NHE PHN Education Session – Sept 2021

Assessment & management of child & adolescent obesity

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the children's hospital at Westmead

THE UNIVERSITY OF SYDNEY

Obesity

- It can be a serious, chronic, relapsing disease
- ~1:4 children & adolescents have overweight or obesity (~8% obesity)
- More prevalent in those who experience social disadvantage

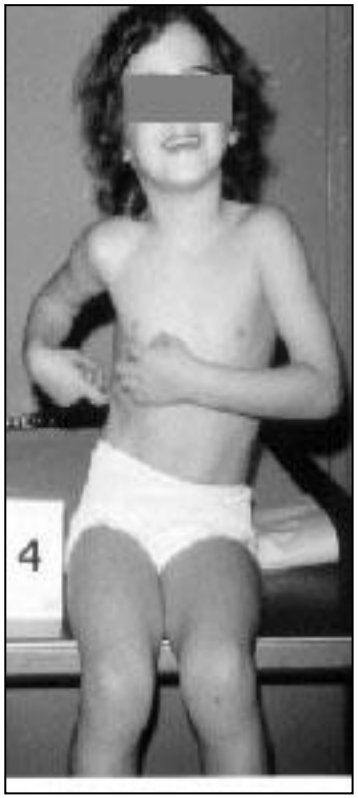
- QUESTIONS:
  - What form of assessment is required of the child or adolescent with obesity?
  - What are the approaches to management of obesity in children & adolescents?

Can you recognise risk?

QUESTION 1: Can you *see* risk? Are these children affected by underweight, healthy weight, overweight or obesity?

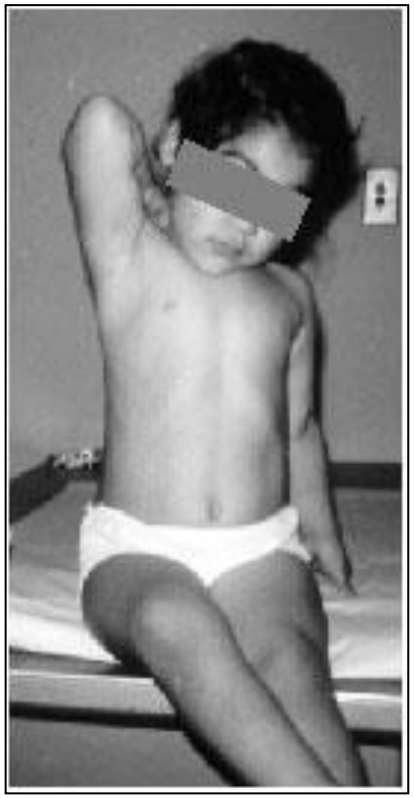
Case A: 3 y 3 weeks

a. Underweight?
b. Healthy weight?
c. Overweight?
d. Obesity?



Case B: 4 y 4 weeks

a. Underweight?
b. Healthy weight?
c. Overweight?
d. Obesity?



Case C: 4 y

a. Underweight?
b. Healthy weight?
c. Overweight?
d. Obesity?

Photos from UC Berkeley Longitudinal Study, 1973; AND http://www.cdc.gov/GROWTHCHARTS/

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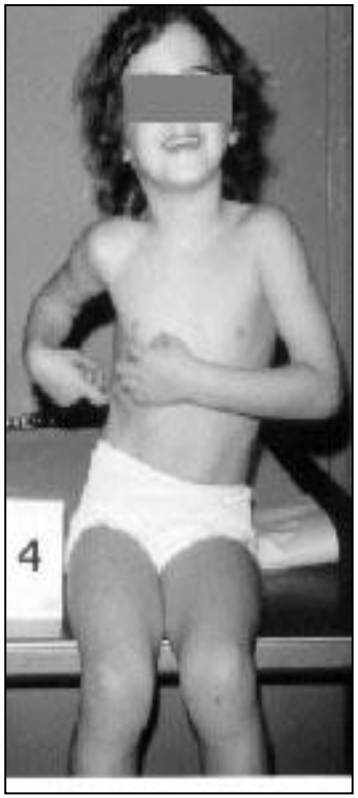
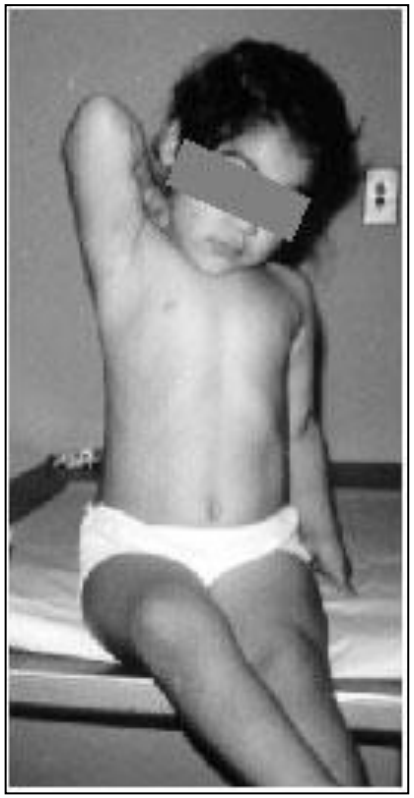


Case B: 4 y 4 weeks



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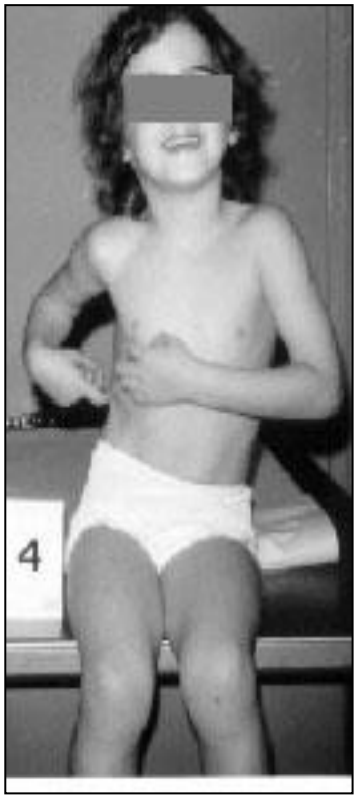

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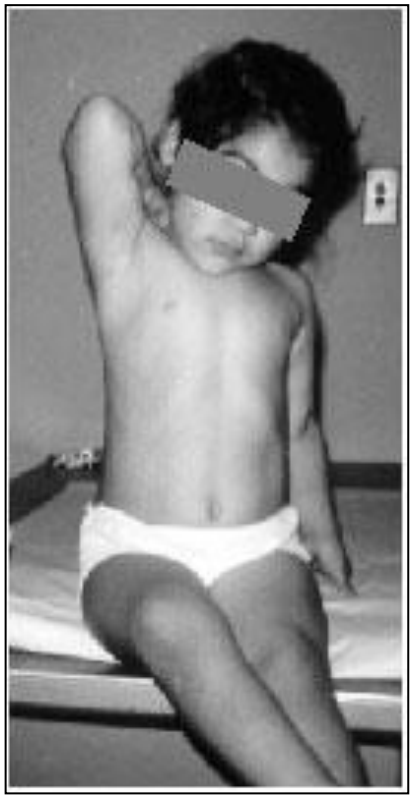

Case C: 4 y

BMI >95th centile

Obesity

Photos from UC Berkeley Longitudinal Study, 1973; AND http://www.cdc.gov/GROWTHCHARTS/

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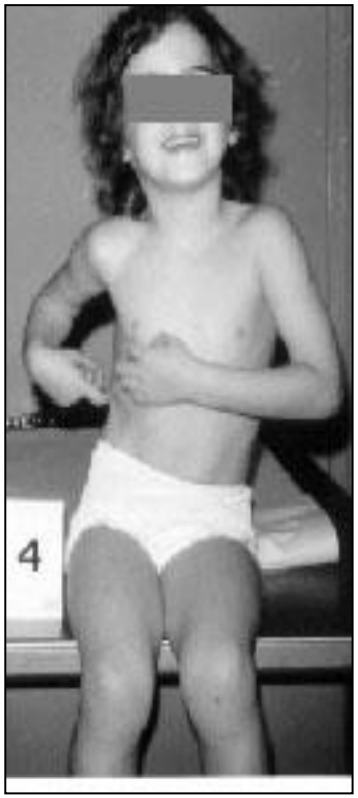
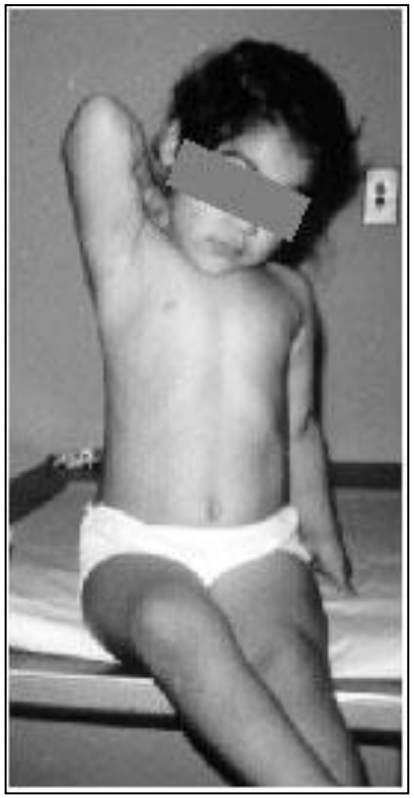
Obesity



Case B: 4 y 4 weeks

BMI 10th centile

Healthy weight



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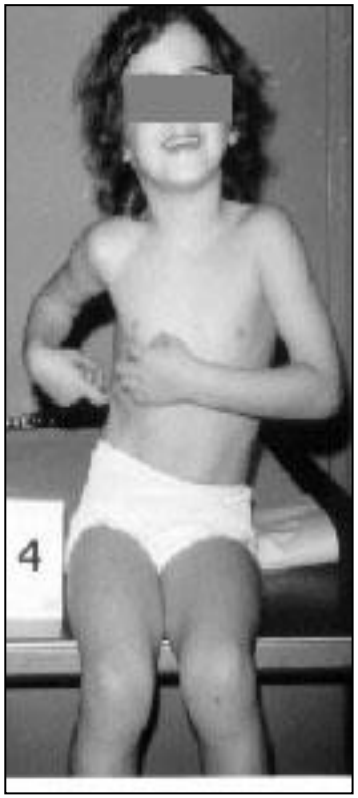

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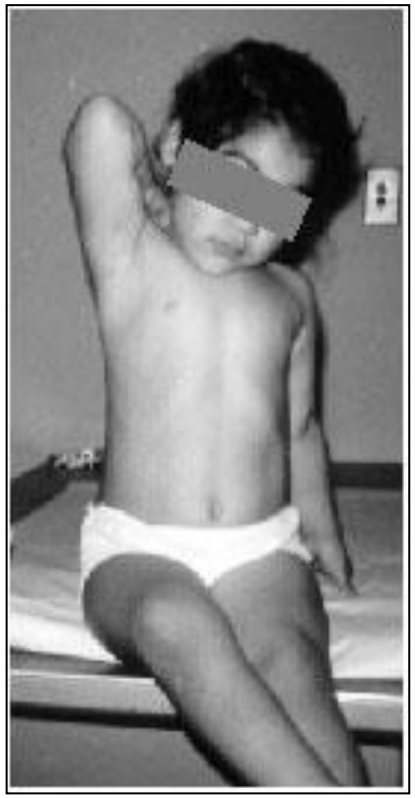
Healthy weight



Case C: 4 y

BMI 85th-95th centile

Overweight

Photos from UC Berkeley Longitudinal Study, 1973; AND http://www.cdc.gov/GROWTHCHARTS/

Recognising the child with overweight or obesity

Girl aged 6 years

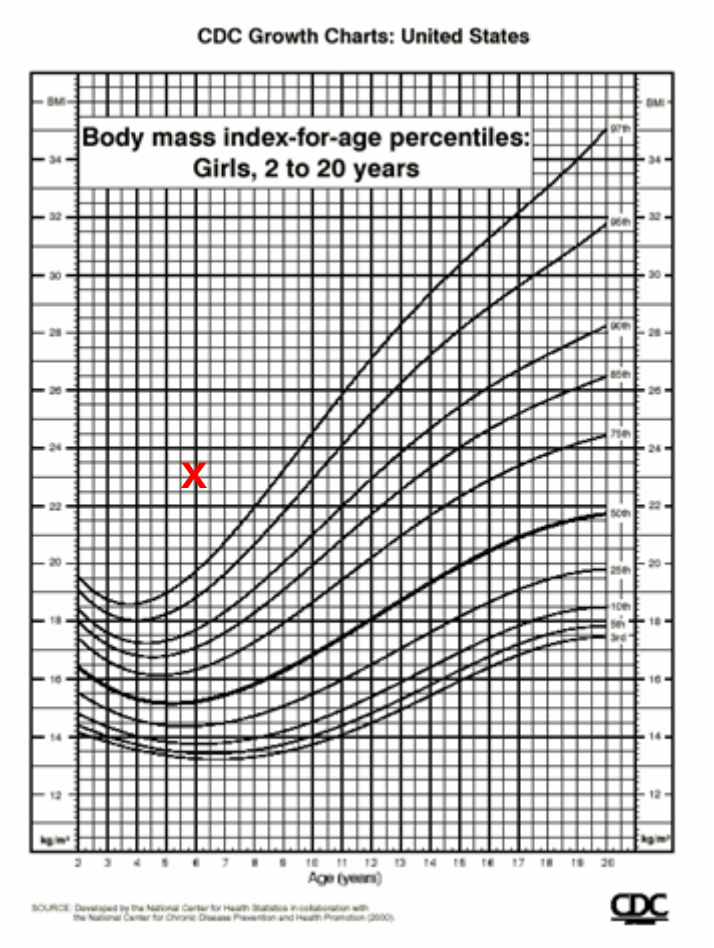
Weight 33 kg

Height 120 cm

BMI 22.9 kg/m^2

Above 95th centile for age range

Patient's BMI is in obesity range ("well above the healthy weight")

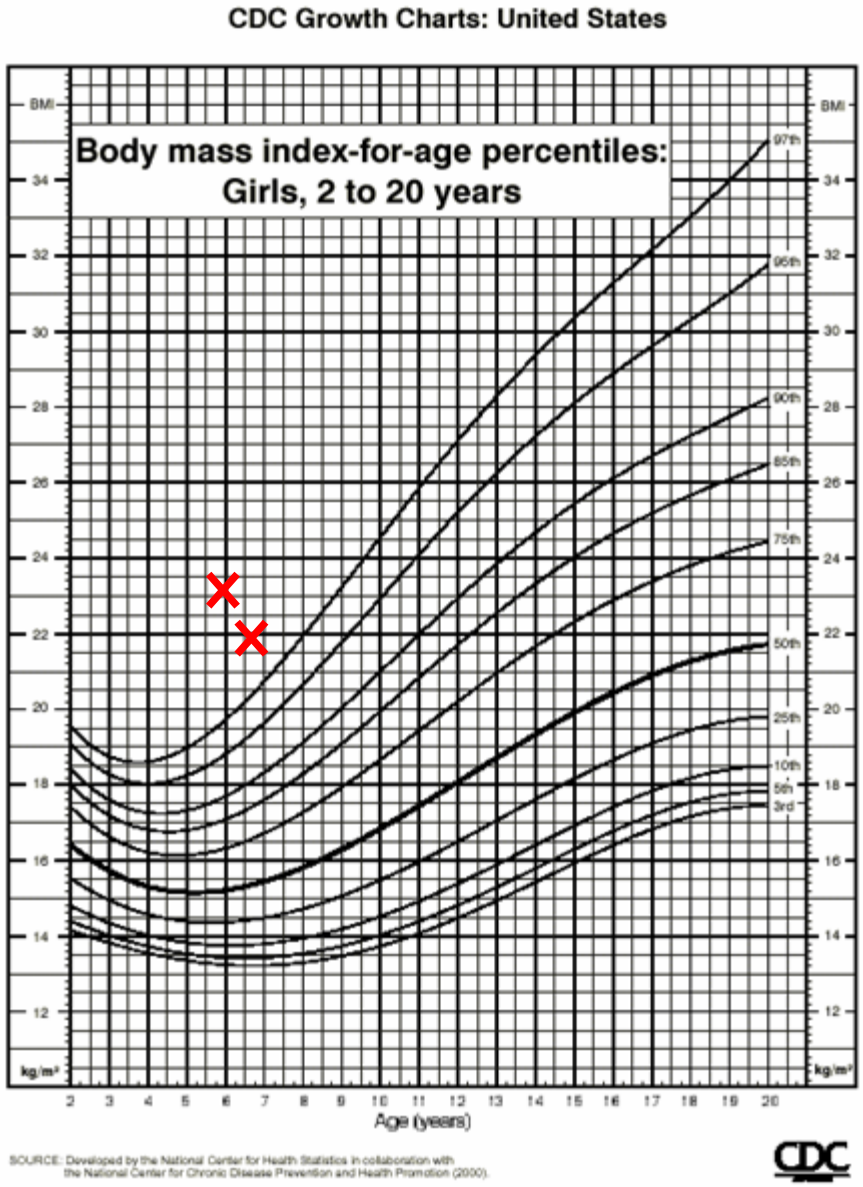


http://www.cdc.gov/GROWTHCHARTS/

Same child 6 months later after family-focused lifestyle intervention

Weight <u>unchanged</u>
Height ↑ 3 cm

→ Weight maintenance may have an important impact on BMI in growing children



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What about central fat distribution?

Waist:height ratio

- **Easy to calculate**
- **Values >0.5 (for people >6 y) associated with increased cardio-metabolic risk**

McCarthy HD. Int J Obes 2006; 30: 988–992; Garnett SP et al. Int J Obes 2008; 32, 1028–1030

Waist:height ratio

- **Easy to calculate**
- **Values >0.5 (for people >6 y) associated with increased cardio-metabolic risk**

- ***"Keep your waist to less than half your height"***

McCarthy HD. Int J Obes 2006; 30: 988–992; Garnett SP et al. Int J Obes 2008; 32, 1028–1030

Practice points

- Measure height and weight routinely
- Plot BMI on a BMI for age chart
- Waist:height ratio
  - Useful for almost all age groups

How can I raise the issue of a child's weight?

Raising the issue

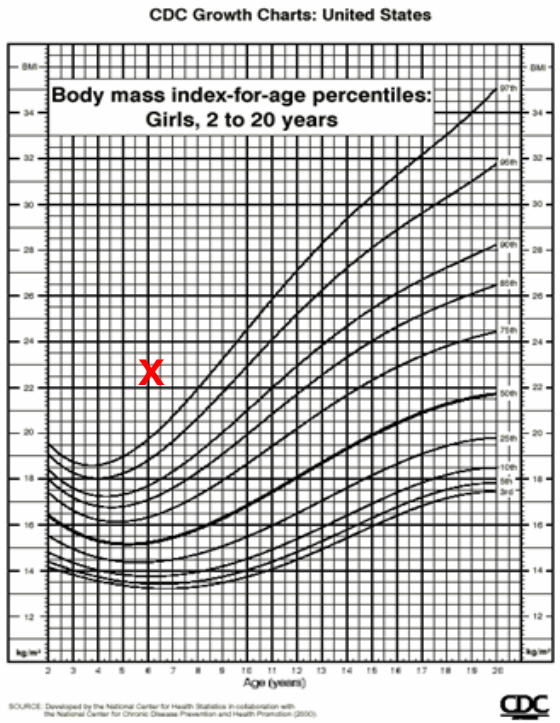
- **You are seeing a child for an apparently unrelated reason (e.g. asthma, otitis media) and think the child may have a weight issue…..**
  - **How do you raise the issue?**
  - **What are the potential difficulties in doing so?**
  - **Your thoughts?**

Raising the issue

- **You are seeing a child for an apparently unrelated reason (e.g. asthma, otitis media) and think the child may have a weight issue…..**
  - **How do you raise the issue?**
  - **What are the potential difficulties in doing so?**

- **Clinical practice guidelines recommend ….**
  - **Routinely measuring height & weight, calculating BMI, and plotting on growth chart**
  - **Discussing growth chart sensitively with parent/young person**

- *"I've plotted weight adjusted for height here on the growth chart…. You can see that it's above the healthy range for age…. Does that surprise you? …. Would you like to discuss it?"*
- **Then recommend a further consultation to start addressing the weight issue**
- **Could the primary reason for the consultation be related to weight?** *(e.g. asthma, enuresis, fracture, lower limb pain, sleep disturbance …)*
- **If so, then highlight its importance**



- **Are there existing problems associated with excess weight?**
- **Start to explore or investigate these**

Practice points

- Use the growth chart to raise the issue sensitively
- Is your patient "above a healthy weight"?
- Check out the *Healthy Kids for Professionals website*:

When the parent is not ready to discuss their child's weight

Video of a health professional speaking with a parent about a child's weight status using the BMI-for-age percentile chart.

http://pro.healthykids.nsw.gov.au/videos/

Offering support to make positive change to address weight

Dr Kean-Seng Lim, GP and President of the Australian Medical Association NSW, shows how we can speak with parents about making positive lifestyle changes to address weight.

How can I tackle weight stigma in my practice?

Tackling weight stigma

- **Weight stigma:**
  - **Commonly experienced within health services - and commonly delivered by health professionals!**
  - **Associated with a range of negative social, psychological and health consequences for people affected by obesity**

Recommendations for tackling weight stigma within a practice

Practice level strategies*

- **Can medical practitioners role-model supportive and unbiased behaviours towards patients with obesity ?**
- **Use appropriate language and neutral word choices e.g.**
  - **Use "unhealthy weight", "BMI", "above a healthy weight" or "weight"**
  - **Instead of "obese", "extremely obese" or "fat"**

* Pont SJ, Puhl R, Cook SR, Slusser W. Pediatrics 2017; 49: e20173034
http://www.uconnruddcenter.org/weight-bias-stigma

Recommendations for tackling weight stigma within a practice

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  - **Instead of "obese", "extremely obese" or "fat"**
- **Create a safe and welcoming practice environment**
- **Have an empathetic approach to behaviour change counselling**

* Pont SJ, Puhl R, Cook SR, Slusser W. Pediatrics 2017; 49: e20173034
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Practice points

- Think about the language and tone you use
- Consider how your practice can provide a safe and welcoming environment for people with obesity

When should I do clinical investigations in a child or adolescent with obesity?

When to investigate?

Age

- Adolescents > younger children

Higher levels of BMI

- Especially central obesity

Clinical suggestion of complications

e.g. acanthosis nigricans

Higher risk ethnic groups

High risk family history

What to investigate?

Initial fasting blood tests

- Glucose
- Liver function tests
- Lipids
- Thyroid function tests?
- [Consider insulin – guidelines vary]

Other investigations MAY be warranted

- HbA_{1c}, oral glucose tolerance test
- Liver ultrasound
- Reproductive hormones
- Full blood count, micronutrient deficiencies
- Consider sleep assessment

AAP Clinical Algorithm, 2015; Barlow S & Expert Committee. Pediatrics 2007;120:S164–92; Baur LA et al. Nature Rev Gastroenterol Hepatol 2011;8:635–45; NICE Obesity Guideline, 2014; NHMRC Clinical Practice Guidelines, 2013; Steinbeck KS et al. Nature Rev Endocrinol 2018;14:331–44.

Case study - Peter

- Aged 15 years
- Greek ethnic origin
- BMI 36 kg/m^2
- Waist 110 cm
- Waist:height ratio 0.62
- Acanthosis nigricans
- Strong family history of:
  - diabetes (father)
  - obesity (both parents)
  - sleep apnea (father)

Case study - results for Peter aged 15 y

- **Fasting lipid profile**
  - **Triglycerides 2.2 mmol/L (normal range [NR] <1.7)**
  - **Total cholesterol 5.1 mmol/L (NR <5.5)**
  - **HDL cholesterol 0.7 mmol/L (NR >0.9)**
- **Fasting insulin & glucose**
  - **Insulin 247 pmol/L (~40 mU/L)***
  - **Glucose 4.8 mmol/L**
  - **Insulin:glucose 51.5****
  - **No IGT on OGTT**
- **Liver function tests**
  - **Normal apart from raised ALT 85 U/L (NR 10-50)**
- **Liver ultrasound**
  - **Diffuse increase in fatty liver, consistent with fatty liver; gall bladder and common bile duct normal**

* Insulin mU/L x 6 ≅ Insulin pmol/L

**Insulin:glucose (pmol/mmol) ratio >15 consistent with insulin resistance (Vuguin P et al. J Clin Endocrinol Metab 2001; 86:4618-4621)

Case study - results for Peter aged 15 y

- **Fasting lipid profile**
  - **Triglycerides 2.2 mmol/L (normal range [NR] <1.7)**
  - **Total cholesterol 5.1**
- **Liver function tests**
  - **Normal apart from raised ALT 85 U/L (NR 10-50)**

Central obesity with:
Dyslipidaemia
Insulin resistance
Non-alcoholic fatty liver disease

- **No IGT on OGTT**

* Insulin mU/L x 6 ≅ Insulin pmol/L

**Insulin:glucose (pmol/mmol) ratio >15 consistent with insulin resistance (Vuguin P et al. J Clin Endocrinol Metab 2001; 86:4618-4621)

Practice points

- **When to investigate?**
  - High risk family history
  - Higher risk ethnic background
  - Severe obesity
  - Clinical assessment suggestive of co-morbidities
- **Assess and treat co-morbidities**

What are the basic approaches to treatment?

What are the aims of treatment?

– **They could be:**

Reduction in weight and weight-related outcomes

Change in weight gain trajectory

Improvement in obesity-associated complications

Change in markers of future health/psychological/social complications

Note the potential for mismatch between the views of the young person, the family, the clinicians… and what may be possible/available!

Steinbeck KS et al. Nature Rev Endocrinol 2018;14:331–44.

Elements of obesity management in adolescents

Management of obesity-associated complications

Standard weight management

- *Family engagement*
- *Long-term behaviour change*
- *Increased physical activity*
- *Improved sleep patterns*
- *Developmentally appropriate*
- *Change in diet & eating habits*
- *Decreased sedentary behaviours*

Long-term weight maintenance strategies

Additional therapies

- *More intensive diets*
- *Bariatric surgery*
- *Drug therapies*

AAP Clinical Algorithm, 2015; Barlow S & Expert Committee. Pediatrics 2007;120:S164–92; Baur LA et al. Nature Rev Gastroenterol Hepatol 2011;8:635–45; NICE Obesity Guideline, 2014; NHMRC Clinical Practice Guidelines, 2013; SIGN Guidelines, 2010; Steinbeck KS et al. Nature Rev Endocrinol 2018;14:331–44.

Interventions for treating children & adolescents with obesity: an overview of Cochrane reviews*

- **6 separate reviews:**

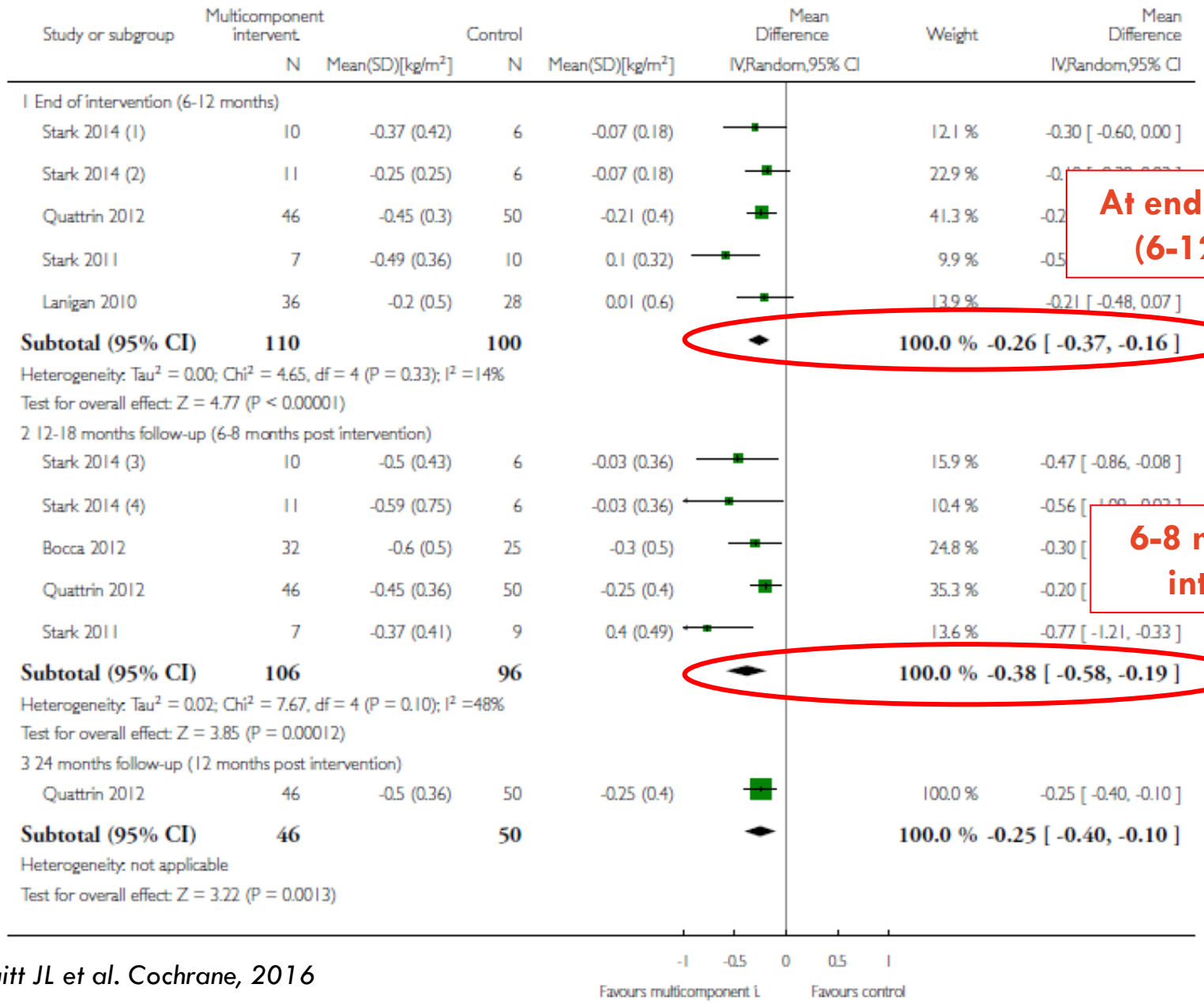
<6y: 7 trials	Mean BMIz reduction -0.3
6-11y: 70 trials	Mean BMIz reduction -0.06; BMI reduction -0.53kg/m^2
12-17y: 44 trials	Mean BMI reduction -1.18kg/m^2
Parent only interventions in 5-11y: 20 trials	Similar effects to parent-child interventions
Surgery: 1 trial	
Drugs: 21 trials	

- **Small reductions in body weight status for most behaviour change interventions. Multicomponent behaviour change interventions may be beneficial**

Modest to moderate outcomes for behavioural interventions dependent upon age groups

**Ells L et al. Int J Obesity 2018; 42:1823-1833*

Multicomponent interventions vs control; ≤6 y; change in BMI z score



At end interv'n (6-12 mo.)

6-8 mo. post interv'n

Colquitt JL et al. Cochrane, 2016

But there are barriers to providing behavioural treatment in real-life clinical settings

Barrier
Poverty
Culturally & linguistically diverse patients
Learning disabilities & developmental disorders
Low literacy
Family in crisis
Psychiatric disorders

PLUS, in many regions

- Services are often poorly resourced
- Services may not be publicly funded
- Health professionals may be inadequately trained

Minshall GA, Davies F, Baur LA. Behavioral Management of Pediatric Obesity. In: Ferry RJ Jr (Ed). Management of Pediatric Obesity and Diabetes. New York: Humana Press; 2011; Jackson-Leach R et al. Clinical Obesity 2020;10:e12357; McMaster C et al. J Paediatr Ch Health Health 2021

Bariatric surgery, drug therapy and other more intensive interventions will be covered elsewhere

What are some of the “simple” initial strategies to be discussed with the young person or family?

Available for free in 13 community languages

8 Healthy Habits: Core messages for anticipatory guidance developed for NSW

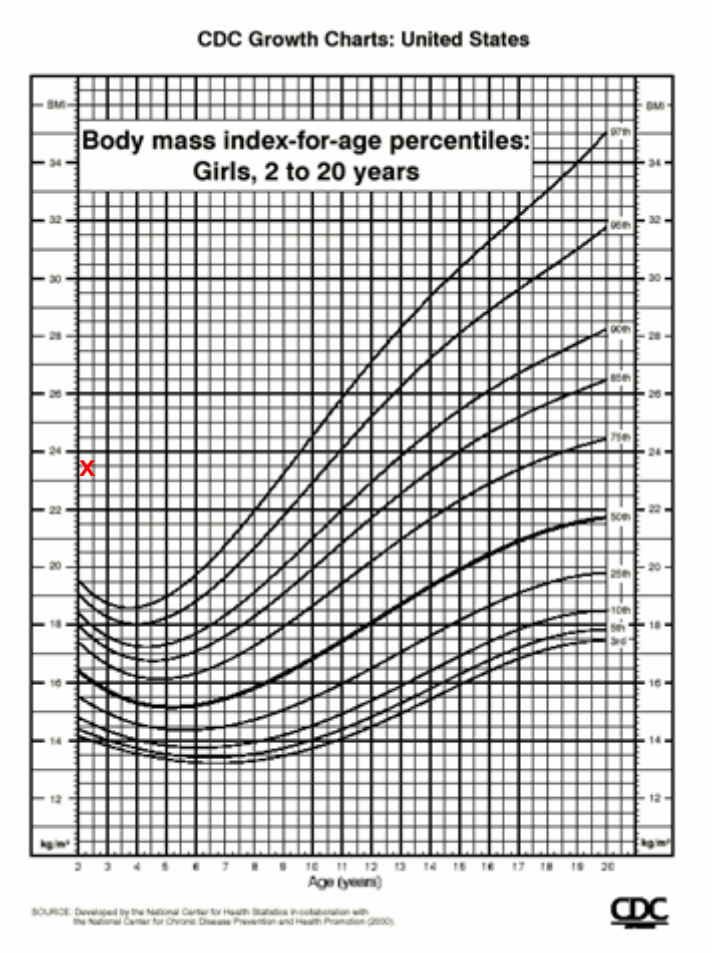
See this and other resources at:
pro.healthykids.nsw.gov.au

Available in English and in Arabic, Burmese, Chinese (simplified and traditional), Farsi, French, Hindi, Karen, Korean, Nepali, Swahili and Vietnamese

Case 1 – Anna, a 26 month Chinese girl

Case study – Anna – 2y 2mo

- Anna is seen for otitis media
- **Anthropometry:**
  - Height 92 cm (97th centile), weight 19.8kg (>97th centile), BMI 23.4 kg/m2 (>>97th centile)



Case study – Anna – 2y 2mo

- Anna is seen for otitis media
- **Anthropometry:**
  - Height 92 cm (97th centile), weight 19.8kg (>97th centile), BMI 23.4 kg/m2 (>>97th centile)
- **Weight history (growth chart review):**
  - Birth weight 3.7kg
  - Weight tracked along 90th centile to 6mo. From 12 months, weight veered above 97th centile
- **Food:**
  - Same food as parents & older siblings from age 12 mo.
  - 3 "fast food" meals per week, several treat snacks each day, regular soft drink intake, large rice intake
- **Activity**
  - Sits and plays in the sand pit rather than active play
  - ~4 hours per day of screens (TV, plays with tablet)
- **Family history**
  - Both parents - mild obesity
  - Siblings – overweight (above a healthy range)
  - Two grandparents have diabetes

Case study – Anna – 2y 2mo

- **You treat the otitis media**

- **QUESTION 2: When would you raise the issue of Anna being "well above a healthy weight"?**
  1. **At the end of the consultation**
  2. **At a later consultation**
  3. **Possibly not at this stage**

Case study – Anna – 2y 2mo

- **QUESTION 3: Which of the following would you prioritise with the family?**
  1. Changing from soft drink to water
  2. Decreasing rice portion sizes
  3. Healthy snack options
  4. Decreasing screen time
  5. Limiting fast food intake
  6. More outdoor play
  7. Something else

Case study – Anna – 2y 2mo

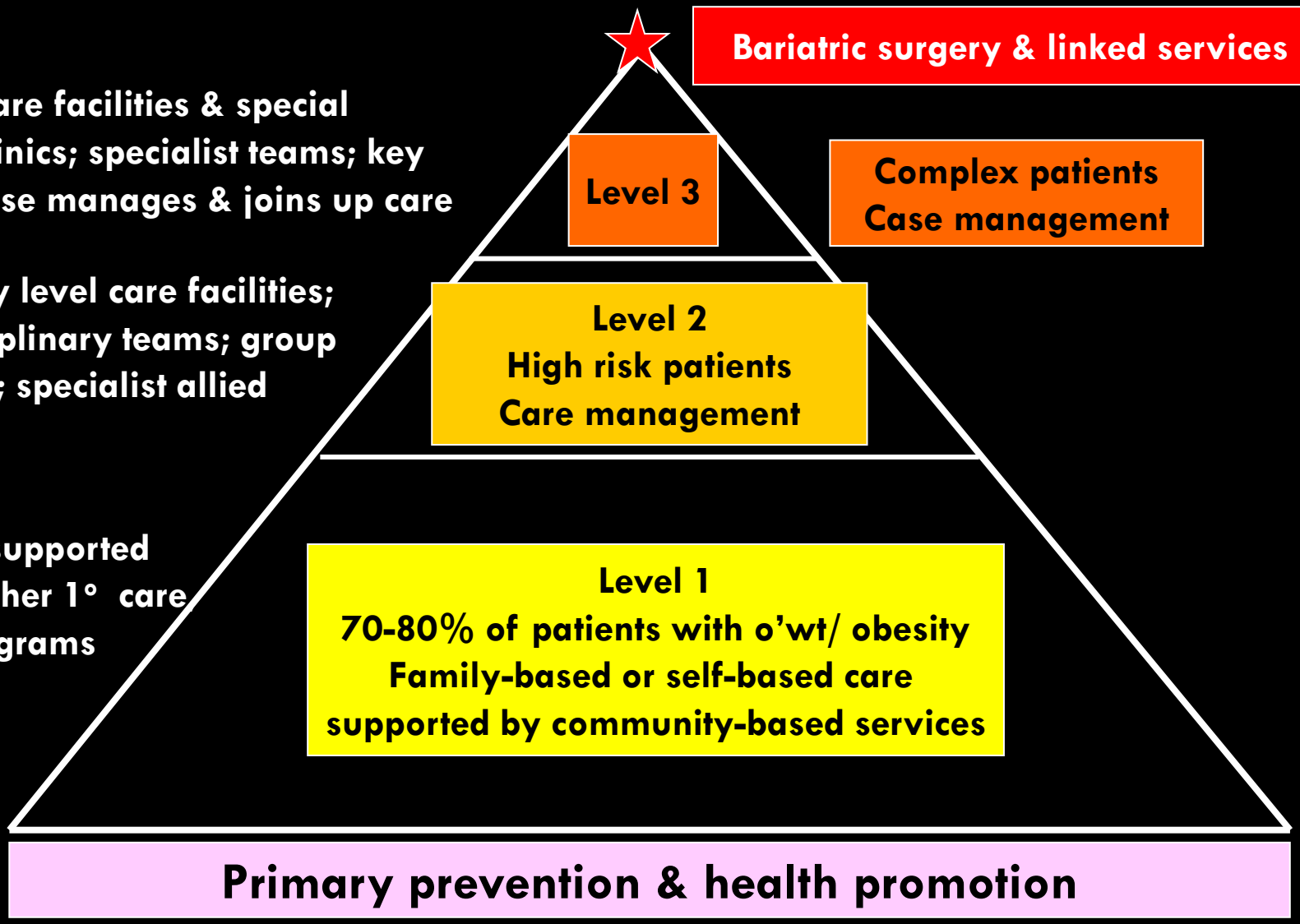
- The GP:
  - sensitively used the growth chart to raise the issue of Anna's excess weight gain with Anna's mother and
  - encouraged a whole-family approach to lifestyle change
- GP and practice nurse saw the mother on a few occasions over 6 months
- Changes that occurred over the next 6 months included:
  - Offering the children water instead of soft drink,
  - A reduction in serve sizes at the evening meal – including rice
  - Provision of healthy snack choices
  - Family rules around TV and tablet time
  - All children encouraged to play outside more often
  - The sandpit was covered!
- Six months later:
  - Anna's weight unchanged and height now 97 cm
  - BMI now 21.0 kg/m^2 (still above 95^{th} centile, but a marked 2.4 unit decrease)

What then?

Keeping on, supporting your patients

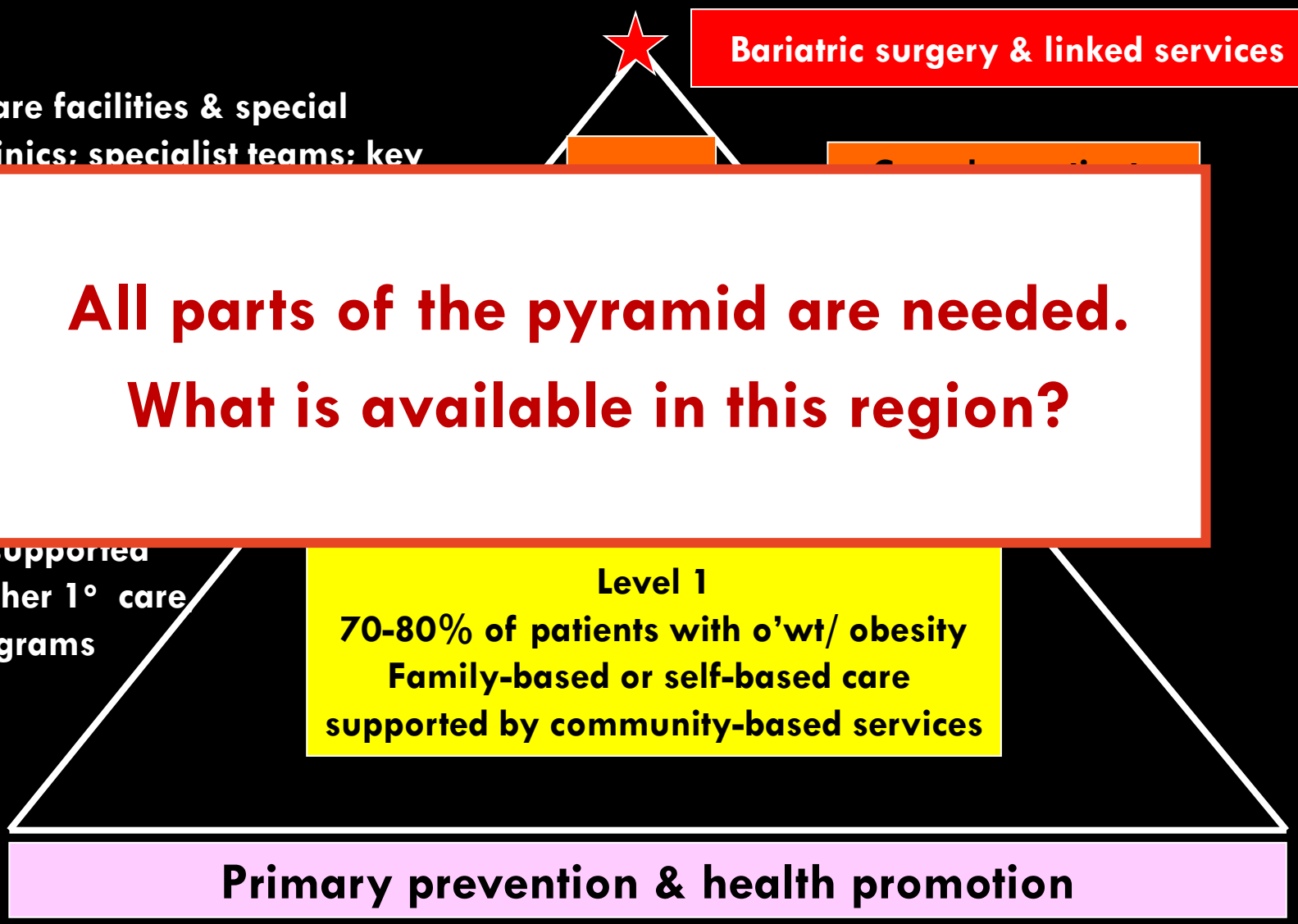
- What fits your skill-set and practice, and local resources?
- Frequent regular follow-up initially
- Role of phone coaching, SMS reminders
- Role of practice nurse?
- Referral to other therapists e.g. dietitian, clinical psychologist, exercise professional, medical …
- Chronic Disease Management plan?
- Monitor, monitor, monitor – behaviours, plus weight (in those who are treatment-seeking)

Obesity and the chronic disease care pyramid



Baur LA et al, Nature Rev Gastroenterol Hepatol 2011; 8:635-45. Adapted from the Kaiser-Permanente and UK NHS chronic disease management pyramids of care

Obesity and the chronic disease care pyramid



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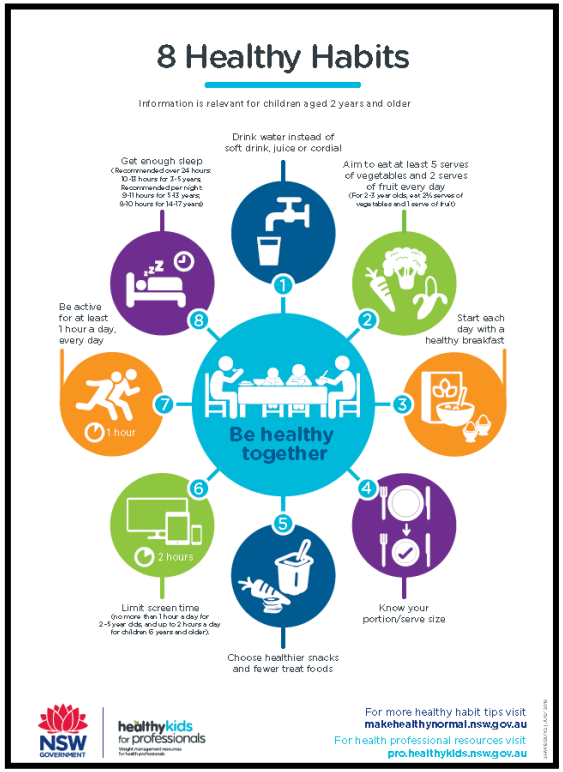
Practice points

- Use the "8 Healthy Habits" and related resources in your routine practice
- Consider how you can ensure frequent regular follow-up and monitoring – yourself, your practice, other health professionals?
- Identify local referral pathways

Acknowledgements

- The Children's Hospital at Westmead: Weight Management Services, Institute of Endocrinology, Obesity Research Group
- Shirley Alexander, Ian Caterson, Chris Cowell, Sarah Garnett, Alicia Grunseit, Jo Henderson, Hiba Jebeile, Natalie Lister, Gerri Minshall, Kate Steinbeck…
- NSW Ministry of Health staff
- WHO ECHO Commission Working Group
- World Obesity Federation colleagues
- University of Sydney: Prevention Research Collaboration, Boden Centre, Charles Perkins Centre



Healthy Kids for Professionals: pro.healthykids.nsw.gov.au

Thank you!

Changes in food intake

- **Follow national nutrition guidelines**
- **Meal patterns:**
  - Regular meals; eat together as a family; decreased portion sizes; eat breakfast
- **Dietary intake:**
  - Nutrient-rich foods that are lower in energy and GI; increased vegetable (*and possibly* fruit) intake; healthier snack food options; reduction in sugary drinks; drink water
- **Whole-of-family lifestyle change:**
  - Includes engagement of the person who buys and cooks the food; role modelling of parents vital
- **Involvement of a dietitian, especially re prescribed menu plans and diet**

2013 Australian NHMRC Clinical Practice Guidelines for the Management of Overweight & Obesity
Barlow SE and the Expert Committee of the AAP. Pediatr 2007; 120:S164-S192; Dietz WH & Robinson TN. NEJM 2005; 352:2100-2109; Whitaker RC. Arch Pediatr Adoles Med 2003; 157:725-727.

Physical activity & sedentary behaviours

- **Increased physical activity**
  - Aim for increase in incidental or unplanned activity eg walking or cycling to/from school, household chores, playing with friends /family…
  - Organised exercise programs and sports
  - Choose activities that are fun & likely to be sustainable
  - Explore access to recreation equipment or spaces
- **Addressing screen time**
  - Aim to limit TV and other recreational small screens (in various forms) to <2 hours per day
  - TV out of the bedroom
- **Parental involvement & role modelling crucial**
- **Involvement of an exercise professional (exercise scientist or physiotherapist) where available**

2013 Australian NHMRC Clinical Practice Guidelines for the Management of Overweight & Obesity
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Sleep behaviours

- **Regular sleep routines**
  - Bedtime routines
  - Sleep time and wake times
- **Address screen behaviour**
  - TV out of the bedroom
  - Limit screen exposure prior to sleep time
- **Parental involvement & role modelling crucial**

Some key behavioural change strategies

- **Goal setting**
  - Both behaviours and weight can be targeted; may require ++ session time to plan and review
  - Example: *I will not buy any cookies or soda drinks during the weekly shopping. To make this easier, I will leave the children at home and shop on my own. If the children ask for junk food, then I will offer fruit instead."*
- **Stimulus control**
  - Modifying or restricting environmental influences
  - Example: *not eating in front of the TV; not having TV in bedrooms; using smaller plates and spoons; not storing unhealthy food choices in the house*
- **Self-monitoring**
  - Detailed recording of a specific behaviour
  - Examples: *Food diary, TV use diary, daily pedometer measurement of physical activity, weekly weighing*

Baur LA et al Nature Rev Gastroenterol Hepatol 2011; Epstein LH et al Pediatrics 1998; 101:554-570; Dietz WH & Robinson TN. NEJM 2005; 352:2100-2109; Saelens BE & McGrath AM. Child Health Care 2003; 32:137-152.