CHILD HEALTH

Definitions

- Child: 0-14 years
- Infancy:0-1 year
  - Neonate:0-28 days; early:0-7 days; late:8-28 days
- Preschool:1-4 years
- School age: 5-14 years

Mortality in infancy and childhood

- Foetal death: death prior to complete expulsion or extraction from its mother of a product of conception; death indicated by
  - no breath, heart beat, movement of voluntary muscles
- Defined variously as death after 22 or 28 weeks of gestation
- Vital reports less reliable on fetal deaths at 22-27 weeks than after 28 weeks, so data may be analyzed separately

Stillbirth

- WHO has recommended within a country the term stillbirth be applied to foetus born dead and weighing more than 500g- birth weight associated with a gestation week of 22 weeks.
- For international comparison foetus born dead and weighing more than 1000g, equivalent to 28 weeks of gestation

Stillbirth rate

- Stillbirth rate: foetal deaths weighing more than 1000g/total live births+ stillbirths weighing more than 1000g
- Causes: infections, eclampsia, Rh incompatibility, diabetes, multiple pregnancies, cord anomalies, foetal anomalies
- High stillbirth rates in developing countries but under reported.
- India-4/1000 live births(SRS), population based studies-20 to 35

Perinatal mortality

- Includes late foetal deaths (stillbirths) and early neonatal deaths
- Perinatal period: 28 weeks of gestation to seventh day of birth
- Babies included in perinatal statistics: birth weight more than 1000g/ 28 weeks gestation/ body length of at least 35 cm

Perinatal mortality rate

- Perinatal mortality rate= late fetal deaths+ early neonatal deaths in 1 year/ live births in same year
- Factors responsible for stillbirths and early neonatal deaths are similar
- Deaths in first few hours may be reported as stillbirths
- Good indicator of pregnancy wastage and quantity and quality of health care available to mother and newborn

Perinatal mortality

- Maternity care better reflected than neonatal mortality rate
- Perinatal deaths more likely to occur in the developing countries than in the developed world
- Omission of stillbirths and early neonatal deaths;
- Difficulty in obtaining accurate information on gestational age or birth weight leading to the misclassification of stillbirths as late spontaneous abortions

Perinatal mortality: causes

- India:23/1000 live births
  - Rural-26, urban-15/1000 live births
- Main causes of death are birth asphyxia, low birth weight, birth trauma and infections
- Antenatal causes:
  - Maternal systemic diseases: hypertension, diabetes, cardiovascular diseases, TB, anaemia
  - Pelvic diseases: uterine myomas, endometriosis, ovarian tumors

Perinatal mortality: causes

- Blood incompatibilities
- Malnutrition
- Toxemias of pregnancy
- Antepartum haemorrhage

- Intranatal causes:
  - Birth injuries
  - Asphyxia
  - Obstetric complications

Perinatal mortality: causes

- Postnatal causes:
  - Pre maturity
  - Respiratory distress syndrome
  - Infections
  - Congenital anomalies

  Unknown causes

Neonatal mortality

- Neonatal mortality rate: number of deaths of children less than 28 days of age/ total live births
- Measure of endogenous factors affecting infant life
- Directly related to birth weight, birth injuries
- 55-60% of infant deaths occur in the neonatal period

Neonatal mortality

- Varies from 53 per 1000 for least developed to 5 per 1000 in developed countries
- India:24/1000 live births
- Rural-27, urban 14/1000 live births
- Of these more than half in the early neonatal period
- Early neonatal mortality rate (ENMR) for India:21/1000 live births

Trends in neonatal mortality

- Nearly 27 million babies are born in India each year; this accounts for 20% of global births
- Of these, 1.0 million die before completing the first four weeks of life.
- This accounts for nearly 25% of the total 3.9 million neonatal deaths world wide.
- The current neonatal mortality rate of 29 per 1000 live births accounts for nearly two-thirds of infant mortality and half of under-five mortality.

Trends in neonatal mortality

- Substantial reduction in IMR and NMR in recent decades. Since early 1970's IMR declined from 140 to 37 while NMR 72 to 25
- Reduction in NMR due to:
  - decline in neonatal tetanus due to TT immunization to mothers
  - increase in institutional deliveries
  - birth spacing
- Decline has slowed down in recent years

Post neonatal mortality

- Post neonatal mortality rate: number of deaths of children between 28 days and one year/ total live births
- Dependent on environmental and social factors
- Diarrhoea, acute respiratory infections, malnutrition main causes
- More in girls
- India-11/1000 live births
- Rural-11, urban-9/1000 live births

Infant mortality

- Infant mortality rate: number of deaths of children less than1 year/total live births in same year
- Important indicator of health status of a community
- Largest single age category mortality
- Deaths due to peculiar set of diseases or conditions
- Affected quickly and directly by specific health programs

IMR

- Wide variations between countries
- Global IMR decreased from 87/ 1000 live births during 1975-80 to world to 61/1000 in 1990 to 37 /1000 live births
- Least Developing countries:107 /1000 live births
- Worst in Afghanistan(73), Sierra Leone(119), Chad (108), Mali(99)
- Lowest in Sweden(2),Spain(4) Switzerland(3)

IMR:India

- High mortality country: 33 in 2017
- Reduced from 81 in 1990
- Wide variation
  - MP-47, Kerala-10, Goa-8
  - Kerala, Maharashtra, Punjab, Tamil Nadu, West Bengal and Karnataka have achieved less than 34
  - Odiisha(44) UP (43), Rajasthan(41), and Assam (44) are more than the national average

Specific mortality rates

	1951	1991	2001	2011
Infant mortality rate (per 1000 live births)	134	80	64	48
Maternal mortality rate (per 1000 live births)	10	4.37	4.08	2.12

Factors affecting IMR

- Biological
  - Birth weight: major determinant of infant and perinatal mortality
  - Low birth weight: babies: less than 2.5 kg are at increased risk
  - Age of mother: more in very young and older mothers
  - Birth order: highest in first born, lowest in second born

Factors affecting IMR

- Biological
  - Birth interval: highest in those with one year interval, lowest if more than 3 years
  - Multiple births: greater risk than singleton
  - Family size: increases with family size
- Socio-economic
  - Education of parents: lower in educated
  - Occupation of parents: lower in professional
  - Income: lower in high income
  - Residence: more in rural than urban

Factors affecting IMR

- Sex of the child: neonatal mortality more in males, post neonatal mortality more in females; female infanticide
- Breast feeding, complementary feeding,
- Cultural practices: not feeding colostrum, pre lacteal feeds, application of cow dung to the cord, child care practices, branding
- Health care services: availability, accessibility, affordability
- Environmental sanitation

Preventive and social measures

- Antenatal care
- Prevention of infection
  - 5 cleans
  - immunization
- Breast feeding
- Growth monitoring
- Family planning
- Environmental sanitation
- Provision of primary health care
- Socio-economic development

Newborn care

- Care at birth
  - Provision of warmth: receive baby in a dry, clean, pre warmed cloth
    - Dry the baby
    - Discard wet cloth and wrap in another warm cloth
    - Place baby skin to skin with mother
    - Ensure head is well covered
    - Hypothermia can be prevented by delivery in warm room
    - Bathing should be avoided immediately after birth

Care at birth…

Dry the baby immediately after birth

Newborn care

- Cord care:
  - Cord cut with sterile blade or scissors 2.5 cm from abdominal skin
  - Sterile cord tie
  - Leave it dry
- Eye care:
  - Clean with clean cotton swabs
  - Clean from medial to lateral side
  - No role of prophylactic application

Newborn care

- Record birth weight
- Breast feeding: initiate BF within an hour of delivery
  - Exclusive breast feeding
  - No prelacteal feeds
- Examination of the newborn
  - Look for congenital malformation
  - Breathing pattern; normal respiratory rate-30-40/min

Examination of the newborn

- Heart rate: normal 100-160/min
- Assess perfusion: apply pressure over neonate’s sole or sternum for 15 seconds and release-normal capillary fill time is less than 3 seconds
  - Prolonged in shock, hypotension and hypothermia

Hypothermia

- Hypothermia: temperature less than 36C
- Normal temperature: 36.5-37.5 C
- Management: Methods to use
  - Skin to skin contact with mother
  - Warm room or bed
  - placing under a heat source-radiant warmer or 200W bulb at distance of 45 cm or an incubator
  - If temperature not normal, refer

‘Warm chain’: After delivery

1. Keep the baby clothed and wrapped; cover the head
2. Postpone bathing particularly for small babies
3. Keep baby close to the mother
4. Use kangaroo care for stable LBW babies
5. Show mother how to avoid hypothermia and to recognize
6. Initiate breastfeeding

Normal phenomena after birth

- Meconium passage: first passed within 24 hours, if not may indicate intestinal obstruction
- Urine passage: soon after birth or within 24-48 hours
- Transitional stools: greenish yellow
  - Increased frequency
  - Loose
  - May last 2-60days
  - No treatment

Normal phenomena after birth

- Vomiting: some newborns bring out mucoid secretions-swallowing of amniotic fluid
  - Mucous gastritis:stomach wash
  - Swallow air while feeding:burping
  - Pathological: persistent,bile or blood stained or pathological
- Mongolion spot: bluish black discoloration on sacral or buttock areas, normal:disappears by 6 months

Normal phenomena after birth

- Erythema toxicum: erythematous rash on second or third day. Begins from face and spreads to trunk and extremities in 24 hours. Disappears in 2-3 days.
- Vaginal discharge/bleeding: mucoid secretions, clean and keep dry. Withdrawal bleeding in 25% female babies 3-5 days of birth. Lasts for 2-4 days

Normal phenomena after birth

- Mastitis: breast engorgement in either sex on 3-4 days of life. Due to transplacental transfer of maternal hormones. Reassure.
- Physiological jaundice:
  - Appears after 24 hours of birth
  - Peak level of bilirubin not more than 15 mg/dl
  - Decrease by 7-10 days of life

Resuscitation of newborn

- Babies who do not breathe immediately after birth need help to establish breathing
- Steps involved to start spontaneous breathing: resuscitation
- Suction: mucus sucker to clear mouth and then nose
- Stimulate by flicking soles
- If not breathing start assisted ventilation with bag and mask

Care of low birth weight babies

- Definition:birth weight less than 2.5 kg
- Premature:born before 37 weeks of gestation or term but IUGR or SFD
- Preterm babies identified by:
  - Absent sole creases, breast nodule <5mm, ear does not recoil,hair fine, testes not fully descended

Management of LBW babies

- Prevention of hypothermia:
  - Room in
  - Adequate clothing and dry
  - Warm room, free from draughts
  - Additional heat with a 100-200 W bulb placed at 45 cm
  - Record temperature 3-4 hourly, maintain at 36.5-37.5 C
  - Kangaroo Mother Care (KMC)

Kangaroo Mother Care

- Care of pre term or LBW baby by placing baby in skin to skin contact with mother or any caregiver.
- Kangaroo position: skin to skin contact between mother and baby in vertical position, mothers breasts and clothes. Provider in semi-reclining position
- Early home discharge in kangaroo position

Management of LBW babies

- Feeding:
  - Must be fed only breast milk
  - No pre lacteal feeds
  - Early breast feeding
  - Frequent breast feeding
  - If unable to suck, expressed breast milk with spoon or traditional spoon like device

Feeding LBW babies

- LBW babies are at risk of infection, and need breast milk more than normal babies. Yet given artificial feeds and bottle feeds more often than normal babies.
- LBW babies born at term(SGA) usually suckle effectively. They are often hungry and need to breast feed more often
- Preterm babies may have difficulty in suckling effectively at first. They can be fed on breast milk by tube or cup and helped to establish full breast feeding later

Methods of feeding LBW babies

- LBW babies who are able to breastfeed, should be put to the breast as soon as possible after birth when they are clinically stable, and the mother and baby are ready.
- Babies less than 30-32 weeks gestational age usually need to be fed by nasogastric tube. Expressed breast milk is given by tube. Mother can let the baby suck on her own finger while he is having tube feeds
- Let mother hold baby and give him skin-to-skin contact: helps in bonding and mother produce more breast milk.

Methods of feeding LBW babies

- When a LBW starts to suckle effectively, he may pause during feeds often for long periods. Do not take him off the breast too quickly, he can suckle again when ready. Offer a cup feed after a breastfeed.
- Babies 34-36 weeks gestational age or more can often feed directly from the breast
- Follow up and weigh regularly

Management of LBW babies

- No bottle feeds
- Adequacy of breast feed assessed by baby's weight gain: 15-20g/day or 100-140g/week
- Prevention of infection:
  - Minimum handling
  - Avoid prelacteal feeds
  - Hygiene
  - Immunization

Management of LBW babies

- Referral:
  - Babies more than 1800g can be managed at home
  - 1500-1800g in primary health care facility
  - Babies less than 1500g referred to health facility with specialist care
  - Sick LBW babies referred to health facility with specialist care

Facility based newborn care

- Newborn Care Corners (NBCCs) are established at delivery points to provide essential newborn care at birth,
- Newborn Stabilization Units (NBSUs): management of LBW babies >1800 g with no complications
- Special Newborn Care Units (SNCUs): management of LBW babies <1800 g with no complications and provide care for sick newborns

Programmes for Newborn

- Janani Shishu Suraksha Karyakram (JSSK): Complete elimination of out of pocket expenses with provision of free transport, drugs, diagnostics and diet to all sick newborns and infants is being ensured in the country
- Navjaat Shishu Suraksha Karyakram (NSSK) programme: health care providers have been trained essential newborn care and resuscitation that are placed at delivery points

Home based newborn care scheme

- Home based new born care through series of home visit by ASHAs and is being paid of Rs. 250/- on completion of the visits.
- The sick and low birth weight babies will need extra visits
- ASHAs are now entitled to receive incentive of Rs. 50/- for ensuring monthly follow up of low birth weight babies and newborns discharged after treatment from Specialized New Born Care Units.