

## **Causes of Short Stature**

### Physiological:

- Familial
- Constitutional

#### Pathological:

- Undernutrition
- Chronic systemic diseases
- Endocrine Causes
- Psychosocial dwarfism
- SGA babies
- Skeletal dysplasias
- Genetic syndromes

## Assessment of child with Short Stature

- Accurate height assessment
- Assessment of body proportions
- Assessment of height velocity
- Comparison with population norms
- Comparison with child's own genetic potential
- Sexual maturity rating

| Evaluation                                |                       |  |  |
|---|-----------------------|--|--|
| History                                   | Etiology              |  |  |
| LBW                                       | SGA                   |  |  |
| Polyuria                                  | CRF, RTA              |  |  |
| Chronic Diarrhoea                         | Malabsorption         |  |  |
| Neonatal hypoglycemia/Micropenis/Jaundice | GH deficiency         |  |  |
| Headache/Vomiting/Visual problem          | ICSOL                 |  |  |
| Lethargy/Constipation/ Weight gain        | Hypothyroidism        |  |  |
| Dietary intake                            | Undernutrition        |  |  |
| Social History                            | Psychosocial dwarfism |  |  |
| Delayed puberty in parents                | Constitutional delay  |  |  |

| Examination   |                            |  |  |
|---|----------------------------|--|--|
|   |                            |  |  |
| Findings  | Etiology                   |  |  |
| Body disproportion  | Skeletal dysplasia/Rickets |  |  |
| Pallor  | CRF                        |  |  |
| Dysmorphism   | Genetic syndromes          |  |  |
| Hypertension  | CRF                        |  |  |
| Frontal bossing, depressed nasal bridge, crowded teeth, small penis | GHD                        |  |  |
| Goiter/coarse skin  | Hypothyroidism             |  |  |
| Central obesity/Striae  | Cushing Syndrome           |  |  |

## Investigations

### **Level One:**

- Complete Hmg with ESR
- Bone Age
- Urinalysis
- Stool examination
- RFT
- LFT
- FBS

## Investigations cont.....

### **Level Two:**

- TFT
- Karyotying

### **Level Three:**

- Celiac serology
- GH stimulation tests

# Bone Age

- Usually BA< CA
- Exceptions: Familial short stature Precociuos puberty
- BA= HA: Constitutional delay Undernutrition Systemic illness
- BA< HA: GHD Hypothyroidism

## **Familial Short Stature**

- Normal height & weight at birth
- Catch down in growth
- By 2 years, height & weight lies on target centile
- Growth velocity normal
- Bone age = chronological age
- Normal puberty
- Final height low but within target range

## **Constitutional Short Stature**

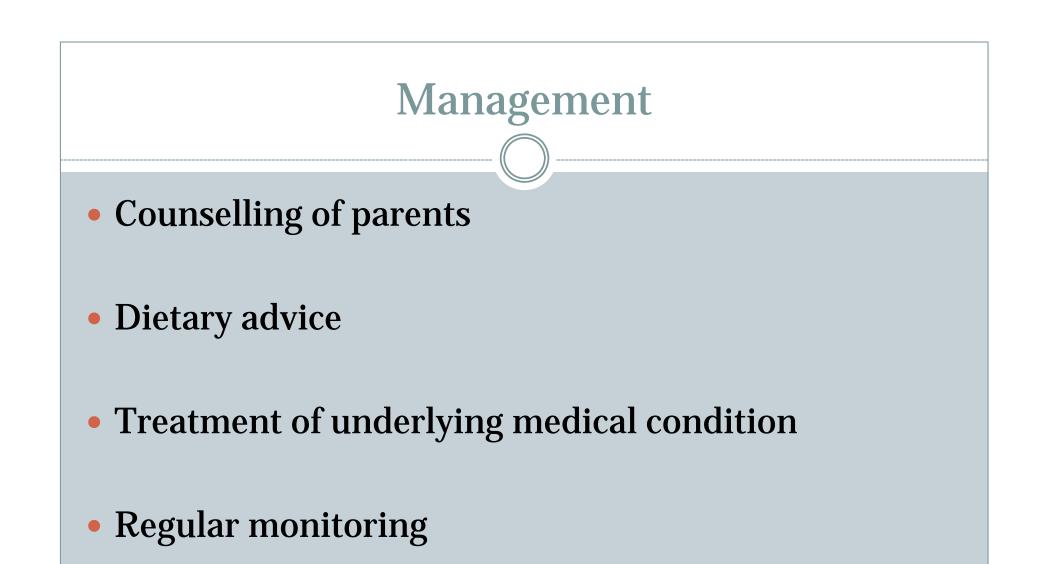
- Normal length & weight at birth
- Normal growth till 6-12 months
- Deceleration till 2-3 yrs
- Height velocity accelerates & grow parallel to 3<sup>rd</sup> percentile
- Normal height velocity
- Delayed puberty
- Final height normal
- Bone age < Chronological age</li>
- Bone age = Height Age
- Family history of delayed puberty

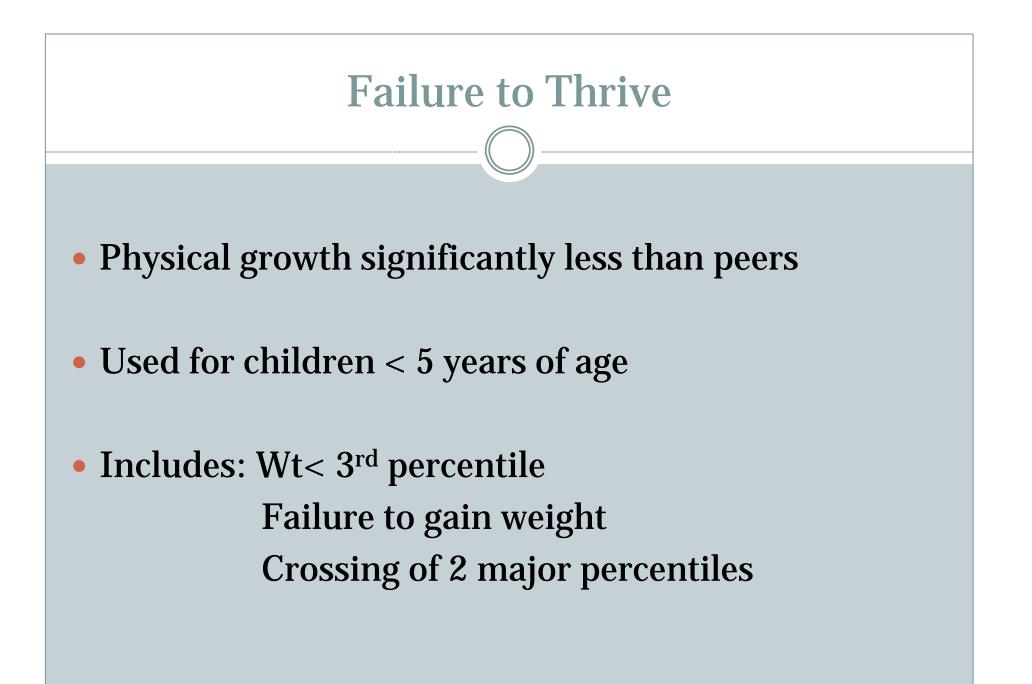
## **Constitutional Vs Familial**

| Feature         | Constitutional              | Familial                         |  |
|-----------------|-----------------------------|----------------------------------|--|
| Height          | Short                       | Short                            |  |
| Height velocity | Normal                      | Normal                           |  |
| Family history  | Of delayed puberty          | Of short stature                 |  |
| Bone age        | Less than chronological age | Normal                           |  |
| Puberty         | Delayed                     | Normal                           |  |
| Final height    | Normal                      | Low but normal for target height |  |
|                 |                             |                                  |  |

## **Psychological Dwarfism**

- Emotional deprivation dwarfism/ Maternal deprivation dwarfism/ Hyperphagic short stature
- Functional hypopituitarism
- Low IGF-1 levels & inadequate response to GH
- Good catch up growth in less stressful environment





## Etiology

### **Organic:**

- GI
- CNS
- Renal
- Cardiopulmonary
- Endocrine
- Infections
- Genetic

## Etiology cont...

- Non organic:
- Poverty
- Faulty diet
- Psychosocial

