

Diabetes

- **Diabetes:** Diabetes is the most common endocrine problem, It occurs due to deficiency of the key metabolic hormone 'Insulin'. Diabetes presents with weakness, easy fatigability, pain in limbs, gain or loss of weight, increase in urination, thirst and appetite and delayed wound healing. Annoyingly, about half the cases of Diabetes do not have any symptoms for many years in the beginning. Proper diagnosis of Diabetes can be made only by blood sugar test. If not well managed right from the beginning, Diabetes leads to development of serious complications like heart attack, paralysis, brain hemorrhage, blindness, kidney failure, impotence, ulcers and gangrene of legs. However, all this is preventable and a healthy and long life is possible through a comprehensive Diabetes management programme. Diabetic patients must read the section [Diabetes Education](#) and follow the Magic of Ten with absolute sincerity.[Read More](#)



Diabetic foot ulcer with gangrene

Thyroid Diseases

- **Thyroid Diseases:** Thyroid gland is situated in the neck and secretes two hormones T3 and T4. These hormones are crucial for the function of every body organ. Thyroid diseases can present with a wide variety of symptoms. Enlargement of the gland is known as 'goiter'. When the gland works less efficiently, the condition is known as 'hypothyroidism'. Symptoms of hypothyroidism include weight gain, swelling, rough skin, falling and graying of hair, lethargy, lack of energy, easy fatigability, breathlessness, lack of freshness, cold intolerance, forgetfulness, irritability, constipation, joint pains, menstrual disturbances and infertility. When the gland secretes more hormones than normal, the condition is known as 'hyperthyroidism' or 'thyrotoxicosis'. Symptoms of thyrotoxicosis include weight loss, tremors, increased sweating, bulging of eyes, palpitation, nervousness, sleeplessness, diarrhea, breathlessness and menstrual disturbances. Thyroid diseases are although very serious, yet they are fully treatable. Swelling of the Thyroid gland is called a Goiter. Goiters may be diffuse or nodular. Nodular goiters have a high chance of being malignant. Thyroid diseases occur as a rule due to genetic predisposition, which might have been inherited from parents or forefathers, or developed de-novo in the individual through genetic mutation. Many environmental factors have also been linked to development of thyroid diseases. Some of these putative factors include ingestion of cabbage and rapeseed oil, mental stress, excessive intake of Iodine, environmental pollution and abnormal salt composition of drinking water. Use of certain drugs like Lithium Carbonate and Amiodarone is strongly linked to development of thyroid diseases. Thyroid diseases occur primarily in women. They are seven to eight times commoner in women as compared to men. In women half the cases tend to occur either during pregnancy or within one year after delivery. Iodine deficiency used to be an important cause of Goiter in India. That has however been eradicated after the introduction of iodized salt in the country. Iodized salt on the other hand may lead to increased incidence of auto-immune thyroid diseases in people who are genetically predisposed to develop thyroid autoimmunity and who, to begin with, never had a nutritional iodine deficiency. Such people who have initial stages of autoimmune thyroid involvement as shown by high levels of thyroid antibodies, should best avoid consuming iodized salt. They should alternatively use rock salt (Sendha namak) that is normally used during Hindu fasts in India.[Read More](#).....[Read More](#).....[Read More](#).



A patient of



Goiter



Hypothyroidism Before



Cretinism

Obesity

- **Obesity:** Obesity or fatness is a serious disease of the modern world. Obesity gives rise to mechanical problems like arthritis, difficulty in walking, shortness of breath, respiratory obstruction, snoring and difficulty in sleep (sleep apnoea). It also causes serious systemic illnesses like diabetes, hypertension, gout, heart diseases, brain stroke, gall bladder stones and certain cancers. Obesity can be defined by Body Mass index (BMI). BMI is calculated by dividing body weight (kg) by the square of height (meters). Any value between 19 and 23 is ideal. 23 to 27 is overweight and more than 27 is obesity. Overweight people should be treated with lifestyle management while obese ones should also be given drug therapy. Surgery is usually reserved for more severe cases having a BMI of more than 35. Another way to define obesity is by way of waist to hip ratio (WHR). It is calculated by dividing the circumference of waist (at the level of umbilicus) by the circumference of hips. It should be less than 0.9 in males and 0.8 in females. A higher WHR than that signifies abdominal obesity even if BMI is seemingly normal. In most cases of obesity BMI and WHR both are abnormal.

Obesity is caused primarily by energy imbalance i.e. consumption of more calories than expended. This simplistic equation is not always true because of genetic and psychosomatic influences on metabolism. Some diseases notably hypothyroidism and Cushing's syndrome also cause obesity. Obesity may be of different types in different people. That developing during childhood generally involves the whole body equally and symmetrically. This type of an all round obesity is known as 'hyperplastic obesity' because there is an increase in the number of fat cells in the body. Obesity developing during adult life mainly involves the abdomen. It is known as central or abdominal obesity. In pathological terms it is generally a 'hypertrophic obesity' where fat cells don't increase in number but rather increase in size due to excessive storage of fatty material in each cell. Central obesity has more metabolic complications. It is generally of lesser magnitude and more responsive to treatment. Peripheral or all round obesity is generally more severe in magnitude and is associated with fewer metabolic but more of mechanical complications. It is more resistant to treatment. Two types of obesity often coexist and increase the chances of both metabolic and mechanical complications. Sometimes obesity develops as a complication of some defined event of life such as treatment of tuberculosis or typhoid, steroid therapy or any procedure on female genital tract including child birth, ligation, tubectomy, hysterectomy and abortion. Use of medicines like oral contraceptives and excessive alcohol intake may also trigger severe weight gain. The cause of obesity can be pinpointed and targeted for treatment. Treatment of obesity involves the use of medicines along with strict exercise and dietary discipline. Recent weight gain is more responsive to treatment than long standing one. Usually a decade old obesity becomes quite stubborn to treat. One thing is certain that if obesity is allowed to stay untreated, it will give rise to serious complications in due course of time. Obesity should be viewed as the first stage of an oncoming serious disease.[Read More](#)



Obesity



Obesity

Hirsutism (Facial hair in women)

- **Hirsutism:** Hirsutism denotes male pattern hair growth in women. This is mainly on the face in moustache and beard area. This is due to increase in the concentration of male hormones in women. Common causes of hirsutism include Cushing's syndrome, polycystic ovarian disease (PCOD), Congenital Adrenal Hyperplasia (CAH), adrenal and ovarian tumors, thyroid diseases and high levels of Prolactin. Cause of hirsutism can be accurately diagnosed through certain blood tests and MRI scans. Most cases can be treated either with medicines or surgery. Treatment may often be required for a long time ranging 1 to 5 years. Cosmetic therapy by Laser, electrolysis, waxing, plucking and shaving etc. can be simultaneously employed along with medical therapy. PCOD is by far the commonest cause of hirsutism, which requires strict lifestyle management in terms of diet, exercise, yoga and stress management along with drug therapy.[Read More](#)



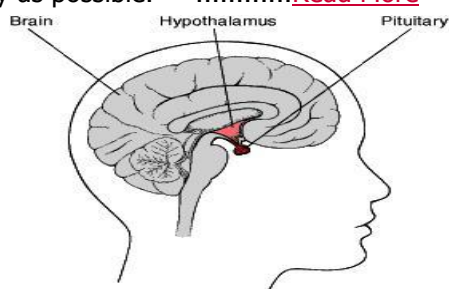
Hirsutism in a young woman

Disorders of Growth

- **Growth retardation:** Physical growth is a complex process that occurs through synergistic actions of many hormones including growth hormone, thyroid hormone, insulin and vitamin-D. Additional inputs are required from good nutrition, regular exercise, healthy emotional environment and proper sleep. Abnormal growth patterns may lead to short stature or abnormally tall stature. Adult height of an individual is genetically determined. Expected adult height of a child can be calculated by the following formula –

$$\frac{\text{Mother's height (cm)} + \text{father's height (cm)} \pm 13}{2} \pm 5\text{cms}$$

(13 cm is added to the total of parental heights for male child and deducted for female child) For example if father is 170 cm and mother is 160 cm, expected adult height of a male child would be $170 + 160 + 13 = 343$ divided by 2 = 171.5 ± 5cm would be 166.5 to 176.5 cm. Anything in that range would be considered normal growth. In the same example expected adult height of a female child would be $170 + 160 - 13 = 317$ divided by 2 = 158.5 ± 5cm would be 153.5 to 163.5 cm. Anything in that range would be considered normal growth for a female child. Growth follows a definite pattern and growth velocity of a child can be compared to a standard for evaluation of growth and development of the child. Standard growth charts for different growth charts are available for different societies. Normally a child stops growing after pubertal development. A girl grows till about 2 years after the beginning of menses and a boy grows till about 2 years after the development of beard. For treatment of growth problems, naturally the child should be brought for medical check-up as early as possible.[Read More](#)



Pituitary gland location in the brain



Acromegaly – A disease caused by a pituitary tumor

Diseases of Adrenal Gland

- **Adrenal diseases:** Adrenal glands are situated in the abdomen on top of the kidneys on both sides. Excessive secretion of Adrenal hormones causes a disease called Cushing's Syndrome. In this disease patient develops central obesity, hypertension, diabetes, bloating of the body, excessive weakness, osteoporosis and behavioral problems. Deficiency of adrenal hormones leads to weight loss, weakness, blackening of body, fall of blood pressure and nausea, vomiting (Addison's Disease). Both are serious, yet treatable conditions. Cushing's syndrome is mostly the result of a pituitary tumor and is treated by trans nasal pituitary surgery. Sometimes it may be caused by tumor in one of the adrenal glands (adrenal adenoma). In that case the involved adrenal gland is operated. In rare cases when no tumor can be demonstrated, removal of both the adrenal glands is required for saving life. Treatment of Cushing's syndrome is essentially surgical. On the other hand Addison's disease is treated by medicines. Medication in the form of steroid tablets, is however to be taken for the entire life. The most important aspect of treatment of Addison's disease is to keep on adjusting the dose of steroids according to the situation. It should be increased to double during mild, or to three times in severe infections or other acute intercurrent illnesses. In seemingly serious conditions the patient should be immediately hospitalized. Under expert guidance and monitoring, full lifespan and good quality life can be guaranteed to all patients of adrenal gland diseases[Read More](#)



Cushing's syndrome Caused by a pituitary tumor

Sex Problems

- **Sexual problems:** Sexual problems including lack of desire, painful or dry intercourse, lack of erection and early ejaculation can occur as the result of hormonal dysfunction. These problems may sometimes be associated with inability to conceive. Sexual problems can occur due to hormonal, vascular, neurological or psychological causes. By far the commonest cause of sexual problems is psychological. Mental stress, pre-conceived wrong notions and inter-personal conflicts between partners lead to significant sexual incompatibility. This can be successfully treated by counseling and medication. Hormonal deficiencies can be appropriately treated by hormonal replacement. Vascular and neurological causes of impotence are the most difficult ones to treat. Impotence due to vascular causes also heralds the onset of more serious vascular diseases like ischemic heart disease and cerebro-vascular disease. Diabetes is a common cause of sexual incompetence. It leads to the problem through all four ways namely hormonal, vascular, neurological and psychological derangements. Sexual problems should never be ignored. Their successful treatment enhances the quality of life and in the process other serious co-existent diseases can also be diagnosed and treated.[Read More](#)

Infertility

- **Infertility:** Sexual problems including lack of desire, painful or dry intercourse, lack of erection and early ejaculation can occur as the result of hormonal dysfunction. These problems may sometimes be associated with inability to conceive. Infertility means an inability to conceive. It may or may not be associated with sexual problems. Primary infertility signifies inability to have the first pregnancy while secondary infertility means an inability to conceive after a successful delivery or after a miscarriage. In couples facing the problem of infertility, around 60% are due to female factors and 40% are due to male factors. In about twenty percent of cases both partners may be responsible.

Causes of infertility may range from systemic illnesses to local genital problems. Work-up of an infertile couple requires blood and urine tests as well as imaging of the genital tract. Both partners must always be investigated together. Common female causes include hormonal disturbances, genital infections, tubal obstruction, anatomical defects, autoimmune phenomena, systemic diseases and mental stress. Conception is such a delicate phenomenon that most of the hormonal diseases can cause this. Common hormonal conditions causing infertility include hyper and hypothyroidism, Diabetes, Pituitary diseases, Adrenal diseases, PCOD, obesity and gonadal diseases (ovarian and testicular). With detailed examination and investigation, most cases can however be properly diagnosed and treated. Male causes of infertility include systemic diseases, hormonal diseases and inadequacy in sperm health or number. Complete absence (azoospermia) or deficient number of sperms (oligospermia) are the most difficult causes to treat. Decreased sperm motility is sometimes responsible for the problem and this can be properly treated. When nothing else works, artificial methods of insemination and in-vitro fertilization (test tube babies) may be tried. Surrogate motherhood is an alternative method considered beyond the realm of endocrinology.[Read More](#)

Problems of Puberty (Sexual Maturation)

- **Delayed Puberty (Lack of sexual development in boys and girls):** Sexual (pubertal) development occurs around the age of 12-13 in girls and 15-17 in boys. Due to variety of reasons this may get delayed or be totally absent. Delayed or absent puberty can happen due to genetic, pituitary or gonadal diseases. Actual cause of delayed puberty can be ascertained with the help of blood tests, ultrasound and MRI scanning, karyotyping and sometimes tissue biopsy. Genetic causes are most difficult to treat requiring life-long medication. Pituitary and gonadal diseases can be treated with appropriate hormone replacement. Sexual development and activity are easier to achieve with treatment while ensuring fertility is much more difficult. In genetic causes of delayed puberty (like Klinefelter's syndrome in boys and Turner's syndrome in girls), fertility is absolutely impossible. An endocrinologist should be consulted if girls don't show any pubertal change by 12 years of age or boys by 15 years of age.[Read More](#)
- **Precocious puberty:** Sometimes the pubertal changes tend to occur at a very early age. If girls start developing these changes before the age of 8 and boys before 10, this is known as precocious puberty. Pinpointing the cause and targeted treatment can cure the disease for ever. Precocious puberty occurs due to premature development of hypothalamic endocrine functions. Normally hypothalamus is programmed to get activated by 10-11 years of age in girls and 13-14 years in boys. A premature activation would lead to development of a true precocious puberty. Pseudo precocious puberty can sometimes develop without hypothalamic activation. True precocious puberty can develop sometimes in association with certain brain tumors. Precocious puberty leads to stunting of growth. Linear growth stops after full pubertal development, and once linear growth has stopped, it cannot be reinitiated by any form of treatment.. Secondly, children having precocious puberty are vulnerable for sexual exploitation because they look sexually well developed but are actually mentally very immature. Cases of precocious puberty are investigated to find out any co-existent brain tumor and to pin point the locus of the defect.. If diagnosed early, most children can be treated to achieve normal adult height and timely sexual maturation.[Read More](#)
- **Gynaecomastia:** Gynaecomastia is development of breasts in males. This is because of deficiency of male hormones and an excess of female hormones in males. Gynaecomastia can be on one or both sides and can occur in any age group. It can develop sometimes in boys aged 13 to 17 years during the stage of pubertal development. It is called Pubertal Gynaecomastia and is not a serious problem. It generally passes off with the passage of time. Occasionally it may require treatment if the breast size becomes big and embarrassing. It may respond to drug therapy but most cases respond inadequately and ultimately require surgical excision of the breast tissue. Sometimes gynaecomastia may be a manifestation of more serious genetic conditions such as Klinefelter's syndrome in which life-long hormonal therapy is required. Gynaecomastia may also develop on occasions as side effect of certain medicines. Most often gynaecomastia does not have serious repercussions on life or general health. It is mostly socially embarrassing cosmetic problem. It's diagnosis and treatment is important anyway, because some cases do have serious genetic diseases. Treatment of the condition leads to significant enhancement of self-image and self-confidence. Some

degree of gynaecomastia may normally develop during old age (after sixty), which is a totally innocuous condition.[Read More](#)



gynecomastia1



gynecomastia1

Menstrual Disorders

- **Menstrual problems:** Menstrual cycles are regulated by well orchestrated action of many pituitary, thyroid and gonadal hormones. Menstrual dysfunction including complete cessation of periods can occur due to problems in any of these hormones. Similarly menopause in women and andropause in men brings in its wake many physical and psychic problems. They can all be treated by proper administration of the deficient hormones. Commonest menstrual problems include irregular bleeding, inadequate flow, painful periods, excessive bleeding and cessation of periods (amenorrhoea). Systemic illnesses, genital infections, gynaecological problems, mental stress and hormonal diseases can cause menstrual problems. Amongst hormonal diseases, thyroid diseases are common causes of both reduced and infrequent bleeding as well as excessive bleeding. Generally hypothyroidism leads to excessive bleeding while hyperthyroidism causes inadequate bleeding. There is however no fixed rule about that. High levels of Prolactin may lead to reduced or totally absent bleeding. Disturbances in the adrenal and pituitary hormones can also cause menstrual problems. A high LH/FSH ratio can cause amenorrhoea and so can high levels of male hormone Testosterone in a woman. Adrenal hormone DHEA and intermediary compound 17 hydroxy progesterone when elevated, can also lead to amenorrhoea. Finally obesity and excessive leanness (as seen in anorexia nervosa) can also cause serious menstrual problems. Fortunately most of these diseases can be properly diagnosed and adequately treated.[Read More](#)

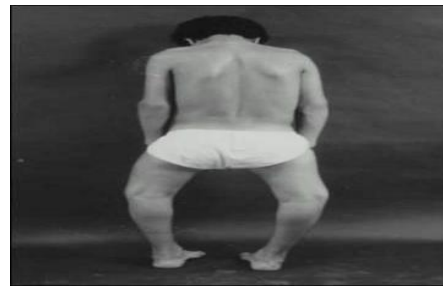
Metabolic Bone Disease

- **Metabolic bone disease:** Bone health depends upon the availability of good nutrition, exercise and proper action of certain key hormones including PTH, thyroid hormone and vitamin-D. In the absence of proper action of these hormones, bones become fragile and weak (Osteoporosis) or soft and malleable (Rickets, Osteomalacia). Osteoporotic bones tend to give nagging pain around the involved region and break at the slightest provocation (Osteoporotic Fractures). Gradual loss of bone tissue is a programmed function of the human bodies. This is generally seen in people of both sexes beyond 60 years of age and even younger post menopausal women. In Rickets and Osteomalacia, soft and malleable bones tend to get curved and unable to perform movement and other actions. Osteoporosis is a very common problem but is unfortunately not well recognized and timely diagnosed. Ideally all post menopausal women and senior men beyond sixty years of age should be regularly investigated at 3-5 year interval. Osteoporosis is accurately diagnosed by estimating Bone Mineral Density (BMD). BMD can be tested in many ways but DEXA is the most sensitive method. Chances of osteoporosis are highest in those women and men who have slender bones to begin with, whose diets are deficient in calcium, who don't get sufficient sunlight or lead sedentary life. In order to minimize the risk of osteoporosis in old age, one should ensure development of thick and strong bones right from an early age. Starting from childhood one should maintain intake of around half to one liter of milk (or milk products) per day, 1-2 hours of outdoor activity and sports and sufficient exposure to sunlight. Supplementation of vitamin D in the form of medicine or through fortified oils during childhood and continuing throughout life is a good option to prevent osteoporosis in old age. Osteoporotic fractures can occur at any place but the commonest location for that is spine. Such fractures lead to significant morbidity and ultimately lead to development of kyphosis (hunch back). All this can be avoided by timely diagnosis and adequate treatment. Nowadays medicines are available that not only prevent further bone loss but can also lead to development of new bone

tissue.[Read More](#)



Normal and Osteoporotic Bone



Rickets causing curved bones

Disorders of Milk secretion

- A female body is so programmed that milk secretion starts occurring from the breasts just after the delivery of a baby. Milk is normally secreted in response to the suckling action of the baby. Sometimes milk secretion is excessive and sometimes too less. Sometimes milk secretion occurs inappropriately i.e. in seemingly normal, non delivery situations. Rarely it may occur in men too. This abnormal secretion of milk or milk like fluid from the breasts of women (or men) is called Galactorrhoea. This is predominantly because of excessive secretion of a pituitary hormone known as Prolactin. High levels of Prolactin can also lead to inability to conceive (Infertility) and cessation of menses (Amenorrhoea). In most cases high levels of Prolactin are caused by a pituitary tumor (Prolactinoma). This is generally a very small tumor (micro adenoma), a few millimeters in diameter and responds very well to anti-Prolactin drug therapy. Neurosurgical removal of the tumor or ablation of the tumor by radiotherapy is required very rarely. Problems developing because of high levels of Prolactin, Galactorrhoea, Amenorrhoea or Infertility all respond very well to drug therapy.[Read More](#)