



# Tamariki Ora Well Child Symposium

Disproportionate Growth

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New Zealanders have normalized overweight

# How long should we wait to predict weight?

- Worldwide 41 million children <5 are estimated to be overweight
- Identification in infants under 2 is difficult
- Currently use the WHO guidelines
- CDC charts don't provide guidelines for overweight of obesity in infants
- Several clinical predictor models have been developed for predicting obesity risk using different predictors
- Predictive capacity ( sensitivity and specificity) varies greatly
- No agreed risk threshold or prediction of obesity in young children
- Ref: Butler et al, J Pediatr Endocrinol Metab 2018; 31(5):497-501



# How long should we wait to predict weight?

- Variability in infant growth patterns
- Lack of evidence for meaningful cut-offs in infants
- HOWEVER – data showing obesity tracks from infancy to adulthood
- BMI >85 at 6, 12 or 18 months is a predictor of significant obesity (weight >p99) at 6 yrs
- BMI trajectories in children who were severely obese at 6 years was apparent at 4-6 months
- Studies 1/3 of infants obese at 2-6 months remained so at 24 mths

• Ref: Butler et al, J Pediatr Endocrinol Metab 2018; 31(5):497-501

# Sustained obesity starts early in childhood

- Early childhood is critical with a relatively narrow window that predicts sustained obesity
- Critical windows of opportunity for interventions to prevent excessive weight gain
- The lack of a reliable model of prediction remains a challenge

• Ref: Page,K; Science translational medicine 17 Oct 2018:Vol

# Sustained obesity starts in early childhood

## Retrospective analysis:

- Most obese adolescents had been normal weight as infants
- >50% overweight or obese by 5 yrs

## Prospective analysis:

- 50% children overweight before 2 returned to normal weight in adolescence
- Probability of overweight in adolescence was almost 90% in children who were obese at 3 yrs
- Greatest acceleration of weight occurred 2-6 yrs
- Probability of obesity in adolescence higher in children with accelerated weight gain during preschool years
- No gender bias

# Risk factors for obesity in 7-yr old European children

- Maternal overweight/obesity
- Maternal age
- Female gender
- Sedentary activity time
- Growth variables – birth weight, rapid weight gain in infancy, early and middle childhood
- Strong correlation between percentage body fat (PBF) at 3.5 yrs and PBF at 7 yrs

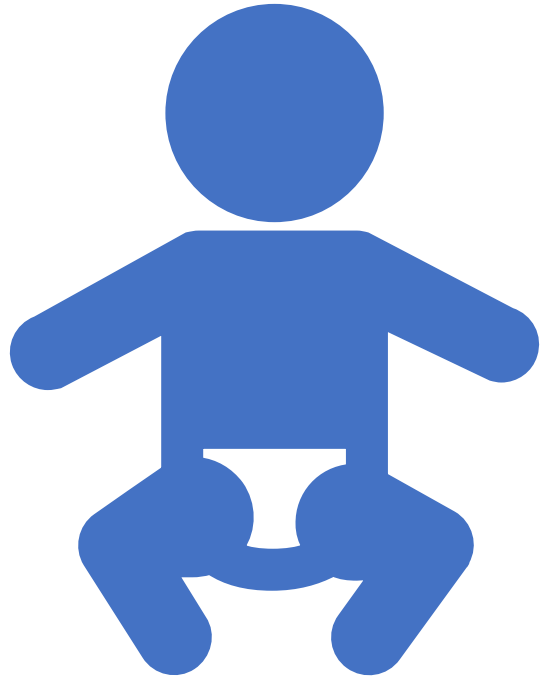


# Early factors associated with obesity in childhood

- Maternal BMI
- Excess gestational weight gain
- Maternal smoking during pregnancy
- Gestational diabetes
- Lower socioeconomic status
- Caesarean-section
- High birth weight
- Rapid weight gain
- Poor infant sleep
- Antibiotic exposure
- Low maternal vitamin D levels
- Poor maternal-infant relationship
- Childcare attendance

• Ref: Butler et al, J Pediatr Endocrinol Metab 2018; 31(5):497-501





## More inconsistent factors

- Breastfeeding – occurrence or duration
- Early feeding practises



## Parents Views

- Parents less concerned about an infants weight until they were walking
- Parents need to be open to and sensitive to communication about the risk of their child being at risk of obesity and later health risks
- Health professionals need to be prepared to initiate conversations



# Physical activity is low in obese NZ children

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- 18.5% met physical activity national recommendations
- 40% met the <2 hours screen time goal, 33% >3 hours
- Average steps 7,324 per day ( goal 6-11 yrs 12-,16000 steps per day)
- Weekend activity less than weekday activity
- Targeted interventions removing TV and devices from bedroom and
- Increasing weekend physical activity

# Eating behaviours in NZ children

- Maori 1.6 x more likely to be obese ( children 2-14) compared to non-Maori
- Pacific children 3.6 x more likely to be obese than non-pacific
- Median energy intake of Maori higher than NZE and Pacific children
- Maori highest intake of sucrose
- Breakfast eating associated with economic status



# Eating behaviour traits associated with weight

- Satiety responsiveness/slowness of eating
- Fussiness negatively associated with weight
- Obese children eat faster
- Food responsiveness, enjoyment of food, emotional overeating and desire to drink positively associated with weight.
- Breakfast skippers less likely to meet fruit and vegetable recommendations
- Study struggle with definitive portion information , challenges of recording data
- 50% increase in energy



# Where does this child sit on the growth charts?

- Where did they come from?
- What is genetically likely – immediate and extended family
- Regular plotting of growth data – pattern of growth
- Normalisation of obesity – can we trust visual assessment?

## Medical reasons for disproportionate growth

- Hypothyroid
- Cushing's syndrome – pituitary disorder
- Undiagnosed coeliac disease
- Prader-Willi syndrome – rare genetic disorder, hypotonia, developmental delay
- Not common
- Association with developmental delay



What is food used for?

- Nourishment
- Social
- Reward
- Distraction
- Comfort
- Attention
- Bribery
- Food hug
- Food language conveys food values



Parents inadvertently  
encourage overeating

- Parent focussing on getting their child to eat not helping them to eat
- Allowing inappropriate foods
- Missing the feeding connection
- No structure with feeding
- Food rewards





Discourage

- Preferences for sweet, salty and fatty foods – offering first tastes from preferences
- Missing the feeding connection – bonding, building trust
- Compelling a child to finish meals, missing signals of self regulation

# Monkey see- monkey do

- Family based interventions
- Support families to make achievable changes
- Meal time structure
- What and when to feed
- Messages around feeding





Portion  
distortion



One size fits all ???

- Pledge 2020 to cap Happy Meals at 600 calories
- 3 yr child requires an average of 786 calories per day

# Portion distortion

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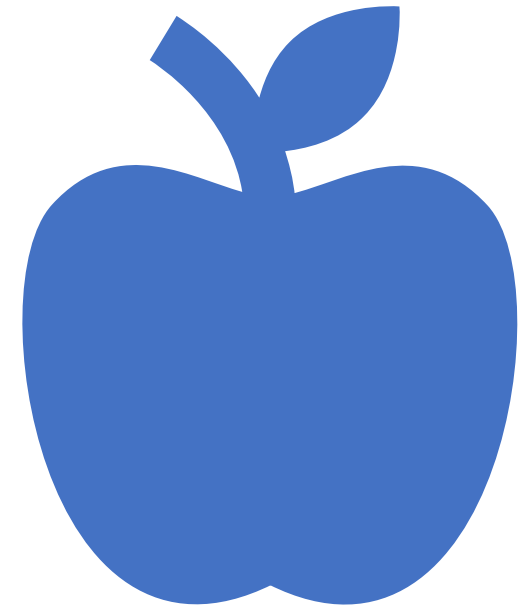




Food outside  
the home

# Concentrated forms of energy

- High sugar ( poor nutrient density)
  - drinks (soft drinks, juices, smoothies, fruit and vegetable juices)
  - pouch foods/ pureed foods
  - 'sugar free' alternatives – bliss balls
- Endogenous vs exogenous sugar
- High fat
- Low fibre foods





# TODDLER PORTION SIZES

Encourage

- Whole foods
- Finger foods from as early as safe
- Minimise processed foods
- Age appropriate portions ALWAYS
- No food rewards
- Predictability of feeding/feeding structure



# Tips to create a healthier lifestyle

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- Minimize processed foods
- Include protein with every meal and snack
- Water and milk to drink
- Portion rules apply to all meals and snacks
- Include vegetables throughout the day
- Make home a safe and healthy place
- Research carried out by Whānau Pakari found that children's physical activity is being replaced by screen time. Place limits around screen time to boost movement.
- Parents are role models for their children - lead by example by demonstrating good eating and exercise behaviours.
- Use time based rather than food based rewards



## Feeding patterns

- 3 meals
- 2-3 snacks
- Food centric meals – no concurrent activities
- Parent provides-child decides ( Ellen Satter model)
- Sometimes and all the times food (value judgements of food language)
- Home as a safe place
- Discourage nocturnal energy consumption

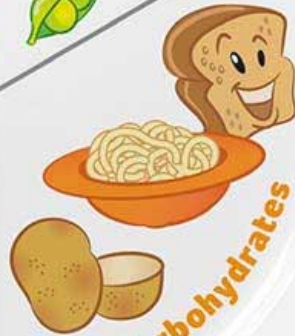


What's on your plate kids?

Salad & Veggies  
Keep It Colourful



Protein



Carbohydrates

Healthy Eating is as easy as 1,2,3



# Improving rates of overweight, obesity and extreme obesity in New Zealand 4-year-old children in 2010–2016

Paediatric obesity  
Shackelton et al

First published: 22 December 2017  
<https://doi.org/10.1111/ijpo.12260>

