By the end of this activity, participants will be able to:

• Refer to recent evidence in adolescent obesity and metabolic syndrome
• Assess an adolescent’s weight status and any weight-related co-morbidities
• Initiate appropriate interventions for the management of adolescent obesity and metabolic syndrome
Prevalence

Prevalence of overweight and obesity by age, Australia, 2011-12
Source: Australian National Health Survey 2011-2012

Health harms

Metabolic Syndrome in adolescents

Key components:
• Adiposity – total or abdominal
• Dyslipidaemia
• Hypertension
• Insulin or impaired glucose tolerance

Metabolic Syndrome in adolescents

Criteria variations

<table>
<thead>
<tr>
<th>Criteria variations</th>
<th>WHO Criteria</th>
<th>IDF Criteria (10-19 yrs old)</th>
<th>NCEP ATP III Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Essential criteria</td>
<td>Insulin resistance (IR)</td>
<td>Nil (3 of 5 below)</td>
<td></td>
</tr>
<tr>
<td>Glucose (mmol/l)</td>
<td>IR or Diabetes</td>
<td>Fasting ≥ 5.6</td>
<td>Fasting ≥ 6.1</td>
</tr>
<tr>
<td>Insulin (pmol/l)</td>
<td>2.17</td>
<td>2.17</td>
<td>2.17</td>
</tr>
<tr>
<td>Triglycerides (mmol/l)</td>
<td>&lt; 0.91 Boys, 1.0 girls</td>
<td>&lt; 1.03</td>
<td>&lt; 1.0</td>
</tr>
<tr>
<td>HDL-C (mmol/l)</td>
<td>≥ 2.14</td>
<td>≥ 130</td>
<td>≥ 130</td>
</tr>
<tr>
<td>Systolic BP (mmHg)</td>
<td>≥ 102cm</td>
<td>Waist-to-hip ratio (2.9 (boys), nil (girls))</td>
<td>2.9th Centile Boys 102cm, Girls 88cm</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>≥ 30</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Waist circumference (cm)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>


Adolescence – a changing, challenging time

4 A’s approach

healthykids for professionals

This website is designed to help professionals manage obesity in a healthy, supportive, and fun environment.

Healthy Kids for Professionals (available with allгазовозовский (район) the following formats):
• Healthy Kids for Professionals: Adiposity - a changing, challenging time
• Healthy Kids for Professionals: Obesity - a changing, challenging time
4 A’s approach

- pro.healthykids.nsw.gov.au

Assess

- Use BMI chart
- Use sensitive language
- Avoid stigmatising
- Avoid blaming
- Be solution-focused and supportive
- Schedule another time to discuss further

Assessment - History

- Medical history
  - History of the weight problem
  - Evidence of complications on history (bullying, depression, joint problems, breathlessness, menstrual concerns ...)
  - Level of concern and level of motivation for change
    - by family and young person
  - Family history
  - Weight problems/complications (eg diabetes)
  - High risk ethnic background?

Assessment - History

- Activity v’s sedentary behaviour
- Diet history
- Psychosocial history
- Sleep issues
Factors specific to adolescents

- Late nights and inadequate sleep
- Skipping breakfast
- Irregular meals and snacks
- Avoiding eating at school
- Binge eating and/or drinking
- High volumes of screen time
- High calorie takeaway and fast foods
- Peer pressure
- Bullying/teasing – school avoidance

Assessment – clinical examination

- BMI
- Waist circumference
- Blood pressure (use large cuff)
- Skin - acanthosis nigricans, striae, intertrigo, acne
- Tonsillar size
- Hepatomegaly (may be difficult to assess clinically)
- Gait and mobility (hip/knee/ankle joints, flat feet)
- Pubertal stage (Tanner stage - stage on chart)

When to investigate?

- Age: adolescents > younger children
- Severe obesity (esp. central obesity)
- High risk family history:
  - 1st and 2nd degree relatives with heart disease, type 2 diabetes (incl. GDM), dyslipidaemia, sleep apnoea etc
- High risk ethnic group:
  - Indian sub-continent, Mediterranean & Middle-Eastern, Maori & Pacific Islander, Aboriginal & Torres Strait Islander, probably east Asian
- Clinical suggestion of co-morbidities

What to investigate?

Initial fasting blood tests (others dependent upon results):
- Glucose
- LFTs (ALT, AST)
- Lipids (TG, HDL cholesterol, LDL cholesterol)
- Insulin
- ?TSH
- Iron studies
- Vit D and Vit B12
- Consider referral for sleep assessment
- Other investigations that MAY be warranted: OGTT, liver ultrasound

What can we do?

The objective is to develop long-term healthy lifestyle habits for the young person and the whole family that not only help lose excess fat but maintain optimal weight and wellbeing.

Treatment aims

- Long-term behavioural change:
  - Dietary change
  - Increase in physical activity
  - Decrease in sedentary behaviour
- Clarify treatment outcomes
  - Set SMARTER goals
- Young person decide – parents provide support
- Regular follow-up and support
- Importance of serial measurements
  - Monitoring and feedback
- Consider non-conventional therapies
Lifestyle intervention versus self-help or control: children ≥12 years


**Additional effective interventions**

- **Frequent contact**
  - 2 yr FU of >21000 in real life setting
  - More intense intervention better outcome
  - Ravinder et al. Obesity 2009

- **SMS, email, phone call**
  - Loozit study – community based intervention in obese adolescents
  - Nguyen et al Int J Obesity 2013

- **Choice of dietary intervention**
  - 12 week dietitian-led weight management program with emphasis on lifestyle change
  - Preference for structured eating plans esp with portion sizing
  - Truby et al. JPCH 2011

**Outcomes from an adolescent clinic dietary intervention program**

- **Enjoy participating with peers and meeting new people**
- **Liked**: practical aspects – cooking and activity
- **Disliked**: writing down goals, repetition, time-consuming
- **Enablers**: goal setting
- **Barriers**: time constraints, lack of motivation
- **Unrealistic expectations – problems with perceptions versus actual outcomes**
- **Coming to terms with the cyclical nature of behaviour change**
- **Main message** – being active, healthy eating and reducing sedentary behaviour

**Interventions – what do adolescents think about weight management programs?**

- **Drug therapy**

**Adjuncts to lifestyle interventions**

- **Obesity drugs (orlistat):**
  - Cost of drug therapy (not on PBS)
  - Not licensed for use in adolescents
  - Only effective on the background of a lifestyle modification program
  - Role in treating moderate obesity in adolescence

- **Other medications:**
  - Metformin
  - Statins – Pravastatin
  - ACE inhibitors
  - ?vit E, antioxidants, fish oil
Bariatric surgery

Bariatric surgery:
- Inclusion and exclusion criteria
- Major issues of cost and equity of access
- Adolescents – RCT outcomes positive (O’Brien P et al, JAMA 2010; 303: 519-526)
- Specialised centres

Refer on for complex, severe cases

Community programs: Go4Fun

- Free community-based child obesity treatment program.
- Once a week, two hours per session, delivered over the school terms.
- Multi component:
  - A dietary component
  - A structured exercise or physical activity component
  - A behavioural component
  - Family (parental) involvement

Go4Fun

- Program Eligibility:
  - Resides in NSW
  - Aged 7 to 13 years above a healthy weight
  - Parent/carer available to attend each session
- Programme outcomes:
  - BMI: -0.5 kg/m²
  - Waist circumference: -1.3 cm
  - Physical activity: +3.6 hours per week
  - Sedentary behaviours: -3.1 hours per week
  - Self esteem: statistically significant improvements
  - Fruit and vegetable intake: statistically significant improvements

Get Healthy Service

The Get Healthy Information and Coaching Service is a free, confidential information and telephone coaching program.
- Participants aged 16 and over receive 10 individually tailored, evidence based health coaching calls over a six month period
- Participants reported the following results:
  - An average of 3.8 kg reduction in weight
  - An average of 4.9 cm reduction in waist circumference
- NSW Health is commencing a trial for a telephone advice service for parents of 2-6 year olds
- Get Healthy in Pregnancy (NSW)
Practical tips when interacting with adolescents

• Don’t:
  - Label, lecture, or have power struggles
  - Act like a parent or teacher
  - Endorse unsafe behaviours
  - Make assumptions/pretend to understand what they mean
  - Rely on information from another source – check with the young person directly
  - Try to be cool

Practical advice – diet

- Regular meals especially breakfast
- Eat together as a family
- No eating in front of screens
- Healthy choices for after school snacking
- Store healthy snacks
- Review portion size
- Discuss take away choices
- Input into meal preparation
- Water as the main drink
- Don’t eat late
- Use smaller plates
- Slow down eating

Practical advice – physical activities

- Increase incidental activity in particular
  - 1 to 2 hours of planned sport a week will not counteract a sedentary lifestyle
  - Pedometer or equivalent – 10,000 steps/day
- Find opportunities to be active with their peers
  - eg youth groups
- Help with household tasks!!
- Active transport – walk when you can
- Parents to model activity
- Family activities
- Support activity that is fun

Practical advice – screen time

- TV/screens out of bedrooms
- Monitor
- Encourage rules around “screens”
- Switch off screens for eating
- Plan what you want to watch
- Remote control out of reach
- Alternatives to watching TV
- Plan a “switch off” day
- Holiday planning

Practical advice – sleep

- Aim for 8-10 hours
- Develop a routine
- Bed before midnight!
- Screens off 30 min prior
- No TV in bedroom

Take home messages

- Obesity prevalence continues to increase
- Metabolic syndrome prevalence variable
- Raising the issue can be difficult
- Use BMI charts, sensitivity
- Assessment can be quick covering a few basic areas
- Small steps at a time can be implemented
- SMARTER goals help structure interventions
- Adolescent engagement with parental support is essential
- Use Stealth Interventions to increase motivation
- Refer when obesity more severe and/or complex cases
- Changing lifestyle habits is worthwhile
There is no GIANT step that does it, it's a lot of LITTLE steps.