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JAYPEE

Catalyst for all PG Medical Examinations

PLATINUM NOTES

2015–16

Platinum Notes

Thoroughly Revised and Updated Edition Including Latest Exam Topics, Questions and Image-based Concept

Completely updated till 2016

Volume 2

Medical Sciences

Medicine, Dermatology, Psychiatry, Pediatrics, Radiology

Important Topics Covered

AIPGMEE, AIIMS, PGI, Delhi PGMEE, Rajasthan PGMEE, UP PGMEE, Karnataka PGMEE, AP PGMEE, J&K BOPEE, Tamil Nadu PGMEE, Kolkata PGMEE, Bihar & Jharkhand PGMEE, Kerala PGMEE, MP PGMEE, DNB, Orissa PGMEE, and Maharashtra PGMEE

Latest Topics Covered from NBE 2015, DNB 2013, AIIMS 2015

5th Edition

Ashfaq Ul Hassan

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Pediatrics



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4 Pediatrics

BIRTH WEIGHT (INDEPENDENT OF GESTATION)

- **Low birth weight** (LBW) = less than 2500 g☛☛
- **Very low birth weight** (VLBW) = less than 1500 g☛☛
- **Extremely** low birth weight (ELBW) = less than 1000 g☛

SGPGI 2005, JIPMER 1993

High Yield for AIPGMEE, AIIMS, PGI 2016

Latest anthropometric values in relation to age:

Age	Weight (kg)	Length (cm)
• birth	3	50
• 6 months	6 (doubles)	65
• 1 year	9 (triples)	75
• 2 years	12	85
• 3 years	14	95
• 4 years	16	100

SIZE FOR GESTATION

- **Small for gestation (SGA)** = less than **10th centile** in weight expected for gestation (small for dates).*
- **Appropriate for gestation (AGA)** = between **10th and 90th centiles** of weight expected for gestation.*
- **Large for gestation (LGA) = more than 90th centile** in weight expected for gestation.*

Age in Utero

- Less than 1 week = **fertilized egg to the formation of the blastocyst.**
- Up to 2 months = **embryo.**☛☛
- 12 weeks–delivery = **fetus.**☛☛

ACQUIRED MATERNAL INFECTIONS EFFECTING GROWTH

STARCH (mnemonic)
- Syphilis
- Toxoplasmosis

Contd...

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Contd...

- AIDS
- Rubella
- CMV
- Herpes

'RED FLAG SIGNS' IN CHILD DEVELOPMENT (PGI 2016)

• No visual fixation by	• **2 months**
• No vocalization	• **6 months**
• No sitting without support by	• **9–10 months**
• Not standing alone	• **16 months**
• Not walking alone	• **18 months**
• No single words by	• **18 months**
• Lack of imaginative play by	• **3 years**

The Neonate

- **Perinatal period** = the period from **28 weeks' gestation** or the time of the live-birth if less than 24 weeks' gestation, to **7 days of postnatal age.** ** **AI 2010**
- **Early Neonatal period** = **the first 7 days of life** of a live-born infant of *any* gestation. * **KERALA 2003**
- **Late Neonatal period = 8–28 days** after birth. * **UPSC 2004**
- **Infancy** = the **first year of life.***

Body weight:
- **doubles × 5 months** **UPSC 1998**
- **triples × 1 year** **AIIMS 1996**
- **quadruples × 2 years**

Length increase in:
- **1st year: 25 cm** **AIIMS 1986**
- **2nd year: 12.5 cm**
- **3rd year: 6–7 cm**
- **4th year; 6 cm per year**

IUGR (PGI 2016)

Causes:
- Alcohol **AIIMS 1991**
- Smoking
- CRF
- BRAIN is not affected in **symmetrical IUGR** **AIIMS 1994**
- Propranolol can cause IUGR. **AIIMS 1992**
- **Fetal growth is maximally affected by INSULIN.** **UP 2000**
- **Fetal well-being in IUGR is assessed by: Amniocentesis, NST, AF Volume** **AIIMS 1996**

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Small for Date Babies

'Any infant whose weight is below the 10th percentile for gestational age, whether premature, full-term, or postmature.'
Despite his small size, a full-term SGA infant **does not have the problems related to organ system immaturity** that the premature infant has.
Causes: An infant may be small at birth because of **genetic factors** (short parents or a genetic disorder associated with short stature) or from other factors that can retard intrauterine growth. These intrauterine (nongenetic) factors usually are not operative before 32 to 34 weeks gestation, and include
- **placental insufficiency** that often results from maternal disease involving the small blood vessels (as in **preeclampsia, primary hypertension, renal disease, or long-standing diabetes**);
- placental involution accompanying post maturity;
- or infectious agents such as **cytomegalovirus, rubella virus, or Toxoplasma gondii**.

An infant may be SGA if the mother is a **narcotic or cocaine addict or a heavy user of alcohol and, to a lesser degree, if she smokes** cigarettes during pregnancy.
HAS wrinkled sole. **PGI 1997**

FULL TERM SMALL FOR DATE BABIES ARE AT A 'RISK FOR' (PGI 2016)

- IUFD(Intrauterine fetal death)
- Perinatal asphyxia
- **Hypoglycemia:** **AI 2000**
  The SGA infant is very prone to hypoglycemia in the first hours and days of life because of lack of adequate glycogen stores
- Polycythemia-Hyperviscosity
- Hypothermia
- Dysmorphology
- Pulmonary Hemmorage

COMPLICATIONS OF LBW (PGI 2016)

Immediate

- Hypoxia/ischemia
- IVH
- Sensorineural injury
- Respiratory failure
- Necrotizing enterocolitis
- Cholestatic liver disease

Late

Neurological:
- mental retardation,
- seizures,
- microcephaly,
- poor school performance,
- hearing impairment, visual impairment, myopia.

Contd...

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Contd...

Respiratory: • Bronchopulmonary dysplasia, • Cor pulmonale, Recurrent Pneumonia.
GIT: • Short bowel syndrome, • Malabsorption, • Infectious Diahrrea
Liver: Cirrhosis, liver failure, Carcinoma
Nutrient deficiency: Osteopenia, anemia, growth failure
Others: • SIDS, • Inguinal hernia, • GERD, • Hypertension, • Craniosynostosis, • Nephrocalcinosis.

Difference Between

Cephalohematoma	Caput succedaneum
• **Not present** at time of birth☛	• Present over presenting part
• **Subperiosteal** swelling☛	• Soft, boggy swelling
• **Does not cross** suture lines☛	• Can cross suture line
• **Disappears late** (2 weeks–3 months)☛	• Disappears early

Important Reflexes

• **Sucking reflex:**	***observed by 14 weeks of gestation.***☛☛
• **Rooting reflex:**	***develops by 28 weeks***☛
• **Palmar grasp reflex:**	***develops by 28 weeks and disappears by 4 months of age***☛
• **Toxic neck reflex:**	***disappears by 8 months of age***☛

Causes of Macrocephaly are:

- Caput Succedaneum,
- Cephalohematoma,
- Subgaleal hematoma,
- Hydrancephaly,
- Subdural collections,
- Sotos syndrome,
- Canavan disease,
- Alexander disease.

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Causes of Microcephaly

There are about more than 200 causes of 'microcephaly'. However the most important ones are:

- Down Syndrome
- Congenital Rubella syndrome
- Edwards syndrome
- Pataus Syndrome
- Beckwith Wiedeman syndrome
- Cornelia de lange syndrome
- Velocardiofacial syndrome
- Cockayne syndrome
- Charge Syndrome

THE KANGAROO METHOD

Kangaroo method (KM) consists of an 'infant support technology that implies early skin contact between the mother and the low weight infant in a progressive form during the time that both of them find pleasing enough, permitting a bigger participation of the parents in taking care of their newborn.' This method is applied in various countries in different ways, according to social and cultural features and to the availability of human, material, and technological resources.

Supplementary Nutrition is not a Component (AIIMS 2014)

Stage 1: Identification of early labor, with the infant having weight lower than 2,500 grams, especially lower than 1,500 grams, who, unable to be moved to joint lodgment, needed to be interned in Neonatal Intensive Treatment Unit (NICU). During this period the mother and the family must be oriented in relation to the conditions of the infant, highlighting the importance of the KM.

Stage 2: Infants in stable clinical condition is moved to the kangaroo nursery, where he or she will be accompanied by the mother and will actually assume the kangaroo position for as longer as it is possible, being stimulated to remain 24 hours/day in that position, functioning as an adaptation period for mother and child to be discharged from hospital.

Stage 3: It consists of ambulatory attendance until the infant reaches the weight of 2,500 grams, being moved, afterwards, to attendance in primary healthcare units.

Teratogens

• Carbamazepine:	• Cleft Lip, cleft palate**
• Valproic acid:	• Neural tube defects*
• Warfarin:	• **Chondrodysplasia punctata☛☛☛**
• Carbimazole:	• **Fetal cutis Aplasia☛☛☛**
• Lithium:	• **Ebstein's Anomaly☛☛**
• Thalidomide:	• Phocomelia**
• Chloramphenicol:	• **Grey baby syndrome**
• DES:	• Clear cell cancer*

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FETAL ALCOHOL SYNDROME (PGI 2016)

- **Microcephaly**
- **Retarded growth**
- **Maxillary hyperplasia (imp)**
- **Small eyes**
- **Mental Retardation**
- **Cardiac malformation**
- **Hyperkinetic movements.**

Important Clinical Conditions

- **Single umbilical artery**: very common in infants of **Diabetic mothers and trisomies 18 and twins.**☛☛
- **Hernia**: has peritoneal layer and skin
- **Omphalocele**: peritoneal layer but no skin☛ **DNB 2011**
- **Gastrorchisis**: **neither peritoneal layer nor skin.**☛☛

IMPORTANT MILE STONES ASKED (PGI 2016)

• Head Control	• **1 month**	**AIIMS 1985**
• Child smiles at familiar persons	• **2 months**	**AIIMS 1984**
• Sits with support	• **5 months**	**PGI 1988**
• Crawls at	• **8 months**	**AP 1988**
• Says mama dada	• **10 months**	**PGI 1988**
• Babies know their gender by	• **3 years**	**COMED 2005**
• Copies circle	• **3 years**	**JIPMER 1991**
• Self-Decisions	• **7 years**	**KERALA 1991**

Milestones in Children (Try to Memorize as much as Possible)

• **Social Smile**	• 2 months☛☛☛	
• Recognizes mother	• 3 months☛	
• Holds object and takes it to mouth	• 4 months	
• **Sitting on slight support**	• 5 months☛	
• **Enjoys mirror**	• 6 months☛	
• Sits alone momentarily	• 5–6 months	
• Transfers object from head to hand	• 6 months	**COMED 2007**
• Rolls Over	• 7 months	
• **Sits steadily**	• 7–8 months☛	
• Crawls in bed	• 8 months	**AP 1988**
• **Monosyllabic words (Mama, Dada)**	• 10 months☛	
• Creeps	• 10 months	
• Cruises around furniture	• 10 months	

Contd…

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Contd…

• Builds a tower of 2 cubes and pincer grasp	• 12 months	
• Can turn two or three pages of a book	• 13 months	
• **Walks alone**	• 13–14 months	
• Walks Sideways and backwards	• 15 months	
• Builds a tower of three cubes	• 18 months	
• Feeds Self	• 18 months	
• Can drop and draw a horizontal or vertical line	• 2 years	
• Can turn one page at a time	• 2 years	
• **Able to wear socks or shoes**	• **2 Years**	
• ***Kick a ball***		**PGI 2011**
• ***Build tower of 5 blocks***		**PGI 2011**
• ***Drink with a cup***		**PGI 2011**
• Can remove his pants	• 2 ½ years	
• Can draw a circle	• 3 years☛☛☛	**MANIPAL 2006**
• Can dress or undress completely and buckle his shoes	• 3 years	
• **Knows age and sex**	• 3 years☛☛	
• **Can copy and draw a cross (Plus Sign)**	• 4 years☛	
• **Can draw a rectangle**	• 4 years☛	
• Can draw a tilted cross (Multiplication sign)	• 5 years	
• **Can draw a triangle**	• 5 years☛	
• Bladder Control-Diurnal	• 12–16 months	
• Nocturnal	• 2½ years to 3 years	

Drawing Skills

• Draws a **horizontal or vertical line**:	• 2 years*	
• Draws a **circle**:	• 3 years*	**MANIPAL 2006**
• Draws a **cross**:	• 4 years*	
• Draws a **rectangle**:	• 4 years*	
• Draws a **triangle**:	• 5 years*	

REMEMBER THE FOLLOWING NONPATHOLOGICAL ENTITIES (PGI 2016)

- **Erythema toxicum☛**
- **Epstein pearls☛**
- **Stork bites☛**
- **Vaginal bleeding☛(Maternal hormones)**
- **Mongolian spots** — **UPSC 1984**
- **Phimosis**
- **Breast engorgement** — **PGI 1989**

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Premature Neonate

- **Sutures widely separated☛☛**
- **Skin appears shiny☛**
- **Abundant lanugo☛**
- **Subcutaneous fat is reduced☛**
- **Sluggish neonatal reflexes☛**
- **Small face☛☛**

Remember

A premature baby has ***fewer Type II pneumocytes*** *and* ***lower surfactant levels,*** *making it* ***susceptible to alveolar collapse, atelectasis, hyaline membrane formation, and barotrauma.***
Alveolar epithelium, which contains a continuous layer of two principal cell types: flattened,

- ***platelike type I pneumocytes covering 95% of the alveolar surface and***
- ***rounded type II pneumocytes. The latter cells are the source of pulmonary surfactant and are the main cell type involved in repair of alveolar epithelium in the wake of damage to type I pneumocytes.***

A neonate is also at risk for the development of persistent pulmonary hypertension (formerly called persistent fetal circulation), a condition in which the pulmonary vascular resistance is equal to or greater than systemic vascular resistance, causing hypoxemia due to extrapulmonary right-to-left shunting.
Immediate change in fetal circulation after birth is reversal of flow in ductus arteriosus. **JIPMER 2014**
This may occur in a variety of conditions, including **hyperviscosity, decreased lung mass (diaphragmatic hernia), or decreased vessel radius (reactive vasoconstriction, pulmonary venous obstruction, total anomalous venous drainage, or hypoplastic left heart).**

BREAST MILK (HIGH YIELD FOR PGI/AIIMS/AIPGME)

- is the ideal food for the infant.
- No other food is required by the baby until 4–5 months after birth.
- The advantages of breastfeeding are:
  - **Safe, clean, hygienic, cheap and available** to the infant at **correct temperature**
  - Fully meets the nutritional requirements of the infant in the first few months of life
  - Contains antimicrobial factors such as **macrophages, lymphocytes, secretory IgA, antistreptococcal factor, lysozyme and lactoferrin**
  - Lower risk of **allergy, ear infections and orthodontic problems, diabetes mellitus, heart disease and lymphoma** in later life
  - Easily digested and utilized by both the normal and premature babies
  - Promotes bonding between the **mother and infant**
  - Sucking is good for the baby as it helps in the **development of jaws and teeth**
  - Protects babies from the tendency to obesity
  - **Prevents malnutrition** and reduces infant mortality rate
  - Provides several biochemical advantages such as **prevention of neonatal hypocalcemia and hypomagnesemia**
  - Helps parents to space their children by prolonging the period of infertility
  - Under normal conditions, Indian mothers secrete **450 to 600 ml** of milk daily
  - The energy value of human milk is **70 Kcals per 100 ml**.

Breast Milk Production

Progesterone, prolactin and human placental lactogen induce hyperplasia and hypertrophy of the ducts and secretory structures of the breast during pregnancy. In the second half of pregnancy the breast is capable of secreting small amounts of milk. This is known as lactogenesis, stage 1. At birth the inhibitory influence of maternal progesterone is removed and **milk production is stimulated by prolactin** *released in response to sucking*. Sucking is therefore the primary stimulus to milk production and the means by which infant demand increases breast milk supply.

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Remember

Has got many protective factors against bacteria, viruses, parasites.
- **Lactoferrin** is particularly important against Plasmodium falciparum, E. coli, Giardia☛☛ **UP 2007**
- **Bile salt stimulated lipase** is important against **E. histolYtica**.☛
- **Lactadhesins** against **Rota virus**.☛
- **PABA** is also anti-infective for **malaria.**☛
- **Maximum at 5–6** months **APGEE 2004**
- **Can transmit tuberculosis** **MAHE 2007**

Breast fed infant can be deficient in:
- Vitamin B1
- Vitamin B12
- Vitamin D
- Vitamin K
- Folic acid.

Comparison to Cows Milk

- Cows milk has **more proteins** than breast milk.
- Cows milk has **more calcium** than breast milk.
- Cows milk has **more Vitamin K** than breast milk.

Remember

- **Oxytocin** is necessary for **ejection/Let down.**☛
- **Prolactin** is necessary for **milk synthesis**.☛
- **Contraindications to breastfeeding**

Contraindications

- **Galactosemia** is an absolute contraindication to breastfeeding.☛☛
- Chronic medical illness such as **decompensated heart failure**.☛
- **Open Tuberculosis** of mother is also a contraindication to breastfeeding in developing countries.☛ **JIPMER 2014**
- Severe **anemia**☛
- Chronic nephritis☛
- Puerperal psychosis☛
- Patient on **antiepileptic, antithyroid drugs**☛

Vaccines

Live Vaccines are:

- BCG **PGI 2006**
- Measles **PGI 2006**
- Mumps
- Rubella
- **Oral** Typhoid
- **Oral** polio (sabin)
- Influenza
- Yellow fever (17 D) **PGI 2006**

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Volume 2: Medical Sciences

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Why this book?

Getting a good rank in PG examinations is a dream for every student. Revising and remembering all the subjects in a short period of time and concentrating on vital information on high-yield topics forms the core of success for PG examinations.

I have tried my level best with suggestions from toppers from ALL INDIA, AIIMS and PGI to present the most valuable information in this book for preparing Postgraduate Medical Entrance Examinations.

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