

Developing Dietetic Resources for Children and Young People with Type 2 Diabetes

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With Thanks to Barts Health

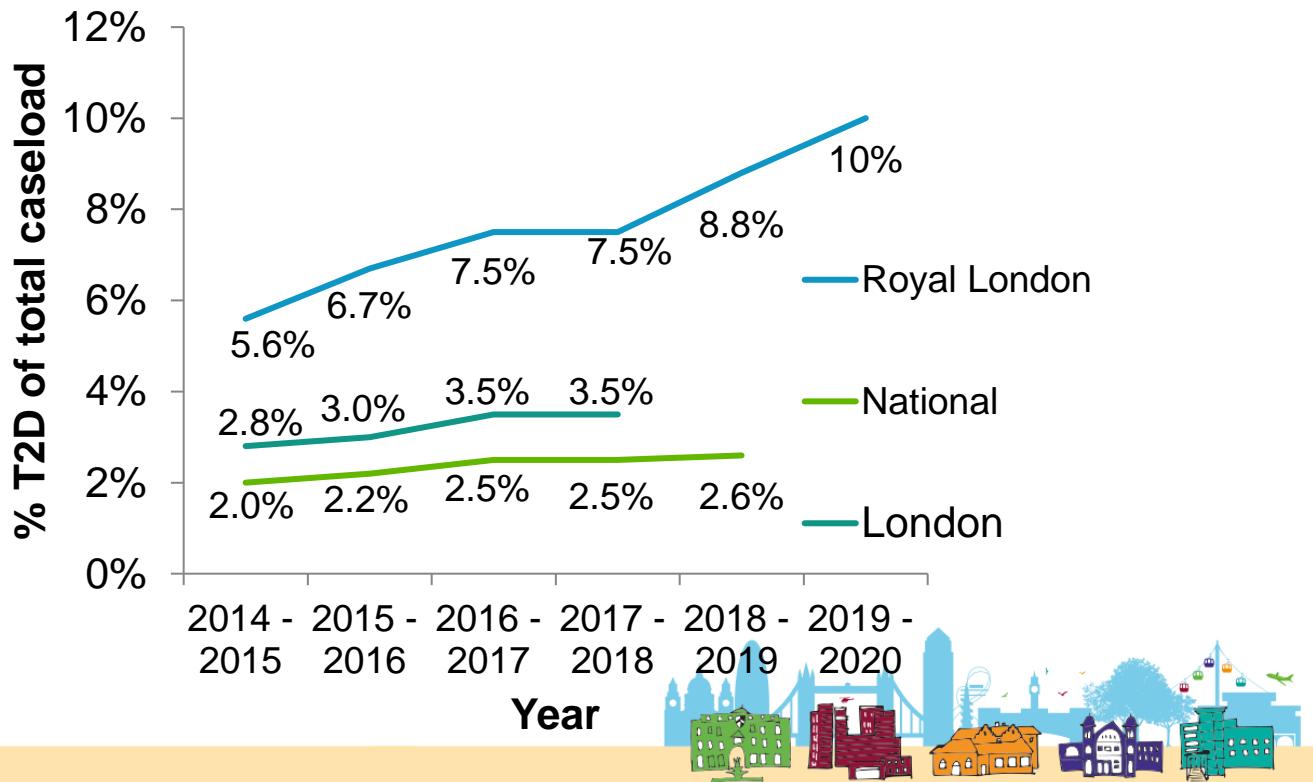


Contents

- The population in East London
- Our QI project and QI tools
- An AHP assessment
- Dietary interventions / options
- Exercise



Type 2 Diabetes at Royal London



An obese population!

10% more children are obese in Tower Hamlets than Nationally

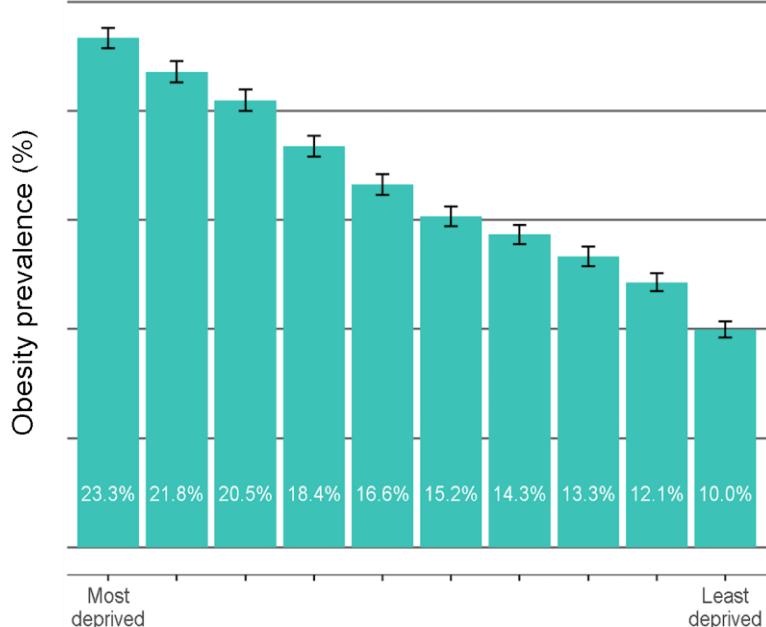


Year 6: Prevalence of overweight (including obesity) 2018/19

Area	Recent Trend	Count	Value
England	↑	205,923	34.3
London region	↑	35,557	37.9
Barking and Dagenham	↑	1,634	44.9
Newham	↑	1,978	42.7
Enfield	↑	1,885	42.6
Brent	↑	1,605	41.7
Tower Hamlets	↑	1,278	41.5
Greenwich	↑	1,392	41.2
Hackney	↑	1,014	40.2*
Redbridge	↑	1,512	39.9
Southwark	↓	1,185	39.7
Hounslow	↑	1,294	38.9
Ealing	↑	1,609	38.7
Hillingdon	↑	1,461	38.7
Croydon	↑	1,751	38.6
Haringey	↑	1,038	38.4
Islington	↑	653	38.3
Waltham Forest	↑	1,203	38.0
Westminster	↑	437	38.0
Bexley	↑	1,184	37.9
Lewisham	↑	1,217	37.3
Harrow	↑	1,051	36.7
Lambeth	↓	1,020	36.5
Camden	↑	523	36.4
Havering	↑	1,070	36.1
Hammersmith and Fulham	↑	441	35.8
Merton	↑	791	35.6
Kensington and Chelsea	↑	234	35.3
Sutton	↑	871	35.0
Barnet	↑	1,423	34.3
Wandsworth	↑	761	32.9
Bromley	↑	1,085	30.7
Kingston upon Thames	↑	506	27.4
Richmond upon Thames	↑	451	22.6
City of London	-	-	*

A Deprived Population

Year 6

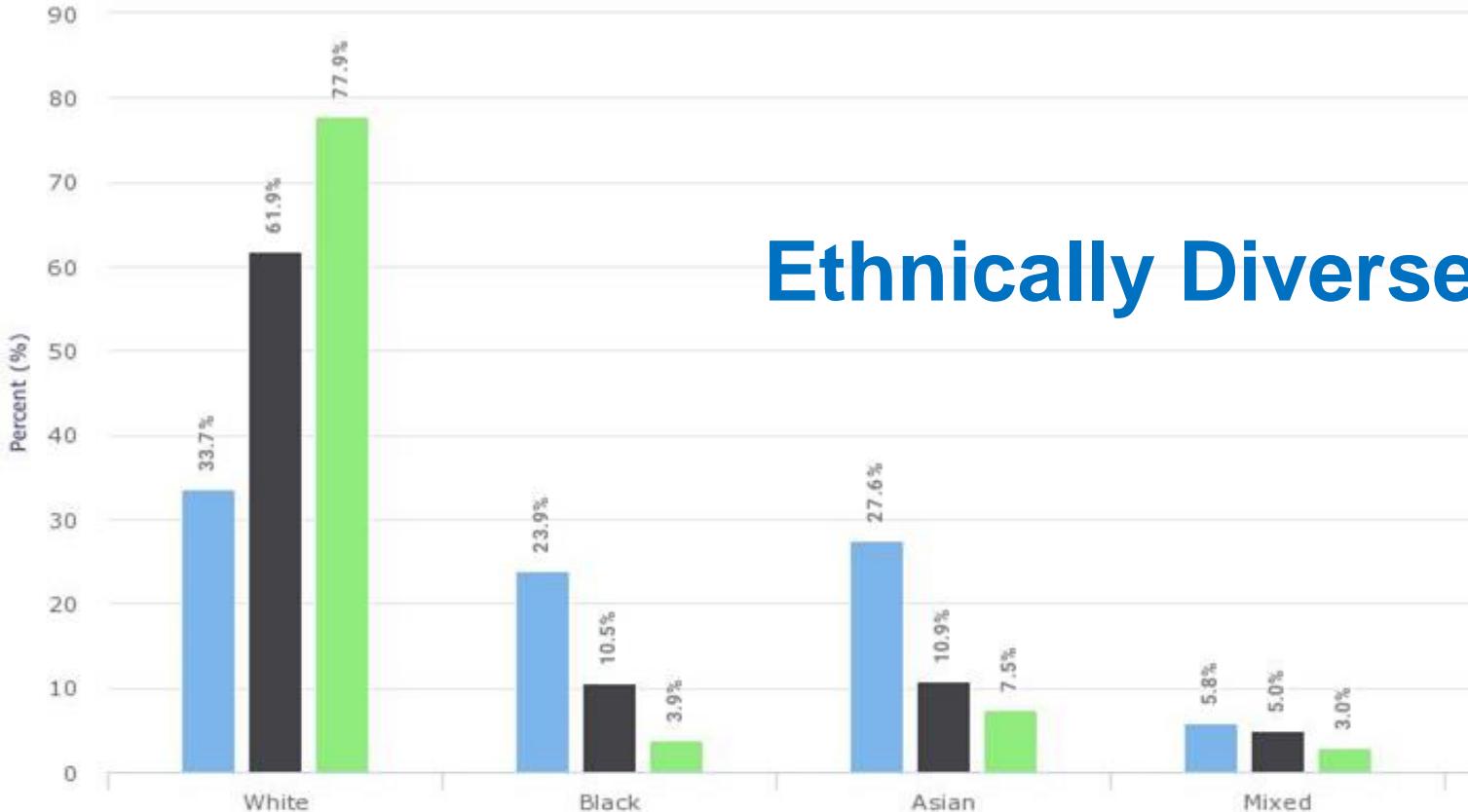


Obesity prevalence by regional deprivation and age

Child obesity: BMI greater than or equal to the 95th centile of the UK90 growth reference. Source: National Child Measurement Programme 2014/15-2016/17



Ethnically Diverse!



● The Royal London Hospital (PZ059)
[326 cases]
2018

● London and South East
[6968 cases]
2018

A complex condition

Obesity harms children and young people



Emotional and
behavioural

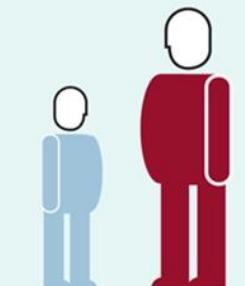


School absence

- Stigmatisation
- bullying
- low self-esteem



- High cholesterol
- high blood pressure
- pre-diabetes
- bone & joint problems
- breathing difficulties



Increased risk of
becoming overweight
adults

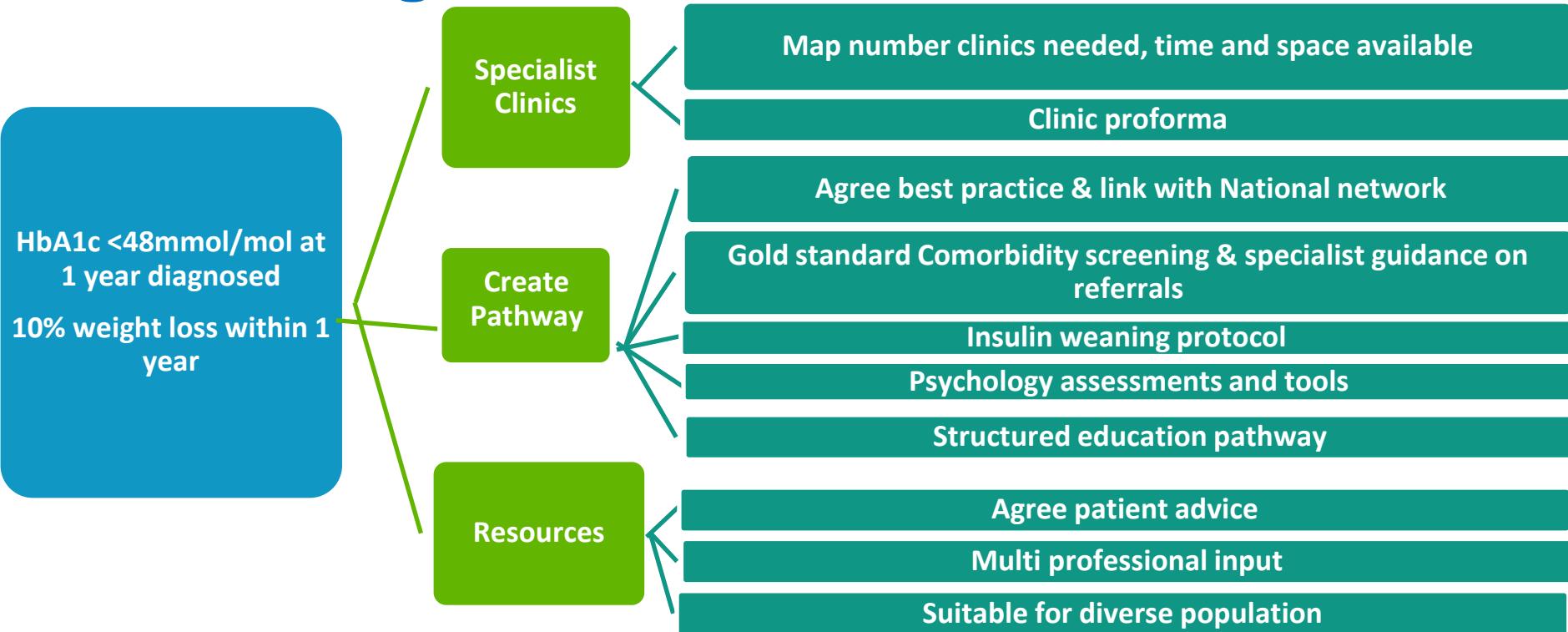
Risk of ill-health and
premature mortality in
adult life

Type 2 Diabetes Specific Stats

- 45.5% require Psych/ CAMHs support. (NPDA 2018-2019)
- Rapid development of complications and CV risk (Barrett et al, 2019)



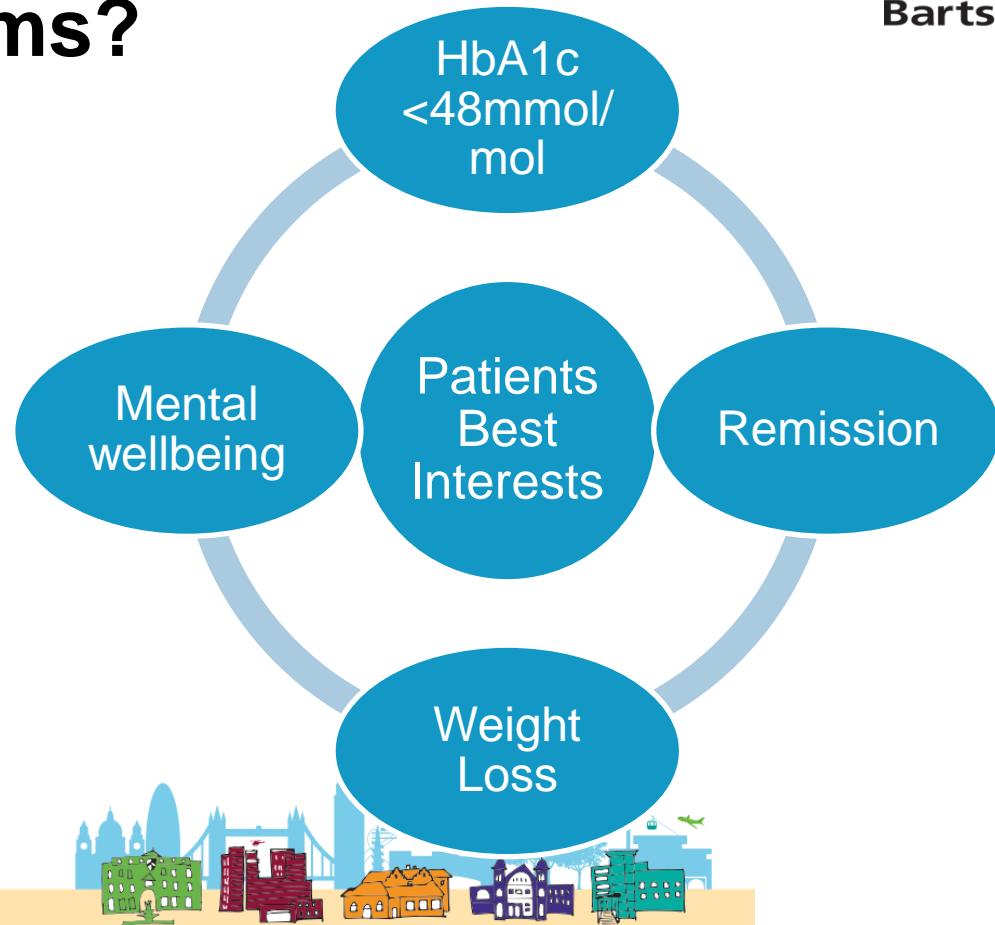
Driver Diagram



What are our Aims?

What is a realistic weight loss:

- Very little evidence in CYP
- 7% weight loss shown to improve CV risk factors
- 5-10% is reasonable & I have seen good results
- Await ACDC guidelines



Dietitian Assessment

Clinical

- Weight/ BMI/ waist circumference
- Weight Hx
- Family weight Hx
- Lipids
- BP

Comorbidities

- NAFLD
- Musculoskeletal
- Sleep aponea

Diet History

- Current & previous dietiting
- Food frequency
- Eating habits questionnaire

Environmental

- Daily Routines
- Family support
- Culture
- Economic
- Housing
- Physical environment

Paediatric Inventory of Distress
(Assesses depression and anxiety)

Individual

- Knowledge
- scaling questions
- Life goals
- Mental health
- Motivation
- Body image/self-esteem
- Sleeping patterns
- Behavioural issues
- Emotional eating



What diet works for significant, sustained, weight loss?



Just one!

The one CYP / families can keep to!



Reference

Johnston Et al, 2014.
Comparison of weight loss
among named diet
programmes in overweight
and obese adults: a meta-
analysis



cut back
me size
fat

breakfast 4 life



up & about

change

4 life

Eat Well Move more Live longer



snack check



fiber
Swap



fitness 4 life



Sugar
swaps

Carb Prescriptions

→ Energy

Mifflin St-Joer /Schofield (over estimates 600 - 1000kcal deficit
35-40% energy as carbs,

40-50% of energy as carbs

Work out energy requirements

Subtract 600-1000kcal

Split this through the day

2300kcal

If you eat this amount your weight would remain the same

→ Starchy Carbs

Minimum 130g per day

→ Dairy (30g carbs)

3 portions per day

→ Fruit (60g carbs)

2-4portions per day

How many calories does my body need per day?

How many calories should I eat to reduce my weight?

How many grams of starchy carbs should I eat per day?

1400- 1700
175- 210g total Carbs

130 – 150g per day

If you eat this amount you should lose 0.5-1kg (1-2lb) per week

This will support your weight loss and good blood glucose levels
Divide this between your meals,
Breakfast = 40 -45g carbs
Lunch = 40-45g carbs
Dinner = 50-60g carbs

Total carbs minus carbs for fruit and dairy

Snack

How many carbs from Dairy should I have per day?

30g carbs from dairy

These foods are important for calcium but do contain carbs
Divided this over 3 portions
e.g. 1 yoghurt and 200mls milk
OR 2 x yoghurt and 100ml milk.

Carbs from fruit and dairy as per BDA portion guide

How many carbs should I have from fruit per day?

30g carbs from fruit

These foods are important for vitamins and fibre but do contain carbs
This should be in the form of 2 forms of fresh fruit per day with meals





Personalising Prescriptions

As with all diets it is important to personalise

→ **What does family currently eat?**

Can current dietary pattern be adapted
Swops

→ **What are they going to find most challenging?**

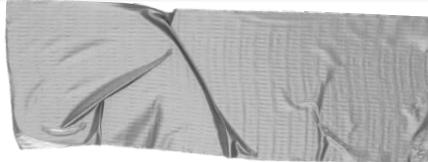
Focus on the easy changes first
Does family need Scales
Handy measures

→ **Consider**

Who does the shopping?
Who cooks?
Who else is willing / able to follow plan?

Example Day		
Breakfast	2 x wheatabix with 250mls Milk OR 40g Wheetos + 150mls milk	50g oats +milk PLUS Apple + cinnamon / banana + spoon hot chocolate + Sweetener. Leave in fridge overnight
Lunch	Chicken Sandwich = 56g carbs	1 Cup of rice / pasta / couscous = 50g carbs Grilled chicken / smoked mackerel + salad / roasted vegetables
Snack	Grapes, Apple, oranges = 2 units, Banana = 4 units, Kiwi, plum, nectarine = 1units Petti Filou x 2 = 2units, 125g yoghurt = 2units Milk 150ml = 7units	100g Oven chips (30g carbs) 3 chicken nuggets (10g carbs)
Evening meal	1 Cup of rice (50g carbs) OR Chappati x 1 + fish / meat curry + dhal or veg curry	Broccoli AND / OR sweetcorn (40g - 11gcarbs) OR Peas (40g - 4g) Or baked beans (80g =12g carbs)
Snack	Sugar free Jelly, Sugar Free ice Lolly,	





Low Carb Diets

→ BDA : 50-130g per day

ADA:

Very low Ketogenic 20-50g/day

Low carbs <30g/day (<26% of energy /day)

Moderate carb: 26-45% energy /day

High carb >45% energy/day

Risks

Reduced fibre intake (gut and CVD risk)

Leaching of calcium into urine and effect on bone development

Managing of ketone levels unknown

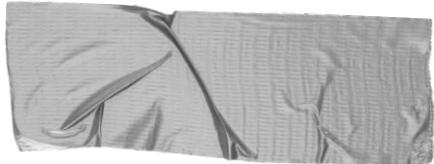
No evidence of long term impact (CVD risk)

Psychological impact of restrictive diet

Type 2 National Network Group position

- Ideal amount of carbs is unclear for CYP with T2DM
- There is not enough evidence for Low carbs < 130g in CYP with T2DM
- Moderate carbs diet (26-45% energy) recommended
- Prescriptive meal plans and recipes
- Consideration of cultural beliefs and cooking practices





Meal Replacements

- No evidence or research on the use in CYP
- Total meal Replacements :
Check whether energy deficit is sustainable
- Total meal Replacement Vs Partial
- Currently we only recommend partial meal replacement with 600 – 1000kcal deficit
- Calorie controlled ready meals



Meal plans

Monday

Breakfast



Porridge + tablespoon raisins

Lunch / Dinner



Milkshake + popcorn

500kcal Dinner

Dinner / school meal

Have this meal at school or for dinner

Free Snack



MEAL Vegetable curry with lentil dhal and rice, and orange juice

12-18 year olds



Vegetable curry

This recipe makes 4 portions of about 200g.

- 1 tablespoon vegetable oil
- 2 medium onions, peeled and sliced
- 2 fresh red chillies, sliced
- 1 clove garlic, finely chopped
- 250g carrots, peeled and sliced
- 2 medium parsnips, peeled and sliced
- 2 large potatoes, peeled and cubed
- 1 large sweet potato, peeled and cubed
- 150g green beans, trimmed
- 75 ml (150g) can low fat natural yogurt

1. Heat the oil in a small saucepan and cook the onion until softened and beginning to brown.
2. Add the chilli, garlic and potato and cook for 1 minute.
3. Add the water.
4. Add the carrots, parsnips, potato and sweet potato and bring to the boil.
5. Reduce the heat, add the sweet potato and simmer for 15 minutes.
6. Remove from the heat and stir in the yogurt then return the pan to a low heat and cook gently for 2 minutes.

Lentil dhal

This recipe makes 4 portions of about 80g.

- 150g split red lentils
- 1 tablespoon vegetable oil
- 1 small onion, diced
- 30g coriander seeds
- 3 small onions, diced
- 1 clove garlic, finely chopped
- 1 teaspoon crushed ginger
- 1 teaspoon ground cumin
- 1 teaspoon ground turmeric
- 1 small potato, diced
- 150ml water

1. Boil the lentils in water until tender.
2. Heat the vegetable oil in a large pan and fry the cumin seeds, then add the onion, garlic and ginger and fry until the onion is soft.
3. Add the cooked lentils to the pan, along with the dried tomatoes and the water, and cook for 5-10 minutes.



www.cwt-chew.org.uk

Spicy Chicken, red pepper & tomato bake



2

Preparation time: 15 minutes
Cooking time: 55 minutes
Serves: 4

Ingredients
600g chicken thighs with skin on
2 tbsp. olive oil
3 medium red onions, cut into thick wedges
800g new potatoes, cut into thick slices
2 red peppers, deseeded and cut into thick slices

400g cherry tomatoes
2 garlic cloves, crushed
1 tsp. cumin
1 tsp. smoked paprika
Pinch of dried chilli flakes (optional)
1 small red chilli, seeds slightly crushed
Zest and juice 1 lemon

To serve
180g 0% fat Greek yogurt
Small handful parsley or coriander chopped

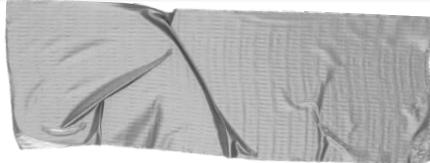
Directions:

- 1) Preheat the oven to 220C (200C Fan).
- 2) Mix together the garlic, chilli flakes, cumin, lemon zest, juice and olive oil in a small bowl.
- 3) Place the onions and potatoes, in 2 large ovenproof dishes, pour over the spice mixture and rub in. Place in the oven and roast for 25 minutes.
- 4) Remove from the oven and add the chicken thighs and the peppers. Season with salt + pepper and put back in the oven for 10 minutes until the chicken is cooked through. Add the cherry tomatoes for the last 10 minutes of the cooking time.
- 5) Serve in bowls with a dollop of yogurt and a sprinkling of coriander.

Gluten free - omega 3.

Nutritional Information per Serving

kJ/kcal	2460 / 588
Protein	38g
Fat	28g
Carbohydrate	48g



Weight Loss Groups

- **Weight watchers:** 13-18 year olds can attend Wellness Workshops, referred by their medical professional or doctor, and accompanied by an adult. Currently, teenagers are not eligible to join our Digital plan.
- **Slimming world:** Children aged 11-15 can join a Slimming World group for free if they're accompanied by a parent/guardian or family member who has main responsibility for their meals/eating habits at home.
- **Our experience:** Poor attendance, great feedback,

Very Low Calorie Diets

- **NICE** – greater weight loss over 3-6 months. NICE does not recommend long term for adults, 12 weeks only
- **DIRECT study**
- **Not currently in CYP.**
- **Study planned led by Nottingham team**

Motivation!

When people are diagnosed with Type 2 Diabetes they often have to make a few changes to their lifestyles at the same time. Making changes can be tough for everyone. Sometimes it's difficult to stay MOTIVATED.

To stay motivated when making difficult changes we need two things:

- 1) Confidence!
- 2) Wanting to change



What changes would you like to make?

.....
.....
.....
.....



Thinking about the top change you've put above...

How much do you want to make this change? (circle a number)

1 2 3 4 5 6 7 8 9 10



How confident do you feel that you can make this change? (circle a number)

1 2 3 4 5 6 7 8 9 10



How much of you does not want to change? (shade area in circle)



What might help you to feel one or two points more confident?

.....



When we make changes most people have mixed feelings about making changes. Below write down three of the good things that might come from making your change and three possible downsides to making the change.



Advantages

1.
2.
3.



Disadvantages

1.
2.
3.



We all need help from other people when we're trying to make changes or aim for a goal. It's good to have a team that can help you make these changes.



Thinking about the people in your life who can be on your support team?

.....
.....
.....



Is there anyone else who might be able to make these changes with you?

.....
.....
.....



When you've decided what change you want to make the next step is to set yourself a goal. Remember to make SMART goals! This stands for;

Specific

Measurable

Achievable

Realistic

Time-based

Some examples of SMART goals could be:

- To eat a piece of fruit with breakfast **everyday** for the next week.
- To test your blood glucose **everyday** when you get up in the morning for the next 7 days.
- To go for a 30 minute walk three times in the next week



Physical activity is the best medicine you will ever prescribe!



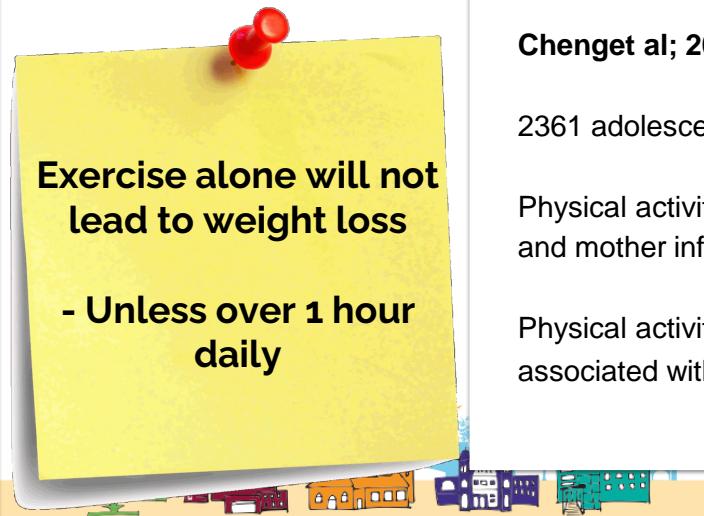
Herbst, 2015.

Impact of regular physical activity on BG control and CV risk factors in CYPP T2DM. Pediatr Diabetes.

55% reported to regular physical activity

Twice weekly Activity = A1c 0.8% lower, lower BMI, higher HDL Cholesterol.

No changes noted in total cholesterol or pharmacological treatment



Chenget al; 2014

2361 adolescents

Physical activity of father influences sons, and mother influence daughters.

Physical activity of friends was directly associated with activity of adolescents

Dietitians Role in Educating

Questionnaire sent to 166 GP in the East midlands. $\frac{1}{2}$ underestimated PA guidelines. 90% felt discussing PA was part of their role but discussed PA about $\frac{1}{3}$ of the time compared with weight management and smoking

Education programme in Oxfordshire on \uparrow PA in those >5 years with diabetes.

Lack of knowledge between health professionals on the risk reduction benefits of exercise.

(Mathews, 2017, BMC Health Serv Res.)

Questionnaire of 177 medical students,

- 40% reported awareness of guidelines
- 68% were able to accurately identify the recommended levels for adults VS 97% accuracy for alcohol guidelines.
- 52% felt adequately trained to give exercises advice

Physical activity for early years (birth – 5 years)

Active children are healthy, happy, school ready and sleep better

BUILDS
RELATIONSHIPS
& SOCIAL SKILLS

MAINTAINS
HEALTH &
WEIGHT

CONTRIBUTES TO
BRAIN DEVELOPMENT
& LEARNING

ZZZ
IMPROVES
SLEEP

DEVELOPS
MUSCLES &
BONES

ENCOURAGES
MOVEMENT &
CO-ORDINATION

Every movement counts

Aim for at least
3 Hours
across everyday



Move more. Sit less. Play together

Physical activity for children and young people (5 – 18 Years)

BUILDS
CONFIDENCE &
SOCIAL SKILLS

DEVELOPS
CO-ORDINATION

IMPROVES
CONCENTRATION
& LEARNING

STRENGTHENS
MUSCLES &
BONES

IMPROVES
HEALTH &
FITNESS

MAINTAINS
HEALTHY
WEIGHT

IMPROVES
SLEEP

MAKES
YOU FEEL
GOOD

Be physically active

Spread activity
throughout
the day

Aim for
at least
60
minutes
everyday

All activities
should make you
breathe faster
& feel warmer



Sit less



Move more

Find ways to help all children and young people accumulate
at least 60 minutes of physical activity everyday



Include muscle and bone strengthening activities
3 TIMES PER WEEK

- HELPS OUR BODY USE INSULIN BETTER
- REDUCES BAD FATS IN THE BLOOD
- HELPS US HAVE GOOD BLOOD PRESSURE

I am Busy!

1. HIIT-20mins of high intensity exercise: lots of apps/ youtube
2. Active Travel: Walk to school and back
3. Cleaning and House chores
4. Getting off the bus / train a stop early
5. Wake up earlier
6. 10 minute study breaks

No Spare Cash?

1. Exercise at home / park
 - a. Youtube Videos
 - b. Games with family
 - c. Change for Life Website
 - d. Skipping ropes
2. Running / jogging:
 - a. parkrun.org.uk
 - b. Coach to 5K
3. www.nhs.uk/live-well/exercise/free-fitness-ideas/
4. Walking / Cycling
5. Outdoor gyms / green gyms
6. Gardening
7. Our Parks – Free park based classes

Not into sport?

1. Yoga
2. Horse Riding
3. Kayaking
4. Rock climbing
5. Walking
6. Cycling
7. Dance
8. Gym
9. Skipping
10. Swimming
11. Active games with friends and family



Sit less



Move more

Resources

Short term physical activity interventions will never work nor be financially viable in the NHS. (opinion)

We need to find local, convenient activity that is acceptable for our families

- Google maps
- Local parks / Youth centres / gyms / gardens
- NHS exercise videos, NHS Fitness Studio: nhs.uk/conditions/nhs-fitness-studio
- Free exercise Ideas: nhs.uk/live-well/exercise/free-fitness-ideas/
- Couch to 5K
- Park Run: parkrun.org.uk
- The conservation Volunteers (Green gyms): tcv.org.uk
- Our Parks, Free outdoor fitness classes: ourparks.org.uk
- Change for Life activities: nhs.uk/change4life/activities



Thank you!

Questions?

