



Royal College of  
General Practitioners  
SOUTH WEST REGION



# The Prevention and Management of Childhood Obesity

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Wessex RCGP Webinar Series

[www.wessexfaculty.co.uk](http://www.wessexfaculty.co.uk)

# 'Turning off the tap...' the Prevention and Management of Childhood Obesity



# Topics – to inspire you??

- Recognising the problem
- Is it his glands doctor?
- The scale of the problem
- Modifiable risk factors?
- MECC
- Management
- Signposting and follow up
- Barriers
- ? Safeguarding



? Normal

? UW

? OW

? OB

Age 8

Weight 22.5kg

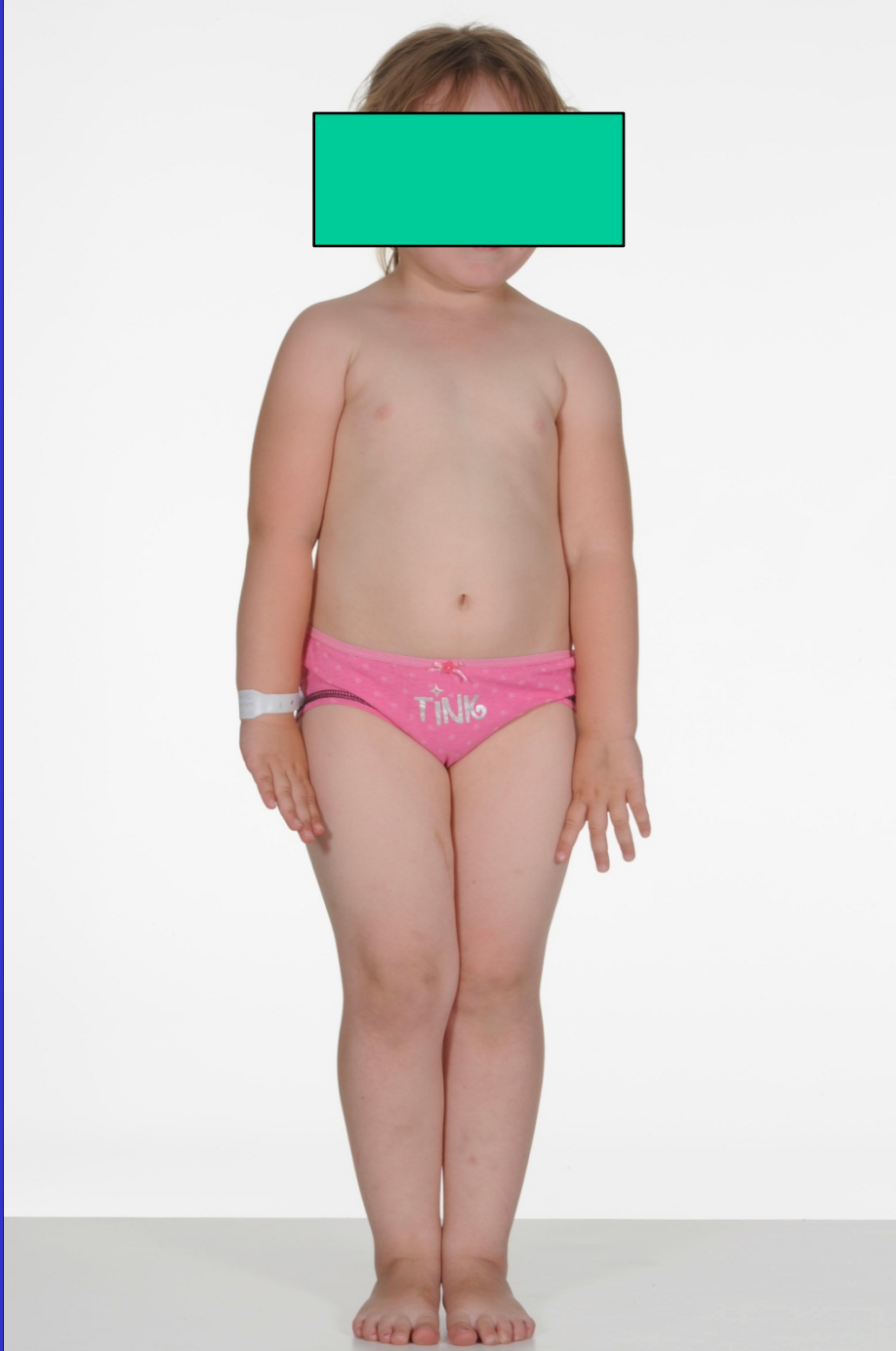
Height 122.5cm

BMI = 15

Normal

25-50<sup>th</sup> centiles

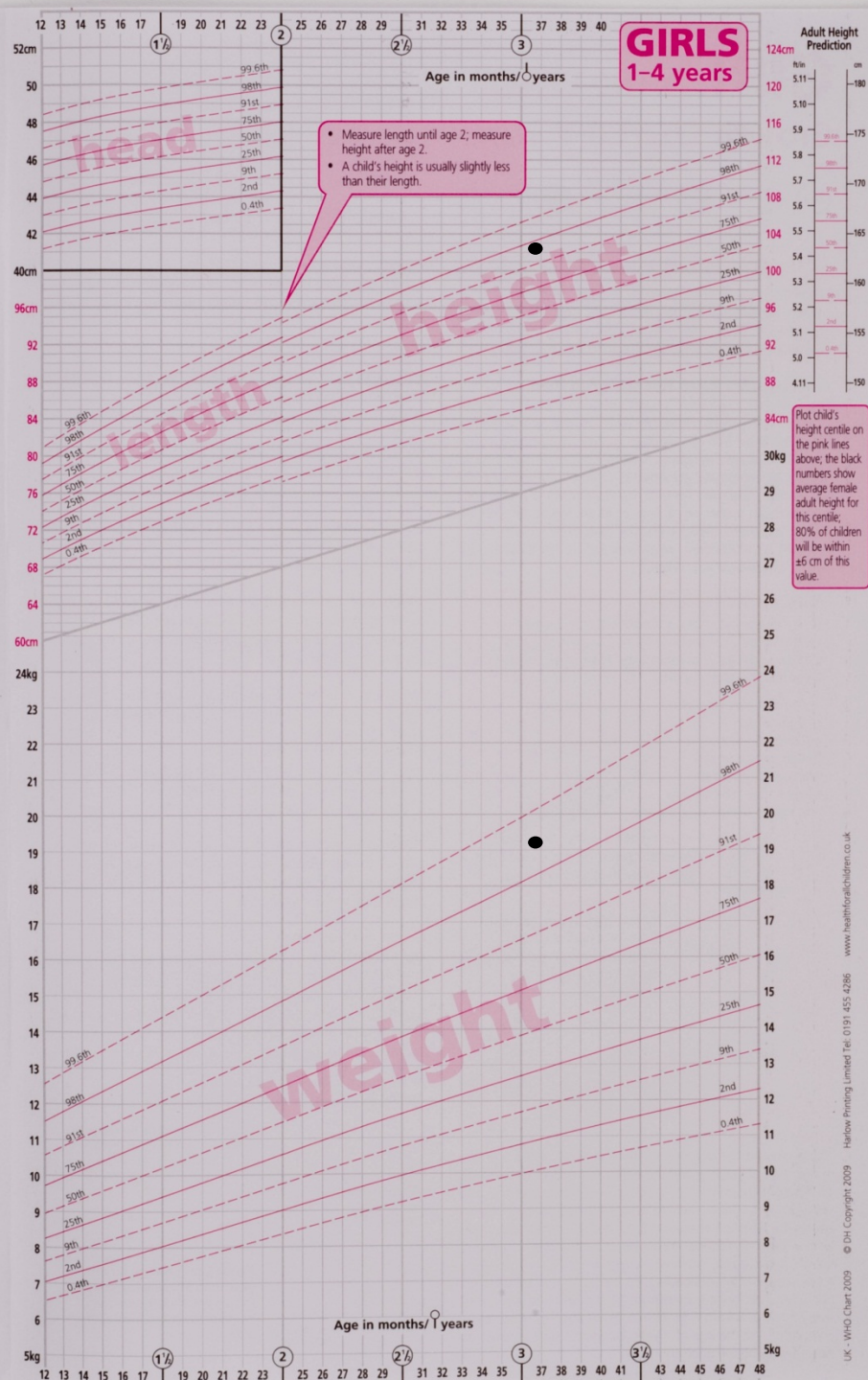




Age 4 and 1 month  
Weight 18.6kg  
Height 100.2cm  
BMI 18.6

91<sup>st</sup>-98<sup>th</sup> centile  
OW

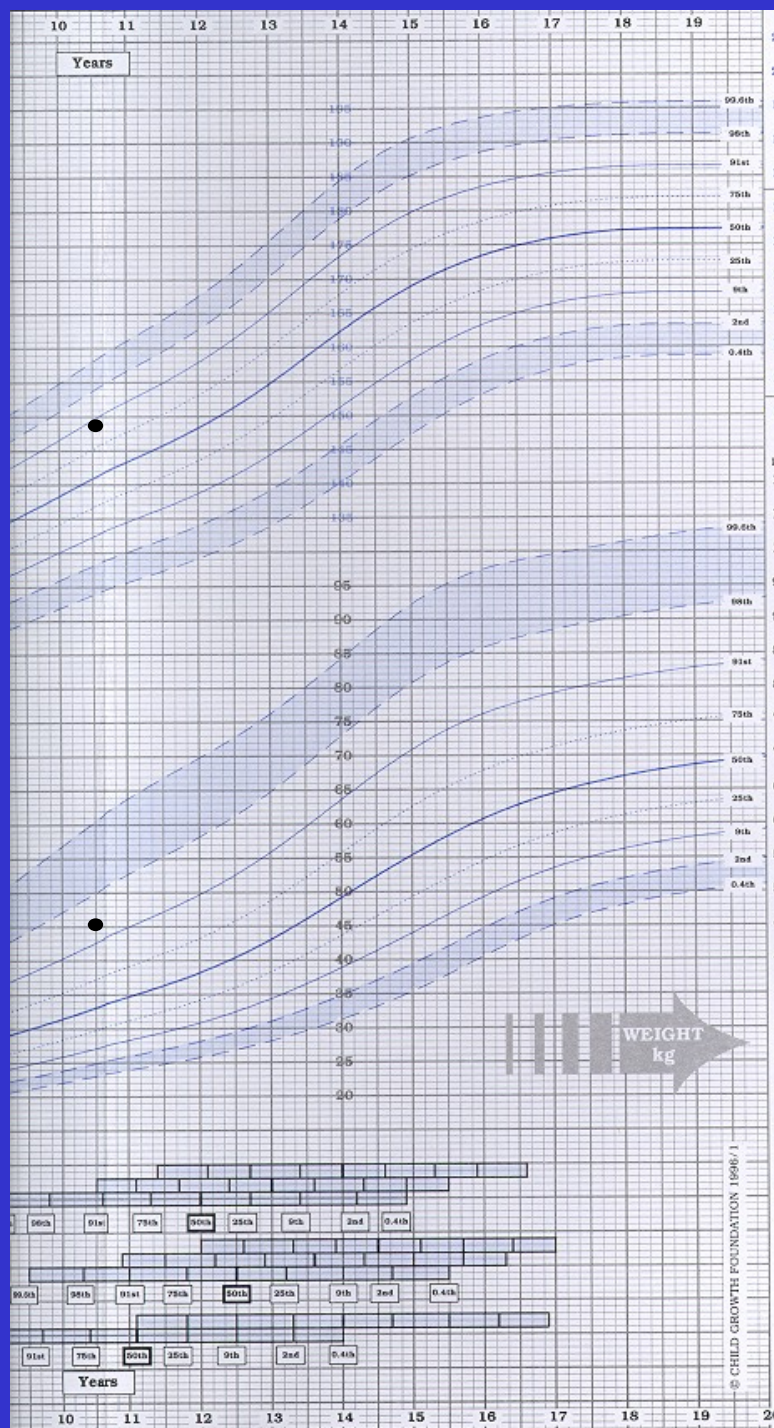




Is this girl  
in proportion?

BMI = 17.9 OW





Is this boy  
in proportion?

BMI 20.5 = OW

#### ADULT HEIGHT POTENTIAL CALCULATION TABLE

- (a) .....cm  
(b) .....cm  
(c) .....cm  
(d) .....cm  
(e) .....cm  
(f) .....centile  
(g) .....centile -  
.....centile

#### PUBERTAL STAGES

**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 reddens and changes in texture. Little or no enlargement of the penis at this stage.

Stage 3 - Enlargement of the penis, which occurs at first mainly in length. Further growth of testes and scrotum.

Stage 4 - Increased size of penis with growth and 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.

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 the area covered is still considerably small than in the adult. No spread to the medial surface of the thighs.

Stage 5 - Adult in quantity and type.

Growth at Adolescence 2nd ed.:  
J.M. Tanner  
Blackwell Sci. Publ., 1962.

**BMI**  
Body Mass Index:-  
 $\frac{\text{weight (kg)}}{\text{length/height (m)}^2}$

**Example**

$\frac{25\text{kg}}{1.2\text{m} \times 1.2\text{m}}$   
= 17.4

BMI is the WHO agreed measure of thinness/fatness although it is not a direct measure of body fat. On its own it should be used with caution.

To confirm fatness more conclusively, take a waist circumference measurement (overleaf).

**Key**

Do not plot in the grey area. To identify a boy who is failing to thrive or is putting on too much weight in his first six months, plot his weight curve on the relevant A5/A4 1st yr weight chart and use the 5% or 95% thrive line acetate overlays.

**Key (continued)**

**HEALTHY BMI**

The blue shaded area indicates a healthy BMI range.

----- 98th [+2 SDS]

Both the BMI centile and Standard Deviation Score are given.

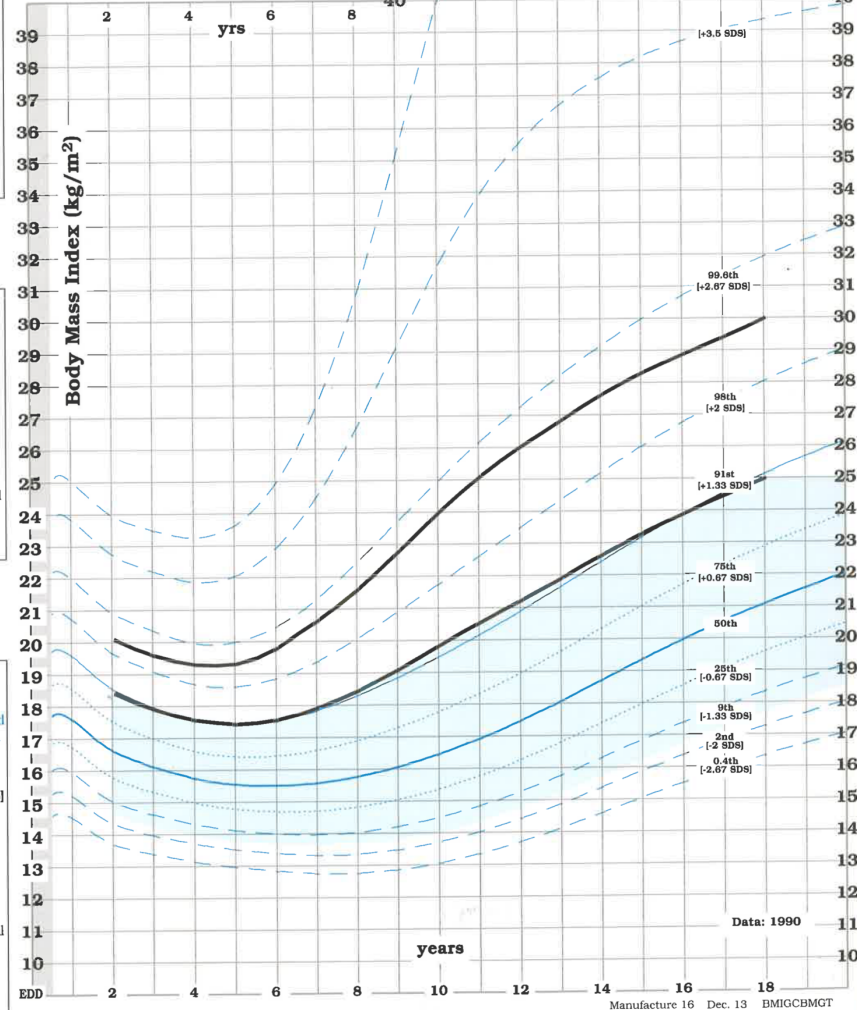
The two thick black lines are International Obesity Task Force definitions for paediatric obesity/overweight respectively, though of course, the BMIs of healthy athletic children may fall above these lines.

# BOYS BMI CHART

## MANAGEMENT

2003/1 Birth - 20 yrs UK cross-sectional reference featuring +3.5 & 4 SDS and the healthy BMI range.

Name.....  
D.O.B. [DDMMYY]    /      
NHS No.          
Mother Weight [kg]  Height [m]  BMI   
Father Weight [kg]  Height [m]  BMI



**Reference**

Body Mass Index reference curves for the UK, 1990 (Cole TJ, Freeman JV, Preece MA) *Arch Dis Child* 1995; 73: 25-9  
Establishing a standard definition for child overweight and obesity: international survey (Cole TJ, Bellizzi MC, Flegal KM, Dietz WH) *BMJ* 2000; 320: 1240-3



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**BMI**  
18.5 - 24.9  
**Normal  
Weight**



**BMI**  
25.0 - 29.9  
**Over  
Weight**



**BMI**  
30.0 - 34.9  
**Obesity  
Class I**



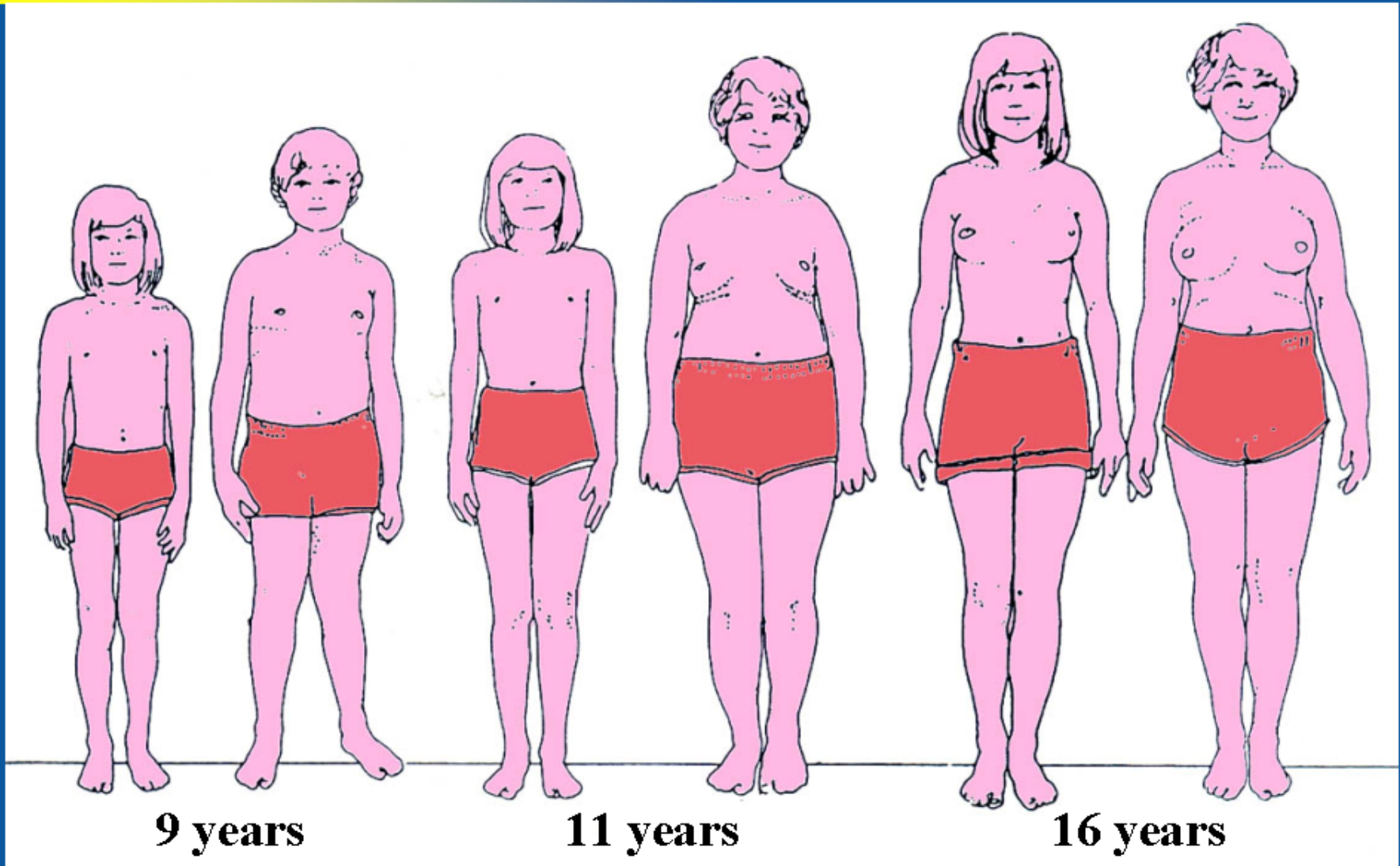
**BMI**  
35.0 - 39.9  
**Obesity  
Class II**



**BMI**  
40.0 - 49.9  
**Obesity  
Class III**



# Implications of obesity for growth and puberty in girls



You say your child is of average weight, even though he's quite overweight...

Overweight is average.





# Data

- Nourish Study - 18% OW/OB age 2
- UK ~20% Yr R and 33% Yr 6 OW/OB
- From current trends, 50% by 2020.
- x2 increase from most deprived to least
- Higher in urban areas than rural areas
- Born since 1980s ~3x OW/OB by 10
- 50% 7yr olds not meeting the CMO's target of at least an hour of physical activity daily
- Obesity
  - 1993 16% women and 13% men
  - 2011 26% women and 24%men

# Definition of Overweight and Obesity

Abnormal or excessive fat  
accumulation that *might impair  
health*



# WARNING

**MY FAT MAY BE FUNNY TO YOU  
BUT IT'S KILLING ME.**

Stop childhood obesity.

**[strong4life.com](http://strong4life.com)**

Brought to you by Children's Healthcare of Atlanta

# Complications

- Bullying, stigmatisation + social exclusion
- Poor self esteem + substance abuse
- Early puberty
- Adult obesity - Fat at 5, fat at 9, fat at 18
- All systems - arthritis
- Problems in pregnancy
  - Miscarriage, GDM, thromboembolism, PET, PPH, ↓BF, death
- Neonatal morbidity
  - Stillbirth, anomalies, Pre+post term, HIE, NICU, death
- Cancer risk
- Metabolic Syndrome

# XL SCHOOL UNIFORMS

Larger sizes available

Back to school!  
1 in 5  
children leave  
primary school  
overweight  
or obese


childhoodobesity

Expanding our XL stock  
due to popular demand

Back to school!  
This is  
our future  
unless the  
Government  
acts now

[gov.uk/government/childhoodobesitystrategy](http://gov.uk/government/childhoodobesitystrategy)





**Guess what is  
the biggest  
preventable  
cause of  
cancer after  
smoking.**



**OBESITY**

**Guess what is  
the biggest  
preventable  
cause of  
cancer after  
smoking.**

# Costs to the NHS and...

- £6 billion/year on medical costs of conditions related to OW/OB
- Further £10 billion on diabetes
- >£16 billion to the total economy
- £50 billion/year by 2050
- <£0.638 billion on obesity prevention programmes....



# Risk factors

- Either parent overweight or obese
- Excess weight gain in pregnancy
- Poverty
- Maternal smoking
- Birth weight > 4kg
- Bottle feeding
- Early weaning
- Rapid early growth
- Poor sleep patterns <12hrs/day



# What we know re early infancy

- Early weeks wt and length accel<sup>n</sup> assoc with
  - later obesity
  - metabolic syndrome
  - endothelial dysfunction
- Early wt loss and slower growth may protect -WHO charts no centiles 0-14/7
- Breast fed partially protective - early self-regulation
- Relative undernutrition and slower growth may programme permanent lower appetite (lower leptin)

# RCPCH Summit 2015

Efforts to date have not been successful in halting the growing obesity epidemic and actions that address prevention in infancy and childhood are urgently required

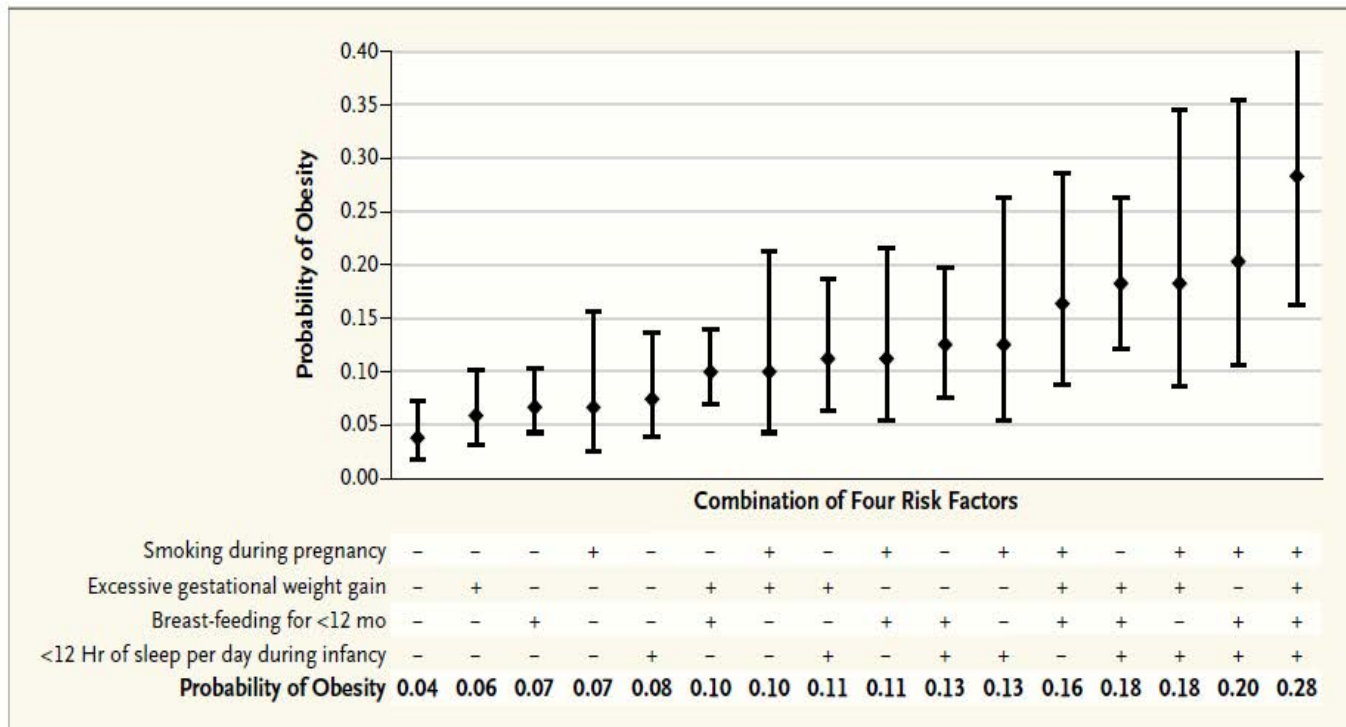
# Prevention

'the only solution'

# Early

# Intervention

## Modifiable Risk Factors

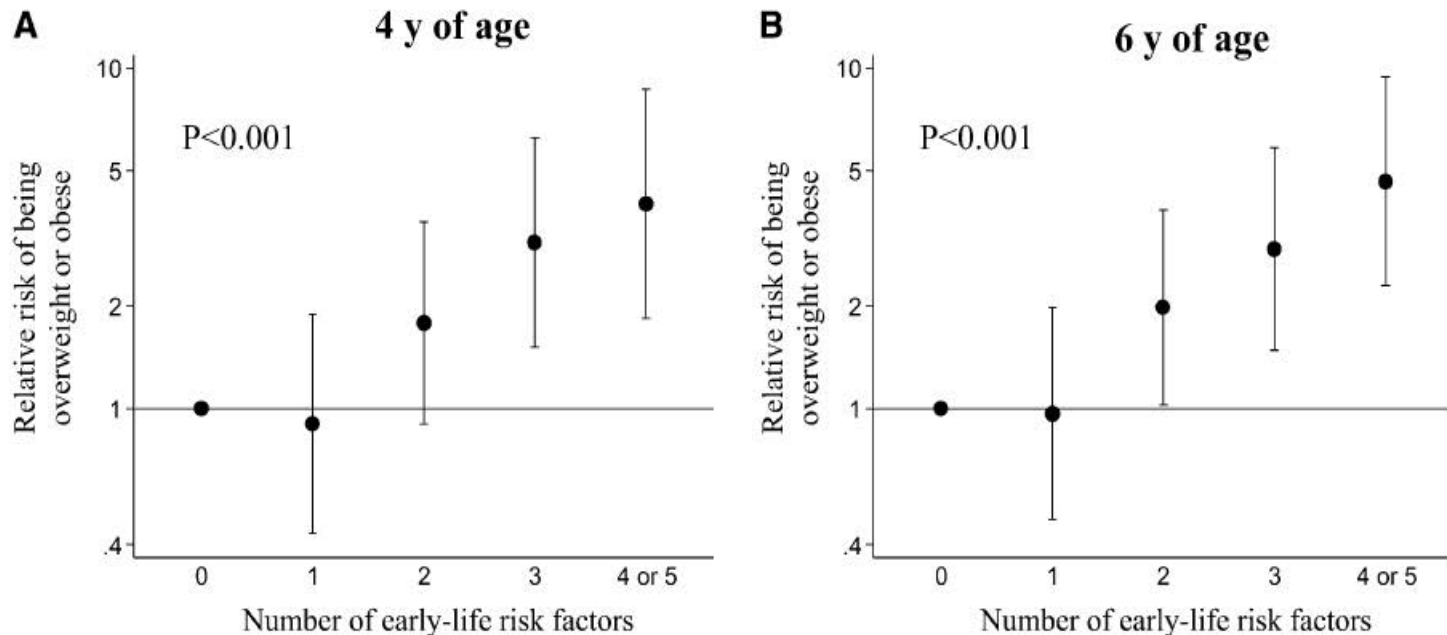


Predicted Probability of Obesity at 7 to 10 Years of Age for 16 Combinations of Four Modifiable Prenatal and Postnatal Risk Factors.

**Gillman MW and Ludwig DS. Perspective: How Early Should Obesity Prevention Start? *NEJM* Nov 2013**

Robinson SM et al. *American Journal of Clinical Nutrition* 101.2 (2015): 368-375.

#### EARLY-LIFE RISK FACTORS FOR CHILDHOOD OBESITY



Five risk factors:

- maternal obesity pre-pregnant body mass index (BMI; in kg/m<sup>2</sup>) >30]
- excess gestational weight gain (Institute of Medicine, 2009)
- smoking during pregnancy
- low maternal vitamin D status (<64 nmol/L)
- short duration of breastfeeding (none or <1 mo).

# RCPCH Summit 2015

- Review guidance in PCHR about responsive feeding to deal with early signs of concern about weight gain
- Update messages for parents
- Support for parents in postnatal wards about responsive feeding
- Develop messages about normal weight gain for babies
- Parenting styles
- Behaviour change

My personal child  
health record



# What we know re bottle feeding

- Negative emotions including guilt, anger and worry
- Little information from HCPs
- Mistakes with preparation
- Interpret 'demand feeding' as feeding in response to crying and increasing the volume if finishes the bottle
- Highlighted the lack of support perceived by mothers who formula-feed.





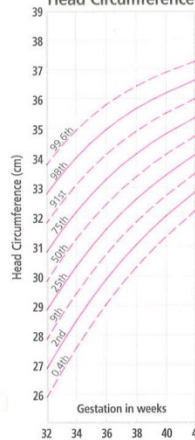
**Healthy feeding**  
**Healthy weight**

# Determinants of weaning

- 60 studies
- Strong evidence for
  - maternal age
  - socio-economic status
  - education
  - smoking
  - not breastfeeding
  - lack of information/advice from HCPs
- Paucity of studies on psychosocial determinants

# Preterm

## Birth Head Circumference



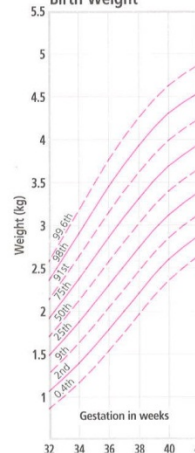
**Plotting preterm infants**  
Use the **low birthweight chart** for infants less than 32 weeks gestation and any other infants requiring detailed assessment.

Use **this section** for infants of less than 37 weeks gestation. As with term infants there may be some weight loss in the early days. From 42 weeks, plot on the **0-1 year chart** with gestational correction.

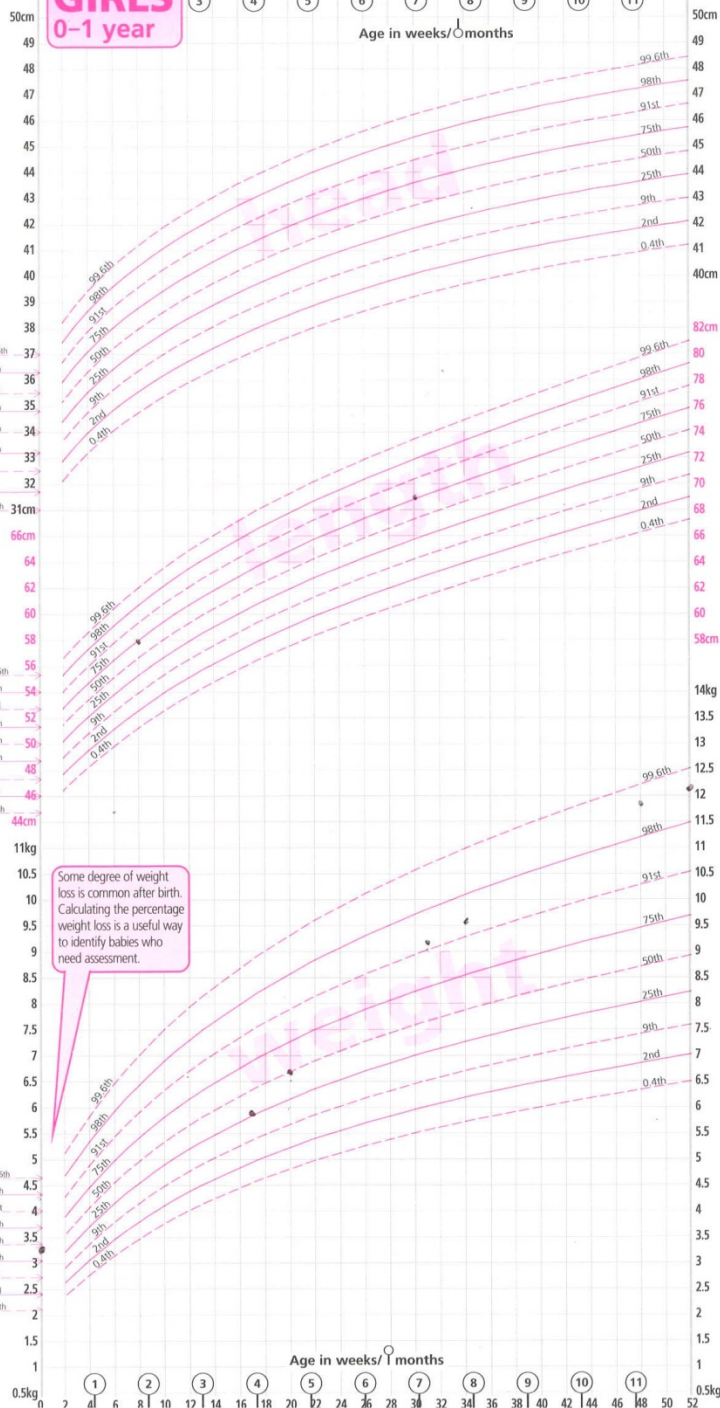
Gestational age (7 weeks preterm) ← Actual age

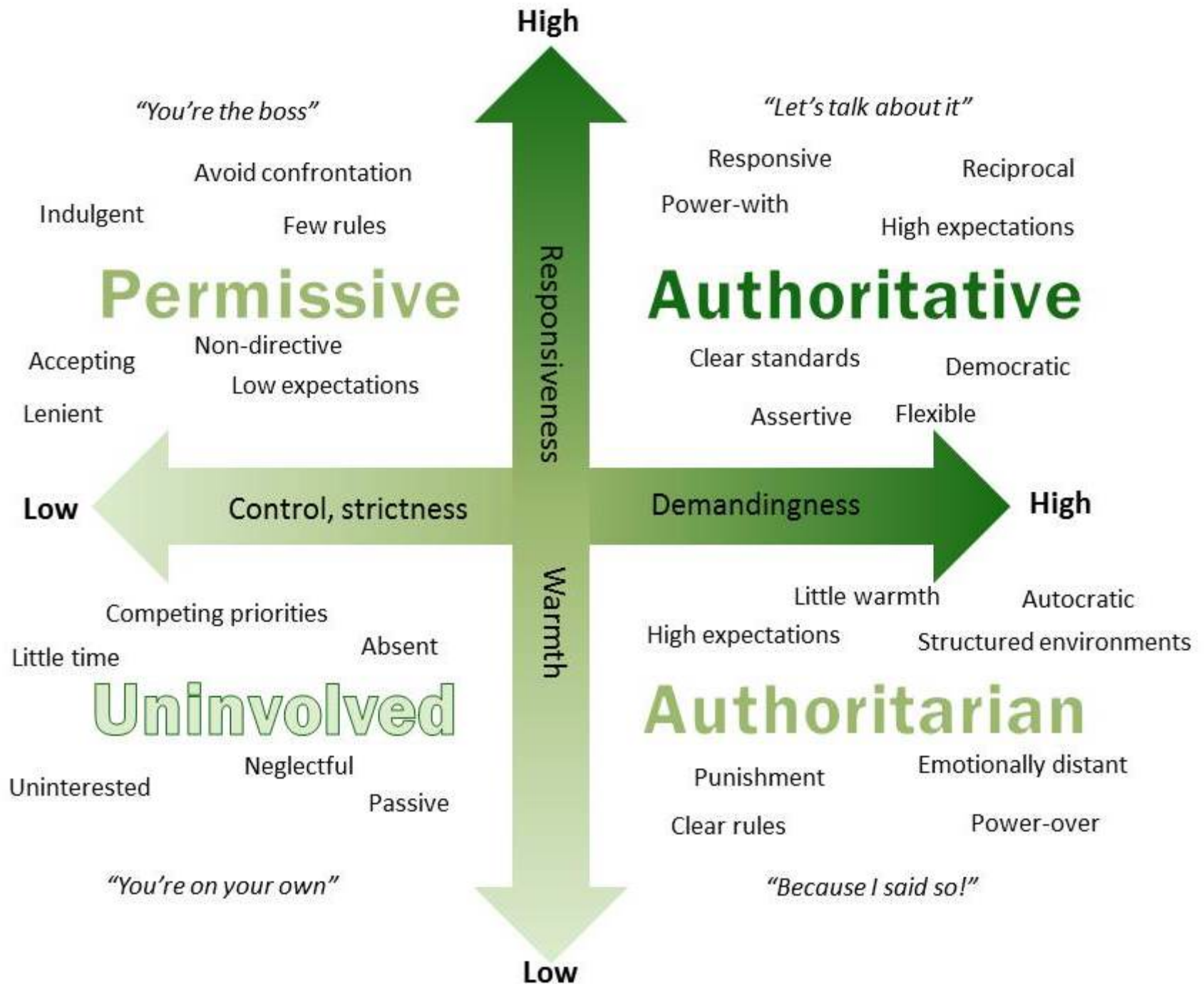
**Gestational correction**  
Plot actual age then draw a line back the number of weeks the infant was preterm and mark the spot with an arrow, this is the gestationally corrected centile.

## Birth Weight



# GIRLS 0-1 year









**WARNING**

**CHUBBY KIDS  
MAY NOT  
OUTLIVE THEIR  
PARENTS**

[stopchildhoodobesity.com](http://stopchildhoodobesity.com)



**WARNING**

**FAT KIDS  
BECOME FAT  
ADULTS.**

[stopchildhoodobesity.com](http://stopchildhoodobesity.com)



**WARNING**

**BIG BONES  
DIDN'T MAKE ME  
THIS WAY.  
BIG MEALS DID.**



**WARNING**

**HE HAS HIS  
FATHER'S EYES,  
HIS LAUGH AND  
MAYBE EVEN HIS  
DIABETES.**

[stopchildhoodobesity.com](http://stopchildhoodobesity.com)

# MECC opportunities?

- Discuss possibilities of prevention
- Encourage breast feeding
- Support with bottle feeding
  - Responsive feeding
  - Volumes
  - Attachment
  - Crying baby
- Explain the growth charts
- Show updated PCHR

# .....? MECC

- Why not to wean till 6 months?
- Fist-sized portions
- Understanding *behaviour* change
- Signpost to HENRY
- Exercise
- Use BMI charts pictorially
- Displays in the surgery
- Staff training

The fact is, Mrs Brown—how  
do I put this?—there's an  
elephant in the room...

Isn't that a bit harsh?

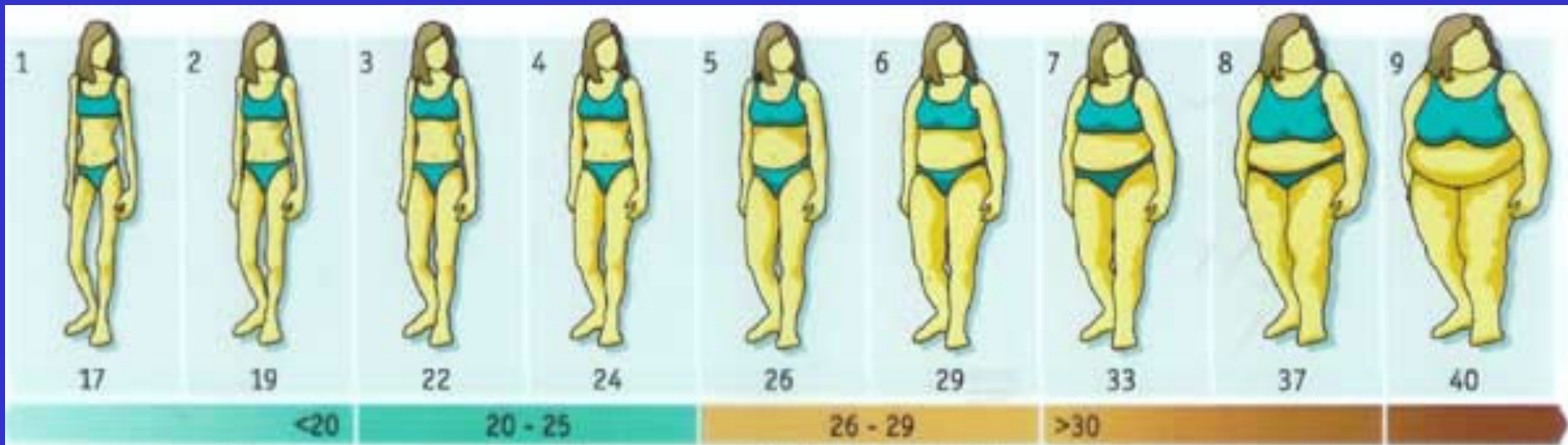




# Broaching the topic

- Take a deep breath
- Try to talk to them all
- Ask if they have concerns
- Explain yours - and the seriousness
- Non-judgemental
- Know your facts
- Pictorial - growth and BMI charts
- Use stones, 'weight at...' and photos

# What will my child look like?



# Management

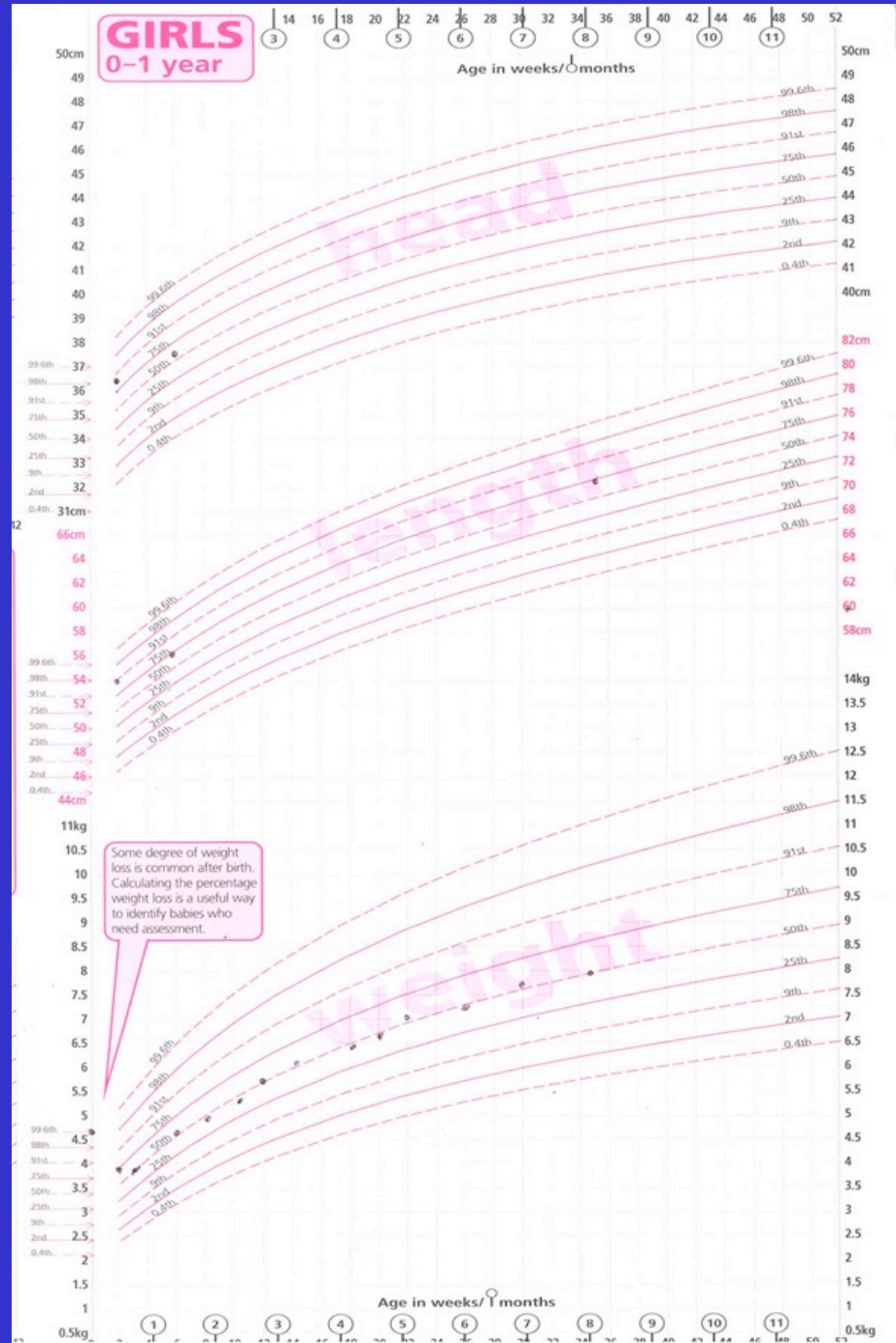
- Recognise and tackle early- school too late
- First law of thermodynamics.....
- Maintain body weight as grows -weight loss is (usually) a bonus
- Behaviour change crucial
- Whole family involvement
- If a diet is healthy the portions too large
- What do they drink?
- Exercise
- 'Killing with kindness'

# Signposting options

- Health visitor
- HENRY
- School nurses
- Dietitians
- Consultant
- Childrens' Centres
- Someone!

**BARRIERS?**

# GIRLS 0-1 year





# Barriers

- Obsession with weight gain
- Failure to recognise
- Failure to take ownership
- Reluctance to support mothers who bottle feed
- Reluctance/fear to tackle
- Poor staff training
- Too daunting and won't work
- Waiting for the evidence....

'Tap-Turner-off' or a  
'Floor-Mopper-Up'??

Questions?

Why a Referral to  
Children's Services?

?

# sabotage

Russell Viner 2011

# Characteristics

- DNA appointments or out when call
- Unwilling to acknowledge the problem
  - 'We're all big'
  - 'He doesn't eat a thing'
  - He'll grow out of it
  - It's because he's tall
- Refuse to change
  - 'He needs them for his lunchbox'
  - Can't not buy sweets because unfair on others (aka 'me')



## ..... Characteristics

- Aggressive and threatening
- Belittling
- Promise to change but don't
- Limited ability/ learning difficulties
- Other CP modalities

*Any questions?*

# MECC

- Brief, opportunistic healthy lifestyle discussions
- 2.5m outpatient + 2.2m inpatient visits
- 3 levels
  - Raising the issue and signposting (3-5')
  - Exploring motivation, options +plans (5-15')
  - Supporting change and maintenance (50')
- Evidence based!
- Coming to a hospital near you....