

# Nutrition and Nutritional Disorders

---

## Questions

63. **Breast feeding is recommended exclusively atleast for**
- 6 months
  - 4 months
  - 9 months
  - One year
64. **The most important factor to overcome protein energy malnutrition in children less than 3 years is**
- Early supplementation of solid feeds rich in protein
  - Treatment of anaemia
  - Immunisation
  - Treatment of pneumonia in children
65. **The composition of breast milk, per 100 ml**
- 67 cal, 3.5gm protein, 3.5g fat and 4.5g carbohydrates
  - 67 cal, 1.1gm protein, 3.5g fat and 7gm carbohydrates
  - 67 cal, 3.5gm protein, 1.1gm fat and 7gm carbohydrates
  - 67 cal, 1.1gm protein, 3.5g fat and 3.5gm carbohydrates
66. **Breast feeding is contraindicated if the mother is taking;**
- Acyclovir
  - Digoxin
  - Propylthiouracil
  - Cimetidine
67. **All are complications of formulafed baby over human milkfed baby except.**
- Necrotising enterocolitis
  - Otitis media
  - Hypocalcemia
  - Vit K.deficiency
68. **All are seen in Breast feeding Infant except**
- Hemorrhagic disease
  - Brown black colour stool
  - Evening colic
  - Prolongation of Physiological Jaundice

- 69. Energy requirement of an infant per Kg Body weight is**
- a. 80–90 Kcal/day
  - b. 100–110 Kcal/day
  - c. 60–70 K cal/day
  - d. 150 K cal/day
- 70. The percentage of calories to be supplied by proteins is**
- a. >20%
  - b. 5%
  - c. 15%
  - d. 60%
- 71. During the treatment of severe malnutrition, calories required per Kg body weight in the first day is**
- a. 80 Kcal/Kg/day
  - b. 120 Kcal/Kg/day
  - c. 60 Kcal/Kg/day
  - d. None of the above
- 72. The principal determinant of catch-up growth**
- a. Proteins
  - b. Energy
  - c. Vitamins
  - d. Minerals
- 73. Primary failure to respond to treatment in severe malnutrition are all except**
- a. Failure to regain appetite by day 4
  - b. Failure of disappearance of edema by day 10
  - c. Weight gain of 10g/Kg/day by day 10
  - d. None of the above
- 74. Death in PEM is mostly due to all except**
- a. Hypothermia
  - b. CCF
  - c. Electrolyte imbalance
  - d. Worms
- 75. ReSoMal is recommended for treatment of**
- a. Iron deficiency anaemia in malnourished
  - b. Respiratory infections in malnourished
  - c. Dehydration in malnourished
  - d. None of the above

## 24 Paediatrics

---

- 76. The following are Age Independent Anthropometric indices**
- Dugdale's Index
  - Kanawati index
  - Rao's Index
  - All of the above
- 77. Kwashiorkar is diagnosed in growth retarded children in association with**
- Hypopigmentation and Anaemia
  - Edema and mental retardation
  - Edema and skin changes with Mental apathy
  - Hepatomegaly and anaemia
- 78. The term "overweight" represents BMI more than**
- 85<sup>th</sup> percentile
  - 90<sup>th</sup> percentile
  - 95<sup>th</sup> percentile
  - 80<sup>th</sup> percentile
- 79. The Most active form of Vitamin A is**
- Retinal
  - Retinol
  - Retinoic acid
  - Retinyl ester
- 80. The primary sign of Xerophthalmia in WHO classification are all except**
- Nyctalopia (XN)
  - Conjunctival xerosis (XIA)
  - Bitot spots(XI B)
  - Corneal xerosis (X2)
- 81. Treatment of Vitamin A deficiency in 8 month old child is to administer**
- 50,000 IU of Vit A
  - 1,00,000 IU of Vit A
  - 2,00,000 IU of Vit A
  - 25,000 IU of Vit A
- 82. Recommended Daily Intake of Iodine in diet for a 5 yr old child is**
- 90 µg
  - 60 µg
  - 50 µg
  - 120 µg

- 83. Endemic Cretinism occurs when the iodine intake is below**
- 50  $\mu\text{g/day}$
  - 35  $\mu\text{g/day}$
  - 25  $\mu\text{g/day}$
  - 10 $\mu\text{g/day}$
- 84. Hypogonadism, anorexia, alopecia, growth retardation and dermatitis occur in**
- Copper deficiency
  - Selenium deficiency
  - Zinc deficiency
  - Iodine deficiency
- 85. A 2 year old child complains of acute headache, vomiting and dizziness, bone pains following excessive medication. The drug most likely to cause this is**
- Vit A
  - Vit C
  - Vit D
  - Vit E
- 86. Neural tube defects can be prevented by giving**
- Folic acid
  - Pyridoxine
  - Riboflavin
  - Vit B<sub>12</sub>
- 87. The reliable index for assessing body folate stores is**
- Free folic acid levels
  - Bone marrow levels
  - Red cell folate
  - None of the above
- 88. Magenta colored tongue, cheilosis, nasolabial dermatitis and circum corneal vascularisation are features of**
- Pyridoxine deficiency
  - Riboflavin deficiency
  - Riboflavin excess
  - Pyridoxine excess
- 89. Beri-Beri is caused due to deficiency of**
- Thiamine
  - Riboflavin
  - Pyridoxine
  - Vit A

**26 Paediatrics**

---

- 90. Failure to Thrive, Hyperirritability, Hyperacusis Anaemia. Seizures and peripheral neuropathy are features of deficiency of**
- Thiamine
  - Pyridoxine
  - Riboflavin
  - Zinc
- 91. All are true regarding Biotin except**
- Avidin is necessary for its Biological function
  - Rett's Syndrome occurs due to Biotin deficiency
  - Children dying from Sudden Infant Death Syndrome (SIDS) have low biotin content
  - Maculosquamous dermatitis, myalgia and mild anaemia are features of deficiency
- 92. Achlorhydria is a feature of deficiency of**
- Biotin
  - Niacin
  - Pyridoxine
  - Thiamine
- 93. Subacute combined degeneration occurs in the deficiency of**
- Vit B<sub>6</sub>
  - Vit B<sub>12</sub>
  - Vit C
  - Niacin
- 94. All are true regarding Vit B<sub>12</sub> except;**
- Castle's Intrinsic factor is required for absorption
  - Cobalt atoms are present in the cyclical structure of Vit B<sub>12</sub>
  - Megaloblastic Anaemia occurs due to deficiency
  - None of the above
- 95. Follicular hyperkeratosis, Peri follicular hemorrhages, bony tenderness, delayed wound healing are manifestations of**
- Vit C deficiency
  - Vit A deficiency
  - Selenium deficiency
  - Niacin deficiency
- 96. Wimburger's sign occurs in**
- Rickets
  - Osteomalacia
  - Scurvy
  - Psoriasis

97. **Vitamin D<sub>3</sub> is formed, by the action of sunlight (wave length 280–305 nm) from,**
- 7 dehydrocholecalciferol
  - 7 dehydrocholesterol
  - Calciferol
  - Cholecalciferol
98. **The earliest manifestation of Rickets is**
- Craniotabes
  - Knock knees
  - Large A F
  - Delayed primary dentition
99. **The following are radiographic features of Rickets except**
- Increase in width of growth plate
  - Decreased bone density
  - Rickety rosary
  - Sub periosteal bleed
100. **All are true regarding rickets except;**
- Rickets is unusual below the age of 3 months
  - Generalised hypotonia with viseroptosis
  - Serum Phosphorous normal
  - Serum calcium is lower or normal
101. **All are features of Hyper vitaminosis D – except**
- Irritability
  - Vomiting
  - Hypocalciuria
  - Polyuria
  - Hypotonia
102. **Vit E deficiency in Preterm infants manifests as**
- Hemolytic Anaemia
  - Hyper Bilirubinaemia
  - Intraventricular hemorrhage
  - All of the above

## Nutrition and Nutritional Disorders

---

### Answers

63. (a) 6 months  
Ref : O.P.G : 97
64. (c) Immunisation  
Ref : O.P.G : 115  
Factors that can prevent PEM are  
(1) Exclusive breast feeding upto 6 months  
(2) Supplementary feeds after 6 months  
(3) Immunisation against vaccine preventable diseases  
(4) Birth spacing
65. (b) 67 cal, 1.1 g Protein, 3.5 g fat and 7 gm Carbohydrate  
Ref : O.P.G : 97 table, Nelson – 158  
Composition of breast milk  
Protein : 1.1 gm,                      ♦ Vitamin A – 60µg  
Fats – 3.5 gm                           ♦ Vitamin C – 5.2µg  
Carbohydrate – 7.0 gm (Lactose)   ♦ IgA   ♦ Lactoferrin  
Calories: 67 calories               ♦ Bilesalt stimulated lipase  
Minerals  
Na – 0.9 meq                           ♦ Macrophages  
K – 1.4 meq  
Ca – 35 mg  
P – 15 mg  
Fe – 30–50 µg  
Zn – 120 µg

66. (d) Cimetidine

Ref : Nelson – 530 / 83 – 4.

<u>Contraindicated</u>	<u>Probably safe and give with caution</u>
1) Amphetamines	1) Paracetomal
2) Anti Neoplasticagents	2) Acyclovir
3) Bromocriptine	3) Aldonet
4) Chloramphenicol	4) Antibiotics except Tetra/Chloram
5) Cemetidine	5) Anti epileptics
6) DES	6) Anti Hypertensive/ cardiac
7) Iodides	7) Chlorpromazine
8) Lithium	8) Digoxin
9) Methimazole	9) Diuretics
10) Tetracyclines	10) Halopenidol
	11) Propylthiourail
	12) Warfarin

67. (d) Vit K. Deficiency

Breast milk is deficient in Vit K. Hence Vitamin K deficiency is common in breast fed infants than bottle fed infants. For the same reason, it is recommended to give parenteral Vit K<sub>1</sub> 1 mg at birth to the newborn.

68. (b) Brown Black colour stool

Ref : O.P.G – 158, 171, 56; (595 – Nelson)

Hemorrhagic Disease may occur due to low Vit K. ↑unconjugated bilirubin may occur, causing prolongation of physiological jaundice.

69. (b) 100–110 Kcal/day

Ref : O.P.G. Page 93

Upto 1 year – Average 103 Kcal/Kg/day

1 – 2 years – Total – 1100 – 1200/day

2 – 3 years – 1400 Kcal/day.

70. (c) 15%

Ref : Park – 18/e 461.

Carbohydrates – 60–70% total calories

Fats – 20–30%

Proteins – 15–20%

71. (a) 80 Kcal/Kg/day

Ref : O.P.G. 110

1<sup>st</sup> week – 80 Kcal/Kg/day and

### 30 Paediatrics

---

The calorie intake should not exceed 100 Kcal/Kg/day  
2<sup>nd</sup> week – 150 Kcal/Kg/day.

Proteins :

1<sup>st</sup> week – 0.7 gm/Kg/day

2<sup>nd</sup> week – 2-3 gm/Kg/day.

Iron should not be given in the first week to avoid free radicals generation and bacterial proliferation.

**72. (b) Energy**

Ref : O.P.G. Page 110

**73. (c) Weight gain of 10g/Kg/day by day 10**

Ref : O.P.G. 111

**74. (d) Worms.**

Ref : O.P.G. 107 – 109

**75. (c) Dehydration in malnourished**

Ref : O.P.G. 109

RESOMAL :- Rehydration Solution for severely malnourished

Component	<u>Resomal</u> mmol/L	<u>Standard ORS</u> mmol/L
1) Glucose	125	111
2) Sodium	45	90
3) Potassium	40	20
4) Chloride	70	80
5) Citrate	7	10
6) Magnesium	3	—
7) Zinc	0.3	—
8) Copper	0.045	—

**76. (d) All of the above.**

Ref : O.P.G. 102

		<u>Normal</u>
1. Dug dale's Index –	$\frac{\text{Wt. Kg}}{(\text{HTcm})^{1.6}} \times 100$	0.88 – 0.97
2. Rao's Index –	$\frac{\text{Wt. In Kg}}{(\text{HTcm})^2} \times 100$	0.15 – 0.16
3. Kanawati Index –	$\frac{\text{Midarm Circumference (cm)}}{\text{Head Circumference (cm)}}$	0.32 – 0.33

**77. (c) Edema and Skin changes with Mental apathy**

Ref : Nelson – 172

## Nutrition and Nutritional Disorders 31

The single most essential criteria in classifying a PEM child into Kwashiorkor is EDEMA. Wellcome Trust classification of PEM based on Wt. for age and Edema. Mental retardation usually denotes a congenital problem in mental (Intelligence / Performance) status. Mental apathy occurs in kwashiorkor. Hepatomegaly and anaemia with growth retardation can occur in various genetic disorders like thalasseмииs, Sickle cell anaemia etc.

### 78. (a) 85<sup>th</sup> percentile

Ref: O.P.G. 117

Body Mass Index (BMI) =  $\frac{\text{Wt. in Kg}}{\text{Ht. in M}^2}$

- ◆ Single most useful index to screen obesity in children and adolescents.
- ◆ In adults – Waist circumference / Hip circumference is a better (or) equally good index.
- ◆ Obesity → BMI > 95<sup>th</sup> percentile.

### 79. (c) Retinoic acid

Ref: O.P.G : 121.

Naturally occurring Retenoids are Retinoic acid, Retinol (alcohol), Retinal (aldehyde) and ester.

Beta-Carotene – (Pro Vitamin A) available in plants and colored fruits. Converted into active Vit A in Intestine.

1ug of Retinol = 3.33 IU of Vit.A

60mg of Retinol = 2 lac IU of Vit.A

### 80. (a) Nyctalopia (XN)

Ref: O.P.G : 121

Primary Signs

XIA – Conjunctival xerosis

XIB – Bitot spots

X2 – Corneal xerosis

X3A – <1/3 size Corneal ulceration

X3B – >1/3 size Corneal ulceration

☞ Note to Remember : Primary signs have number and alphabets (1 – 3) suffixed while secondary signs only have alphabets.

Secondary Signs

XN – Night Blindness (or) Nyctalopia

XF – Fundal changes

XS – Corneal scarring

### 81. (b) 1,00,000 IU of Vit A

Ref: O.P.G Page 121

The above dosage is for oral administration

(ie) 0 – 6 months – 50000 IU

6 – 12 months – 1,00,000 IU

> 1 year – 2 lacks IU

## 32 Paediatrics

---

Parental dose :- Water soluble Vit A

1) 0 – 6 months – 37,500 IU (ie 3/4 oral dose)

2) 6 – 12 months – 50,000 IU (1/2 oral dose)

Vit A Administration for prevention of deficiency

9 months– 1 lakh units along with measles vaccine

18, 24, 30, 36 months — 2 lakh units

Recommended Daily allowance of Vit A

Infants – 300 – 400µg

Children – 400 – 600µg

Adolescents – 750µg

### 82. (a) 90µg

*Ref: O.P.G. – 122*

RDA of Iodine

(1) 0 – 12 months – 50µg

(2) 1 – 6 yrs – 90µg

(3) 7 – 12 yrs – 120µg

(4) >12 yrs – 150µg

Recommended level of Iodination in common salt is 1 : 25,000 to 1 : 50,000 – I<sub>2</sub> ; salt at the consumer level.

### 83. (c) 25µg/day

*Ref: O.P.G. 122*

Clinical features of Endemic Cretinism

(A) Neurological Cretinism :- Deaf mutism, Squint, proximal spasticity and rigidity of lower extremities. Gait disturbance, cerebellar signs and severe mental retardation.

(B) Myxedematous Cretinism:- Psychomotor slowing, short stature, coarse facial features with myxedema and absent DEAF-MUTISM

### 84. (c) Zinc deficiency

*Ref: O.P.G: 123*

(1) Acrodermatitis, enteropathica, Behavioural changes, infections, IUGR and neural tube defects occur.

(2) Selenium deficiency results in KESHAN DISEASE and KASHIN-BECK DISEASE, high risk of cancer, and cardiovascular and cerebral thrombosis.

(3) Copper deficiency – results in Anaemia, Neutropenia, hypopigmentation of skin & hair, Metaphyseal fraying etc.

### 85. (a) Vit A

*Ref: O.P.G: 121*

Chronic intoxication with Vit A results in anorexia, dry skin, weight loss, sparse hair, bone pain and hepatosplenomegaly, anaemia.



## 34 Paediatrics

---

(2) Antipellagra Vitamin

Deficiency : "3" Ds. Diarrhoea, Dermatitis, Dementia. Symptoms are anorexia, vomiting, achlorhydria (absence of HCl secretion in stomach), muscle weakness and loss of memory. Skin manifestations include Pigmented, scaly, cracked skin in parts of the body exposed to sunlight like neck and back of hands [casal necklace].

93. **(b) Vit B<sub>12</sub>**

Ref : IAP : 137

SACD is the neurological complication due to long tract demyelination in lateral and posterior columns of spinal cord.

94. **(d) None of the above**

Ref : IAP : 136

95. **(a) Vit C deficiency**

Ref : O.P.G : 127 IAP : 137.

- ◆ Scurvy results due to severe deficiency of Vit C.
- ◆ Usually seen from 6 months to 8 years.
- ◆ Bones are tender and the child prefers characteristic frog position – pain results in non-moving of limbs → Pseudo paralysis.
- ◆ Palpable subperiosteal hemorrhages along bones
- ◆ Bleeding gums and spongy, swollen bluish gums
- ◆ Rosary at costochondral junctions

96. **(c) Scurvy**

Ref : O.P.G: 126 / IAP : 137

Radiological signs in scurvy.

- (1) Wimberger's sign – Epiphyseal centres surrounded by a thin white ring.
- (2) Whiteline of Frenkel – Groundglass appearance due to osteoporosis and loss of trabeculae at epiphyseal ends with fracture zones

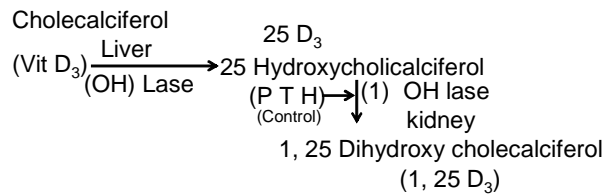
97. **(b) 7 dehydrocholesterol**

Ref : O.P.G:127, IAP: 139.

Vitamin D<sub>3</sub> — Cholecalciferol

Vitamin D<sub>2</sub> — Calciferol

Active Vitamin D<sub>3</sub> — 1, 25 Dihydroxy Vit D<sub>3</sub>.



98. (a) **Craniotabes**

Ref : O.P.G. 128/IAP : 140

Craniotabes results due to thinning of inner table of skull due to deficient calcified osteoid (Bone).

99. (d) **Subperiosteal bleed**

Ref : IAP : 140 / OPG : 128.

Radiologic findings in Rickets

- (1) Best seen in lower end of Radius and ulna
- (2) Widening and cupping of Epiphysis
- (3) Rarified diaphysis
- (4) Green stick fractures and subperiosteal thickening

100. (c) **Serum Phosphorus normal**

Ref : IAP : 141, OPG : 129

- ◆ Rickets is a disease of growing bones
- ◆ Incidence -(4 – 18 months) high
- ◆ Serum Phosphorus is always low – < 4mg/dl; except – Renal osteodystrophy → elevated.
- ◆ Serum Ca – Low (or) Normal
- ◆ Serum ALK PO<sub>4</sub> ase — High > 500 mg/dl.

101. (c) **Hypocalciuria**

Ref : IAP: 140

Hypervitaminosis – D – Clinical features:

Anorexia, Vomiting, Hypotonia, Polydipsia, Polyuria, hypercalcaemia and hypercalciuria. Radiological – metastatic calcification and osteoporosis of long bones.

102. (d) **All of the above**

Ref : IAP : 141

In general; areflexia, muscle weakness and dysarthria also occur.