

# CHILD HEALTH

## ESSAY

- Define infant mortality rate.
- What are the factors influencing infant mortality in India.
- What are the measures taken to reduce infant mortality in India.

**Definition:** Infant mortality rate (IMR) is defined as "the ratio of infant deaths registered in a given year to the total number of live births registered in the same year; usually expressed as a rate per 1000 live births.

### *Causes*

Neonatal mortality (0-4 weeks)	Post-neonatal mortality (1-12 months)
<ul style="list-style-type: none"><li>➤ Low birth weight and prematurity</li><li>➤ Birth injury and difficult labour</li><li>➤ Sepsis</li><li>➤ Congenital anomalies</li><li>➤ Hemolytic diseases of newborn</li><li>➤ Conditions of placenta and cord</li><li>➤ Diarrhoeal diseases</li><li>➤ Acute respiratory infections</li><li>➤ Tetanus</li></ul>	<ul style="list-style-type: none"><li>➤ Diarrhoeal diseases</li><li>➤ Acute respiratory infections</li><li>➤ Other communicable diseases</li><li>➤ Malnutrition</li><li>➤ Congenital anomalies</li><li>➤ Accidents</li></ul>

### *Factors affecting infant mortality*

#### **Biological Factors**

- **Birth weight:** Low birth weight (<2.5kg) and high birth weight (>4kg) babies are at special risk.

- **Birth Order:** Highest mortality seen usually in first born and lowest among those born second. Mortality escalates after 3rd born.
- **Birth Spacing:** Repeated pregnancies increase infant mortality. They cause malnutrition and anemia in the mother, predispose to LBW.
- **Age of Mother:** IMR are greater when the mother is either very young (below 19 years) or very old (over 30 years).
- **Multiple Births:** Due to greater frequency of LBW in multiple births, Infants born in multiple births are more prone than single births.
- **Family Size:** IMR increases with family size as diarrhoea, malnutrition and respiratory infections increase with family size.
- **High fertility:** High fertility and high IMR go together.

### **Economic Factors**

- **Socio-economic status:** The availability and quality of health care and nature of the child's environment

### **Cultural and Social Factors**

- **Breastfeeding:** Early weaning and bottle-fed infants living under poor hygienic conditions are more prone to die than breast-fed infants living under similar conditions.
- **Early Marriages:** Baby of teenage mother has the highest risk for neonatal and post- neonatal mortality.
- **Sex of the child:** In many families, the birth of a female child is unwelcome.
- **Quality of Mothering:** Better quality educated mothers reduce IMR
- **Quality of Healthcare:** Inadequate prenatal care and infrequent attendance at delivery.
- **Broken families:** IMR tends to be high where the mother or father has died or separated.

- **Brutal habits and customs:** Depriving the baby of the first milk or colostrum, frequent purgation, branding the skin, application of cow dung to the cut end of umbilical cord etc.
- **The Indigenous Dai:** The untrained midwife is usually an illiterate person with no knowledge of hygiene.
- **Bad environmental sanitation:** Lack of safe water supply, poor housing conditions, bad drainage, overcrowding and insect breeding, all increase the risk of infant mortality.

### *Preventive and Social Measures*

- ***Prenatal nutrition:*** An improvement of maternal nutrition, poor women were fed an extra 500kcal and 10g protein during the last 4 weeks of pregnancy. Infant birth weight increased by 300g. Food supplementation programs during pregnancy by ICDS should be ensured.
- ***Prevention of Infection:*** By Universal immunisation programme; children are protected against 9 vaccine preventable diseases and pregnant women with tetanus vaccine is recommended to prevent neonatal tetanus.
- ***Breast-feeding:*** Promoting breastfeeding brings safeguard against GI and Resp infections and PEM.
- ***Growth Monitoring:*** All infants should be weighed periodically and their growth charts maintained. These aid as a screening method of early malnutrition.
- ***Family Planning:*** Spacing of births contribute to reduced IMR
- ***Provision of Primary health care:***
  - All personnel involved in maternity care (from dais to obstetricians) should work together as a team
  - Pre-natal care should be done to detect high-risk mothers and hospitalize them.
  - "Special care baby units" must be provided for all babies weighing less than 2kg.

- **Education:** It plays a major role in the decline of infant and child mortality. Women with schooling tend to marry later, delay pregnancies and are more likely to practice family planning.
- **Improved sanitation**
- **Socio economic development**

**Sumitha had delivered a term baby of birth weight 2kg in a PHC. As a medical officer how will you assess the health and provide immediate neonatal care.**

1)Observe the skin: cyanosis of lips and skin; jaundice; pallor; generalized erythema

2)Check the babies vitals

- Heart rate: should be 100-160 beats per minute
- Respiratory rate: should be 30-60 breaths per minute
- Body temperature for temperature instability

3)Assess the **APGAR** score: Taken at 1 minute and again at 5 minutes after birth

- Appearance (color)
- Pulse (heart rate)
- Grimace (reflex response to stimulation)
- Activity (muscle tone)
- Respiratory effort (breathing difficulty)

Sign	Score		
	0	1	2
Color	Blue, pale	Body pink, extremities blue	Completely pink
Heart rate	Absent	Slow (below 100)	Over 100
Reflex response	No response	Grimace	Cry

Muscle tone	Flaccid	Some flexion of extremities	Active movements
Respiratory effort	Absent	Slow irregular	Good crying
Total score = 10	Severe depression 0-3	Mild depression 4-6	No depression 7-10

### **Immediate neonatal care**

- ***Clearing the airway***: Airway should be cleared from mucus and other secretions by positioning the baby with his head low assisted by gentle suction.
- ***Care of the cord***: cord should be cut using sterilized instruments and tied when it stops pulsating.
- ***Care of the eyes***: Before eyes are open, the lid margins should be cleaned with sterile wet swabs and instill a drop of freshly prepared silver nitrate solution to prevent gonococcal conjunctivitis.
- ***Care of the skin***: Drying the baby with clean cloth to remove vernix, meconium and blood clots and wrapped in dry clean cloth from head to foot. First bath preferably after a week.
- ***Maintenance of the body temperature***: immediately after birth the child is quickly dried with a clean cloth and wrapped in warm cloth and given to mother for skin-to-skin contact and breast feeding.
- ***Breast feeding***: Should be initiated within an hour of birth. Colostrum; the first milk contains high concentration of protein and anti-infective factors protect the baby from respiratory and diarrheal diseases.

### **As the baby is 2 kg provide:**

- Kangaroo mother care
- The intensive care comprises of:
  - Incubatory care: that is, adjustment of temperature, humidity and oxygen supply;

- Feeding: Breast-feeding is rarely possible as the baby cannot suck. breast milk feeding by nasal catheter;
- Prevention of infection

### **NEONATAL SCREENING**

- Phenylketonuria
- Neonatal hypothyroidism
- Coomb's test
- Sickle cell or other haemoglobinopathies
- Congenital dislocation of hip

### **AT RISK INFANTS**

- birth weight less than 2.5 kg;
- twins;
- birth order 5 and more;
- artificial feeding;
- weight below 70 per cent of the expected weight (i.e., II and III degrees of malnutrition);
- failure to gain weight during three successive months;
- children with PEM, diarrhea
- working mother/one parent.

### **LOW BIRTH WEIGHT** [Essay]

Rema aged 42 years gave birth to a child who weighted 1.6kg.

- a) What is this condition of the child called as.
- b) What is the classification of the above condition.
- c) What are the complications that can arise out of this condition
- d) How will you prevent the occurrence of this condition among babies in India.

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**a) Low birth weight**

b) Classification

**According to weight**

- Low Birth Weight Baby < 2.5 kg
- Very Low Birth Weight Baby <1.5 kg
- Extreme Low Birth Weight Baby <1.0 kg

### **According to birth weight and gestational age**

i) Preterm babies: Preterm is defined as babies born alive before 37 weeks of pregnancy are completed. There are sub-categories of preterm birth, based on gestational age:

- extremely preterm (<28 weeks)
- very preterm (28 to <32 weeks)
- moderate to late preterm (32 to 37 weeks).

ii) Small for date (SFD) babies: A baby smaller than particular gestational age. They weigh less than 10<sup>th</sup> percentile for the gestational age.

### **CAUSES OF LOW BIRTH WEIGHT/ PRETERM BABY**

- **Maternal infections** like malaria, UTI, HIV, syphilis
- **Maternal chronic conditions** like diabetes, hypertension, anaemia, asthma, thyroid disease
- **Maternal psychological health:** depression, violence against women
- **Foetal causes** multiple gestations, foetal abnormalities, TORCH infections, genetic disorders like chromosomal abnormality
- **Social causes:**
  - Advanced maternal age, short interval between pregnancy
  - Multiple pregnancy/high parity
  - Undernutrition and micronutrient deficiency
  - Alcohol, smoking and drug abuse
  - Excessive physical labour

### **COMPLICATIONS OF LOW BIRTH WEIGHT/PRETERM BABY**

- **Infections**
- **Malnutrition**

- ***Mortality***
- ***Temperature instability***: inability to stay warm due to low body fat
- ***Respiratory problems***: Respiratory distress, bronchopulmonary dysplasia, incomplete lung development, apnoea (stopping breathing)
- ***Cardiovascular***: patent ductus arteriosus, too low or too high blood pressure, low heart
- ***Blood and metabolic***: anaemia, polycythaemia, jaundice  
Too high or low levels of minerals like calcium, glucose
- ***Gastrointestinal***: difficulty feeding, poor digestion, necrotizing enterocolitis
- ***Neurologic***: intraventricular haemorrhage, periventricular leukomalacia, poor muscle tone, seizures may be due to bleeding in the brain, retinopathy of prematurity.

## **PREVENTION**

### **DIRECT INTERVENTION**

- ***Increasing food intake***: Increase calorie intake by malnourished pregnant women, treatment of anaemic mothers. Direct intervention covers supplementary feeding, distribution of iron and folic acid tablets, fortification and enrichment of foods, etc.
- ***Controlling infections***: Diagnosis and treatment of maternal infections (e.g., malaria, urinary tract infection, infections due to cytomegalovirus, toxoplasmosis, rubella and syphilis)
- ***Early detection and treatment of medical disorders***: These include hypertension, toxaeemias, and diabetes.

### **INDIRECT INTERVENTION**

- Family planning
- Avoidance of excessive smoking and alcohol
- Improved sanitation measures
- Improving the health and nutrition of young girls
- Avoid strenuous jobs

- Counselling and health education

## **TREATMENT**

LBW babies under 2 kg requires Kangaroo mother care in NICU until the weight reaches between 2-2.5 kg tube feeding of expressed milk.

Between 2-2.5 kg need NICU for a day or two then special care at home and educate mother regarding danger signs with frequent breast feeding almost every hour.

## **CAUSE OF DEATH IN LOW-BIRTH-WEIGHT BABIES**

- atelectasis;
- malformation;
- pulmonary haemorrhage;
- intracranial bleeding, secondary to anoxia or birth trauma; and
- pneumonia and other infections.

## **KANGAROO MOTHER CARE**

- KMC is the early, prolonged and continuous skin to skin contact between mother and her baby till baby reaches term with support for positioning, feeding and prevention of infection and proper follow up.
- Required for LBW and preterm babies.

**Three components** of Kangaroo mother care for low birth-weight babies include

- Kangaroo position: skin-to-skin positioning of a baby on the mother's chest.
- kangaroo feeding: frequent and exclusive breast feeding.
- Early discharge and follow up: ambulatory care as a result of earlier discharge from hospital.

The intensive care comprises of:

- Incubatory care: that is, adjustment of temperature, humidity and oxygen supply;

- Feeding: Breast-feeding is rarely possible as the baby cannot suck. breast milk feeding by nasal catheter;
- Prevention of infection

### **Advantages**

- Ensure warmth and nutrition
- Protect child from infections
- Promotes bonding with mother
- Reduce cost of health care by ambulatory care and early discharge

### **ADVANTAGES OF BREAST FEEDING**

#### *Benefits to baby*

- It fully meets the nutritional requirements of the infant.
- It contains antimicrobial factors such as macrophages, lymphocytes, secretory IgA, lysozyme, lactoferrin etc.
- Protection against diarrhoeal diseases and respiratory infections.
- Easily digested and utilized by body.
- Promotes "bonding" between the mother and infant.
- Sucking helps in the development of jaws and teeth.
- Protects babies from the tendency to obesity;
- Prevents malnutrition and reduces infant mortality;
- Prevention of neonatal hypocalcaemia and hypomagnesaemia.
- Special fatty acids in breast milk lead to increased IQ and better visual acuity.

#### *Benefits to mother*

- Reduce the risk of postpartum haemorrhage and anaemia,
- Boosts mother's immune system.
- Delays next pregnancy.
- Reduces the requirement of insulin among diabetic mothers.
- Protects from ovarian and breast cancers and osteoporosis.

## **Baby friendly hospitals initiatives (BFHI)**

- Focused on promoting breast feeding.
- Encourage proper infant feeding practices, starting at birth.

The steps are:

(1a) Comply fully with the international code of marketing of breast-milk substitutes.

(1b) Have a written infant feeding policy.

(1c) Monitoring and data-management system;

(2) Ensure that staff have sufficient knowledge and skills to support breastfeeding.

(3) Discuss the importance of breastfeeding with pregnant women and their families

(4) Promote skin to skin contact and initiation of breastfeeding as soon as possible after birth

(5) Support mothers to initiate and maintain breastfeeding and manage common difficulties.

(6) Do not provide breastfed newborns any food or fluids other than breast milk, unless medically indicated.

(7) Practice rooming 24 hours a day.

(8) Support mothers to recognize and respond to their infant's cues for feeding.

(9) Counsell mothers on risk of feeding bottles, pacifiers.

(10) Cordinate discharge.

## GROWTH CHART

- Growth chart is the visible display of child's physical growth and development.
- It is used to assess the growth of the child by plotting the child's weight against the age.
- Boys and girls aged 0-60 months have separate growth charts.

### *Uses of growth chart*

- **Growth monitoring:** by regular plotting it is possible to know whether the child's weight is normal, gaining or not. which is of great value in child health care.
- **Diagnostic tool:** for identifying "high-risk" children. For example, malnutrition can be detected long before signs and symptoms of it become apparent;
- **Planning and policy making:** It reflect the nutritional status of the community by studying growth chart of several children so the government can plan nutritional intervention programmes and make appropriate policy decisions.
- **Educational tool:** because of its visual character, the mother can be educated regarding infection and adequate feeding on child's growth monitoring.
- **Tool for action:** it helps the health worker on the type of intervention that is needed; it will help to make referrals easier.
- **Evaluation tool:** evaluate the effectiveness of corrective measures and programme or special interventions for improving child growth and development.
- **Tool for teaching:** Example, the importance of adequate feeding; the deleterious effects of diarrhoea.

## JUVENILE DELINQUENCY [8 mark]

- Delinquent - A child who has committed an offence
- Juvenile means a boy who has not attained 16 years, and girl not attained age of 18 years.
- All deviations from normal youthful behaviour and includes all children who are ungovernable and habitually disobedient and who desert their homes and mix with immoral people those with behavioural problems and anti-social practices.

**Incidence:** It is 5 times more in males than females. The highest incidence is found in age group of 15 and above.

### *Causes*

- **Biological:** Hereditary defect, feeble mindedness, physical defect, glandular imbalance.
- **Chromosomal anomalies** like child with extra Y chromosome (XYY) suffer from severe disturbance of whole personality.
- **Social:** Broken homes (e.g. death or divorce of parents, step mother treatment) disturbed home condition (poverty, alcoholism).
- **Other causes:** Absence of recreation facilities, cheap recreation, sex thrillers, urbanization, industrialization, cinema, television, slum dwelling etc.

### **Common Problems seen in Juvenile Delinquents**

- Behavioural problems e.g. lying, stealing, gambling etc.
- Learning disabilities
- Emotional problem e.g. depression, fears, shyness
- Development disorder e.g. autism, bedwetting & soiling
- Intellectual deficit
- Psychosomatic disorders
- Socio-legal issues e.g. child custody, sexual offences, child abuse and head injuries

## *Prevention & Management of Juvenile Delinquency*

- ***Improvement of family life*** - A well-adjusted family in which parent should be prepared for parenthood and needs of children should be well appreciated and met.
- ***Schooling*** - There should be healthy teacher pupil relationship. The school teacher should be trained to detect the early signs of maladjustment in students.
- ***Social welfare services*** - Child guidance clinics, recreational facilities, parent counselling, educational facilities etc.
- ***Life Skills development*** - Adjustment to the life situation with positive outlook should be imposed on children from childhood itself.
- ***Juvenile Welfare Boards*** - Under the Juvenile Justice Act, 1986, separate provisions have been laid down for the neglected and uncontrollable juveniles.

## **SCHOOL HEALTH SERVICE**

### *Health Problems of School Children*

- Malnutrition
- Infectious diseases
- Intestinal parasites
- Disease of skin, eye and ear
- Dental caries

### *Objective of School Health Services*

- Promotion of positive help
- Prevention of diseases
- Early diagnosis treatment and follow up
- Awakening health consciousness among school children
- Provision of healthy school environment

### *Components of School Health Services*

#### ***Health checkup of school children and school personal***

- Periodic medical examination, starting from the time of entry and then every 4 years.
- Assessment should include history taking, physical examination, blood examination, urine and stool examination.
- Tests should be carried out to check for the vision, hearing and speech.
- All the persons working in the school should undergo an annual checkup.

### ***Remedial measures and follow up***

***Prevention of communicable diseases:*** Immunisation services should be carried out in school and maintained as a part of school health records.

***Mental health:*** Juvenile delinquency, maladjustment and drug addictions are becoming a major mental health problem so school teacher should also be trained to identify behavioural problems.

***Dental health:*** Dental caries being a major problem so dental examination should be done by a dentist. Children should be taught proper technique of brushing and the need to brush at least two times a day.

***Eye health:*** Refractive errors, squint, amblyopia; eye infections like trachoma, or signs of vitamin A deficiency should be looked for.

***Nutritional services:*** The mid-day meal provided in the school should provide at least 1/3rd of the calories and half the proteins required for the child.

***First aid and emergency care:*** Teachers should be trained in providing first aid to minor injuries.

***Health education:*** Health education regarding personal, environmental hygiene, good posture, family life

### ***Education of handicapped child***

***Maintenance and appropriate use of school health records:*** It should have identifying data, past health history & record of current assessment.

### ***Maintaining healthy school environment***

- Location: Should be centrally located with a proper approach road.
- Site: School should be on a suitable high land, which can drain the water properly.
- Structure: Nursery and secondary schools be single storied. Walls should be heat resistant with a thickness of 10 inches.
- Doors and Windows: The combined area of the door and window should be at least 25% of the floor space area.
- Classroom: should accommodate not more than 40 students.
- Furniture: There should be single desks and chairs of the "minus" type.
- Colour: Walls should be white in colour with periodic white washing
- Lighting: Sufficient natural light, preferably from the left.
- Water supply: Independent continuous source of safe and potable water, made available through taps.
- Eating facilities: Non-approved vendors should not be allowed inside school premises. Separate room should be provided for mid-day meals.
- Lavatory: One urinal for 60 students and one latrine for 100 students. Separate for boys and girls.

### **IMNCI (Integrated Management of Neonatal Childhood Illnesses)**

- It focuses on the preventive, promotive and curative aspects of the disease management with participation of the mother in the entire process.
- Objectives are to reduce death and the frequency and severity of illness and disability and to contribute to improved growth and development.

- The strategy combines improved management of childhood illness with aspects of nutrition, immunisation and other important disease prevention and health promotion elements.

### *Age categories*

- Young infants (age up to 2 months)
- Children (2 months up to 5 years)

### *Childhood Illnesses*

- Acute Respiratory Infections
- Diarrhoea
- Measles
- Malaria
- Malnutrition

### *Components/strategy of IMNCI*

- Strengthening the skills of the health care workers
- Strengthening the health care infrastructure
- Involvement of the community.

### *Steps in Management (ACT-assess, classify and treat)*

- **Assess the child** by checking first for danger signs, asking questions on common conditions, examining child, checking nutrition and immunization status. Also assess for other health problems.
- **Classify the severity of disease** using colour coded triage system.
  - **Pink** for urgent pre-referral treatment and referral;
  - **Yellow** for specific medical treatment & advice;
  - **Green** for simple advice on home management.
- **Identify specific treatment:** If child requires referral give essential treatment before transfer. If child require care at home develop integrated plan and give first dose of drug at clinics. If child requires to be immunized, give immunization.

- **Treatment instructions:** how to give oral drug, how to feed and give fluid, how to recognize the danger signs. Return for follow up.
- **Counsel the mother** to solve feeding problem or her own health problems.
- **Give Follow up care** and if necessary, reassess the child for new problems.

### *Limitations*

- Does not address some of the major illnesses and less common illness, which may require special care.
- Does not address management of trauma or other acute emergencies.
- AIDS is not addressed specifically, the case management guidelines address the most common reasons, for a child with HIV to seek care; diarrhoea and respiratory infection are addressed.
- Applicable only if the families bring the sick child timely to clinics or trained health worker before he/she becomes seriously ill.

## **INTEGRATED CHILD DEVELOPMENT SERVICES [ICDS]**

### *Objectives of the ICDS scheme*

- to improve the nutritional and health status of children in the age group 0-6 years;
- to lay the foundations for proper psychological, physical and social development of the child;
- to reduce mortality and, morbidity, malnutrition and school drop-out;
- to achieve an effective coordination of policy and implementation among the various departments working for the promotion of child development; and
- to enhance the capability of the mother and nutritional needs of the child through proper nutrition and health education.

## *Beneficiaries*

- Pregnant women
- Nursing mothers
- Other women 15-45 years
- Children less than 3 years
- Children in age group 3-6 years
- Adolescent girls 11-18 years

## *Services under ICDS*

### *Supplementary nutrition*

- Each child 6-72 months of age to get 500 calories and 12-15 grams of protein (financial norm of Rs 8.00 per child per day);
- Severely malnourished child 6-72 months to get 800 calories and 20-25 grams protein (financial norm of Rs 12.00 per child per day); and
- Each pregnant and nursing woman to get 600 calories and 18-20 grams of protein (financial norm of Rs 9.50 per beneficiary per day.
- More than one meal to the children who come to AWCs, which include a morning snack in the form of milk/banana/egg/seasonal fruit/micro- nutrient fortified food followed by a hot cooked meal. \
- For children below 3 years of age, and pregnant and lactating mothers, "take home ration" is to be provided.

***Nutrition and health education:*** to women in the age group 15-45 years through home visit by Anganwadi workers.

***Immunisation:*** for children against 9 vaccine preventable diseases and pregnant women for tetanus is recommended.

***Health checkups:*** For antenatal women, postnatal mothers and care of children under 6 years of age. For children assess the weight, height, milestones, immunisation, malnutrition, deworming, prophylaxis against vitamin A and anaemia, treatment of diseases and referral.

***Non formal preschool education:*** For children between 3-6 years in an Anganwadi to develop desirable attitude, values and behavioural patterns.

***Schemes for adolescent girls:*** Kishori Shakti Yojana, nutritional programme for adolescent girls.