The Treatment of Childhood Obesity
Past, Present and Future

Sinéad Murphy
Children’s University Hospital, Temple Street
UCD Dept. Paediatrics
The Past

THERE IS NO PAST TENSE FOR 'PIGGY'!

PORK!
Obesity Definition

- WHO:

“A chronic disease that affects people of all ages in every region of the world and which is associated with a myriad of health problems and attributable to many causes of mortality”
Prevalence

• 25% School children overweight or obese

• Prevalence of childhood obesity has more than doubled over past 30 years, adolescent obesity has increased threefold.
Childhood Obesity - the pandemic

The average 14 year old child today weighs about double what they weighed in 1948.
Dietary Changes

Sedentary Lifestyles
Childhood Obesity - complex aetiology

- **Socioeconomic** — OW shows a negative gradient with Socioeconomic group
- **Diet** — easy access to palatable energy dense, cheap foods
- **Activity** — physical inactivity, sedentariness, less energy requirements in daily life
- **Genetic** — obese parent(s), influence of genes on behaviour rather than metabolism
- **Obesogenic Environment** — pulls the trigger
“Unless effective interventions to reduce obesity are developed, the steady rise in life expectancy observed in the modern era may soon come to an end and the youth of today may live shorter lives than their parents.”

“Unless effective interventions to reduce obesity are developed, the steady rise in life expectancy observed in the modern era may soon come to an end and the youth of today may live shorter lives than their parents.”

80% Obese Children will be obese adults
The Dietary Component – 80%
Understanding the Food Pyramid

Top Shelf foods are high in fat, sugar and salt, are not essential for health and taken in excess can be harmful.

Fats and oils are essential, but only in small amounts.

The foods and drinks on the bottom 4 shelves of the Food Pyramid are essential for good health.

A Guide to Measures
1 small glass = 100 ml
1 large glass = 200 ml
1 cup = 200 ml
A disposable cup is a good guide
1 teaspoon = 5g/ml
1 heaped teaspoon = 7g/ml
1 dessertspoon = 10g/ml
Obesity Definition

• WHO:

- “a complex condition which is influenced by a wide range of genetic and non-genetic factors, with interactions between many of these”
Genes

You're fat.

It runs in the family...

Dude no one runs in your family...

....
Exercise and Obesity

- Exercise is a critical component of a healthy lifestyle
- Exercise ALONE NOT a treatment for obesity
- Likely to have a role in prevention
The Activity Component

• < 50% Irish children get required amount of exercise
ENERGY BALANCE

2200 calories

Fast food meal

For 26 miles...

Assessment and Treatment
Medical Assessment

Remember:

Endocrine aetiologies for obesity are rare and are usually accompanied by attenuated growth patterns.

BMI > 85$^{th}$ Percentile – need to evaluate for comorbidities.
Medical Assessment

• Detailed history – motivational interviewing
• Anthropometry – discussion around centile charts
• BMI sds
• Physical Exam
• Problem solving approach
• “Problem list”
• Secondary obesity
• Comorbidities
BMI SDS
The major medical **comorbidities** associated with **childhood obesity** in the current literature are metabolic risk factors, asthma, and dental health issues. Major psychological **comorbidities** include internalizing and externalizing disorders, ADHD, and sleep problems.
Baseline Bloods

Fasting:
• Glucose
• HbA1C
• Cholesterol
• Triglycerides
• Liver function
• TFTs
• Conservative treatment of adult obesity does not work – is not sustainable
• Hirsch 1950 – Rockefeller University “long term weight loss is a life long struggle”
• Same picture emerging in childhood obesity
Treatment of Childhood Obesity

• Purpose is to restore normal metabolic and organ function
• To reduce the disability of morbidity rather than reduce weight per se
• Thereby improving the quality of life
Cochrane Review 2009

• “not enough evidence to recommend any specific weight management treatment programme over another but combined behavioural therapy lifestyle interventions have an advantage over standard, self care dietary or activity interventions”
Treatment of the Morbidly Obese Child

- Particularly challenging
- Adult obesity resistant to long term change
- Need to maximise effort to develop effective treatments for obese children
- Challenge bigger in adolescents than in younger children
Barriers to treating the Morbidly Obese Child

- High attrition levels
- Patient
- Provider
- Institutional
- Community level
Barriers to Engaging Patients in Obesity Treatment

1. Lack of patient perception of obesity as a problem – 39%
2. Difficulty in sustaining weight loss – 39%
3. Lack of adherence to treatments - 31%

Catalyst Oct 2018

NEJM
One in five mums don't realise their child is overweight or obese

Research
NUI Galway
Attrition Rates

- 88% - majority of patients did not complete one half of maintenance visits
- Primary barrier – no perceived benefit from programme

---

Patient Engagement and Attrition in Pediatric Obesity Clinics and Programs: Results and Recommendations
Sarah Hampl, Heather Paves, Katie Laubscher and Ihuoma Eneli
Pediaiatrics 2011;128:S59
DOI: 10.1542/peds.2011-0480E
Addressing high Attrition Rates

- Reminder phone calls
- Involvement of entire family
- Need small initial clinic
- Capacity for large follow up clinics
Treatment Options

• Lifestyle Modifications
• Pharmacotherapy
• Bariatric Surgery
• Combination of above
• PREVENTION
Lifestyle Modification

- Combination of exercise, diet & behaviour modification
- Some synergism with physical activity
- Poorly defined dose-response pattern between adiposity and exercise
- Exercise protective and linked to metabolic health
Behaviour Modification

• Dietary behaviour of great concern
• Dietary interventions should be theory driven and behaviour focused
• Theory Planned Behaviour / Theory Reasoned Action
• Multiple settings needed
Family Based

- 5 year follow up studies demonstrate that including parents as active participants improves child weight control
- Support from family predictive of outcome
- Parental modelling & reinforcement play essential role
Surgical Treatment

• Laproscopic Adjustable Banding (LAGB)
• Roux-en-Y Gastric Bypass (RYGB)
• 50-70% loss of excess
• Sustained weight loss
• Safe, effective and economically viable
• Meticulous patient selection and preparation essential
Social Ecological Model

Dietary Behaviour Change is highly complex – need multi-layered interactions

5 Layers of influence on Behaviour
1. Individual
2. Interpersonal
3. Institutional
4. Community
5. Policy
The Future
The physician does not need to be the primary clinician to address weight.
Prevention

- Little evidence School based - ? too late
- Parents – universal goal is to raise healthy children
- Traditional parenting in obesogenic environment
Mobile Health

• 5 billion mobile phone users worldwide

• mHealth interventions may be useful ADJUNCTS to treatment
BMI Calculator for Children and Adolescents

Name

Height

How to measure height?

Weight

Gender

Unconditionally supported by Consilient Health.
How to measure height

The child should take their shoes off and stand with their back to a wall. An adult should mark their height on the wall. Then using a measuring tape measure the distance from the floor to the mark on the wall.

OK

Gender

Boy  Girl
Information Entered

Name: Aidan
Date of birth: 28-02-2013
Gender: Male
Height: 110 cm
Weight: 4 stone 2 lb
Date of Measurement: 12-11-2018
BMI: 21.74

Result

Based on the age, gender, height and weight entered, your child has a BMI of 21.74. This places your child in the 99.60 percentile for boys of this age.
Red

This BMI is on > 91st centile. Your child is overweight for a child of their age and may be at risk of the medical consequences of this. Medical / dietetic advice should be sought.

Yellow

The calculation shows that your child is on the lighter side of a healthy weight, this is unlikely to be of medical concern but in the event that you are worried that your child is not gaining weight or losing weight, you should seek the advice of your GP.
on the lighter side of a healthy weight, this is unlikely to be of medical concern but in the event that you are worried that your child is not gaining weight or losing weight, you should seek the advice of your GP.

Green
This BMI is on the < 50th centile. Your child's BMI is healthy for his / her age, keep going with healthy diet and exercise.

Orange
Orange: 50th – 91st centile. Your child's BMI is within normal limits. It is important to keep to a healthy diet and to exercise.
<table>
<thead>
<tr>
<th>Date of Measurement</th>
<th>Name</th>
<th>Date of birth</th>
<th>Height</th>
<th>Weight</th>
<th>Gender</th>
<th>BMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-11-2018</td>
<td>Aidan</td>
<td>28-02-2013</td>
<td>110 cm</td>
<td>4 stone 2 lb</td>
<td>Male</td>
<td>21.74</td>
</tr>
<tr>
<td>19-09-2018</td>
<td>Aidan</td>
<td>28-02-2013</td>
<td>130 cm</td>
<td>2 stone 13 lb</td>
<td>Male</td>
<td>11.00</td>
</tr>
</tbody>
</table>
Management of the child with severe obesity

- Personalised medicine
- Management of comorbidities
- The role of bariatric surgery
Improve Understanding

A component of an individual’s response to the obesogenic environment is **neurobehaviourally** driven.
Actions

• Define and begin to categorise the population in question
• “Education and Awareness are the fundamentals of preventing obesity”
• Identification of at risk child
• Community based
• Technology enhanced
Thank you

SO YOU'RE TELLING ME
YOUR PEOPLE DIE BECAUSE THEY EAT TOO MUCH?