



CAPE NEWS

Pediatric and Adolescent Endocrinology Chapter of IAP

For Private Circulation Only

December 2007
Volume 11, Issue 3

Advisors:

- * Dr MP Desai, Mumbai.
- * Dr PSN Menon, Kuwait.
- * Dr P Raghupathy, Bangalore.

Chairperson: Anju Virmani

virmani.anju@gmail.com

Secretary-Treasurer: V Bhatia

Dept of Endocrinology, SGPGI,
Lucknow 226014.
vbhatia@spggi.ac.in

Governing Council:

- VK Bhardwaj (Jabalpur)
- Shaila Bhattacharya (Bangalore)
- VV Khadilkar (Pune)
- Nalini Shah (Mumbai)
- Sangita Yadav (Delhi)

Editor CAPE NEWS: Anju

Virmani, C-6/6477 Vasant Kunj,
New Delhi 110070.

**BEST WISHES FOR A
WONDERFUL 2008!**

**NOTICE OF THE ANNUAL
GENERAL BODY MEETING**

*V Bhatia, Secretary-Treasurer, Pediatric &
Adolescent Endocrinology Chapter*

Notice is given of the annual GBM to be held during Pedicon 2008 at Bhuvaneshwar, on 19/01/08 at 9.30 am, outside the Hall for the Chapter symposium. The agenda is:

1. Confirmation of minutes of the AGBM held at Mumbai in Jan '07.
2. Business arising out of the minutes.
3. Consideration and adoption of the audited Statement of Accounts for YE 31st March 2007, and Budget for the year 2007-08.
4. Consideration and adoption of the Annual Report of the Chapter.
5. Welcoming new members.
6. Discussion of activities for the year 2008-09, including the Feb Mumbai Update, Pedicon 2009 & others, including popularizing the use of orchidometers and growth charts among pediatricians.
7. Any other agenda with permission of the Chair.

**DEVELOPMENTAL ORIGINS
OF HEALTH & DISEASE
(DOHaD)**

*Gurmeet Singh, Menzies School of Health
Research, Casuarina NT, Australia
Gurmeet.Singh@menzies.edu.au*

Poor fetal growth and small size at birth have been shown to be followed by increased risk of coronary heart disease, stroke, hypertension, type 2 diabetes and osteoporosis. This led to the hypothesis that these disorders originate through unbalanced nutrition *in utero* and during infancy. The DOHaD concept is bringing new

insights into the pathogenesis of disease. There is a range of experimental models for investigating the underlying biological mechanisms, and DOHaD is now a burgeoning research area in basic and clinical sciences, involving scientists from many backgrounds.

The DOHaD Society aims to promote cohesion and shared knowledge between groups working in different specialties and different countries. Their Congress brings together a wide range of specialists from all over the world, including endocrinologists, cardiologists, perinatologists, gynecologists, pediatricians, geneticists, epigeneticists, public health physicians, fetal physiologists, scientists specializing in animal experiments.....

The 5th International Congress held in Perth, Australia (6-10 Nov 2007), like previous DOHaD conferences, had a great deal of information on a wide range of topics such as "Why does the early life environment have echoes for the rest of our life?", "Growth in early child-hood: the catch-up dilemma", "The epigenetic interface between genes, the environment and disease", "Early interventions in pregnancy" and "Early nutrition and long-term cardiovascular health". The 6th International Congress is in Santiago, Chile, from 19th-22nd Nov., 2009.

Epigenetics, also called the hidden influences on genes, adds a whole new layer to genes beyond DNA. It proposes a control system of 'switches' that turn genes on or off – and suggests that things people experience, like nutrition and stress, can control these switches and cause

Inside this Issue

1. Notice of the Annual General Body Meeting at Bhuvaneshwar: Jan 2008
2. Developmental Origins of Health & Disease: Gurmeet Singh
3. New Members
4. APES News
5. Forthcoming Meetings.
6. News you can use.
7. International Update, Mumbai

heritable effects in humans. DNA methylation, histone acetylation, and RNA interference, and their effects in gene activation and inactivation, are increasingly understood to be more than "bit players" in phenotype transmission and development. During the meeting, complex experiments in animals designed to elucidate these mechanisms and their effects were described. With specific emphasis on developing countries, there were discussions on epigenetic mechanisms as the basis of programmed changes and the transgenerational effects of environmental conditions, on the effect of postnatal catch-up growth on later life events, and finally whether there was enough evidence on which one could act.

Earlier evidence came mostly from the developed world. More recently, large cohort studies from developing countries, which have the largest numbers of low birth weight (LBW) babies, are also providing the evidence for the effectiveness of possible interventions to reduce LBW. The main cohorts are from Pune and Delhi in India; the Pelotas (Brazil) birth cohorts, 1982 and 1993; and the 2003 birth cohorts from Latin and Caribbean countries. The Pune Maternal Nutrition Study has studied the effects of maternal nutrition on offspring size and body composition. Compared to babies born in UK during a similar period, Indian babies were smaller but with a higher fat percentage. A Pune birth cohort showed increased insulin resistance at 8 years of age. These differences, mediated by the state of the intrauterine environment, might explain partly the increasing propensity of Indians to develop diabetes.

The adverse effects of accelerated postnatal growth led to questioning of the current practice of "fattening up" babies who are born small. Interestingly, it has now been shown that "catch-up growth" in the first two years of life is mainly due to an increase in lean body mass, which not only gives a survival advantage, but is also necessary for the development of organ systems, especially the brain. In contrast, a similar acceleration in growth after 4 years of age is mainly due to an increase in fat mass, with several adverse metabolic consequences.

Recent evidence also shows that improvements in birth weight are difficult to achieve once pregnancy is established. Ensuring a mother who is healthy pre-conception is a more effective means of ensuring a baby with a normal birth weight.

Evidence also suggests that improving the health of women of child-bearing age to prevent LBW babies, providing adequate nutrition to allow catch up growth in LBW infants till 2 years of age, and preventing the development of obesity after 4 years of age should help prevent the epidemic of obesity and insulin resistance occurring globally, especially in the developing world.

The Australian Aboriginal Birth cohort (ABC) study with which I am working, was established in 1987 by Dr Susan Sayers, a Neonatal Pediatrician. From 1987 to 1990, a total of 686 babies born to Aboriginal mothers were recruited, and have been followed regularly. At birth, details of maternal, obstetric and neonatal conditions were recorded and a reliable gestational age was obtained by Dr Sayers, using the Dubowitz method. Aboriginal people in Australia are severely

disadvantaged compared to non-Aboriginal Australians, with life expectancies 17y less, LBW twice as common, and rates of cardiovascular disease (CVD), renal disease and diabetes 6-20 times higher in some remote aboriginal communities.

In our cohort, 26% babies were small for gestational age. Follow-up at mean age 11y showed these children were still under-nourished, especially the LBW babies. There was no catch-up growth as seen in the Indian babies. However, there was a relatively high waist circumference, even in those who were undernourished. At this age, only blood pressure showed an inverse relationship with birth weight. Markers of insulin resistance, CVD and renal disease showed a relationship only with measures of current body size.

A cross-sectional data collection period is just coming to a close; analysis will begin in 2008. These young adults (mean age 18y) are still relatively lean and about a third of them have children of their own. It will be interesting to see if the high waist circumferences at age 11y do identify those at higher risk of chronic disease.

NEW MEMBERS

We extend a very warm welcome to our new members:

1. Dr A AHILA, Coimbatore
2. Dr CM BATRA, Delhi
3. Dr HARI KUMAR, Hyderabad
4. Dr MUTHUKRISHNAN, Hyderabad
5. Dr LEENA PANDA, Cuttack
6. Dr MONASHIS SAHU, Gurgaon

APPES NEWS

*PSN Menon, Member, Governing Council,
APPES. psnmenon@hotmail.com*

This year's **APPES Fellows' meeting** is in Taiwan 3rd to 5th Dec 2007. Fellows selected from India are C

Sadish Kumar Kamalanathan (Mumbai), Deepti Chaturvedi and Bhanu Kiran Bhakri (New Delhi).

The **5th APPEs meeting** will be held at Lotte Hotel, located in the heart of Seoul's financial, shopping and entertainment district in Korea from 29 Oct to 1 Nov, 2008. The scientific program is being finalized. The plenary speakers include Dr Leo Dunkel on Growth & Klinefelter syndrome, and Dr Bill Tamburlaine on Diabetes Mellitus. There will be an APPEs/ ESPE combined symposium with 2 invited speakers from Europe. The options with LWPES for symposium are being explored. The website for the conference is www.appes2008seoul.org

The **APPEs Fellows' meeting** for 2008 will be held at the Academy House, surrounded by Mt. Bukhan at Seoul, Korea. There will be 2 participants from India. The process of selection will be by applications.

The APPEs secretariat is in the process of organizing a **Clinical Question Forum/ Chat Room** for members. The **membership fees** have been revised to \$150 for 2 years and \$220 for 4 years. APPEs is also in the process of finding sources for educational support for members. The October issue of the **APPEs newsletter** is out. This special focus on this issue is on pediatric endocrine services in India. It can be accessed at the site www.appes.org

Don't forget, all APPEs members have online access to **Hormone Research Journal**. To utilize this service, you need to log onto the members area of the APPEs website.

FORTHCOMING MEETINGS

1. PEDICON 2008: 45th National Conference of the IAP: 17-20 Jan 2008, Bhubaneswar. Contact: Dr Gadadhar Sarangi, Baidyanath Memorial Hosp, Kanan Vihar Phase I, Chandrasekharapur, Bhubaneswar 751031, Orissa. Tel: 0674 2741740, 09338415073, Fax 0674 2744231. iap@pedicon2008.org, www.pedicon2008.org

Programs of endocrine interest:

Chapter Symposium: 19 Jan 2008. Chairperson: V Bhatia: * Subrata Dey (Kolkatta): 21st century technology - how it is helping the diabetic child.

Panel Discussion: Moderator: Sangeeta Yadav. Growth & Growth Hormone: (a) Vandana Jain (Delhi): All short stature is not endocrine; (b) Rajesh Khadgawat (Delhi): Difficulties and pitfalls in the diagnosis of GH deficiency; (c) Shaila Bhattacharya: GH therapy for GH deficiency; (d) Kavita Bhat (Bangalore): GH therapy for Turner syndrome & idiopathic short stature.

2. ATTD 2008: 1st International Conference on Advanced Technologies & Treatments for Diabetes: 27 Feb-1 Mar 2008, Prague, Czech Republic. Details: Kenes International, 17, Rue Du Cendrier, PO Box 1726, CH-1211 Geneva 1, Switzerland. Tel: +41 22 908 0488; Fax: +41 22 732 2850; attd@kenes.com; www.kenes.com/attd.

3. ISPAD 2008: 34th Annual Meeting: 12-16 Aug 2008, Durban, South Africa. Contact: Kuben Pillay, West Ville Hospital Westville, 7 Spine Road, Suite 561, IDurban 3600 4013, South Africa. Tel: +27 31 2655377, Fax: +27 31 2655378, kubenpillay@worldonline.co.za, www.ispad2008.com

4. ESPE 2008: 47th ESPE Meeting: 20-23 Sep 2008, Istanbul, Turkey. Contact: Atilla Buyukgebiz, Prof Dokuz Eylul Faculty of Medicine, Dept of Pediatric Endocrinology & Adolescence, Inciralti, IZMIR, TR-35340, Turkey. Tel: +90 232 278 8411 / 4644540, Fax: +90 232 278 8411/ 4649240, email: atilla.buyukgebiz@gmail.com www.congrex.com/espe2008/

5. JSPE 2008: 42nd Annual Meeting: 2-4 Oct 2008, Yonago, Tottori, Japan.

Contact: Susumu Kanzaki, smkanzak@grape.med.tottori-u.ac.jp

6. APPEs 2008: 5th Biennial Meeting: 29 Oct- 1 Nov 2008, Seoul, Korea (for details, see above).

7. ICE 2008: 13th International Congress of Endocrinology: 8-12 Nov 2008, Rio de Janeiro, Brazil. www.ice2008rio.com/

8. ESPE/LWPES: 8th Joint Meeting: 9-12 Sep 2009: New York, USA. www.lwpes-espe2009.org

9. ISPAD 2009: 35th Annual Meeting: 16-18 Sep 2009, Ljubljana, Slovenia. Contact: Tadej Battelino, E-mail: tadej.battelino@mf.uni-lj.si

10. ISPAD 2010: 5-11 Sep 2010, Buenos Aires, Argentina. Contact: Olgar Ramos, E-mail: ramoso@interlink.com.ar

NEWS YOU CAN USE

The **Greulich and Pyle bone age atlas** is available for on-line purchase from Amazon.com. The cost of a new book is US \$ 145. Shipping to India costs about \$ 10 (shipping to a US address is free). It takes a month to arrive. Dr Leena Priyambada.

Growth charts (based on KN Agarwal reference data) and locally made **orchidometers** are available with Dr Vijayalakshmi Bhatia.

The **5th ISPAD Science School for Health Professionals** will be held in Durban, South Africa, from 10-12 August 2008, immediately prior to the 34th Annual Scientific Meeting of ISPAD. The 3 day meeting, for a total of 15 students, is designed for nurses, dietitians, psychologists, social workers and podiatrists (*not MD's*) who have or wish to develop a research interest and expertise in diabetes in young people. It will give participants an understanding of research methodologies, statistics, and publication strategies. The cost of the meeting will be covered by ISPAD. Applications will be assessed by the Science School Steering Committee. Closing date 29th Feb 2008. For details, see ISPAD website.

INTERNATIONAL UPDATE IN PEDIATRIC ENDOCRINOLOGY

Current Trends in Diagnosis and Management

14-17 February, 2008

RD Choksi Auditorium, Tata Memorial Hospital, Parel, Mumbai 400012

Under the joint auspices of

Indian Academy of Pediatrics - Pediatric & Adolescent Endocrinology Chapter

Asia Pacific Pediatric Endocrine Society (APPES)

Supported by

European Society of Pediatric Endocrinology (ESPE)

CHAIRPERSON: **Meena P Desai** • meena_desai@vsnl.net

SECRETARY GENERAL: **Nalini Shah** • nalinishah@gmail.com

CONTACT PERSONS: **Sudha Rao** (098219 17880); **Tushar Bandgar** (098200 25037)

Vyankatesh Shivane (098200 84780) **Aruna Bafna** (98191 66681)

• secretariatpedendo@gmail.com Website: www.pedendouupdate2008.org

Tel.: +91-22-24162917 / +91-22-24168714; Fax : +91-22-24162883 | Mobile : +91-98202 23288

INTERNATIONAL FACULTY:

Francesco Chiarelli, Italy **Peter Clayton**, UK **Chris Cowell**, Australia
Wayne Cutfield, New Zealand **Annette Gruters**, Germany **Ze'ev Hochberg**, Israel
Khalid Hussain, UK **Yoo HW**, South Korea **Xiaoping Luo**, China
Charles Sultan, France **Garry Warne**, Australia

SCIENTIFIC PROGRAMME

Thursday, 14 February 2008

(Registration is free but essential; Restricted to 100 delegates registered for the full update)

4.00 to 7.30 hrs “**Grand Rounds in Pediatric Endocrinology - Interactive case based discussion.**”: **Hall of Culture, Nehru Center, Worli, Mumbai 400018.**

Friday, 15 February, 2008 (Registration from 7:30 am)

ALL SESSIONS ARE FOLLOWED BY TIME FOR DISCUSSION

9:00- 9:40h **INAUGURATION**

9:45- 11:15h **Sesion I: Molecular Basis of Pediatric Endocrine Disorders: Clinical Lessons from Genetic Mutations**

- Role of Molecular Genetics in Pediatric Endocrinology: **Peter Clayton**
- Normal Female Puberty : Genes v/s Environment: **Charles Sultan**
- Disorders of Male Sexual Differentiation: **Garry Warne**
- Genetics of Congenital Adrenal Hyperplasia: **AC Ammini**

11:35- 13:10h **Sesion II: Molecular Basis of Pediatric Endocrine Disorders: Clinical Lessons from Genetic Mutations**

- Congenital Hypothyroidism : New Insights: **Annette Gruters**
- Persistent Hyperinsulinemic Hypoglycemia of Infancy: **Khalid Hussain**
- Growth Hormone Deficiency – Does Phenotype Predict the Genotype? **Yoo HW**

d. Indian Experience: **Meena P. Desai**

13:10- 14:05h **Session III: Growth, Endocrine & Metabolic Consequence of IUGR**

- a. Does Epigenetics Play a Role in Programmed Early Life Events: **Wayne Cutfield**
- b. Indian Experience : Intrauterine, Childhood Growth & Risk of Type 2 DM: **C.J.Yajnik**

14:45- 15:45h **Session IV: Pituitary Development & GH Therapy**

- a. Genetics of Pituitary Development: **Xiaoping Luo**
- b. Pharmacogenomics of GH Therapy: **Peter Clayton**
- c. Indian Experience: GH Therapy in GH Deficiency: **PSN Menon**

15:45- 16:50h **Session V: Diabetes Mellitus**

- a. Prediction and Prevention of Type 1 Diabetes Mellitus in Children: **Francesco Chiarelli**
- b. Genetics of Early Onset DM in India: **V. Mohan**
- c. Neonatal Diabetes : Genetics: **Khalid Hussain**

17:10- 17:55h **Session VI: Autoimmune Endocrinopathies**

- a. Thyroiditis in Pediatric and Adolescent Age Group: **Nikhil Tandon**
- b. APECED Syndrome (APS 1): Clinical & Genetic Aspects: **Eesh Bhatia**

19:00h onwards **Cultural Program and Dinner**

Saturday, 16 February, 2008 (Registration from 7:30am)

9:00- 09:45h **Session VII: Type I Diabetes Mellitus**

- a. Vascular Complications in Children with Diabetes: **Francesco Chiarelli**
- b. Optimal Management: The Indian Scenario: **Aspi Irani**

9:45- 11:30h **Session VIII: Maternal Endocrine Disorders and Impact on Fetus & Newborn: Optimal Care for Successful Outcome**

- a. • Maternal Diabetes: **Usha Sriram** • Fetus: Newborn of Diabetic Mother: **Wayne Cutfield**
- b. • Maternal Thyroid Disorders: **Nikhil Tandon** • Fetal – Neonatal Outcome: **P. Raghupathy**
- c. • Mat. Hyper/hypoparathyroidism: **Ambrish Mithal** • Management of the Newborn: **Ze'ev Hochberg**

11:50-13:05h **Session IX: Metabolic Bone Disorders**

- a. Evaluation and Management of Pediatric Osteoporosis: **Craig Munns**
- b. Newer Aspects of Rickets: **Ze'ev Hochberg**
- c. The State of Calcium and Vitamin D Nutrition in India
- i. Adolescent Girls: **Vaman khadilkar**
- ii. Pregnant Women and their Neonates: **Vijayalakshmi Bhatia**

13:05- 13:50h **Session X: Endocrine Neoplasia**

- a. Genomics of Endocrine Neoplasia: **Anita Borges**
- b. Endocrine Consequences of Childhood Malignancies: **Peter Clayton**

14:35- 16:05h **Poster Session**

16:05-17:15h **Session XI: Management Issues: Optimizing the Outcome**

- a. Growth hormone Deficiency: **Chris Cowell**
- b. Precocious Puberty: **Charles Sultan**
- c. CAH: **Garry Warne**
- d. Chronic Adrenal Insufficiency: **Nalini Shah**

17:35-18:00h **Session XII**

New Growth Hormone Formulations: **Paul Saenger**

18:00-18:20h **Session XIII: Pediatric Endocrinology: The Way Forward: MP Desai; Wayne Cutfield; Ze'ev Hochberg.**

Sunday, 17 February, 2008 (Registration from 7:30am: Single Day Registration available)

9:00- 9:30h **Session XIV: Growth in Infancy and Childhood**

a. Evolutionary Perspectives of Growth in Infancy and Childhood: **Ze'ev Hochberg**

9:30-10:45h **Session XV: Growth & Growth Hormone: Efficacy & Safety**

a. FSS & ISS: **Chris Cowell**

b. Turner Syndrome: **Paul Saenger**

c. Growth Hormone Beyond Growth: **Peter Clayton**

d. Can Height be Optimized following Corticosteroid Therapy? **TBA**

11:05- 11:40h **Session XVI: Thyroid Disorders**

Spectrum of Thyroid Disorders in Childhood: **Annette Gruters**

11:40-13:05h **Session XVII: Decision making in Neonatal Endocrinology**

a. Hypothyroxemia of Prematurity: **Annette Gruters**

b. Neonatal Hypopituitarism: **Xiaoping Luo**

c. Neonatal Hypocalcaemia: **Anju Seth**

d. Neonatal Hypoglycemia: **Khalid Hussain**

e. Role of Hydrocortisone in Pre Term Babies: **Wayne Cutfield**

13:50- 14:35h **Session XVIII: Is Surgical Intervention Justified?**

a. Strategies for Surgical Intervention in Disorders of Sexual Differentiation: Whether, When: **G Warne**

b. Cryptorchidism : Should the Treatment be Medical or Surgical: **Jyotsana Kirtane**

14:35-15:35h **Session XIX: Pediatric, Endocrine and Metabolic Emergencies**

a. Management of DKA in Children: **Francesco Chiarelli**

b. Mass Screening for Inborn Errors of Metabolism: **Yoo HW**

c. Acute Adrenal Insufficiency: **Xiaoping Luo**

15:55-16:35h **Session XX: Childhood Obesity**

a. Epidemiology of Obesity: Indian Scenario: **RK Marwah**

b. Childhood Obesity: A Therapeutic Challenge: **Shashank Joshi**

16:35-17:50h **Session XXI: Disorders of Puberty**

a. Precocious Puberty in Girls : How Much to Investigate: **Charles Sultan**

b. Approach to Gynecomastia: **Anju Virmani**

c. Central Hypogonadism : Therapy: i. Male **Archana Arya**; ii. Female: **Sangeeta Yadav**

17:55 to 18:10 Valedictory Function

REGISTRATION FORM

• Please tick appropriate box • Please use capitals • Foreign Nationals must pay in US\$

Title : Prof. Dr. Mr. Ms.
 Family Name: _____ First Name: _____
 IAP-PAEC Membership No.: _____ APPEP Membership No.: _____
 Institution: _____ Department: _____
 Mailing Address: Office Residence _____

 City: _____ State: _____ Country: _____ Postal Code: _____
 email: (essential) _____
 Telephone No. (Off) (+) _____ (Res) (+) _____
 Mobile:(+) _____ Fax No: (+) _____
 Meal preference : Vegetarian Non Vegetarian

Registration Fees

| Category | Upto 31 Dec 07 | Onsite |
|--|----------------|----------|
| Full Registration (14 - 17 Feb. 2008) | | |
| IAP-PAEC Member | 4000 INR | 4500 INR |
| Non Member | 4500 INR | 5000 INR |
| APPEP Member | 150 US\$ | 175 US\$ |
| Non Member | 175 US\$ | 200 US\$ |
| PG Student (Letter from HOD to be sent with registration form) | 2500 INR | 3000 INR |
| Accompanying Person | 2500 INR | 3000 INR |
| | 125 US\$ | 150 US\$ |

Grand Rounds with case discussion, Thu 14 Feb 2008

Registration is free but **Compulsory**

Restricted to 100 delegates registered for full update • Attending •
Not-Attending

One day registration available for practicing pediatricians for Sun 17 Feb 2008

| | | |
|----------------------------------|------------|-------------|
| | □ 1500 INR | □ 1750 INR |
| Outstation Cheque (Not for US\$) | +50 INR | +50 INR |
| TOTAL | INR | US\$ |

Mode of Payment (Tick any one) Cheque Draft: No.Dt:on....
 Cheque/Draft to be issued in favour of "**PEDENDO 2008**".

Registration Entitlement: Registration Fees for the Update will cover Delegate Kit, Tea/Coffee, 3 Lunches and 1 Social Event. Accompanying persons are entitled to Tea/Coffee, 3 Lunches, 1 Social Event and Half Day Sightseeing tour.

REGISTRATION FORM

Mail To: **Dr Nalini S Shah**, Secretary General, Dept of Endocrinology, KEM Hospital, Parel, Mumbai 400012. • Tel.: +91-22-2416 2917/ 2416 8714 • Fax: +91-22-2416 2883

• Mobile : +91-9820223288 • email : secretariatpedendo@gmail.com / nalinishah@gmail.com

www.pedendoupdate2008.org

REFUNDS: 25% Deduction: If written intimation is received before 1 Jan 2008

50% Deduction: If written intimation is received before 15 Jan 2008

No refund after 16 Jan 2008

Refunds will be sent after 18th Feb 2008



**Orient
Longman**

Pediatric Endocrine Disorders

Second edition

Edited by

Meena P Desai, P S N Menon, Vijayalakshmi Bhatia

Thoroughly Revised

New Colour Photographs

Special in this edition

**Molecular Basis of Pediatric Endocrinopathies
Disorders of Calcium, Phosphorus and Bone Metabolism
Principles of Hormone Measurement**

Copies available at

- *Your local medical bookshop*
- **Orient Longman**
3-6-752 Himayatnagar, Hyderabad 500 029; Ph 040-2766 2849-50, 2761 0898, 2764 5049; cogeneral@orientlongman.com
- www.orientlongman.com

If undelivered, please return to: C6/ 6477, VASANT KUNJ, NEW DELHI 110070.