

# PEARLS IN PAEDIATRIC ENDOCRINOLOGY

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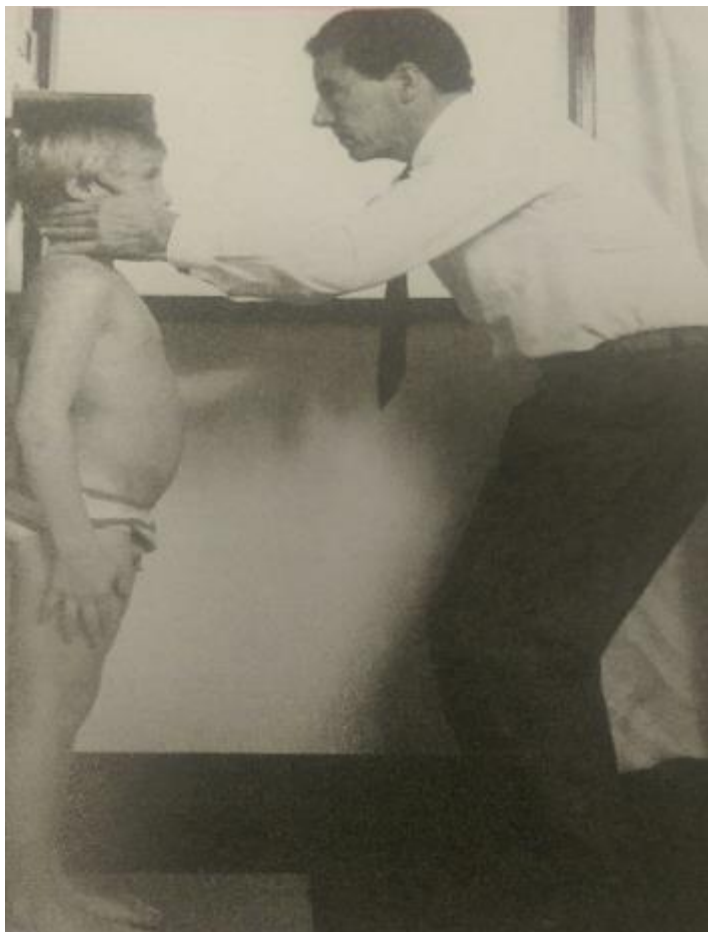
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# Type 1 Diabetes

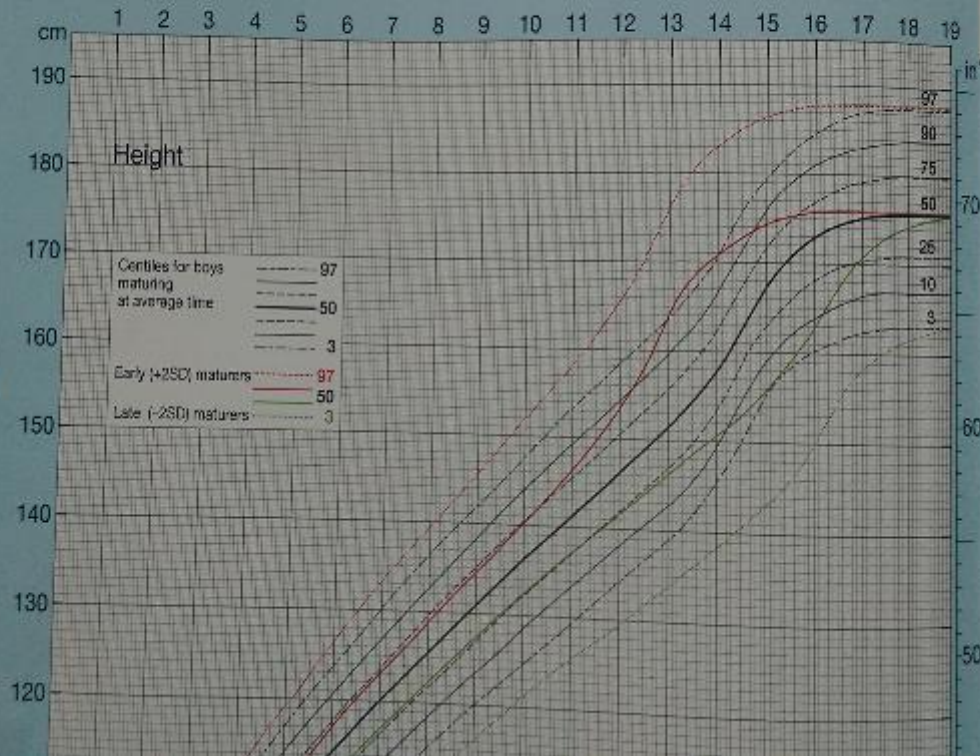
- Diabetes progresses from islet cell antibodies through hyperglycemia and symptoms to ketosis to DKA
- Increasing annual incidence in younger children. 5.4% vs 3.9% (Ireland childhood incidence is 27.5/100,000/yr)
- Higher incidence of DKA at diagnosis in <5yrs. 33% and not improving (< 2yrs 40 to 50%.) Why? No one thinks!
- Significant morbidity and mortality of DKA.
- Symptoms and CBG >11mmol/l. ? Ketones >1mmol/l.

# Normal Growth

- Physiology
- How to Measure. Proportions.
- Growth Charts
- Mid Parental Percentile
- Weight versus height percentiles
- Growth velocity. Crossing centiles.
- Bone Age
- Screening tests



# BOYS



Surname

Forename

Date of Birth

kg

80

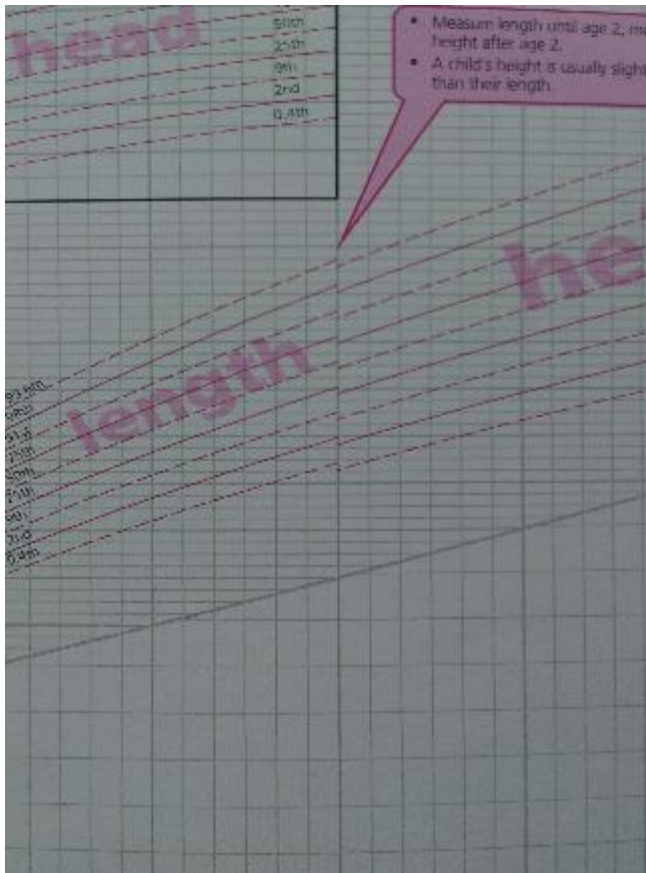
Weight

70

Centi

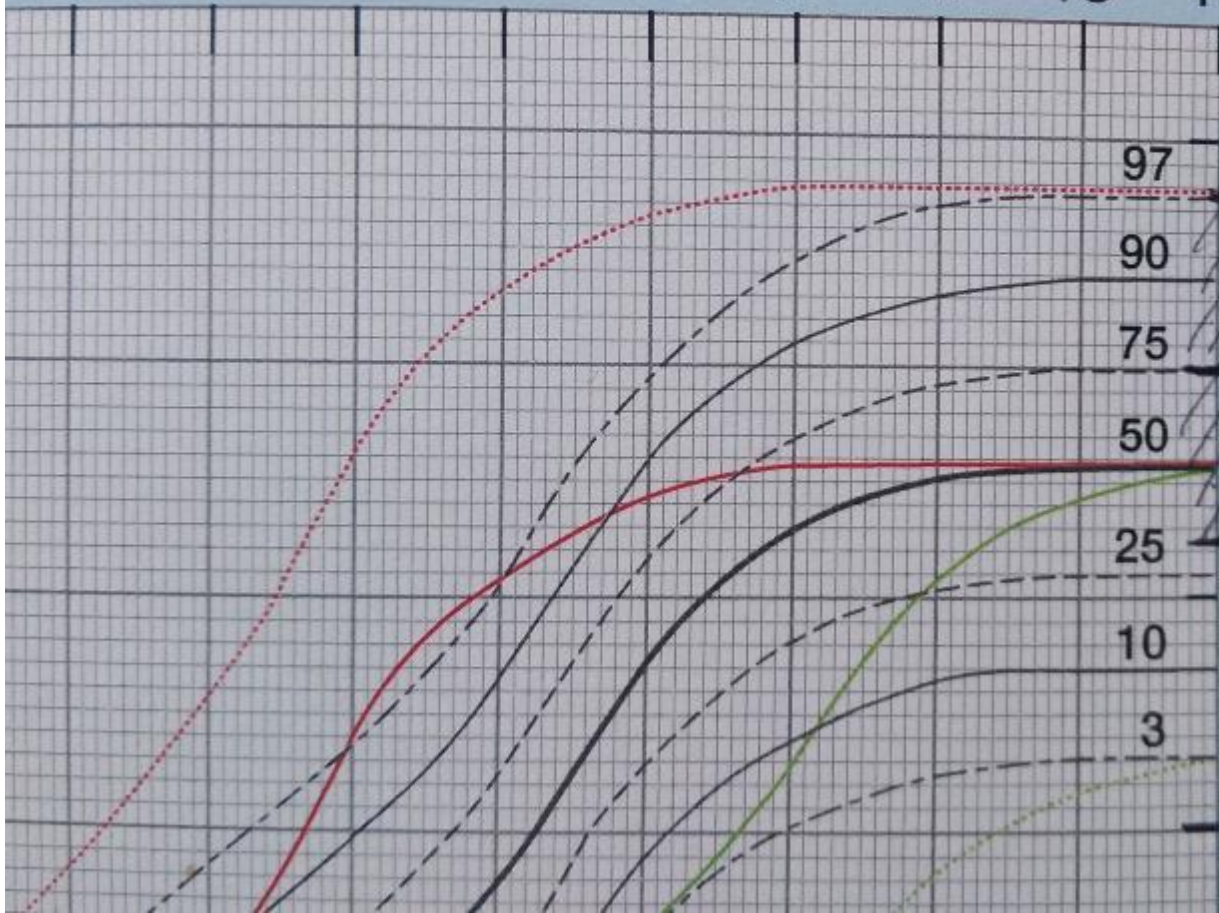
60

50



11 12 13 14 15 16 17 18 19

Date of Birth



in

97

DAD

90

8.5cm

75

MPP

50

70 8.5cm

25

Mum%

80

10

+12.5cm

3

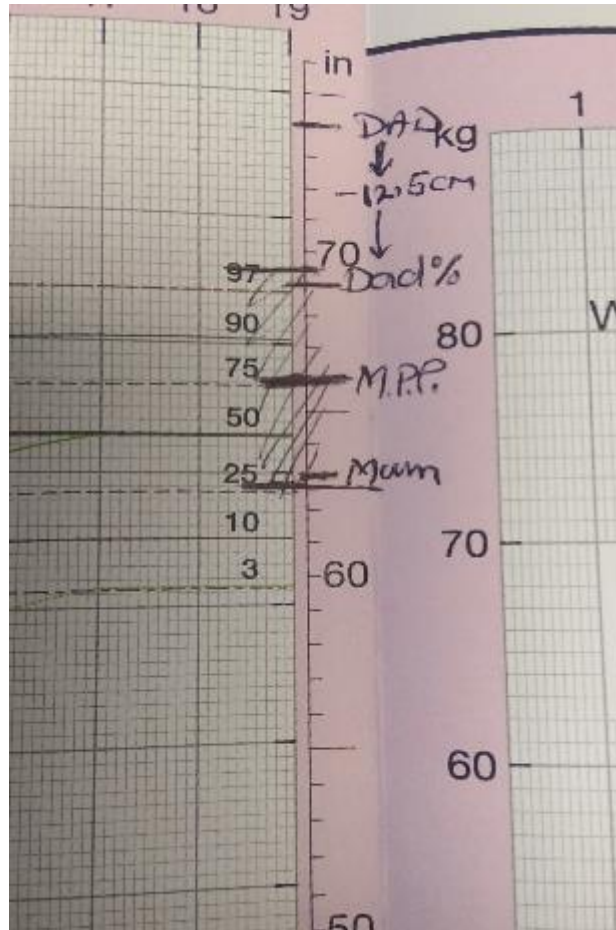
Mum.

1

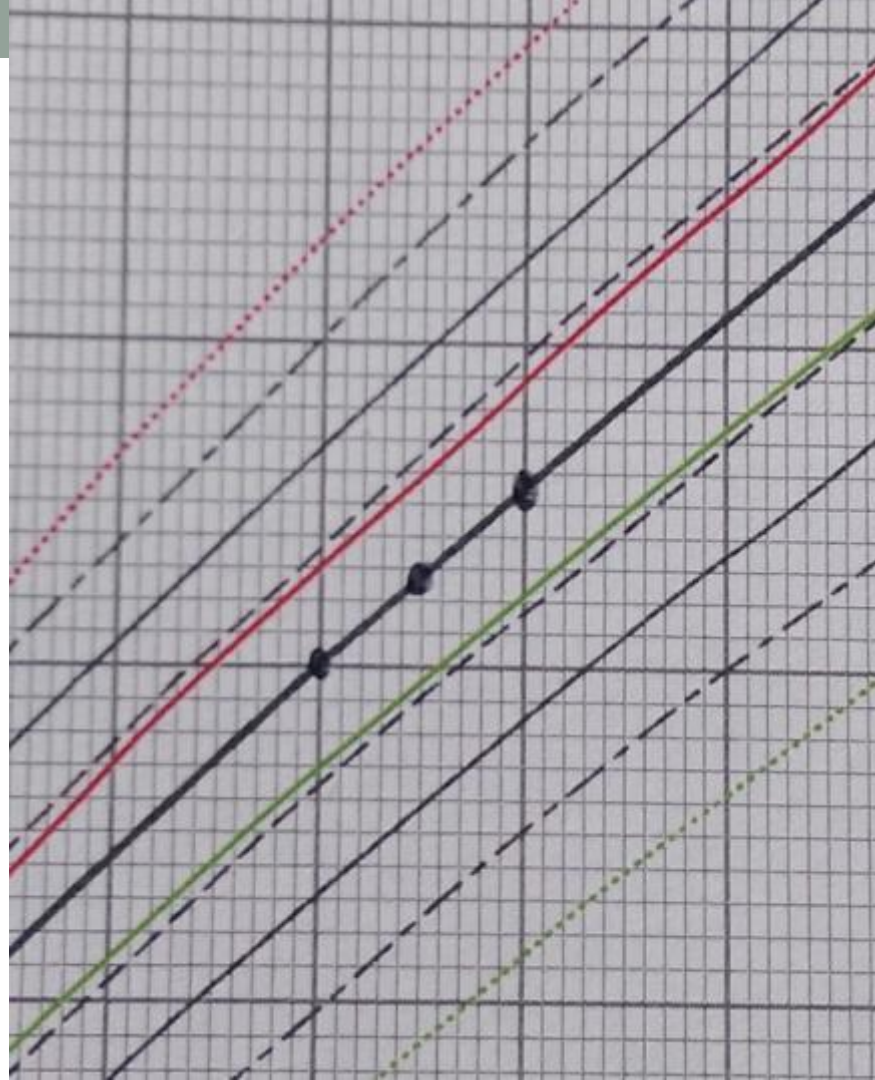
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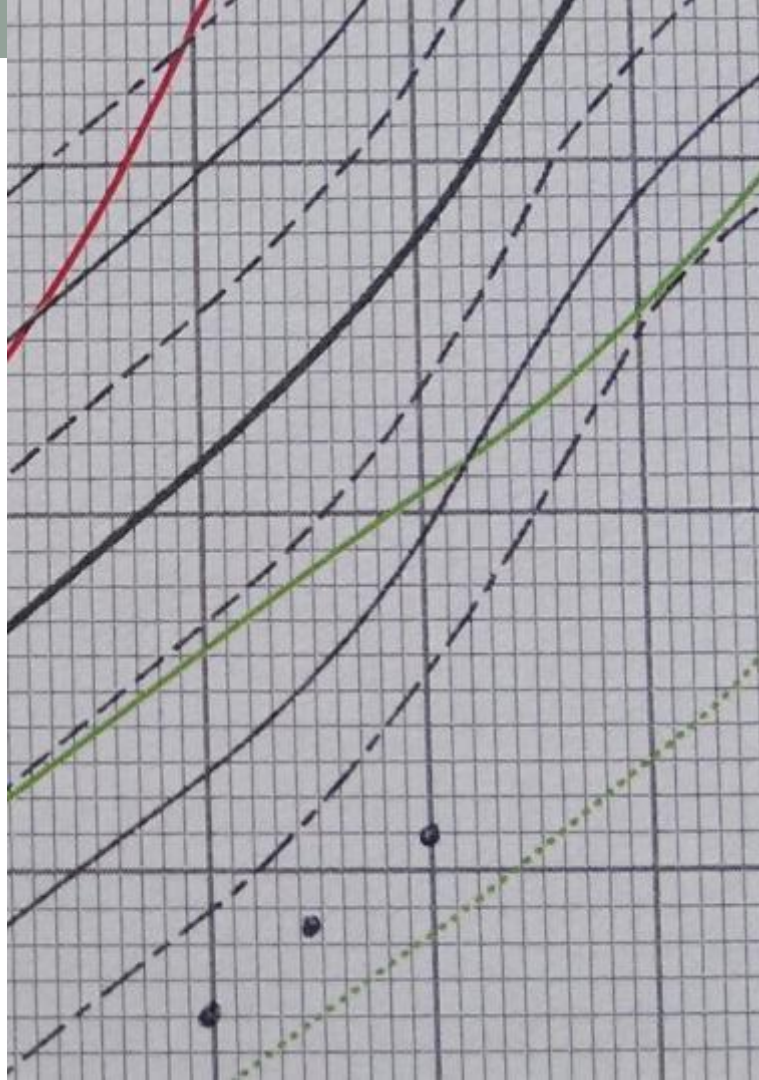
Weight

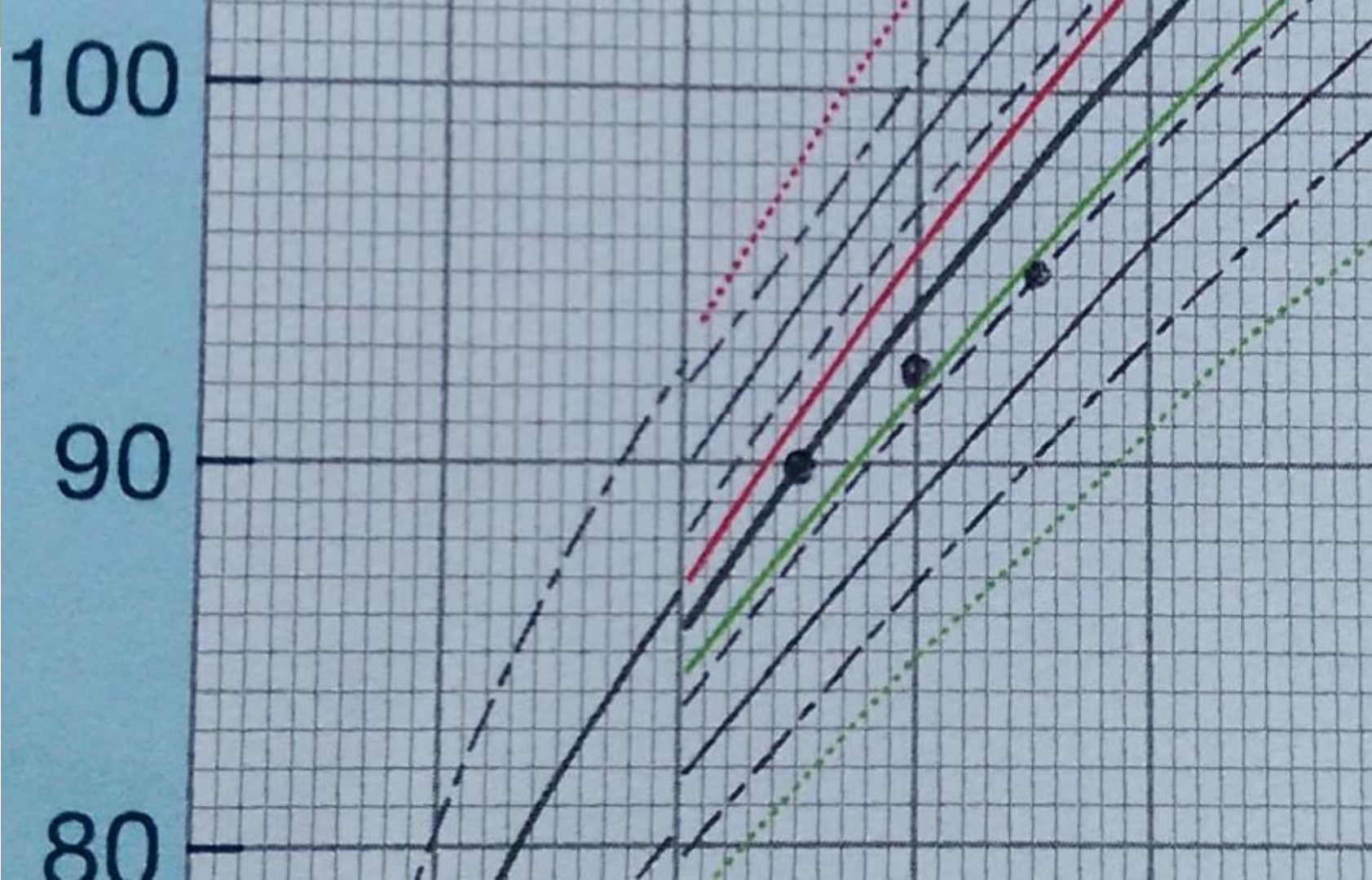












# Growth: screening

FBC, Ferritin, U and E, CRP, LFT's, TtG, Tft's, IGF1.

Karyotype in all girls shorter than expected for family and/or growing slowly.

Referral point

Definitive testing for Growth hormone deficiency is difficult.

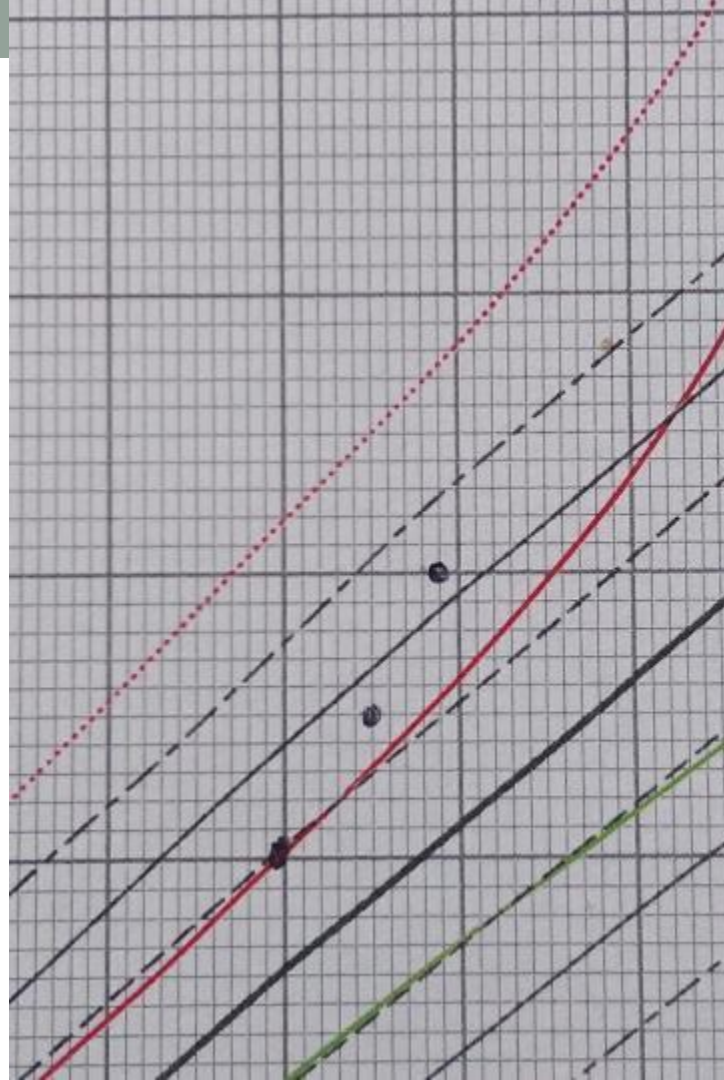
# Causes of Short Stature

- Familial
- Constitutional Delay of Growth (and puberty).
- Underlying illness (Coeliac, Renal)
- Psychosocial
- SGA/IUGR (RSS)
- Turner Mosaic.
- Hypothyroidism
- Growth hormone deficiency. (1st stage diagnosis)

# Puberty

- Physiology.
- 5 Tanner Stages for Pubic hair, genitalia and breasts.
- Premature Thelarche. Non Progressive.
- Precocious Adrenarche. Onset <6 yrs in girls or 7 in boys.
- Precocious Puberty if onset <8yrs in girls or 9yrs in boys.
- True (central) PP versus Pseudo(peripheral).
- Females versus males.
- LHRH agonists as treatment.







The bladder should be empty.

## Testis Charts (1986)

### **Genital (penis) development:**

- Stage 1.* Pre-adolescent, testes, scrotum and penis are of about the same size and proportion as in early childhood.
- Stage 2.* Enlargement of scrotum and testes. Skin of scrotum redness and changes in texture. Little or no enlargement of penis at the stage.
- Stage 3.* Enlargement of penis, which occurs at first mainly in length, further growth of testes and scrotum.
- Stage 4.* Increased size of penis with growth in breadth and development of glans. Testes and scrotum larger, scrotal skin darkened.
- Stage 5.* Genitalia adult in size and shape.

### **Pubic hair**

- Stage 1.* Pre-adolescent. The vellus over the pubes is not further developed than that over the abdominal wall, i.e. no pubic hair.

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Stage 5. Genitalia adult in size and shape.

### **Pubic hair**

- Stage 1. Pre-adolescent. The vellus over the pubes is not further developed than that over the abdominal wall, i.e. no pubic hair.
- Stage 2. Sparse growth of long, slightly pigmented downy hair, straight or slightly curled, chiefly at the base of the penis.
- Stage 3. Considerably darker, coarser and more curled. The hair spreads sparsely over the junction of the pubes.
- Stage 4. Hair now adult in type, but area covered is still considerably smaller than in the adult. No spread to the medial surface of thighs.
- Stage 5. Adult in the quantity and type with distribution of the horizontal (or classically 'feminine') pattern. Spread to medial surface of thighs but not up linea alba or elsewhere above the base of the inverse triangle (spread up linea alba occurs late and rated stage 6).

### **Decimal age**

The system of decimal age has been used in all charts. Thus the year is divided

conveniently recorded to the last completed 0.1kg above the age of 6 months.  
The bladder should be empty.

## Charts (1986)

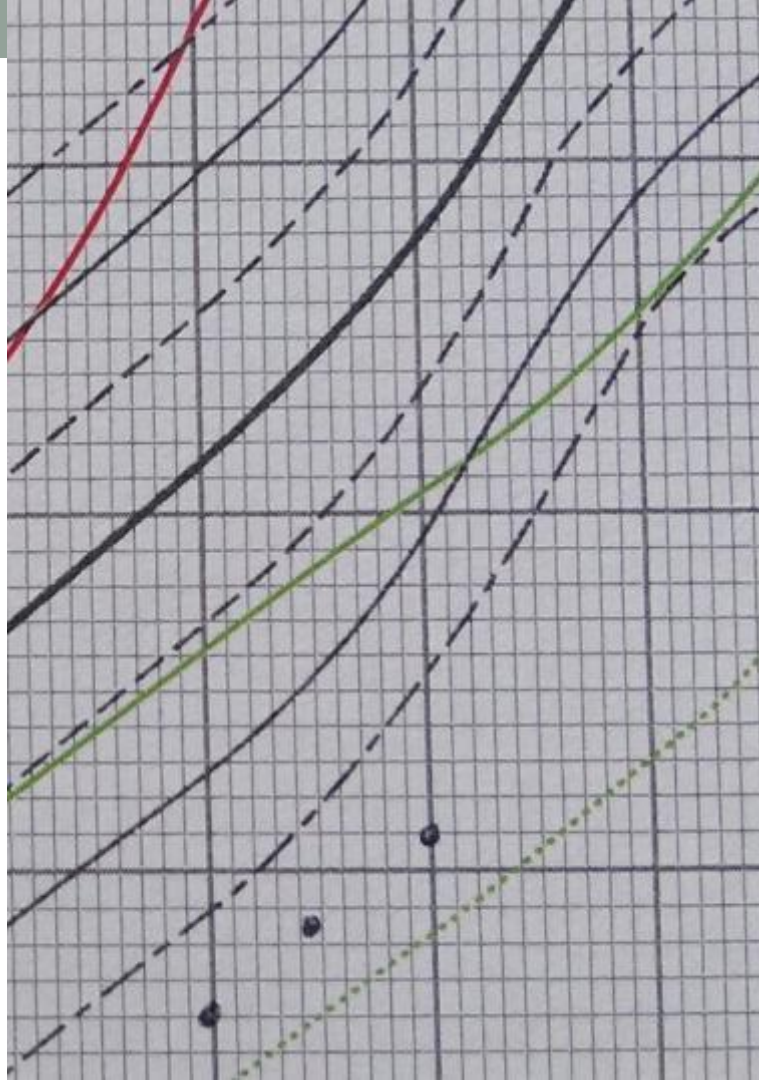
### Breast development

- Stage 1.* Pre-adolescent: elevation of papilla only.
- Stage 2.* Breast bud stage: elevation of breast and papilla as small mound.  
Enlargement of areola diameter.
- Stage 3.* Further enlargement and elevation of breast and areola, with no separation of their contours.
- Stage 4.* Projection of areola and papilla to form a secondary mound above the level of the breast.
- Stage 5.* Mature stage: projection of papilla only, due to recession of the areola to the general contour of the breast.

# Delayed Puberty

- No signs after 12 in girls or 14 in boys.
- Family History.
- Height, Proportions, Sense of smell.
- Bone age delayed ?CDGP if BA <12/14 yrs.
- If BA not delayed. LH and FSH. Testosterone No.
- If LH and FSH high Primary gonadal problem.
- If normal or low hypothalamo/pituitary or extreme delay
- Trail of testosterone/estrogen.





# Obesity

- Exogenous kids are tall for family and have advanced BA.
- Endocrine cause very rare.
- Consequences of Obesity. Social. Sleep. Metabolic syndrome from Insulin resistance. PCOS. DM type 2.
- Acquired Primary hypothyroidism. Short, myxedema, constipation, cold etc. Beware of T21 and + Fhx.

# Syndromes

- Turner. 45X.(majority Mosaics)
- Klinefelter Syndrome 47xxy.



### Turner Syndrome Chart 1-20 years

