$  where M is magnitude, F is frequency (incidence, prevalence), HV is the Humanitarian Value (physical suffering + mental suffering + disability + social disruption) and EV is the Economic Value (cost of care, losses resulting from disability). Here is a simple scoring method used in Nigeria during project formulation for its model LGAs.

	Points	
1.	Awareness (Who sees the problem?)	
	- community and health worker	3
	- community members	2
	- health worker	1
2.	Who is affected?	
	- children 0-5 years	5

- pregnant women 4
- work force 3
- school children 2
- elderly 1
- 3. severity/duration of problem
  - loss of working days 3
  - disabling 2
  - fatal 1
- 4. feasibility of intervention
  - short term 3
  - medium term 2
  - long term 1
- 5. relative cost of intervention
  - cheap 3
  - moderate 2
  - expensive 1

The average score for these 5 aspects of each health problem were added up and ranking done in descending order from the highest score which indicated the problem of highest priority.

### **GROUP WORK TO DESIGN AND COLLECT SURVEY INSTRUMENTS**

**SURVEYS:** Trainees will be supervised by lecturers during all field work activities. They will:

- \* design forms for baseline survey/situation analysis of the community assigned to them.
- \* collect data, using formal and informal data gathering techniques from the target areas assigned to each group.
- \* interview samples of relevant persons in the community
- \* carry out physical examination of representative proportions of assigned communities as well as
- \* do general observation of factors affecting health in the community.

Each group will write a report and present it to other trainees and a panel of lecturers (supervisors) who will grade them. Their findings after necessary corrections will be reported to the health care

providers and members of the community to be used for planning as applicable.

#### **ASSESSMENT**

Trainees are assessed on individual knowledge before and after training, attitude and success with community activities as well as team work performance.

### **CHAPTER 3**

#### **ORGANISATION OF PHC HEALTH SERVICES**

Various methods of organising health services at the PHC level may exist in one country. In Nigeria for example there are few facilities with integrated services, some with unilateral services e.g. maternities, dispensaries or with multiple but not integrated services. Many of the services may not be based on PHC principles and concepts.

An effective, well organised PHC service system must emphasise

- equity and optimal coverage of the target community
- community participation
  - utilisation of appropriate technology and transfer of
- health technology to members of the community.
  - affordability, accessibility and acceptability.
- integration with other relevant services
- provides preventive, promotive and rehabilitative and curative services

Primary Health Care can be delivered using different systems, depending on various factors obtaining in the community. Factors that are taken into consideration include cultural, economic, social, ecological, political and demographic structure of the community.

Four major types of systems described in this chapter are

1. Welfare State system e.g. of Norway
2. socialist system e.g. of the former Soviet Union
3. transitional system e.g. of Peru and
4. pluralistic system of the United States of America

#### **WELFARE STATE SYSTEM**

About 7% of the GNP of Norway is devoted to health and a very high percentage of this support, about 80% comes from social insurance and government health revenues. Hospital and medical care is extended to the entire population of Norway and the patient pays nothing except low charges for special amenities such as a private hospital room. Outside the hospital, medical care requires about 20% payment on the first 3 visits and none for continuing treatment or chronic illness. There are no charges for pensioners or the very poor.

Primary care is regarded as the unique responsibility of a general medical practitioner who is aided by nurses but virtually all maternity cases are delivered in hospitals by nurse-midwives and adequate public health clinics are available for preventive and promotive care. Specially trained nurses do most of the work in the clinics with doctors in periodic attendance. The quality of service rests on governmental control of training institutions.

An Essential Drug System with only about 2000 drugs is operated and all pharmacies are under government supervision.

#### **A SOCIALIST SYSTEM**

The economic support of Soviet health services is derived from the general government revenue which comes from the production of all commodities. Only about 4% of the GNP is spent on health through a unified Ministry of Health.

The soviet constitution guarantees complete preventive and therapeutic health care to everyone as a public service. Doctors are turned out of medical schools at a faster rate than population growth and their institutions are directly under the control of the Ministry of Health.

Much emphasis is placed on child health care and paediatricians are regarded as general practitioners for children rather than as specialists. All health facilities are owned and operated by the central Ministry of Health and primary health care is provided to the general population at polyclinics in the cities or health centres in the rural areas.

"Dispensarisation" is an important feature of the soviet system. All persons considered vulnerable (children, pregnant women, persons

with chronic illnesses or who are exposed to hazards) are recalled to polyclinics or health centres for periodic check-ups. Priority is highest for children and industrial workers and preventive services emphasised to the extent that one may conclude that the pervading priority is more on quantity than on quality of health care.

Drug control is not an issue since the government factories produce all drugs and the ministry distributes them.

The administrative structure is operated through a simple hierarchical network of authority from the national Ministry of Health to 15 republic ministries and to health departments in the provinces.

#### **A TRANSITIONAL SYSTEM**

The health services in most transitional countries of Latin America e.g Peru reflect historical influences. Traditional Indian healing practices are common especially in the rural areas while the Church of Spain provides charitable hospital care, North American influences promote public health programmes and European influence has disseminated social security. The private medical sector also thrives here because there is a class of wealthy families mainly in the cities.

Only about 3% of the GNP is allocated to health. Health care is financed predominantly from collective sources including general national revenues, social security contributions and charitable donations. About 25% of this revenue is devoted to organised programmes for more than 75% of the population and the rest for the affluent and social security beneficiaries.

Doctors (especially the 25% who are specialists) and nurses are poorly distributed, being concentrated in the urban areas as is typical of developing countries. Yet, Peru unlike most other developing countries prefers to post new medical graduates on social service to training of middle level health manpower.

The Ministry of Health undertakes regulatory and planning functions but avoids actions which would intervene with the operations of the private sector.

#### **A PLURALISTIC SYSTEM**

In the USA, the provision of health services is influenced by an open economic market. About 8% of the GNP is spent on health. Up to 40% of health care costs is financed by government agencies (federal social insurance - Medicare and and state - industrial injuries compensation). About 20% is from voluntary health insurance programmes, 35% from private payments and 5% from charity and industry.

General practitioners are few with about 80% of doctors being specialists. The USA is therefore training more physician assistants and nurse-practitioners as replacement for the doctor to provide primary health care. The pattern of health care delivery is mostly private with most doctors working in their own private offices even when services have been financed by government or spread through health insurance.

Preventive health services to children and pregnant mothers are given mainly through private arrangements even though there are numerous clinics for such services, used mostly by the poor. Preventive services are however highly developed for environmental protection, water and sanitation. Also because of the mounting importance of chronic diseases in the elderly, increasing efforts have been put into research into early detection and measures of prevention.

Patients have great influence over the performance of health care providers through court actions against malpractices and a movement for "consumer participation" in policy decisions on health programmes. The overall administrative authority is decentralised and non-governmental organisations exercise a lot of influence on the health system. Drugs are procured, marketed and distributed by private pharmaceutical industries but they are controlled.

### **CLINIC FLOW FOR AN INTEGRATED PHC SERVICE SYSTEM**

A simple clinic flow helps minimise the frustration and time wasted by both the care providers and the consumers. The structure of a facility affects clinic flow but any structure can be modified or

arranged for an efficient utilisation. For an integrated service approach, the following activities and stations are required:

<b>ACTIVITY</b>	<b>STATION</b>
Registration	Registration table
Weighing	weighing table
<b>General</b> health education	Waiting area
Individual health education Consultation	Consulting cubicles,
Immunisation	Injection room/ immunisation table
Nutrition counseling and Food demonstration	Food demonstration section
Treatment	Treatment/injection room
Delivery	labour/delivery room
family planning	family planning room
Payment	cashier's section
Collection of drugs	Pharmacy/drug collection point
Quality of care control	exit table

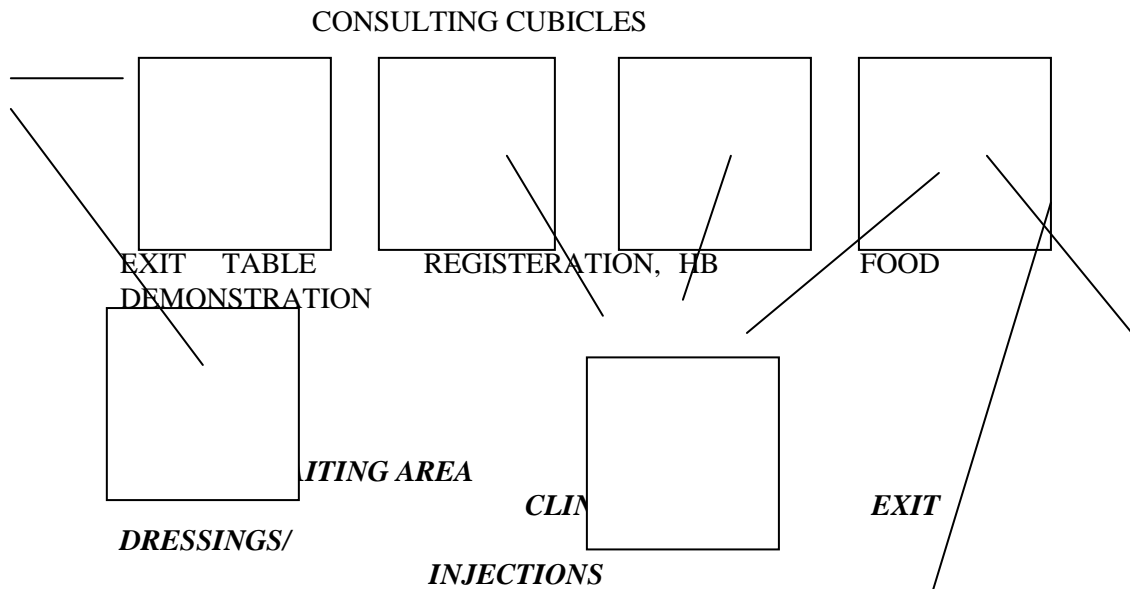
An example of the arrangement in a model PHC clinic in Nigeria is as follows:

Users go first to the registration table where new ones are registered and previous users' cards arranged in a "first come-first served" fashion. The next station is the waiting area where users have general health education before they are called into the consulting cubicles/rooms.

In the consulting cubicles, complaints are obtained and the cards examined for required routine services. Users are sent to relevant sections for services such as Haemoglobin estimation, Heaf test, food demonstration etc., examined and given one-to-one counselling before proceeding to the exit table. At the exit table, a senior health care provider assesses the services given in the cubicles for completeness and ascertains users' understanding of vital instructions. From this table, the user proceeds to the cashier to pay

for drugs which will be collected at the pharmacy or drugs section on the users' way out of the clinic.

In order to reduce the waiting time of those for immunisation, antenatal and family planning services, users are allowed to proceed to the relevant sections from the registration section. Cards of children brought for immunisation are examined to ensure that other routine services e.g weighing for the month, Haemoglobin estimation etc. are not due.



*Figure 3 Clinic Flow*

**CHAPTER 4:**

**MOBILISING COMMUNITY RESOURCES**

**Involving the community:** Mobilising community resources for a health intervention means practicalising the basic PHC principle of community participation. It is involvement of community members in thinking, planning, implementing and evaluating of socio-economic development programmes for their community. Failure to involve communities in the planning of community based projects may lead to total abandonment or partial utilisation of services. Serious and fatal consequences of disagreements between fractions (usually political or religious) of a community can occur even when

an intervention is desirable. For example, a more hygienic abattoir built to replace traditional ones used by two fractions of a community led to a clash that claimed many lives. Smaller but separate abattoirs built with the same budgeted amount or with some contribution from members of the community might have averted the unfortunate situation.

Even tax paying communities, especially urban ones who expect the government to provide all necessary health services and infrastructure will prefer to be consulted before implementation of any project.

**Identification of problems and needs:** Rather than impose a pre-designed project on a community with absolute disregard for its wishes, mere helping it to identify its problems and needs may be more beneficial. The community's felt needs must be addressed as much as possible to encourage full commitment to an intervention being introduced. For example, there may be a need to institute income generating activities with or before embarking on a health intervention.

It is important to ensure that all segments of the community have a fair hearing by representation at all relevant stages of the programme. The poor and disadvantaged must be motivated to get involved and their priority concerns considered even if they are in the minority. Cultural beliefs and practices, ethnic, religious and political differences which may impede optimal participation of community members must be taken into consideration at the planning stage.

Dialogue and discussions must be encouraged between all representatives and the professionals at every stage of the execution of a programme. The feeling of alienation and powerlessness will be avoided and a more united community with joint commitment organised.

**Working within the community's decision making system:** existing structures in a community may be more acceptable to members and need not be disrupted. The same decision making

committee for other developmental matters should be the medium through which health matters are discussed with the community. A two-way communication process between them and the professionals must be kept open.

**Training:** Training and orientation of community so that it is well informed about plans and allowed a chance to be heard about its objections or suggestions is crucial to sustained mobilisation. An informed community's views and reactions are more likely to be taken into consideration in the execution of projects. Also required skills for implementation (data collection and analysis, curative care et cetera) may be taught.

**Choice of manpower:** Community-nominated representatives should be trained to implement projects. A kind of partnership with professionals for the construction of wells, facilities, even roads may be less expensive since there may be no need for compensation. Ideally, the health manpower serving a community should be chosen by it.

**Self reliance:** The ultimate aim of community participation is for the community to have full control. The community must have some control over the planning and management of its programmes. Community Development Committees should not only choose members who are suitable for training as Community based Health Workers but also supervise some of their activities. Programmes which encourage self reliance are better sustained.

#### **ADVANTAGES OF USING COMMUNITY RESOURCES**

**Manpower supply:** Full participation may require training of some community members e.g Volunteer Health Workers. They should be chosen by the community and under its control. This will ensure better accountability as well as give the community a sense of responsibility as the "watch-dog" for its project.

Considerable reduction in manpower needs can be achieved by training community members to acquire skills of problem identification, data collection and analysis for the development of their health programmes. Members and the professionals learn to

carry out community surveys, analyse data gathered and plan together. Direct labour from the community certainly cuts down implementation costs. This requires a sense of commitment and patriotism from every member of the community who has capability for needed skills e.g. volunteers for teaching on activities to improve economic viability of members, volunteers for training as Community Health Workers or as members of the Community Development Committee.

The "child-to-child" method of propagating health information and influencing health behaviour also ensures that children, though classed as dependent members of the community become very useful health manpower(see Chapter 9).

**Better management of resources:** a managerial committee comprising community members who are present in the community at all times to oversee the implementation of programmes are usually better at supervising than health workers who only come on visits. This committee should comprise:

- The head of the community or other respected person appointed by the committee as chairman.
- Respected persons representing
  - religious groups
  - women's groups
  - occupational/religious groups
  - youth groups
  - local clubs
  - at least one school within the community
- Representative of the district health staff
- Representative of donor/Non-governmental organisation
- Existing trained Volunteer Health Worker

**Financial:** the amount spent on health from the GNP of most countries, especially developing ones often falls far short of estimates. Better programmes can be executed if government's efforts are complemented by communities as well as non-governmental donor agencies. Development Communities must learn to raise funds for their programmes but must consciously avoid overtaxing the poor or embarking on projects which are too

demanding or only theoretically accessible to all segments of the community.

**Self reliance:** many communities do not realise the quality and quantity of their resources until they are motivated to utilise them. When potentials in the community are transformed into actuals, self reliance is promoted.

### **OBSTACLES TO COMMUNITY MOBILISATION**

An individual, family or community can be mobilised for various purposes for example, for fund raising, participation in a programme, utilisation of a service or responsibility for its management. The same basic principles apply, whether for the individual or for a large group, rural or urban, rich or poor, literate or illiterate. It is the method, timing or strategies that may need modification. Prior knowledge of certain characteristics of the individual or group helps in determination of such modifications.

Some of the obstacles to mobilisation are political, socio-cultural, economic and psychological. Experiences show that the better a mobiliser is able to identify with the mobilised, the more successful the outcome of mobilisation. Also, priority "felt needs" and demands of the mobilised often need to be dealt with as much as practically possible before new ideas or behaviour change can be effected. The political, traditional or governmental organisational structure into which a community fits largely affects response to mobilisation efforts. In some communities, what the leader or leadership says is accepted by all while in others most decisions are based on majority acceptance. Community mobilisation and eventual participation requires a lot of patience and understanding on the part of government, donors and professionals but more especially on the willingness of the community to be self reliant.

### **PLAN OF ACTION TO OVERCOME OBSTACLES**

The following steps should be taken when there are problems with mobilising a community:

1. find out **WHY** members of the community are not cooperating. This information may be obtained from members themselves or from school children or someone from a nearby community who may know what is going on. There may be discouragement from certain

fractions or leaders in the community. Sometimes, political differences, leadership tussle or misunderstanding or misinterpretation of the goals and objectives of a project may lead to outright rejection of a potentially laudable project.

2. discuss with the community leaders and if necessary, explain the goals and objectives all over.

3. replan and involve community members in deciding how to prevent problems of the first attempt. Members chosen to work with you must be those respected by the community members.

4. with the assistance of community, choose leaders/members who will help in mobilising others.

**PRACTICAL EXPERIENCE** – mobilization of communities during Community Diagnosis and other community based activities.

**ASSESSMENT** - observation with checklist during exercise, MCQ,SAQ.

## **CHAPTER 5**

### **DRAWING UP A PRIMARY HEALTH CARE PLAN**

Planning is the formulation or drawing up of an organised method by which a programme will be executed. It involves the use of existing information and experience of the planner/s.

In PHC, planning is a team work between the professionals or health care providers and community members who may be represented by existing community organisation/s for example, the Community Development Committee or Cooperative Union.

### **MOBILISING COMMUNITIES FOR EFFECTIVE PARTICIPATION**

#### **IN THE PLANNING PROCESS**

Full involvement of the community as much as possible at the planning stage of its health programme is crucial to successful implementation of the programme. Relevant representatives of the community may assist with different steps of the planning process. (See Chapter 4 on Community Mobilisation).

The **Planning Team** should therefore comprise representatives of the (i) community (ii) relevant sectors (iii) health staff (iv) Non

Governmental Organisations (v) women's groups (vi) other relevant community development groups.

### **POLICY ISSUES TO CONSIDER IN PROJECT FORMULATION**

The policies of a country must be considered in deciding strategies for improving health care services of a country or of a community within the country. They affect the choice of alternatives directly or indirectly. Here are some policy issues to consider:

**Funding/ health care financing** - government expenditure on different levels of health care, what money is available for, how money can be spent, which group or problem is priority, which government sector or what officials control expenditure et cetera.

**Physical facilities/services** - type of facilities and services, siting, number acceptable within geographical area.

**Importation regulations** - policies on procurement of materials and equipment, Essential Drugs List et cetera.

**Manpower** - training and capabilities, deployment, remuneration

**Fiscal year** - official calendar

**International relationships** - diplomatic ties, allowable project duration, project manpower (ratio of local/expatriate, payment).

**Intersectoral relationship** - autonomy of sectors, collaboration

**Health** - payment for service, maternity leave, food and drugs regulations, family planning, environmental control, et cetera

**Nutrition** - production, distribution, processing.

### **STEPS FOR DRAWING UP A PHC PLAN**

#### ***Step 1: Description of Situation Analysis and Baseline data collection:***

At the onset of planning for PHC, it is important to carry out a careful assessment of the existing situation. This is particularly important in a country like Nigeria where data collection or analysis is inadequate and irregular. Basic information about a target population e.g an LGA must be collected to give a brief overview of the health situation in that population. This information must be complimented by the information obtained from a baseline data survey, as done for the exercise on Community Diagnosis. Four basic types of data to plan with are demographic data, epidemiologic data, socio-

economic data and environmental data as well as information on the pattern of health facility distribution and their utilisation.

**Demography (population) data:**

Current demographic information about a community may not be available. In the absence of recent data, a baseline survey must be carried out. Examples of data needed include:

- i. Size of the population
- ii. Age-sex structure
- iii. Distribution by religion
- iv. Distribution by ethnic groups
  - v. Vital rates (Crude Birth Rate, Crude Death Rate, Rate of Natural Increase, Maternal Mortality Rate et cetera)
- vi. Geographical distribution
- vii. Political distribution
- viii. Migration pattern

**Epidemiologic data (Diseases and Health Problems):**

- i. Morbidity rates for various conditions
- ii. Prevalence (most common diseases) rates
- iii. Child health situation (Infant Morbidity and Mortality Rates, Under-Five Mortality Rate)
- iv. Maternal health (proportion of women who have lost at least one child, maternal mortality), and Family planning

**Social, economic and environmental conditions**

- i. adult literacy (male/female)
- ii. employment levels and type
- iii. economic activities and categories for males/females
- iv. environmental findings
- v. level of LGA health expenditure per capita
- vi. level of personal health expenditure
- vii. food security and nutritional status
- viii. dependency ratio

**Patterns of Health resources distribution and utilisation:**

- i. Primary health care resource distribution (Health care facilities/training institutions available, Health manpower, special PHC programmes operating).
- ii. Service coverage (Family planning, antenatal, delivery and postnatal services, immunisation, growth monitoring and promotion, health education)
- iii. "Illness behaviour" (Level of self-medication)
- iv. Level of health service utilisation

Information from a situation analysis and baseline data should be compared with new information collected at subsequent stages of programme implementation and the result used for replanning. Expected changes in the economy, population growth and distribution, economy et cetera should be stated at the planning stage.

**Population projection:** There different methods e.g mathematical or geometric growth curve component methods, but a simple, acceptable calculation can be used to determine the population being planned for. **Population growth** can be linear, geometric or exponential. It is the net addition over time of members to a population

$$P_n = P_o + B - D + \text{immigrants} - \text{emigrants}$$

The **rate of annual increase** can be calculated using:

$$P_n = P_o (1 + r)^n \quad \text{where}$$

**P<sub>n</sub>** = new/projected population in n years

**P<sub>o</sub>** = baseline/current population

B = births

D = deaths

n = period over which population is being calculated for.

r = rate of annual increase

**Step 2: Enumeration and Prioritisation of Health Problems**

After compiling data and other relevant information on a community,

- i. a list of health status and health service problems identified must be provided
- ii. problems should be prioritised, i.e. a decision taken

on which problems need to be tackled immediately or postponed and  
iii. possible solutions to these problems and desired or expected changes stated. These form the core of the planning process. A rank of order of priority should be based on the magnitude and manageability of health needs. Manageability can be calculated by adding together scores for efficacy, efficiency and effectiveness.

**Criteria used in identifying priorities include:**

- i. community awareness of the problem
- ii. community groups/s affected
- iii. relative magnitude of the problem in terms of morbidity and mortality.
- iv. vulnerability (feasibility) of the problem to intervention
- v. cost of solution/s

Various methods are available for scoring criteria. The one used in Nigeria followed the pattern of finding the average of scores awarded to the criteria above for each health problem by a planning team (see Chapter 2)

**Step 3: Listing and Selection of Present/Potential Interventions for Priority Health Problems:**

Interventions currently undertaken or proposed for each priority problem must be listed and the most appropriate intervention selected. Interventions for malnutrition for example may include food subsidy, free food supply to families or community based nutrition education. The last intervention may be the most appropriate for a country which cannot afford the other two. Interventions chosen must be technically and financially feasible and socially acceptable.

**Step 4: Determination of Obstacles/Constraints to Interventions:**

Possible constraints and obstacles which could prevent the success or even initiation of each selected intervention must be identified. A fine distinction between obstacles and constraints is difficult to make. A constraint is anything which may dampen or limit the realisation of objectives e.g. delay in obtaining funds while an obstacle prevents or stops progress altogether e.g. non availability of funds.

**Step 5: Selection of Strategies to Resolve Obstacles/Constraints**

There may be several alternative strategies for dealing with a problem. The most appropriate strategies for removing or reducing obstacles can be determined taking into consideration all possible constraints. For example, an obstacle to good immunisation coverage may be inadequate health facilities. The strategies for improving coverage may include use of mobile clinics and yet the constraint of inefficient vehicle maintenance may make selection of this strategy unwise. Training and use of community based health care providers may be a more feasible and cost effective alternative.

**Step 6: Setting of Objectives for Selected Strategies**

Objectives for selected strategies should be set in terms of coverage. It is difficult to measure health status objectives because the contribution of a particular intervention to improvement of health status cannot be clearly separated from that by other interventions or factors. It is easier to measure coverage effectiveness. Setting of overly ambitious objectives or weak objectives should be avoided because they form the basis for subsequent evaluation.

**Step 7: Formulation of Project Plans**

In writing project plans, the following questions need to be answered; what are the required activities for training, design or improvement of facilities, health promotion, service delivery, administration et cetera?, how are they to be done (tasks)?, where will they be done?, when>, by whom? and with what resources? A plan is drawn up for each selected strategy based on these questions with a timetable of activities to realise objectives and targets.

A programme implementation plan with a summary of activities on a schedule gives a picture of the project at a glance. Expected outputs, starting and completion time should be indicated.

**TABLE 2** **ACTIVITY SCHEDULE**

<b>ACTIVITY</b>	<b>OUTPUTS</b>	<b>STARTING DATE</b>	<b>COMPLETION DATE</b>
Promotional -health	better education health knowledge	March 1994	July 1997

et cetera.

<u>No.</u>	<u>ACTIVITY</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>
1.	Baseline data collection	_____			
2.	Procurement of equipment		_____		
3.	Orientation of staff to Primary Health Care		_____	_____	
4.	Retraining of staff		_____	_____	_____

***Figure 3***      ***Sequence of Implementation Activities***

**Step 8: Budgetting (Budgetary Allocations)**

A budget for each project must be worked out with emphasis on cost-effectiveness. Estimates of actual and potential resources needed to implement project activities must be clearly stated in monetary terms. The budget should be specific to the project objectives and relate funds to specific activities, This will make it easier to determine the cost-effectiveness of capital and recurrent expenditures for the various project activities.

Alternative sources of funding apart from government subvention and community contributions should be identified. Examples are Non-Governmental organisations, private entrepreneurs and financial organisations.

**TABLE 3      PROJECT BUDGET**

BUDGET CATEGORY	UNIT COST N K	QUANTITY OR MULTIPLYING FACTOR	TOTAL COST N K	SO
EQUIPMENT PROCUREMENT				

-motorcycles	30,000.00	4	120,000.00	GO T
-weighing scales	5,000.00	30	150,000.00	CO

**Step 9: Planning for Support Systems**

Support systems to enhance implementation of projects may include logistics (transport, supplies), administration, information etc. which must function efficiently before PHC activities can proceed effectively.

**Step 10: Development of a monitoring and Evaluation System**

It is at the planning stage that a system for monitoring and evaluating implementation of projects must be determined. Monitoring is a continuous assessment of the extent to which work schedules, targetted outputs et cetera are proceeding according to plan such that timely corrective measures can be instituted if necessary. Evaluation may be done at specified periods of the implementation timetable or at the time stated for achievement of objectives. Evaluation of coverage will for example, determine to what extent effective coverage is achieved e.g. what proportion of a population for which an intervention is designed has access to it, utilises it and is benefitting from it.

Indicators (indirect measures) should be selected for each intervention but the selection must be guided by the possibility of collecting and analysing the required data and using them meaningfully. In addition, relevant information should be obtained from existing sources.

**HEALTH CARE FINANCING, COST BENEFIT AND COST EFFECTIVENESS**

**HEALTH CARE FINANCING:**

The government is the major source of funding for health in most countries but this source of funding is very often very inadequate especially in developing countries. Other sources of financing must be explored if a health intervention programme is to succeed. One very reliable source is the community itself.

**COMMUNITY FINANCING.**

In a community financing system, the community generates and manages its financial resources. There are three basic options for such financing each having its merits and demerits.

<b>OPTION</b>	<b>ADVANTAGES</b>	<b>DISADVANTAGES</b>
standard for any treatment	Encourages complete treatment and willingness to pay; more treatments are subsidised	Risk of bankruptcy; high prices if there is an over utilization of costly treatments; lower utilization of inexpensive services for which fee exceeds value
Charging for drugs	Willingness to pay; less risk of bankruptcy	Risk that patients do not purchase all necessary drugs for a complete treatment
Pre-payment health insurance	Encourages redistribution of community resources on the basis of need and early use of services since there is no additional cost	Reluctance to pay for future (hypothetical) services; over utilization

To ensure cost recovery and continuity of the PHC system, it is possible to implement a community financing system based on payment for curative services with fees varying according to drug costs. Costly treatments can be subsidised by increasing fees for less expensive treatments and preventive services can be given free.

**Cost benefit and cost effectiveness** analysis should be done periodically to determine the usefulness of a project.

**Cost benefit:** is an assessment of the economic benefits of an intervention programme. It does not take **humanitarian benefits** (relief of physical and mental suffering, reduction of disability and social adjustment) into account.

**Cost effectiveness:** by doing cost-effectiveness analysis, it is possible to determine which of various programmes will best reduce a health problem at a given cost.

## **GROUP WORK**

- critique of existing project formulation document(s) provided and presentation to class.
- project formulation based on data and information on the community (Chapter 2) and presentation.

## **CHAPTER 6**

### **MANAGERIAL PROCESS FOR MANAGING PHC**

#### **DEFINITION**

There are many definitions of management but the most widely used is "getting things done through people".

Three main schools of management theories represent what management is and how it should be studied.

1. The management process school follows the idea of Henri Fayol, who described managerial functions as planning, organising, commanding, coordinating and controlling. Managers must carry out these inter-related functions to be efficient.
2. The behavioural school which recognises the importance of individuals in the workplace and management as a collection of cultural interrelationships or group behaviour. Managers in this school of thought apply their skills of psychology and sociology in motivating workers, identifying their needs, leadership qualities and personalities.
3. The quantitative school sees management more in terms of planning with statistical information e.g budgetting and predicting outcome. This school uses mathematical methods to solve management problems.

#### **FUNCTIONS OF MANAGEMENT**

Management is as old as human society. The principles followed since human beings started living and interacting together are still applicable today in successful organisations. Some of the individuals and institutions who have contributed to these principles are Jethro, Biblical Moses' father-in-law, religious groups e.g the Roman Catholics, Hammurabi(a Babylonian king), Nicolo Machiavelli, Charles Babbage, Henri Towne, Boulton and Watt Soho Foundry and the writers of religious instructions.

Principle of delegation of duties (hierachy of authority)

The use of this principle is as old as man. The Roman Empire had several Provinces and provincial heads; Jethro, Moses' father-in-law suggested how to delegate duties to different leaders with varying numbers of people under each (hundreds, thousands), e.g. departmental or unit heads; while Moses attended to more difficult issues (e.g. policies, regulations).

Efficient Utilisation of Resources - Sumerian priests (3000 B.C.) efficiently managed the local resources brought to them as sacrifices and became the wealthiest in their time. Human sacrifices would not have brought them riches but their acceptance of readily available local resources e.g. money, animals and food made the difference.

Record keeping - Sumerian priests also kept records. Sumerians are known for the development of a written languqage which they used in recording their transactions e.g. taxes collected.

Job description - One of the oldest religious organisations, the Roman Catholic Church, has an organisational structure with job descriptions for posts in the hierachy (Pope, bishops, priests and the laity).

Laws and regulations (Policies) - The Bible, Koran, and other religious books have detailed laws on every aspect of life and on standards as applicable for the period of writing.

The Babylonians under King Hammurabi had laws popularly known today as Hammurabis Code on wages, professional conduct, property et cetera.

Leadership (by example) - Nicolo Machiavelli, as far back as the 15th Century wrote on broad management principles of mass consent, cohesiveness, will to survive and being a good example. As with religious injunctions which emphasise leadership by example, good management relies heavily on this method of leadership even though it is not applicable in all situations.

Planning (including budgetting) - One of the basic principles of scientific management is planning. Major emphasis was placed on

forecasting and production planning by Boulton and Watt Soho Founding, the manufacturers of steam engines. Market survey and information on various conditions in the market which may affect demand helped in production decisions. Demands are still determined from statistics in modern day management.

Supervision - For efficient management of manpower and other resources, there must be adequate supervision. The "putting-out" system of the Industrial Revolution period would have been very successful but for inadequate supervision. Entrepreneurs who supplied raw materials and purchased finished products at a fixed price from producer families did not have effective supervision systems. The workers (families) cheated on materials supplied, leading to a breakdown of the system. With introduction of the factory system, workers had to go to a central place to use machines, hence a better supervision of both the workers and the materials supplied or utilised.

Communication - Effective communication is very crucial to good management. It may be verbal or non-verbal and through physical or non-physical means. Communication is effective only if the purpose for communication is achieved. Communication is an important tool in solving managerial problems. Steps to take include:

- \* identification and analysis of the problem (with or without other staff as necessary),
- \* recognition of person(s) directly or indirectly concerned,
- \* determination of possible solutions (long or short term),
- \* planning and utilisation of appropriate communication means and resources and
- \* evaluation of the outcome.

Staff development and motivation - The initial challenge of scientific management was how to increase productivity and motivate the workers to utilise new methods and techniques effectively. In the Boulton and Watt Soho foundry of Britain, wage payment systems were derived for each job. The environment was made lively and houses were provided. A mutual insurance society was established and at Christmas, families of workers received presents. Charles Babbage, the pioneer of digital computers recommended research

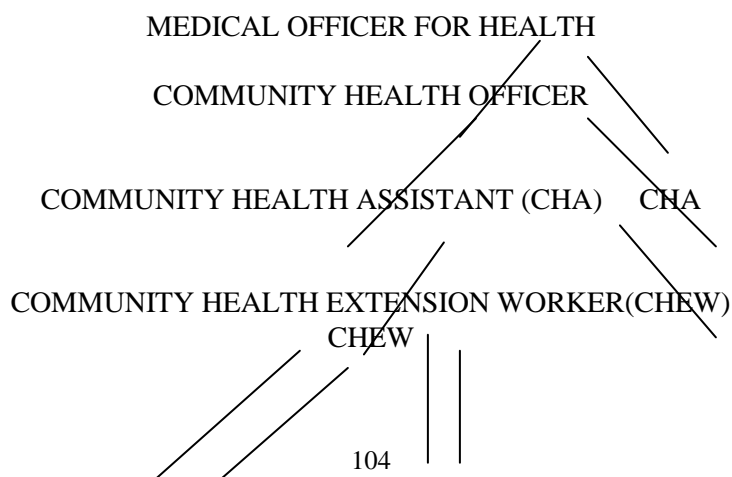
and staff development as essential ingredients while Henri Towne of the Yale and Towne Manufacturing Company introduced gain-sharing to the American Society of Mechanical Engineers as a means of staff motivation. Individuals were to receive guaranteed wages with a work standard, but in addition, gains accruing from extra efforts were to be shared equally between the workers and the management.

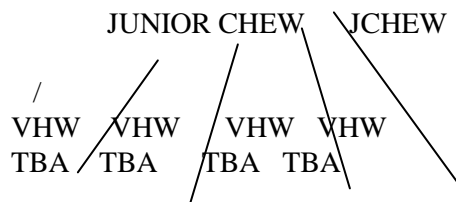
Friendliness, favourable environment and justice are essential ingredients to staff motivation and organisational unity.

### **THE ROLE OF MANAGEMENT IN THE ORGANISATION OF PHC**

Effective management of resources is crucial to the success of any PHC system. From the definition of PHC, it is obvious that for the services to be accessible to all, there must be adequate skilled manpower, materials and equipment which must be properly deployed or distributed. Supervision of the manpower and other resources can only be effected by those having the qualities of good managers.

Communication is a major management tool for PHC. Since a lot of the factors contributory to poor health habits are deeply ingrained in cultural and traditional ways of doing things, a lot of efforts at health education to effect attitudinal and behavioural changes are required.





*Figure 4 Organisational Chart For PHC*

(Example - The Nigerian system)

### **HEALTH MANPOWER MANAGEMENT**

An effective health manager must be familiar with the elements, principles and practice of health manpower planning and development. According to the WHO Geneva Technical Report series 717 Health Manpower Requirements for the achievement of HFA 2000 through PHC pp 58-59, 1985, a health manpower management system consists of a set of administrative structures, procedures, and processes which can be termed as the "elements" of the system. It is these elements which provide the mechanisms for the employment, retention, support and development of health personnel.

Health manpower planning and development is a continuous process comprising long and short term plans. Certain factors must be taken into consideration in determining health manpower needs. They include the:

- national policy
- felt needs of the community to be served
- availability and competence of health workers
- resources available
- population to be served and its distribution/characteristics

- level of intersectoral collaboration

The indicator of Staffing Need (ISN) system uses formulae to calculate the requirement for any category of health worker:

$$n = \frac{v_1 \times w_1 + v_2 \times w_2 + v_3 \times w_3 \text{ etc}}{p}$$

where n = number of staff required

v = a volume measure of workload

w = a weight to be attached to that unit of workload

p = a productivity standard

The volume measure of workload could be for example, outpatient attendance (v1 of 10,000 per annum) with a weight (w1 = 1) or inpatient days (v2 of 20,000) with weight 10 and productivity standard of 10,000 weighted units per annum. The requirement for nurses will be:

$$n = \frac{10,000 \times 1 + 20,000 \times 10}{10,000} = 210$$

The following are elements of Health Manpower Management

#### **ELEMENTS**

Employing	job description establishment controls recruitment procedures personnel records and data base induction distribution of personnel utilisation of support staff
Retraining	career structures promotion procedures living and working conditions salary and incentives
Supporting	supervision communication and consultation collective representation continuing education logistic support

Developing performance appraisal  
retraining (new skills)

A job description is no doubt the major element of health manpower planning and development. It is determined through task analysis.

#### **TASK ANALYSIS AND DESIGN OF A JOB DESCRIPTION**

Task analysis is the breakdown of a task into its components and determining the time, aptitudes and resources required to carry it out. A job description gives essential information about the skills required to perform specified tasks, the qualifications required, responsibilities involved, relationship to other jobs, location and remuneration. It should include:

- i. the job title
- ii. location
- iii. qualifications required
- iv. a summary
- v. the duration
- vi. principal responsibilities
- vii. relationship with other jobs/workers
- viii. remuneration/advancement
- ix. evaluation criteria

#### **EXAMPLE OF A JOB DESCRIPTION FOR A JUNIOR COMMUNITY HEALTH EXTENSION WORKER**

**TITLE:** Junior Community Health Extension Worker (JCHEW)

**LOCATION OF JOB:** Agboyi Village, Somolu Local Government Area

**QUALIFICATION:** - mature, accepted and respected by community

- resident in community
- willing to serve community continuously for at least four years
- leadership qualities and supervisory skills
- secondary school passed

**JOB SUMMARY:** Promote and maintain individual and community health, give curative and preventive care for common, minor illnesses, using appropriate resources and supervise VHW.

**DURATION:** Five years

**RESPONSIBILITIES:**

1. Mobilise community for health improvement interventions.
2. Teach community how to improve personal health, hygiene and environmental sanitation.
3. provide curative care according to Standing Orders
4. supervise Village Health Worker/s.
5. administer immunisations
6. weigh babies
7. keep accurate records
8. attend Village Development Committee meetings

**HOURS OF WORK:** should be accessible at all times in community and work in the clinic in rotation with other available staff according to duty roster.

**RELATIONSHIP TO OTHER JOBS/WORKERS:** Will be supervised by a CHEW who will be supervised by Community Health Officer in charge of health facility in the community. Will supervise VHWs in the community.

**REMUNERATION/ADVANCEMENT:** qualifies for training as CHEW after four years of experience. Salary Grade Level 06 with annual increment and bar as stipulated in Regulations.

**EVALUATION CRITERIA:** quality of work in clinic and community, attitude and behaviour.

### **JOB DELEGATION AND MOTIVATION**

A job description gives an official guideline of the duties of an employee but often, this cannot be adhered to rigidly. An effective team leader or manager must realise that he cannot take all responsibilities and be able to **delegate** duties according to staff abilities/skills. He must be able to motivate the team members or staff to perform such duties. Motivators may include verbal and non-verbal acknowledgement and demonstration of gratitude. Promotion, increased salary or allowances, prize for good performance etc. are ways of encouraging staff to perform optimally.

### **SUPERVISION AND SUPERVISORY CHECKLIST**

Supervision is a process of ensuring effective staff performance and efficient utilisation of resources. It is a method of detecting whether activities are in line with stated objectives and going according to the

time schedule. A supervisory guideline reminds the supervisor of what to observe or obtain information on in a way that is replicable and assures uniformity when different places and/or different persons are to be supervised. It states how often supervision should be done and who to give a feedback to. A standard supervisory checklist is a format for data collection when on a supervisory visit.

**EXAMPLE OF A SUPERVISORY CHECKLIST**

FACILITY/MANAGEMENT SUPPORT	YES	NO	REMARKS
Building easily accessible to clients Size of building adequate Rooms adequate for integrated services Surrounding clean/refuse properly disposed of Store burglar proof Adequate shelves for drugs Toilets available for staff and clients Electricity supply regular Functional generator available as standby Drinkable water available at all times Ambulance functioning Outreach vehicles in good condition Refridgerator able to maintain cold chain Steam sterilizers in working condition Funtioning weighing scale available Adequate audio-visual aids Regular supplies for: <ul style="list-style-type: none"> <li>- family planning</li> <li>- immunisation (vaccines, needles, syringes)</li> <li>- Drugs</li> <li>- maternity services</li> <li>- maintenance of facility</li> <li>- routine data collection</li> </ul> Is there a log book /FIFO method used			
<b>SERVICES</b> Services are integrated All PHC services are available Standing Orders are used			

<p>Patient flow is smooth High proportion of target population uses services</p> <p><b>PERSONNEL</b> Adequate number of staff categories available (doctor, CHO, CHEW, JCHEW, midwife, cleaners, others) Job description available for each category Staff development activities done Staff remunerated regularly</p> <p><b>FINANCE</b> Imprest account kept Functioning Drug Revolving Fund Funding from community Contribution from other sectors Price list for drugs and services available</p> <p><b>MONITORING AND EVALUATION</b> Forms available records regularly filled Findings displayed Feedback to staff and community</p>			
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**STEPS FOR ESTIMATING DRUG, MATERIAL AND EQUIPMENT REQUIREMENT**

1. estimate population by age/sex. The following estimates apply to Nigeria and other developing countries
  - Infants (0-11 months) = 5% of population
  - Pre-school (1-5 years) = 20%
  - School children (6-14 years) = 15%
  - Women (Child-bearing; 15-44) = 15%
  - Other adults = 45%
2. estimate expected annual number of cases of common, serious diseases by age, sex, and seasonal variations.
3. determine the basic drugs needed to treat common conditions
4. calculate the quantities required based on 1 and 2 and National standards

5. make allowance for an increase in number of cases, wastage and expiration of drugs
6. calculate costs for a quarterly order or procurement
7. record all relevant information

#### **PROCUREMENT OF DRUGS**

Drug procurement must be based on assessed needs or previous record of utilisation. Wastage from drug expiration can be avoided if drugs are not distributed from a central store simply by using census figures. Disease variations and prevalence data must be updated regularly and used for procuring drugs. The Essential Drugs and Supply system in Nigeria adopts this bottom-up approach and allows for multi-source supply to health workers to prevent shortage. A Village Health Worker for instance, may replenish her stock from any PHC facility in the district or LGA even though she is primarily attached to one.

#### **INITIAL STOCK**

This must be based on identified health needs. Maximum stock levels are calculated from this and modified according to available storage facilities. Minimum stock is the lowest allowable level before the process of replenishment begins. The drug stock period used in calculation depends on needs; for example the VHW's Initial stock period may be 2 months while that for the district is 4 months. Minimum stock for the VHW may be calculated for a period of 2 weeks and maximum stock for a period of 2 months or more depending on utilisation. Fluctuations in prices must be constantly monitored.

#### **THE DRUG REVOLVING FUND**

This method of drug financing, if properly practised ensures sustainability of drug procurement. The community is involved through "payment for service/drugs" and this requires its active participation in the fixing of prices and supervision of the system. The Essential Drugs List is used to identify drugs available for prevailing health problems. An inventory register is opened for each drug item as well as a ledger for every drug received. A cash box, safe or bank account may be kept as applicable. Withdrawals must be according to the amount needed to replenish stock and a "cash and carry", that is immediate payment for goods adopted in order for the DRF to run smoothly. The system does not allow for exemptions. A

sponsor must pay into the DRF account for clients who are unable to pay by themselves.

### **INVENTORY CONTROL**

The stock card system may be used. Each drug item is entered on a separate card. An alternative is the stock ledger which has each drug recorded on a separate page. A stock voucher shows all the drugs issued out. If operated correctly, this system prevents thefts and drug wastage.

### **CALCULATION OF DRUG NEEDS**

#### **CONSUMPTION FORMULA**

Opening stock + drugs received = closing stock

- adjust for sock-outs, wastage/losses

- calculate drug use per 1,000 patient contacts

$$\frac{\text{adjusted consumption} \times 1000}{\text{Total outpatient consultations}}$$

#### **MORBIDITY FORMULA**

Quantity of drug-specific treatment by standard x Number of treatments by standard episodes of the health problem

**EXAMPLE:** In a population of 50,000, requirement for Chloroquine will be for approximately 5% of all fevers. Assuming that every community member will have one episode of fever in the year, the requirement for Chloroquine will be:

0-5 years (25%)	= 12,500 x 0.5 x 5 tablets/one episode	= 31,250
6-14 years (15%)	= 7,500 x 0.5 x 7	= 26,250
Adults (60%)	= 30,000 x 0.5 x 10	= 150,000
TOTAL /quarter	= 207,500 /4	= 51,875

**MATERIALS AND SUPPLIES:** Essentially, the same principles apply as for drugs. Prices may change but the amount of drugs, materials and supplies required is fairly stable unless there are epidemics.

**EQUIPMENT:** The prices of equipment often change drastically in unstable economies but once procured they may be used in a facility for years. They should be efficient, effective and cheap to maintain. Budgets must be made for preventive and corrective maintenance.

### **EFFICIENT MAINTENANCE OF EQUIPMENT AND FACILITIES**

The durability of equipment and structures depend mostly on quality of manufacture and materials used. There is however, also a great difference between the durability of well maintained equipment and structures and those which are not. Many equipment also come with manufacturers instructions on how best to use them in order to have optimal performance. Some suggest when the equipment are due for periodical maintenance check-ups or servicing and how to store them when not in use.

Cleaning and prompt repair of worn-out parts help prolong the life span of equipment and structures. Early detection of rusted, broken or used parts and their replacement helps prolong the period of usefulness of some equipment and structures beyond the manufacturers' estimates. A major, unfortunate problem with the running of many PHC programmes is poor maintenance of equipment and structures such that in a short while, a lot of them have deteriorated beyond repair that is cost-effective. Many equipment and structures have been abandoned because maintenance was not considered and budgeted for at the planning and procuring stages. An efficient PHC manager must remember that PHC encourages the use of easily maintained equipment and structures at the planning stage. He must also remember to purchase essential spare parts because at the rate that technology is improving and changing, replacement parts are becoming less available for old equipment. They become dysfunctional and obsolete if required spare parts are no longer manufactured. Whenever possible, locally manufactured equipment should be purchased and staff trained on how to maintain them.

### **BUDGETTING AND RESOURCE ALLOCATION**

Budgetting is detailed determination of how funds are to be sourced and utilised. A budget can be capital and/or recurrent. Resource

allocation is a method of distribution of resources e.g from the centre to the periphery. objectives of a project are translated into action through the medium of financial allocation and/or authority to incur expenditures.

**1. Resource based budgets** - a budget manager provides service staff with funds based on what is available.

**2. Activity based budget** - budget is allocated based on activities rather than available resources. Each activity needs are estimated and allocation made base on the activities. Each activity unit or department has its own budget holder.

3. Combination of 1 and 2

**4. Programme budget** - emphasises input-output (outcome/impact). Budget is regarded as the input and the programme objectives as the output. The input has estimates of the cost of each requirement or activity (salaries, transportation, accomodation, feeding, materials, etc as "line items") which must be accounted for on completion of each activity.

**Rolling plan** - in planning budgets, one may need to combine long and short term plans i.e make flexible short term plans within a long term plan. The cycle period is usually 3 years.

#### **ANNUAL BUDGET FOR A HEALTH FACILITY**

This is mostly recurrent expenditure except for years in which the facility may need to procure equipment and vehicles or extend the facility's structure. Items to budget for include:

Salaries

Materials and consumables (syringes, needles, cotton wool, antiseptic solutions, cleaning materials etc)

Drugs

Equipment, vehicle and structural maintenance

Staff development

Miscellaneous.

#### **STAFF DEVELOPMENT**

*Training:* Staff in a PHC setting often need to be polyvalent i.e perform a variety of duties which are normally performed by

different specialised staff. Periodical on-the-job training may be organised and staff remunerated for extra duties done. Also, with improving knowledge and technology, staff need training for the improvement of skills and refreshers on previously acquired knowledge. They may need to go to other clinics to get exposed to newer systems.

*Experience sharing:* meetings and workshops may be organised for staff to discuss experiences on patient management, community outreach etc. This may be among staff of the same facility or of different ones.

### **COST RECOVERY AND COMMON CAUSES OF RESOURCE WASTAGE**

*Cost Recovery:* In an efficient system, the output is better than the input. When money is spent in the PHC setting, the expected output is the fulfilment of objectives or measurable impact. In order to generate funds, patients may need to pay a token fee for services and drugs. A Drug Revolving Fund (DRF) ensures cost recovery if properly executed.

*Resource Wastage:* The common causes of wastage in a health facility include:

- \* expiration of drugs
- \* improper storage ( non maintenance of cold chain for vaccines)
- \* non-pooling of patients/ non-integrated services
- \* over-estimation of requirements
- \* staff carelessness
- \* stealing

## **CHAPTER 7:**

### **NUTRITION AND IMPROVED FOOD SUPPLY**

#### **INTRODUCTION**

Nutrition is the sum total of the processes involved in taking in nutrients, assimilating and utilising them. Inadequate intake, or

assimilation or utilisation leads to malnutrition which is still one of the major causes of morbidity and mortality of children especially in the underdeveloped parts of the world. Many factors are responsible, for example ignorance about what to take, lack of money, malfunction of the gastrointestinal system due to infection and parasitic infestation. Even in the midst of plenty, improper processing or combination of food types leads to malnutrition. Many a problem would have been solved without a gamut of laboratory investigations simply by assessing the nutritional status of patients. Unfortunately, nutritional assessment, especially dietary history is seldom taken hence omission of the often much needed dietary counselling. This chapter deals with the various aspects of nutrition which every health practitioner should know in order to impart appropriate knowledge on people at every opportunity.

### **GOOD NUTRITION**

If children are to develop well and remain healthy till old age and death, they must take the necessary nutrients in the right proportions daily. Since nearly all foods are mixtures of nutrients but each may be richer in certain nutrients than others, various proportions must be combined to achieve a balanced diet. Maize, for example, has little lysine but much methionine while cowpea (beans) has much lysine and little methionine. Where there is a need for strict diet restriction, the composition of the foods should be checked from authentic food tables. Generally, first class proteins include various types of meat, fish, other sea foods, milk and eggs. Second class ones are the legumes e.g. different types of beans (soya, locust, cowpeas etc), melon seeds and groundnuts. Sea foods are rich in calcium and fluorides, first class proteins in riboflavin and essential amino acids, vegetables in iron while fruits are generally rich in vitamin C (and yellow ones in caroteen, the precursor of vitamin A)

### **IMPORTANT PERIODS OF LIFE:**

1. Intrauterine period
2. Infancy
3. Adolescence
4. Child bearing period for women

5. Old age
6. Period of illness.

#### **INTRAUTERINE PERIOD AND PREGNANCY:**

There are no special foods for pregnancy but the normal diet of a non pregnant woman must be modified to provide adequate nutrients for her physiological needs and that of the baby in utero. The size of the baby increases fastest during the last trimester, so over-eating during this period should be avoided. On the other hand, dieting during pregnancy is not advisable. A pregnant woman should eat in addition to the normal daily requirements, extra nutrients needed during pregnancy. A baby in utero will obtain needed nutrients whether the mother eats or not but a starved mother is likely to give birth to a low birth weight or even malformed baby (See Appendix for requirements).

#### **BREASTFEEDING AND ARTIFICIAL FORMULA/BOTTLE-FEEDING**

Breastmilk is the best food for human babies. Much as they have tried, manufacturers of infant formulas have not been able to produce all the characteristics of breast milk especially its nutritional, biochemical, anti-allergic, anti-infective and immunological specificities. Even today in highly industrialised societies, breastfed infants tend to show a lower morbidity rate than do bottlefed infants, and are less prone to obesity and cholesterol build-up later on in life (Children 55/56, 1981). They have also been found to be more intelligent (WHO, 1992). Other advantages of breastfeeding over artificial or bottle are dealt with later in this chapter.

#### **ENCOURAGING BREASTFEEDING**

Different experiences and provisions motivate mothers to breastfeed and to maintain doing so for the recommended period of 2 years:

1. Maternity leave duration and arrangement
2. Nursing breaks
3. Provision of nursing rooms
4. Creches at places of work.
5. Legislation on import and use of artificial formulas.
6. Hospital practices which depend largely on the attitude of staff. a. "Rooming-in" to aid demand feeding in hospitals

b.Prevention of prelacteal bottle feeding c.avoidance of overly-deep sedation d. Immediate skin-to-skin contact of mother and baby while nursing the newborn. e. Prohibition of distribution of formula samples.

7. encouragement by peers and family members

Sociological, economic and cultural conditions which discourage breast-feeding include the attitude of relations and neighbours, cultural taboos, especially about colostrum, another pregnancy while nursing, food taboos and family feeding habits, and inadequate or absence of pre-natal information.

Breastfeeding can be promoted by educating mothers, family members and generally, the community on the properties of breast milk as well as on how to succeed at breastfeeding. They must be taught the importance of post-partum attention, early initiation of breast-feeding (immediately after delivery) and support for the nursing mother. A study in Lagos showed that fathers lacked knowledge about the importance of breastfeeding, some would prevent their wives from breastfeeding for cosmetic reasons and will not allow the use of Expressed breastmilk (Abosedo and Esangbedo).

The mother's health as well as that of the baby is very important. Organised education may be in the form of daily broadcasts on radio or T.V., information posters and pamphlets, home counselling or community based education sessions, seminars in secondary schools and prenatal courses.

## **PRACTICAL HINTS ON BREASTFEEDING**

### **Preparation for breastfeeding:**

During the antenatal period, mothers must be encouraged to develop a positive attitude towards breastfeeding and to eat the right foods. They must be taught the properties of colostrum and breastmilk and the advantages of breastfeeding. For those who have retracted nipples, Hoffman manoeuvre or wearing of nipple shields may make nipples more protractile. This is not advisable in the primiparous ones as nipple stimulation may predispose to abortion.

### **Optimal breastfeeding**

**Initiation of breastfeeding** should be immediately after delivery. A close and continuing contact between mother and baby creates the desire for breastfeeding. Baby should be put to the breast **within the first half hour** after birth and fed **frequently, on demand** (usually about 8 to 12 times in 24 hours in the first 2-3 months). Baby should sleep with the mother to allow for night feeds. There is no need for timing because babies usually settle down to a routine on their own.

**Exclusive breastfeeding** should be practised until baby is 6 months old. Some mothers are willing to do so for the first 4 months only. Prelacteal feeds (water, native preparations, glucose drinks, formula etc.) and bottlefeeding prevent mothers from producing adequate milk. They should **NEVER** be given to babies. Breastmilk contains adequate water (about 90%) and nutrients for the baby.

Baby should be put to the breast for about 10-20 minutes on each side. It is important for it to have both the foremilk and hindmilk which contains fatty acids necessary for brain development. The baby should "empty out" one breast before being shifted to the other side. In order for both breasts to produce adequate milk, the side on which the baby starts feeding should be alternated. Mothers need to know that small sized breasts can even produce more milk than big ones if stimulated adequately. With suckling, the "let-down" reflex operates 2-3 minutes after the prolactin reflex. It is important to remove any psychological stimuli that may inhibit the "let-down" reflex of the mother, e.g. pain, embarrassment, fear or discomfort. Baby should be held in the correct position, "tommy-to-tommy" with the head in the crook of the mother's arm and the mouth covering the areola. This prevents cracked nipples. If a breast still feels firm after a feed, it should be emptied by manual expression and the milk kept for later use (see notes on storage). Should nipples ever get cracked, expose and apply a few drops of breastmilk. If very painful, express milk from affected breast and give to baby. It is usually not necessary to apply any other thing but if mother insists, a soothing cream e.g. Lanolin may be prescribed.

**Complementary feeding** with appropriate, local nutritious foods should start when baby is about 6 months old but mother should continue breastfeeding until baby is about 2 years old.

**Breastfeeding and illness:** Mother and baby should not be separated when either requires hospitalisation unless there are contra-indications to breastfeeding. Mother should breastfeed more frequently if the baby has diarrhoea. If the mother has active tuberculosis, she should be given treatment immediately and the baby should have BCG vaccination at birth and Isoniazid therapy.

**MULTIPLE BIRTH:** breastfeeding is successful if twins/triplets are not severely premature. Even then, her expressed milk should be given. The mother of twins/triplets makes as much milk as is needed for all the babies. A convenient arrangement should be made such that each baby takes enough milk.

#### BREASTMILK PRODUCTION

Breast milk volume depends on mother's diet, psychosocial status, and frequency of suckling. The normal volume of breastmilk secreted is 700 - 1000 ml per day and the baby sucks most of it in 5 - 7 minutes. Breast milk volume does not depend on the size of breasts but on the nutritional status of the mother, her state of mind, physical fitness, some hereditary factors, her attitude to breast-feeding and desires to succeed at it. Studies on breast-milk volume have shown under hospital conditions that raising the protein intake of mothers from poor socio-economic background in India increased the average volume of milk from 410 mls to 523 mls per day (Gopalan). If baby is getting enough milk, swallowing sounds are audible during feeds, mother's full breasts become soft, baby wets diapers about 6 times and has bowel movement about 4-8 times in 24 hours, and gains about 18-30 grams per day or 125-210 grams per week. That a baby cries more at about 3 months is no indication that it is ready for complementary feeding. Babies undergo a growth spurt at about this period and want to feed more. This should help increase the mother's milk production for the next few months. This is also the period that the baby may put things in the mouth and have diarrhoea. Continuing exclusive breastfeeding is very crucial during this period.

The following should be avoided when breast-feeding:

- \* Smoking: the nicotine in cigarette causes reduction of milk production and passes through the milk to the baby.
  - \* Coffee: the caffeine in it is a central nervous system stimulant and it passes through milk, to the baby.
  - \* alcohol: appears in milk also. Hard liquors must be avoided.
  - \* spices: excessive spicing of food may alter the taste of breastmilk and put baby off. This does not mean that the breastmilk is spoilt. Some babies like them with the spices!
- Stimulants of milk production (lactagogues) include fluids, drugs (e.g Clorpromazine, a strong Central Nervous System suppressant, for the management of psychosis and not normally prescribed for milk production), and prolactin, an important hormone in initiating and maintaining milk secretion. After the delivery of baby, secretion of prolactin is controlled by stimulation of nerve endings in the nipple during suckling.

*Figure 5 : **BREASTMILK PRODUCTION AND LAM***

The 'LET-DOWN' reflex- is a mechanism which maintains milk secretion and flow. It is set in motion by suckling. Interference with suckling interferes with "let-down" or "milk-ejection" reflex. Regular emptying of the breast by suckling or pump will stimulate milk secretion and flow. Suckling is more than just sucking; it is a complete process when the baby obtains milk from the mother's breast. The nipple lies against the hard palate and the tongue and is "milked" by rhythmic movement of the tongue, cheeks and lower jaw. The "**rooting reflex**" enables the baby to find the nipple when he is put to the breast. Smell may also help the baby to locate the nipple.

**ADVANTAGES OF BREASTFEEDING OVER FORMULA OR COW'S MILK**

**1. Composition** of breastmilk: This varies with the age of a baby. That of the mother of a premature baby is different from that of the mother of a full term baby and the composition changes as the baby grows older. Breastmilk is sufficient for the first 4-6 months. All

mothers, unless severely deprived produce enough milk for their babies and unless severely lacking in Vitamins, produce the right quality of milk.

**Table 4 - COMPOSITION OF HUMAN MILK AND COW'S MILK**

	HUMAN	COW
water (ml/dl)	87.1	87.2
Energy (kcal/dl)	75.0	66
Protein (g/dl)	1.1	3.5
Fat (g/dl)	4.5	3.7
Lactose (g/dl)	6.8	4.9
Proteins (% of total protein)-		
Casein	40.0	82.0
whey proteins	60.0	18.0
Calcium (mg/l)	340.0	117.0
phosphorous (mg/l)	140.0	920.0
Sodium (mEq/l)	7.0	22.0
Potassium (mEq/l)	13.0	35.0
Chloride (MEq/l)	11.0	29.0
Iron (mg/l)	0.5	0.5
Vitamin A (I.U)	1898.0	1025.0
Vitamin D (I.U)	22.0	14.0
Vitamin C (mg)	43.0	11.0
Vitamin K (ug)	15.0	60.0

2. No need for **Literacy**: A mother's literacy is not essential to breastfeeding. In order to use formula, she needs to understand instructions on containers.

3. **Mortality rate**: Infants breastfed for less than 6 months have 5 times more mortality in the second half of their first year (WHO/Mahler). A study of infection related morbidity in breastfed and formula fed infants in India and Canada showed this result:

**TABLE 5: NUMBER OF ILLNESS EPISODES OVER A 24 MONTH PERIOD**

DISORDER	INDIA		CANADA	
	BREASTFED	FORMULA FED	BREASTFED	FORMULA FED

	N = 35	N = 30	N = 35	N = 30
Respiratory infections	57	109	42	98
otitis	21	52	9	86
diarrhoea	70	211	5	16
dehydration	3	14	0	3
pneumonia	2	8	0	0

**Source:** R. K. Chandra, Prospective studies of the effect of breastfeeding on incidence of infection and allergy. *Acta Paediatrica Scandinavica* , 68: 692, 1979.

It is important to note that exclusive breastfeeding is best in the first 4-6 months. There is no immunological protection for the baby if breastmilk and cows/artificial formula are given together during this period of a baby's life. Breastfeeding reduces risk of contamination; it has antibodies (IgD and IgG) against enteropathogens and promotes growth of bifidobacteria which reduce pathogens e.g. E.coli and poliomyelitis virus. That it has antibodies against poliomyelitis virus is however a very important fact to remember because it will reduce the effectiveness of poliomyelitis vaccination. Mothers must be advised not to breastfeed one hour before and after the vaccine has been administered.

4. **Anti-allergenic properties:** Breastfeeding protects against allergy. IgA production in the neonate is deficient in the first 2 to 3 weeks. IgA from mother's milk limits exposure of the neonatal gut to allergens. Artificial or cowmilk feeding deprives the infant of IgA and exposes it to potent immunogens (proteins which are strange to the body).

5. **Contraception (Lactational Amenorrhoea):** Breastfeeding aids contraception; in the absence of any artificial contraception the interval between pregnancies is longer when a mother feeds her infant, especially if done exclusively. In the Philippines, a birth interval of 24-35 months was found in 51.2% mothers who breastfed their children from 7-12 months. Women who breastfeed have high blood levels of prolactin which has inhibitory influence on the secretion of ovarian steroids. Low levels of oestrogen result in delay of ovulation. Lactational amenorrhoea was observed in a study on

Zairean mothers who suckled infants 6 times daily and therefore had high prolactin levels. These rural mothers had high prolactin levels for 18 months, and up to 15% did not menstruate until one year after delivery ( ).

6. **Psychological well-being:** Psychological effects of breastfeeding include mother-child bonding. A close, intimate and secure relationship is developed if a woman breastfeeds her baby. This is helped by placing the baby in the mother's arms soon after delivery. Breastfeeding gives satisfaction and pleasure. For the mother; psychological responses of lactation include nipple erection and uterine contraction, similar to those of coitus and for the baby, sucking is pleasant and soothing.

7. **Weight control:** a nursing mother loses about 1.2 kg in the first six months after delivery.

8. **Reduced postpartum bleeding:** involution of the uterus is aided by the baby's sucking at the nipples. Even mothers who have had Caesarian section should breastfeed as soon as sedation wears off. Breast-feeding aids their recovery.

9. Breastfeeding is more **economical** and **breastmilk can be stored**. In hot climate, it can be stored in a clean container and kept in a cool place for up to 8 hours and in a refrigerator for at least 24 hours. It will keep in a deep freezer for up to 6 months.

10. Breastfeeding is more **convenient** because it is readily available at the right temperature and does not require bottle sterilisation. Even a **working mother** can express her milk for someone else to give to the baby later **with a cup**.

#### **DANGERS OF ARTIFICIAL FORMULA FEEDING**

1. **Neonatal tetany** (which manifests as twitching) is due to high Phosphorus and low Calcium and Magnesium. Sodium and Potassium concentrations are high in cow's milk hence there is increased solute load to the kidneys.

2. **Dehydration:** A neonate's kidney cannot excrete excess of sodium ions therefore, during infection or decreased intake of water hypertonic dehydration results.

3. **Uremia:** the protein content of cow's milk is higher and this predisposes to high blood urea which may lead to neurological sequelae especially in low- birth-weight babies.

4. **Unabsorbed fat:** fat in cow's milk decreases Calcium absorption, yet some components of fat (fatty acids) which are important for brain development are better absorbed from breastmilk.
5. **Cow's milk-sensitive-enteropathy** may occur in infants fed artificial formula. They present with acute diarrhoea and vomiting. It is a temporary condition which disappears by the age of 2 years.
6. **Malnutrition:** there is a tendency for overdilution of artificial formula especially by poor or illiterate mothers and the other extreme, overfeeding by rich ones.
7. **Contamination:** artificial formula needs to be mixed and given to the baby from a container, commonly feeding bottles. Non sterilisation of containers is the single most common cause of milk contamination and resultant diarrhoea. Contaminants may be present even in sterilised formulas (insecticides, pesticides and drugs administered to cows).

#### **BREASTFEEDING PROBLEMS**

Most breast problems are easily treated and for most of them, continuation of breastfeeding is safe and advised.

1. **Engorgement** - usually a result of late initiation of breastfeeding, infrequent feeding and insufficient emptying of breasts. The treatment is more frequent breastfeeding. If the breasts are very painful, some milk should be expressed manually before putting the baby on.
2. **Cracked or sore nipples** - most commonly caused by poor positioning and wrong attachment. May be caused by the use of soaps and detergents on nipples. The treatment is correction of positioning and attachment, exposure of nipples and application of breastmilk.
3. **Mastitis** - a result of inadequate emptying of the breast. The treatment is relief of inflammation, pain and fever. Moist heat may be applied to breasts before a feed and more fluids taken. Antibiotics may be necessary if infectious. Baby should be nursed more frequently. Mastitis is the inflammation of breast tissue and not infection of the milk. Mother should rest more.
4. **Abscess** - The main cause is infection. Antibiotics should be given and as much as possible, incision should be avoided in order not to damage breast tissue and nerves. Depending on the location of the abscess, mother may breastfeed or express the milk.

#### **THE FOOD CHAIN**

The food chain or path through which food passes from its source to its ready-to-use stage has many points at which wastage or nutrient loss may occur. The following diagrams illustrate points at which this may occur for plant and animal foods.

**PLANT FOOD**

(1a) -> (2) -> (3) -> (4)  
 CLEARING OF BUSH PLANTING GROWING  
 HARVESTING

(1b) (6) <- (5)  
 WAGE EARNING TRANSPORTING PROCESSING  
 (BUDGETTING) (7) <- AND STORING  
 WHOLESALE (8)  
 RETIALING  
 AND SHOPPING COOKING  
 (9) -> (10)  
 SHARING EATING AND  
 ASSIMILATION

**ANIMAL FOOD**

(1) -> (6) -> (5) -> (7)  
 FISHING TRANSPORTING PROCESSING  
 WHOLESALING  
 AND STORING RETAILING  
 BUYING (1) (8)  
 -> (9) -> (10)  
 CATTLE-REARING COOKING SHARING EATING  
 ASSIMILATION

**Figure 6 - The Food Chain**

**Points at which nutrient insufficiency or loss may occur include:**

1 = effects of bush burning, inadequate fertilizer et cetera leading to poor crop yield; excessive demand leading to catching of small fish, overgrazing on limited land and rinderpest, Tsetse fly infestation, poor breed leading to poor milk production and malnourished cattle.

2 = planting during the wrong period or in the wrong type of soil

3 = pest infestation (locusts, birds, rodents, aphids, viruses)

4 = use of poor harvesting methods leading to damage and losses

5 = crude processing methods leading to wastage and nutrient loss (crushing of rice grains on motor ways, sun drying causing loss of Riboflavin, et cetera)

6 = spoilage during transportation and storage, destruction by pests and rodents

7 = wholesale or retail buying depends on purchasing power and availability of storage facilities. The quality of foodstuff purchased determines the nutritiousness.

8 = cooking methods e.g. straining of cooked rice and washing of water soluble vitamins, crushing of vegetables or boiling before straining off water with which most of the Iron is lost, overheating and reheating of cooked food and loss of heat labile nutrients

9 = sharing of food among family members is not often according to individual needs causing malnutrition especially among children and women.

10 = eating and assimilation are affected by appetite, efficiency of the gastrointestinal tract (malabsorption), infestation with worms et cetera.

## **MALNUTRITION, GROWTH AND DEVELOPMENT**

A child who is properly fed, develops well. The normal average birth weight is 3-4 kilograms and this should be doubled by the age of 6 months and tripled by 12 - 14 months. The head circumference increases by 2.5cm in the first month and about 1 - 1.2 cm per month up to 6 months. By 4 years, it is near adult size. The normal average length at birth is 40-50 cm and this increases by 2.5 - 4cm in the first 6 months and subsequently about 2.5cm per month. The ratio of the head/chest circumference should be greater than 1 in the first year but less than 1 in subsequent years. The head circumference of a baby less than 1 year is about 0.5cm more than the chest circumference and is 12 - 13.5cm. The posterior fontanelle closes before or at birth and the anterior fontanelle by the age of one year.

**Reflexes:** Newborn reflexes include crying, sucking, rooting, grasping, eye-pupil response and Moro reflex.

### **DEVELOPMENTAL MILESTONES (Appendix 5)**

**At 6 weeks:**

Gross Motor - raises head  
Fine Motor - clutches object  
Language/Speech - vocalises  
Social - smiles socially

**At 3 months.**

Gross Motor - Can elevate chest in prone position  
Fine Motor - claws at small object but cannot grasp  
- squeals and babbles, excited at sight of food

**At 4 months**

Gross Motor - can hold head erect in sitting position  
Fine Motor - moves arms in unison with grasp  
Language - turns head to voice  
Social - Likes to sit and look about with support

**At 6 months.**

Gross Motor - crawls,  
Fine motor - can grasp objects  
Language - calls "mama", "dada",  
Social - fear of strangers.  
Teeth - first 2 lower incisors erupt

**At 9 months**

Gross Motor - Stands supported  
Fine Motor - can approximate index fingers and thumb  
Language - Responds to questions  
Social - plays on his own or with others  
Teeth - has 6 (3 lower + 3 upper incisors)

**At 1 year**

Gross Motor - walks with help or alone up stairs, kicks ball.  
Fine Motor - makes tower of two objects.  
Language - can say 3 words  
Social - removes clothes, indicates wants without crying

Teeth - 0-12 in number D-BA AB-D, 8 deciduous incisors,  
D-BA AB-D + 1 deciduous molar

*Picture 1 - Normal Baby*

**WEANING**

Weaning has been defined as:

- (a) period from when mother decides to stop breastfeeding, until when she achieves it.
- (b) Period from which supplementary food is introduced.
- (c) Period from which anything ( water, milk/formula, food) other than breastmilk is taken by baby. This is the most popularly used definition.

**When to wean:** Breastmilk is sufficient to provide nutrients for an average of 6 months (Helsing & Savage), for some up to 12 months and yet for some earlier than 3 months (Waterlow and Thompson 1979). Some say until the baby doubles its weight.

Weaning too early causes diarrhoea while starting late leads to malnutrition (Rutishauser 1975). Babies should be gradually weaned off breast so that they do not suffer emotional shock. Even if the mother becomes pregnant, she should continue to breastfeed. Her milk is just as good as before but she will need to eat more.

**Iron supplementation:** The little iron in breastmilk is well absorbed, (McMillan, Landlaw and Oski, 1976; Saarimen and Silmes 1979; Picciano 1980). It is possible that supplementary vegetable soup will inhibit iron absorption especially from breastmilk (Helsing 1982, 1980). Also, giving too much iron can lower a child's resistance to certain infections e.g. gram-negative bacteria (Bullen, Rogers, and Leigh, 1972). The reason is, supplementary iron saturates the iron-binding protein (Lactoferrin) in the milk making "free" iron available to bacteria which need it for growth. Vegetables should be added after child has taking supplementary food for about one month. It is better when baby is more than 6 months old.

**Protein:** local protein supplements should be introduced at about 10 months. Ideally, sea foods which may cause allergy and dairy products should be avoided until one year of age.

**Vitamin supplements:** are not necessary for breastfed babies: Fat: (butter, margarine, palm/vegetable oil) should be introduced at about 11 months. Fat helps absorption of vitamins (A especially) from vegetable and increases energy content of food. It is better to introduce as many appropriate foods as possible by the time a baby is ten months or they may not be accepted again. Also, unnecessary

snacking and appetite suppressants (sugary carbonated fluids) should not be presented before baby's main meal. At one year, baby should be able to eat the foods prepared for adults in the family.

**ADOLESCENCE:**

Adolescents have a growth upsurge which demands increased intake of all the nutrients of a balanced diet. Their energy need makes them consume a lot of food.

**OLD AGE:**

As one grows past middle age, one requires less nutrients. Adequate nutrients must be taken however for wear and tear of the body.

**SPECIAL DIETS**

Certain conditions require special diets e.g. Diabetes, hypertension and obesity. The diet for these conditions aims at reducing carbohydrate intake, at the same time meeting the normal needs for energy, protein and vitamins. Hypertensives also need to reduce their salt intake.

**MALNUTITION**

Manifests as undernutrition, the severe forms of which are marasmus and kwashiorkor and overnutrition (often manifested as obesity).

**FACTORS PREDISPOSING TO UNDERNUTRITION**

Basic sectors which influence nutritional status include: 1.Agriculture 2.Education 3.Economics 4.Health and 5.Sociology.

They directly or indirectly contribute to:

(1) Food availability which largely depends on production (farming methods, destruction by pests, preservation etc), seasonal variations, quality and quantity of food produced, harvesting methods, transportation facilities, storage, processing methods, feeding practices e.g. food distribution in family and family size. Also by

digestion and assimilation which depend on the health status of the gastrointestinal tract and absence of parasites.

(2) Socio-cultural problems

- cultural taboos (on breast feeding, pregnancy, and acceptable foods for infants, pregnant or nursing mothers and during illness),
- illiteracy and/or ignorance or inadequate knowledge of the properties of colostrum and breastmilk (e.g. belief about staleness if not fed to baby for a period longer than normal feeding time) or of balanced diet.
- family feeding habits e.g. of food hygiene, favourite foods, and forbidden foods (taboos), communal eating from the same bowl leaving the younger, less aggressive children underfed at each feeding time.
- weaning practices; if not introduced before 1 year, a child may not want to try new foods. Breastmilk is sufficient to satisfy some children up to the age of 6 months but others require supplements from about 4 months. The best time to introduce new foods to a child is before the age of 10 months and breastfeeding should be maintained. By the age of 2 years, a child should be eating regular adult foods. Breastfeeding should be stopped gradually.
- income and amount spend on food as affected by extended family system and poor child spacing.

(3) Infections and infestations: - Conditions synergistic with malnutrition (diarrhoea, measles and tuberculosis) which worsen nutritional status and parasites such as intestinal worms.

4. The environment - inappropriate faecal disposal leading to propagation of parasitic infestations, diarrhoeas and infections.

5. Gastrointestinal tract problems - malfunction of the gastrointestinal tract leading to digestion, absorption and assimilation problems. Malfunction may be enzymatic as in pancreatitis/other pancreatic problems or biliary problems. It may also be a result of malabsorption syndrome or intestinal worms.

6. Communication problems - wrong advertisements and propaganda on formulas, weaning foods and supplements generally.

7. Organisational problems - even where the people have the right knowledge and attitudes, there is need for intersectoral collaboration for efficient production, distribution and utilisation of local foods.

Malnutrition is endemic in many underdeveloped countries not because there are no potentials for adequate nutrition but because of poor organisation and management of resources.

## **MANIFESTATIONS OF MALNUTRITION**

There are major and lesser manifestations of malnutrition.

Major ones include:

### **1. Marasmus and 2. Kwashiorkor**

Marasmus and Kwashiorkor are severe manifestations of malnutrition. A child is said to be marasmic if he suffers from calorie deficiency but to have Kwashiorkor if there is both calorie and protein deficiency.

### **Kwashiorkor (protein-calorie malnutrition)**

#### *Picture 2 - Kwashiorkor*

Signs and symptoms include: apathy, irritability, straight, thin, brownish, easily plucked hair, abdominal distension (due to hepato-splenomegaly), oedema of extremities, and peeling off of skin leading to hypopigmentation.

### **Marasmus - (calorie malnutrition)**

***Picture 3 - Marasmus***

Signs and symptoms include: thin, wasted features, sunken eyes and "old man's face". The child looks hungry and alert and will rush at food.

**Other manifestations of malnutrition:**

3. Goitre - from Iodine deficiency.
4. Xerophthalmia - Vitamin A deficiency + Keratosis.
5. Scurvy - from vit. C deficiency .
6. Pellagra and other dermatological manifestations e.g. photosensitivity and rash from Niacin deficiency
7. Ricketts - Vit. D deficiency
8. Anaemias - Pernicious, hypochromic (Iron deficiency), Megaloblastic (Vitamin B12, folic acid deficiency)
9. Beri-beri (Thiamine deficiency)
10. Riboflavin - angular stomatitis and
11. Vit. B12 deficiency -Neurological manifestations (see notes on neurological manifestations of malnutrition)
12. Overnutrition - Obesity

***Picture - Obesity***

**HOSPITAL/CLINIC BASED MANAGEMENT OF MALNUTRITION**

The problems of a child suffering from Kwashiorkor may include 1. Infection 2. dehydration 3. Anorexia and 4 . derangement of metabolic processes. The treatment should therefore include: 1)resuscitation which should include treatment of all infections e.g. diarrhoea, measles, tuberculosis, urinary tract infection, malaria,

intestinal parasites etc: A few cases have been found to have developed septicaemia and meningitis,

2) Rehydration: fluids should be given at a rate of 180mls/kg. for 24 hours. N/5 saline and 5% glucose should be given orally as these babies are sometimes hypoglycaemic. The I.V. route may be dangerous as the child may "drown". Blood transfusion should be given as 10mls/kg of actual weight if there is (a) severe infection (b) child is unconscious (c) severe anaemia (d) poor appetite.

3) Dietary management: a diet of 100 kilocalories/kilogram/day including 500 gram/kg body weight of protein should be given according to the exact weight of the child. Feeds should be given hourly if necessary, through a nasogastric tube. The target should be a weight gain of 2 to 4 kg in 10 weeks for a child weighing 10 kg on admission. It is not necessary to give more protein than is necessary for the growth of a normal child.

Example of diet: Egg + Pap or Soy-Ogi cooked together + Milk + 1 teaspoon palmoil. Potassium dilchloride (0.5gm), magnesium chloride (3mg/kg) and Folic Acid (5mg) should be added to the meal.

#### **CONVALESCENCE**

Progress should be measured by daily weighing the patient. Parents or guardians must be involved in all dietary treatment. The marasmic child is more likely to suffer from tuberculosis, intestinal parasitic infestation, pneumonia and anaemia. A small blood transfusion of 10mls per kg of actual weight helps initiate recovery. Initial feeds especially of babies under 1 year should be in liquid form at one or two hourly rate. Diet should be calculated as per expected weight at 100 kcal/kg/day and 0.5 kg protein, fluid requirements must however be calculated as per actual weight.

#### **LESSER NUTRITIONAL DISORDERS**

These are commonly found in malnourished people and do not result in severe disability. They are therefore rarely complained about. They may be discovered during routine examination, especially of school children. When many cases are found, the community's dietary habits are faulty. Diagnosis may be by physical examination and by confirmatory biochemical studies. Sometimes, therapeutic trials may be necessary.

Disorders of the skin:

1. Follicula hyperkeratosis or "toad's skin" results from Vitamin A deficiency (not always). Skin follicles get clogged with keratin. The parts of the body mostly affected are the backs of the upper arm (especially elbows), front of thighs, and at the buttocks. Horny plaques project from the follicles. There may be folliculosis in well nourished children; follicles are raised above the skin surface but there is no horny plug and no evidence of any nutritional importance.
2. Xeroderma or "dry skin" or "Crackled skin"
3. Crazy-paved skin: the skin of the front of the legs is dry and broken into individual islands.
4. Flaky paint dermatosis: larger areas than in 3 are affected. It is common in the diaper (nappy) area. Treatment with amino acid mixture devoid of vitamins is effective.
5. Pachyderma (elephant skin) - skin thrown into coarse folds usually at the back of elbows and front of knees.
6. Dyssebacea (nasolabial seborrhea) or "Sulphur flalie" between the nose and cheeks, sometimes extending to the forehead. There is atrophy of the skin making it thin and inelastic. There may also be pigmentary changes and cold chilblains. It responds to Nicotinic acid.
7. Angular stomatitis - heaping up of epithelial cells at the angle of mouth.
8. Cheilosis - denuded epithelium at the line of closure of lips. Occurs with any stomatitis.
9. Orogenital syndrome: Oedematous, red, sensitive buccal mucosa and perineal erythematous dermatitis. Vitamin B complex (not synthetic e.g. Marmite) gives effective treatment.
10. Disorders of hair and nails: hair - depigmentation as bands and spoonshaped finger nails as in Iron deficiency (koilonychia) Protein deficiency may cause white, transverse bands across nails, usually symmetrical in both hands. Treatment - food supplementation with deficient nutrient.
11. Disorders of the eye: Night blindness resulting from Vitamin A deficiency. Rhodopsin which the rods contain decreases. Treatment - Vitamin A supplementation.

**OVERNUTRITION** - is most commonly manifested as obesity even though there are many other factors which contribute to obesity. Where due to diet, treatment is dietary control and physical exercise.

### **FAILURE TO THRIVE**

Failure-to-Thrive (FTT) is not a diagnosis but a presenting symptom. Growth failure is sine qua non of the syndrome. Regardless of the basic disorder, FTT is usually the result of suppression of appetite. The exact mechanisms of appetite control are not yet fully understood but generally when energy intake exceeds energy expenditure a person cannot remain underweight.

**Growth failure** = Weight (in younger infant) or height (in older children) persistently below the 3rd percentile. Exceptions are children who are small but are gaining weight steadily and maintaining a previously established growth pattern.

FTT can be organic or inorganic. It can be classified into 3 aetiological categories 1. Inadequate nutritional information 2. Disturbance in attachment (maternal care) 3. Disturbance in separation individuation (food reprisal).

#### **Causes:**

1. Malnutrition resulting from obstruction e.g Pyloric stenosis or Coeliac disease
2. Infections especially parasitic e.g malaria or worms;
3. chronic illnesses e.g Tuberculosis
4. Haematologic diseases e.g Sickle Cell Disease
5. Congenital heart disease
6. Endocrine disorders e.g cretinism, hypertension, adrenogenital syndrome, growth hormone deficiency
7. Metabolic disturbances
8. Chromosomal
9. Neurological - mental retardation, cerebral palsy
10. Pulmonary - recurrent pneumonia, tracheomalacia
11. Cystic Fibrosis
12. Renal Diseases
13. Emotional deprivation syndrome
14. Malabsorption.

### **LOW BIRTH WEIGHT INFANTS**

#### **(LBW)**

This terminology is used to describe 2 kinds of very small infants. (i) Premature babies with less than 37 weeks gestation but with weights, lengths and development within normal limits for the duration of pregnancy and (ii) Light-for-date babies who may be born at term or prematurely, but have weights less than expected for the duration of the pregnancy as a result of growth failure.

LBW is responsible for childhood mortality/morbidity resulting from recurrent infections and hypothermia. The aetiology includes

- i. Antenatal infections (a) viral infections (Rubella, Cytomegalovirus, Herpes virus hominis) (b) Amniotic fluid infection (c) Transplacental bacterial infection e.g. syphilis (d) Parasitic infections e.g. Plasmodium
- ii. Placental abnormalities for example as in hypertensive mother
- iii. Smoking
- iv. Multiple pregnancy
- v. Genetic factors
- vi. Congenital malformation
- vii. Maternal malnutrition.

#### **Nutritional Needs of LBW babies:**

LBW babies have special nutritional needs. The special needs of "normally" grown premature infants and of full term light-for-date babies are different but often, LBW babies combine both problems. Much evidence has shown that by far, the best "formula" for an LBW infant is fresh human milk, even though some minerals and extra energy need to be added (U.S. Hew, 1976 and Lucas et al 1980).

#### **Recommended Feeding methods:**

For gestation period less than 33 weeks, tube feeding either as small frequent feeds or continuous intragastric drip in order to prevent overloading of the immature stomach is recommended. The mother's breastmilk should be fed to the baby. It has been demonstrated that the first milk of mothers delivering pre-term differs from "normal" colostrum. It has a higher content of nitrogen, sodium, chloride and calcium than the milk of mothers delivering at term (Atkinson et al, 1980).

The digestive tract of the mature small-for-dates has less difficulty handling food therefore normal breastfeeding is advised. To keep up her milk supply, a mother should express her breasts at about 3 hourly intervals (6 times during the day).

#### **Supplementation**

Supplements to breast milk needed by L.B.W. babies include:

1.Iron: All LBWs become anaemic because they have not received the usual iron stores of the last 2 weeks of gestation (may be the same case for twins). they should be started on iron supplement at the age of 1 month. Ferrous Sulphate 0.2 mg/kg/day or Ferric Ammonium Citrate. Giving iron earlier than 1 month predisposes to infections from gram-negative bacteria (Bullen, Rogers and Leigh, 1972) which need "free" iron for growth.

2.Folic Acid: All babies weighing less than 1.8g need Folic Acid (0.1mg weekly).

3.Vitamin D and Calcium: LBWs may get Ricketts and may need Vitamin D (600 units/day) and Calcium (5mg/100g/day).

4.Vitamin C: 25mg/day from the age of 1 month.

5.Energy: Whereas a normal baby requires 100kcal per kg body weight per day, a LBW infant may need up to 140 kcal per kg per day. The milk volume given should be increased gradually up to 200mls/kg.

### **CHILD LOSING WEIGHT (WEIGHT FALTERING)**

Every child whose weight on plotting is static or decreasing must be investigated for the following possible causes:

1.Nutritional problems due to a) inability to eat or assimilate food (sore mouth or loss of appetite as in measles, malaria, oral thrush etc, dysphagia, vomiting, diarrhoea, malabsorption, inadequate/unbalanced diet). b) Inappropriate weaning techniques e.g sudden withdrawal of breastmilk and introduction of unbalanced diet, c) Artificial feeding with the dangers of overdilution and unhygienic preparation.

2.Specific synergistic medical problems associated with malnutrition i.e. Tuberculosis, Measles, Weanlings diarrhoea and

3.Infections and parasitic infestation.

### **ASSESSMENT OF NUTRITIONAL STATUS**

#### **1. General Physical features**

(a) Size for age

(b) Activity - weak or strong

- (c) Countenance - (apathetic, irritable or happy)
- (d) Muscle bulk - thin or bulky
- (e) Skeletal - bow legs as in Vitamin D deficiency
- (f) Hair - Colour change, brittleness/falling off
- (g) Skin - thickness/wrinkling, signs of disease e.g. scurvy or pellagra, hypopigmentation
- (h) Eyes - sunken, keratomalacia
- (i) Mouth - angular stomatitis, soreness, thrush
- (j) Abdomen - Large (fatty liver, splenomegaly)
- (k) Legs - oedema

### **Anthropometric Measurements**

Nutritional status can be expressed as a percentage of normal (standard or average for the age).

i. Weight-for-age, ii. weight for height and iii. height-for-age.

	ACUTE MALNUTRITION (WEIGHT-FOR-HEIGHT/AGE) %	CHRONIC MALNUTRITION (HEIGHT-FOR-AGE)%
Mild	81 -90	91 - 95
Moderate	71 - 80	86 - 90
severe	< 70	< 85

iv. Head circumference and chest circumference for Head/chest ratio. The head circumference is greater than the chest circumference in a normal newborn baby, therefore the Head/chest ratio is greater than 1 ( >1 ). If the ratio in a child older than one year is >1, the child is malnourished because by this age the chest circumference should be more than that of the head.

v. Mid - Upper Arm Circumference

vi. Skin-fold Thickness

vii. Growth Chart or Graph (Appendix 5). See also appendices 7h, 8x and 8y for tallying. For details, see appendices 5c-f, 7 and references.

### **3. Laboratory (Biochemical Methods)**

Serum - iron (in hypochromic anaemia)

Serum - albumin (in protein malnutrition)

Urea excretion in urine  
Creatinine in urine  
Hydroxyproline in urine  
Albumin in urine.

#### 4. **Nutritional Indices for Community Nutritional Status**

Morbidity/mortality rates for malnutrition  
Socio economic data  
Chemical analysis of locally available foods  
Food consumption surveys  
-Dietary history  
-Dietary recall  
-Weighing method  
-Food balance sheets  
-Food prices (at national level).

#### **DIETARY HISTORY TAKING AND DIETARY RECALL**

Dietary history is important in determining if a child is receiving adequate diet for the age based on breastfeeding duration, weaning practices, types of food, amount given, frequency of feeds, nutrient preservation practices and other socio-economic factors which may affect the child's feeding.

A 24 hour dietary recall is often sufficient to expose deficiencies e.g. foods not meeting the nutritional needs of the child (especially during an illness episode) and problems of the mother or child (inverted nipples, cleft palate, jaundice). Questions should be asked about food processing and preservation methods, family food distribution, taboos and other cultural practices which may need urgent intervention.

The level of food hygiene must be assessed because even when nutrient consumption is adequate, frequent diarrhoea, worm infestation and illnesses predispose to malnutrition.

#### **NUTRITION AND INFECTION**

THE YOUNGER THE MORE PROLONGED CHILD, THE MORE -> INFECTION AND  
MALNUTRITION MAKES THE INFECTION MORE -> AN

THE EFFECT OF INFECTION ON NUTRITION

SEVERE MALNUTRITION

THE MORE ITS SEVERITY, THE WORSE THE MALNUTRITION

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LONGER INFECTIVITY <- CHANGE IN <- INFECTION  
 WORSE/  
 OF THE MALNOURISHED CHARACTERISTICS FATAL  
 BECAUSE  
 CHILD LEADS TO OF INFECTIONS CHILD IS WEAK  
 AND  
 INFECTION OF OTHER (TB, MEASLES, IMMUNE  
 SYSTEM NOT  
 BABIES AT YOUNGER DIARRHOEA) ABLE TO COPE  
 AGE

**Figure 7 - Nutrition and Infection**

**Diet during illness** - During acute illness, a child may be given the normal diet with increased fluid intake. With prolonged illness, the child should have 80 calories per kilogram body weight with carbohydrate giving about 50 - 60% of this and 1.1 - 1.5 gram per kilogram body weight of protein. For gastrointestinal problems, if there is no vomiting, the normal diet should be given. Excessive spicing should be avoided but the food must be well cooked and appetising.

**ORGANISATION OF A COMMUNITY NUTRITION PROGRAMME**

Community nutrition programmes require full participation of community members for self sustainability to be possible. For a successful programme, one must ensure the following:

1. - community mobilisation

2. - intersectoral collaboration (especially between Agriculture, education and health).
3. - regular growth monitoring and promotion (GMP), using local resources and prompt feedback so that findings can be used for replanning.
4. - regular supervision and continuing education for community based staff and other health care providers.
5. - starting with small scale programmes to ensure sustainability
6. - laying emphasis on counselling at individual and community levels
7. - integrating with other health programmes e.g. immunisation and curative care so that there is holistic management of the child
8. - advocacy; the community leaders must be convinced of the importance of the programme. Once convinced, they will mobilise the community.
9. - identification of obstacles and constraints before starting and during implementation by interacting with the community and where necessary, carrying out preliminary fact finding surveys.

**Table 7 - WEIGHTS OF ORGANS/TISSUES DURING PREGNANCY**

ORGAN/TISSUE	WEIGHT
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		<b>1-3 weeks</b>	<b>1 month</b>	<b>6 months</b>
Foetus(Kg)	Uterus(oz)	<b>2.5-4</b>	<b>7.5</b>	<b>16</b>
Placenta		<b>2.0</b>	<b>20</b>	<b>30</b>
Aminiotic		<b>1.5</b>	<b>5</b>	
Head Circumference		<b>2.0</b>	<b>1</b>	
(inch/month)		<b>1</b>	<b>3/8-1/2</b>	
Blood volume(kg)				
Extracellular fluid(kg)		<b>3.0</b>	<b>1.5</b>	
		<b>2.0</b>	<b>1. until</b>	
Breast Tissue(kg)			<b>6 months</b>	
Fat		<b>1.0</b>	<b>5 – 8</b>	
TOTAL (kg)		<b>9.0</b>	<b>3.5</b>	
		<b>28.0</b>	<b>12</b>	

Source:

**DAILY FOOD GUIDE DURING PREGNANCY**

- Animal Protein - 200g cooked meat
- Milk product - 500mls of milk or yoghurt
- Cereal - 7 thin slices of bread or 3 cups rice/spaghetti
- Vitamin C rich foods and vegetables - 1 orange/tangerines/other fruit/ sweet pepper or tomatoes
- Vitamin A rich fruits and vegetables/fibre - vegetable oil (palm oil), mango, carrots, spinach
- Unsaturated fats and Vitamin E - margarine, avocado pear

**Table 8 NUTRITIVE VALUES PER 100 GRAMS**

<b>NUTRIENT</b>	<b>RICE</b>	<b>MAIZ</b>	<b>YAM</b>	<b>BEAN</b>	<b>MELO</b>	<b>GNU</b>	<b>FISH</b>	<b>BEEF</b>
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		E		S	N	T		
<b>WATER(ml)</b>	<b>12</b>	<b>12</b>	<b>18</b>	<b>10</b>	<b>6</b>	<b>6</b>	<b>78</b>	<b>66</b>
<b>CAL(kcal)</b>	<b>354</b>	<b>363</b>	<b>317</b>	<b>340</b>	<b>581</b>	<b>579</b>	<b>95</b>	<b>202</b>
<b>PROTEIN(g)</b>	<b>8</b>	<b>10</b>	<b>3.5</b>	<b>22</b>	<b>25</b>	<b>27</b>	<b>18</b>	<b>19</b>
<b>FAT(g)</b>	<b>1.5</b>	<b>4.5</b>	<b>0.3</b>	<b>1.5</b>	<b>45</b>	<b>45</b>	<b>2.5</b>	<b>14</b>
<b>CARBOHYDRATE(g)</b>	<b>77</b>	<b>71</b>	<b>75</b>	<b>60</b>	<b>19</b>	<b>17</b>	<b>0</b>	<b>0</b>
<b>FIBRE(g)</b>	<b>0.5</b>	<b>2</b>	<b>1.5</b>	<b>4</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>0</b>
<b>CALCIUM(mg)</b>	<b>10</b>	<b>12</b>	<b>20</b>	<b>90</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>10</b>
<b>IRON(mg)</b>	<b>2</b>	<b>2.5</b>	<b>10</b>	<b>5</b>	<b>8</b>	<b>2.5</b>	<b>1</b>	<b>3</b>
<b>VIT A(I.U)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>20</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>THIAMINE(mg)</b>	<b>0.25</b>	<b>0.35</b>	<b>0.15</b>	<b>0.9</b>	<b>0.1</b>	<b>0.9</b>	<b>0.03</b>	<b>0.1</b>
<b>RIBOFLAVIN (mg)</b>	<b>0.05</b>	<b>0.13</b>	<b>0.1</b>	<b>0.15</b>	<b>0.15</b>	<b>0.15</b>	<b>0.05</b>	<b>0.2</b>
<b>NICOTINAMIDE(mg)</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1.5</b>	<b>17</b>	<b>1.5</b>	<b>5</b>
<b>ASCORBIC ACID (mg)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

Source: B. S. Platt. Tables of Representative food Values of Foods Commonly Used In Tropical Countries. Lon.

## **CHAPTER 8 IMMUNISATION**

### **PRINCIPLES OF IMMUNITY AND IMMUNISATION**

The **immune** system provides barriers against infectious agents. These barriers could be natural (inate) or induced (acquired).

**Inate immunity** comprises (a) physical barriers e.g the skin and mucous membranes and (b) phagocytic cells (neutrophils,

macrophages) which destroy microbes which pass through the physical barriers. This immunity is non specific and is a part of normal body functions.

**Acquired immunity** results as a response to exposure to specific infectious agents. It may be humoral (production of antibodies by B lymphocytes from the bone marrow) or cell mediated (response of T lymphocytes in the thymus).

**Humoral immunity** defends the body through (i) opsonisation (antibodies bind to bacterial cell surface making, them susceptible to phagocytes) (ii) antitoxicity (antibodies bind to bacterial toxins, inactivating them) (iii) activation of complement (a complex group of circulating enzymes which when activated, are capable of lethally damaging the membrane of the invading agent) (iv) neutralisation (antibodies bind to bacterial or viral receptors and prevent them from entering host cells)

**Cell-mediated (cellular) immunity** (e.g delayed hypersensitivity of Tuberculin test or cell mediated killing of tumor cells), like B lymphocytes in humoral response, T lymphocytes of cellular immunity have antigen-specific receptors on the cell surface. They are composed of a and B chains. The lymphocytes in recognition of infectious agents or antigen recruit other cells (phagocytes) to react, usually in a localised area

**Immunisation** - according to the "clonal selection theory", immunisation causes selective replication of lymphocytes which produce antibodies with high affinity for the inducing agent (vaccine or toxoid). Response can be humoral or cell mediated.

#### **DISEASES PREVENTABLE BY IMMUNISATION**

Many childhood communicable diseases are preventable by immunisation. The following are corresponding vaccines:

	<b>DISEASE</b>	<b>VACCINE</b>
1.	Tuberculosis	Bacillus Calmette Guerin (BCG)
2.	Diphtheria	Diphtheria, Pertussis, Tetanus vaccine
	1. Pertussis or Whooping cough	DPT, as for Diphtheria
4.	Tetanus	DPT

5. Poliomyelitis Polio vaccine - Sabin or Salk
6. Measles Attenuated Measles vaccine
7. Cholera Attenuated Cholera vaccine
8. Typhoid Typhoid vaccine
9. Yellow Fever Yellow Fever vaccine
10. Rabies Rabies vaccine
11. Hepatitis A and B Hepatitis vaccine

### VACCINES, TOXOIDS AND THE COLD CHAIN

All vaccines are either live attenuated or killed microorganisms or toxins from microorganisms. They are heat labile and even though the live attenuated ones like Measles, Polio and BCG are better kept in the frozen state (0 oC), and their diluents at 0-8 oC, killed organisms and toxoids (DPT, Tetanus toxoid) are easily destroyed if frozen. They are also all susceptible to antiseptic cleansing agents therefore the skin should only be cleaned with water when an immunisation is to be administered.

Vaccines must be used when they are still potent. The expiry date of each vaccine must be checked before administration.

### IMMUNISATION SCHEDULE, STATUS AND ADMINISTRATION

**Table 9 - IMMUNISATION SCHEDULE**

VACCINE	AMMOUNT	ROUTE	AGE TO GIVE
<u>Infants:</u>			
BCG	0.05cc (0-11 mo)	intradermal	at birth
	0.1cc (12-23 mo)	right upper arm	second dose
		or left forearm	at school age
OPV 0	0.5 cc (2 drops)	orally	at birth
DPT 1, Polio 1	0.5cc (DPT)	intramuscular	6 weeks/2 mo
		into thigh	
DPT 2, Polio 2	0.5cc (Polio)	drop	10 weeks/3 mo
DPT 3, Polio 3	0.5cc		14 weeks/4 mo
Measles	0.5cc	subcutaneous into	9 months
		left upper arm	
Yellow Fever		subcutaneous	9 months

\* Cerebrospinal meningitis type A and C vaccine was added to the programme because of the prevalence of the disease in the north.

### Pregnant women

Tetanus toxoid 0.5cc intramuscular upper left arm      1st time give  
2 doses, 4 weeks      apart before  
or during pregnancy 3<sup>rd</sup> Dose after 6 mo, 4<sup>th</sup>, 1 yr after 3<sup>rd</sup>, 5<sup>th</sup> 1 yr  
after 4<sup>th</sup>

## **ASSESSMENT OF IMMUNISATION STATUS**

The immunisation status of a person is the proportion of required immunisation the person has received. By the age of one year, a child should have received all the vaccines listed in the schedule for infants. A woman of childbearing age should have received at least 2 doses of Tetanus toxoid by the time of delivery.

The immunisation status of every preschool child and every pregnant woman should be assessed at every opportunity at the clinic or in the community. Check the PHC Child Health card and the home-based adult treatment card.

## **VACCINE ADMINISTRATION SESSION**

The site for a vaccination session whether inside a building or out in the open should be cool and shady. Vaccines lose their potency quickly when exposed to sunlight. The place should be large enough to allow for free movement. Three tables or areas may be set up for screening, vaccination and exit to have a good flow that will not confuse mothers.

At the beginning of a session, mothers who do not have a PHC Child Health card should be issued with one and mothers told to bring the cards each time they bring their babies to the clinic. It is important to have the birth date of the baby or an estimate of the age. The status of each child should be assessed, required immunisation administered and recorded on both the home-based (PHC card) and clinic-based records. The date for the next appointment should be written and clear explanations given to mothers about it and the mild fever that babies may have after DPT. The recommended antipyretic should be given to her and the dosage explained.

All children with incomplete immunisation status (ill or not) should be vaccinated except those **critically ill**. Malnutrition is no excuse for sending a child away without the required immunisation.

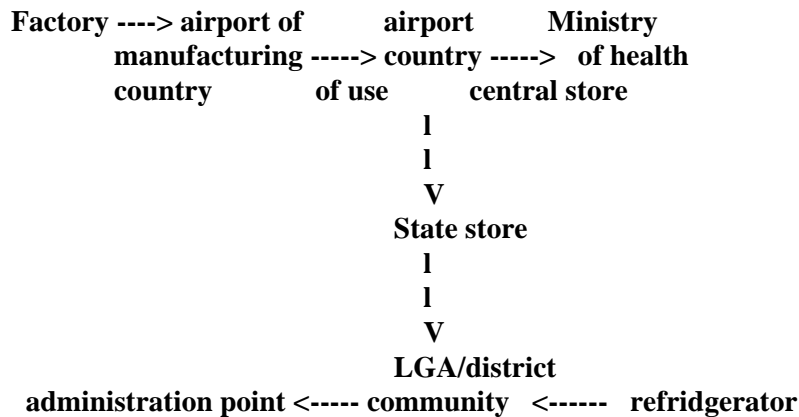


Figure 8 THE COLD CHAIN

The cold chain is a chain of people and equipment (airplanes, vehicles, reffridgerators, cold boxes, vaccine carriers et cetera) that must maintain the right temperature of vaccines from the time of production until administration. Both the handlers of vaccines and the needed equipment must function well to maintain a cold chain.

**Reffridgerator**

The freezer of a fridge used in freezing ice packs must have the right temperature. It must not be loaded with too many ice packs so tha the temperature is maintained. A thermometer should be used to check the temprature daily.

**The cold box**

The cold box is used in collection and transportation of large quantities of vaccine. Ice packs are placed on the sides, top and bottom to keep vaccines at the right temperature. Ice packs are made by placing some water containers that come with cold boxes in a freezer. When it is time to transport vaccines, they are removed from the freezer and left out of the box for a while until water and not frost is on their surfaces. This ensures that the temperature of the ice is 0oC and will not freeze the DPT and Tetanus toxoid vaccines. To further ensure that these vaccines do not freeze, plastic foam or

packing material or cottonwool should be placed between them and the ice packs.

After positioning the top ice packs, place a bag of ice cubes or block on top. It will be needed to keep opened vials cold during the immunisation session.

The cold box must be checked regularly for cracks and dried after each session. The rubber seal must be replaced if broken.

#### **Vaccine Carriers**

These are used for transporting smaller amounts of vaccines to outreach stations. It is packed and maintained like the cold box.

#### **Left-over vaccines**

In the past in Nigeria, clinics had immunisation sessions only on days set aside for immunisation. The argument for this arrangement is that less vaccine will be wasted since many children will be there. On the other hand, Primary Health Care clinics have been advised to integrate their services such that immunisation is available every clinic day. This means less number of children at sessions and the likelihood of left-over vaccines. In spite of this, the fear of failed vaccination necessitates destruction of all opened and exposed vaccine vials.

Even if only one child requires immunisation and a vaccine vial is for several children, the child should be immunised that day and the rest of the vaccine discarded rather than miss an opportunity. Many "missed opportunities" have led to poor coverage. Another argument is that with integrated services, increased accessibility to the different PHC services on each clinic day helps to increase service utilisation and reduction of overcrowding especially in urban clinics. Cross-infection of droplet transmitted childhood communicable diseases like Measles, Poliomyelitis, Whooping cough and Common colds is also minimised.

### **METHODS**

#### **BCG**

The BCG vaccine is freeze dried and must be reconstituted with a diluent before it is used. The diluent should be cold but not frozen. Draw the BCG diluent into a syringe and empty it into the vaccine vial. **Do not shake to mix** to avoid foaming but draw the mixture into the syringe and expell back into the vial 3 or 4 times until it is

thoroughly mixed. Remember to keep the vial on an ice pack on the immunisation table under a shade.

Use a sterile forcep to fix a BCG needle firmly on a syringe and twist it round so that you can read the scale on the syringe easily when in use. After drawing 0.05 ( for age 0-11 months) or 0.1ml (for age 12-23 months) into the syringe, hold it with the needle pointing up and tap the syringe to expel air. Push up the plunger until vaccine can be seen at the tip of the needle. If the vaccine spills on your skin or eyes, wash off immediately with water.

Ask mother to hold baby well with the site for vaccination exposed and all clothing that may get in the way removed. Clean the right upper arm with water, allow to dry and holding the arm with your left hand, insert the needle into the skin. If it goes under the skin, withdraw it and try again. You should have practised with an orange using another needle before attempting.

Holding the barrel of the syringe between your index and middle finger, put your thumb on the plunger and holding the needle flat (parallel to the skin), inject the vaccine and withdraw the needle gently. A weal should form at the site making the skin looks like an orange peel. If the skin remains flat, then you have injected wrongly but do not reinject.

Explain to mother that a sore will be at the site in about 2-3 weeks. It will heal in 6 to 8 weeks by itself, so mother should not apply anything, not even hot formentation to it. She should just keep the area clean by giving baby its normal baths. There should be a scar at the site.

Remind mother of her appointment to come for the next, DPT immunisation, when baby is 6 weeks old and tell her to continue to breastfeed her baby.

Use a new needle and syringe for each baby and return opened and unused vials to the store for recording. Remember that vaccine in all vials that have been opened or exposed must be destroyed.

#### **DPT (TRIPLE ANTIGEN)**

DPT is stored as a liquid vaccine containing Diphtheria toxoid, killed Pertussis bacteria and Tetanus toxoid. The white sediment mixes

well to give a cloudy non-granular appearance by simply turning the vial upside down a few times.

DPT may be administered intramuscularly in the upper outer part of the thigh for children under two years or on the upper outer quadrant of the buttock. **The thigh** is preferable for children under two years to avoid the possibility of injecting the sciatic nerve and causing paralysis.

Draw up 0.5ml of vaccine, clean the upper outer quadrant of the thigh with water and allow to dry. With your left thumb and index finger, stretch the skin at the site of injection slightly, then push the needle between your fingers into the muscle. Pull gently on the plunger to be sure that the needle is not in a blood vessel. If blood comes into the syringe then it is. Withdraw the needle and try again away from the previous point.

Explain to mother the need to come for two more doses and give the next appointment. Give her Paracetamol syrup to give the baby if he develops a fever. She should continue to breastfeed her baby.

Use a different needle and syringe for each child and return opened vials and unused ones to the store. Vaccine in opened and exposed vials must be destroyed.

If mother does not bring back the baby for the next immunisation after 4 weeks, administer the vaccine anytime she does and explain the importance of keeping to the right schedule.

### **Buttock**

Ask the mother to remove all clothing from the child's buttock and position him with the stomach to her own shoulder or across her thighs. She should hold the baby's legs with her right hand and the upper part of the body with the left hand. Stretch the skin at the site of injection slightly and proceed as for that on the thigh.

**Side effects** - fever, local soreness (no special treatment but give Paracetamol if fever high), convulsion is rare but may be due to pertussis in children over 6 months. If this happens within 3 days, then stop pertussis and give only TT or DT if available.

### **POLIO VACCINE**

The pinkish Polio vaccine liquid contains either the live attenuated, Sabin or inactivated (killed), Salk virus. The Sabin type is given orally and has its own dropper. while the Salk type is administered intramuscularly. Polio vaccine should be administered at the same time with the 3 doses of DPT to reduce the number of times mothers have to bring babies or outreach staff going to the community. Breastmilk contains Polio antibodies so mothers should not breastfeed one hour before and after Polio vaccine administration.

Remove the vial from the cold box or vaccine carrier and place it on an ice pack. Ask the mother to hold the baby well so that you can open the mouth. If child resists, gently press the nostrils or cheeks between your left thumb and index finger and with your right hand use the dropper to administer 3 drops of the vaccine. The number of drops depends on the instruction on the vial. Do not allow the dropper to touch the baby's lips or tongue.

Remind mother of the remaining 2 doses. At the end of the immunisation session for the day, discard vaccine in all opened and exposed vials.

### **MEASLES VACCINE**

Freeze dried Measles vaccine is the most heat sensitive of all the vaccines used for the Expanded Programme of Immunisation. The live attenuated virus is destroyed on exposure, a major reason for immunisation failure. Its diluent must also be kept cold but not frozen. The diluent is used to reconstitute the vaccine as for BCG. While the immunisation session is on, the vial should be kept on an ice pack.

While the BCG immunisation is on the right upper arm, that for Measles is on the left and is given to children at the age of 9 to 23 months. After showing mother how to hold the child, clean the site and inject 0.5ml of the vaccine subcutaneously.

Explain to mother that the vaccination may make the child a little ill with fever and/or rash in about 6 to 10 days. It should subside after two days and if the fever is high, mother should give Paracetamol.

## **TETANUS TOXOID**

Tetanus toxoid is recommended for universal use regardless of age. It should be given to workers in contact with soil or domestic animals (farmers, masons), military and police officers and all at risk of traumatic injuries but is especially important for pregnant women. Neonatal tetanus is preventable by immunisation of the would be mother.

Five doses protect her for a life time and the first two will protect her first child.

Ist dose - at first contact with woman of child bearing age or first visit during pregnancy

2nd dose - 4 weeks after first dose

3rd dose - 4 months after second dose or during second pregnancy

4th dose - 1 year after third dose

5th dose - 1 year after 4th dose

In the past, a person who has been actively immunised against Tetanus but who has not had any booster in the previous 3 to 5 years would be given a single dose of toxoid on sustaining an open injury. Recently, it was confirmed that anyone who has received 3 doses has lifelong immunity.

## **RABIES**

The recommended methods for preventing rabies are physical removal of the virus after animal scratch or bite by washing the wound with soap or detergent and water or quaternary ammonium compounds and administration of antirabies serum and vaccine.

A single dose of 20 International Units per kg body weight of human rabies immune globulin should be given intramuscularly or half of it used in infiltrating the wound. In addition 21 doses of vaccine are given on daily basis or 2 doses daily for the first 7 days and daily for the rest. Booster doses may be required on the 10th, 20th and 90th days. If the victim has had previous full antirabies vaccine, only 5 doses and a booster after 20 days is required.

For pre-exposure immunisation of those highly at risk of rabies, two 1ml doses of non-nervous tissue vaccine one month apart and a third dose after 6 to 7 months or 3 1ml doses 5 days apart and a fourth one after a month should be given.

Antirabic vaccination may cause encephalitis and serum of non-human source may lead to serum sickness.

### **YELLOW FEVER**

Active immunisation against Yellow Fever is essential for all who are exposed to infection because they live or work in infectious zones or need to travel to such zones. A single subcutaneous injection of 17D strain virus cultivated in chick embryo when given leads to production of antibodies in 7 to 10 days and confers immunity that lasts for about 17 years. Revaccination is advised after 10 years.

Another type of vaccine, the Dakar strain is a living neurotropic virus prepared in mouse brain and administered by scarification only to those over 10 years of age. Reactions are more common and more fatal with this type.

### **CHOLERA**

Vaccination against cholera does not confer long lasting immunity and is considered unnecessary and of little value as a practical control measure. It was once compulsory for travellers to have the vaccination but the false security it gives is dangerous. Emphasis on sanitation, food hygiene and care about the source and treatment of drinking water seem to be more beneficial.

### **MENINGITIS**

Group C polysaccharide vaccine is an old type used in military camps. Group A polysaccharide is also effective. During epidemics, the vaccine has been tried but mass sulphonamide (Sulfadiazine) chemoprophylaxis is more widely used in Nigeria, especially in the north where outbreaks occur more frequently and are sulphonamide sensitive. With increasing sulphonamide resistance, mass vaccination is now practised.

### **MUMPS**

A live attenuated vaccine prepared in chick embryo cell culture is administered intramuscularly as a single vaccine or in combination with Rubella and Measles vaccine to people above the age of one year. It confers immunity for several years and even though it is advisable for those who are approaching puberty and have not suffered from mumps, it is not a universally used vaccine. It is not a routine immunisation in Nigeria.

### **RUBELLA**

Rubella attack during pregnancy leads to congenital abnormalities in the foetus. It is a droplet infection that confers long lasting immunity. Even though universally endemic epidemics in the past have been in temperate regions like the USA and Australia.

The live attenuated vaccine is given as a routine to girls before puberty in some countries. It must not be given when a woman is already pregnant.

### **HEPATITIS ANTISERA**

Hepatitis A virus from feco-oral contamination and Hepatitis B from parenteral infection can both be prevented by passive immunisation in cases of high risk even though the B antibody is usually too small in sera and of less surety. Prophylactic dose of Immune Serum Globulin (ISG) 0.02ml per kg body weight is recommended for exposures less than 2 months and up to 0.06ml per kg every 4 months for longer exposures. There is no vaccine.

### **VACCINE FAILURE (MEASLES, POLIOMYELITIS)**

Factors responsible for vaccine failure include:

1. Exposure to heat because of a break in the cold chain. This is the most common factor responsible for any of the vaccine failures and more so for Measles which is very sensitive to heat.
2. Presence of antibodies. Failure of Poliomyelitis is said to be attributable to some extent to the antipolio antibodies in breastmilk.
3. Incomplete immunisation. Mothers' ignorance and negative attitude as well as "missed opportunities" contribute a lot to this factor. Immunisations requiring more than one dose (DPT, Polio,

Tetanus toxoid) have high default rates for the second and even more for third doses. Every opportunity of contact with a child or mother requiring immunisation must be used. The National Programme on Immunisation (NPI) provides services in static facilities and carries out house-to-house immunization on National Immunisation Days (NIDs).

4. Vaccine potency at production. The potency of vaccines must be checked by batches after production or on arrival if they have been imported.

#### 5. **IMMUNISATION COVERAGE**

The indicator for immunisation coverage is the proportion of those at risk immunised against diseases which are preventable by immunisation. If the proportion is very small, then it could be expressed as the proportion not immunised so that remedial action can be rapidly planned and implemented.

**Poor coverage** may be due to:

- i. ignorance about the benefits and importance of immunisation
- ii. wrong attitude of individuals, especially mothers to immunisation
- iii. accessibility to immunisation services
- iv. availability of vaccines and other resources (manpower, vehicles, cold box, vaccine carriers etc)
- v. commitment of immunisation team

#### **EXPANDED PROGRAMME ON IMMUNISATION (EPI)**

EPI was launched in Nigeria in 1978, the same year that the country adopted the Primary Health Care approach to health care delivery along with several other members of the World Health Organisation. Being one of the initial 8 components of PHC according to the Alma Ata declaration, and a crucial one to the reduction of infant morbidity and mortality, it has received a lot of attention from the government.

As a result of logistic problems (vaccine supply and delivery to site, cold chain et cetera), by 1983, coverage was still as low as 10-20%, therefore a revised EPI pilot project was tried with the assistance of UNICEF. Within a year, immunisation coverage increased in the trial

state, Ondo from 9% to 83% therefore a national programme based on the revised EPI methods was launched in 1984. Cold stores with back-up generators were placed in strategic sites and vaccines transported bi-monthly from the Federal cold store to State cold stores. From the state, vaccines are transported in cold boxes to LGAs which have no cold store.

Vaccinators, supervisors, storekeepers and drivers were trained on the importance and how to maintain a cold chain. Policy makers, LGA personnel and communities were mobilised. Voluntary agencies (e.g Scouts, Girl Guides), non governmental organisations, clubs e.g Rotary International assisted with community mobilisation and contributed financially or by printing cards, registers, posters etc. The ministries of Information and Education assisted with dissemination of information.

By 1987, it was obvious that the prevalence of targeted diseases were on the decline but coverage was still low. A machinery for National Immunisation Days was set up and the exercise carried out for 3 days in 3 consecutive months. A national coverage evaluation by November 1988, showed 38% children fully immunised, 72.18 had BCG, 57.8 (DPT3), 57.02 (OPV3) and 59.2 (Measles) Source - *Strengthening Primary Health Care at the Local Government Level: The Nigerian Experience*. Academy Press, Lagos, 1990. Political commitment declined with government instability and so did coverage. In order to arrest this unfortunate decline, **The National Programme of Immunisation (NPI)** was launched in 1996.

The **NPI** which so far has concentrated on polio eradication hence, polio immunization on National Immunisation Days (NIDs) also lays emphasis on continuation of routine immunizations.

**CHAPTER 9**  
**CHILD HEALTH COMMON HEALTH PROBLEMS OF THE**  
**UNDER-FIVE**

The problems of children under the age of five years varies with communities. This age group in developing countries still suffers largely from vaccine preventable communicable diseases and endemic problems like Malaria. Students are reminded of the management of the common conditions which they learnt during their Paediatric posting and given further instructions on the country's specific guidelines. In Nigeria, health care providers in training have specific "Standing Orders" which give them legal cover.

In order to tackle these problems, *The World Summit for Children* set some goals for children and development in the 1990s. These in addition to other summits include:

**Reduction of Mortality**

- \* Between 1990 and the year 2000, reduction of infant mortality and under-five child mortality rate by one-third or to 50-70 per 1000 live births respectively, whichever is less. ICPD/WSSD/WCW/WSC have modified this as reduction of IMR by 1/3 of 1990 level and below 35 per 1,000 by 2015 as well as under-five mortality to 2/3 of 1990 level by 2015.

**Women's Health and Education**

- \* special attention to the health and nutrition of the female child, and pregnant and lactating women.

**Nutrition**

- \* Between 1990 and the year 2000, reduction of severe and moderate malnutrition among under-five children by half.

- \* reduction of the rate of Low birth weight (2.5 kg or less) to less than 10%.

- \* virtual elimination of iodine deficiency

- \* virtual elimination of Vitamin A deficiency and its consequences, including blindness.

- \* empowerment of all women to exclusively breastfeed their child for 4-6 months and to continue to breastfeed with complementary food well into the second year.

- \* growth promotion and regular monitoring to be institutionalised in all countries by the end of the 1990s.

- \* dissemination of knowledge and supporting services to increase food production to ensure household food security.

### **Child Health**

- \* global eradication of poliomyelitis by the year 2000.

- \* elimination of neonatal tetanus by 1995

- \* reduction by 95% in measles deaths and reduction by 90% of measles cases compared to pre-immunisation levels by 1995 as a major step to the global eradication of measles in the longer run.

- \* maintenance of high immunisation coverage (at least 90% of children under 1 year of age by the year 2000) against diphtheria, pertussis, tetanus, measles, poliomyelitis, tuberculosis, and against tetanus for women of child bearing age.

- \* reduction by 50% in deaths due to diarrhoea in children under the age of five years; and 25% reduction in diarrhoea incidence rate.

- \* reduction by one-third in the deaths due to acute respiratory infections in children under five years.

### **Basic education**

- \* expansion of early childhood development activities including appropriate low cost family and community based interventions.

#### **Children in difficult circumstances**

- \* provision of improved protection of children in especially difficult circumstances and to tackle the root causes leading to such situations.

**Others** include goals on water and sanitation (access to safe water, guineaworm eradication, sanitary waste disposal), prenatal care, family planning, Integrated management of childhood diseases, adult literacy which indirectly affect child health and increase in Life Expectancy at birth to 75 years or more by Year 2015 (ICPD).

### **MANAGEMENT OF COMMON CHILDHOOD HEALTH PROBLEMS**

#### **FEVERS**

Fever is a manifestation of disease and can be caused by several infective agents. In our environment, Malaria is the commonest cause of fever in childhood. Other causes include acute respiratory infections (ARI), measles, poliomyelitis, typhoid (enteric fever) and other infections. The following should be considered in diagnosing the cause of fever:

#### **MALARIA**

Most often the age group affected is 6 months and above. Fever is the predominant symptom and can be as high as 38-40C. It is diurnal, causing chills and rigours and a varying degree of anaemia and jaundice. There may also be gastrointestinal symptoms.

Acute malaria should be suspected if:

- \* onset of fever is acute
- \* fever is usually in the evening
- \* respiratory signs are absent
- \* patient is active, playful and does not appear ill between surges of fever

Treatment: ideally, thin and thick blood films should be examined before treatment is started even though absence of plasmodia in the blood does not rule out malaria. Oral Chloroquine is the first drug of choice. Injections should be avoided as much as possible because of the possibility of incubation of poliomyelitis. If inevitable, it should be given subcutaneously or a suppository used.

In case of allergy to Chloroquine or Chloroquine resistant malaria, the following may be given:

1. Fansidar (Sulfadoxine+Pyrimethamine) - prophylaxis and treatment (**contraindicated in Sulfonamide sensitivity**).
2. Halofantrine Hydrochloride - treatment (**not for prophylaxis**)
3. Amodiaquine Hydrochloride - treatment (**avoid other antimalarials**)
4. Maloprim (Dapsone + Pyrimethamine) - prophylaxis (**not for acute attacks or prolonged prophylaxis**)
5. Mefloquine - prophylaxis and treatment
6. Metakelfin (Sulphametopyrazine+pyrimethamine) - prophylaxis and treatment
7. Proguanil - prophylaxis

### **Prophylaxis**

Prophylaxis with drugs is not compulsory for endemic areas and it may even be better to promptly treat malaria and allow individuals to develop resistance. For those travelling from malaria free areas to where it is endemic, prophylactics must be taken. Commonly used ones are 1,3,4,5,6 and 7 above.

### **CEREBRAL MALARIA**

This is a very dangerous clinical complication of acute malaria. Early recognition is crucial in order to prevent mental damage or death. It should be suspected when there is:

- \* evidence of acute malaria
- \* altered state of consciousness

- \* variable degree of rapidly worsening haemolytic anaemia
- \* normal cerebrospinal fluid
- \* numerous malaria parasites in blood film

### **Treatment**

Intravenous Chloroquine or Quinine

Chloroquine - 5 mg base/kg in 10 mls/kg saline or 10% Dextrose given over 4 hours and repeated 12 hourly until patient can take orally to complete a total dose of 25 mg base/kg.

Quinine - 10mg/kg/dose in 10mls/kg IV infusion, repeated 8 hourly for 7-10 days. To avoid the hypoglycaemic effect of Quinine, 5% Dextrose in saline is preferable to ordinary saline.

### **ACUTE RESPIRATORY INFECTION (ARI)**

ARI constitute a major cause of childhood morbidity and mortality. The commonest infections are viral. The symptoms include: fever, running nose, cough, hyperapnoea (rapid respiration) and dyspnoea (difficulty with breathing).

Symptoms:

The intensity of symptoms depends on whether it is upper or lower respiratory infection. Bacterial infections cause sputum to be tenacious and discoloured. The cough is brassy (larynx of trachea) and there is a stridor if there is obstruction. Rhonchi and wheeze indicate lower respiratory infection/obstruction.

Treatment

Even though viral infections are the commonest, antibiotics should be given to prevent complications by bacteria, especially group *AB* haemolytic streptococcus which predisposes to kidney and cardiac infections.

### **MEASLES**

Immunisation has been reducing the incidence of Measles but it remains a devastating and debilitating infection of childhood affecting 8 months - 2 years olds. The symptoms include fever, runny nose, cough, conjunctivitis. As the illness progresses, fever gets worse and child is miserable and irritable. By the third day of fever, a morbiliform rash appears behind the ears and spreads to the face and rest of the body, sparing the palms and soles. By the sixth day, usually the fever breaks and the child feels better.

Management is largely supportive. Child should be bathed regularly and Kalamine lotion should not be applied so that lesions do not leave scars. Promethazine (Phenergan) may be given if itching is troublesome. Complications such as bronchopneumonia, encephalitis and laryngotracheobronchitis should be treated promptly.

#### **ACUTE POLIOMYELITIS**

The viruses responsible for acute polio are the serotypes 1, 11 and 111. This neurotropic virus could be responsible for epidemic outbreaks. The illness starts with an influenzalike fever and gastrointestinal upset. Temperature builds up and pain in the muscles leads to irritability. This progresses rapidly into the paralytic stage (spinal, bulbar or combined). Muscle paralysis is asymmetrical and sensations preserved. If bulbar the child may need help with respiration.

Physiotherapy will be needed for paralysed muscles.

#### **DISCHARGING EAR**

This could result from external or middle ear infection. If it is external, pain is felt when the tragus is pressed. If middle ear, pain is felt more when the back of the pinna is pressed.

Auriscopy to ensure that the membrane is intact must be done. Ear drops must not be prescribed when there is a perforation or suspicion or no instrument to confirm. Oral antibiotics and analgesics should be given.

## **THE RED EYE**

This may be caused by irritants (soap, smoke, chemicals, trauma) or viral and bacterial infections. Eyes may discharge (purulent in gonococcal infection) and become swollen. Proper examination of the eye must be done to exclude damage to tissues, especially inner ones. Referral to an ophthalmologist may be necessary when uncertain.

**Treatment:** antibiotic eye drops during the day and ointment at night.

## **SKIN PROBLEMS**

The two broad groups considered here are the **infective** and **allergic** problems.

**Allergies** are rare and are usually (apart from hereditary ones) due to chemicals in baby's soap or cream or drugs. A good history must be taken to determine the cause. The lesions may take different forms, localised or generalised depending on the causative agent. They could be macules, erythematous, weepy and pussy where there is superimposed bacterial infection.

**Treatment** is removal of the cause where possible, and antipruritic for itchy lesions.

Infective ones are commonly due to bacteria (staphylococci and streptococci). Infestation with tunga penetrans, Tumbu fly (myiasis), and sarcoptes scabiei is also common in places with water problem or poor hygiene.

**Tunga penetrans** (jiggers)- is common in villages where pigs are reared. The larvae of tunga hatch from the eggs deposited in soil by the pregnant female. They are slow jumpers, so they usually crawl and penetrate soft parts of the feet (commonly under the nails). They grow and become so big in the tiny space that the lesions are very painful and when extracted, cause some bleeding. Disinfecting the floor of the house, wearing protective shoes and controlling the breeding areas for pigs will reduce the prevalence.

**Treatment** is removal of the jigger, disinfecting of feet and sometimes antibiotic therapy.

**Sarcoptes scabiei**- lesions which may be septic are usually between the fingers, spreading sometimes to the rest of the hand and arm, gluteal region, bends of joints, umbilical area, and axillary folds.

**Treatment:** Antibiotics. In addition to antibiotic therapy, when lesions are dry, Benzyl benzoate should be applied all over the body (excluding the face) for three days (only) if infection is due to scabies. It is important to treat other members of the family at the same time.

**Tumbu fly** infection is common where the fly breeds and where clothes are spread out to dry on grass or tree branches. The fly lays eggs on clothing and they hatch into larvae which penetrate the skin. The larva destroys skin tissue and the lesion resembles a big boil. If oil or vaseline is applied, the larva gets uncomfortable and the black head may be seen wriggling as it tries to escape.

**Treatment** is removal of the larva (maggot like) and where necessary, antibiotics (for multiple infection).

## **ASSESSMENT OF THE HEALTH STATUS OF A CHILD**

Assessment of health status begins with a good history including information on the pregnancy, labour and delivery, neonatal history, milestones, nutritional history, immunisations, social and family history, history of drugs and allergies and a review of the systems.

Physical examination should include the colour and texture of hair, search for any lesions and infestations of the head, condition of the fontanelles, head circumference, colour of conjunctiva (look for pallor or jaundice), tongue for cyanosis, mouth/throat for lesions and condition/number of teeth, ears for lesions/discharge, neck, axillae and groin for glands, fingers and toes for clubbing, temperature, weight, length/height, and systemic examination (respiratory, cardiovascular, genitourinary, central nervous system, gastrointestinal, dermatological, and musculoskeletal).

Basic investigations (haemoglobin, genotype, urinalysis, stool examination and heaf test) may be done in clinic laboratories.

### **Screening for Anaemia and Tuberculosis**

**Anaemia** (nutritional, blood loss, infection, Sickle Cell Disease)-check the history, perform Hb to confirm anaemia, genotype to exclude Sickle Cell Disease, blood films for morphology (Iron or folate deficiency, parasites), stool for ova of parasites (hookworm), urine test to exclude urinary tract infection.

**Tuberculosis** - unlike in the adult in whom Tb manifests with cough, haemoptysis, and weight loss, in the child, the symptoms may be non-specific and mimic other conditions. It should however be suspected in a malnourished child who is losing or having static weight in spite of adequate nutrition, chest infection that is not responding to regular therapy, persistent respiratory symptoms after measles or pertussis, recurrent ill-health. Screening requires a good history, physical examination and tuberculin testing (may not be conclusive in severe malnutrition). At the clinic level, the Mantoux test is preferable and the Heaf test in the community.

### **THE "AT RISK" CHILD**

The at "risk" child has a greater potential for developing disease or dying. Recognition of such children depends on careful screening for predisposing factors which could be genetic, cultural, behavioural, socio-economic etc. A register should be kept for appropriate follow-up of the children. Examples are Sickle Cell Disease, Tuberculosis, malnutrition, prematurity.

### **CARE OF THE NEWBORN AT THE COMMUNITY LEVEL**

The care of the newborn can be quite simple or complex depending on the basic understanding of the care taker. Some of the problems of newborns start in the intrauterine period and can be easily detected

(asphyxia following prolonged labour e.g in a woman with a small pelvis, or who has eclampsia).

**At birth** - baby's mouth should be sucked, face cleaned and the cord clamped and cut with a sterile instrument or new razor blade. The baby should be put to the breast then cleaned and kept warm. Only methylated spirit on a gauze or cotton wool should be applied to the cord, no powder or herbs or hot formentation.

The **skin** should simply be wiped or bathed with warm water and soap (not medicated); there is no need for extra oiling or powder which may predispose to infection.

Baby needs cleaning with warm water each time urine or stool is passed to prevent nappy rash. powder should not be used. A little vaseline may be applied.

**Drugs and vitamins** are not required by breastfed babies. Mother should be encouraged to breastfeed exclusively. Drugs commonly used which are not necessary include teething powder (acetyl salicylic acid), gripe water (which may prevent a child from moving the bowel without assistance), phenergan, herbal preparations, paracetamol and antibiotics. The baby box is sometimes full of unnecessary, sometimes dangerous drugs (Abosede and Edoho).

## **HIV/AIDS IN CHILDREN**

Acquired Immunodeficiency Syndrome (AIDS) caused by the Human Immunodeficiency virus is a global problem. The established and widely publised nature of its spread often portrays AIDS as if it is an adult illness. A child whose mother does not have AIDS can contract it through blood transfusion and infected instruments (needles, blades, ear-piercing instruments etc).

Epidemiological data indicate that the periods a child is most vulnerable are intrauterine, perinatal and postnatal. Infection is acquired by a vertical transmission from an infected mother (in utero via the placenta, during labour through exposure to infective maternal blood and vaginal secretions and postnatally through breastfeeding).

As in adults, HIV infection is chronic, characterised by a long latent period of months to years before the onset of AIDS.

Diagnosis of perinatally acquired infection in infants has been difficult because early signs of AIDS such as failure to thrive, generalised lymphadenopathy and developmental delay are non-specific. Two clinical causes have been described; i. children with opportunistic infections and ii. children whose predominant manifestation is lymphoid interstitial pneumonitis. The first group presents earlier in the first year of life while the second is usually diagnosed at a later age and have a more indolent course.

Managing children with HIV-1 infection requires a multidisciplinary approach. The answer to the problem of AIDS logically is prevention of pregnancy in infected women, and prevention of perinatal and postnatal infections.

Management as for adults is according to whatever condition is manifesting. Good nutrition, protection from infections and adequate rest must be encouraged at all times. The emotional well being of the patient must be guarded and this starts from family members and friends who should not react strangely to them. Family members, in particular must be educated and counselled on modes of transmission so that the patient can live a normal life as much as possible and not be ostracised.

### **CHILD-TO-CHILD PROGRAMMES**

Child-to-child programmes attempt to utilise children in reaching to their siblings and indirectly to the rest of the family. The index child is usually a school child who is exposed to health information in the school. He/she is encouraged to teach siblings at home skills learnt and to help put them into practice. Attitudinal and behavioural changes seen in such children help other members of the family to accept intervention strategies.

Index children are taught such skills as ORT preparation, maintenance of personal, food and environmental hygiene, preparation of adequate meals from locally available foods and how to convince their mothers to take their siblings for necessary immunisations.

## **CHAPTER 10**

### **HEALTH EDUCATION AND TRAINING**

#### **PRINCIPLES AND GOALS OF LEARNING, TRAINING AND HEALTH EDUCATION**

Learning in health does not simply mean acquisition of knowledge but application of that knowledge to effect change in behaviour. Health education is also not just a transfer of information but application of the information to effect change in health behaviour. In order to encourage this to happen, it is important to first diagnose the behavioural problems with the assistance of individuals, family or community. Needs and demands must be assessed before deciding on what health education approaches to use.

Health education strategies should be designed in such a way that they motivate people to adopt or modify and sustain habits which

will reduced risk of disease and improve their health status. The individual's or community's perception of prevailing health problems and personal or collective factors (economic, cultural, political et cetera), determine to a great extent the type and degree of response to health education efforts. It is more likely for a community to respond positively if feedback on community diagnosis is given promptly and all concerned mobilised. The community should discuss their problems and suggest solutions rather than health care providers prescribing them. A good health educator must be able to listen to the community's guidelines on how best to proceed even though this does not apply to all situations and discretion must be used. Ideally, methods decided on should be tried out on a sample or samples of the community since communities are usually not homogeneous.

A very high proportion of health education programmes in PHC is directed at adults. It is therefore important to discuss not only the general principles and techniques of learning, training and health education but to address their applications to adults.

### Learning Theories

1. *Traditional Education or "Empty vessel" Theory and Didactic "Teacher-student" Theory.* The teacher, apparently full of knowledge, uses a one-way communication method, ignoring the students' previous experiences.

2. *Experiential sharing Theory.* The trainer is a facilitator who uses a two-way communication method. He works at the same level with the trainees and respects their ideas and suggestions.

3. *Recall Theory or Adult Retention Rate.* This theory states that learners recall: 10% of what they **read**, 20% of what they **hear**, 30% of what they **see**, 50% of what they have **seen and heard**, 70% of what they **say when speaking** and 90% of what they **say while describing what they are doing**.

4. *MRS learning Theory.* M = modelling by facilitator

R = repetition by learner

S = shocks to attract, surprise and hold the attention of learners.

Adults learn best when what is being taught is relevant to their needs and when it is applied to real life situations. They learn better by doing especially when they are actively involved in the learning process. They should be involved at different applicable levels and in as many teaching techniques as relevant. Opportunities must be provided for sharing information, discussing and analysing previous experiences and the environment must be conducive to learning. a circular or crescent arrangement of chairs so that eye-to-eye contact is possible between all trainees is ideal for small groups.

**TRAINING** in simple terms is the "transfer of knowledge". There are various methods and media through which knowledge can be transferred. Their choice largely depends on identified learning needs, objectives of training, available facilities and the characteristics of the trainee/s.

**Training involves five basic steps.**

1. Needs assessment - estimation of deficiencies in knowledge, ability or skills needed for a particular situation/problem
2. Setting of goals and objectives
3. Planning and design of programme
4. Implementation and
5. Evaluation.

*NEEDS ASSESSMENT*

*EVALUATION  
GOALS AND*

*OBJECTIVES*

*IMPLEMENTATION*

*PLANNING AND  
PROGRAMME DESIGN*

*Figure 9 - Basic Steps For Learning*

-----**FEEDBACK**-----

INPUT----- + PROCESS-----> OUTPUT

*Figure 10 - Systems Approach to training*

### **INPUT**

The input into a system must be appropriate or else the process may be ineffective in producing the desired output. In formal programmes, trainees must have prerequisite knowledge in order to be able to understand the content of the training programme or have some basic skills needed to carry out certain exercises. A **qualifying examination** or assessment may be done to identify those to be admitted to the programme. In informal situations however, the input may not be strictly predetermined, for example, a group in the clinic, market, club or community and is not likely to be homogeneous.

Where a new basic course is being introduced, especially to a homogeneous group of trainees in a formal system it is often assumed that the content will be new to trainees. In many situations for example in clinics and communities however, trainees may not have the same educational or social background and their health knowledge will vary. A Knowledge, Attitude and Practice (KAP) survey or assessment of group knowledge may be done to identify areas of deficiencies which the planned training must cover. In a classroom situation, a **pre-test** should be administered to identify individual or group knowledge or **learning needs**. The test may be written or verbal, individualised or in groups.

### **PROCESS** (teaching and evaluation methods)

The process through which the trainees are put depends on the objectives to be achieved. There may be theoretical sessions (health talks, lectures, discussion), practical sessions (demonstrations, field visits, laboratory work) and on-the-job training in the clinic or within the community. In order to ensure that trainees understand what is being taught as they go through the process, some checks (**feedback**), for example tests should be introduced. This helps both the trainer and trainees to identify areas needing extra emphasis or

remedial programmes. Trainees may need to revise previous sessions in the programme or go over basic texts before proceeding.

**Objectives** state clearly what the trainee should be able to do after training in measurable, observable and specific terms.

**Health Education - goes beyond simply training an individual but involves putting into practice what has been learned.**

In health education, more can be achieved through counselling rather than a straight teacher-student fashion, because counselling puts the responsibility of decision taking on the counsellee. Depending on situations, one may use:

- i. one-to-one counselling or
- ii. group (family, group in clinic or community) counselling

While one-to-one counselling is more appropriate for confidential atmospheres, group counselling is preferable in situations where peer group pressure is necessary to convince members to change.

## **PRINCIPLES OF COMMUNICATION, COMMUNICATION FACILITATORS**

### **AND BARRIERS**



*Figure 10 - Components of Communication*

Communication is a process by which a *message (information)* is transferred between a *source (sender)* and a *recipient (receiver)*, through verbal/non-verbal *means (media or channels)*. **Its effect** leads to a reaction or *feedback* from the receiver. It may be assumed that communication has not taken place if there is no reaction from the recipient but sometimes, the recipient has simply ignored the message. In principle, effective communication depends a lot on the sender who must possess certain qualities and utilise effective and efficient means.

#### **Expected qualities of the components of communication:**

- \* **Message** - must be audible/easily seen, clear, and easily understood; must arouse the

expected feeling in the receiver. \* **source (sender)** - ability to say or demonstrate message in a way that the receiver can understand.

\* **media (channels)** - must be accessible, acceptable and affordable

\* **recipient (receiver)** - must have good sight/hearing, be a good listener or able to interpret visual messages and take appropriate action(s).

\* **feedback** - must be relevant and appropriate to senders expectation.

In training/education, encouragement of feedback from the trainees must be in a non-threatening fashion. The trainer is able to identify communication problems and if necessary, utilise more appropriate media. Students will find that this is very important especially when dealing with illiterates at the community level, during field practice.

**Interpersonal communication** is face-to-face verbal or non-verbal exchange of information or feeling between individuals or an individual and a group. It is used in education, motivation, supervision and counselling. Health education at the PHC level is mostly through interpersonal communication.

### **FACILITATORS AND BARRIERS**

Factors which influence the quality of any of the components of communication constitute the facilitators or barriers. For example the attitude of the sender, mood and body language directly influence the interpretation of information by the receiver. There may also be physical barriers between them e.g a large table between a doctor and the client may prevent the latter from relaxing and volunteering all useful information.

Background noise (a common barrier) may interfere with messages conveyed on radio, telephone or television while a husky, monotonous voice may be such a pain that the listener loses interest in no time. Audio media are enhanced (facilitated) by visual aids. Messages conveyed on TV are better remembered than those heard on radio.

Disorganised information is a very common barrier in communication. When the content of a message is organised

sequentially, it is more easily grasped, better understood and retained. However, no matter how well organised a message is, the qualities of the receiver will determine the degree of understanding, retention and reaction.

### **WRITING OF INSTRUCTIONAL OBJECTIVES**

**Instructional objectives are specific statements of what trainees (e.g community members) must be able to do, the conditions under which they will take place and the acceptable standard of competency after they have been taught. They may also be statements of what is/are the expected outcome(s) or impact of a health education programme e.g change in health behaviour or improvement in a health situation.** They are therefore *specific, simple, measurable, attainable, realistic, relevant and usually time bound*. When constructing objectives, illustrative (action) verbs must be used. Examples for training outcome are: state/list, analyse, apply, demonstrate, recognise, locate, define, explain, etc. and for programme outcome: reduce, improve, produce etc. (see appendix - ).

The conditions under which activities are to be carried out must be clear. For example, the trainee may be expected to perform in classroom or health facility or community situation.

The acceptable standard of performance of a trainee may be according to percentage score in a written test or observation while that of a programme may be observable changes or impact.

### **PLANNING OF A TRAINING/HEALTH EDUCATION PROGRAMME**

In planning a training/health education programme, the trainer must carry out needs assessment and task analysis, determine the communication methods, media and training materials to use, design a microplan and the evaluation technique.

**Needs Assessment** - is done to identify what problems in the work setting, community or previous training prevent a trainee from doing his job to expected standards or a community from having expected health knowledge, behaviour and standards. It is very crucial to do needs assessment in order to make appropriate plans for future

interventions to improve the quality of service and to motivate health care providers and the community to sustain good health standards.

The methods used for needs assessment include:

- \* observation
- \* administration of questionnaires
- \* interviews (in-depth)
- \* group discussions
- \* analysis of work records and reports
- \* work samples

The advantages and disadvantages of each method are discussed in chapter 2 (Community Diagnosis).

**Task Analysis** - is a process of finding out what needs to be learnt (knowledge, skills, attitudes) in order to perform a task to expected standards. It involves breaking down a job into tasks and identifying what each task requires. The context (situations/facilities in which tasks will be performed, availability of relevant equipment/materials), components of the task or sub-tasks as well as the enabling factors and skills are described.

### **Setting Goals and Objectives**

A goal is a general statement of what is to be achieved after training. A learning objective is a specific statement of what a learner must be able to do, to show that learning has taken place; the conditions under which learning will take place and the acceptable standard of competency. Both are important to the evaluation of the learning process and objectives help one to have a general overview of a training programme's content. Objectives also help the trainer to keep within the content of training and the trainer to have an objective evaluation.

### **Planning/design**

The following must be taken into consideration when planning:

- \* goal(s) of training
- \* objectives
- \* data from needs assessment and job descriptions
- \* logistics (where, when, how, by whom etc)
- \* participant selection criteria
- \* budget

A microplan must also be prepared and it should include the:

- \* total period of training
- \* objectives and activities for each day
- \* time for teaching each topic
- \* content to be taught
- \* method(s) of instruction
- \* materials and resources
- \* evaluation methods

### **Implementation**

Before the beginning of a training/health education programme, there are certain things that should be done in preparation. They include:

- \* explanation of the goals and objectives as well as participant selection criteria to those who will sponsor participants.
- \* confirmation of permission to use site and carry out all relevant training activities from authorities host training.
- \* identification and preparation of the training site
- \* selection and invitation/information of participants
  - \* trainers' meeting(s) to define trainers' roles and expectations, discuss workshop process, plan/review training schedule, methods, materials, lesson plans and evaluation.
  - \* preparation of workshop materials (registration forms, information packages, audio-visual aids, certificates, banner etc).
  - \* preparations for accommodation and feeding for residential programmes.
  - \* taking decisions on timing of opening/closing ceremonies and agenda
  - \* making arrangements for recording of the event e.g media coverage, photographs.
  - \* identification and preparation of practicum sites and informing facility/community about the activities.
  - \* making arrangements for provision of snacks/lunch

The first day of the programme which may be the evening before Day 1 of training schedule may start with the registration of participants, distribution of instruction/information sheets and

materials. For residential programmes, participants will need to know where they will reside and how to obtain meals.

**Day 1 of training:** - the first few minutes should be devoted to explanation of the workshop objectives and process, listening to trainees' expectations/problems so far e.g with accomodation/meals and actually trying out the sitting arrangement. The sitting and room arrangement must be such that the trainer can see all trainees and has easy access to them. An overview of the schedule (Time-table) of activities should be given. At the end of the day's sessions, trainees should give a feedback on the summary of what they have learnt.

**Other training days:** may start with a recap of the previous day's learning experiences, followed by the schedule for the day. Group/Practical sessions should be supervised and reports on them given by trainees.

**Evaluation:** students' achievements (knowledge and skills acquired, changes in attitudes) and the appropriateness of the process and management of the workshop should be evaluated.

#### **DESIGN OF A HEALTH EDUCATION PROGRAMME**

In designing a health education programme, the principles of learning must be applied. Important aspects include:

- \* **Note to trainer(s)**
- \* **Duration of programme**
- \* **Training format**

A Training Format (microplan) should be developed for each learning unit. A unit covers one or more objectives and topics. A programme or course may have many units.

**The lay-out used may be horizontal or vertical depending on which one trainers prefer.**

#### **Unit 1**

**Vertical:**

Duration of unit -----

Objectives to be covered

Time allowed per topic -----

et cetera

or horizontal:

Topics	Objectives to be covered	Time allocated et cetera
-----	-----	-----
-----	-----	-----
-----	-----	-----

Content outline

-----  
-----  
-----

Methods/Media of Instruction

Topics	Methods/Media
-----	-----
-----	-----

**Methods** - must be relevant to the content to be taught e.g brainstorming, discussion, lecture, symposium, practical demonstration, field (community based) practice etc.

**Media** (village or town crier; print - posters, pamphlets, photographs; slides; journals; radio; television; cassette; movie et cetera). The media used must be relevant to identified needs, objectives of the education programme, characteristics of the target group (literacy, sex, age, cultural beliefs and practices et cetera), message to be transmitted, and cost.

**Materials/Resources** - audio-visual aids, flip charts, reference books and journals etc.

**Evaluation Methods** - the commonest methods in PHC are written/oral tests depending on literacy, MCQ, practical demonstration.

**CURRICULUM DEVELOPMENT** can be defined as the design of learning programmes to achieve educational goals.

The basic steps for the development of a curriculum are:

- i. -specification of a job description - future responsibilities (tasks, knowledge, attitude, skills) of products of a proposed training programme.
- ii -identification of target group for training
- iii. -determination of learning needs/objectives

- iv. -statement/description of relevant course content.
- v. -selection of appropriate methods and media of presentation (lecture, panel/group discussion, seminar, role play, demonstration, films et cetera).
- vi. -design of learning units or lesson plans
- vii. -design of evaluation tool(s)
  - ix -review of curriculum (based on evaluation results: constraints and available resources - **manpower, money, materials**)

### **Objectives**

Objectives should be constructed with action verbs that are measurable, for example, state, list, demonstrate, explain, describe, design. Vague verbs like understand, know, comprehend are not directly or easily measured and should not be used in constructing learning objectives. They must cover the content to be taught and be stated in a way that the standard of performance expected from trainees is understandable, for example:

- At the end of training, the student will be able to **list correctly**, ten commonest causes of illness among children under the age of five years in Adidun village.

**The content of training** should be based on the learning needs of the trainee/s. In formal education, the input to a programme is chosen based on its potential ability to master the content of the programme. In the informal setting, it is usually the other way round with the content being tailored to meet the learning needs and qualities of the input.

The knowledge and skills that the trainees are expected to acquire or master can be ranked as "**must learn**", "**useful to learn**" and "**nice to learn**" (Abbatt). The "must learn" comprises information and skills that trainees or learners must master for any change in behaviour to occur. For example, the community must know that ingestion of contaminated food and water causes diarrhoea and is preventable through good food hygiene, drinking of potable water and proper sanitation. They must also know how to prepare Oral Rehydration Solution (ORS) whether from a sachet or from home materials and how to administer it. They must know what to do if diarrhoea does not subside in 24 hours.

It may be useful to know that different types of diarrhoea present with different colours and may have mucous and it may be nice to know that different organisms cause diarrhoea.

**THE OUTPUT** in a formal system is the graduate. In the informal system the output is the person who has changed or improved knowledge, attitude and practice as a result of the learning process.

#### **DESIGN OF TRAINING MATERIALS**

In order for effective health education to take place, some materials, popularly known as Information, Education and Communication (IEC) materials are necessary. They also constitute the audio-visual aids used in the teaching process. They are essential because, in order for a person to accept and/or adopt a new behaviour, he passes through some stages which the material must address. They are the stage of motivation (exposure to material and creation of awareness), conviction, and acceptance. If accepted, there is a high possibility of utilisation of the information conveyed and behaviour change.

IEC/Teaching materials should:

- \* create awareness
- \* motivate people and promote desired changes/objectives
- \* educate/ inform people
- \* explain the need for change or counsel
  - \* carry information that is easily understood, remembered and retained for future use.

Simple teaching materials relevant to the culture, literacy level and the teaching environment are developed by students in groups. They are presented to the rest of the class for criticism and graded by 2-3 lecturers.

When designing materials, the following are also taken into consideration, depending on the problem to be tackled:

- \* Target group to be educated
- \* current practices
- \* feasible new practices to be recommended
- \* major resistances that must be overcome
- \* possible motivators for change
- \* main media to be used in communication

Teaching materials produced may be pretested before they are brought to the class for criticisms or taken out for practicals in clinics

and/or in the community. The most commonly prepared are flip charts, viewing boxes, posters and drama scripts for role play.

### **Flip charts**

These are large cards or sheets on which illustrations are drawn, usually joined together by rings (as done for calendars) so that they can be flipped over. The illustrations/information face the person(s) being taught or counselled while reminders on what should be said by the teacher or counsellor faces him/her. Reminders are not to be read out; they are just guides.

### **Viewing box**

This is like a manual, local television. Cards or sheets of illustrations are glued together serially. A cardboard box or wooden box is constructed such that it has holes on the sides (top and bottom) through which two pieces of straight wood, one at the bottom and one at the top can pass. The woods are passed through the holes, then, the first and the last sheets are glued on the pieces of wood. The sheets are rolled on one piece of wood. A large-enough space is cut out of the side of the box or wood through which illustrations can be viewed. As the other (empty) piece of wood is rolled, illustrations roll up or down the viewing space and the teacher/counsellor discusses the information conveyed.

### **Posters**

Like slides, posters must contain the minimum, effective number of words which explain an illustration. Illustrations must be able to convey relevant information even to an illiterate audience. Ideally, there should not be more than 6 words on a line and the words which need emphasis should be highlighted. Posters must not be too crowded and illustrations on them must not be offensive to any (cultural) group of people. Illustrations help people to remember messages better but they must be simple and clear enough for easy understanding.

### **Drama script for role play**

At the clinic and community levels, role play is very effective for catching and maintaining the interest of the audience. Sketches for 5-

10 minutes drama may be produced by students. Relevant information must be conveyed during the time limit.

### **Pretesting**

IEC materials should be pretested on an audience similar to the one it is prepared for. It may be difficult for students to do this and modify their materials before presentation in class. As much as possible, they should try to address the following questions:

- \* does the material attract peoples' (especially target audience) attention?
- \* what message does the IEC material convey even without a counsellor explaining it?
- \* What is the material asking one or community to do?
- \* does the material say anything opposed to previous beliefs?
- \* is there anything offensive on the material?
- \* do the illustrations have similarities with the culture or beliefs of the target group?
- \* is there anything liked or disliked about the material?
- \* is there any changes to the material the respondent would like to suggest for its improvement?
- \* does the respondent believe what the material is saying?
- \* will the respondent(s) change or modify previous behaviour or attitude?

### **PRACTICALS AND EVALUATION**

Students use the teaching/IEC materials they have produced to carry out health education in the clinic and community settings. Each group is graded by one or more facilitators. For objective grading, a checklist is provided assessing: attitude, coverage of objectives, clarity of presentation, appropriate use of relevant teaching/IEC materials, encouragement of audience participation and allowance of adequate time for discussion/feedback from audience.

Flip chart

Viewing box

Sticker

Poster

**Figure 12 - Flip chart, viewing box, sticker and poster**

## **CHAPTER 11 MATERNAL HEALTH AND FAMILY PLANNING**

Generally, the problems of adults are similar except for sex specific problems. The health problems discussed in this chapter cut across the general problems for example anaemia, infectious diseases and sex specific ones like problems related to pregnancy and childbirth. This chapter is more of a reminder of what students have already learnt in Obstetrics and Gynaecology.

### **Relationship Between Socio-economic Status, Education and Health Status**

There is a vicious cycle between socio-economic status, education, and health status. Opportunity for a good education depends on

socio-economic status (except where there is sex discrimination) while socio-economic status is influenced by the type of education and earning power of individuals; a good education attracts well paying jobs and exposes one to more and sometimes better information. Certainly, reproductive health choices which affect health status directly or indirectly are influenced by the educational level of individuals or couples.

Both education and socio-economic status therefore affect health status and health status affects both of them. A healthy person is able to learn better and achieve educational heights if resources are available and better education improves his health knowledge.

Research has shown that the members of the family of an educated woman, especially the under-fives have lesser morbidity and mortality (\*\*\*\*\* -reference). A literate mother is able to read health information and has more opportunities of exposure to such information through mass media (radio, TV). She is able to read instructions and therefore use appropriate methods in caring for her family.

## **PREGNANCY AND ANTENATAL CARE**

### **Recognition of pregnancy**

The most common signs of pregnancy are amenorrhoea, breast engorgement and abdominal distension. A pregnancy test should be done where there is doubt.

### **Antenatal Care**

At the first antenatal visit, detailed medical, previous obstetric history and history of present pregnancy must be taken. Relevant family history should also be taken. Full examination should be done as it is important to detect any medical or obstetric problems and to determine whether a mother will be able to deliver safely or not with a TBA or at the local maternity. Obstetric history should include date of last menstrual period, number of previous pregnancies and their outcomes, types of abortions if any and at what gestational age, history of multiple pregnancy, delivery complications, and immunisation status for Tetanus toxoid

### **Antepartum Risk Assessment**

The following should be checked in every woman who attends antenatal clinic:

Height, weight, blood pressure, Haemoglobin level, any illness, nutritional status, urine for presence of protein and sugar, legs for varicose veins, breasts for any abnormality, abdomen for any scars, fundal height, foetal parts, size and position by palpation, foetal heart sounds, external genitalia for any abnormality, pelvic measurements (diagonal conjugate, height of symphysis, prominent spines), cervix for colour, smoothness, lacerations, discharge or bleeding. The bicep and patella reflexes should be tested if pre-eclamptic or has history of eclampsia. She should be given any required dose of Tetanus toxoid.

### **Postnatal care**

This begins from the puerperium (see under Life Saving Skills) and should continue until the baby is old enough to start complementary feeding (at 6 months). Most health workers think that it stops with the puerperium and this is one of the reasons why breastfeeding and Lactational Amenorrhoea are not properly monitored.

#### **Recognition of risk factors**

From the history and physical examination, the following risk factors may be detected:

#### **obstetric**

- elderly primiparous
- previous abortions
- bleeding during pregnancy
- small pelvis
- prominent spines
- Caesarian section
- anaemia
- multiparity
- large baby
- abnormal presentation
- previous postpartum haemorrhage
  - retained placenta
  - youngest baby < 1 year
  - placenta previa
  - still born
- previous toxemia of pregnancy

#### **medical**

- history of diabetes
- Sickle Cell Disease
- bleeding disorders
- high blood pressure
- fit during pregnancy or delivery (eclampsia)/other seizures
- respiratory problem (asthma, TB)

- previous laparotomy/other surgery
- previous accidents - any cardiac problem
- other medical problems

## **MATERNAL HEALTH PROBLEMS**

### **MENSTRUAL DISORDERS**

Dysfunctional Uterine Bleeding -anovular bleeding, usually in extremes of reproductive years (adolescence and premenopause) which deviates significantly from normal even though there are no pathological changes. Anovular bleeding results from irregular shedding of fragile endometrium and may be just spotting or as heavy as to be fatal. The patient should be referred for investigations to rule out pregnancy, blood dyscrasias, uterine fibroids and malignancy.

**Amenorrhoea** - (primary and secondary). Primary = failure of menses to occur before age 15 years. Secondary = cessation of menses after establishment of menstrual pattern.

A careful history should be taken to identify associated factors such as psychological stress (the reason for amenorrhoea in about 95% of cases), weight loss, short stature, absence of pubic hair, cyclic pains, obesity, lactation, chronic illnesses e.t.c. A family history of amenorrhoea or hypogonadism should be investigated.

Physical examination and investigation will help determine the dysfunctional organ or system which may be vaginal, uterine, ovarian, pituitary or hypothalamic. One can easily detect an imperforate hymen, transverse septum, cervical obstruction, absence or scantiness of pubic or axillary hair. The patient may need to be referred for complex investigations such as karyotyping.

Post-pill amenorrhoea should be suspected in those who stop pills and have not had spontaneous menses for 6 months. It may result from oversuppression of the hypothalamic-pituitary axis.

**Hyperprolactinaemia** - causes disruptive effect on gonadal as well as hypothalamic-pituitary function. Amenorrhoea of more than 12

months is an indication for determination of serum prolactin. Some common causes of high levels are pathology of the pituitary gland and hypothalamus, primary hypothyroidism, chest wall trauma (burns, surgery), drugs (e.g. methyl-dopa, phenothiazines, reserpins, tricyclic antidepressants), pregnancy and oral contraceptives. It could also be idiopathic.

**Genetic Disorders** (Testicular feminisation syndrome, gonadal dysgenesis).

**Anorexia Nervosa** (voluntary weight loss and emaciation) may be associated with a psychiatric problem, usually among adolescent females.

**Polycystic Ovarian disease** leads to amenorrhoea or oligomenorrhoea, infertility and clinical evidence of androgenicity.

**Hirsutism** excess Testosterone production (from the ovary) causes suppression of other hormones.

**Oligomenorrhoea** is usually iatrogenic (oral contraceptives, post Dilution and Curettage) but may also be due to hypothalamic dysfunction, postpartum period or nutritional disorders.

## **MENOPAUSE**

Menopause starts from about age 48 - 52 and is the last uterine bleeding caused by ovarian function. The hormonal changes may cause client to experience "hot flushes" (heat from the chest to the head, lasting between a few seconds to one hour which can be relieved by oestrogen), disturbances of menstrual pattern, psychological problems (anxiety, tension, depression, irritability), skin atrophy, vaginal atrophy, headaches, insomnia, myalgia, palpitations).

Prompt recognition of a person who is unable to cope with this period is a vital aspect of Primary Care. Professional consultation with a psychiatrist may be necessary when there are serious symptoms of maladjustment.

**ANAEMIA (bleeding, malnutrition)**

Anaemia may be due to blood loss or inadequate nutrient intake. Severe anaemia is very dangerous as it may result in heart failure and death especially if it is not corrected before the onset of labour. If other signs and symptoms of heart failure are present, give a diuretic e.g frusemide (Lasix) 40-80 mg and refer to a hospital immediately. If patient is likely to deliver before reaching the nearest hospital, deliver in your health centre, give Ergometrine 0.5mg intramuscularly and then refer, keeping patient in a sitting position.

**VAGINAL BLEEDING** - early pregnancy (Abortion, ectopic pregnancy)

- late pregnancy (antepartum haemorrhage, ruptured uterus)

- postpartum ( post-partum haemorrhage, retained placenta, ruptured uterus, infection)

Bleeding during pregnancy is always abnormal and requires admission of the patient. The commonest cause **before 26** weeks is abortion (threatened, incomplete or septic).

**Threatened abortion** - bleeding and pain are mild and there are no clots. Give a sedative, advise to rest and observe at the health centre. Complete bed rest may be necessary.

**Incomplete abortion** - there is heavy bleeding and abdominal pain. Patient may present with anaemia or shock. Uterus may be palpable but there may be no abdominal tenderness. Give intravenous ergometrine and fluids, Pethidine and if the pregnancy is less than 4 months, do a P.V and remove retained products and clots. If the pregnancy is more than 4 months, a P.V is dangerous as it may cause more bleeding.

**Septic abortion** - heavy bleeding and abdominal pain with signs of infection (foul smelling vaginal discharge). It may be complicated by septic shock. Manage as for incomplete abortion and add antibiotics.

**Ectopic pregnancy** - an important differential of bleeding in early pregnancy is accompanied with severe abdominal pain and may be complicated by shock. Give intravenous fluids and Pethidine and

refer immediately. Per Vaginal (PV) examination must NOT be done as this will aggravate internal bleeding.

All patients bleeding in **late pregnancy** (after 6 months) must be admitted. The bleeding is usually due to placenta previa (painless) or abruptio placentae (severe pain, loss of foetal movement). Abruptio placentae may be concealed, in which case there is no bleeding. Look for evidence of anaemia or shock and palpate uterus. With placenta previa, the uterus is soft, presenting parts are high or there is malpresentation and foetal heart sounds are normal. In abruptio placentae on the other hand, the uterus is hard and tender and foetal parts are not easily palpable. Foetal heart sounds are usually absent. PV should not be done. Give IV fluids (NOT Dextran or any other plasma expander which may interfere with clotting) and Pethidine and refer immediately.

**Threatened premature labour** - painful bleeding which stops within 2 hours. Observe for 2 to 3 days and advise rest.

**Post-partum haemorrhage** - any blood loss more than 250 ml or 10 ozs is abnormal. Rub the uterine fundus to stimulate contraction, give ergometrine IV or Syntometrine IM. If available, give 20 units of syntocinon or pitocin in 500 mls of IV fluid and run in at about 80 to 100 drops per minute. If fundus is soft, do bimanual compression and ACCOMPANY to a hospital. Compression may be necessary on the way. If fundus is hard and bleeding is due to a laceration, suture. If there is no laceration, insert a vaginal pack and refer.

If bleeding is due to retained placenta, do controlled cord traction and if this fails and cervix is wide open, try manual removal. If cervix is closed, refer with IV fluid on. Give antibiotics to ALL cases of attempted manual removal and observe at the health centre for about five days.

**ABDOMINAL PAIN** - early pregnancy (ectopic, non obstetric conditions e.g appendicitis, pyelonephritis)

- late pregnancy (labour, ruptured uterus, concealed abruptio placentae, non obstetric)

Severe abdominal pain is always an indication for immediate referral. If patient complains of dysuria or cloudy urine, the problem may be pyelonephritis. Check urine for albumin and if present, refer.

**OEDEMA** with hypertension (diastolic blood pressure >100 or BP 10-20 points above normal) and proteinuria is diagnostic of **pre-eclamptic toxemia**. Patient may be brought in unconscious and with a history of **fits (eclampsia)**. She may have complained of headache, blurred vision, nausea and upper abdominal pain or noticed an increase in weight of one or more kilograms in one week. Refer to a hospital immediately. If unconscious, ensure good airway using a gag or rubber airway, suck out secretions and sedate to control fits (IM Paraldehyde 10 ml or Lagarctil 50 mg or Phenobarbitone 200 mg). Wait for 30 to 40 minutes for sedative to take effect before moving the patient.

If referral centre is too far and patient is conscious, give Phenobarbitone for 3 days and advice on complete bed rest and restricted salt intake. Review in three days and if there is improvement, continue Phenobarbitone and bed rest for 2 weeks.

**SHOCK (difficult labour, ruptured uterus, antepartum haemorrhage)**

Shock is a condition in which there is disparity between circulating blood volume and vascular bed capacity. There is hypotension and reduced perfusion of tissues resulting in hypoxia and eventually cellular death. Septic shock may complicate septic abortion or postpartum endometritis and other infections.

**Prolonged/obstructed labour (malpresentation, multiple pregnancy, pelvic inadequacies)** - At the first antenatal visit, patients with risk factors including previous bad obstetric history, mal-presentation, multiple pregnancy, and cephalopelvic disproportion must be referred to a hospital. Refer also all patients with membranes which i.have ruptured for longer than 24 hours ii.showing signs of obstruction (distension of the lower segment, oedema of the cervix or vulva, marked caput or moulding iii.show signs of infection iv. show signs of prolonged labour (first stage longer than 12-18 hours, second stage longer than 1 hour).

All **multiple pregnancies** should be delivered in a hospital unless they are seen too late. Do not administer Ergometrine when the other baby is still in the uterus but it **MUST** be given after the second baby is delivered to prevent haemorrhage. In case of prolonged labour with retained second twin, if lie is horizontal, rupture membranes. If patient does not deliver in 10 to 15 minutes or lie is transverse, refer.

**Ruptured uterus** - this is the commonest cause of maternal mortality in rural areas. It is usually due to mismanaged obstructed labour or attempt at normal delivery by women with previous Caesarian section. There may be a history of multiparity, previous Caesarian section, vaginal bleeding and continuous abdominal pain instead of labour pains. The patient may show signs of anxiety, shock and anaemia. The abdomen is very tender, irregular and asymmetrical. If the foetus is lying outside the uterus, its parts will be easily palpable but the foetal heart sounds are not heard.

Administer Pethidine, antibiotics and IV fluids and refer immediately

#### **URINARY TRACT INFECTION**

If patient complains of pain or burning sensation on micturition and the urine is positive for protein, give Sulphadimidine for 10 days and encourage fluid intake. Check the genitalia for sores which may require referral.

**VARICOSE VEINS** may get worse as pregnancy advances. Advise the patient not to wear tight clothings and to elevate the legs as much as possible. She may need to use crepe bandage if it is severe. In the third trimester, give piperazine. If there are open sores at the site of the veins, refer to hospital.

**LEG CRAMPS** may be due to inadequate calcium in the diet. Advise on calcium rich foods and on elevation of the feet as much as possible.

**NAUSEA AND VOMITING** especially in the morning (morning sickness) is very common early in pregnancy. Reassure the patient

and advise on small, dry meals. Oily meals may aggravate the problem.

**INFECTIOUS DISEASES** - hepatitis, rubella, herpes simplex, gonorrhoea, syphilis, urinary tract infections, tuberculosis

#### **DIABETES MELITUS**

Diabetes may be suspected in pregnant women who are obese, have a family history of diabetes, previous unexplained foetal losses or previous babies with birth weights over 4 kilograms. They should be referred for Glucose Tolerance Test. Diabetes of any severity is associated with increased perinatal risk. Known cases need to be hospitalised early in pregnancy for a period long enough to regulate the condition and to educate the patient. Also, 7 - 10 days to the PLANNED date of delivery, patient should be sent for admission to re-evaluate her and for necessary monitor during delivery. the optimum time for gestational diabetic is 38 - 40 weeks, but it may be less for a moderately severe diabetic, 36 - 38 weeks and for a severe one, 34 - 37 weeks.

#### **LIFE SAVING SKILLS (ANTENATAL, LABOUR AND PUERPERIUM)**

**These comprise all the necessary precautions that must be taken during these periods, including:**

- \* antenatal risk assessment
- \* management of antenatal problems
- \* monitoring of labour progress
- \* management of problems in labour (including repair of episiotomies and lacerations)
- \* prevention and management of haemorrhage
- \* resuscitation
- \* management of sepsis and dehydration
- \* vacuum extraction/Caesarian section

**LSS during the ANTENATAL period ((as treated above under Antenatal Risk Assessment and antenatal problems).**

## **LSS in LABOUR**

When a woman presents in labour, remember to do the following:

- \* obtain labour history (when it started, how often they come, have membranes broken?, any bloody show?, time of last meal, last bowel movement, any medicines taken and when?)

- \* if accompanied by her TBA, obtain all relevant information from the TBA and as much as possible (depending on TBA's training), allow her to assist with the delivery.

- \* from previous antenatal record or directly from an unregistered patient, obtain information on the age, parity, and previous obstetric and medical history.

- \* perform physical examination. It is easier if the woman empties her bladder. Look out especially for oedema, pallor, BP, adequacy of the pelvis, the lie of the baby and foetal heart rate.

- \* observe contractions for 10 minutes every hour in the latent period of labour and every 30 minutes in the active phase. Check how often they come, their duration and how strong.

- \* palpate to confirm the lie of the baby, presenting part and if engaged. A thorough abdominal palpation will prevent unnecessarily long and uncomfortable vaginal examination later.

- \* listen to the foetal heart rate and record every 30 minutes.

- \* do pelvic examination to determine the condition of the cervix. You may need to do this every 4 hours (more frequently in the multipara) in the active phase to determine the progress of labour and ensure there is no cord prolapse. A yellowish or greenish stained vaginal discharge is an indication of breech presentation. Meconium discharge is a warning of foetal distress.

- \* **record findings on a partograph if available (Appendix 4).**

## **Abnormal Labour**

Prolonged latent phase (cervix less than 3 cm dilated for more than 8 hours) is not normal. There may be a need for oxytocin drip, forceps or vacuum extraction or caesarian section.

**FOETAL PROBLEMS** ( malpresentation, distress, prolapsed cord)

Malpresentations (transverse lie, face or brow) must be referred to hospital immediately. If breech presentation and cervix is more than 6 cm dilated, it is better to deliver in the health centre as delivery in motion may be even more dangerous. If head cannot be delivered, sedate with pethidine and refer. If gentle traction is not effective, do not use fundal pressure as this may lead to uterine rupture.

If Foetal Heart Rate is irregular, less than 110 per minute or more than 160, do a PV and if the membranes are still intact, rupture them. If the membranes are already ruptured or meconium stained, assess the cervical dilatation and if more than 6 cm, deliver at the health centre. If less than 6 cm or progress is poor, give pethidine and refer.

In the case of a prolapsed cord, check to see if cord is pulsating and assess the cervix. If the cord is pulsating and cervix more than 6 cm dilated, deliver at the health centre but if otherwise, give pethidine and refer immediately with the stretcher tilted in a head-down position.

**INITIATION OF BREASTFEEDING**

Baby should be put to breast within the first half hour of delivery (details in Chapter 7)

**Breast problems** to look out for are:

**Engorgement** - There may be pain and congestion if breasts are not emptied during feeds or feeding is delayed. Encourage mother to empty breasts at least once every other feeding. Give Paracetamol and reassure.

**Lump** - a non-tender lump with no redness, mobile (like a small bead moving about) or lump that is fixed and pulling on skin must be referred to a hospital.

**Breast problem with cough** - weight loss, cough, axillary lymphadenitis, think of cancer or tuberculosis. Do Heaf test and refer appropriately.

**Nipple sores and cracks** - may result from inappropriate feeding technique (bad positioning and poor attachment) or prolonged breastfeeding. If very painful, cracked nipple may be rested by expressing breast and administering Paracetamol. Give antibiotic only if septic. Advise on hot compress, lubrication with a few drops of breastmilk after feeds, exposure to air and **discourage** routine washing of nipples with soap before feeds. Teach how to position the child (in chapter 7) and the importance of making baby suck on the areola and not on the nipple.

#### **LSS AND LEARNING NEEDS OF TBAS**

During their training, TBAs are exposed to possible complications of pregnancy, labour and the puerperium. Emphasis is laid on these complications so that TBAs are well aware of their limitations and the consequences of disregarding them. **Only normal deliveries are to be handled by them**, therefore antenatal risk assessment is very crucial.

**Antenatal needs assessment** - TBAs take most of the deliveries in developing countries like Nigeria and may do so for a long time to come. They however need to be very careful when assessing the woman on her first visit for the current pregnancy. Risk factors must be detected early so that referral to the appropriate level can be made in time.

**Labour complications** - Even where there are no risk factors detected during the antenatal period, TBAs must be able to recognise complications quickly during labour. They need to be fully aware of the fact that last minute referral of obstructed labour, postpartum haemorrhage et cetera does not often lead to a good outcome.

**Hygiene** - Traditional delivery methods are usually not hygienic. The place of delivery, instrument used in cutting the cord and things applied to the cord or laceration of the vagina must be relevant and hygienic. TBAs must be asked what they practice so that corrections and modifications can be suggested.

**Self protection** - TBAs also need to know how to protect themselves from diseases of the women in labour, for example HIV/AIDs. In places where gloves are not readily available, they are advised to use polythene bags that will not tear easily.

### **FAMILY PLANNING**

#### **FERTILITY AND FAMILY PLANNING CONCEPT/GLOBAL POPULATION CONTROL**

A fertile person is capable of reproducing. The reproductive age spans teenage to about 55 years for women but men go many years beyond this. The most popularly used childbearing age bracket for calculations for women is 15-45 years. Rather than simply reduce fertility of individuals (which is culturally and religiously unacceptable to some people), FP programmes have helped families to have the number of children they desire, and prevent unwanted pregnancies. A family is said to be well planned if the children are properly spaced (about 2 years between one child and the next) and FP has done this through provision of information, devises and services.

FP has helped in slowing down populations globally. Short Population Doubling Times and overpopulation of the earth with resultant malnutrition and insufficient resources have been and to some extent are still major world headaches. However, in about 30 years of FP programmes, nearly 400 million women in developing countries used FP methods to prevent unintended pregnancies and the proportion of couples using contraceptives rose fivefold (from 10% to about 50%). Fertility dropped from an average of about six children per woman in the 1960s to about four today (Freedman R. and Blanc AK). About 70% of married women of reproductive age use contraception and the average couple has about two children (Population Reports).

FP programmes, socioeconomic development and government support play important roles in fertility decline. In some parts of the world, legal and religious opposition are still slowing down the rate

of fertility decline but generally, without FP, total fertility rates would have remained high.

### **Determinants of human fertility**

Fertility depends on many factors in both men and women. This is important information for a couple because in many societies, the woman is the one blamed most, if not all the time for the couple's inability to have children. Many men have taken other wives when in fact, the fault laid with them.

Each of them must have healthy pituitary gland, hypothalamus, thyroid and adrenal glands to stimulate production of or produce necessary hormones. Age is important to both since the peak of physiologic fertility for both is the mid-twenties and to the woman especially because fertility in women declines faster in them after this period.

### **Male determinants include:**

- \* Normal spermatogenesis (healthy testes)
- \* ability to transmit spermatozoa to a female vagina (having sexual drive, maintaining erection and having adequate ejaculate)
- \* normal vas deferens to allow passage of sperm
- \* normal prostate gland (for production of acid phosphatase and fibrinolysins)

### **Female determinants include:**

- \* presence of ovulation (normal ovaries and hormones)
- \* normal vagina to receive spermatozoa
- \* normal cervical mucus (to allow spermatozoa to travel up her uterus to fertilise her ovum)
- \* healthy fallopian tubes to permit movement of the ovum to the uterus
- \* healthy uterus for implantation and development of the fertilised ovum until day of delivery.

### **Management of infertility**

The person who attends to a couple complaining of infertility must take adequate history, do thorough physical examination and confirmatory tests. He must therefore counsel the couple on possible causes and encourage both to have relevant tests done.

They need to know which of their habits may lead to reduction of fertility. Sometimes the type of occupation (men working in very hot environment/where there is irradiation or anyone for long, tiring hours), diet, clothing (men wearing tight pants), long distance running by women, smoking and alcohol may reduce fertility.

The couple needs to know female fertility cycle and plan intercourse for her fertile period when a pregnancy is desired. They need to know about the types of lubricants which may be spermicides as well as medications which may cause impotence or impair spermatogenesis (narcotics, tranquilizers, methyldopa etc). The issue of multiple sex partners in a polygamous society is a common dilemma but many families are able to plan well, so that each woman is satisfied.

**Interview** should be detailed and done separately. Some histories are confidential and a partner may not want it revealed to the other.

**Physical examination** should be performed to rule out the above possible causes. Hair distribution, neck, breast development, hypogonadism and other developmental abnormalities may be easy clues.

**Diagnostic tests** may include tests for tubal patency, semen analysis, hormonal assays, cervical mucus studies (including post-coital or Sims-Huhner test), and endometrial biopsy.

It is very important to remember that the idea of the possibility of being infertile, embarrassing questions and the gamut of tests may cause **STRESS** which may worsen existing situation. A few cases may need psychological counselling.

### **History of contraception, Religious and Cultural Beliefs and Practices Affecting Acceptance of FP Methods**

No one can really say when human beings started trying to prevent pregnancy. To some religious groups, for example certain fractions among moslems and Catholics, pregnancy should not be prevented because of the belief that God expects man to reproduce and populate the earth. It is therefore a sin (disobedience) to prevent pregnancy especially by using methods. Some accept the practice of abstinence while others will allow use of contraceptive methods by married people only.

FP to some religious groups is abortion. Contraceptive devices which interfere with fertilisation of the ovum or implantation of the fertilised one are especially frowned at.

Not only religious and cultural beliefs and practices have held back FP in some countries. **Political and scientific controversies** have strengthened resistance for example against the use of injectables.

In spite of resistances, before the advent of modern contraceptive methods, apart from abstinence, traditional methods (herbal preparations, rings, incantations et cetera) were popular. When such methods failed, couples resorted to illegal abortions and suffered the consequences which may be as grievous as the death of the woman. One such example is the death of Sadie Sachs in 1912 reported by Margaret Sanger, a pioneer of family planning and founder of Planned Parenthood Federation (Population Report Series).

Contraceptive acceptance and utilisation has gone a long way especially between the 1960s and 1990s. It is even more especially relevant now with the world's interest in **Women empowerment**.

#### **Women Empowerment Through Reproductive Choice**

Women want the best for themselves and for their families. To have these, they must be able to choose their own time and type of marriage, decide on sexual relationships, childbearing and contraception. Many of them already know that they can control their health, education, occupation and economic viability through control of their fertility and spacing of their children.

Contraceptive use offers a means to do this and therefore influences the well being of the woman, her children and the entire family generally. As the United Nations has declared, the goal of family planning should be "the enrichment of human life, not its restriction". The enrichment of women's lives is certainly an empowerment of women.

### **Nigerian FP Policy**

Within the National Health Policy of Nigeria, provision is made for Family Planning.

" The health care services, based on Primary health care, shall include...

(d) maternal and child health care, including family planning. In this context, family planning refers to services offered to couples to educate them about family life and to encourage them to achieve their wishes with regard to:

- i. preventing unwanted pregnancies;
- ii. securing desired pregnancies;
- iii. spacing of pregnancies; and
- iv. limiting the size of the family in the interest of the family health and socioeconomic status. The methods prescribed shall be compatible with their culture and religious beliefs."

The policy reflects what most countries, especially those with fractions who have cultural and religious oppositions allow for the sake of others within their countries. It focuses on the reproductive health needs of couples and individuals as well as cultural and religious beliefs. Some policies focus on reducing the rate of national population growth while others emphasise ethical considerations.

### **FP SERVICES**

FP services include education and counselling of clients, provision and administration of modern contraceptive devices, as well as their removal (where applicable) whenever the client wishes. Such services could be provided in health facilities or in the community (including markets) by Community Based Distributors. All health workers involved in family planning must have sound technical knowledge about family planning methods. Each of them must also be skilled in counselling techniques. The ideal is a service which

offers a choice of methods and encourages clients to continue until they have been successful in planning their families well. Since couples differ, each should be counselled separately and, preferably husband and wife together.

### **Counselling for family planning**

Put client/s at ease. Talking about sex especially among rural and certain religious communities may be uncomfortable, so it is very important to be sensitive to cultural norms and terminologies and to try as much as possible to put clients at ease. Expressions of fear, confusion, embarrassment and non-verbal messages indicating unease must be dealt with appropriately.

Listen carefully to what clients say about themselves or their spouses so that you will be in a good position to help them as they make their decision on what method to use. They may have medical problems or attributes e.g. age for which particular methods are not advisable. Explain instructions carefully and use audio-visual aids as much as possible. Demonstrate how to use methods and for every family planning service, keep a record which will be needed for effective follow-up (contraceptive history, menstrual history and cycle).

**Oral contraception (The Pill)** is now available in different combinations of hormones (progesterone only or oestrogen + progesterone) as 21 day and 28 day pill packs. This method is good for women under 35 years and who want more children in the future, however each client must be screened for cardiac or vascular problems.

Find out if the client is over 40, is pregnant or has amenorrhoea, is nursing a baby, has chest pain or dyspnoea, high blood pressure, varicose veins or pain in the legs, has severe headaches, depression or diabetes, bleeds between periods, has breast lump, liver disease or jaundice, and if she smokes.

The pill is one of the most effective methods, having 97% success rate. It does not interfere with sex and one only needs to stop and wait for a few months if pregnancy is desired. It relieves menstrual cramps and can make periods more regular. It reduces menstrual blood flow, hence prevents anaemia, protects against pelvic

inflammatory disease, reducing chances of female infertility and also protects against ovarian and uterine cancer.

The disadvantages are that it may cause nausea, dizziness, headaches, spotting, weight gain or tender breasts especially in the first 3 months when the body is still adjusting to it. It may also cause embolism, stroke or heart attack in women over 35, who smoke. Some women may forget to take their pills daily or follow the programme as advised. They should change to another method to avoid getting pregnant. If only missed once, it should be taken as soon as possible even if it means taking 2 in a day. If 2 or more days missed in a series, 2 pills should be taken every day until she catches up with her programme. She should be advised to use an additional method. Clients should be told that instead of the 7 iron containing pills for the last 7 days of the 28 day pack there is nothing to take for those days in the 21 day pack. Women who are breastfeeding and prefer the pill should use mini pills which contain only progestin and will not reduce milk output.

***Male contraceptive pills were recently introduced by the Johns Hopkins University. The pill known as Gossypol alters the structure and motility of spermatozoa and within one month of discontinuation, 75% sperm count is restored.***

#### **The injectables (Depo-provera and Noristerat)**

These contain hormones which prevent ovulation. Progestine only ones are the most widely used. DMPA (depot medroxyprogesterone acetate or Depo-Provera) is injected every 3 months and NET EN (norethindrone enanthate or Noristerat) every 2 months in the upper arm or buttock, preferably 5 to 7 days after a period starts. Recently, monthly administered ones (combination of oestrogen and progestin, Cyclofem and Mesigyna) were introduced. Cyclofem which has undergone tests in 12 countries since the 70s, suppresses ovulation and thickens cervical mucosa. According to researchers in Johns Hopkins University, the failure rate is only 1% and its safety and acceptability have been affirmed by the WHO.

Clients must be screened as for pills and the advantages and disadvantages explained to them. Some of the advantages include

99% success rate, no interference with sex and no need to remember to use them daily. They can be used 6 weeks after delivery; they reduce menstrual discomfort and flow or stop it for some time. Fears that DMPA may cause cancer have been refuted by the WHO following long term researches (Population Reports, Series K, Number 5, August, 1995).

The disadvantages include headaches, dizziness, weight gain, irregular periods, amenorrhoea and delay for several months before getting pregnant when desired. Clients must report at the clinic if periods are twice as long or twice heavy as usual or if bleeding between periods lasts longer than 7 days.

**The Implant (Norplant)** has 6 small capsules containing low dosage hormones as in pills. Gradual release of the hormones into the blood stream prevents ovulation. One implant lasts for 5 years but can be removed earlier. It is the most effective temporary method of contraception. Like the pill, it reduces menstrual flow and does not interfere with sex.

The main disadvantages are the fact that it is clinicians who insert or remove it, periods may be irregular, there may be warning signs (lower abdominal pains, vaginal bleeding longer than 7 days, severe headaches or blurred vision), implant may come out or the site may be infected.

**The Intra-uterine Device (IUD)** is made of plastic or copper wound around plastic. TCu-380A IUD is the most widely available type now and is recommended for use up to 10 years. Others are TCu-220C, the Multiload-375, the Nova T and the LNG-20. IUD is inserted into the uterus, preventing the ovum and sperm from uniting. Women who are breastfeeding or cannot use other temporary methods or who do not want babies anymore or for a long time may prefer IUD. It is however important that they have access to appropriate medical care. Success rate is about 95% and pregnancy is not normally delayed once it has been removed. IUDs are more effective than contraceptive pills and on a par with injectables, implants, and voluntary sterilisation (Population Reports, Series B, Number 5, August, 1995).

IUDs should not be recommended for childless women or for those with multiple sex partners, previous Pelvic Inflammatory Disease, infection following childbirth or abortion, ectopic pregnancy, haemophilia, embolism, genital or uterine surgery, severe dysmenorrhoea, and Copper T if she has allergy to copper. Also, IUDs are not advisable if on examination, it is found that the client has an abnormally shaped uterus or is pregnant.

UDs may cause initial back pain and cramps for a short period but removal may be necessary if they persist or bleeding is unbearably heavy. Partial or total expulsion is uncommon but may happen if the size inserted is too small. Warning signs of expulsion or infection are delayed period (pregnancy), abdominal pain (may be during sex), abnormal discharge or spotting, fever, and missing strings.

Only trained health staff should insert or remove IUDs but the client must be taught how to feel for the threads herself. She should use another contraceptive method in addition for the first 2 weeks to 3 months after insertion.

**The Diaphragm** is a flexible rubber cup that a woman uses to cover her cervix. The lubricant used with it is spermicidal making the method 82% effective. It can be inserted just before or as long as up to 6 hours before intercourse. It must be left in place at least six hours after but not more than 24 hours. Extra cream should be applied on the outside of the diaphragm already in place if intercourse is to occur before 6 hours after the first. The size must be appropriate and only the recommended cream (not vaseline or other lubricants) should be used. It should be washed with soap and water and put against light to check for holes regularly.

**The condom** is a thin rubber sheath worn on the erect penis (or the female type in the vagina) to prevent expulsion of sperm into the vagina. Some are lubricated to make them more comfortable. Condoms are 88% effective and when used with contraceptive foam, close to 100%. They protect against sexually transmitted diseases and HIV/AIDS, are easy to obtain and carry and do not interfere with the menstrual cycle of women. Condoms used by the man may interrupt sex as he needs to put it on only when the penis is erect.

Some people have said that it reduces sensation. It should not be used more than once or after expiry date.

**Foam and foaming tablets** can be used by almost every woman. They contain spermicides, expand in the vagina and block the cervix. About 80% effective and very safe, they can be combined with other methods and are easy to carry. They can however be messy or cause vaginal irritation or be ineffective if wrongly applied. A new foam must be inserted if intercourse does not take place within 30 minutes. Applicators which come with the cans of tablets must be pushed in as far as possible into the vagina before the tablet is released.

**Foam and foaming** tablets are more effective if combined with condoms and left in for at least 6 hours. About 10 minutes should be allowed for the tablet to finish foaming before intercourse and another tablet inserted each time.

**Natural family planning** includes Lactational Amenorrhoea Method (LAM) and periodic abstinence based on the cycle of the woman. The fertile period, usually about 7 to 14 days is avoided. The method is about 80% effective but can be difficult to practice especially for women with irregular cycles or who cannot recognise mucous or temperature changes.

The types used now are LAM, rhythm, basal body temperature (BBT), mucous and sympto-thermal. **LAM** is only effective in the first six months after delivery, if a woman's menstruation has not returned and she breastfeeds exclusively and frequently, on demand. **Rhythm** relies on good recording of the menstrual cycle. Ovulation should take place at about 14 days before the next period and abstinence is advised 5 days before and after ovulation. **BBT** relies on temperature rise which occurs during ovulation, **Mucus or Billings** on the change in the consistency and appearance of cervical mucus during ovulation and **sympto-thermal** a combination of the latter two. Combined with LAM, the other methods are useful during breastfeeding.

**Vasectomy** is a permanent surgical method for men. The vas deferense are ligated, preventing sperms from being ejaculated. It is

99% effective and advised when pregnancy is no longer desirable. For safety, another method of FP should be used for the first 3 months after a vasectomy or until the man has ejaculated 15 times.

**Tubal ligation** is the equivalent in women with ligation of the fallopian tubes. It can be done by minilaparotomy or laparoscopy.

#### **FP choices for lactating mothers**

**LAM** in the first 6 months is the most appropriate if mother breastfeeds exclusively on demand and does so frequently even in the night. She must be reminded that as soon as her menses return, LAM is no longer reliable. Also after 6 months a couple must use alternative FP methods which will not interfere with lactation.

**First choice** methods are non-hormonal (condoms, diaphragm, spermicides, IUDs, Natural methods, vasectomy and tubal ligation as applicable to each couple.

**Second choice** methods are progestin-only methods (mini pills, injectables, implants).

**Third choice** methods are pills containing oestrogen (combined orals and combined injectables)

#### **SELECTION AND STERILISATION OF FP EQUIPMENT**

Minimal equipment for IUD insertion include:

1. Alligator forceps
  2. Tenaculum
  3. Ring forceps
  4. Speculum
  5. uterine sound
  6. Scissors
  7. Source of light e.g. flashlight (torch)
- All these except the flashlight need sterilisation and this can be done even at the community level by boiling.

*Figure 13 - Contraceptive Devices*

*Figure 14 - FP equipment*

#### **FEMALE CIRCUMCISION/MUTILATION**

This unnecessary procedure, now referred to as mutilation because of its grievous consequences (not the case with male circumcision), is still performed in some countries including Nigeria today. The erroneous beliefs about it have been difficult to change but there is some reduction in the prevalence of the practice. Some cultures believe that women will have difficulty at child birth if it is not done, whereas the practice itself predisposes the women to vulval stenosis.

Some say they do it to reduce sexuality and prevent promiscuity in their women.

In some countries like Egypt and The Sudan, the vulval excision done is very wide, with removal of the clitoris, labia minora and part or all of the labia majora. In countries like Nigeria, lesser degrees of the excision is done. The WHO has categorised it into 4 main groupings:

Type 1 - removal of prepuce (clitoral hood), sometimes with part of clitoris.

Type 11 - removal of clitoris and part or all of labia minora

Type 111 - (infibulation) removal of clitoris, amputation of some of labia minora, and incisions on labia majora to create a raw surface for healing such that a "hood of skin" is formed covering the urethra and most of the vaginal opening. A small opening, size of a match stick head is left to allow flow of urine and menstruation.

*Figure 15 - Female Genital Mutilation*

Type 1V - other incisions like introcision as in gishri cuts, piercing or incising of clitoris and/or labia, stretching the clitoris and/or labia, cauterisation, scraping and/or cutting of the vagina, introduction of corrosive substances and herbs into the vagina et cetera.

Complications include excessive haemorrhage sometimes leading to death, sepsis from unsterile instruments used, vulval stenosis leading to obstructed labour, vaginal lacerations and postpartum haemorrhage. Some women have complained of pain and therefore no enjoyment of sexual relationship with their spouses. No doubt, there will be adverse psychological effects of the practice on some women.

These dangerous effects of the practice have been discussed globally and the operation declared illegal. It is however still being practised in some countries.

### **SEXUALLY TRANSMITTED INFECTIONS INCLUDING HIV/AIDS**

**Sexually Transmitted Infections (STIs)** are a major cause of infertility especially in women, ectopic pregnancy and infections in the baby (e.g gonococcal conjunctivitis). The consequences are major, yet some of the infections have become endemic in developing countries, especially Africa.

Causes include:

Bacterial infections (Pelvic inflammatory disease, gonorrhoea, syphilis, chancroid, trichomoniasis,

Viral infections (Herpes zoster,

Fungal infections (Chlamydia, condylomata accuminata

Pubic lice

### **HIV/AIDS**

The most common route of infection with Acquired Immune Deficiency Syndrome caused by the Human Immunodeficiency Virus is through sexual relationship. The other routes are through blood (as in blood transfusion, mother to unborn baby, use of contaminated instruments like needles, razor blade, scalpel etc.) and through other body fluids like amniotic fluid, plasma from wounds etc. The control of the disease has been greatly assisted by the use of the condom, previously just an FP method.

**Management of STIs and HIV/AIDS (details in chapter 12):**

As much as possible, sexual intercourse without protection with a condom must be discouraged until an infection has been cured. Usually all partners need to be treated. Since there is no effective cure for AIDS yet, protection with Latex condom is very crucial.

As many partners as can be contacted must be treated and counselled but confidentiality must be maintained at all times.

**EVALUATION OF MATERNAL HEALTH and FP SERVICES**

The effectiveness and quality of care rendered by maternal health and FP services may be evaluated through:

- the types, frequency and quality of available services
  - \* antenatal care
  - \* delivery
  - \* FP
  - \* Tetanus Toxoid immunisation
  - \* STD screening/counselling
  - \* AIDS screening /counselling
- accessibility and coverage services
  - cost and affordability of services to clients
  - efficiency of materials procurement
  - availability and accessibility to referral facilities
- availability of functioning ambulance/ambulatory services
  - quality and frequency of supervision at all levels
  - effect of services on maternal health (morbidity and mortality rates, family planning utilisation) and on the newborn (perinatal morbidity and mortality rates, and birth weights).

**CHAPTER 12**  
**MANAGEMENT OF COMMON DISEASES AND CONTROL**  
**OF LOCALLY ENDEMIC PROBLEMS**  
**DIAGNOSIS AND TREATMENT**

Good history taking and thorough physical examination are crucial to decisions on mode of management and choice of medication for a patient.

The mode of management may be preventive, curative, rehabilitative or promotive. It could also be symptomatic or according to overall problem diagnosed and related to the patient's circumstances or the condition's treatment regulations.

The treatment of choice should be based on efficacy, safety and suitability of the drugs as well as on convenience and cost. Decision must be taken on whether the patient requires drug treatment or non-drug treatment. The correct dosage, side effects or reactions and expected actions must be explained to the patient. The possible outcomes of non-compliance should also be emphasized.

Prescriptions must be according to Generic names, and follow the Essential Drugs List if any is available.

**USE OF STANDING ORDERS**

The "Standing Order" used by health care providers in Nigerian clinics was designed for the Family Health Clinic project of the Institute of Child Health and Primary Care of the College of Medicine, University of Lagos.

They are a set of specific guidelines arranged by symptoms which define how patients should be managed, depending on the presenting signs and symptoms.

The objectives of "Standing Orders" are to:

1. give the family health workers legal protection for providing Primary care,

2. provide a systematic framework for history taking and physical examination;
3. keep staff aware of the less common, more serious, and easily forgotten conditions;
4. ensure a high standard of care in the Family Health Clinic;
5. provide uniformity of care;
6. facilitate evaluation of care.

By following the standing orders, health workers are acting under authority and legal auspices of the physician, whether or not he is present in the clinic at the time of treatment. Medical students during field work fall into this category and can only prescribe outside the standing orders if the supervising physician countersigns the prescription.

### **PHYSIOLOGY AND PATHOPHYSIOLOGY OF COMMON SIGNS AND SYMPTOMS**

When prescribing drugs for various conditions, choice depends on suitability of the drug. There may be different drugs for the treatment of a sign or symptom but the mode of action may differ. The physiology and pathophysiology of the sign or symptom must be understood before one can choose the appropriate medication.

#### PAIN

When a tissue is damaged, the information is transmitted along surrounding nerve fibres through the spinal cord to the hypothalamus and cerebrum. A block along this line of transmission leads to analgesia.

The minor analgesics e.g. salicylates, block peripheral pain-nerves. They inhibit prostaglandin synthesis and this is why they are also anti-pyretic. Opiates, the most powerful analgesics, block pain perception by blocking opiate receptors in the brain and hypothalamus.

#### INFLAMMATION

Non-steroidal Anti-inflammatory Drugs (NSAID) inhibit prostaglandin synthesis. Salicylates and NSAIDs are called prostaglandin-synthesis blockers. They prevent inflammatory process in tissues and reduce tissue oedema.

### COUGH

This is a reflex reaction to local irritation of the throat (e.g. pharyngitis, postnasal drip) or to secretions swept up the respiratory tract as a result of lower respiratory tract infections (pneumonia, pleurisy, tuberculosis).

Cough expectorants are necessary to aid expectoration of mucus and pus, while suppressants should only be used to reduce the cough reflex in non-productive, troublesome cough e.g. whooping cough, allergies, hysteria.

FEVER (PYREXIA) - disturbance of the heat regulating system due to infectious agents in circulation, low fluid volume as in dehydration, or change in the composition of body electrolytes.

RIGORS - while temperature is rising, skin vessels constrict so that the body surface feels cold, leading to shivering. When the higher temperature is reached, heat loss again becomes apparent; skin vessels dilate and the body feels warm/hot. When sustained at a higher level, the person exhibits fever.

HICCUP - Phrenic nerve irritation leading to spasmodic contraction of the diaphragm, and therefore no coordination between the respiratory muscles and the diaphragm. It may also occur in uraemia; affections of the brain stem, diaphragm and the peritoneum.

JAUNDICE (icterus) - is the yellow colouration that shows on the sclera, mucosa and skin when either free or conjugated bilirubin circulating is high enough to stain tissue ( $> 2\text{mg/dl}$ ). This may result from excess production (as in haemolytic anaemias), hepatic disease and intra or extra hepatic obstruction of the biliary tree.

### NAUSEA AND VOMITING

Nausea is the sensation that precedes vomiting. There is production of copious of thin, mucoid saliva. This is followed by retching (involuntary motions of vomiting without production of vomitus) or vomiting (a reflex loss of upper gastro-intestinal contents through the mouth). It may be due to:

(a) stimulation of the pharynx, tonsillar fauces, intestines (appendicitis, obstruction, enterotoxins), heart, kidney, uterus and testes.

(b) intense emotions e.g. fright, strong sensation (odours and tastes).

(c) excessive vestibular stimuli (vertigo, motion sickness and

(d) pregnancy (due to hormonal and metabolic changes).

Afferent stimuli pass through the vagal and sympathetic pathways to the vomiting centre located in the medulla.

Efferent motor, impulses pass through cranial nerves V, VII, IX and XII to the upper gastrointestinal tract and through spinal nerves of the diaphragm and abdominal muscles.

Direct stimulation of the vomiting centre causes projectile vomiting with minimal nausea (e.g. by drugs like apomorphine, ipecacuanha and increased intracranial pressure or meningeal irritation).

**OEDEMA** - may result from increased capillary pressure (e.g. due to venous obstruction), decreased osmotic forces within vasculature (reduced protein concentration) impaired fluid removal from tissues (due to lymphatic obstruction), increased permeability of capillary walls (e.g. due to histamine).

**ANOREXIA** - loss of appetite. Appetite is a psychic or emotional desire to eat whether or not there is a need for food. Lesions in the area of the hypothalamus where the feeding centres are located cause anorexia resulting in emaciation and death by starvation. The feeding centre also located within the hypothalamus is regulated by blood levels of glucose and glucagon. A post-prandial increase in blood glucose level stimulates the satiety centre which then inhibits the feeding centre.

**CYANOSIS** - bluish colouration of tissues due to deoxyhaemoglobin in concentration higher than 5g/dl of capillary blood. Cyanosis may be readily seen in the lips, ear lobes, nail beds and mucous membranes. It is important that there may be hypoxia but it may not result in cyanosis.

**DEHYDRATION** - may be is-osmotic, hypo-osmotic or hyper-osmotic.

**Is-osmotic** - fluid is lost from the plasma and is then repleted from the interstitial space. The volumes of extra-cellular fluid (ECF) is reduced but there is the changes in osmolarity.

**Hypo-osmotic** - loss of sodium chloride (NaCl) e.g. through excessive sweating or renal problem, causes loss of water, but loss of NaCl in excess of water results in decreased osmolarity of the ECF and

a shift of fluid from extracellular into intracellular space.

**Hyper-osmotic** - water deficits due to reduced intake diabetes incipidus, alcoholism, fever or excessive loss from the skin leads to a shift of fluid from the interstitial fluid to the plasma.

**HEADACHE** - as for pain.

The causes may include electrolyte imbalance, increased intracranial pressure, overdilation of cerebral vessels, increased blood pressure, eye strain and damage to tissues in organs of the head.

### **ORAL ULCERATION AND INFECTION**

#### Primary Ulceration

1. The most common cause of oral ulcers is trauma.

2. Infection with spirochaetes and bacillus piriformis may result from poor oral hygiene and smoking. It is usually an acute onset stomatitis with halitosis.

Tuberculosis ulceration is usually secondary to pulmonary TB. The chronic ulcer has undermined edges. Snails track ulcers in secondary syphilis and punched out ulcers of tertiary syphilis must be referred for confirmation and treatment.

Other infections which may cause oral ulceration are actinomycosis, candidosis and infectious mononucleosis.

3. Neoplasms (squamous cell carcinoma).

4. Systemic conditions such as anaemia, agranulocytosis, lupus erythematosus, lichen planus and Crohn's disease.

5. Aphthous ulceration

#### Intra-epithelial bullous lesions

1. Herpes simplex - usually follows severe constitutional illness. There is mucosal erythema followed by vesicles and ulceration. Healing leaves no scar.

2. Herpes zoster - there is pain and unilateral vesicles and ulceration of forehead, chin and cheek as well if the trigeminal nerve is affected.

#### Sub-epithelial bullous lesions

Erythema multiforme causes generalised severe, painful exfoliative stomatitis. There is haemorrhagic crusting of the lips and blood-filled

bullae. It may result from drug hypersensitivity, bacterial or viral infections. Refer for investigation and treatment.

### **DYSPHAGIA/SORE THROAT**

1. Defined as pain on swallowing food or saliva with or without fever.
2. To be distinguished from irritation lump, other sensations.
3. Pain must be inside the throat, not on neck.
4. Associated symptoms: ear ache.

#### Causes

Inflammations; bacterial or viral.

#### Clinical features

Pain may prevent the patient from swallowing hence, saliva is kept in the mouth. Inflammation may cause the uvula to elongate. This is the commonest cause of inappropriate treatment by unqualified persons. Uvulectomy is done locally, complicating the tonsillitis.

#### Differential diagnosis

- |                           |                            |
|---------------------------|----------------------------|
| -Diphtheria               | -Kissing disease           |
| -Ludwig's angina          | -Lassa fever               |
| -Vincent's angina         | -Leukaemia - lymphosarcoma |
| -Infectious mononucleosis | -Neoplasia                 |
| -Glandular fever          |                            |

#### Complications

- Quinsy
- Abscesses

#### Treatment

The patient should (1) gargle with warm saline water and oral antiseptic solution if available;

(2) have a broad spectrum antibiotic.

If it is recurrent, refer to an ENT specialist for tonsilectomy.

### **EPISTAXIS**

Bleeding from the nose usually resulting from erosion or trauma to the blood vessels of Little's area.

The most likely causes are;

Local - Trauma, infection, allergic rhinitis; also hereditary haemorrhagic telangiectasia, idiopathic;

General - Hypertension, bleeding disorders (haemophilia, scurvy, thrombocytopaenic purpura) use of anticoagulants, late phase of liver disease, renal failure (hypertensive), leukaemia.

#### Management

Anterior nasal bleeding:

-Sit patient up, lean forward to prevent swallowing of blood so that amount lost can be estimated.

-Clear the nostrils. Herbs, cotton wool e.t.c. may have been used to stuff the nostril. Spray the nostrils with Xylocaine-Adrenaline mixture and carefully remove stuffing.

-Examine and apply cotton wool soaked in 0.25-5% Phenyl Epinephrine (or 1:10,000 epinephrine).

-Apply ice or cold packs to the bridge of the nose.

Pinching the nostril may stop bleeding from Little's area.

-When bleeding has stopped, apply cotton wool soaked in 4% Xylocaine, or mixture of 10% cocaine with 1:10,000 adrenaline for 10 minutes.

If bleeding persists, pinch nose with parafin - impregnated gauze, or make a nasal pack with stuffed glove fingers.

Refer patient for investigations and further management.

Posterior nasal bleeding:

If a size 12-14 Foley's catheter is available, pass it through the nostril until you can see it through the mouth. Inflate with water or air and pull it up the roof of the nasopharynx. Strap the catheter to the bridge of the nose. Refer patient for investigations.

**FOREIGN BODY IN THE NOSE** - Parents may have attempted to remove the foreign body, causing it to go further in and sometimes causing bleeding. As long as child is able to breathe, reassure the parents and refer to an ENT specialist who may have to remove the object under anaesthesia.

**FOREIGN BODY IN THE EAR** - Just as foreign body in the nose, several attempts might have been made by untrained hands to get the foreign body out.

**FOREIGN BODY IN THE LARYNX** - Fish bone is one of the commonest objects swallowed accidentally. It may lodge in the larynx, and if not dealt with quickly may cause oedema of surrounding tissues and the possibility of airway obstruction. Refer cases to the ENT specialist immediately.

**DEAFNESS** - A state of being hard of hearing.

*Figure 15 - Anatomy of the Ear*

1. Tympanic membrane 2. Malleus 3. Incus 4. Stapes 5. Labyrinth  
6. Auricular nerve 7. Cerebrum

Causes of conductive deafness

Canal Wax, Debris, foreign body, congenital stenosis.

Middle ear Trauma - Slap, bomb (leading to rupture of tympanic membrane), - Road traffic accident - Barotrauma (from flying)

Infections

Otitis media, bullous myringitis (Secretory, Suppurative, Adhesive)

Tumors- Polyps, granulation tissue, adenocarcinoma, squamous cell carcinoma, glomus jugulare.

Causes of sensorineural deafness

-Measles; congenital from maternal German measles, Neonatal jaundice, Labyrinthitis, Noise (chronic exposure to acoustic trauma), Herpes zoster (viral infections), Head injury, Bacterial infections (syphilis), Meniere's disease, Ossicular chain disease: Tympanosclerosis, Otosclerosis, Toxic substances (streptomycin, neomycin, salicylates, quinine, alcohol, dyes, tobacco), Cochlear otosclerosis, Acoustic neuroma, convulsion, cerebral malaria, ageing (presbycusis).

Diagnosis

In adults:

1. Voice tests - 15ft away.
2. Tuning fork test - not usually reliable below 5yrs and may not detect conductive loss of less than 20dB.
3. Rinne's test - for air conduction /bone conduction deafness.
4. Weber's test - for conductive deafness.

In children:

1. Distraction test - the child should be held facing a nurse/person who tries to play with (distract) the child. The doctor, who is completely out of sight, now makes a sound e.g. tapping a cup with a

spoon, voice or rustling paper; starting with a low intensity and increasing it until the child responds. Both ears can be tested according to where the sound is coming from.

2. Cooperation tests - distraction tests may not be useful between ages 18-30 months, so the child may be asked to perform a function or stop following specific instructions, e.g. bang an object on the table/floor or drop stones into a can when asked to start. Different intensities are used to give the instructions.

3. Performance tests - for children over 30 months; may be asked to perform specific tasks on hearing a sound. Different intensities are used to give instructions for different tasks.

Treatment - may simply be removal of wax. The wax should be syringed out with normal saline at body temperature. Hard wax may need to be softened with waxol or olive oil applied a few days before syringing. Normal saline is preferred to water just in case there is a perforation.

Secretory otitis media - refer to the ENT specialist after giving decongestant e.g. Triprolidine HCl + pseudoephedrine.

Suppurative otitis media - advise on cleaning the ear and refrain from dropping anything into the ear. Give oral broad spectrum antibiotics after taking a specimen for laboratory investigations.

### **COMMON DERMATOLOGICAL PROBLEMS.**

Several skin problems do not bother people and are hardly presented to health care providers. During physical examination in the clinic or community surveys however, a lot of them will be discovered. Some of them will need referral to a dermatologist.

Congenital or genetic - naevus, haemangioma, neurofibromatosis, ichthyosis, atopic eczema (allergy).

Physical reactions - e.g. sunburns, photodermatitis (sulfa drugs), solar keratoses from sunlight, chilblains and frostbites from cold in temperate regions and among cold storage workers, burns and miliria (heat rash) from heat and corns, skin cancer from pressure and friction.

Chemicals - contact dermatitis from soaps, creams, perfumes, jewelry, chemicals used for processing leather, e.t.c.

Drug eruptions - e.g. urticaria from penicillin, Stevens-Johnson syndrome from sulfonamides, pyrazolone analgesics, lichen planus

from thiazides, chlorpromazine and even antimalarials; erythema nodosum from oral contraceptives, iodides, sulfonamides.

Infections:

Parasitic - e.g. scabies, guinea-worm, larva migrans, pediculosis, onchodermatitis, e.t.c, can be treated at the PHC level.

Fungal - e.g. Tinea vesicolor, ring worm, candidiasis. Treat at the PHC level.

Bacterial - e.g. Impetigo contagiosum, gonorrhoea, syphilis, chancroid, leprosy, lupus vulgaris, (M.tuberculi) e.t.c, can be treated in the PHC clinic.

Viral - as in verrucae (warts), molluscum contagiosum, Herpes simplex and zoster, pityriasis rosea.

Autoimmune disorders - e.g.vitiligo, lupus erythematosus, alopecia areata.

Systemic disorders - e.g.ecchymosis and purpura in bleeding disorders.

Neoplasms

Unknown aetiology - e.g.atopic dermatitis, sarcoidosis.

Anaphylaxis - an emergency condition resulting from insect stings e.g.bees, drugs, foods e.t.c. Refer to the hospital.

## **COMMON EYE PROBLEMS**

The Red Eye - every red eye is an emergency until proved otherwise. The common causes are trauma/injuries (chemical, mechanical, non-mechanical), allergies, viral and bacterial infections (conjunctivitis, blepharoconjunctivitis, uveitis, orbital cellulitis, Hordoleum <Meibomian gland infection>, corneal infections, kerato-scleritis), glaucoma, tumors, systemic diseases e.g.hypertension, diabetes mellitus, thyroid pathology e.t.c, refractory errors.

Gonococcal conjunctivitis presents with copious purulent discharge, while the common viral infections are measles, chicken pox, acute haemorrhagic keratoconjunctivitis ("apollo"), herpes. They should be managed by an ophthalmologist.

Chlamydia (trachoma) is common in Northern Nigeria and is one of the commonest causes of blindness.

Glaucoma, especially in children (congenital) makes them very sensitive to light (photophobia). Mother may notice redness or corneal opacity. Older children may complain of eye ache or pain,

frontal headaches, vomiting and constitutional upsets. The pupillary reaction is sluggish.

Alkaline chemicals cause more damage than acidic ones. The eye must be thoroughly irrigated with sterile bland water or normal saline solution. Patient must be referred for further treatment.

#### Refractory problems

Myopia (short sightedness) and presbyopia (long sightedness). Refer to the ophthalmologist/optician.

### **BLINDNESS**

This could be partial or total, and there are several causes prevailing in this environment;

- Infections acquired in-utero or during delivery such as toxoplasmosis;
- Other infections e.g. trachoma, measles, onchocerciasis;
- Deficiency states e.g. vitamin A deficiency
- Injuries and accidents
- Neoplasms and congenital cataract.

### **HIGH BLOOD PRESSURE**

This can be defined as elevation of the **diastolic** blood pressure above normal levels, though an abnormally high systolic blood pressure is also referred to as high blood pressure.

The major proportion of people with high blood pressure have the idiopathic type - that with no identifiable underlying cause. This type is referred to as idiopathic.

Secondary causes of high blood pressure include;

- Renal causes - polycystic kidney, renal artery stenosis, renal failure;
- Hormonal imbalance - oral contraceptive use in susceptible persons, pheochromocytoma, pregnancy-induced;
- Coarctation of the aorta

For a diagnosis of hypertension to be made, at least three separate blood pressure assessments on three separate occasions, showing evidence of high blood pressure must have been made.

Treatment modalities include;

- diet
- weight loss/exercise, and

- use of antihypertensive drugs.

### **CONTROL /PREVENTIVE MEASURES FOR LOCALLY ENDEMIC DISORDERS COMMUNICABLE DISEASES**

In order to control or prevent any disease, its epidemiology must be known and health care providers must know how to recognise it and confirm the diagnosis. They should also know the incubation period of the disease.

There must be a programme for notification to appropriate authorities, detection of the source of infection and contact tracing and surveillance.

There are 3 main methods of control:

- 1) elimination of the reservoir of infection
- 2) protection of those susceptible
- 3) interruption of the cycle of transmission.

Isolation of patients (quarantine) may be necessary for communicable diseases with high morbidity and mortality, high infectivity, none or insignificant extra-human reservoir.

Where the reservoir of infection is animals, the control measure will depend on the usefulness of the animal. Where the animals are pests e.g rats, they should be eliminated but if useful e.g. cattle, they should be vaccinated and infected ones promptly treated or eliminated.

If the reservoir is non-living e.g. soil, elimination is often impossible and the best measure would be human protection by good sanitation, environmental health, personal hygiene and immunisation.

The following are some of the control and preventive measures for communicable disease, some of which are locally endemic disorders in Nigeria.

**Health Education** is a preventive and control measure common to all and is therefore not repeated under measures for each condition.

#### **AMOEBIASIS, GIARDIASIS, TRICURIASIS, ENTEROBIASIS**

Personal and food hygiene  
Sanitary disposal of faeces.

#### **ANTHRAX**

Isolation of sick animals  
Protective clothing  
Proper disposal of infected carcasses  
Disinfection of hides, skin and hair.

#### **BRUCELLOSIS**

Pasteurisation of milk  
Environmental sanitation  
Personal hygiene  
Protective clothing in slaughter houses and farms  
Elimination of infected animals  
Vaccination of animals NOT man.

#### **CANDIDIASIS**

Discouragement of indiscriminate antibiotic use  
Treatment of pregnant women and husbands  
Chemotherapy.

#### **CHICKEN POX**

Notification  
Immunisation of high risk groups (not done in Nigeria).

#### **CHOLERA**

Isolation and notification  
Chemotherapy and terminal disinfectin  
Tracing of source of infection  
Provision of potable water  
Sanitation  
International cooperation.

#### **DIARRHOEA AND BACILLARY DYSENTRY**

Improvement of water supply and sanitation  
Promotion of personal and food hygiene  
Chemotherapy for invasive infections  
Promotion of breastfeeding and good weaning practices  
Immunisation for conditions like measles, poliomyelitis  
Adequate and appropriate nutrition  
Control of flies.

**DENGUE**

Vector eradication (*Aedes Aegypti*)  
Screening of houses/Protection against bites.

**DIPHTHERIA**

Immunisation  
Isolation of cases  
Search for carriers and treatment (in a small group e.g. school).

**FILARIASIS**

Vector control (mosquito)  
Chemotherapy (mass treatment or selective).

**GUINEAWORM**

Provision of potable water  
Filtration of water or boiling  
Prevention of infected persons from going into water source  
Chemotherapy.

**HELMINTHIC INFECTIONS**

Sanitary disposal of faeces  
Food hygiene  
Potable water  
Chemotherapy  
Protection (e.g. wearing of shoes for hookworm).

**HEPATITIS**

Provision of potable water  
Environmental sanitation (faeces disposal)  
Isolation of cases and notification  
Search for source of infection  
Control of flies  
Supervision of carriers  
Immunisation.

**HIV/AIDS** (See Sexually Transmitted Infections)**LEISHMANIASIS**

Control of vector (cutaneous (rodents), visceral (sand fly))  
Breaking of man/vector contact

Chemotherapy  
Immunisation (cutaneous)  
Plastering of walls and use of DDT (for sandfly)  
Treatment or elimination of infected dogs  
Siting of houses at least 100 yards away from termite hills  
Destruction of termite hills.

### **LEPROSY**

Treatment of cases (Triple drug therapy)  
Survey to identify cases and contacts.  
BCG and/or Prophylactic dapsone (persons exposed)  
Improvement of housing.

### **LOAIASIS**

Vector Control (Chrysops species)  
Chemotherapy  
Screening of houses & Clearing of the environment.

### **MALARIA**

Chemoprophylaxis  
Prompt Chemotherapy  
Vector (mosquito) Control  
Human Protection

### **MEASLES**

Immunisation  
Isolation of cases (not very effective by the time measles is diagnosed).  
Adequate nutrition.

### **MENINGITIS**

Improvement of housing and avoidance of crowded places  
Treatment of cases and contacts  
Mass Immunisation  
Surveillance.

### **MUMPS**

Isolation of cases  
Immunisation  
Personal hygiene.

**ONCHOCERCIASIS**

Vector control (simulium)  
Chemotherapy.

**PERTUSSIS (WHOOPIING COUGH)**

Immunisation  
Isolation of cases during catarrhal phase.

**POLIOMYELITIS**

Immunisation  
Notification and Isolation of cases  
Safe disposal of faeces  
Personal and food hygiene  
Fly Control.

**RABIES**

Immunisation of pet dogs  
Control of stray dogs  
Immunisation after exposure  
Prophylactic immunisation of high risk persons (Veterinary doctors/nurses, researchers etc).  
Control of importation of dogs  
Destruction of rabid dogs

**RELAPSING FEVER**

Protection from vectors  
Vector control (rodents, ticks, lice)  
Improvement of housing.

**RHEUMATIC FEVER**

Prevention of overcrowding  
Chemotherapy  
Chemoprophylaxis.

**RUBELLA (German Measles)**

Active Immunisation

Passive immunisation if exposed when pregnant (gamma globulin).

### **SCABIES**

Personal hygiene  
Chemotherapy  
Adequate water supply  
Mass treatment in institutions.

### **SCHISTOSOMIASIS**

Chemotherapy (elimination of reservoirs)  
Vector control (molluscicides)  
Sanitary disposal of faeces and urine  
Prevention of pollution of surface waters  
Avoidance of contact with infected water.

### **SEXUALLY TRANSMITTED DISEASES (HIV/AIDS, Herpes genitalis, Trichomoniasis, Gonorrhoea, Syphilis, Chancres, Lymphogranuloma venereum, Granuloma Inguinale)**

**A** – Abstinence

**B** – Being faithful to an uninfected partner (discouragement of multiple sexual partners)

**C** – Condom protection (encouragement of safer sex)

Identification and treatment of carriers/reservoirs (e.g. Commercial Sex Workers)

Counselling of patients.

Surveillance

In addition to the above, for HIV/AIDS:

Screening of blood donors and blood products for transfusion

Sterilization of equipment e.g. barber's clippers and shavers, instruments for ear piercing, circumcision, pedicure, manicure, tattooing etc and use of new needles and syringes.

Prevention of Mother – to- Child Transmission through use of anti-retroviral drugs.

Counselling of HIV positive mothers on infant feeding options and alternatives to breastmilk.

### **TETANUS**

- Passive and active immunisation
- Wound toileting
- Prevention of cuts and pricks by infected instruments
- Sanitary disposal of faeces
- Penicillina prophylaxis.

#### **TRACHOMA**

- Personal hygiene
- Mass treatment with antibiotics
- Improvement of living standards
- Fly control.

#### **TRICHINOSIS, TAPEWORM INFECTION**

- Adequate cooking of pork and beef
- Inspection of animals
- Sanitary disposal of faeces
- Chemotherapy.

#### **TRYPANOSOMIASIS (SLEEPING SICKNESS)**

- Tsetse fly control
- Chemotherapy
- Selective chemo-prophylaxis.

#### **TUBERCULOSIS**

- Improvement of housing
- Immunisation with BCG
- Chemotherapy
- Contact tracing and treatment
- Personal hygiene
- Adequate nutrition
- Pasteurisation of milk.

#### **TYPHOID**

- Sanitary disposal of faeces
- Provision of potable water
- Personal and food hygiene
- Tracing of source
- Pasteurisation of milk
- Immunisation
- Fly Control
- Discouragement of the use of fresh human manure.

## **YELLOW FEVER**

Isolation of cases  
Vector control  
Immunisation

## **COMMON NON-COMMUNICABLE HEALTH PROBLEMS CONGESTIVE CARDIAC FAILURE**

Cardiac failure is the heart's inability to deliver adequate oxygen to metabolising tissues, e.g. in anaemia where the oxygen-carrying capacity of the blood is reduced, or in thyrotoxicosis where the rate of metabolism in tissues is high. In most cases, it is secondary to a rise in pressure against which the heart has to pump blood, e.g. in hypertension. Patient must be calmed and advised on salt intake. A diuretic may be given if available and patient promptly referred.

## **DIABETES**

-Chronic hyperglycemia

Types:

Insulin dependent - Type 1  
(IDDM) - Type 2

Non-insulin dependent  
(Adult onset) - Non-obese  
- Obese

It could be associated with pancreatic disease, or could be hormonal or drug/chemically induced.

A full history (of e.g. polydipsia, polyuria, weight loss, family history of the disease) and urine test for glucose will help diagnosis, but patient must be referred for further investigations and management.

When referred back, the dietary control should be supervised.

Encourage complex carbohydrates (starchy foods) rather than use of refined or simple carbohydrates (soft drinks, Lucozade).

Carbohydrates should give: 45 - 60% total calories

Protein 15 - 20%

Fat 25 - 35%

Patient must take adequate vitamins and minerals. Those on insulin have less caloric restrictions; their caloric intake should be matched with insulin dose. They should have regular meals 3-6 times per day.

With pancreatic diabetics, preparation with coconut oil is preferable. Pancreatic extracts may be necessary. Neonatal hypoglycemia may occur in babies born to mothers who have been on oral hypoglycemic agents.

**CHAPTER 13**  
**WATER, SANITATION AND THE ENVIRONMENT**  
**THE ENVIRONMENT**

Man depends on his environment for good health, survival and safety. He obtains essential things from his environment e.g oxygen from the air, water from the rivers, ponds, streams, natural and artificial lakes/dams, food from land and sea. Man also pollutes the very environment from which he obtains these things. When waste is not properly disposed of, the environment becomes polluted or contaminated, threatening good health and survival.

**WATER SUPPLY**

The sources of water supply in a community may include rain water, streams, ponds, lakes/dams, springs, wells, borehole, and pipes. The water may be contaminated during collection, storage and distribution. Water for drinking needs to be treated (purification) to prevent some water-borne diseases (removal of infective agents) and removal/reduction of hazardous concentrations of chemicals.

**Potable Water:**

Water can be made potable (drinkable) through boiling, filtration, sedimentation, chemical disinfection (chlorination, iodination, fluoridation), and aeration.

**Protection of the Sources of Water Supply**

**Surface water ( streams, ponds, lakes/dams, rivers, sea)**

Water is used for many purposes; bathing, washing of clothes, drinking, watering of animals/plants and in industry. Villagers

often put demarcations to identify portions of a stream or river where water for the different activities, especially water for drinking may be collected. Drinking water is usually collected upstream but they must be taught to treat it because it may have been contaminated by another village closer to its source. fences could be constructed around ponds and lakes to prevent contamination by animals.

### **Wells and boreholes**

These must be sited at least 30 feet from pollution sources like pit latrines, septic tanks/soak-away, and refuse dumps. They must be properly constructed with lining to ensure that surface water does not seep into the well without filtering through at least 3 metres of soil. The well must have an apron with drainage, a parapet and a lid. Concrete rings help to reinforce the wall. There should be no pool of water around it and community members must be taught how to use and maintain the hand pump. A "two-bucket" system (with one permanent bucket used for drawing water) should be recommended.

### **Pipe borne water**

Damaged pipes (often passed through gutters) carry contaminated water. That they come through pipes often gives a sense of false security. It is wiser to boil pipe borne water for drinking in developing countries when one is not sure of its safety.

Ideally, water samples should be periodically sent to laboratories for analysis. Potable water should be colourless, odourless, tasteless and clear. Good quality water should have:

- \* A faecal coliform count of 0/100ml
- \* chlorine residual of 0.2-0.6 mg/l and
- \* turbidity of < 1TU and never > 5TU

## **ENVIRONMENTAL FACTORS AFFECTING HEALTH**

( see Chapter 2, page - and Table -).

### **AIR, NOISE AND RADIATION POLLUTION**

Modern technology has worsened air pollution in the developing world because in addition to smoke from firewood, fumes from kerosene stoves, saw dust cookers and emissions from poorly

maintained vehicles and factories have become serious, uncontrolled health hazards.

There is no law against noise in some countries and where there is, it is hardly enforced. Noise from industries, horns of vehicles, public address systems in mobile vehicles, noisy music from record/cassette sellers, shouts of destination of public vehicles etc. seem to have become part of life in the developing world. Prolonged or long-term exposure to noise reduces hearing ability. Factory workers are particularly vulnerable to partial deafness.

Radiation from radioactive substances which are illegally dumped affect plants, animals and human beings. Health personnel working in X-ray and radiotherapy units must wear protection and fully educate other staff working with them.

#### **SOLID WASTE MANAGEMENT**

Solid waste generated in the community includes wood products (leaves, trimmings and grass), waste food, dead animals, polythene and rubber products, metals (tins). Developing countries still find it difficult to dispose of polythene properly because it is not biodegradable. It is only recently that researchers have discovered how to grow plants which produce plastic leaves and flowers that can be used in producing biodegradable plastic products. Other solid waste can be disposed of through:

- \* burning (not satisfactory because of pollution) \*
- burial \* incineration \* recycling \* pyrolysis
- \* land filling (controlled tipping) \* composting and
- \* barging (rapid dumping into sea)

#### **SEWAGE DISPOSAL** (human waste- faeces, urine)

Each community must have adequate number of pit latrines or Ventilated Improved (VIP) latrines. Ideally, each house should have its own toilet and bathroom. Open space dumping of faeces and the use of bush around the house must be discouraged. Other methods use are: Chemical as in aeroplanes, aqua privy (water seal), trickling filter, intermittent sand filters (for populations < 2000), oxidation ponds, activated sludge treatment plant.

#### **HOUSING**

Poor house construction and overcrowding are still major problems in developing countries. A health promoting house should have

adequate space for rooms for sleeping, living room/parlour for entertaining guests, kitchen/dinning, store and toilet/bathroom. It must have adequate cross-ventilation (or functioning closed ventilation e.g. air conditioning), good and safe flooring and adequate lighting. It should protect against disease and accidents, provide fundamental physiological and psychological needs (warmth, heat loss, sunlight, privacy, family life etc.)

#### **CONTROL OF ANIMAL RESERVOIRS OF INFECTION**

Zoonoses can be controlled if domestic animals are given required immunisations (e.g. rabies vaccine for dogs, delousing and deworming of dogs and cats, use of insecticides to prevent ticks etc.)

Wild animal parks must be controlled so that the animals do not escape into communities.

#### **CONTROL OF INSECT VECTORS AND OTHER PESTS**

Insects and pests associated with health hazards include

- \* house flies - dysentery, gastroenteritis, diarrhoeas, cholera
- \* mosquitoes - malaria, yellow fever, filariasis
- \* tsetse flies- sleeping sickness
- \* rats - plaque

They can be controlled by:

- \* clearing the bush and water receptacles (old cans, broken pots, tyres etc.) around houses
- \* sweeping the surroundings
- \* cleaning of gutters and making them flow
- \* filling up of burrow pits
- \* sanitary disposal of refuse (covered dustbins/buried refuse)
- \* use of insecticides
- \* screening of houses

#### **ECOLOGY AND THE CONCEPT OF ECOSYSTEM**

An ecosystem is a delicately balanced chain that links living things with non living matter like oxygen, rain, precipitation etc. If one of the components of an ecosystem is stressed, the whole system is affected. The components are:

1. **A-biotic substances** - basic elements and compounds like oxygen, carbon dioxide, phosphorus, water, oil.

2. **Producers** - e.g. green plants which by photosynthesis convert carbon dioxide into carbohydrate and oxygen. They produce food from a-biotic substances.

3. **Consumers** - depend on the producers. They can be classed as **primary consumers** or herbivores which feed on plants e.g. cattle, **secondary consumers** or canivores which feed on the primary consumers e.g. man, dogs, cats etc.

4. **Decomposers** - or saprophytes i.e. bacteria, fungi etc which break down the dead or remains of macro-consumers and producers into their original elements.

The cycle goes on unless destabilised by any of the components. This may lead to environmental problems e.g.

**Dessertification and soil erosion** - which results from indiscriminate felling of trees without replacement.

**Earth warming** - The earth's temperature is maintained through heat generated by human and other living things' activities. Industrial activities, decomposition etc produce heat which is blown off or reduced by cool breeze from large waters.

**Ozone layer** depletion caused by radical reaction with it of certain substances e.g. chloroflouorocarbons, trichlorofluoromethane, dichlorofluoromethane, trichlorofluoroethane etc. usde in air conditioning, refridgeration, aerosol propellents, fire extinguishers, solvents and plastic industries. As a result, carcinogenic ultraviolet radiation from which the earth is protected by the ozone layer penetrates through and can cause cancers, especially, skin cancers. Some other compounds contribute to earth warming by building barriers which prevent the cooling effect of winds from large waters. They are called the "**green house gases**". they are carbon dioxide, methane, nitrogen dioxide and chlorofluorocarbons. They are generated by power plants

(generators), automobiles, industrial activities etc. When the rate of removal is slow, the gases accumulate and cause warming.

**Biodiversity** is the numerosity of organisms in their own natural state. When the ecosystem is balanced, numbers are controlled.

**IMPROVING ENVIRONMENTAL SANITATION, WATER SUPPLY AND PERSONAL HYGIENE.**

Organised health education programmes and follow-up on the recommendations for maintaining a good environment (above) as well as improvement of personal hygiene will no doubt improve the health status of individuals and the community generally. Members must be taught that apart from dirty environment and water, other means of contracting infections are through contaminated hands, food, and utensils. Improper storage and exposure of food and water to insects such as flies, cochroaches and ants lead to contamination.

Nigeria, like many other countries has an Environmental protection policy that aims at securing a quality of environment conducive to good health for all Nigerians, conservation of all natural resources and maintenance/enhancement of the ecosystem. The Federal Environmental Protection Agency (FEPA) is the central governmental organ for the management and protection of the environment in the country.

Personal hygiene can be maintained by regular/at least daily bathing with soap and water, cleaning of the mouth with chewing stick or toothbrush and toothpaste (daily and before going to bed), regular cutting of finger and toe nails, washing of hands before meals and after using the toilet and keeping hair clean and tidy.

**CHAPTER 14**  
**MENTAL HEALTH**  
**COMMUNITY MENTAL HEALTH**

The basic goal of a community mental health programmes to provide short-term hospitalization, out-patient care, and emergency service, as well as consultation and education for people in all the communities within the catchment area of health facilities.

A typical pattern of Community mental health institution should consist of a centralised urban clinic with satellite clinics placed in various parts of the country in order to gain greater access to the people. In some cases personnel from one of the centres serve in mobile clinics that move to the most rural areas one or two days a week. Apart from consultations, community groups are educated on ways in which they can be free from various forms of mental illness. This emphasis of community mental health programme is to educate the community members whether they are already being disturbed or not by the mentally sick.

CMH programme uses consultant and prevention programmes. The consultant programme is concerned with the services of the centres. The goal is to make more efficient use of professionals as agents of change. For instance, if a Psychologist consults for two hours with ten teachers on how to handle certain problems in class and each teacher has thirty students who can apply the techniques, then the psychologist has had "contact" with three hundred people during that time rather than with a few individuals he/she could have reached in direct therapy.

The prevention programme, an important goal in community mental health is divided into primary, secondary and tertiary prevention.

**Primary prevention** programme involves directly removing the cause or danger so that problems do not arise.

**Secondary prevention** implies taking steps once a problem has arisen to see that it does not become serious.

**Tertiary prevention** provides for the rehabilitation of victims or patients so that residual problems do not affect the community.

Applying these concepts to mental health could be difficult, because we may not be able to quantify the causes of most of the illness but it is known that stress weakens a person's ability to cope and so

efforts are channelled towards identifying and minimizing crisis situations.

### **ABNORMAL BEHAVIOUR**

Abnormality in Mental Health does not have a clear cut definition. It is very difficult to point to some physical cause except for those relatively rare cases where a brain disorder has resulted from a disease or an injury.

Abnormality varies from one person to the other and from time to time, and also from culture to culture. This is because different individuals in different places see different types of behaviour as abnormal at different times. Abnormality thus depends on the time, place and the person involved.

A person could be said to be abnormal if a psychologist or the psychiatrist says so. The diagnosis of being abnormal is usually derived from constant acquaintance with various types of symptoms. In social definition of abnormality, it is opined that all criteria of abnormality are a reflection of the particular culture of the individual and it must be taken within the context of that culture. The social definition depends on the accepted patterns of behaviour in the society.

Buss (1960) defined abnormal behaviour in a practical way. He opined that there are three indicators of abnormality. These are discomfort, bizarreness and inefficiency. Discomfort is shown in headaches depression, anxiety etc.

Bizarreness implies a deviation from accepted standards of behaviour for instance, a person who sees what others cannot see. Inefficiency means inability of the individual to function properly in his life role. Mental Health Workers include religious leaders, teachers, friends, lawyers.

### **MINOR PPSYCHIATRIC DISORDERS**

There are 6 major classifications of mental disturbance. These major classifications of mental disorders are listed as:

1. ***Mental Retardation*** - Less than normal intellect.
2. ***Organic Brain Syndromes*** Psychological problems associated with brain damage.
  - \* Psychoses associated with organic brain syndromes - severe psychological dysfunction related to brain damage with no physical cause, presumably of psychological origin.
3. ***Psychoses*** - Not attributed to conditions listed previously. severe psychological dysfunction with no known physical cause, presumably of psychological origin.
4. ***Neuroses*** - Moderate psychological dysfunction, psychological in origin, characterised by both anxiety and a degree of psychological awareness.
  - \* **Anxiety Neurosis** - Primary symptom is nonspecific or free floating anxiety.
  - \* **Hysterical Neurosis** - Loss of memory or physical function as a result of psychological conflicts.
  - \* **Phobic Neurosis** - exaggerated fear.
  - \* **Obsessive-Compulsive Neurosis** - characterised by an uncontrollable need to repeat certain thoughts and actions.
  - \* **Depressive Neurosis** - Lowering of mood more severe than a normal reaction to loss, but less severe than affective psychoses.
5. ***Personality Disorders and other Non-psychotic Disorders***
  - \* **Personality Disorders** - psychological dysfunction of long duration in which particular traits have become an integral part of the personality.
  - \* **Sexual Deviations** or misdirection of sexual interest towards inappropriate objects techniques or partners.
  - \* **Alcoholism** - excessive intake of or dependence upon alcohol.
  - \* **Drug dependence** - habitual use of or need drug other than alcohol, tobacco, kola, coffee and other medically essential preparations.
6. ***Psycho-physiological disorders*** - physical problems which are initiated or seriously worsened by psychological stress or emotional upset.

Of all these disorders, the ones which could be termed minor psychiatric disorders include neuroses, personality disorders and psycho-physiological disorders. These are termed minor disorders because the person who has the experiences is still in tune with reality, and sometimes has insight into his/her problems.

### **NEUROSIS**

Literally translated, the term neurosis comes from the Greek Neuron (Nerve) and OSIS (disease).

In general, neuroses are mental disturbances characterised by severe discomfort from which the patient seeks relief. The discomfort can take many forms such as exaggerated fear, overwhelming feelings of anxiety or fright, loss of memory, physical lethargy, debilitating tension, extreme shyness etc.

It is important to bear in mind that no neurotic patient restricts his behaviour to only the symptoms listed for each sub-classification. There is a great deal of overlap.

A neurotic person is still oriented to reality, but she/he is usually at cross-purposes and has trouble thinking through specific problems because they create anxiety. He knows that something is wrong with him.

### **GENERAL CHARACTERISTICS OF NEUROTIC BEHAVIOUR**

One of the major difficulties of the neurotic is his inability to change his behaviour, his thoughts, his feelings and his reactions according to the demand of the environment.

\* **Anxiety Neurosis** - Anxiety is a generalised feeling of apprehension, usually accompanied by physiological upset.

Anxiety is frequently distinguished from fear because in the latter case, there is some specific threat e.g. in standing before a crowd. A person may be afraid, but is not exactly sure of what he/she is afraid of. Anxiety on the other hand, never becomes that clearly defined. It is usually attached to a specific type of situation, such as being in an enclosed place.

Some of the most typical symptoms of anxiety are palpitations, choking, breathlessness, chest pains, dizziness, fainting apprehension, and severe headaches.

### **CAUSES OF ANXIETY NEUROSIS**

**Freudian View** - It is one of the most important theories developed to explain anxiety in 1895. Anxiety was regarded as streaming from unblockage of unconscious impulses. Such impulses are blocked for example under condition of extreme deprivation. When repressed, they become susceptible (according to Freud's theory of anxiety) to transform action into neurotic anxiety. In this theory attention was not paid to circumstances surrounding repression of unconscious impulses.

While a certain amount of anxiety is natural in all of us, the development of neurosis according to Freud results from a massive amount of anxiety that is warning the person that unacceptable impulses buried in the unconscious are trying desperately to break through.

The symptoms that appear in the individual as compulsions, obsessive thoughts etc. are expressive of two things:

- (1) Representative of the undesirable impulse itself
- (2) The energy that is connected with the undesirable act is channeled through the nervous the nervous system in such a way that it finds an outlet in the unusual physical mannerisms or expressions typically seen - compulsive acts, physical pains, nervous, symptoms etc.

Abnormal behaviour is thus symbolic in the sense that it represents what is going on beneath the surface.

In this respect, Freud felt that while the normal person is able to turn his energies outward into appropriate action, a neurotic shows symptoms of abnormality. Learning theorists assert that anxiety occurs in the individual confronted with painful stimuli, over which

he/she has no control. Anxiety is experienced (anxiety induced experiment by John Watson).

### **OBSESSIVE COMPULSIVE NEUROSIS**

It is the least common of any of the neurotic disorders. Generally it has its onset in early adulthood. Obsessions are **INTRUSIVE RECURRING** thoughts which appear irrational and uncontrollable to the individual expressing them. Whereas, many of us may have similar fleeting thoughts, the obsessive person expresses. With such force and frequencies that functioning is interfered with.

A **COMPULSION** is an irresistible impulse to repeat some ritualistic act over and over again, virtually any behaviour can be viewed as a compulsion if an individual reports an irresistible urge to perform it and show disturbance if prevented from doing so. Often, the individual fear the consequences if the act is not performed. For example a woman who washes her hands 500 times a day to prevent germs is obsessed with the thought that she has some diseases on her hands, and would not want it to affect other members of her family.

#### Causes of Obsessive Disorders

In general terms, compulsive behaviour seems to be the result of some insoluble problem, with people under conditions of emotional upset or shock or stress, and in attempting a solution, the person becomes fixated (clocked into) an unchanging and repetitive behaviour pattern.

#### Phobic Neurosis

The two things that differentiate the **PHOBIA** from other categories of neurosis are : (1) it involves a specific fear of something in the environment and (2) more important, the phobic person spends most of his time avoiding the feared object rather than developing an elaborate ritual around it as does the obsessive compulsive.

The phobic person typically realizes intellectually that his fears are irrational, but this realization has no effect whatsoever on reducing the anxiety - producing properties of the object or situation in question. When the phobic person is faced with the feared object, he develops overwhelming feelings of anxiety characterized by heart

palpitations, vomiting, tremors, wild climbing, running, fainting and in severe cases even a heart attack.

Some of the phobias include:

fear of animals - Zoophobia

fear of germs - Mysophobia

fear of heights - acrophobia

fear of spaces - agoraphobia

fear of the strange or unknown - Xenophobia

fear of the night or darkness - nyctophobia

Most traditional explanation for the phobia is that it is a symbolic link with the past. For example, being afraid of open places (agoraphobia) might date back to a time when the patient was a child and was left alone by his parents, resulting in an intense fear of loneliness that is now symbolized and induced by any wide open space.

### **TREATMENT**

Behaviour therapy which involves rewarding the behaviour to which fear is attached. For example, when a person fears noise, the noise could be made to occur and the individual is rewarded for not being afraid, until the fear is totally eradicated in the person.

### **DEPRESSIVE NEUROSIS**

It constitutes about 25% of all cases of treated neurosis. The disorder is usually reality-based in the sense that something has happened to the person to send him into the depressed condition. The traditional symptoms of neurotic depression are lack of energy, unhappiness, loss of interest in things and people, loss of sense of humour, and sadness. All of these things can happen to the normal person, who for instance, loses a loved one. Typical characteristic that seem to differentiate normal from neurotic depression seem to centre around external symptoms. The normally depressed tend to be irritable, lose their appetite, have crying spells, etc but they still function fairly well despite these problems.

The neurotically depressed tend to have reduced emotional output in the sense that they become somewhat dazed for periods of time and show little sign of really responding to what is going on around them. They tend more frequently to exhibit psychomotor retardation (diminishing or slowing of motor responses of the body to brain stimuli). In treating the depressed, anti-anxiety drugs are administered, or mood elevating drugs are given. Further more, the patient could be counselled by a professional also the family members could be involved.

#### Psychosomatic disorders

A Psychosomatic disorder is the result of chronic or severe disturbance of delicate homeostatic balance of the body arising from Physical threat. This may involve any organ system and usually require both medical and psychotherapeutic attention. The disorders occur when emotions generated by situation cannot be described through acceptable verbal or physical activity, then it is internalized and disrupts normal functioning of some organ system.

A psychosomatic disorder can occur as a result of illness or seen in conjunction with some other physical illnesses. It may take a form of a specific disability or generalized malfunction, the specific one depend on (1) the possible constitutional weakness of a particular system. (2) previous illness or accident in person's life history. (3) the presence of some illnesses affecting the organ in relation to the patient. (4) the relation of emotional pressure. (5) the symbolic meaning to the patient of a given organ. (6) the secondary gain the patient may achieve through selected symptoms. In general, the life history of some patients reveal a lack of maturity, which reflects a pattern of a strong childhood condition which is being manifested in the (PSS).

The principal Psychosomatic disorders are exhibited in gastrointestinal, cardiovascular, respiratory, skin, musculo-skeletal and genitourinary reactions.

But it should be noted that the overstimulation of the brain as a whole increases cardiovascular, gastric (digestive), and respiratory behaviours.

### Gastro Intestinal Disorders

These include peptic ulcer, disorders of elimination chronic gastritis and anorexia nervosa.

(i) Peptic Ulcer - Its immediate cause is excessive secretion of stomach acids which irritate, inflame and ultimately break down the stomach wall. During stress, more blood is secreted and the intestine is engorged with blood tightening up and increasing the acid production in that area, and combining to held it away at the mucuous membrane.

Lining of the intestines peptic ulcers commonly found in persons with ambitious driving forces whose outward bahaviour is in conflict with their dependency needs. For Example, a lazy person who wants to be rich.

(ii) Disorder of elimination - Patient with disorders of elimination show emotional stress arising from anxiety, guilt feelings and resentment. These disorder is usually manifested in constipation or diarrhoea

(ii) Anorexia Nervosa - Here, appetite and food intake are supressed as a result of emotional strain. Sometimes this behaviour seems to result from an over-reaction to avoid problems formerly connected with obesity.

Anorexia is rare in young children, however, in the few cares involving children, there is usually a direct connection with some kind of family problem in which the child gains sympathetic attention as he gates thinner and thinner. The more serious and more frequent cases occur in adolescents and young adulthood. It has been suggested that the process involved in self-imposed starvation at that time centres around the person's inability to express himself well enough to gain a feeling of independence and relate to others in a mature fashion.

### (B) CARDIOVASCULAR DISORDER

Illness involving the heart and the blood vessels in which psychological factors may play a role are cardiac neurosis, essential hypertension, and headache (migraine).

(i) Cardiac Neurosis - This is used to describe a group of symptoms referable to the heart, but psychogenic in origin. The symptoms are palpitation of the heart, or shortness of breath, spasm, twitching, pain or murmur in the heart.

Because these symptoms also occur in organic heart diseases, careful examination must be made before the disorder is diagnosed as psychosomatic disorder or a cardiac disorder. A diagnosis of cardiac neurosis cannot be offered unless there is a finding of emotional conflict and tension.

Experiences that usually precipitate a cardiac neurosis are a physician statement of concern over the patient's failure to pass physical examination, the occurrence of heart disease and possibly sudden death of some friends or a member of the patient's family. These precipitating factors will tend to cause cardiac neurosis, only in those persons who have major basic anxiety and are pre-occupied with bodily functions.

(ii) Essential Hypertension

This is a chronically elevated blood pressure without an organic cause.

In earlier stages it is characterised by occasional transient periods of elevation of the pressure. If the emotional problem of patient is unrelieved in time, the pressure stabilizes at some high level. The persistence of the heightened pressure puts further strain on the cardiovascular system.

## SUICIDE

Suicide seem to be an outgrowth of depression for majority of people, but the length, nature and cause of the depression are sometimes elusive. Frequently a minor setback (or what seems to be one) will trigger the suicide.

Attempters of suicide are greater in proportion than those who actually commit it. Although, percentages vary from one culture to the other, the highest rate of suicide prevails among mental patient groups especially those with depressive psychosis.

### Symptoms of Suicidal Persons

Although there are no indications that all those who commit suicide are abnormal, there still are common denominators among suicides that fit its symptoms.

Typical events leading to the suicide act suggest a sequence of interpersonal troubles that seems to become progressively more pervasive in the individual's life. Thus in order of presumed occurrence of many suicides, one first finds a drinking problem, then a loss of sexual potency, trouble with in-laws, followed by difficulty in getting along with one's own family, eventually leading to difficulty on the job, and culminating after that with either a suicide threat or an obsession with death leading to depression and hospitalization. Another prominent symptom is an all-inclusive boredom - that is, feeling that there is nothing in life worth doing. Essentially, the suicide-prone person is the one who has broken off communication with the rest of the world. Living in this private world, the person tends to become quite rigid in his thinking, leaving little room for change, becomes authoritarian, which tends to put others off, and develops a strong negative self-image.

Although there is considerable variation in the behaviour of suicidal individuals, clear cut general trends appear when people are examined in mass. For instance, there is almost always some warning that suicide is going to be attempted. Sometimes the warning is very obliquely and quietly stated, as when someone comments that he does not need his watch repaired because he is not that concerned with time anymore.

The most prominent symptoms seem to be those that center around a notable personality change, probably accompanied by onset of depression. Other symptoms include change in family relations or in eating habits, an inability to communicate as in the past, insomnia, and neglect of personal appearance, that is indicators that something is drastically wrong, accompanied (usually) by depression can be a precursor to suicide.

## **PREVENTION**

Psychotherapy goes a long way in helping people with who are depressed. This form of psychotherapy is geared towards understanding the person and helping such person reflect on these feelings. It is important for the therapist to establish rapport with the client who is attempting suicide, and then there will be a time to provide hope. Without rapport, hope, and support, one cannot reach the person enough to re-establish some degree of self esteem.

## **MENTAL RETARDATION**

The most commonly accepted definition of mental retardation is a sub-average general intellectual functioning which originates during the developmental period and is associated with impairment in adaptive behaviour i.e. the mentally retarded individual is one who has not reached the "normal" or expected level of cognitive and social development found in the average person in his or her age.

As a result, learning ability is impaired, as well as social adjustment.

This implies that the mentally retarded person is operating at a mental age lower, in varying degrees, than his chronological age.

A fact buried in the above definition is that the mentally retarded persons are not different from the rest of us at some point in our lives - only they just were not able to continue to progress, for one reason or another, to the same level we reached. So the mentally retarded person is well-intact psychologically for whatever age level he has reached and thus is not hard to differentiate from the seriously disturbed child.

The followings are the classification system used for diagnosing the mentally retarded:

### **(a) Borderline Mental Retardation (I.Q 68 -83)**

This is a group that belongs to the lower edge of using Stanford Binet Test the "normal" spectrum, just below "low-average" IQ group Some finish secondary school, but most don't. They usually fit into society sufficiently well that they are not diagnosed as mentally retarded, they are poor students, but frequently do well in "non intellectual" occupations.

(b) Mild Mental Retardation (IQ 52-67).

This group comprises the greater majority of those who are labeled retarded. They comprise students who attend special classes in the school system. They are usually normal in physical appearance, have an adequate basic vocabulary for verbal communication, although they have trouble with school and especially abstract learning processes.

(c) Moderate Mental Retardation (IQ 36-51)

Members of this group have had some disease, brain damage or physical trauma of one sort or another. Almost all show problems with motor abilities. Emphasis in training is on taking care of themselves.

(d) Severe Mental Retardation (IQ 20-35)

Only in the upper portion of this group do you find individuals who can benefit from special school training. Most persons in this group, especially toward the lower end, require constant supervision. Almost all these persons have suffered a major physiological setback at a young age. The causes of mental handicap mainly comprise neurological and chromosomal abnormalities. The most common chromosomal abnormality is Down's syndrome.

(e) Profound Mental Retardation (IQ 19 or Below)

Comprise the smallest group of retardates. They rarely develop beyond the mental age of a 3 - year old. As an adult will know a few words, but communication is very limited. They require custodial treatment of one sort or another because their coordination is so poor they usually cannot dress themselves and even have trouble walking smoothly.

In the management of Mental Retardation, there has been a growing commitment to community care. Although this appears to be the most acceptable approach, there are still many associated problems. Some of these problems are financial, which stems from very limited resources which are allocated to this group for the more severely handicapped, the provision of day centres or special sheltered work

environments may be necessary and in Nigeria, such facilities are limited. For the mild group there is need to find suitable employment.

### **PSYCHOSOCIAL FACTORS AND JUVENILE DELINQUENCY**

There are no single and clear definitions of juvenile delinquency because it has been defined from different points of view. But generally, juvenile delinquency is understood as the failure of children and adolescents to meet certain obligations expected of them by the society in which they live. A delinquent is a child under 17 years who violates any law of the state, or is incorrigible, immoral, wanders about the streets, both day and night time without being in any lawful business, uses vulgar language or is guilty of indecent sexual conduct.

The legal definition of the term "juvenile delinquency" is the violation of a state or municipal ordinance by youth of juvenile court age (14-20 years), or conduct on the part of such person is anti-social and seriously interferes with the welfare of the delinquent himself or the community.

#### **Causes of Juvenile Delinquency**

The causes are multiple and interrelated and may be related to the following:

- (a) The individual - This could result from the individual's general attitude to life. There could be unresolved conflicts in the individual, which could result in delinquent behaviour.
- (b) Family Background - In most cases delinquents have unstable homes, and such a child could lack the warm emotional ties between himself and his/her parents.

Apart from these reasons, over-permissiveness could be a causal mechanism, as well intentioned but misguided parents may be afraid to set limits for their children's behaviour, lest they frustrate him/her. So the youngster is excused rather than disciplined for misdeeds. Consequently, he/she grows not feeling guilty about committing anti-social acts.

(c) Social Factors - These social factors could include either poverty or prosperity, social instability, negative media influence (various films on aggression), and sometimes imitation of parents who are "delinquent".

(d) Genetic Factors - There seems to be a strong possibility that certain persons are habitual and/or violent criminals because of a defect in their chromosomal number and the amount of male hormone produced. It is possible to attribute the delinquent's misbehaviour to the XYY syndrome.

#### Prevention of Juvenile Delinquency

It is better to prevent delinquency than trying to find a solution to delinquent behaviour. It is important that parents build the character of their children when they are still young. Thus right attitudes are passed on to the children while they are still young.

In the health facilities, it is important for the physician to take full, detailed history about the background of the child so as to reveal problem areas which could be nipped in the bud.

Management - Where there is a case of Juvenile delinquency, It is important to help the child concerned. Most often, the form of treatment offered depends on the motivation of the child, the family, the nature of the problem and the presence or absence of significant mental illness. Some children may need to be sent to **Remand homes and Special (Approved) Schools** for a period.

Counselling or psychotherapy may be helpful in some cases, whereas where there are underlining mental problems, there may be a need for drug therapy. It must be emphasized that before any therapy starts, the individual concerned must be aware of the problems which the therapist is helping him solve.

#### **MANAGEMENT OF MENTAL ILLNESS**

Most people with psychiatric illnesses can be managed outside hospitals. Having taken a detailed history of the illness, and diagnosis is made, there is a need to commence therapy. With judicious use of relevant medication nearly all persons suffering any psychiatric illness can live in the community, with hospitalization reserved only for the episode of acute disturbance, but whenever

possible it is important to treat the patient within his social environment. Much of the care of psychiatric patients are provided by personnel who have had no medical training. Certain types of therapy include environmental therapy, occupational and sometimes group and family therapy are carried out by professionals such as nurses, social workers, psychologists, occupational therapist and social welfare officers.

In spite of the role of these professionals in the community and hospitals or clinics, general medical treatment is very important in managing psychiatric illnesses and these could include hypnotics, sedatives, major tranquilisers, anti-depressants, anti-convulsants, as the case may be.

#### **PREVENTION OF MENTAL ILLNESSES**

In community psychiatry, proper preventive programmes are aimed at groups of people and not individual. These preventive measures could include (a) genetic counselling which discourages marriages between persons with familiar history of mental illness.

(b) Physical health - Chronic brain syndromes can be reduced by improved medical care, and good nutrition.

(c) Mental Health Improvement - It is important that an individual lives a good, caring family atmosphere and a reduction in environmental stress.

Conclusively, when there is adequate social support, and a good outlook on life in general, there is a tendency for an individual to have a good mental health, even in the face of various types of problems of living.

### *Chapter 15*

#### **PRIMARY ORAL HEALTH**

#### **NORMAL TOOTH AND DENTITION**

##### **Morphology**

The normal human tooth is off-white in colour, hard in consistency and has a smooth surface. Like most mammalian teeth, it is composed of: the DENTINE which forms the bulk of the tooth, the

ENAMEL which covers the ANATOMICAL CROWN and the CEMENTUM which covers the ANATOMICAL ROOT. The junction between the Enamel and Cementum or the crown and the root is the cervical margin or CERVIX of the tooth.

*Figure 18 - Morphology of a tooth*

All the dental hard tissues are calcified tissues with most of the calcium in the crystalline form. The inner core of the tooth adjacent to the dentine is the pulp. This is the Nutritive portion of the tooth and is protected from external stimuli by the overlying hard tissues. The Pulp cavity consists of a Pulp chamber in the crown and a number of root canals, the number depending upon the particular tooth.

Periodontum: This is a descriptive term to indicate all the tissues that support the teeth on the jaws including the alveolar bone, periodontal ligament, gingiva and cementum.

Man has 2 types of teeth at different ages:

Deciduous teeth which erupt from about the age of 6 months. They are 20 in all and are whiter, smaller and shaped different from the permanent teeth.

Secondary from 6 years to 18 - 21 years 32 in all

	<u>Deciduous</u>	R	L
Alphabets	<u>EDCBA</u>	<u>ABCDE</u>	
A - E	EDCBA	ABCDE	

A. first (central) incisor B. secondary lateral incisor  
C. Deciduous canine D. Deciduous premolar. E. Deciduous molar.

Eruption starts at 4-6 months and lasts till 24-30 months.

Permanent    87634321    12345678  
                  87654321    12345678

1.central incisor 2.lateral incisor 3.canine  
4.first premolar 5.second premolar 6.first permanent molar  
7.second permanent molar 8.third permanent molar

In the primary dentition the lower incisors erupt first and eruption progress to E. In the permanent dentition, the lower first molar erupts at about 6 years, the lower central incisors next and then the upper central incisors. In some cultures it is a taboo for upper A to erupt before lower A.

There may be problems with permanent 8. This usually occurs in inter-racial marriages or when large men marry small women. Sometimes these teeth are congenitally absent or jammed. The second permanent molar (7) often presents as tooth ache during adolescence.

### COMMON ORAL PROBLEMS

#### PLAQUE

Plaque is produced by normal oral flora. It enables bacteria to adhere to the normally smooth surface of teeth.

#### Plaque microflora:

Streptococci	Bacteroides
Neisseria	Diphtheroids
Actinomyces	Spirochaetes
Veillonella	Haemophilus
Lactobacilli	Peptostreptococcus
Fusobacteria	

Streptococci use a lot of sugar in their metabolism. The by-product of this metabolism is acid, which when concentrated and in large quantity give rise to decay (caries).

**PLAQUES** are the commonest causes of caries and periodontal disease. Plaques in the gingival sulcus cause a-symptomatic degradation of collagen and gingival tissue. Progression of gingivitis leads to periodontal disease.

**PERIODONTITIS:** The commonest form of periodontal disease is an inflammation of any of the tooth supporting tissues resulting from poor oral hygiene. It may be simple, compound or juvenile and is usually chronic and more prevalent among adults accounting for a large percentage of tooth loss. It may start as early as childhood or teenage and can be generalised or localised. The localized form is periodontosis which most frequently affects molars and incisors and must be treated quickly. Refer to a dentist.

Aetiology: Dental plaque accumulation is favoured by the presence of a calculus or food impaction and periodontitis results from invasion of the plaque by specific plaque pathogens (capnocytophage) . Predisposing factors include neutrophil defect or defect of cell mediated immunity and it may be familial.

The **simple** type is a chronic inflammation of the gingiva resulting in tooth mobility and bone loss which may not be visible except on Xray. The **compound** type manifests as intra-bony pockets, angular bone loss, widening of the periodontal ligament space and early, severe tooth mobility. It results from a combined effect of inflamed plaque and trauma from occlusion.

The **juvenile** type is an advanced destructive lesion in children and adolescents. There is rapid loss of periodontal ligament attachment, severe pocketing and vertical bone loss usually between puberty and 25 years.

**GINGIVAL RECESSION:** May be localized or generalised. The localised type is usually due to anatomical defect and the generalised due to faulty use of toothbrush or chewing stick or it may accompany generalised reduction in the height of the alveolar bone. Advise on the proper use of toothbrush or chewing stick.

**DENTINE:** Conditions of defective dentine may result from the following:

1. Ricketts

2. Dentinogenesis imperfecta: Inherited. At times seen in association with osteogenesis imperfecta which presents with blue sclera and bone problems

3. Ehler Danlos Syndrome. Inherited condition of blood vessels (elastically defective).

2. Odontodysplasia: Enamel, dentine and cementum are all defective. X-ray shows "ghost-teeth".

All the conditions require immediate referral to a dentist.

### **CEMENTUM**

1. Cementoma

2. Ankylosis. Union of Cementum with bone.

### **CALCULUS**

The presence of calculus on the teeth leads to accumulation of plaque. On its own calculus causes no disease but indirectly by allowing plaque formation causes caries and gingivitis.

Cariogenic --> Acid --> caries  
Plaque        Demineralization  
                  (sucrose)

BACTERIA --> Plaque --> Low Grade dental disease  
                  (Poor Oral hygiene)

Periodontopathic -> Irritants -> Inflammatory tissue  
Plaque                                destruction

*Figure 19 - Pathogenesis of CARIES*

### **CLASSIFICATION:**

1. **SUPRAGINGIVAL:** It is easily accessible and visible even though usually unpigmented. Colour may be changed by diet or smoking. Smokers have black calculi.

2. **SUBGINGIVAL:** Greenish. Under the gum. Care must be taken not to damage the gingiva.

Subgingival calculus is usually found in Periodontal Pockets.

### **COMPOSITION:**

1. Inorganic component of calculus is 70- 90% (calcium, magnesium, phosphates and carbonates). The crystalline minerals present include:

- hydroxyapatite
- brushite
- magnesium whitlockite
- octal-calcium phosphate

These give hardness to calculus. The relative proportion of these crystals varies with the location of the calculus.

2. Organic content.

- Protein from saliva
- Protein polysaccharide complexes
- Micro-organisms
- Desquamated epithelial cells

### **CARIES:**

Caries is progressive irreversible bacterial damage to a tooth. The tooth changes colour becoming whitish and opaque. The enamel becomes softened due to decalcification which progresses to the pulp.

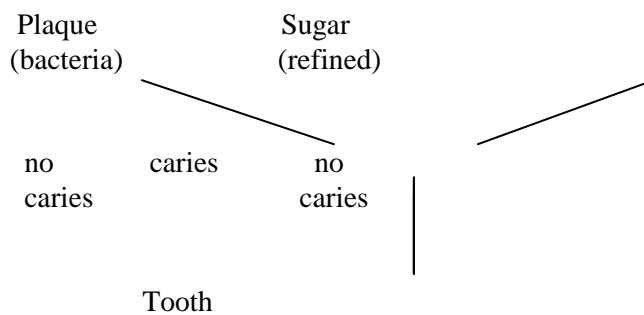
Aetiology: There are various theories about the aetiology of caries. In 1890, W.D. Miller described the Acidogenic theory /chemotherapeutic theory which states that caries results from decalcification caused by bacterial acid products which is then

followed by invasion and destruction of tissue and not the other way round. He showed through in-vitro experiments of combination of (sugar + bacteria), (sugar + tooth) and (sugar + bacteria + tooth) that fermentation of sugar by bacteria is a prerequisite for caries formation. Since all three factors must be present, the chain of events can be broken by simply removing one of the factors. Refined carbohydrate (sucrose) as in soft drinks, sugar, and sticky sweets and chocolate predispose to caries. The frequency of intake and the period of contact with the teeth also affect development of caries. Two other theories, Proteolytic Theory and Proteolytic-chelation theory cannot be substantiated.

**Experiments on cariogenesis:**

Substrate: Tube fed rats will not develop caries since the substrate by-passes the teeth.

Bacteria (Germ) free rats fed on sugar will not develop caries while normal rats will ( ).



Substrate (sugar) + bacteria -> Fermentation on susceptible tooth surface -> Caries.

***Figure 20 - Alternatives to Cariogenesis***

Streptococci produce polyglucans which allow the bacteria to adhere to the tooth surface and clump together. The substance is highly permeable to sugar. Bacteria then work on stored sugar in the

plaque, with production of acid for up to 1 hour after food is taken in.

### MICROBIOLOGY

Predominant bacteria are haemolytic streptococci.

They are responsible for initiation.

\*S. Viridans, S. Mutans S. Sahvanis, S. Sanguis and S. Mitis

Others include Lactobacillus: Strongly acidogenic (PH 3). Do not initiate but cause progression of caries.

#### (a) TYPE OF SUGAR

-Refined carbohydrate; As in soft drink, cube sugar, chocolate specifically sucrose; Xyhtol alcohol sugar) cannot be fermented by bacteria.

#### (b) CONSISTENCY OF SUGAR

Strictly sugar as in toffee is sustained longer in the mouth.

(c) FREQUENCY OF IN TAKE: The more frequent the intake of refined sugar, the worse a person's dental status.

### EPIDEMNLOGY

- Dental caries is the commonest dental disease worldwide.

-Universal in prevalence, affecting quality of life to a considerable degree.

-Highest in western countries also in mid Eastern, the orient.

-Global prevalence is lowest in Africa but incidence is increasing.

-Eskimos also have very low incidence. With the habitation of Alaska however, Eskimo children have started to develop the disease.

-Caries begin in early children and by early adulthood, most susceptible sites have been affected.

**RAMPANT CARIES**: Rapidly progressing, acute onset type linked with increased intake of refined sugars. Affects even normally protected areas.

-Caries can be considered a life style disease.

-Ancient man has been found to have also developed the disease in his time.

-Increased incidence in Europe started in 19th century, associated with increased affluence. Same pattern now occurring in Nigeria.

-South African countries have as much incidence as Western Europe.

WESTERN COUNTRIES: Percentage Caries free = 0%. In Britain, by the age of 5 years, DMF (Decayed (carius), Missing, Filled) in a

child = 5. By the age of 30 years, there are less than 14 sound teeth in most mouths and by 40 years, most people have fillings.

**GROUPING:** After 5 years:

Group 1. No caries at all

Group 2. Minimal caries

Group 3. A lot of caries.

PREVALENCE IN NIGERIA: In 1954, % caries = 0, 1962 - 0%, 1976 – 48%

Vipeholm Study (Sweden) Division into 5 groups

1. Control Basic diet made up to adequate calories with margarine

2. Basic diet with sugar supplement (as sweet drinks) only at meal times.

Basic calories with sugar supplement in between meals.

- Caries had higher incidence in urban than rural dwellers but is now leveling up.

-Same among the different socio-economic groups

Most recent studies in Africans show that 50-60% of urban dwellers are caries free (especially adults). In 1976/77, in a study done among 15 years old Lagos School Children showed DMF = 1.08-1.47.

G.V. BLACK's CLASSIFICATION

i. - Pits (occlusal)

ii.-Interdental areas of posteriors

iii.-Interdental areas of anteriors

iv. - Affects incisal edge

v.- Cervical region. Found in adult

PREVENTION OF DENTAL CARIES

PRIMARY: To prevent initiation of the disease (Pre-pathogenesis)

SECONDARY: To intervene before establishment of disease

TERTIARY: To prevent mutilating effect of the disease plus rehabilitation.

PRIMARY PREVENTION

-Is directed at the aetiological agents

(sugar-dietary counselling)

Bacteria (Plaque eradication)

- . Regular, effective tooth brushing
- . Dental floss
- . Nood sticks (triangular in cross-section)
- . Chewing stick, if used properly
  - . Oral hygiene instruction, directed at specific groups
    - e.g. teachers, nurses

Plaque modification

. Calcium glycerophosphate in some toothpastes. This inhibits bacteria

TOOTH: Increase tooth resistance. Give children and pregnant women substances like fluoride

- Addition to water in quantities which do not cause mottling but protect the teeth.

- fluorination of water gives 50-60% reduction in incidence of caries.

This however applies more to surface than tissue caries.

- Use of fluoride tablets by children 6 months - 9 years

- fluoridated table salt, milk

- Topical application of fluoride

- Professional i.e. fluoride gel mouth rinses

- Toothpaste

FISSURE:

This is done to level out the occlusal surface of teeth, using fissure sealants, especially for children, who have deep fissure

SECONDARY: Fillings (refer to dentist)

TERTIARY: Bridges, Dentures (refer to dentist)

### **OTHER ORAL PROBLEMS**

**FALSE TEETH** – These are taboo in many cultures. The newborn has one or two teeth, often hanging loosely. Mothers are scared of superstitious beliefs and want them removed promptly and secretly. It is difficult to convince them that the teeth will normally fall off.

**ORAL THRUSH (moniliasis)** – fungal infection with *M.albicans*, often due to poor food hygiene, especially overcrowded nurseries or understaffed maternity clinics where rooming-in is not practiced. The fungus may also be transmitted to the baby during delivery. The buccal mucosa, tongue and palate may be coated and attempts to scrape off the whitish stuff leaves a bleeding, granulated surface.

Application of Gentian Violet is very effective. It should be applied before meals or dropped under the tongue three times daily. The disadvantage is that it may stain clothes or cause mouth ulcer, especially under the tongue. If there is no response after prolonged use, Nystatin which is more expensive may be used.

**CLEFT LIP/PALATE** – this congenital abnormality causes embarrassment and even though cleft lips can be repaired early, palates are not done until about the age of one year. Mothers should be encouraged to breastfeed rather than use bottle. As the child sucks, the areola helps to block the defective palate. She should be taught to position the baby such that the nape of the baby's neck is higher than the breast. That way, the baby can control the milk flow. If available, palate prosthesis may be used.

**ACUTE TONSILLITIS AND DIPHTHERIA** – In acute tonsillitis, tonsils are tender and enlarged and may have a whitish exudate. It is important to remember that in children, there may be no pain in the throat and the child may complain of abdominal pain instead. Also remember to differentiate it from diphtheria, which produces a single dirty grey membrane. The faucial pillars and uvula are not red and there is no high fever. Complications to prevent include Quinsy, rheumatic fever, acute nephritis and chronic infection. Give antibiotic vigorously (preferably Penicillin) for 10 days.

Small, fibrotic tonsils (result of chronic tonsillitis or Quinsy) are more likely the seat of reinfection and should be removed. Refer to a hospital. Parents often need to be reassured that large, mobile tonsils do not cause respiratory obstruction and if still functional, should not be removed. Removal is rarely necessary before the age of four years.

**ADENOIDS (nasopharyngeal tonsil)**- is a lymphoid aggregation which is obvious when it pushes the uvula forward and upward. It causes respiratory obstruction and blocks the Eustachian tubes, predisposing to otitis media. That a child snores or breathes with the mouth open may not be an indication for immediate surgery but recurrent otitis and other signs of obstruction are indication requiring referral.

**MOUTH ULCERS** – mild sloughing may be due to irritants or sour drinks/fruits but ulceration of the buccal mucosa may be a sign of syphilis or Vincent's stomatitis ( from *Treponema vincenti*) It is Vincent's angina when sloughing involves the tonsils. Vincent's stomatitis may progress to Cancrum oris in malnourished children. It is usually precipitated by an infection like measles or herpes simplex. The buccal mucosa sloughs off and cheek bones are necrotic. Involvement of the mandible or maxilla may lead to osteitis. Intramuscular Penicillin must be given to prevent further necrosis. The child should be referred later for plastic surgery.

**ANGULAR STOMATITIS** – results from riboflavin deficiency that is easily corrected by a proper diet. When combined with nicotinic deficiency, the tongue may also be bright red.

**FISSURED TONGUE** – is an indication of mongolism. Look for the other signs.

**TONGUE TIE (short frenulum)** – may require referral for surgery if it interferes with speech (usually after about four years). It is important to resist snipping it as mothers often want because of the danger of profuse bleeding. Mothers should be reassured so that they do not go to the local or quack "surgeon".

**ACUTE GLOSSITIS** – is often a result of irritation by jagged teeth or badly fitted dental plate. Chronic glossitis is usually due to syphilis or tuberculosis. All chronic tongue ulcers should be referred for investigation.

**CARCINOMAS** – All carcinomas must be referred immediately. Carcinoma of the tongue is common among males. It spreads rapidly. Carcinoma of the lip is also one of the commonest tumors among males. It is preceded by chronic irritation, and more commonly of the lower lip. Carcinomas of the mouth are usually in the floor and begin as local thickenings which later ulcerate.

**CHANCRE** – a syphilitic growth which begins as a nodule may ulcerate and become a chancre.

**ORAL-MOTOR DYSFUNCTION** – is rare but may be a major problem of breastfeeding. Forty-two (42) muscles take part in suckling and problem with any or a group of them in a small or recessed jaw, low oral tone, poor jaw stability, poor cheek tone/suction may require special techniques. Jaw protraction may be promoted by giving support behind the mandible with thumb and index finger, allowing gravitational pull on jaw as the baby sucks. For poor tone, feeding with sustained pressure under the jaw and forward pressure on cheeks (dancer hold) should be taught to the mother. Muscle tone development can also be encouraged by cup feeding (not pouring milk into the baby's mouth, but allowing him to lap it and exercise the tongue and other mouth muscles).

#### **TRAUMA FROM OCCLUSION**

Tooth mobility - Pronounced widening of periodontal space in the gingival region. Angular bone loss of periodontal ligament at apex.

**DEGENERATIVE PERIODONTAL DISEASE:** uncontrollable degeneration of periodontal tissue.

#### **ORAL MANIFESTATIONS OF SYSTEMIC DISEASES**

Systemic diseases such as diabetes, hypertension, chronic anaemias as in Sickle Cell Disease and micronutrient deficiencies are often accompanied by oral manifestations. These conditions predispose to caries, abscesses and periodontitis. The dentist should be part of the management team for such conditions.

#### **THE DENTAL TEAM**

At the Primary Health Care level there may not always be a dentist but there should be a dental technician and dental nurse who work as a team with other PHC personnel to provide holistic care to clients. Cases too complex for the PHC level should be referred to a dentist.

#### **DENTAL EMERGENCIES**

**TRAUMAS:** Accidents to the mouth may lead to profuse bleeding. First Aid should be given for fractures (of teeth or jaw) and patient referred immediately.

## CHAPTER 16 SCHOOL HEALTH

### SCHOOL HEALTH SERVICES

The National Curriculum Conference held in Lagos, Nigeria in September of 1969 was a major landmark in the history of education in Nigeria. The objective of the conference was to provide appropriate curriculum guidelines for all educational levels in the country. **The curricula were to be made relevant to the situations in different parts of the country.**

Inclusion of Health Education in curricula was specifically dealt with in the 1977 Policy on Education, replacing Hygiene. The policy was given legal support that year and revised in 1981. It states that:

the quality of instruction at all levels has to be oriented towards inculcating such values as the "promotion of the emotional, physical and psychological health of all children" [section 1, item 3 (6)]

"for health to be meaningful in primary education, the government will, through the Ministries of Education, ensure that school authorities maintain a high degree of sanitation in the school environment"

### **School Health Education (personal hygiene, accident prevention, nutrition, family life, immunisation etc.)**

School Health Services are incomplete without the organisation of health education sessions for the teachers and pupils. The Nigerian Educational Research and Development Council (NERDC) developed the Health Education/Health Science programme for primary and secondary schools. It highlights the need for teachers to know about the following: Causes of illnesses (Health knowledge), wholesome health attitudes, desirable health practices and health skills.

The Primary School Health Curriculum covers:

- \* personal health, hygiene and body structure
- \* disease prevention and control
- \* community and environmental health
- \* nutrition education
- \* drug education
- \* safety education and First Aid

- \* mental and social health
- \* Family Health Education
- \* Consumer Health Education
- \* Current health problems at local, national and international levels.

The secondary school curriculum has in addition:

- \* growth and development
- \* Family life and sex education
- \* chemicals which alter behaviour

School children can directly influence health behaviour in their families and directly or indirectly influence that of their communities. They are a ready source of health literacy, and manpower. In organising School Health Services therefore, it is important not to simply consider provision of curative care (First Aid and sick bay) but to view the services as a holistic management of the school child.

Other responsibilities of a School Health Service include:

- \* routine physical examination of pupils, teachers and school vendors for health problems.
- \* screening for specific conditions e.g. anaemia, sight, hearing and speech disabilities.
- \* organisation of community based health activities for pupils and teachers.
- \* keeping of school health records, analysis of data and giving feedback to the school authorities, community leaders and Local Government Authority health personnel.
- \* organisation of immunisation for Tuberculosis, Tetanus etc. as appropriate, especially during epidemic outbreaks.

#### **Medical Examination of School Children and Screening for Disabilities**

Routine screening by medical personnel should be done for all new entrants and at least twice a year for all pupils in primary and secondary schools. Infections, sight or hearing problems, risk factors e.g. Sickle Cell Disease must be detected early.

#### **Routine Daily Inspection of School Children**

Where nurses are available in the school clinic, they should organise regular inspection of the pupils for personal hygiene, health problems and risk factors. The teachers must know how to look inspect pupils and the nurses or school authority should organise refresher courses for them at least once a year.

### **Emergency care ( First Aid ) in schools (The First Aid Box and Room in School Health Service**

The **First Aid box** contains drugs and materials for emergency care. It may be stationary or portable. It must be clearly marked (the most commonly used colour is white background with a red cross). It should be placed where it can be reached in less than 3 minutes, preferably the ground floor of a storey building (ideally, each floor should have a box).

The **First Aid Room**, clinic or sick bay, like the box, must be easily accessible, be well stocked with relevant drugs and materials and have easy access to transportation e.g ambulance.

In addition, it should be spacious, well ventilated, well lit and should have appropriate conveniences (toilet, bathroom). The floor should be washable but not slippery to prevent accidents. The room temperature should be comfortable at all times and provision made for easy communication as appropriate. Telephone (intercom and external) or call-bell should be installed and a standby vehicle available for transporting cases referred to nearby hospitals or clinics.

The room/clinic must be manned by appropriately trained health personnel. A first aider or nurse must be readily available and school teachers must have training on emergency care as well as on recognition and management of common school health problems within their capabilities. They should in turns (where applicable) take responsibility for calling the ambulance, organising action to be taken for serious illnesses or injury and follow-up cases.

First Aiders and nurses must have a recognised Aid certificate of e.g. of St. Johns Ambulance for first Aiders. They should have refresher courses every 3 years.

#### **Contents of the First Aid Box**

- Appropriate drugs eg. Chloroquine, Paracetamol, Iodine/other antiseptic solutions, promethazine, Tetanus toxoid, Penicillin.

- Dressing materials (medicated and non-medicated bandages, gauze, cotton wool, sterilisable or disposable instruments, syringes and needles, methylated spirit)
- Triangular bandages
- Thermometer
- Sterile eye pads
- splints
- Safety pins

The First Aid Room /Clinic and or Sick bay should contain similar drugs and materials as the first Aid Box as well as:

- a sink with water supply (cold and hot where possible)
- drinkable water
- hand washing materials (soap, nail brush, towel)
- a smooth-top working surface
- a couch with pillow.
- bed linen and blanket/s
- lockable store or cupboard
- clean garments or aprons to replace or cover soiled uniforms.

#### **Responsibilities of School Children in Maintaining Healthy Homes and Community.**

School children must learn to take some responsibility for the improvement of health in their homes and the community generally. The health knowledge acquired in school must be put into practice at home. As much as possible, they should be involved in meetings of the Community Development Committees even if they are not statutory members.

#### **Health Assessment for School Food Vendors Including School Vendors' Home and Kitchen Inspection**

The health team of a school must be taught how to screen school food vendors for health problems. The vendors must have regular, routine urine (to detect infection or diabetes) and stool tests (for ova of parasites and salmonella), chest X-ray and sputum examination, as well as regular checking of blood pressure.

Unannounced visits should be paid to their homes and the kitchen inspected. They should be observed as they cook and serve food to see if they maintain good food hygiene. The types of food prepared should provide basic nutritional

needs of pupils. The vendors should be encouraged to report on pupils who do not buy adequate food combinations.

### **PRACTICALS**

As done for community diagnosis, students go to schools to observe the health activities, perform physical examination (including eye and hearing tests, urine and where possible stool examination) on students, teachers and food vendors as well as assist in the First Aid room or sick bay. They visit the Food Vendors' houses and observe as they cook and serve food to pupils.

They take with them: sphygmomanometers, stethoscopes, Snellen's charts, Weight-for-height charts, auroscopes, clinistix, albustix, and small bottles for collecting urine/stool specimens.

Facilitators assess the students as they carry out the different activities using a checklist. The attitude of each student is also assessed. Team or group assessment is done when they present their findings to the rest of the class.

## **CHAPTER 17 MONITORING AND EVALUATION**

**MONITORING** is continuous checking of progress and effectiveness of activities to determine whether or not they are going on according to plan.

**EVALUATION** is periodic comparison of achievements with set goals and objectives.

The purpose of monitoring and evaluation is to assess the impact of health services on the population in terms of coverage, effectiveness, and efficiency.

**COVERAGE (availability, accessibility, acceptability)**

Coverage is the proportion of a population in need of a specific intervention which has access to it and utilises it in such a way that it leads to desired changes in its health status. A baseline survey/situation analysis helps one to determine at the beginning of an intervention, how much of the population is already being reached (chapter 2).

Coverage, being a population based measurement, is directly and indirectly influenced by many factors (the environment, attitudes and cultural beliefs, political situations/policies, and socio-economic conditions). These are not easily measurable. Factors which are measurable include:

- i. available human, material and financial resources,
- ii. accessibility to services,
- iii. effectiveness of services,
- iv. utilisation of services and
- v. efficiency/adequacy of services (frequency and intensity of need).

#### **EFFICACY, EFFICIENCY, EFFECTIVENESS and COVERAGE**

In the process of diagnosing the health problems of a community, certain characteristics of existing services or interventions should be measured.

**Efficacy:** is proof that an intervention is more useful and beneficial than harmful in meeting needs or that one strategy is more beneficial than the alternative.

**Efficiency:** is the extent to which the highest possible effectiveness can be achieved with the cheapest use of resources.

**Effectiveness** is the extent to which a proven, efficacious (quality and quantity) intervention is available to all who could benefit from it.

**Coverage** can be said to be a measure of effectiveness that relates the utilisation of intervention directly to the population needing the intervention in a defined target population.

**Adequate coverage** is the frequency and intensity of utilisation of an intervention.

**Effective coverage** is the proportion of a service target unit requiring a specific intervention and who utilises the intervention in a way that it solves its health problems.

### **EVALUATION OF COVERAGE AND IMPACT**

In order to evaluate the coverage and impact of a programme, indicators must be specified. **Indicators** are variables which allow one to measure the achievement of selected programme criteria. For example in order to assess service utilisation, an indicator may be "the proportion of the community living within 5 kilometres of a clinic" because the nearer people are to a facility, the more likely they are to use it or to assess optimal infant feeding could be "the proportion of mothers of children less than 6 months who are breastfeeding exclusively". Children <6 months who are breastfed exclusively are less likely to suffer from malnutrition.

An indicator must be valid (able to measure a parameter effectively), reliable (reproducible), measurable and appropriate.

Indicators are compared against **standards** i.e. the norms or highest attainable. The goals and objectives of a programme reflect the standards expected.

**Impact** is the effect (changes) that a programme has on the target community. For example, there may be a change or modification of health behaviour such that the health status improves over what was found during a baseline survey.

### **SERVICE AND POPULATION-BASED INFORMATION SYSTEMS FOR MONITORING AND EVALUATION (M&E)**

A good information system is one that has acceptable data collection, analysis, interpretation and utilisation methods. Its data collection instruments are not too cumbersome for the collectors and defaulter rate is minimal. Personnel handling them and the community must recognise their usefulness.

Service information can be more readily obtained from records, registers etc and Community or population-based ones from surveys (demography, geographical distribution, age structure, epidemiologic data etc). Some can be obtained from records (births, deaths), school registers etc. The denominators for community based information must be readily available even if they are estimates (e.g census figures).

### **M&E DATA COLLECTION FORMS (Appendices 8A TO 8Z)**

Forms for gathering information must be simple so that they can be easily filled by relevant personnel. They must be appropriate for gathering required information and easily reproduced.

**The M&E forms used for PHC in Nigeria at the community level include:**

<b>FORM</b>	<b>PHC SERVICE</b>
BOOKS 1HF 1-8 Record of work of VHW/TBA	Treatment of common ailments, health education, maternal health
Community pregnancy profile	antenatal care and pregnancy outcome
Community FP profile	family planning
Community demographic profile	data on births, deaths, migration

**M&E Forms used at the Health Facility level:**

<b>FORM</b>	<b>PHC SERVICE</b>
BOOK 2HF 1-3, 2LG 1-2	Treatment of common ailments Locally endemic diseases
BOOK 3HF 1-3, 3LG 1-2	Maternal health (antenatal care and pregnancy outcome)
BOOK 4HF 1-4, 4LG 1-2	Family Planning
BOOK 5HF 1-3, 5LG 1-2	Immunisation
BOOK 6HF 1-2, 6LG 1-2	In-patient care
BOOK 7HF 1-3, 7LG 1-2	Environmental Health

BOOK 8HF 1-3, 8LG 1-2

Nutrition assessment,  
Growth Monitoring/Promotion

The **M&E RECORDS** used in Nigeria include:

**Home-based records**

- \* PHC Child Health Card
- \* Adult Personal health Record/Treatment Card

**Village level (Community)-based records**

- \* record of work of VHW/TBA
- \* community demographic profile
- \* community pregnancy profile
- \* community family planning profile

**Health Facility/District Level records (BOOK HF - )**

- \* clinic master card
- \* Monthly and Annual Record of Work
- \* Tally Sheets - Monthly and Annual records of Tracer Diseases/Outpatient Attendance
- \* Daily/Monthly/Annual Record of Pregnancy Outcome
- \* Daily/Monthly/Annual Record of Family Planning
- \* Tally Sheets, Monthly/Annual Records of Immunisation
- \* Daily/Monthly/Annual record of In-patient Care
- \* Diary, Daily/Monthly/Annual record of Environmental Health Activities
- \* Tally Sheets, Monthly/Annual records of Growth Monitoring and Promotion.

**LGA Level records - as for Health facility, labelled (BOOK LG - )**

**EVALUATION OF STAFF PERFORMANCE**

In order to maintain the standards and quality of service in a health facility or outreach community, staff need to be assessed periodically and refresher courses organised to improve their skills or learn more modern ones. The assessment may be in the form of:

- \* observation (with checklist)
- \* interview
- \* survey of client satisfaction
- \* evaluation of randomly selected home-based records for quality of care given (whether relevant services were given at each visit)
- \* assessment of the outcome/impact of programme(s)

## DATA COLLECTION METHODS

### *QUANTITATIVE METHODS*

#### **The Questionnaire**

Questions on a subject are given out to participants to fill. They may be open or closed ended. (Closed ended questions are easier to analyse). This method relies on the participants' integrity. Many times, questionnaires are thrown away, especially if they have been sent by post or they are too long.

#### **The Interview Schedule**

Questions, closed or open ended as in the questionnaire are used but instead of leaving them for the participant to fill, an interviewer fills out the forms. Data loss is minimised this way. The main problem is having participants keep appointments.

#### **Laboratory Investigations**

Specimens are tested/analysed to detect diseases, infections, presence of clues etc.

### *QUALITATIVE METHODS*

#### **In-Depth Interviews (IDIs)**

This is not simply asking questions to obtain quantitative data. The interviewer asks probing questions to determine attitudes, opinions, recommendations etc.

#### **Focus Group Discussions (FGDs)**

Group discussions are guided to obtain information on the nature and magnitude of health problems, practices and experiences, beliefs and attitudes, and household members' participation and influence on health decisions.

A moderator leads (guides) the FGDs with small groups of 8-10 participants (may need to be in the local language). The choice of participants must be carefully done so that no one is afraid of expressing his/her views. Groups may be homogeneous or mixed, depending on the kind of group interaction required. Two assistants should take notes and if possible, audio-tape the sessions.

**Projective techniques** may be used for some situations, for example, pictures of healthy and malnourished babies, and of mothers and fathers of different age grouping, religious and ethnic groups and/or socio-economic levels may be used

to elicit a groups' concepts of ideal and problematic child feeding. This will provide insight into practices of various categories of mothers and fathers and needed interventions.

**CONSULTATIVE RESEARCH** " is used to indicate mostly qualitative methods used in an interactive process through which researchers and respondents jointly contribute to defining improved practices that are both practically feasible and technically effective, and to designing a strategy for promoting these practices". Obstacles to interventions are identified and appropriate intervention strategies determined.

As a form of formative research, a lot of information relevant to different cultural groups in the community can be collected and utilised in planning intervention programmes. Primary Health Care departments will benefit immensely from a study which addresses problems and interventions which the people are willing to try and comply with.

#### **Household Action Trials (HATs)**

This will identify useful (health promotive) changes in behaviour which are feasible and the best ways to promote and support them. For example, In-depth interview of mothers and 24 hour dietary recall could be done to identify infant feeding problems. The findings are later analysed and on the next day, mothers are counselled and motivated to try improved practices. A week later, follow-up interviews and another 24-hour dietary recall conducted to evaluate mothers' acceptability of recommendations.

Analysis of the child's diet for the first 24-hour dietary recall compared with that of the second one will indicate whether there is improvement i.e. child has met the daily energy requirement for the age group and whether or not the mother actually tried out the recommendations.

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