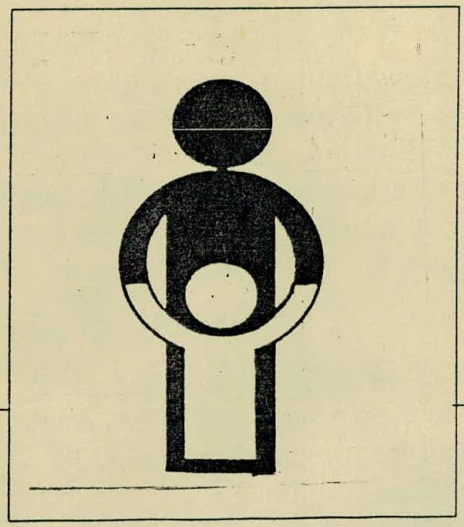
NATIONAL CHILD SURVIVAL
AND SAFE MOTHERHOOD PROGRAMME

PROGRAMME INTERVENTIONS



Ministry of Health and Family Welfare
Government of India
New Delhi
1992

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GOALS AND COMPONENTS OF NATIONAL CHILD SURVIVAL AND SAFE MOTHERHOOD PROGRAMME

GOALS

- **Infant mortality rate** reduced from 81 to 75 by 1995 and 50 by 2000.
- **Child (1-4 years) mortality rate** reduced from 41.2 to < 10 by 2000.
- **Maternal mortality rate** reduced from 400 to 200/100,000 by 2000.
- **Polio eradication** by 2000.
- **Neonatal tetanus elimination** by 1995.
- **Measles** - prevention of 95% deaths and 90% cases by 1995.
- **Diarrhoea** - prevention of 70% deaths and 25% cases by 2000.
- **Acute respiratory infections** - prevention of 40% deaths by 2000.

Components of this package would be:

Children

Newborn care at home - warmth and feeding.
Primary immunization by 12 months - 100% coverage
Vitamin A prophylaxis (9 months to 3 years) - 100% coverage
Pneumonia - Correct case management at home/health facilities.
Diarrhoea - Correct case management at home/health facility; ORS in every village.

Pregnant Women

Immunization against tetanus - 100% coverage
Anaemia prophylaxis and oral therapy - 100% coverage
Ante-natal check-up - at least 3 check-ups in 100%
Referral of those with complications
Care at birth - promotion of **clean** delivery
Birth timing and spacing

PROGRAMME INTERVENTIONS

A. CHILD SURVIVAL

B. SAFE MOTHERHOOD

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PROGRAMME INTERVENTIONS

A. CHILD SURVIVAL

B. SAFE MOTHERHOOD

CONTENTS

1.0 INTRODUCTION

1.1 THE PROGRAMME PACKAGE

As part of an overall strategy to achieve reduction in infant mortality rate to below 50 per thousand livebirths and child mortality rate to 10 per thousand by the year 2000 the following programmes were intensified during the 7th Plan :

- o Immunization against preventable childhood diseases
- o Prophylaxis against anaemia as well as blindness due to Vitamin A deficiency, and
- o Oral rehydration therapy for control of deaths due to diarrhoeal diseases.
- o A pilot programme for the control of acute respiratory infections among children.

The strategy in the Eighth Plan is to use the opportunity created by the Universal Immunization Programme in terms of continued contact with mothers and young children for implementing a "UIP Plus" package of services combining immunization with other basic MCH interventions progressively with a view to universalizing this "package" by 1995. The components of this package are :

For **children**	Newborn care, Primary immunization by 12 months, Administration of Vitamin A till 3 years of age, Pneumonia therapy; in children below 5 years and Control of diarrhoeal diseases in children below 5 years.
For **mothers** (pregnant women)	Immunization against tetanus, Anaemia prophylaxis, diagnosis of anaemia clinically and therapy, Ante-natal check-ups - at least 3 check-ups in 100% Identification and timely referral of complicattions, Care at birth - promotion of **Clean** delivery; and Promotion of spacing and timing of births.

1.2 INTEGRATING PREVENTIVE CARE

The basic strategy of this component is to use the delivery system and opportunities created by the immunization programme for effective delivery of additional interventions that will benefit the young child and mother significantly, without disrupting the pace of immunization programme, or losing any of the strategic gains. For example, the immunization programme focuses on the most vulnerable group of children under 5 years, that is, the infants. Infants are the most difficult group to reach, and we will continue to address this most vulnerable segment of the population. Similarly, the pregnant woman who is reached by tetanus toxoid injections under the immunization programme, will receive priority attention so that we concentrate our efforts on her needs.

The effort, therefore, is to build around the concept of converting the "immunization sessions" into "Mother-Child protection sessions".

It is important to integrate in operational terms, prophylactic interventions against Vitamin A deficiency and anaemia (distribution of iron and folic acid tablets) with immunization efforts.

In operational terms, this strategy implies:-

- **Unified training for all levels of functionaries.**

- **Unified logistics.** (See manage cold chain and other supplies module)

- **Unified monitoring and supervision** at state and district levels.

- **Integrated management information system.** A set of beneficiary cards and sub centre registers already developed under UIP make it possible to integrate reporting of ante-natal care, care at birth, prophylaxis for Vitamin A and iron deficiencies with immunization, complications of pregnancy and labour etc. (See modules on 'Evaluate service coverage' and 'Conduct disease surveillance'.

- **Integrated communication.** In the immunization programme, a communication strategy, which addressed "protection" of infants was developed positioning immunization as one of the important interventions for protecting babies. This umbrella concept will be enlarged to include protection against other diseases, death and disability of children as well as mothers.

1.3 POLICY AND PROGRAMME ISSUES

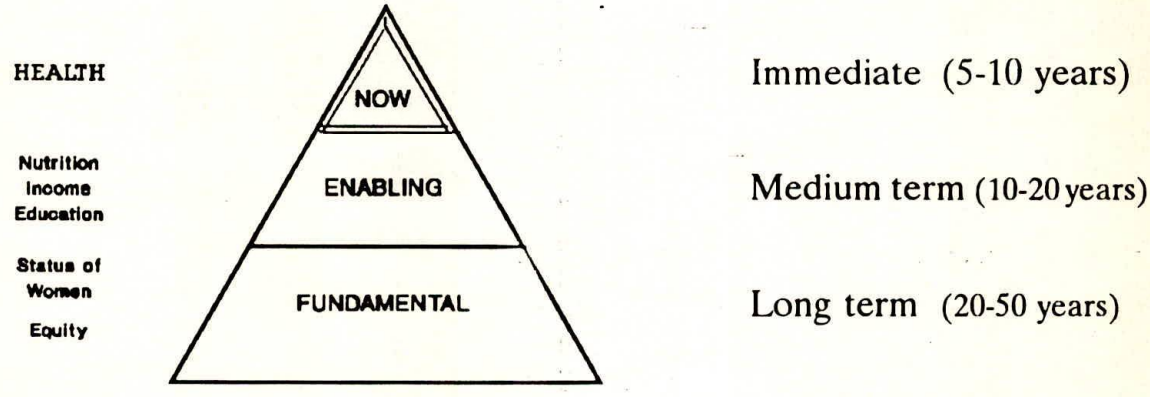
1. The National Child Survival and Safe Motherhood programme has the following features :

o It **universalises** a package of services for pregnant women and children - i.e. all pregnant women and all children below five years will be reached through the package of services.

o It **rationalises** activities so that only those activities that have specific outcome and use are undertaken. There will be no increase in workload from this programme. In fact, the work will be streamlined and time optimised.

o It **specifies** action at all levels so that health functionaries are aware of exactly what they are expected to do. It is very important to ensure that a minimum quality of services is provided and that technical standards are maintained.

2. **Safe Motherhood**



Safe Motherhood and maternal death is influenced by several factors -

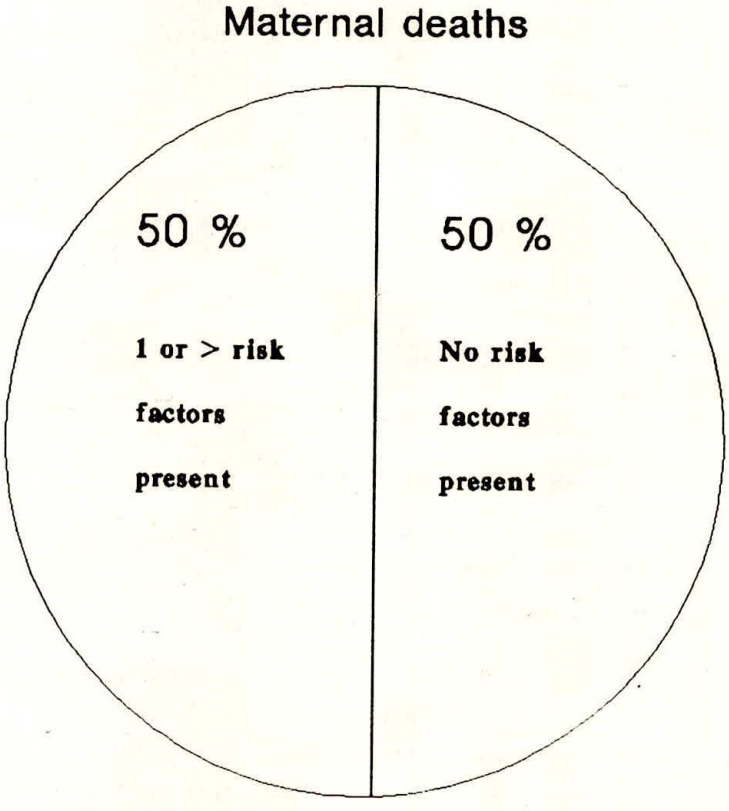
o **health** action that can reduce maternal mortality by half in a five to ten year period. This package attempts to implement activities to reduce maternal deaths in India by 2000 A.D.

o several enabling factors such as **income, nutrition and education** are even more important for longer term benefits. Action needs to start today in these areas such that over the next 10 to 20 years, these services are improved.

o there are fundamental issues related to women that impinge upon their health in a significant manner - issues related to **women's status and equity**. These need to be addressed, and action initiated now so that over the next 50 years, improvements can be seen.

However, the health sector needs to do what can be done **NOW**.

3. Much discussion has gone into the formulation of a '**risk approach**', for maternal and child care. Epidemiologically, a risk approach implies that there are criteria to screen potential danger, identify those in danger and provide special care. In the context of maternity, this would imply that certain conditions have a higher probability of death. Some researchers have identified these as anaemia, short stature, bad obstetric history. If these factors are taken into account, over 90% of India's pregnant women are at risk. Therefore, this approach does not help focus action, and all women should get ante-natal care.



Recent studies related to women who died due to pregnancy and child-birth revealed that 50 % of them had one or more risk factors; and 50 % of them had **no** risk factors. This clearly shows that pregnancy itself is the major risk factor, and that prevention of pregnancy will reduce maternal mortality. This also underlines the need to provide essential ante-natal care for all. This will include check-ups for early detection of complications.

4. Safe Motherhood services will include the following 3 major components:

E - Essential Obstretic Care for all

E - Early Detection of Complications

E - Emergency Services for those who need it

5. Briefly, the above may be defined as follows:

E - Essential Obstetric Care for all

* Early registration - between 12 and 16 weeks

* Check-up - minimum 3 times

* Anaemia
  - prophylaxis
  - clinical diagnosis
  - treatment
  - deworm those with history of passing worms

* Immunization - TT

* CARE AT BIRTH

  - clean **hands**
  - clean **surface**
  - clean **razor blade**
  - clean **cord tie**
  - clean **cord stump** (no cord applicant)

E - Early Detection of Complications

- Clinical examination to detect anaemia
- Bleeding - **APH**
  PPH
- Blood Pressure rise } } Toxaemia
- Weight gain in excess}
- Fever - Sepsis

E - Emergency Services for those who need it

- Emergency care at first referral level

6. For child survival, the following policy and programme guidelines need to be underlined:

* **Immunization**

- sustain coverage at near 100% levels; implement catch-up rounds when necessary; continue to implement the "fixed day" as the major strategy for continuing services on a regular basis and having contact with the community;

- eradicate polio by 2000 AD, through improved surveillance; investigating and taking action for every outbreak; instituting mop-up rounds to replace the wild virus by vaccine virus;

- eliminate neo-natal tetanus by 1995; immunise all pregnant women with two doses of tetanus toxoid and promote clean delivery, both at home and in hospitals.

* **Vitamin A Prophylaxis**

- Every child by the age of three years will receive at least five doses of Vitamin A concentrated solution at six monthly intervals. Children with Vitamin A deficiency will receive 2 megadoses of Vitamin A.

* **Control of Diarrhoeal Diseases**

- improve ORT use rates upto 60% widely and set up ORS depots with the help of Anganwadi workers of ICDS and other village level functionaries of other sectors wherever possible.

7. Please be ready to view a film titled "Dying for Life' which focuses on the problems of safe motherhood in India.

1.4 STATEMENT OF PURPOSE

In this module, you will learn about various components of the Child Survival and Safe Motherhood package, its rationale, strategy of implementation and your role in the service delivery.

PART A

CHILD SURVIVAL INTERVENTIONS

2.0 NEWBORN CARE

Nearly 50% of all infant deaths occur in the neo-natal period. Half of these occur in the first seven days. Common causes of death are prematurity or low birth weight, birth asphyxia, neonatal tetanus and sepsis. You can prevent many of these deaths by proper and timely care of the newborn. Supportive care regardless of birth weight and condition of the just born prevents mortality.

Goals

Improved survival of newborns and infants

Institute timely and simple care of low birth weight newborns at home level.

Examine every new born and record body measurements (length, weight), reflexes, look for congenital malformations, respiratory distress, cyanosis, jaundice (if any) to detect 'AT RISK' new born.

2.1 CARE OF ALL NEWBORN BABIES

You should ensure the following for all newborn babies :

* Clear respiratory passages immediately after birth by sucking mucus with a clean rubber catheter. Baby should cry immediately after birth and breathe normally.

* Clean eyes with soft clean cloth, cotton swab, using one swab for each eye, moving from medial to lateral side.

* Blood, mucus and meconium should be gently cleaned and skin dried with a clean cloth. In summer, baby may be bathed with soap and water soon after birth. Baby must be wrapped with a clean cloth and put close to the mother, for warmth.

* Tie cord with a clean cord tie at 2.5 cm (i.e. four finger breadth) from umbilicus, cut with a new razor blade and separate baby from placenta. The cord should be inspected later for bleeding. If there is bleeding, another cord tie must be used. Do not apply any medication on the cut end of the cord.

* Weigh the baby and record birth weight.

* Initiate breast-feeding immediately after birth. Early breast milk, colostrum is beneficial to the baby. Putting the baby to breast also helps in early establishment of successful lactation and involution of uterus after delivery.

* The following may occur in a baby but require no intervention :

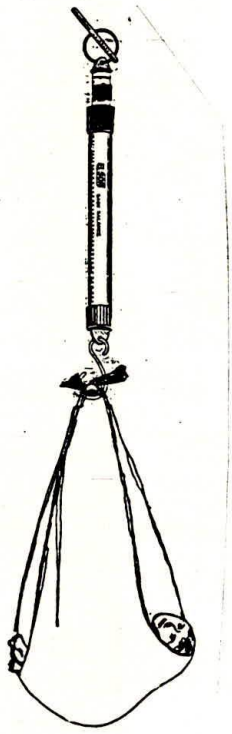
transitional loose stools, regurgitation of feeds, oozing breast nodules, vaginal bleeding, sub-conjunctival haemorrhage, swelling of the head etc.

Cephalhaematoma : Swelling of the head due to subperiosteal collection of blood dur to injury during delivery. It is a fluctuant swelling and does not cross the suture line. It resolves spontaneously after a few days or weeks. No need for incision or aspiration.

Caput Succedaneum : diffuse swelling of the head due to collection of fluid around the area which presses against the mouth of birth canal during delivery. It is present at birth and disappears within 24 hours. It is not limited by suture lines.

2.2 ASSESSMENT OF BIRTHWEIGHT

Weight should be recorded as soon after the birth as feasible, but not later than 2 days. Prepare a hammock (sling) by making four folds of a soft clean cloth and tie knots which can be engaged into the hook of spring balance. Place baby in the hammock and weigh baby as shown in the picture.



Record weight by exact measurement or thorough recognition of colour range. Grade birth weight to decide about the care to be provided. Provide normal care at home to babies who weigh more than 2500 grams at birth or are in green colour range (2500 to 4000 grams). Special care at home is required for babies who weigh between 2000 and 2500 grams i.e. those who are in yellow colour range. They are "at risk". Consultation or referral is advised for babies who are less than 2000 grams at birth (red colour range which signifies danger) since they are in danger of death or disease.

2.3 Newborn babies 'AT RISK'

All babies with following characteristics are at higher risk of dying in the neo-natal period.

i) Low birth weight (less than 2500 gms) or pre-term babies (gestation period less than 37 weeks).

ii) Birth Asphyxia

iii) Jaundice in newborn

iv) Convulsions

v) Congenital malformation

vi) Birth injuries

vii) Inability to suck

You will be able to take specific action at your level for babies included in i) and ii) above and other babies will have to be referred to the next level i.e. where child specialists are available.

2.3.1 Care at Home/Sub Centre/PHC

Newborn babies 'at risk' will require additional care and management. The following babies will require such additional care by attendants, health workers - female, health supervisors and Medical Officers:

- Birth weight between 2000 and 2500 grams
- Gestation period between 37 and 40 weeks
- Moderate birth asphyxia - i.e. a feeble cry or laboured breathing which can be due to blocked passages.

I Low Birth Weight Babies : If the birth weight is between 2000 and 2500 gm, you can manage the baby at home by providing **warmth**, and ensuring **adequate feeding.**

Encourage normal growth in a low birth weight baby

Low birth weight babies must be weighed every month regularly. Plot the weight on growth chart. If the weight increases from the previous record, growth is satisfactory. If it does not increase, she may need additional feed. A low birth weight baby who loses weight may be sick - consultation is necessary. Breast milk alone is adequate during the first four months. After four months of age, supplement breast feeding

with soft fruits like banana, mashed vegetable or dal. If the low birth weight baby is too weak to suck, express breast milk drop by drop directly into his mouth.

Prevent infections - in low birth weight babies.

A low birth weight baby requires gentle handlind. The persons handling baby should observe proper cleanliness and wash their hands with soap and water before taking care of the baby. The number of persons handling the baby should be kept at the barest minimum to prevent infections. The baby should be roomed-in with the mother in a clean, airy room.

II Birth asphyxia : If the baby does not cry soon after birth and respiration is not established satisfactorily.

clear airway with a clean rubber catheter or mucus extractor. You will have to, if necessary, do oropharyngeal or nasopharyngeal suction with the help of a catheter by sucking from the other end. If breathing is still not established, give controlled mouth to mouth breathing with puffed cheek and with a gauze put over the nose and mouth of the baby.

2.3.2 Care at Hospitals

The following categories of 'at risk' newborns would be managed by Paediatrician and trained nursing staff in CHC/District hospital:

* Low birth weight below 2000 gms, if possible.
* Pre-term babies with gestation age of 33 to 36 weeks
* Cases of severe birth asphyxia.
* Neo-natal Jaundice
* Sepsis
* Metabolic disorders
* Birth Injuries
* Infected umbilicus and other septic cases.
* congenital malformations

It is estimated that 15-20% of newborns would require care at hospitals.

Jaundice in newborn : Some babies develop jaundice after birth. This is a physiological process and does not require treatment in majority of cases. If the jaundice keeps increasing or does not subside, please refer the baby to a child specialist.

If a baby has convulsions, congenital malformations, birth injuries or is unable to suck you should refer the baby to a child specialist.

2.4 REFERRAL OF LOW BIRTH WEIGHT BABIES

REFER low birth weight baby, if the baby :

* does not suck breast milk
* is too sleepy or restless
* feels too cold or too warm
* has breathing problems
* appears blue or pale
* has red umbilicus or there is discharge of pus/blood/bad odour

Protect low birth weight babies from illness

Minimal handling and restrict different people handling the baby. Immunize low birth weight babies in time. They need timely protection even more than normal birth weight babies. Use recommended schedule of immunization to protect low birth weight infants.

2.5 SERVICE DELIVERY AT VARIOUS LEVELS

Village

Mothers	*	Early feeding.
	*	Keep baby warm.
	*	Special care of low birth weight baby.
TBA	*	Manage asphyxia immediately after birth.
	*	Care of normal / low birth weight newborn.
	*	Weigh children at birth.
	*	Teach mother, care of low birth weight babies at home.
	*	Refer if child is unable to suckle, not breathing normally or if birth weight is below 2000g

Sub-Centre

Health Worker	*	All the above plus
Female	*	Assess risk
(HW-F)	*	Priority visiting of homes with low birth weight babies (below 2500 g).

PHC / Urban Centres

Medical	*	All the above plus
Officer	*	Treat neonatal sepsis.
	*	Refer babies with complications which cannot be managed at this level.

CHC / District Hospital / First Level Referral Centre

	*	All mentioned for lower levels, plus
Specialist	*	Observation and treatment of high risk neo-nates
	*	Care of neo-nates referred with complications like birth asphyxia, birth injuries, haemolytic disease, neonatal sepsis etc. by paediatrician and trained paediatric nursing staff.

3.0 IMMUNIZATION

In 1985-86, the Universal Immunization Programme was launched to extend immunization coverage among the eligible children and to improve quality of services. We aim at consolidating the gains of the UIP programme by strengthening implementation for sustaining high immunization coverage in districts which have already achieved 80 per cent coverage and increase the coverage in the remaining districts. In addition, the programme will focus intensively on polio eradication, elimination of neo-natal tetanus and reduction of measles.

3.1 SUSTAINING IMMUNIZATION SERVICES

Goals

to eliminate neo-natal tetanus and eradicate poliomyeitis
to reduce deaths due to diptheria and measles
to reduce incidence of whooping cough and childhood tuberculosis.

Coverage

Coverage of all **pregnant women** with two doses of tetanus toxoid and all infants with one dose each of BCG and Measles and three doses each of OPV and DPT.

Immunization Sessions (fixed or outreach centres)

Shall continue to be implemented as a part of PHC activities. The immunization session will now become immunization/MCH sessions in the villages. The "**fixed day**" day sessions will be organized as per following norms :

Hospitals	Every working day
PHC	Once a week
Sub-centre village	Once a month
Villages that can be reached within one hour or those with easy access by private or public conveyance and having a population of 1000 or more	Once a month
Villages with difficult accessibility or pockets with population less than 1000	Once a month along with neighbouring outreach sessions.

THE DAY AND TIME OF VACCINATION SESSION SHOULD BE FIXED AND SHOULD BE PROMINENTLY DISPLAYED AND KNOWN TO THE PEOPLE

Complete enumeration of all infants and pregnant women should be ensured. Enumeration at village level will be done annually and updated continuously.

Catchup sessions will be organized every year in all PHCs/sub-centre areas where the immunization coverage is low (i.e. every district where the immunization coverage from April to September is less than 25 per cent of the annual target. These rounds should preferably be organized over October, November and December months.

PHC-wise and sub centre-wise immunization coverage should be monitored so that organizational and managerial support can be provided with high priority to those areas with low coverage.

Private practitioners should be involved systematically, specifically in urban areas for the delivery of immunization on 'Fixed Days' as part of the immunization services system. Wherever possible, these 'Fixed Centres' will be made widely known to people indicating the date and time of the immunization session. Vaccines and immunization cards should be made available from the government health system to private practitioners who can maintain an efficient cold chain system. A report of immunizations given by the private practitioners should be obtained on a monthly basis.

The Immunization Card, which includes items on ante-natal care, iron and folic acid and Vitamin A will remain the major tools for communication and information to the family. The counter-foil will be kept by the health workers and private practitioners and linked to the record system.

The Immunizations should not be denied unless absolutely contraindicated. Only criticaly ill children with high fever (38 degree C, 100.4 degree F or more) and children requiring hospitalization may be denied vaccination. But ensure vaccination as soon as the child recovers.

Due to increased publicity and other mobilization efforts it is, however, likely that older children may also be brought for immunization. These children may be given vaccines "***ON DEMAND***" only and recorded separately.

REMEMBER : MALNUTRITION, LOW GRADE FEVER, MILD RESPIRATORY INFECTIONS, DIARRHOEA AND OTHER MINOR ILLNESSES ARE NOT CONTRA-INDICATION TO IMMUNIZATION

3.2 POLIO ERADICATION

Goal

Eradication of Poliomyelitis throughout the country by the year 2000.

Coverage

100% coverage of all infants with 3 doses of OPV and of under-twos with booster dose and 'O' dose of OPV at birth for institutional deliveries.

Strategy

The district or an urban unit above 1,000,000 population will be considered as the geographic sub-unit for declaring an area free of polio.

* You will give three doses of oral polio vaccine during infancy; For institutionlised deliveries '0' dose of OPV will be given at birth. In addition, one booster dose of OPV will be given between 16 to 24 months.

* The plan for polio eradication is based on two categories of districts, those with OPV3 coverage (a) 80% or greater and (b) those with less than 80% coverage (actual coverage).

For districts with 80% or greater coverage

Surveillance

* Immediate implementation of increased surveillance for suspected polio (Case definition - suspected polio is any case of acute flaccid paralysis including Guillan Barre syndrome in a child less than 15 years of age).

* Even the occurrence of one case of polio in these districts is defined as an outbreak of poliomyelitis.

Case investigation

* Physical examination by a medical officer.
* Stool specimens for viral culture.
* Follow-up examination at 60 days.
* Increased local surveillance for other polio cases.

Outbreak control (containment immunization) - if there is a case meeting case definition

* To be initiated and completed within one week of onset of paralysis in the case.

* A dose of OPV to all children less than 3 years regardless of immunization status to 2000 to 3000 children in urban areas or to all children within 5 kms in low density rural areas.

* One month later a second round of immunization is carried out.

* If more than one month has elapsed after the onset of paralysis of last case no outbreak immunization is carried out.

Mop -up operations

* Mop up rounds should be implemented in those geographic areas where coverage is relatively high and yet acute poliomyelitis cases occur.

* Immunizations done in blocks or PHCs with polio cases reported in last year. May be expanded to 2 or 3 years interval as polio cases decrease. Totally about 10,000 children are immunized.

* Areas where number of polio cases have been reported or are likely to occur, all children up to three years of age regardless of immunization status, must receive 2 doses of OPV one month apart, prior to transmission season (e.g. before rainy season).

For districts with less than 80 per cent coverage:

o increased routine immunization efforts to achieve 80 per cent coverage.
o special immunization activities (such as catch-up rounds) needed to increase coverage.
o outbreak control as appropriate based on epidemiological investigation.

Select operational aspects:

1. Catch-up rounds:

This needs to complement the routine immunization services being provided at the village, sub-centre and PHC. As the fixed day strategy becomes institutionalised, the catch-up rounds should be implemented in progressively in fewer areas and districts. These rounds are necessary where coverage levels are low especially in areas that remain cut off due to floods and other natural calamities.

2. Mop-up rounds:

Mop-up rounds needs to be implemented to replace the wild polio virus with the vaccine virus. They should be implemented before the epidemic season (generally June to August in our country, and some times in May), when transmission is lowest. Therefore, two mop-up rounds should be organised ideally during **March and April.**

Mop-up rounds should not interrupt regular service delivery. Therefore, every effort should be made to implement mop-up rounds on the day immunization sessions are held. That means, the health workers will complete the primary immunization of all infants first. Thereafter, children below three years of age would be immunized with OPV.

The OPV given during mop-up rounds should not be entered in the immunisation card, unless it is part of the primary immunisation that is due for an infant on that day. The worker is expected to submit a statement on the total number of children below 3 years of age who have been given OPV (as a proportion of estimated number of children below 3-years in that area) and does not need to identify these children by name or address.

Mop-up rounds are not implemented for enhancing individual protection - they are implemented to replace the wild virus. Therefore, it does not matter if a few children are left out, or few children over 3 years of age are included. Much House-to-house listing of children below 3 for mop-up rounds is not recommended since this is not the best use of the health workers time who has to perform numerous activities. Instead, it is advisable that all children below 3 years be brought to the immunization session through a village based social mobilisation and communication initiative.

3. Improving surveillance

Presently, data on disease trends are being collected through sentinel sites located at state and district hospitals. The information from villages, sub-centres, primary health centres and community health centres, reflecting the situation in communities are very important. Timely response is a priority. In the programme, **all out-break containment measures will be taken for every case of poliomyelitis within one week.** Therefore, every effort should be made to improve the surveillance system through the routine monthly reports from both sentinel centres as well as the primary health care system).

The village level functionaries as well as communities are expected to report all cases of suspected poliomyelitis to the health worker within 24 hours. After the health worker at sub-centre level is informed, information on suspected poliomyelitis cases must reach the medical officers at the primary health centres within the next 24 hours. The health worker is not expected to leave the sub-centre headquarters and go to the primary health centre, because this will disrupt the provision of regular services in the community. A nodal person(s) should be identified and briefed from the community, so that people are fully involved in this process.

The Medical Officer at primary health centre must respond to the information within 48 hours, and investigate the reported poliomyelitis case(s). If required, containment measures must be taken within one week of the first report.

Information on the timeliness of the reporting will be maintained along with the line listing of cases.

3.3 ELIMINATION OF NEONATAL TETANUS

Goal

Elimination of neo-natal tetanus from the country by the year 1995.

Strategy

A district approach will be adopted for elimination of neo-natal tetanus.

The four major interventions include:

* 100% coverage of pregnant women with 2 doses of tetanus toxoid.

* Extensive information, education and communication efforts to promote clean delivery at home level as well as correct medical practice in institutions

* Community based surveillance of neo-natal deaths.

* Promotion of clean delivery by a massive communication strategy for :

    - clean hands
    - clean surface
    - clean razor blade
    - clean cord tie
    - clean cord stump - no applicant

In addition, if your areas have high domiciliary delivery rates they will require the following additional interventions :

* TBA's will require to be trained, supported by female health workers through a process of at least 10 contacts for continuing education every year. As the medical officer with training responsibilities, you will identify at least 10 topics related to maternal and child care for carrying out continuing education activities. The main purpose is to promote clean delivery, improved ante-natal care as well as post-natal care with the primary aim of reducing maternal mortality.

* The need to provide facilities for clean and safe normal deliveries in sub-centres and PHC's where buildings are available is very important. You will have to encourage and help your health workers carry out greater number of deliveries in the PHCs and sub-centres.

3.4 REDUCTION OF MEASLES

Goal

Measles deaths reduced by 95% and cases reduced by 90% by the year 1995.

Coverage

100% coverage of all infants with measles vaccine.

II. Strategy

The major strategy you will adopt for reducing measles cases and deaths will be as follows:

- 100% coverage of infants between 9-12 months with measles vaccine.
- Good case management at home level, and educating mothers about complications that may arise, especially pneumonia and diarrhoea. Health Workers and medical practitioners need to be conscious of the post-measles complications that are the major causes of deaths in babies.
- Community based surveillance for early recording of cases.
- During epidemics, you will conduct an investigation primarily to study the deficiencies in the implementation of the immunization programme in your area and train your health workers for adopting practices which will result in potent vaccine being used for immunization activities. No containment measures are necessary.

3.5 SERVICE DELIVERY AT VARIOUS LEVELS

Village

- Getting registered for immunization
- Ensuring timely completion of immunization schedule
- Maintenance of immunization cards
- Motivate other eligibles

- Education of mother on :

Mother with assistance of VHG/AWW/TBA

- Need for immunization.
- Completion of all doses of immunization as per schedule.
- Maintenance of Mother/Infant immunization card.
- Motivating other families.

- Motivation of target group
- Help enumeration of eligibles.
- Help provision of immunization services at fixed intervals.
- Maintaining records.
- Referral of cases of adverse events.
- Tracking drop outs and non-participants.
- Help surveillance of neonatal deaths and outbreak of measles, poliomyelitis

Sub Centre Level

HW - F

- Provide immunization services once every month
- Maintain records.
- Track drop outs and monitor coverage.
- Education of mothers.
- Referrals.

PHC/Urban Centre

Medical Officer

- Provide immunization services once every week.
- Maintain records.
- Monitor programme coverage.
- Storage and distribution of vaccine.
- Training of staff.
- Surveillance.
- Education of mothers.

CHC/Dist Hospital
First level referral facility

Specialist
CMO/DHO/DIO
Supdt. Hospital

- Provide immunization services daily or more than once a week.
- Maintain records.
- Monitor programmes.
- Storage and distribution of vaccine.
- Surveillance.
- Investigate and manage adverse reactions.
- Education of mothers.
- Training of staff.

4.0 CONTROL OF VITAMIN A DEFICIENCY

Goals

Elimination of blindness and other consequences of Vitamin A deficiency.

100% coverage of children 9 months to 3 years with 5 mega doses of Vitamin A.

Strategy

4.1 PROPHYLAXIS

- Prevalence of Vitamin A deficiency is maximum between 6 months and 3 years. It has therefore been decided to focus attention on this priority age group.

- Five mega doses of Vitamin A will be provided to every child between 9 months and 3 years. The first dose of 100,000 IU will be given at 9 months along with measles immunization and the second dose of 200,000 IU will be given at 16 months with booster dose of DPT/OPV. Three more doses will be given at 6 monthly intervals.

- Dietary management will be integrated in all training and communication as a long term strategy for control of Vitamin A deficiency.

- The health worker (F) and other functionaries working in the Primary Health Centres are responsible for administering Vitamin A concentrates to children under three years and for advice on dietary management. Services of Integrated Child Development Services (ICDS) functionaries will be utilized for the distribution of Vitamin A to children in the ICDS Blocks and for the education of mothers on prevention of Vitamin A deficiency.

4.2 DIAGNOSTIC CRITERIA

- Children with symptoms of Vitamin A deficiency (night blindness, conjunctival changes and corneal xerosis/ulceration) will be detected and treated as early as possible.

Although Vitamin A deficiency affects many tissues in the body, its effect on the eye are most damaging and can result in blindness. The surface of cornea becomes dry and rough, and may ultimately break down partially or completely. This may lead to ulceration, and permanent scarring or irreversible damage and loss of sight.

The ocular signs considered most reliable for identifying Vitamin A deficiency are:

Night blindness -

An early symptom - A child cannot see clearly after dark or in a dark room.

Bitot's spots - They are accumulation of foamy cheesy material on the conjunctiva, often in association with other signs of xerophthalmia such as night blindness.

Corneal xerosis/ulceration - The cornea becomes dry (xerosis) and wrinkled, devoid of the shine or gloss.

Keratomalacia - If the disease is not treated, a corneal ulcer can lead to "melting" or "washing" of the cornea (keratomalacia).

Corneal scar - Keratomalacia can lead to perforation of cornea resulting in a scar. The sooner the disease is treated, the smaller the ulcer and smaller the scar. If treated early, corneal scars and blindness can be prevented.

4.3 TREATMENT

* **Treatment schedule is to administer 200,000 IU of Vitamin A immediately after diagnosis. This must be followed by another dose of 200,000 IU four weeks later.**

* **Children with eye lesions must be treated immediately with Vitamin A even if they are being referred for special care.**

* **Infants and young children suffering from diarrhoea, measles or acute respiratory infections must be monitored closely and encouraged to consume Vitamin A rich food. In case, early signs of Vitamin A deficiency are observed, the above treatment schedule must be followed.**

REMEMBER

* **Vitamin A concentrate solution is available in the PHC and sub-centres in the form of a flavoured syrup at a concentration of 100,000 IU/ml or capsules**
* **Vitamin A syrup should be administered using the 2ml spoon provided with every bottle. A marked level full of the 2 ml spoon contains 200,000 IU of Vitamin A**

4.4 SERVICE DELIVERY AT VARIOUS LEVELS

Village	*	Feeding colostrum to newborn
	*	Early and exclusive breastfeeding for four to six months
Home Mother	*	Grow and consume green leafy vegetables and other Vitamin A rich food.
	*	Ensure Vitamin A prophylaxis at six monthly intervals of all children.
AWW	*	Administer Vitamin A doses to under 3 years old children as per schedule.
	*	Recording Vitamin A doses given on Immunization cards/registers.
	*	Educate mothers on prevention of Vitamin A deficiency.
	*	Advice on exclusive breastfeeding (including colostrum consumption).
	*	Promote consumption of Vitamin A rich foods.
Sub-Centre	*	All the above plus
HW (F)	*	Give additional dose of Vitamin A during measles.
	*	Detect deficiency cases and give full therapy.
	*	Refer cases with eye signs to Medical Officer (MO), PHC.
PHC/Urban	*	All above plus
Centres	*	Receive referrals, assess and give therapy and prophylactic
Medical		care.
Officer	*	When indicated refer to district hospital.
	*	Monitor and report coverage.
CHC/Dist.	*	All above plus
Hospital	*	Treat referred cases

5.0 CONTROL OF ACUTE RESPIRATORY INFECTIONS (ARI) - Pneumonia Control

Acute respiratory infections (ARI) are one of the commonest causes of death in children in developing countries. They are responsible for four out of the estimated 15 million deaths that occur in children under 5 years of age every year; two-thirds of these deaths are in infants (especially young infants). A majority of these deaths are due to pneumonia. Under the programme, the emphasis is on early diagnosis and treatment to prevent mortality due to pneumonia.

Goal

To reduce deaths due to pneumonia

Coverage

Prevention of pneumonia cases through measles and BCG immunization and Vitamin A prophylaxis. Identification of pneumonia in children, promotion and education at home remedies and early referral for proper treatment and preventing death.

Strategy

- Reduce deaths due to pneumonia by standard case management by workers as well as medical practitioners at all service facilities.
- Equip mothers in early recognition of fast and difficult breathing and seeking referral.
- Promote correct home care for ordinary cough and cold through education of mothers.
- Reduce inappropriate use of antibiotics in treating ARIs other than pneumonia in children.
- Sustain high coverage with immunization especially measles, DPT and BCG.
- ARI control programme will be implemented as an integral part of the primary health care system, closely linked with immunization outreach services, promotion of breast-feeding, and use of ORT for diarrhoea management.
- Surveillance of pneumonia cases and deaths.
- As the medical officer, you should ensure that your health workers are trained to assess children with cough and cold and are in a position to initiate correct case management or give advice to parents for home care. In case of severe disease, they should be able to refer to a health facility equipped to handle such emergencies.

5.1 CRITERIA FOR DIAGNOSIS

Health care providers - all levels

* The basic criteria for diagnosis of pneumonia is based on the counting of respiratory rate. **A breathing rate of 60 per minute or more in an infant less than 2 months of age, 50 or more in an infant 2-12 months of age and 40 or more in the children 1 year to 5 years of age suggests pneumonia.** In each case respiratory rate should be carefully counted in a resting child for a full minute. In a child whose respiratory rate exceeds these limits, a second count should be done before a diagnosis is made.

* Children breathing at rates lower than mentioned above are considered to have no pneumonia. Home treatment alone will be recommended in such cases. In this case, for treatment of cough the worker will advise locally accepted remedies made from household ingredients (honey, ginger, tulsi, hot water) or a suitable bulk cough mixture made in the dispensary. You will ensure fever control with paracetamol, continued feeding, adequate fluids and give instructions on when to return (if breathing becomes rapid or laboured).

* In the event that respiratory rates are above the indicated levels, the following action will be taken:

  Case Management

  Infant aged 0-2 months, respiratory rate 60 per minute or more will be referred immediately to a health care facility with a doctor for further evaluation and treatment. No treatment will be offered by paramedical workers for these young children in view of the high danger of respiratory disease in this age group. The dose of cotrimoxazole (paediatric) in this age group is 1 tablet twice a day for five days.

  Children 2-12 months of age, respiratory rate 50 per minute or faster, with no signs of respiratory distress (e.g. chest indrawing) will be treated with cotrimoxazole (paediatric), 2 tablets twice a day for five days.

  Children 1-5 years of age with respiratory rate of 40 per minute or greater, and no signs of respiratory distress would be treated with cotrimoxazole (paediatric), 3 tablets twice daily for five days.

* Each tablet of cotrimoxazole (paediatric) contains 20 mg trimethoprim and 100 mg sulphamethoxazole. Oral cotrimoxazole (paediatric) tablets are recommended for treatment of children (2 months - 5 years) with pneumonia at sub-centres and OPD of hospitals or health centres and can be given by paramedical functionaries such as the health worker.

* Control of fever and advice on fluids, feeding and home based remedies will be given for every child. All mothers will be told to return for further evaluation if the rate of breathing increases, if the child is unable to drink or feed, or a child appears to become sicker. Under such conditions, the child will be re-evaluated by the health worker and sent for referral, if necessary.

The process of classification of illness for children below 2 months and those from 2 months to 5 years for determining the treatment schedule is given in the charts that follow :

5.2 CLASSIFICATION OF ILLNESS USING ASSESSMENT CHARTS

CHILD (AGE 2 MONTHS UP TO 5 YEARS)

SIGNS	* Not able to drink * Convulsions * Abnormally sleepy or difficult to wake * Stridor in calm child * Wheezing in calm child * Severe Undernutrition
SIGNIFY AS	VERY SEVERE DISEASE
TREATMENT	* Refer URGENTLY to hospital * Give first dose antibiotic * Treat fever, if present

SIGNS	* Chest indrawing	* No chest indrawing and * Fast breathing (50 per minute or more if child 2 months up to 12 months 40 per minute or more if child 12 months up to 5 years)	* No chest indrawing and * No fast breathing (Less than 50 per minute if child 2 months up to 12 months; less than 40 per minute if child 12 months up to 5 years)
IDENTIFY AS :	SEVERE PNEUMONIA	PNEUMONIA	NO PNEUMONIA: COUGH OR COLD
TREATMENT :	* Refer URGENTLY to Hospital * Give first dose anti-biotic * Treat fever, if present (If referral is not feasible, treat with antibiotic and follow closely)	* Advise mother to give home care * Give antibiotic * Treat fever, if present * Advise mother to return with child in 2 days for reassessment, or earlier if the child is getting worse.	* If coughing more than 30 days, refer for assessment * Assess and treat other problems * Advise mother to give home care * Treat fever, if present

	Reassess in 2 days a child who is taking an ant biotic for pneumonia :		
SIGNS :	WORSE * Not able to drink * Has chest indrawing * Has other danger signs	THE SAME	IMPROVING * Breathing slower * Less fever * Eating better
TREATMENT :	* Refer URGENTLY to Hospital	* Review antibiotic or Refer	* Finish 5 days of antibiotic

THE YOUNG INFANT (AGE LESS THAN 2 MONTHS)

SIGNS	* Stopped feeding well * Convulsions * Abnormally sleepy or difficult to wake * Stridor in calm infant * Wheezing in calm infant * Fever or Low body temperature
CLASSIFY AS :	VERY SEVERE DISEASE
TREATMENT	* Refer URGENTLY to hospital Give first dose antibiotic

SIGNS :	* Fast breathing (60 per minute or MORE) and or * Severe chest indrawing	* No fast breathing (less than 60 per minute) * No severe chest indrawing
CLASSIFY AS :	SEVERE PNEUMONIA	NO PNEUMONIA
TREATMENT	* Refer URGENTLY to hospital for antibiotic by injection * Give first dose of antibiotic (if referral is not feasible treat with antibiotic and follow closely) * Keep the young infant warm during transfer * Breast-feed frequently young infant during transfer.	* Advise mother to give home care : - Keep baby warm - Breast-feed frequently - Clear nose, if it interferes with feeding * Advise the mother to return if : - Illness worsens - Breathing is difficult - Feeding becomes a problem

EXERCISE A

1. Mark the following statements about chest indrawing as true or false :

   (a) If chest indrawing is seen only some of the time, it is considered to be present

   (b) If chest indrawing may appear to be present in a child who is upset or trying to feed

   (c) Any chest indrawing in a young infant indicates pneumonia

   (d) The position of the child is not improtant in the assessment of chest indrawing

   (e) Chest indrawing can be assessed during any phase of breathing i.e. inspiration or expiration

2. Amongst the following statements about assessment, identify what is true and what is false

(a) A young infant has pneumonia if he is breathing 50 times or more per minute

(b) Central cyanosis indicates severe hypoxia

(c) Cyanosis is a reliable sign in cases of severe anaemia

(d) For assessment of an ear problem or sore throat, the child must have cough or difficult breathing

(e) Peripheral cyanosis does not always indicate hypoxia

5.3 DOSE SCHEDULE
COTRIMOXAZOLE(*) IN A SUSPECTED CASE OF PNEUMONIA

Dose/Frequency (for each dose)	F o r m	Amount per dose (in tablets, capsules or ml) according to body weight in Kg		
		3-5 Kg	6-9 Kg	10-19 kg
4 mg of Trimethoprim per kg every 12 hours	Adult single strength tablet containing 80 mg TMP + 400 mg of SMX	0.25 **	0.5	1
- do -	Paediatric tablet containing 20 mg of TMP + 100 mg of SMX	1 **	2	3
- do -	Syrup containing 40 mg of TMP + 200 mg of SMX	2.5 **	5	7.5

* Cotrimoxazole = Trimethoprim (TMP) + Sulfamethoxazole (SMX)

** If the child is less than 1 month old, give 1/2 pediatic tablet or 1.25 ml syrup twice daily. Avoid cotrimoxazole in neonates who are premature or jaundiced.

5.4 MEDICAL OFFICERS' ROLE

Traditionally, medical officers like you have used auscultation of the chest, laboratory investigations and chest X-ray to diagnose pneumonia. It has now been shown that **rapid respiratory rate, chest indrawing and inability to drink** are, in most cases, more reliable and practical in making a diagnosis of pneumonia. The pathognomonic value to these selected signs has been well established. You must get yourself trained to assess these signs correctly to classify illness for judging severity and for deciding about treatment instructions.

Danger signs which signify very severe disease or severe pneumonia are :

a) Child stopped feeding well.

b) Child too sleepy or difficult to wake.

c) Stridor even when the child is calm.

d) Wheezing.

e) Convulsions.

f) Severe undernutrition, and

g) a very young infant who has fever or is cold to the touch.

Children with these signs will be referred for evaluation by you and generally for admission in a hospital.

It is important that you train the health worker that in a child with severe pneumonia the respiratory rate may actually slow down as a result of exhaustion and advanced disease. Therefore, the presence of chest indrawing and other dangerous signs should take precedence over respiratory rate as diagnostic criterion and reason to refer the child to you.

At the PHC, further evaluation will be conducted by you and parenteral antibiotic started. You may choose to keep the child under direct observation in the PHC, or if the case is very severe, may initiate parenteral antibiotic and send the child onward to another hospital facility where round the clock nursing, oxygen, intravenous drugs and laboratory/radiological investigations are available. In the referral hospital, a paediatrician will examine, assess and provide appropriate medical treatment for all children, referred with a diagnosis of very severe disease or severe pneumonia. Such patients should be treated as inpatients with careful medical and nursing care until their disease remits.

Routine use of antimicrobials, cough syrups containing ephedrine, codeine, atropine or alcohol, medicated nasal or ear drops are discouraged in the treatment of the child with uncomplicated acute upper respiratory infections. Health centres and hospitals will stop purchase of commercial cough syrups.

Private practitioners will be encouraged to use simple safe cough remedies and curtail the use of cough medicines containing atropine, alcohol, codeine or antihistaminics in treatment of children with cough.

Only saline nasal drops are recommended for running or blocked nose.

5.5 REFERRAL

A child coming from village to the Primary Health Centre managed and referred by a health worker must be given priority attention over others in out patients' que. This is because the condition may be serious and such a child should not wait.

Ask for referral note and get an idea of the management given there. Assess the patient quickly and start treatment immediately.

Do not point out any inadequaciis in the management by health worker in front of the relations of the child. We must appreciate what she has done within the limitations of the facilities she had. If there are serious flaws she can be corrected at a personal level later at the sub centre or when she comes for monthly meetings.

A health worker has to take over your role of case management just in case a child with pneumonia cannot be referred to a PHC. Please refer to the "Manual for Health Workers" for the details of management at her level. If she has risen to the occasion compliment her in your reply note when the child is discharged. Also write about the case management and diagnosis and any follow up care by the health worker required for the child.

EXERCISE B

Sundari is a 16 month old girl. Her mother tells you that she had cough for 7 days but then Sundari suddenly became ill. She did not feed well and was drinking poorly. There was no fever and no history of convulsions. She was breathing 62/minute. She had chest indrawing and appeared to be having breathing difficulty. Sundari had great effort breathing out and her expiratory phase of breathing was prolonged. There was no wheezing or stridor. Her tongue was blue, she was very restless and perspiring. Temperature was 38.4°C. She was not undernourished.

(a) List all of Sundari's signs and symptoms of illness in the space below.

(b) Record how you would classify Sundari's illness by writing the classification in the space below. Also list the signs you used to classify her illness.

(c) How would you treat Sundari and name of each medicine you will prescribe and its dose.

5.6 SERVICE DELIVERY AT VARIOUS LEVELS

Village Mothers	o Get children Vitamin A prophylaxis and immunization as per schedule o Avoid exposure of babies to cold, dust and smoke o Learn home-level care and when to seek help for cough and cold
AWW/VHG	o Ensure immunization (DPT, Measles and BCG) and Vitamin A prophylaxis o Educate on dust and smoke free environment o Teach/advice on home remedies/care for cough and cold
PHC/ **Urban centres** HW (F)	o Assess and treat on the basis of standard case management o Refer when required o Educate on home remedies for cough, prevention and home care for ARI o Ensure immunization (DPT, measles and BCG) and Vitamin A prophylaxis.
PHC/Urban Centres Medical Officer	o All above plus o Receive referrals, assess, manage and give feed back o Refer to district hospitals/first level referral centres when required o Record and follow surveillance procedures
CHC/ **District Hospital/** **First level referral centres** Specialist	o Receive referrals and provide appropriate treatment especially for severe and persistent pneumonia o Educate health functionaries regarding home remedies and early referral, standard case management etc. o Compile surveillance data, analyze, send reports and provide feedback.

6.0 CONTROL OF DIARRHOEAL DISEASES

Diarrhoeal diseases are a major cause of morbidity and mortality among children under years (0-5 years). It has been estimated that diarrhoea accounts for 28 % of deaths age group i.e. 1 million deaths every year. Most of the deaths in diarrhoea are due dehydration (loss of water and electrolytes) caused due to frequent passage of loose watery motions. A child on an average suffers from 2-3 attacks of diarrhoea each year. Prevention of diarrhoea itself is not an easy task and remains a long term goal to be achieved. The National Oral Rehydration Therapy (Control of Diarrhoeal Diseases) Programme therefore, presently aims at reducing deaths due to diarrhoeal diseases among the 0-5 years age group.

Goal

To reduce deaths due to dehydration caused by diarrhoeal diseases through promotion of Oral Rehydration Therapy (ORT) by 30 % in 1995 and by 70 % in 2000 A.D

Coverage

Improved ORT use rate by 60 %

What is diarrhoea ?

Diarrhoea is defined as passage of liquid or watery stools. These liquified stools are usually passed more than three times in a day ; however, it is the recent change in consistency and character of the stools rather than the number of stools that is the more important factor. Passage of even one large watery motion among children may constitute diarrhoea. When stools contain mucus or blood it is known as **dysentery.**

What is **not** diarrhoea ?

- passage of frequent formed stools
- passage of pasty stools in a breast-fed child
- passage of stools during or immediately after feeding
- passage of frequent loose greenish yellow stool in the 3rd and 4th day of life (transitional diarrhoea)

In most situations, mothers know better what is an abnormal stool of her child.

THREE TYPES OF DIARRHOEA

1. **Acute watery diarrhoea** starts suddenly and may continue for a number of days but not more than 14 days. Most of these are self limiting and will last for 3 to 7 days.

2. **Dysentery** is diarrhoea with visible blood in stools.

3. **Persistent diarrhoea** begins acutely but is of unusually long duration lasting more than 14 days.

WHY IS DIARRHOEA DANGEROUS ?

- two main dangers of diarrhoea are **death** and **malnutrition.**

- diarrhoea leads to loss of water and electrolytes (sodium, chloride, pottassium and bicarbonates) from the body through diarrhoea stool. **Dehydration** occus when these losses are not replaced adequately and body develops a deficit of water and electrolytes. If untreated, dehydration leads to death.

- undernutrition in diarrhoea occurs because - nutrients are lost from the body, a child with diarrhoea may be anorexis, and mothers often reduce food for some more days even after diarrhoea is treated or has stopped.

Strategy

- **correct case management** at all levels enabling mothers at home to use Home available fluids (HAF) for diarrhoea without dehydration followed by Oral Rehydration Salts (ORS) solution whenever a child gets dehydration. Mothers should be able to recognise dehydration so that she can start Oral Rehydration Therapy and can seek help when the condition of the child worsens. In addition, correct and improved management of cases depending on degree of dehydration at all health facilities will have to be ensured.

- **ensure availability of ORS packets** through government outlets and in villages through village level functionaries including Anganwadi worker (AWW) wherever possible

- **eliminate irrational use of drugs** in the management of diarrhoeal diseases.

The strategy is based on the following observations :

1. Ninety percent of all diarrhoea episodes **do not** develop dehydration. These can be managed at home by mothers with the use of home available fluids (HAF) and continued feeding.

2. Nine percent of all episodes will develop **some dehydration**. These need to be managed at health facilities with the use of Oral Rehydration Salts (ORS) solution.

3. One percent of episodes will develop **severe dehydration** needing intravenous infusion therapy. These need to be referred to the nearest facility where intravenous infusion could be given.

6.1 ASSESS CHILD WITH DIARRHOEA

A child with diarrhoea should be assessed to determine the nature and pattern of diarrhoea, the degree of dehydration (no signs, some or severe dehydration) and the presence of any other problems (i.e. blood in stool or severe undernutrition) so that appropriate treatment can be started without delay.

History should be taken from the patient or a family member. **ASK** questions to obtain information on : duration of diarrhoea, consistency of stool, presence of blood in stool, presence of fever, convulsions or other problems, pre-illness feeding practices, type and quantity of fluids (including breast milk), food consumed during illenss and drugs or other remedies taken. However answers to many of these questions will not decide the degree of dehydration. **Please note that degree of dehydration will be determined by the signs as described in the table that follows.**

DETERMINE DEGREE OF DEHYDRATION USING THE TABLE BELOW

	A	B	C
1. **LOOK** :CONDITION	Well, alert	***Restless, Irritable***	***Lethargic or unconscious; floppy***
EYES	Normal	Sunken	Very sunken and dry
TEARS	Present	Absent	absent
MOUTH & TONGUE	Moist	Dry	Very dry
THIRST	Drinks normally, not thirsty	***Thirsty, drinks eagerly***	***Drinks poorly or not able to drink***
2. **FEEL**: SKIN PINCH	Goes back quickly	***Goes back slowly***	***Goes back very slowly***
3. **DECIDE**:	The patient has NO SIGNS OF DEHYDRATION	If the patient has two or more signs, including at least one ***sign***, there is SOME DEHYDRATION	If the patient has two or more signs, including at least one ***sign***, there is SEVERE DEHYDRATION
4. **TREAT**	Use Treatment Plan A	Weigh the patient, if possible, and use treatment Plan B	Weigh the patient and use Treatment Plan C URGENTLY

Physical examination

LOOK at the patient. General condition: alert; restless or irritable; floppy, lethargic or unconscious; severely undernourished? Are the eyes: sunken or very sunken and dry?

Are there tears when the child cries? Are the mouth and tongue: moist, dry or very dry? (Confirm by feeling the child's tongue and the inside of the mouth with a clean dry finger). When water is offered to drink: is it taken normally or is the patient unable to drink?

FEEL skin pinch. Skin turgor. When the skin over the abdomen or the thigh is pinched and released, does it flatten : quickly, slowly or very slowly?

Take temperature. Does the child have a high fever (Axillary temperature more than 38.5^{0}C or 101^{0}F).

EXERCISE C

Look at the table given below. For the first part of the exercise try to recapitulate the signs you should look and feel. Fill column 1 only. Against others you should enlist the serious problems (other than dehydration) one could identify in a case of diarrhoea.

This part is nothing but recapitulation so check yourself how many blanks you can fill up without looking at the previous pages. IN CASE YOU HAVE MISSED ANY, FEEL FREE TO CONSULT. DO NOT LEAVE ANY SPACE BLANK IN COLUMN 1, BEFORE YOU PROCEED.

	Col.No.I	Col.No.II	A	B	C	D
1. LOOK AT						
2. FEEL FOR						
3. OTHERS						

Since you could write up all the items in column 1, we assume you looked at and felt the items for a diarrhoea child whose case history is given below:

Read out the following case history and enteR the observations in column 2 of the table on the facing page against respective item.

Case history : The 18 months old child Panu is having diarrhoea since last 3 days. You learn that Panu has been drinking a lot of water. He has vomited 2 times and has had 11 watery stools today. You note that Panu's eyes are somewhat sunken and his mouth and tongue are dry. When you pinch the skin in his abdomen the skin goes back slowly. His temperature is 39°C. Panu is restless and irritable and cries during examination. There are tears when he cries.

BEFORE YOU PROCEED FURTHER ENSURE THAT YOU HAVE ENTERED ALL THE OBSERVATIONS IN COLUMN NO. II.

Based on your entry on Column I and Column II, you will find some symptoms/signs belonging to category A (no dehydration), some in category B (some dehydration) and some in category (severe dehydration) in the table 'how to assess your patient'.

Can you interpret each item separately putting a tick mark against each of them under column 'A', 'B' & 'C' to signify degree of dehydration or any other serious problem they indicate in column 'D'.

Finally look at the whole table you have filled up. Now you get a total picture of status of dehydration of Panu. So please answer:

1. What is the 0xgree of dehydration shown by Panu (Check one)

   ( ) no dehydration; ( ) some dehydration, ( ) severe dehydration

2. Which treatment plan do you select for Panu for dehydration if any?

   Plan _____

3. Are there any other serious problem shown by Panu that require treatment?

   If yes, how would you treat the problem?

6.2 MANAGE CHILD WITH ACUTE DIARRHOEA

Once assessment of degree of dehydration is performed - the appropriate treatment plan has to be selected.

For no dehydration	-	Treatment Plan A (Prevention of dehydration)
For some dehydration	-	Treatment Plan B (Rehydration with ORS Solution)
For severe dehydration	-	Treatment Plan C (Rehydration with I/V infusion)

Feeding during and after diarrhoea, to prevent nutritional damage is extremely important.

6.2.1 WHEN THERE ARE NO SIGNS OF DEHYDRATION (TREATMENT PLAN A)

This aims at preventing dehydration in early diarrhoea. Mothers should be taught how to prevent dehydration at home by giving the child increased amount of fluids, how to continue to feed the child and why these actions are important. There are three rules for treating diarrhoea at home. **See Treatment Plan A on page 41.**

Rule 1 Give the child more fluids than usual to prevent dehydration

Home made or Home available fluids which are traditionally acceptable can be used for home therapy of diarrhoea. Traditional fluids may vary from place to place. Home available fluids (HAF) such as rice water, dal water, sikanji, buttermilk, etc. can be promoted depending on suitability, availability and acceptability at local levels.

Rule 2 Continue feeding the child

Food should never be withheld during diarrhoea. This is important as it prevents undernutrition of the child. Breast feeding should continue without interruption. The aim is to give as much nutrient rich food as the child will accept. Child should be given additional meals after the episode of diarrhoea is over for some days to prevent undernutrition.

Rule 3 Watch for signs of dehydration

Explain the mother that she should take her child to a health worker if the child does not get better in two days or child starts passing many stools, has repeated vomitting, is eating and drinking poorly, develops excessive thirst, develops fever or has blood in stools. When a parent brings a child with diarrhoea but no dehydration **give one ORS packet.**

TREATMENT PLAN A
TO TREAT DIARRHOEA AT HOME

USE THIS PLAN TO TEACH THE MOTHER TO:

- Continue to treat at home her child's current episode of diarrhoea.
- Give early treatment for future episodes of diarrhoea.

EXPLAIN THE THREE RULES FOR TREATING DIARRHOEA AT HOME:

1. **GIVE THE CHILD MORE FLUIDS THAN USUAL TO PREVENT DEHYDRATION:**
   - Use a recommended home fluid, such as a cereal gruel. If this is not possible, give plain water. Use ORS solution for children described in the box below.
   - Give as much of these fluids as the child will take. Use the amounts shown below for ORS as a guide.
   - Continue giving these fluids until the diarrhoea stops.

2. **GIVE THE CHILD PLENTY OF FOOD TO PREVENT UNDERNUTRITION:**
   - Continue to breast-feed frequently.
   - If the child is not breast-fed, give the usual milk. If the child is less than 6 months old and not yet taking solid food, dilute milk or formula with an equal amount of water for 2 days.
   - If the child is 6 months or older, or already taking solic food:
     - Also give cereal or another starchy food mixed, if possible, with pulses, vegetables, and meat or fish. Add 1 or 2 teaspoonfuls of vegetable oil to each serving.
     - Give fresh fruit juice or mashed banana to provide potassium.
     - Give freshly prepared foods. Cook and mash or grind food well.
     - Encourage the child to eat; offer food at least 6 times a day.
     - Give the same foods after diarrhoea stops, and give an extra meal each day for two weeks.

3. **TAKE THE CHILD TO THE HEALTH WORKER IF THE CHILD DOES NOT GET BETTER IN 3 DAYS OR DEVELOPS ANY OF THE FOLLOWING:**
   - Many watery stools
   - Repeated vomiting
   - Marked thirst
   - Eating or drinking poorly
   - Fever
   - Blood in the stool

CHILDREN SHOULD BE GIVEN ORS SOLUTION AT HOME, IF:

- *They have been on Treatment Plan B or C.*
- *They cannot return to the health worker if the diarrhoea gets worse.*
- *It is national policy to give ORS to all children who see a health worker for diarrhoea.*

IF THE CHILD WILL BE GIVEN ORS SOLUTION AT HOME, SHOW THE MOTHER HOW MUCH ORS TO GIVE AFTER EACH LOOSE STOOL AND GIVE HER ENOUGH PACKETS FOR 2 DAYS:

Age	Amount of ORS to give after each loose stool	Amount of ORS to provide for use at home
Less than 24 months	50-100 ml	500 ml/day
2 up to 10 years	100-200 ml	1000 ml/day
10 years or more	As much as wanted	2000 ml/day

- Describe and show the amount to be given after each stool using a local measure.

SHOW THE MOTHER HOW TO MIX ORS.

SHOW HER HOW TO GIVE ORS:

- Give a teaspoonful every 1-2 minutes for a child under 2 years.
- Give frequent sips from a cup for an older child.
- If the child vomits, wait 10 minutes. Then give the solution more slowly (for example, a spoonful every 2-3 minutes).
- If diarrhoea continues after the ORS packets are used up, tell the mother to give other fluids as described in the first rule above or return for more ORS.

6.2.2 WHEN THERE IS SOME DEHYDRATION (TREATMENT PLAN B)

Oral Rehydration Solution (ORS) must be used in cases with **some** dehydration. Treatment with ORS aims at:

Correction of water and electrolyte deficit as indicated by degree of dehydration (Rehydration); replacement of on going losses due to continuing diarrhoea (maintenance) and provision of normal daily fluid requirement.

The detailed composition of ORS (WHO formulation) is :

INGREDIENTS	AMOUNT
Glucose (a form of sugar)	20.0 gms
Sodium chloride (ordinary salt)	3.5 gms
Sodium Citrate[1]	2.9 gms
Potassium chloride	1.5 gms

It is very important that the ORS solution is mixed properly, in exactly one litre of water. The method of preparation of ORS solution is : Packets that contain the ingredients as stated above are made for mixing in one litre of drinking water. This mixture is called ORS SOLUTION. Preparation of ORS solution is a skill that all health workers should have. They must always try to supply ORS solution as mothers can commit serious mistakes in preparing the solution.

To prepare ORS solution, i) Wash your hands, ii) Measure 1 litre of clean drinking water using the measuring container supplied and iii) Pour all the powder from one packet into the wate and mix well until powder is completely dissolved.

Fresh ORS solution should be mixed each day in a clean container. The container should be kept covered. Any solution remaining from the day before should be thrown away then and there.

For determining the approximate volume of ORS Solution to be given, atdifferent ages (when it is not possible to weigh the child) - the table given on the top of the chart on the facing page may be used as a guideline. The exact quantity of ORS Solution to be given will however, depend upon the child's dehydration status. Patients with many or more marked signs of dehydration will require more solution than those with fewer or less marked signs. If the patient wants more ORS solution than the volume shown on the chart and there are no signs of overhydration give more.

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[1] Trisodium citrate dihydrate - 2.9 grams soda bicarbonate 2.5.gms can also be used as an alternative to sodium citrate.

TREATMENT PLAN B
TO TREAT DEHYDRATION

APPROXIMATE AMOUNT OF ORS SOLUTION TO GIVE IN THE FIRST 4 HOURS:

Age: *	Less than 4 months	4 - 11 months	12 - 23 months	2 - 4 years	5 - 14 years	15 years or older
Weight:	Less than 5 kg	5 - 7.9 kg	8 - 10.9 kg	11 - 15.9 kg	16 - 29.9 kg	30 kg or more
in ml	200-400	400-600	600-800	800-1200	1200-2200	2200-4000
in local measure						

* Use the patient's age only when you do not know the weight. The approximate amount of ORS required (in ml) can also be calculated by multiplying the patient's weight (in grams) times 0.075.

- If the child wants more ORS than shown, give more.
- Encourage the mother to continue breast-feeding.
- For infants under 6 months who are not breast-fed, also give 100-200 ml clean water during this period.

OBSERVE THE CHILD CAREFULLY AND HELP THE MOTHER GIVE ORS SOLUTION:

- Show her how much solution to give her child.
- Show her how to give it - a teaspoonful every 1-2 minutes for a child under 2 years, frequent sips from a cup for an older child.
- Check from time to time to see if there are problems.
- If the child vomits, wait 10 minutes and then continue giving ORS, but more slowly, for example, a spoonful every 2-3 minutes.
- If the child's eyelids become puffy, stop ORS and give plain water or breast milk. Give ORS according to Plan A when the puffiness is gone.

AFTER 4 HOURS, REASSESS THE CHILD USING THE ASSESSMENT CHART. THEN SELECT PLAN A, B, OR C TO CONTINUE TREATMENT.

- If there are **no signs of dehydration**, shift to Plan A. When dehydration has been corrected, the child usually passes urine and may also be tired and fall asleep.
- If signs indicating **some dehydration** are still present, repeat Plan B, but start to offer food, milk and juice as described in Plan A.
- If signs indicating **severe dehydration** have appeared, shift to Plan C.

IF THE MOTHER MUST LEAVE BEFORE COMPLETING TREATMENT PLAN B:

- Show her how much ORS to give to finish the 4-hour treatment at home.
- Give her enough ORS packets to complete rehydration, and for 2 more days as shown in Plan A.
- Show her how to prepare ORS solution.
- Explain to her the three rules in Plan A for treating her child at home:
  - to give ORS or other fluids until diarrhoea stops
  - to feed the child
  - to bring the child back to the health worker, if necessary.

6.2.3 WHEN THERE IS SEVERE DEHYDRATION (TREATMENT PLAN C)

Treatment Plan C deals with treatment of severe dehydration. Community based health staff should be advised not to attempt I.V. treatment in these cases. They should, however, start immediate treatment with ORS as per Treatment Plan B and at once refer the case to the nearby facility for I.V. treatment. If ORS packet is not available treatment with 'Home Available Fluids' should be started.

Intravenous therapy for servere dehydration

Solutions for intravenous infusion - A number of solutions are available for IV infusion; however, some do not contain appropriate or adequate amounts of the electrolytes required to correct the deficits found in dehydration associated with acute diarrhoea.

Preferred solution is - Ringer's Lactate Solution which supplies adequate concentration of sodium and potassium and the lactate yields bicarbonate for correction of acidosis, and Acceptable solution is - Normal Saline which is readily available. It will not correct the acidosis and will not replace potassium losses. If used, this solution should be accompanied by ORS solution orally.

Providing IV Therapy for severe dehydration - The purpose is to give the patient a large quantity of fluids quickly to replace the very large fluid loss which has resulted in severe dehydration.

Plain Glucose and Dextrose Solutions **should not be used** as they provide only water and sugar. They do not contain electrolytes and thus they do not correct the electrolyte losses causing the acidosis.

Begin intravenous therapy quickly in the amount specified on Treatment Plan C

- Start IV Fluids immediately if the patient can drink, give ORS by mouth while the drip is set up. Give 100 ml/kg Ringer's Lactate solution (or, if not available, Dextrose saline) divided as given in the table on the top of the chart (facing page).

- Repeat once if radial pulse is still very weak or not detectable

- Reassess the child every 1-2 hours if hydration is not improving, give the IV drip more rapidly.

- Also give ORS (about 5 ml/kg/hour) as soon as the patient can drink: usually after 3-4 hours (infants) of 1-2 hours (older patients)

- After 6 hours (infants) or 3 hours (older patients), evaluate the patient using the assessment chart. Then choose the appropriate Plan (A,B or C) to continue treatment

TREATMENT PLAN C
TO TREAT SEVERE DEHYDRATION QUICKLY

FOLLOW THE ARROWS. IF ANSWER IS "YES", GO ACROSS. IF "NO", GO DOWN

START HERE

Can you give intravenous (IV) fluids immediately?

YES →

- Start IV fluids immediately. If the patient can drink, give ORS by mouth while the drip is set up. Give 100 ml/kg Ringer's Lactate Solution (or, if not available, normal saline), divided as follows:

Age	First give 30 ml/kg in:	Then give 70 ml/kg in:
Infants (under 12 months)	1 hour *	5 hours
Older	30 minutes *	2 1/2 hours

* Repeat once if radial pulse is still very weak or not detectable.

- Reassess the patient every 1-2 hours. If hydration is not improving, give the IV drip more rapidly.
- Also give ORS (about 5 ml/kg/hour) as soon as the patient can drink: usually after 3-4 hours (infants) or 1-2 hours (older patients).
- After 6 hours (infants) or 3 hours (older patients), evaluate the patient using the assessment chart. Then choose the appropriate Plan (A, B or C) to continue treatment.

NO ↓

Is IV treatment available nearby, (within 30 minutes)?

YES →

- Send the patient immediately for IV treatment.
- If the patient can drink, provide the mother with ORS solution and show her how to give it during the trip.

NO ↓

Are you trained to use a naso-gastric (NG) tube for rehydration?

YES →

- Start rehydration by tube with ORS solution: Give 20 ml/kg/hour for 6 hours (total of 120 ml/kg).
- Reassess the patient every 1-2 hours:
  - If there is repeated vomiting or increasing abdominal distension, give the fluid more slowly.
  - If hydration is not improving after 3 hours, send the patient for IV therapy.
- After 6 hours, reassess the patient and choose the appropriate Treatment Plan.

NO ↓

Can the patient drink?

YES →

- Start rehydration by mouth with ORS solution, giving 20 ml/kg/hour for 6 hours (total of 120 ml/kg).
- Reassess the patient every 1-2 hours:
  - If there is repeated vomiting, give the fluid more slowly.
  - If hydration is not improving after 3 hours, send the patient for IV therapy.
- After 6 hours, reassess the patient and choose the appropriate Treatment Plan.

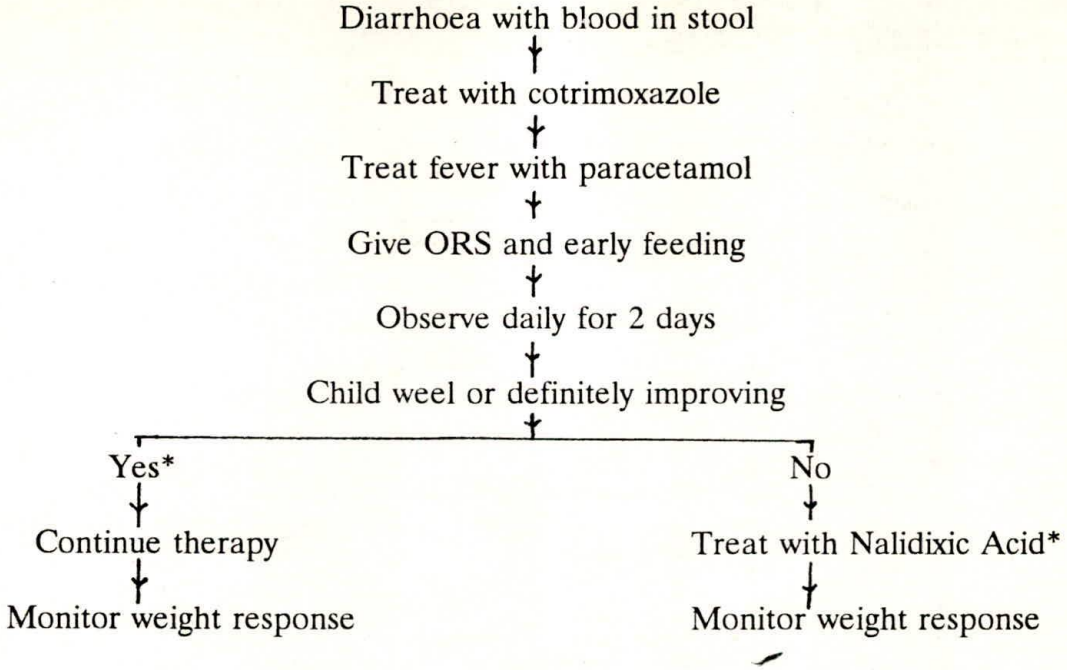
NO ↓

URGENT. Send the patient for IV or NG treatment

NOTES:

- If possible, observe the patient at least 6 hours after rehydration to be sure the mother can maintain hydration giving ORS solution by mouth.
- If the patient is above 2 years and there is cholera in your area, give an appropriate oral antibiotic after the patient is alert.

6.2.4 WHEN THERE IS DYSENTERY



* As indicated by disappearance of fever and of blood in stools
** If not applicable, or not available refer to a pediatrician

6.2.5 WHEN THERE IS PERSISTENT DIARRHOEA

- Persistent diarrhoea begins as acute diarrhoea and continues for more than 14 days
- Malnutrition in such children is common due to a combination of unresolved infection and malnutrition
- A vicious cycle between malnutrition and diarrhoea each precipitating the other leads to chronic illness in the child
- Refer to child specialist if : the child is under 6 months old, dehydration is present (Refer the child after treatment of dehydration),
- Otherwise, teach the mother to feed her child as in Plan A, except:

  dilute any animal milk with an equal volume of water or replace it with a fermented milk product, such as curd and butter milk.
  assure full energy intake by giving 6 meals a day of thick cereal and added oil, mixed with vegetables, pulses, meat or fish.

- Tell the mother to bring the child back after 5 days:

  if diarrhoea has not stopped, refer to hospital
  if diarrhoea has stopped, tell the mother to:
  use the same food for the child's regular diet
  after 1 more week, gradually resume the usual animal milk
  give an extra meal each day for at least 1 month.

THEN, FOR OTHER PROBLEMS

ASK ABOUT BLOOD IN THE STOOL

IF BLOOD IS PRESENT:

- Treat for 5 days with an oral antibiotic recommended for **Shigella** in your area.
  i.e. Cotrimoxazole
- Teach the mother to feed the child as described in Plan A.
- See the child again after 2 days if:
  - under 1 year of age
  - initially dehydrated
  - there is still blood in the stool
  - not getting better
- If the stool is still bloody after 2 days, change to a second oral antibiotic recommended for **Shigella** in your area. Give it for 5 days. – Nalidixic Acid

ASK WHEN THIS EPISODE OF DIARRHOEA BEGAN

IF DIARRHOEA HAS LASTED AT LEAST 14 DAYS:

- Refer to hospital if:
  - the child is under 6 months old
  - dehydration is present. (Refer the child after treatment of dehydration.)
- Otherwise, teach the mother to feed her child as in Plan A, except:
  - dilute any animal milk with an equal volume of water or replace it with a fermented milk product, such as yoghurt. (curd)
  - Assure full energy intake by giving 6 meals a day of thick cereal and added oil, mixed with vegetables, pulses, meat, or fish.
- Tell the mother to bring the child back after 5 days:
  - if diarrhoea has not stopped, refer to hospital.
  - if diarrhoea has stopped, tell the mother to:
    - use the same foods for the child's regular diet.
    - after 1 more week, gradually resume the usual animal milk.
    - give an extra meal each day for at least 1 month.

LOOK FOR SEVERE UNDERNUTRITION

IF THE CHILD HAS SEVERE UNDERNUTRITION:

- Do not attempt rehydration; refer to hospital for management.
- Provide the mother with ORS solution and show her how to give 5 ml/kg/hr during the trip.

ASK ABOUT FEVER AND TAKE TEMPERATURE

IF TEMPERATURE IS 39° C OR GREATER:

- Give paracetamol.

IF THERE IS FALCIPARUM MALARIA IN THE AREA, and the child has any fever (38° or above) or history of fever in the past 5 days:

- Give an antimalarial (or manage according to your malaria programme recommendation).

Ensuring ORS availability through setting up of ORS Depots

You will attempt setting up of ORS depots in every village. The same functionaries who normally may be acting as depot holders for contraceptives/chloroquine tablets for malaria may also function as ORS Depot holders. The idea of such a strategy is to ensure ORS availability in the village for 24 hours a day.

Wherever possible, you will identify Anganwadi workers (in ICDS blocks) village health guides or trained birth attendants as ORS depot holders. Once they are identified as depot holders, the supply line of ORS packets from several sources including government (health and other departments), and non-government budgets will have to be ensured.
Remember a ORS depot holder in the villages covered by your health worker increases the access to ORS packets and can prevent dehydration and death at village level.

Setting up ORT corners in Health Centre/Hospital

During summer season or when there is a big case load of diarrhoeas during other seasons, it is very advantageous to set up an ORT corner. A portion of the out patient facility is converted for the purpose.

What is the aim of an ORT corner?

The aim is to manage cases with some dehydration without admission and send home the child before the end of the day. This will reduce the cost and inconvenience caused to the family due to an avoidable hospitalisation of a child with diarrhoea. ORT corner not only teaches the mother how to give oral rehydration solution but also convinces her how well it works. This makes her confident to manage a child with diarrhoea next time in her own home or in the neighbourhood.

What is done in an ORT Corner?

- The child is assessed after taking history and examination.
- Depending on the level of dehydration determine the amount of fluid to be given in 4-6 hours.
- Demonstrate mixing and administering ORS to the mother.
- Deal with difficulties in administering ORS (such as vomitting).
- Treat other problems (e.g. giving paracetamol for fever - tepid sponging giving antispasmodics for colic etc.).

- Encourage the mother to begin feeding the child (Provision of food to children who remain in ORT Corner more than 6 hours must be made).

- Assess the patient every 2 hours till rehydrated and record the progress.

- Determine the amount of ORS to be given for maintenance at home and provide the same.

- Teach the mother home level care and when to bring back the child.

- Impress upon her how to prevent diarrhoea in future.

What do you need for the ORT Corner?

- Enough place with good ventilation with access to toilet as well as washing facilities.

- A few benches, mats, rubber sheets, ORS packets, large containers with taps at bottom for easy distribution, cups, glasses, spoons, etc.

6.3 SERVICE DELIVERY AT VARIOUS LEVELS

Village level	*	Assess diarrhoeal cases and provide Correct Case Management
	*	Provide ORS through atleast one depot holder
VHG/AWW/TBA*		Educate on Correct Home Management of diarrhoea.
	*	Educate mothers on when to seek referrals.
Sub-centre level	*	All the above plus
	*	Maintain records and report
HW (F)	*	Supply ORS packets to depot holders (wherever possible)
PHC/Urban	*	All the above plus
centre	*	Have ORT Corners for outpatient care during seasonal peaks.
	*	Receive referrals and provide appropriate treatment.
Medical officer	*	Referrals to next level.
	*	Maintain, analyse records and report,
	*	Epidemic Control.
	*	Surveillance.
	*	Training of staff in diarrhoea management.
First level	*	All the above plus
referral centre	*	Diarrhoea Training Unit ORT Corners
	*	Training for correct case management.

CASE STUDIES ON

MATERNAL MORTALITY

(To be carried out in individual groups - one case study analysis per group followed by presentation by groups in a plenary session)

7.0 GROUP WORK TO ANALYSE CASE STUDIES

Objectives After this session you will be able to :

* list 6 principal medical causes of maternal mortality;
  - able to associate common signs and symptoms with these causes of maternal mortality; and
  - state at least 10 social causes of maternal mortality.
* be aware of, and mention, the routine non-emergency health actions required during the ante-natal, intranatal and post-natal periods.
* spell out
  - what families can do at home, what families cannot do
  - what trained TBAs can do, and should not attempt to do
  - what health workers can do to prevent maternal deaths
* identify which medical conditions can be effectively dealt with only at first level referral with essential obstetric emergency services.

Design: There are five case studies specially included for this programme from the case histores of unfortunate women admitted in leading hospitals of the country. Each one of these cases are typical and represent several other such women who meet similar ends at homes, in the sub-centre headquarters, PHCs and district hospitals.

You will be given forty-five minutes to analyse the case studies and answer the questions that follow. Each group will be expected to analyse at least one case study. Your facilitator will indicate the Case study you will be analysing in your group. After answering the questions your group may identify one of you to present the answers in the plenary session which will be for forty-five minutes.

Case Study I

Taiji Bai came for her first ante-natal visit during the 7th month of pregnancy. On enquiry it was found that Taiji was 29 years old, having had five full-term normal deliveries, and the last delivery was eighteen months back. This time she said she was feeling tired for the last two months, feeling breathless and could not perform routine household work which she could before. She had developed swelling of the feet during the last one month. The ANM found her pale and she asked her to get admitted. Taiji did not get admitted because her husband did not take her as there was nobody at home to look after the children. Taiji also said that she had five normal deliveries at home, there was no checkup that was done, and everything was fine in the past.

Three days later, the ANM visited her - she had gone into labour and was delivered at home by an untrained dai. After the delivery of the baby, there was severe bleeding and part of the placenta was still inside. So the dai told her to go to hopsital. Before any transportation was organized Taiji died at home.

Taiji went to visit Dr. Matwankar, a private practitioner in the village at the seventh month. Dr. Matwankar was interviewed by the Health Staff later. He said she was anaemic when he saw Taiji and so Dr. Matwankar prescribed iron tablets and B-Complex. But her brother said he did not purchase that medicine. Dr. Matwankar also said that after the delivery of the baby he saw that part of the placenta inside and so advised Taiji's family to take her to the primary health centre. Due to lack of transport he said the patient died at home. He also commented that no blood or urine test was done, nor her blood pressure examined because these facilities were not available.

1. What was the direct cause of death?

2. What were/was the underlying medical cause(s) of death?

3. What were/was the associated social and other factor(s) that lead to death?

4. What were the common signs and symptoms that Taiji suffered?

5. What could have been done by the family to prevent this emergency?

6. What could have been done by the family to save Taiji once the emergency occured?

7. What were the "missed opportunities" for saving Taiji's life? What were they?

8. What action could have been taken at the village level?

9. What action could have been taken at the Sub-centre or by health worker?

_____

_____

10. What action could have been taken at the Primary health Centre?

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_____

11. What action could have been taken at the first level referral services?

_____

_____

12. Who are the decision makers and influencers?

_____

_____

13. What could have been done by sectors other than health to prevent this death?

_____

_____

14. What was the role of the private practitioner?'

_____

_____

15. What are the key programme interventions that would have saved Taiji?

_____

_____

Case Study II

Chanchal, 24 years old, residing at Bhirwadi, was admitted to the District Hospital, Alibaug for two months amenhoerrea (no menstruation) with fever and bleeding per vaginum. On enquiry, Chanchal had two full term normal deliveries - both boys. She had a disturbed marital life. Her husband beat her up regularly after being heavily drunk. Her mother-in-law always supported her husband to beat her and abuse her. Chanchal left her in-laws' house and went to her parents with both her children. Occasionally, her husband would visit her. She became pregnant after her husband's last visit; she asked her husband what to do. Chanchal's husband refused to let her have an abortion (MTP) with or without sterilization. Chanchal's mother-in-law wanted her to deliver six children like herself.

Chanchal and her friend, Shobha, went to an ANM for medical termination of pregnancy. The ANM gave her the District Hospital's address. Chanchal's mother took her to a local dai who conducts delivery in the village. Maltibai (dai) introduced a stick and paste into her uterus and asked her to go home. Chanchal was bleeding and had fever with chills two days later. She started getting foul smelling discharge. She went to maltibai who told her to wait and observe the problem for a few days more. Meanwhile, Chanchal started having high temperature, vomitting, distension of abdomen and breathlessness. The ANM was called after three days; and advised them to go to the District Hospital.

The family went to primary health centre, and no doctor was there. They then went to the district hospital. The Medical Officer examined the patient. Antibiotic Ampicillin was started within 48 hours. Chanchal became more breathless, stopped passing urine and died.

1. **What was the direct cause of death?**

2. What were/was the underlying medical cause(s) of death?

3. What were/was the associated social and other factor(s) that lead to death?

4. What were the first symptoms that Chanchal suffered?

5. What could have been done by the family to prevent the emergency?

6. What could have been done by family to save Chanchal once the emergency occured?

7. Were there any opportunity to save the life of Chanchal? What were they?

8. What action could have been taken at the village level?

9. What action could have been taken at the Sub-centre or by health worker?

_____

_____

10. What action could have been taken at the Primary health Centre?

_____

_____

11. What action could have been taken at the first level referral services

_____

_____

12. Who are the decision makers and influencers?

_____

_____

13. What could have been done by sectors other than health to prevent this death?

_____

_____

14. What made Chanchal's mother decide to take her to the local dai instead of taking her to the district hospital as advised by the ANM?

_____

_____

15. What are the key programme interventions that would have saved Chanchal.

_____

_____

Case Study III

Sulochana Gajanand Patel, 17 years old has been married for eight months. Since her marriage, she did not menstruate.

She started developing swelling of feet since four months for which was advised to go to Primary health centre for blood pressure, urine check, etc. Sulochana contacted the ANM only after she got swelling of the feet.

Her mother-in-law refused to take Sulochana to any insitution, as she herself has delivered 10 children and never seen a hospital. Two days later Sulochana had pain in the abdomen, difficulty in vision and was irritable. The mother-in-law and relatives thought it was due to evil spirits, so they sent for the person known for removing evil spirits. He arrived after two hours and performed the rituals for removing the evil spirits her. Suddenly the patient had fits. To stop the fit, they put lime, shoes and other items in front of her nose. But the fits continued for sometime. They went to call ANM who asked them to transfer her to a PHC. It was night time so they did not get transport. Next day morning they took her in a cloth stretcher to the primary health centre. She was found deeply unconscious, with high blood pressure and no urine was passed. There was swelling of the face and Sulochana's leg. The PHC doctor referred Sulochana to the District Hospital.

At district hospital she was treated for five days before Sulochana died.

1. What was the direct cause of death?

2. What were/was the underlying medical cause(s) of death?

3. What were/was the associated social and other factor(s) that lead to death?

4. What were the Sulochana's first symptoms?

5. What could have been done by the family to prevent the emergency?

6. What could have been done by the family to save Sulochana once the emergency occured?

7. Were there any opportunity to save the life of Sulochana? What were they?

8. What action could have been taken at the village level?

9. What action could have been taken at the Sub-centre or by health worker?

_____

_____

10. What action could have been taken at the Primary health Centre?

_____

_____

11. What action could have been taken at the first level referral services

_____

12. Who are the decision makers and influencers ?

_____

_____

13. What could have been done by sectors other than health to prevent this death?

_____

_____

14. What are your comments on the present system of referral?

_____

_____

15. What are the key programme interventions that would have saved Sulochana?

_____

_____

Case Study IV

Sumati, aged 31, died in KEM Hospital, Bombay. She died after delivering a bady. She had five children. Sumati never visited the sub-centre or primary health centre. Even though the ANM visited Sumati's village, she never contacted the ANM.

On 30 August 1989, Sumati delivered a baby. Within 24 hours she started bleeding heavily. So Sumati's relatives carried her to the primary health centre which was three kilometers away on a cloth hammock on their shoulders. But in the primary health centre, Dr. Karna was not present. So the relatives carried her to the next Primary health centre where they reached at 11.00 p.m. at night. Dr. Tikkar examined Sumati and advised them to go immediately to the district hospital as there was heavy bleeding and the primary health centre had no blood transfusion facility. The relatives took Sumati to the District Hospital. There was no blood available; nor were their any facilities to get the blood. So here again she was referred to Bombay. The relatives took her to the Railway Station where she delivered a dead baby. To save Sumati they went on KEM Hospital, Bombay. Sumati died within six hours of admission.

1. What was the direct cause of death?

2. What were/was the underlying medical cause(s) of death?

3. What were/was the associated social and other factor(s) that lead to death?

4. What were the Sumati's first symptoms?

5. What could have been done by the family to prevent the emergency?

6. What could have been done by the family to save Sumati once the emergency occured?

7. Were there any opportunity to save the life of Sumati? What were they?

8. What action could have been taken at the village level?

9. What action could have been taken at the Sub-centre or by health worker?

_____

_____

10. What action could have been taken at the Primary health Centre?

_____

_____

11. What action could have been taken at the first level referral services

_____

_____

12. Who are the decision makers and influencers?

_____

_____

13. What could have been done by sectors other than health to prevent this death?

_____

_____

14. What are the essential emergency services that are required at first level referral for obstetric care?

_____

_____

15. What are the key programme interventions that would have saved Sumati?

_____

_____

Case Study V

Saku Tanagi Gadge, 35 years old had four full term normal deliveries. She was admitted in the primary health centre as an emergency due to the inability of the dai and relatives, as well as the local doctor, to deliver her.

Saku contacted the ANM during the eighth month of this pregnancy. She was given iron folic acid tablet by ANM and asked to come for blood and urine examination. According to ANM, Saku never felt the need in all five deliveries so she did not go for investigation and ANC check up.

On 13 July 1990 she started labour pain at home. She was getting very strong pain but could not deliver so the relative went and called the dai Shantabai. Shantabai came and examined her by putting finger inside the birth canal without washing. Shantibai went and called private doctor who gave Saku an injection. After the injection Saku's pain increased and she was screaming with pain but could not deliver the baby. Then Shantibai told the relatives to take her to primary health centre. There was no transport available in the village so they carried her on the shoulder to primary health centre, walking for over four hours.

When she reached PHC Saku collapsed. The doctor incharge was not available in the primary health centre because he had gone for a meeting. The other doctor was on training leave. So the ANM, who accompanied the patient, asked them to go to the doctor in the district hospital.

Relatives requested that the primary health centre vehicle be given for transportation; but it was election time and the vehicle was not available.

Saku's condition further deteriorated and she died in the PHC without treatment. Post mortum revealed that the child was dead lying in the abdomen and uterus had ruptured tearing unirary bladder.

1. What was the direct cause of death?

2. What were/was the underlying medical cause(s) of death?

3. What were/was the associated social and other factor(s) that lead to death?

4. What were the first symptoms that Saku suffered?

5. What could have been done by the family to prevent the emergency?

6. What could have been done by the family to save Saku once the emergency occured?

7. Were there any opportunity to save the life of Saku? What were they?

8. What action could have been taken at the village level?

9. What action could have been taken at the Sub-centre or by health worker?

_____

_____

10. What action could have been taken at the Primary health Centre?

_____

_____

11. What action could have been taken at the first level referral services

_____

_____

12. Who are the decision makers and influencers?

_____

_____

13. What could have been done by sectors other than health to prevent this death?

_____

_____

14. Please comment on the ANM's role, and the support the system gave her.

_____

_____

15. What are the key programme interventions that would have saved Saku?

_____

_____

PART A

INTERVENTIONS FOR SAFE MOTHERHOOD

8.0 REDUCING MATERNAL DEATHS

Goal

Reduction of maternal mortality from the existing level of 400 per 100,000 live births to 300 in 1995 and 200 in 2000 AD.

Coverage

- Essential ante-natal and obstetric services to all pregnant women and essential obstetric care at village/sub-centre level ;
- Early identification of all complicated pregnancies
- Emergency obstetric care at first level referral centre to those with complications

Strategies

- ***Enumeration, registration and check up of all pregnant women***

- ***Improving services at village, sub-centre and PHC***

Diagnosis and management of all complicated cases will be conducted to the extend possible at village, sub-centre and PHC level in addition to providing tetanus toxoid immunization, giving prophylaxis and treatment of anaemia and services for birth spacing and timing.

- ***Organization of first level referral centres***

A first level referral centre is defined as a district or sub district hospital or community health centre, to which a woman identified prenatally as definitely having complications is referred, or to which a woman is usually sent when she is in serious difficulty or emergency in pregnancy, child birth or immediately after.

These centres are organized to deal with all obstetric emergencies specifically bleeding and obstructed labour. Community health centres (corresponding to block PHCs) and district/tehsil hospitals will be strengthened for first level referral. There are eight functions for these centres :

1. Surgical functions

   Caesarean section
   Laparotomy for repair of ruptured uterus
   Repair of high vaginal and cervical tear
   Surgical treatment of sepsis

   Removal of ectopic pregnancy presenting as acute abdomen
   Evacuation of uterus in uncomplicated abortion
   Amniotomy with/without I.V. Oxytocin infusion

2. Administer anaesthesia

3. Medical treatment of complications in pregnancy

   Treatment of shock and sepsis
   Control of hypertensive disorders of pregnancy and eclampsia
   Intravenous iron infusion etc.
   Treatment of congestive heart failure due to various causes, including severe anaemia

4. Blood replacement

   Blood grouping, typing, cross matching and transfusion.

5. Manual and/or assessment functions

   Manual removal of placenta
   Vacuum extraction
   Partograph etc.

6. Family Planning support functions

   Vasectomy and Tubectomy (Laproscopic and abdominal)
   Inserting IUD
   Norplant and other contraceptives

7. Management of complicated pregnancies / labour referred from other levels

8. Newborn care

   Resuscitation
   Thermal control
   Feeding
   Treating neonatal sepsis

In addition there must be Laboratory support - radiological and other facilities

Maternity homes or Dharamsalas where such referral cases can wait and receive supervision during last month of pregnancy.

Organization of Transport

If a woman develops an obstetric complication, her chances of survival and receiving appropriate treatment are excellent if she reaches the appropriate institution **in time.** The time gap often appears inadequate due to either lack of transportation (vehicle) or lack of good roads in rural areas. This gets further worsened due to lack of clear instructions to the community regarding where the patient should be taken. An advance community based transport plan should be made in every sub-centre and PHC area to transport women requiring emergency care.

9.0 ESSENTIAL CARE FOR ALL

A review of the association of "risk factors" with maternal mortality reveals that 50% of maternal deaths had one or more risk factors associated while the other 50% had no risk factors at all. "Risk factors" are therefore **not the best criteria** to give priority to a particular group in ante-natal or obstetric care. Essential care for all is thus critical to safe motherhood. In this section of the module, you will learn about various activities to be carried out for all pregnant women regardless of their risk status.

9.1 ANTE-NATAL CARE

o Early registration

You will ensure enumeration and early registration of all pregnant women by 12-16 weeks of their pregnancy.

o Ante-natal Check ups

You will ensure that a minimum of three ante-natal visits are made during pregnancy. These will be at -

20 weeks or as soon as pregnancy is known and registered,
32 weeks and
36 weeks or once during the last trimester preferably at least one month before delivery.

There are certain minimum activities you will have get your health workers to perform. These are :

At the first ante-natal visit and/or contact

- o register and prepare a mother and infant immunization card
- o take history to rule out too old (> 30 years) or too young (<20 years) primigravida and examine clinically to diagnose anaemia.
- o do an abdominal examination to detect lie, rule out associated general diseases, record blood pressure, weight, give IFA tablets, take weight and motivate for first dose of TT (can be done at sub-centre clinic)
- o give ante-natal advice on (i) diet, (ii) rest and (iii) danager signs (complications)
- o if there is history of passing worms, give mebendazole tablets (only in the second/third trimester)
- o motivate pregnant women to attend ante-natal clinic at least three times.

At the second and third visit/contact

- o specifically look for anaemia give IFA tablets and give mebendazole tablets if there is history of wom infestations (only in second/third trimester)
- o record blood pressure
- o motivate for 2nd dose of TT

- record weight and determine if there is adequate weight gain

Weight gain of more than 5 Kg in any month is an early warning sign for toxaemia - can be done at the sub-centre clinic

- reinforce diet, rest and inform about warning signs such as bleeding, loss of foetal movements, headaches, dizziness, blurred vision for which the pregnant woman should seek immediate help from health worker/ medical officer.

<u>During the third visit</u>

- your health worker will have to carry out all activities included above for the second visit except TT (if given earlier) and deworming
- enquire about the place of delivery and motivate for institutional delivery, remind the mother about the need to have the delivery conducted under the **five cleans** conditions.
- give a disposable delivery kit if your district has these available
- advise regarding preparation for labour including the five cleans during deliver, early initiation of breast feeding i.e. within 2 hours of birth of the baby.

9.2 MANAGEMENT OF ANAEMIA

Anaemia is one of the major health problems affecting women of child bearing age and children in the country. Anaemia in pregnant women is an important aggravating cause of maternal mortality. Apart from affecting the health of pregnant women, it affects the new born also. You will seek to prevent nutritional anaemia in mothers by giving them one tablet of iron and folic acid daily for a period of 100 days. The beneficiaries of the scheme are expectant and nursing mothers and women who have accepted family planning methods. All cases of anaemia are however required to be given therapy with higher doses of iron.

Goal

Reduction of iron deficiency anaemia in pregnant women

Coverage

Universal coverage (near 100%) of pregnant women with iron and folic acid.

The major problems related to the National anaemia prophylaxis programme has been poor reach and utilization of services and lack of a strategy that addresses additional needs of moderate and severe anaemic cases. There are two aspects of administration of iron and folic acid to pregnant women : prevention and control.

The anaemia control programme in this package will focus primarily on the pregnant women to reduce anaemia and thereby maternal mortality as well as to improve birth weight of babies. Every effort will be made to cover all pregnant women. The maximum impact of iron and folic acid supplementation is seen if all pregnant women are reached.

Specifically, the interventions for <u>pregnant women</u> are :

- All pregnant women will be given 1 tablet of iron and folic acid for 100 days.
- All pregnant women will be clinically examined for anaemia at the time of immunization/MCH session.
- Those found to be anaemic will be given two tablets of iron and folic acid for 100 days.
- Women diagnosed as severely anaemic by clinical assessment will be referred to medical officers at primary health centres.
- Women with a history of worm infestation will be dewormed during second and third trimesters.
- Dietary advice for consumption of adequate qtys. of iron-rich foods will be given.

Iron and folic acid (IFA) tablets will be given during the immunization session (mother-child protection session). In ICDS blocks, IFA tablets may be provided through ICDS functionaries with the coordination of the health worker.

There may be certain areas where IFA may not be effective due to heavy worm infestation. In such cases, whenever there is history of worm infestation in mothers or children, IFA tablets will be given after deworming.

9.3 PREVENT DEATHS DUE TO TETANUS

Goal

Maternal/Neonatal deaths due to tetanus will be prevented.

Coverage

Universal coverage of all pregnant women with 2 doses of tetanus toxoid; ante-natal care for 75% of pregnant women and 80% of deliveries conducted by at least a trained birth attendant.

Four major interventions for preventing maternal deaths due to tetanus are :

1. 100 percent coverage of pregnant women with 2 doses of tetanus toxoid.

2. Extensive information, education and communication efforts to promote safe deliveries at home level as well as correct obstetric practices in institutions i.e., 5 cleans.

   - clean **hands**
   - clean **surface**
   - clean **razor blade**
   - clean **cord tie**
   - clean **cord stump** (no applicant)

3. Community based surveillance for maternal and neo-natal deaths.

4. Involving trained traditional birth attendants(TTBAs) in districts with high maternal and infant mortality for clean home delivery practices; reaching out to families for improved care during birth wherever neighbours or relatives conduct deliveries.

A district approach will be adopted for preventing maternal deaths due to tetanus. Criteria for selection of districts will have an epidemiological basis where neo-natal tetanus mortality rates are high. Although, accurate district-wise information is not available, the review of immunization programme has shown that neo-natal tetanus mortality rates are highest where infant mortality rates are also high, infrastructure development is poor and the proportion of deliveries by untrained workers is high. Therefore, districts which have high vacancy rates of female health workers, along with a high proportion of deliveries will be selected for specific interventions related to maternal/ neo-natal tetanus mortality.

9.4 CARE AT BIRTH

Goal

To ensure clean delivery for all pregnant women and to refer immediately if any complication arises.

Coverage

From the existing level of 15%, all deliveries are to be attended by a trained birth attendant by 2000 AD with 80% of deliveries attended by trained attendants by 1995.

Normal deliveries can be conducted at home even in the absence of health staff provided it is conducted under full aseptic conditions. To ensure clean delivery the traditional birth attendants must be trained on 5 cleans :

- clean **hands**
- clean **surface**
- clean **razor blade**
- clean **cord tie**
- clean **cord stump** (no applicant)

These aspects must be emphasized in the messages for mothers and family members anticipating a home delivery.

The TBAs require refresher courses and continued supervision for conducting safe and clean delivery at home.

In order to help TBA follow the clean practices during delivery, she must be given disposable delivery kits which contain soap, plastic sheet, cotton/gauze pads, thread/ligature, new razor blade, and savlon or antiseptic solution.

While improving skills and quality of delivery care by TBA efforts must be made simultaneously to promote institutional deliveries.

All TBAs must be trained properly to refer all complicated cases at the right time and to the right place. It is crucial that a TBA must refer a case of bleeding prior to delivery or obstructed labour (labour pain for more than 24 hours), to a CHC or a District Hospital and not to a sub-centre or Primary Health Centre. It saves time and precious lives.

Post-natal care

After the delivery, mother must be given adequate rest, plenty of fluids to drink. She must be watched for any increased bleeding and deteriorating general condition. It is again important to reach within 2 hours a CHC or District Hospital where blood transfusion facilities exist just in case bleeding after delivery crosses normal limits.

9.5 BIRTH-SPACING AND TIMING

Goal

To increase the proportion of births spaced three years apart from existing levels of 30% by 1995 and 60% by 2000 AD; to decrease the proportion of births in women below 20 years from the existing level to less than 10% in 1995 and 2% in 2000 AD.

Coverage

Access to all couples to information and services for spacing and timing births from the existing level of 35% to 75% in 1995 and 100% by 2000 AD.

To increase the effective couple protection rate from the existing level of 46% in 1990 to 55% by 1995 and 65% by 2000 AD.

Birth spacing and timing of birth are amongst the most important determinants of maternal and childhood morbidity and mortality. The crucial issues requiring immediate attention in our country are :

- Early marriage and first pregnancy before 20 years (teenage) ;
- Birth interval less than three years ;
- Fourth or later pregnancies;
- Pregnancies after the age of 30 years ;

These issues can be addressed by educating the community and making spacing and other family planning methods readily available to them. Various spacing methods have received insufficient importance so far. Under the programme, birth timing and spacing of births will be given attention to improve the health of the mother and the child and also to prevent mortality amongst pregnant women and children.

BIRTH TIMING

Problem	Implementations for Health of		Action required
	Mother	Baby	
1. Pregnancy before 18 years of age	Mother physically & psychologically not ready for child birth and care. Higher maternal mortality due to obstructed labour. Anaemia	Higher LBW incidence Perinatal and infant mortality	Delay marriage after 18 years for girls. If married earlier, adopt spacing method.
2. Birth interval of less than 3 years	Higher incidence of Anaemia and infections	Higher IMR	Spacing method soon after child birth (breastfeeding not reliable for contraception)
3. Fourth or later pregnancy	Higher incidence of Anaemia, APH PPH	Higher IMR	Adopt terminal method as soon as family completed
4. Pregnancy after 35 years	Higher incidence of obstructed labour, APH, PPH, Anaemia	Increase in cogenital anomalies. Perinatal mortality	As above Greater care if pregnancy occurs.

Following strategies will be used to increase information on timing of births and spacing :

- o You will organise a massive communication campaign to provide information on the benefits of birth spacing and timing. Birth spacing will be positioned as a health measure for welfare of people rather than a demographic measure.

- o Training of medical and para medical personnel will include technical aspects of contraception as well as appropriate counselling to people required for the success of the programme.

- o At various health facilities including sub-centres, a variety of contraceptives will have to be offered. You will make special efforts to promote IUDs and oral contraceptives.

- o You will give emphasis on availability of contraceptives. You will ensure that supplies are available in every immunization session as well as during home-visits of health workers. In addition, all health facilities will have contraceptives available. Condoms should be available in every village at all times.

- o Organise appropriate education sessions during mothers' meetings and to adolescent girls and boys in schools and colleges.

- o You will also highlight protection offered by the use of condoms against Sexually transmitted diseases including AIDS.

- o Innovative ways for family life education will have to be designed for adolescents who are not in school.

- o Functional literacy programmes as well as ICDS, UBS and DWCRA programmes will include appropriate information. You will interact with block and district level managers of these programmes to ensure success of your programmes.

- o Coverage evaluation surveys will include information on birth spacing and timing so as to provide a system of tracking progress in this programme.

- o Education after secondary school and acquiring professional skills after school final to increase earning capacity for girls are other means of delaying marriage and motherhood as well as empowering women.

10.0 EARLY DETECTION AND MANAGEMENT OF COMPLICATIONS

Seriousness of complications determine the pregnancy outcome. There are few complications during pregnancy, delivery and during puerperium which if identified early can help prevent maternal mortality. As a medical officer you have learnt that pregnancy and delivery require minimal assistance and you only need to monitor that it is progressing well. You will have to ensure that during the ante-natal visit and during the intra-natal period, the health worker or the trained birth attendant look for these complications and take action as detailed below :

We get at least three opportunities to detect complications if any, during pregnancy. These are the three ante-natal visits. Although one can look for complications in high risk pregnancies, we also know that half of the complications arise in the so called "non-risk pregnancies". Therefore, the strategy under this programme is to educate all pregnant women and their family members during ante-natal contacts of the danger signs in pregnancy and ensure that they seek early help when any of the danger signs start appearing.

Training of DAIs, village health guides and Anganwadi workers will also help you in identifying the early danger signs in pregnant women during ante-natal visit or during labour. The health worker or the birth attendant will have to be educated by you to ensure that once a pregnancy with complication is identified, such a pregnant woman will have to be referred early to the appropriate level for immediate care. Depending on the complication identified, there may be only two hours to 7 days between life and death of the pregnant woman. Every minute is critical to the life of the mother. The table on the next page gives the average time between the onset of a complication and death in a pregnancy. The table also suggests the place or health facility to which such a pregnancy should be referred.

COMPLICATIONS DURING ANTE-NATAL, INTRA-NATAL AND POST-NATAL PERIOD

Complication	Average time from onset to death	Where to refer
1. Haemorrhage		
o APH	12 hours	} First referral
o PPH	2 hours	} level*
2. Rupture uterus	24 hours (1 day)	First referral level*
3. Eclampsia	2 days	PHC / CHC
4. Obstructed labour	3 days	First referral level*
5. Sepsis (after abortion / delivery)	6 days	PHC / CHC
6. Severe anaemia (CHF in labour)	2 hours to 1 day**	PHC

* First referral level facility is that which has the following :

- o A surgeon (Obstetrician & Gynaecologist)
- o An anaesthetist and anaesthesia equipment
- o Blood transfusion facilities

** During severe anaemia even the slightest bleeding during the third stage of labour or the exertion of second stage of labour can lead to mortality.

You will note from the above table that the sooner you diagnose a complication and send the pregnant woman to the appropriate health facility, the better are the chances of averting her death.

How will you or your worker or a birth attendant suspect any of these complications

10.1 HAEMORRHAGE

Ante-partum haemorrhage will be suspected when the pregnant woman starts bleeding from the vagina any time after the 28th week of pregnancy and before the birth of the child.

The bleeding may be **frank blood** or mixed with liquor amnii. There may or may not be pain or tenderness over the abdomen along with the bleeding. Sometimes, bleeding may not be revealed and can occur within the uterus. In such cases, the pregnant woman starts having pain of the abdomen and the abdominal girth increases.

No vaginal examination should be done at a health facility which does not have facilities for emergency surgery. At the peripheral level, the pregnant woman will have to be **transported immediately** to the first level referral centre. The patient may be transported in left lateral position. In case intra-venous fluids are available, a slow intravenous infusion may be started.
If it is a painful bleeding, give intramuscular injection Morphine 15 mg or Pethidine 100 mg IM one dose.

Post-partum haemorrhage is excessive bleeding (more than 500 ml) from the genital tract after the birth of the child. The haemorrhage may be immediate or primary, or if it occurs more than 24 hours after delivery, it may be known as secondary. When post-partum haemorrhage is seen every minute is very critical to the life of the patient. At the peripheral level, the vagina must be packed with sterile or clean gauze/cloth after removing products/membranes and ensuring that the uterus is not atonic. If it is an atonic uterus, apply external bimanual compression and give Injection Ergometrine.

If the bleeding still continues, you will have to ensure that the patient is transported immediately to a centre which has surgical and blood transfusion facilities. In case, such a facility is more than 2 hours away, the patient may be taken to another facility en-route where intra-venous fluids including plasma expanders (dextran) can be infused. Thereafter, if the patient is still bleeding, her vagina should be packed once again and the patient should be transported to the first level referral level with intravenous infusion on flow. The foot end of the patient should be raised during transport.

10.2 OBSTRUCTED LABOUR

Labour is said to be obstructed when there is no progress in spite of strong uterine contractions. This will manifest with failure of cervix to dilate or failure of the presenting part to descend in the birth canal. It is a serious condition and if untreated, can lead to fatality of both mother and foetus.

The earliest sign of impending obstruction during labour is the deterioration of the condition of the pregnant woman. She looks tired and anxious and behaves as if she is beginning to lose the ability to deliver and will not co-operate. In between the pains, she is unable to relax and her anxiety increases. The presenting part is often above or at the level of the pelvic brim. The membranes rupture early in labour because the presenting part is badly applied to the lower segment. The cervix may be not well applied to the presenting part. The liquor drains away and there is retraction of the placental site leading to reduction in the maternal blood flow to the placenta and eventually results in foetal death due to hypoxia. The pulse rate and temperature rise and the quantity of urine secreted diminishes and it becomes concentrated and deeply coloured.

In the first stage, dilatation of cervix should be progressive, although sometimes it is not rapid even in normal cases. Descent of the presenting part should also be continuous, especially in the second stage. Any failure of the progress of labour calls for careful abdominal and vaginal examination to exclude any possible cause of obstruction.

Obstructed labour undiagnosed in time can lead to rupture of uterus. A patient with obstructed labour should be referred immediately to the first level referral centre with surgical and blood transfusion facilities.

Before transporting a patient to the hospital, an intravenous infusion may be started if facilities are available.

10.3 RUPTURED UTERUS

Rupture of uterus usually occurs during prolonged labour. The causes of rupture of uterus could be :

* obstructed labour
* injudicious induction of labour
* intra-uterine manipulations
* a weak scar of uterus after a previous caesarean section

Rupture of uterus will be suspected, when there is lower abdominal tenderness, patient is in severe pain and at times in shock. Slight vaginal bleeding may also be associated. The presenting part may not be felt and at times fetal parts may be palpable through the abdomen very freely.

Such a patient requires immediate surgery and will be referred to the first referral centre where surgical and blood transfusion facilities are available.

10.4 ECLAMPSIA / TOXAEMIA (PRE-ECLAMPSIA)

You will suspect toxaemia (pre-eclampsia) in a pregnant woman when either of the following are observed :

* Systolic blood pressure is 140 mm Hg or more ,
* An increase in the weight more than 5 Kg. in a single month.

These two together are very good and early predictors of toxaemia in a patient. Such a patient requires further management by a medical officer. In this module, we will not discuss what management is to be given by the medical officer. This can be referred to in any standard text book.

Eclampsia may be suspected in a patient who is already having toxaemia or not having toxaemia if the following symptoms / signs are present :

* Visual problem, Blurring of vision
* Convulsions in a patient of toxaemia
* Vomiting / severe headache
* Severe epigastric pain

A patient of eclampsia will have to be referred to a first level referral centre and managed as per standard treatment for patients of eclampsia.

Keep the patient away from external stimuli such as noise, bright light and painful procedure.

During convulsions, there is considerable risk of hypoxia to the mother and foetus. The mother needs adequate ventilation and care should be taken to insert a spoon and prevent tongue falling behind and blocking airways.

Eclampsia cannot be treated at home or sub-centre. Patient of eclampsia will have to be taken to a Primary health centre with intravenous fluids facility or a first level referral centre.

10.5 SEPSIS (FOLLOWING ABORTION OR DELIVERY)

You will suspect sepsis in a patient who is pregnant if there is fever following abortion or delivery.

Sepsis following abortion

Usually sepsis following abortion is found when illegal / illicit attempts to terminate pregnancy have been made. There will be fever and increased pulse rate. Lower abdomen tenderness and pain is often found. There could be in addition foul smelling or purulent discharge from the vagina.

At home or at a village level, if there is fever more than 39° Celsius, the patient should be referred to the Primary Health Centre or hospital for antibiotic therapy and further management. Tablet paracetamol and cold sponges may be given to reduce temperature.

Sepsis following delivery (puerperal sepsis)

Puerperal sepsis is defined as rise of temperature to or above 38° C within 14 days of labour or miscarriage irrespective of the cause. The causes of puerperal sepsis include :

* retained piece of placenta/membrane
* birth canal infection
* urinary tract infection
* breast infection
* thrombophlebitis
* respiratory tract infection
* any other cause of pyrexia.

The earliest and most important sign of puerperal sepsis is fever. Fever may appear within 12 hours of delivery and only exceptionally later. The rise of temperature will be abrupt, occasionally accompanied by a rigor or it may be step-like taking several days to reach its maximum. Along with fever, the pulse rate increases and the patient feels hot with headache and backache.

Spread to the pelvic peritoneum will be suspected when lower abdominal pain and tenderness on examination of uterus and neighbouring areas is found. The patient may be very ill and would require immediate attention.

Management can be in the Primary Health centre. Antibiotic therapy with intravenous fluids therapy will have to be instituted. Sometimes, there may be collection of pus in the uterus or in the peritoneal cavity, in which case uterus or the peritoneal abscess should be evacuated surgically in a first level referral centre.

10.6 SEVERE ANAEMIA

Clinically severe anaemia is diagnosed when there is pallor and breathlessness on exertion. During early part of pregnancy, the pregnant woman requires two tablets of IFA every day for 100 days. In case, the pregnancy is already advanced, the patient will require intravenous iron therapy at the Primary Health Centre, or blood transfusion in a hospital facility with transfusion services.

During labour, pregnant women with severe anaemia may go into Congestive Heart Failure leading to death. Such patients require assistance at the PHC to cut short second stage of labour and decrease exertion during second stage of labour. Some patients may also require blood transfusion in which case they will be referred to the First level referral centre.

Anaemic women when they develop APH or PPH have greater risk of dying.

11.0 EMERGENCY CARE FOR THOSE WITH OBSTETRIC COMPLICATIONS

11.1 ANTEPARTUM HAEMORRHAGE (APH)

APH is any bleeding from the vagina occurring at any time after the 28th week of pregnancy and before the birth of the child.

There are three varieties of APH based on the cause of bleeding :

- o Accidental Haemorrhage or Abruptio Placentae
- o Placenta Previa
- o Incidental haemorrhage

Accidental Haemorrhage

Accidental haemorrhage or Abruptio placentae is due to the partial separation of placenta normally situated on the upper segment of the uterus. Maternal blood from the opened sinuses escapes and track down between the membranes and the wall of the uterus. If the blood escape at the cervix to vagina it is a "revealed accidental haemorrhage" and if it remains inside the uterine cavity it is concealed accidental haemorrhage". Direct injury or blow can separate placenta and lead to retro-peritoneal bleeding.

The exact cause is not established. Pre-eclampsia, essential hypertension and rarely chronic nephritis are associated with 25% of the cases.

Management in the Peripheral level

All cases of APH should be referred without any delay to the "first level referral" centre.

No vaginal examination should be done till the patient is in a place equipped for caesarean section if needed and facilities for blood transfusion exist. An intramuscular injection of Morphine 15 mg or Injection Pethidine 100mg IM may be given before moving the patient.

This part of the module is relevant for medical officers at primary health centres and community health centres only. A more detailed description will be found in standard text books of Obstetrics & Gynaecology

She is turned into Sim's left lateral position in order to prevent aggravating the hypotension caused by the weight of the gravid uterus on the inferior vena cava. Awaiting transport, a patient in shock may be started on an IV and connected to a plasma expander. But what she needs is liberal transfusion of blood. If already known matching blood group donor volunteers are available the medical officer must encourage them to accompany the patient till the first level referral centre. This is to avoid delay in blood transfusion just in case the required group of blood is out of stock.

Placenta Previa

It is a condition where the placenta is wholly or partly attached to the lower uterine segment.

The degree of encroachment onto the lower uterine segment is important because both treatment and prognosis are determined by it. Based on the position of placenta in the lower segment and its relation to the internal os there are four types. The actual determination of the types can be made only in a facility which has surgical, blood and anaesthesia services available.

Symptoms and signs

During the last trimester (occasionally earlier) patient notices slight bleeding from the vagina without any pain. These occur without evident cause, perhaps during sleep, but they may also follow hard exercise or coitus. Foetal heart sounds are usually normal. There are usually repeated slight "warning haemorrhages" before the large bout. During labour severe haemorrhage is inevitable as the cervix dilates. In the third stage of labour, there may be PPH because the placental site is larger than normal and lies on the lower segment which may not retract efficiently. Any cervical tear will bleed freely because of the increased vascularity.

On abdominal examination the fetal head may be high and freely mobile. There may be a breech presentation or oblique lie. All these are due to the placenta occupying the lower segment and preventing the head from entering the pelvis. There is no uterine tenderness unlike in accidental haemorrhage.

Hypertension and proteinuria are not found.

DO NOT DO A PER VAGINAL EXAMINATION till the patient has reached a place where a caesarean section can be done immediately if needed. (**Note**: If no transport facilities are available, per speculum examination may be performed to determine if membranes are seen, in which case amniotomy can facilitate fixation of the presenting part and arrest bleeding.)

Management - Transfer to first level referral centre

Injection Morphine 15mg intramuscular can be given before transfer of the patient. Haemorrhage and shock are the chief causes of death in placenta previa. Blood transfusion and caesarean section may be required to save the pregnant woman.

Incidental Haemorrhage - Transfer to first level referral centre

Haemorrhage due to a lesion of the cervix or vagina such as an erosion, a polyp or a carcinoma are called incidental haemorrhage in pregnancy. On gently passing a Sim's speculum and examining under good light, these causes can be established.

11.2 POST-PARTUM HAEMORRHAGE (PPH)

It is the excessive bleeding (more than 500 ml) from the genital tract after the birth of the child. The haemorrhage may be immediate or primary, or if it occurs more than 24 hours after delivery, it is described as secondary.

Primary postpartum haemorrhage

There are two possible sources of primary post partum haemorrhage, the placental site and lacerations of the genital tract.

Primary haemorrhage from the placental site

Some blood must escape (less than 200 ml) as the placenta separates. Further loss is normally prevented by the retraction of the uterine muscle fibres which surround the vessels in the wall of the uterus and compress them until intravascular thrombosis occurs.

Excessive bleeding occurs when -

- Ineffective contraction of uterus in the third stage of labour result in failure of complete separation and expulsion of placenta and adequate retraction of the placental site. (e.g. in prolonged labour, multipara with atonic uterus, over distended uterus with twins or hydramnios etc.)

- Third stage of labour is mismanaged e.g. if ergometrine injection has not been given at the end of the second stage or injudicious attempts to pull out placenta before complete separation

- Placenta is abnormally adherent (placenta accreta) or when placenta has a wider area of attachment including the lower segment which may fail to retract.

- Hypofibrinogenaemia is present associated with concealed accidental haemorrhage, amniotic embolism or retention of dead foetus in the uterus for some weeks.

Primary post partum haemorrhage from lacerations

Commonest sites of lacerations occurring during labour are either cervix or vagina. It is suspected when bleeding continues even after the expulsion of placenta and firm retraction of the uterus.

Signs and symptoms of PPH

Bleeding more than 500 ml and early signs of shock must alert the Medical Officer. Increase in pulse rate, fall in blood pressure, pallor and air hunger occurs early in a woman who is already anaemic in pregnancy. Rarely bleeding occurs into the cavity of an atonic uterus and it is detected by an abnormally high fundus of uterus on per abdominal palpation.

Management

Post partum haemorrhage is the fastest killer among all the causes of a woman undertaking the risk of child birth. The obstetrician must be very alert in detecting it early to save a precious life. A high index of suspicion is needed if normal events are delayed during second and third stage of labour.

If a TBA or Health Worker (F) attending the delivery suspects a PPH then the lady must be transported at the shortest interval to the first level referral centre for further management. But in case the patient has landed up at the PHC the medical officer may make an attempt to save her from death by the following quick steps of management.

- Start an intravenous line with 5% dextrose normal saline.
- Raise the foot end of bed
- Keep the patient warm and adequately covered
- Make her lie in the lithotomy position for assessment

If the placenta is undelivered :

Assess whether the placenta is separated or not. The fundus is rubbed gently, when it will usually contract.

(i) If placenta is separated :

Uterus will be felt as a firm rounded mass about 10 cm in diameter, at about the level of the umbilicus and movable from side to side. If these signs of separation are present there should be no difficulty in delivering the placenta by modified Brandt Andrews method. (Rubbing up a contraction and elevation of uterus with left hand flat on the abdomen and controlled cord traction with right hand after the separation of placenta). If the bleeding does not stop an intravenous injection of Ergometrine 0.5 mg is given (irrespective of whether she received the first dose of ergometrine after the delivery of the head of the baby or not).

If the uterus does not contract well in spite of the ergometrine bimanual compression is immediately performed. One gloved hand is inserted into the vagina and formed into a fist, which is placed in the anterior fornix above the cervix. The other hand is placed on the abdomen and pressed downwards onto the posterior wall of the uterus so that it is compressed between the two hands. This is an effective but temporary method of controlling uterine bleeding. Firm pressure must be maintained until the uterus is felt to contract.

(ii) If placenta has not separated

as revealed by vaginal examination or if the placenta expelled are incomplete (on physical examination) it has to be removed digitally under general anaesthesia. The patient has to be rushed to the first level referral centre.

Repeated or violent attempt to express the placenta by squeezing the uterus or pressing on it are unlikely to succeed and often produce shock.

If manual removal is to be performed it is best to withhold any further injection of ergometrine until after the removal of the placenta.

If placenta is delivered and still bleeding :

If the patient was brought bleeding after the expulsion of placenta and the uterus is well contracted examine the cervix with a speculum under good source of light. The blood in the fornices are mopped to visualise the cervix. If there is a profuse haemorrhage from a cervical tear involving a branch of the uterine artery, this can be temporarily controlled by clamping the highest part of the tear with a sponge holder until the patient can be taken to the operating theatre.

Bleeding from tears of the lower vagina, perineum or vulva should be controlled by pressure until the tear is sutured under local anaesthesia.

If there are no tears and there is bleeding, give 5 units of Oxytocin and 0.2 mg of Ergometrine intramuscular injection and transport the patient fast to the first level of referral centre.

Secondary post partum Haemorrhage

This occurs more than 24 hours after delivery of the child, often starting between 5th and 10th days. Commonest cause is retention of a piece of placenta and it is frequently complicated by intrauterine infection.

Other causes of secondary bleeding are separation of an infected slough in a cervical or vaginal tear or in a lower segment caesarean wound.
Management is exploration and evacuation under general anaesthesia. This must be done at the first level referral centre.

11.3 OBSTRUCTED LABOUR & RUPTURE OF THE UTERUS

Labour is said to be obstructed when there is no progress in spite of strong uterine contractions. This may be shown by failure of the cervix to dilate or failure of descent the presenting part to descent through the birth canal. It is a most dangerous condition if it is untreated, and can then be fatal to both mother and fetus.

Causes of Obstructed labour

The space in the bony canal of the mother is either too small or too distorted to permit easy passage of the head of the baby during labour.

If well fed, most women attain their genetically determined maximum stature at about 18 years with growth of bony pelvis ceasing by 21 years. With poor nutrition and recurrent infections like, diarrhoea, measles, childhood tuberculosis, malaria etc. growth in stature will be slow and often result in stunting.

Obstructed labour may arise from maternal or fetal conditions, or both.

Maternal conditions

- Contraction or deformity of the bony pelvis
- Pelvic tumours
- Uterine fibromyomata
- Ovarian tumours
- Abnormalities of the uterus or vagina (Rare)

Fetal conditions

- Large fetus.
- Malposition or malpresentation
- Persistent occipito-posterior or transverse position
- Breech presentation
- Mento-posterior position
- Brow presentation
- Shoulder presentation
- Compound presentation and
- Locked twins (Rare)
- Congenital abnormalities of the fetus (rare)

Some of these causes can be detected during pregnancy so that early treatment is possible, or a plan of action can be made before labour. The effects of obstructed labour if it is left untreated is given below :

Symptoms and signs of obstructed labour

The early detection of possible obstruction in labour is important, for if labour is allowed to progress to the point of absolute obstruction the death of the fetus is almost certain and the life of the mother is endangered. In a primigravida complete obstruction leads within 2 or 3 days to a state of uterine exhaustion or secondary hypotonia; any relief which this gives to the mother and fetus is only temporary. In a multigravida obstruction becomes established much sooner and progressive thinning of the lower segment may lead to uterine rupture in less than 24 hours.

The earliest sign of impending obstruction is a deterioration in the patient's general condition. She looks tired and anxious and behaves as though she is beginning to lose her ability and will to cooperate. Between the pains she seems unable to relax and her anxiety increases.

The presenting part is often above or at the level of the pelvic brim. The membranes rupture early in labour because the presenting part is badly applied to the lower segment. The cervix may not be well applied to the presenting part. The liquor drains away and there is retraction of the placental site, which causes reduction in the maternal blood flow to the placenta, and eventual fetal death from hypoxia.

In late obstruction the patient's pulse rate and temperature rise. The quantity of urine secreted diminishes and it is concentrated and deeply coloured. Ketone bodies are present in the urine and acetone can also be smelt in the patient's breath.

The possibility of obstructed labour should be suspected when labour fails to progress. In the first stage dilatation of the cervix should be progressive, although sometimes it is not rapid even in normal cases. Descent of the presenting part should also be continuous, especially in the second stage. Any failure in the progress of labour calls for careful abdominal and vaginal examination to exclude any possible cause of obstruction particularly in the case of previously undiagnosed disproportion or malpresentation.

If the diagnosis of obstruction is missed for a time the dangerous condition of over-retraction of the uterus (generalized tonic retraction) may occur. In normal labour some retraction of the upper segment persists after each contraction, and the upper segment becomes slightly shorter and thicker, while the lower segment becomes stretched and thinner. If the fetus is unable to descend because of obstruction, the total length of the uterine cavity must remain constant, so that as uterine contractions continue progressive retraction causes abnormal stretching and thinning of the lower segment. The line of junction of the upper and lower segments becomes very evident and is known as the retraction ring of Bandl. It may become so high in the uterus that it can be seen or felt on abdominal examination. Eventually rupture of the lower segment occurs.

In advanced obstructed labour the uterus is found on abdominal examination to be moulded to the shape of the fetus. It feels hard all the time and does not relax. It is tender to palpation and Bandl's ring may be evident. Fetal parts are easily felt and the fetal heart sounds are absent. The presenting part is fixed at the level of obstruction.

On vaginal examination the vagina is found to be oedematous and feels hot and dry. The oedematous cervix is only loosely applied to the presenting part. If the head is presenting there will be a large caput succedaneum and extreme moulding of the skull. The presenting part is tightly fixed, and even under anaesthesia cannot be pushed upward without danger of causing uterine rupture. If there is a shoulder presentation the oedematous arm of the fetus will have prolapsed, with the hand projecting from the vulva.

Management

Excessive retraction of the uterus should never be allowed to develop. The cause of the obstruction should have been discovered during pregnancy or in early labour, such women should not be delivered at home. When tonic retraction is present the fetus is certainly dead and the aim of treatment is to deliver the mother immediately by the safest possible method. Intrauterine manipulations are very liable to cause rupture of the abnormally thin lower segment. Internal version is particularly dangerous. Refer the case immediately for a caesarean section.

Rupture of the uterus

It usually occurs during labour, although it occasionally also happens during the later weeks of pregnancy.

Causes

During pregnancy the only common cause of rupture of the uterus is a weak scar after previous operations on the uterus. The higher the scar is placed on the uterus the greater is the risk. The most dangerous scar is that of 'classical' Caesarean section; this is more dangerous than a hysterotomy scar. Rupture of a lower segment Caesarean scar is uncommon during pregnancy, and rupture of a myomectomy scar or those following perforation of the uterus with a curette or cannula are rare. Rupture of the uterus during pregnancy has also followed a direct blow on the abdomen.

During labour rupture may be caused by :

- The injudicious use of oxytocic drugs.
- Obstructed labour. The rupture may be spontaneous especially in multi-gravida or follow manipulations carried out for the relief of the obstruction.

- A weak scar in the uterus after Caesarean section, or in rare instances after hysterotomy, myomectomy or perforation of the uterus with a curette or cannula.

- Intrauterine manipulations, such as internal version or manual removal of an adherent placenta.

- Forcible dilation of the cervix. Rarely, a cervical tear in a normal delivery may extend up into the body of the uterus.

- Degeneration of uterine muscle, which is most likely to occur in multigravida.

Symptoms and signs

Rupture through a uterine scar :

- History of the previous operation and the scar in the skin (a low transverse incision may be hidden by pubic hair). Rupture during pregnancy may be so gradual that the symptoms may be very slight at first, and the description 'silent rupture' has been applied to these cases.

- Abdominal pain (which may be wrongly attributed to the onset of labour).

- More severe pain and shock occur (if the rupture becomes complete and part of the uterine contents are extrude into the peritoneal cavity.

Rupture of a scar more often occurs during labour, and the scar gives way more suddenly than during pregnancy, so the symptoms are more dramatic, with severe pain and shock. The possibility of rupture of the scar should always be considered if a patient who has had a Caesarean section suddenly complains of severe pain during labour which is not synchronous with the uterine contractions.

Spontaneous rupture during obstructed labour. Prolonged labour or violent uterine action almost without intermission between the pains makes the patient exhausted before the rupture occurs. There may be signs of disproportion or of a malpresentation such as a transverse lie. At the moment of rupture the patient cries out and complains of a sharp pain in the lower abdomen. Soon after the rupture she presents signs of shock, with pallor and sweating. The pulse becomes thready and rapid and the blood pressure falls. With an incomplete tear the signs of shock may not be so severe.

Slight vaginal haemorrhage is usually present. On abdominal examination there is marked tenderness. The presenting part may not be felt unless the head is impacted in the pelvis. If the fetus is completely extruded into the peritoneal cavity uterine contractions may cease, but in other cases often continue. With complete extrusion the fetus may be felt in the abdominal cavity with the retracted uterus beside it.

Extensive cervical lacerations. They are usually produced with the forceps at a difficult delivery, especially if the cervix is not completely dilated, but they seldom extend far enough to open the peritoneal cavity. Brisk external haemorrhage may occur. The uterus is empty and firmly retracted and the tear can be confirmed by visual examination. For this effective retractors and the help of an assistant will be required.

Rupture caused by oxytocic drugs. Rupture of the uterus has followed the administration of oxytocin before the delivery of the child particularly when there was some obstruction. The risk is much greater in multipara and when oxytocin is given intramuscular.

Treatment

Prevention. Disproportion must be recognized early, and labour must not be allowed to continue to the stage of obstruction. An oblique lie must be corrected early but if the shoulder has become impacted, versions should not be attempted: Caesarean section is the correct treatment.

The cervix must not be forcibly dilated and forceps must not be applied unless it is fully dilated. Manual removal of the placenta must be carefully performed, with an external hand guarding the fundus.

A patient who has had a Caesarean section, hysterotomy or extensive myomectomy must be delivered in a hospital where all obstetric facilities are available.

Treatment after rupture has occurred.

A. At Primary Health Centre (if the patient happens to arrive at PHC) :

- Give Morphine injection
- Start intravenous glucose solution
- and TRANSFER THE PATIENT IMMEDIATELY to first level referral centre.

B. At first level referral centre (for your information) :

Before operation the general condition of the patient must be improved as much as possible by blood transfusion and intravenous glucose solution.

If the rupture is complete laparotomy is always necessary.

Many cases of uterine rupture during obstructed labour are best treated by hysterectomy, as efficient suturing of bruised and ragged tissues may be impossible.

Wide spectrum antibiotics are given, and paralytic ileus is treated by giving only intravenous fluids and maintaining gastric aspiration until bowel sounds reappear.

11.4 PRE-ECLAMPSIA & ECLAMPSIA

Weight gain

The weight gain during the first trimester is minimal. After 12th week there is an average weight gain of about 0.5 kg per week. An increase of more than 1 kg weight gain per week should arouse the suspicion of pre-eclampsia. At the workers' level, a weight gain of more than 5 Kg during one month is an early indicator suggesting pre-eclampsia.

Blood pressure

Ideally the blood pressure before pregnancy must be known to assess the changes due to conception. Mostly 140/90 mm is the diagnostic level for pre-eclampsia and at 160/110 she might develop eclampsia. When blood pressure rises abruptly the patient may complain of severe and persistent frontal headache and may vomit. For diagnosing toxaemia, an increase of more than 30 mm of Hg in systolic pressure or an increase of more than 10 mm. of Hg in diastolic pressure will be treated as a danger sign requiring referral.

Management of Pre-eclampsia

A patient with weight gain of more than 5 Kg. in one month or an increase in systolic pressure of more than 30 mm Hg or diastolic pressure increase of more than 10 mm. Hg. or a single reading of blood pressure of more than 130/80 mm Hg may be managed at home and reviewed after 1 week.

Home management

- Complete bed rest for one week
- No extra salt
- No restriction on fluid intake
- Tab Phenobarbitone 30 mg twice a day

BP above 140/90 mm Hg or a rise of 20 mm over the diastolic BP recorded at the first trimester visit needs admission and bed rest.

The aim of management of a patient with toxaemia is to obtain a live baby as mature as possible while controlling BP so as to avoid eclampsia, cerebral haemorrhage and accidental APH.

Diazepam should not be used for mild cases as it can have depressant effect on the baby if born premature. However, it is useful sedative in post partum eclampsia and in control of convulsions in severe eclamptics.

Though hypotensives act at the expense of placental blood flow and function, severe

preeclampsia or eclampsia may need potent anti hypertensive drugs. The health worker female must visit daily and check BP.

Imminent eclampsia

If the situation is worsening i.e. diastolic BP remains above 100 mm Hg in spite of bed rest or if proteinuria persists and the gestation has crossed 36 weeks labour should be induced.

Keep the patient away from external stimuli such as loud noise, bright lights and painful procedures. These are liable to trigger off a fit.

Eclampsia

Characterized by the occurrence of major epileptiform convulsions in a pre-eclamptic patient. Post partum eclampsia is usually less severe than ante partum or intrapartum eclampsia. The mortality varies with the number of fits and the quality of treatment and the speed with which it is made available.

Eclamptic seizure has got four stages, the aura, the cry, the tonic and the clonic phase. Aura is usually visual flashes of light and spots before the eyes.

During the convulsions there is considerable risk of hypoxia to the mother and foetus, inhalation of vomitus, cerebral haemorrhage, accidental separation of placenta, disseminated intravascular coagulation and renal necrosis.

Management at PHC - Sedate and refer to first level referral centre.

Sedation is by :

1. Inj. Pethidine 100 mg IM
   or
   Inj. Phenobarbitone 300 mg IM
2. Inj. Chlorpromazine 25 mg in 20ml of 5% Dextrose slow I.V.
   and then
   Inj. Chlorpromazine 50 mg IM
   Inj. Promethazine 25mg IM

- Put airway in the mouth to prevent injury during fit.
- Suction with mucus catheter on the way.
- Send Health Worker (F) with the patient and also give a referral note to the obstetrician.

11.5 PUERPERAL SEPSIS

Puerperal pyrexia was defined as a rise of temperature to or above 38 °C (100.4$_o$F) within 14 days of labour or miscarriage irrespective of the cause.

Aetiology

When the placenta separates from the uterine wall a raw area is left which may be regarded as an extensive but superficial wound. As a result of delivery, the cervix is occasionally torn, the fourchette is commonly torn in first confinements, and sometimes the perineum also. These wounds may become infected. It is a common risk with

(a) Anaemia
(b) Traumatic delivery
(c) Intrauterine manipulation
(d) Prolonged labour
(e) Antepartum or post partum haemorrhage.

Patients and attendants suffering from colds and sore throats are liable to harbour haemolytic streptococci or staphylococci in their noses and throats, but a small proportion of healthy individuals are carriers.

The incidence of carriers of resistant strains of staphylococci among hospital staff has now risen greatly, and these resistant strains are harboured in dust and bedding. Staphylococci may colonize the umbilical stump of the newborn child, and organisms from this site may spread to other infants in the nursery. Infection with penicillin-resistant strains of staphylococci is not only of importance in puerperal sepsis, but also in breast infections, and danger to the newborn.

Depending on the spread of infection three degrees of severity are recognized :

In the mildest cases the infection remains localized to the birth canal, in perineal, vaginal or cervical lacerations or at the placental site.

Direct spread of infection may take place from the vagina or cervix into the pelvic cellular tissue to cause pelvic cellulitis; infection may spread from the uterine cavity to involve the Fallopian tubes and pelvic peritoneum, giving rise to acute salpingitis and pelvic peritonitis.

When the organisms are particularly virulent, as in the case of the haemolytic streptococcus group A, the infection may involve the general peritoneal cavity to cause a general peritonitis, or spread into the blood stream to produce septicaemia. The patient rapidly becomes acutely ill from the effect of toxins formed by the organisms, but the local inflammatory response at the site of entry of the organisms in the birth canal may be minimal, and a perineal laceration, for example, may look quite clean.

Symptoms and signs. The earliest and most important sign of puerperal sepsis is fever. The fever may appear within 12 hours of delivery, more often within 24 hours, and only exceptionally later. The rise of temperature may be abrupt, occasionally accompanied by a rigor, or it may be step-like, taking several days to reach its maximum. Coincidentally with the fever the pulse rate is raised and the patient feels hot, with headache and backache.

Spread to the pelvic peritoneum is shown by lower abdominal pain and tenderness on examination of the uterus and adnexa. Pelvic cellulitis causes persistent pyrexia and a mass to one or both sides of the vagina and uterus which may take several weeks to resolve.

In cases of general peritonitis the patients are severely ill with a rapid thready pulse, abdominal pain and distention, vomiting and diarrhoea. There is generalized tenderness and few, if any, bowel sounds. The fever is usually persistently high, but in the very worst cases, and terminally, it may be slight.

In septicaemia, however, rigors are common with continuous high fever. The patients are very ill and there may be no localizing signs. A high vaginal swab and blood culture are of paramount importance in diagnosing these cases.

Diagnostic examination.

In every case a general clinical examination should be made, including the throat, chest, breasts, abdomen, renal angles and legs. Involution of the uterus may be delayed and it is often tender on abdominal examination. The perineum should be examined to see if any lacerations or an episiotomy are infected. The lochia may be purulent and foul-smelling, when coliforms and anaerobic streptococci are commonly found. If the severity of the illness or the type of fever leads to suspicion of septicaemia blood is taken for culture, preferably when the temperature is at its height or during a rigor. Several blood cultures are sometimes needed to establish a diagnosis.

Prevention

Aseptic precautions during delivery
Hand washing and cutting nails before conducting delivery
Avoiding too many superfluous vaginal examinations
Cleaning instruments with cold disinfectants and boiling before use
Prophylactic antibiotics for premature rupture of membranes (more than 24 hours duration)

Management

External vulval douches useful.
DO NOT give vaginal douches
Remove stitches of infected perineal wound
Give broad spectrum antibiotics like Cotrimoxazole, Ampicillin, Cephalexin, etc.
IV fluids for very ill patients
Close monitoring of pulse, blood pressure and temperature
Refer if uncontrolled or if infected pus has to be surgically drained and blood transfusion has to be given or retained placental bits is to be removed by curetting.

11.6 ABORTION - BLEEDING AND SEPSIS

Deaths due to complications of illegal abortions have remained among the most intractable causes of maternal mortality in many countries. Bleeding and sepsis are the major lethal complications after abortion. This is more common in the hands of unqualified people who conduct abortion secretly.

Traditions, culture and religious faiths do not support inducing abortions. But women do have pregnancies that they refuse (for whatever reasons) to carry to term. Then they will resort to illegal and secretive sources for an abortion with its consequent ill effects on the mother.

Even access to modern contraceptives does not obviate the demand for induced abortion though it can reduce it. This is because no method of contraception is perfect. Still, major intervention of reducing abortion revolves around birth spacing and timing. Health education, oral contraceptives IUCD and propagation of condom usage are the indirect measures to reduce the number of illegal abortions.

Clinical assessment

History of missed periods and illicit attempts to terminate pregnancy.
Fever and increased pulse rate.
Per abdomen-tenderness, and a mass may be present
Speculum examination to rule out injury to fornices and cervix and presence of foreign body.

Gentle vaginal examination to note the size and position of uterus, condition of os, and to check if there is any tender adnexal mass.

Management in PHC

Correct shock with IV fluids.

Start on antibiotics with broad spectrum coverage plus intravenous Metronidazole.

Inj. Pethidine 50 mg IM, if pain is severe.

Paracetamol for fever.

As soon as stabilized, transport the patient to first level referral centre.

TABLE I

INTERVENTIONS FOR SAFE MOTHERHOOD

Cause of Death	Interventions	List of Activities	Village	Sub-Centre	PHC	1st Level ref.centre
1. ABORTIONS	Organise birth spacing & timing programme (using pills, IUCD and condoms)	Train personnel for:				
		- Health information	+	+	+	+
		- Distribution of pills	+	+	+	+
		- Insertion of IUCD	0	0	+	+
		- Promotion & guidance in condom usage	+	+	+	+
		Supply:				
		- Pills	+	+	+	+
		- IUCD	0	0	+	+
		- Condoms	+	+	+	+
		Communications	+	+	+	0
2. SEPSIS	1. Safe Delivery	Training and Service Delivery				
		- Home deliveries conducted by HW(F), TTBA's with sterile delivery kits & sterile techniques for low-risk cases.	+	+	+	0
		- Hospital deliveries - Forceps	0	0	+	+
		- Vacuum	0	0	+	+
		- Caesarean	0	0	0	+
	2. Treatment of puerperal sepsis	Cotrimoxazole 2 BD x 3 days Ampicillin 250 mg QID x 3 days If still febrile after 3 days - refer	+	+	+	0
		Laboratory diagnosis and appropriate antibiotics and treatment.	0	0	0	+
	3. Prevention of illegal abortion	Health Education	+	+	+	+
3. BLEEDING	1. Management of anaemia in pregnancy	Service Delivery				
	- Prophylaxis	- In prophylaxis of anaemia by				
		a) Distribution of iron & folic tablets	+	+	+	+
		b) Dietary advice	+	+	+	+
		c) Advice on birth spacing	+	+	+	+
		d) Deworming	+	+	+	+
	- Diagnosis	By a) Clinical Examination	+	+	+	+
		b) Haemoglobin estimation by haemoglobinometer	0	0	+	+
		c) Peripheral blood film examination	0	0	+	+
	- Treatment	a) Treatment by oral iron and folic acid for mild degree of anaemia (e.g. above 10 gm)	+	+	+	+
		b) Injectable iron	-	-	+	+
		c) Blood transfusion	-	-	-	+
	- Treatment of concomitant infection	Antihelminthics &	+	+	+	+
		Antimalarials when required	+	+	+	+

+ = Yes o Nil

Cause of Death	Interventions	List of Activities	Village	Sub-Centre	PHC	1st Level ref.centre
	2. Recognition of cases at risk of post-partum haemorrhage	- Training of health personnel to spot risk cases	+	+	+	+
		- Referral of risk cases for hospital delivery	+	+	+	O
		- Referral for sterilization in grand multiparous women.	+	+	+	O
	3. Injection Ergometrine	As a first aid treatment for bleeding	O	+	+	+
	4. Blood Transfusion	Training and service delivery for				
		a) Grouping and cross matching blood	O	O	O	+
		b) Collecting donor's blood	O	O	O	+
		c) Storage of blood	O	O	O	+
		d) Transfusion	O	O	O	+
		Screening donors for diseases transmissable by blood e.g. malaria, HBV infection, HIV infection	O	O	O	+
		Referral & transportation of cases with bleeding to first level referral centre	+	+	+	O
	5. Surgical intervention when required	Training and Service delivery for surgical intervention.	O	O	O	+
4. HYPERTENSIVE DISORDERS OF PREGNANCY	Early Detection	Training of health personnel for early detection with				
		a) Abnormal weight gain with regular weighing of mothers	O	+	+	+
		b) BP measurements	O	+	+	+
		c) Detection of proteinuria	O	O	+	+
		d) Detection of pitting oedema	+	+	+	+
	Referral to hospital treatment	- Health Education	+	+	+	+
		- Advice on salt-restricted diet & rest	+	+	+	+
		- Referral & transportation - Training & service delivery of health personnel	+	+	+	+
		- Treatment of mild cases	O	O	+	+
		- Treatment with careful maternal and fetal monitoring	O	O	O	+
5. OBSTRUCTED LABOUR	Anticipation and referral	Training health personnel to recognize cases at risk of obstructed labour e.g. malpresentations, abnormal lie.	+	+	+	+
		Referral & transportation to hospital	+	+	+	O
	Early diagnosis & operative intervention with blood transfusion if needed	Training and service delivery: - Provision of resources and upgrading of facilities for operative intervention and expert care	O	O	O	+

Education is empowerement. Every girl and boy must be helped to complete at least primary education in school. This will facilitate attainment of good health. In this endeavour all of us can contribute and make a difference.

You can :

* ask every family you meet during your health work, whether their children are in primary school;

* persuade them to send all their children including girls, to attend and complete primary school, if they are not in school;

* identify the primary school teachers of the villages covered by you;

* facilitate communication between the family and the school teacher whenever possible;

* encourage all functionaries working with you to actively promote school attendance and completion of primary school; ask them regularly, what they have done;

* include a panel/discussion on primary education whenever you organize a health exhibition/camp.