Macronutrients:
The holy grail of health and wellbeing

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Who am I?

- GP Partner
- Additional areas of interest / qualification
  - PGcert Aesthetic Medicine
  - Level 4 Qualification in Weight Management and Nutrition
  - Diabetes Practice Lead
  - PCN CVD champion
  - Lipid Practice Lead
  - Advanced Certificate in Men's Health

Objectives:

- By the end of this short talk you should know:
- What macronutrients are
- How do macronutrients affect my health
- What are the UK recommendations
- How macronutrients affect weight
- How can I adjust my macronutrients to lose weight and stay healthy

Macronutrients

Fats

- Complex structures
- Fats are in fact a type of lipid
- Lipids are the umbrella term used for a lot of fat and fat like substances including oils, wax and cholesterol
- The most common lipid is glyceride. This is made with linking fatty acids with glycerol.
  - You will be most familiar with triglyceride (95% of the lipids we consume in our diet)
  - There are also monoglycerides and diglycerides that are used in food preparation and food preservation.

Fats

- There are saturated and unsaturated fats

Saturated fats (the bad guys) –

These are generally solid in room temperature

Unsaturated fats (the goodish guys) –

These are generally liquid in room temperature

Trans fats

- Artificially made fats
- Used to make food tasty
- Entirely unnatural and linked with significant negative health outcomes.
- The recommended daily intake of trans fats in the UK is 0%

Carbohydrates

- This is the body's first available energy source.
- These are again complex structures and the term carbohydrate is an umbrella term for a number of different molecules that all look and behave differently.
- Ways to divide them:

By size
Monosaccharides (1-10 sugar units)
Disaccharides
Polysaccharides – further divided into starch and non-starch

Carbohydrates

- **Starch carbohydrates**
  - Found in a wide range of foods
  - Not all starches are equal!
  - Glycaemic index is key
- **Non-starch carbohydrates**
  - AKA sugary carbohydrates
  - Intrinsic versus extrinsic

Glycaemic index

- This is the rate that sugar is digested and released into the body.
- Low GI foods release sugar slowly – reducing sugar spikes in the body
- We will discuss why this is important with controlling snacking as part of weight management in next talk.

Glycemic Index

Low GI (<55), Medium GI (56-69) and High GI (70>)

Grains / Starchs		Vegetables		Fruits		Dairy		Proteins	
Rice Bran	27	Asparagus	15	Grapefruit	25	Low-Fat Yogurt	14	Peanuts	21
Bran Cereal	42	Broccoli	15	Apple	38	Plain Yogurt	14	Beans, Dried	40
Spaghetti	42	Celery	15	Peach	42	Whole Milk	27	Lentils	41
Corn, sweet	54	Cucumber	15	Orange	44	Soy Milk	30	Kidney Beans	41
Wild Rice	57	Lettuce	15	Grape	46	Fat-Free Milk	32	Split Peas	45
Sweet Potatoes	61	Peppers	15	Banana	54	Skim Milk	32	Lima Beans	46
White Rice	64	Spinach	15	Mango	56	Chocolate Milk	35	Chickpeas	47
Cous Cous	65	Tomatoes	15	Pineapple	66	Fruit Yogurt	36	Pinto Beans	55
Whole Wheat Bread	71	Chickpeas	33	Watermelon	72	Ice Cream	61	Black-Eyed Beans	59
Muesli	80	Cooked Carrots	39						
Baked Potatoes	85								
Oatmeal	87								
Taco Shells	97								
White Bread	100								
Bagel, White	103								

Protein

- These are the building blocks of your body.
- They are all sorts of shapes and sizes and have a vast array of functions within the body.
- Proteins are made up of amino acids – there are only 20 in total.
- Amino acids come together to form either dipeptides (two amino acids) or polypeptides (more than two peptides)
- Proteins are either:
- Globular – ball like structure and usually involved in metabolic functions of the body
- Fibrous – rod like, linear fibres and usually involved in structural roles. These are the important ones to consider in this talk as they are responsible for making up muscle fibres.

Not all proteins are equal!

- There are broadly two types of protein to consider nutritionally:
- Complete proteins – these proteins contain all of the essential amino acids (amino acids the body cannot make themselves).
- Incomplete proteins – these proteins lack some of the essential amino acids.
- Generally most meat products or proteins from animal sources are complete proteins.
- Most non-meat sources of protein in plants (beans pulses etc) are incomplete and lack of the essential amino acids.
- Complementary foods exist where combining non-meat sources of protein together will provide the full complement of amino acids needed for bodily functions.

Water

- Often missed out but one of the most important sources of nutrition
- Our body is made up of roughly 60% water
- The UK recommendation is 6-8 glasses of water a day (roughly 1.2-1.5L)
- Water is essential for many of the normal bodily functions chronic low level dehydration will affect your physical and mental wellbeing.

How much is enough?

- So now we know about the macronutrients.
- How much is enough?

Eat well Guide

- The eat well guide is National Guidance on dietary proportions for adults in the UK.

Fruit and Vegetables

1/3 of the total daily intake
5 portions of fruit and veg a day
Limit fruit juices and smoothies to no more than 150ml – high sugar

Starchy foods

1/3 of the total food we eat.
Main source of essential nutrients including fibre, calcium iron and B vitamins

Oils and spreads

These should be eaten in small amounts and unsaturated fats chosen as much as possible

Dairy and dairy alternatives

Good source of protein, vitamins A B12 and calcium

Beans, pulses, fish, eggs, meat and other proteins

Regular beans and pulses and 2 portions of fish per week (one of which is oily)

Where is the cake!?

High calorie, high fat, high sugar foods are not included in the eat well guide. This is because they are not essential for a balanced diet.
The advice is to eat in small amounts.

Macros and the Eat Well Guide

- Macronutrient balance is important but the eat well guide does not divide groups according to macronutrients…….
- Why?
- This is because foods contain a cocktail of macronutrients within them and so cannot be easily divided in this way.
- It is for this reason that you are not given macronutrient 'targets' as the first step of improving diet or losing weight.

ANY CALORIE DEFICIT WILL RESULT IN WEIGHT LOSS

How the body uses energy

- The body holds vast amounts of energy:

ENERGY STORAGE IN THE HUMAN BODY Average 155 lb individual		
Fuel Type	**Where it is Stored**	**Reserves (Calories)**
Glucose	Blood & Body Fluids	80
Glycogen	Liver & Muscles	760
Protein	Muscle & Organ Tissue	24,000
Fat	Adipose Tissue	135,000

Order energy is used in

1. Carbohydrates
   - Easily broken down from the liver and muscles
   - Fast release energy
   - Doesn't last very long
2. Fats
   - Vast amounts of energy
   - Takes more energy to break down
   - Recruited for periods of prolonged activity or calorie deficit
3. Protein
   - From muscle sources when fat stores are lower and calorie recruitment is still required

How can we break down fats specifically?

- Theoretically by reducing the first source of energy (carbohydrates) fats will be used preferentially.
- Caution with rapid weight loss
  - If rapid weight loss the body cannot utilise fats quick enough – muscle starts being broken down.
- Calorie deficit is very important.
  - Be sensible for a slow weight loss.
  - Quicker is not better.

BMI Category	Typical Calorie Deficit Range	Notes
Underweight (BMI < 18.5)	**0% deficit** (maintenance or surplus)	Weight loss is not recommended – focus on gaining muscle/weight.
Normal weight (BMI 18.5–24.9)	**5–15% deficit**	Small deficit to avoid excessive lean muscle loss; good for slow recomposition.
Overweight (BMI 25–29.9)	**10–20% deficit**	Moderate deficit supports steady fat loss while preserving muscle.
Obese class I (BMI 30–34.9)	**15–25% deficit**	Slightly larger deficit is safe and effective for faster progress.
Obese class II-III (BMI ≥ 35)	**20–30% deficit** (sometimes up to 35% under supervision)	Larger deficits possible early on due to higher fat reserves, but still maintain adequate protein.

Inclisiran

- New medication to lower cholesterol
- Works by boosting your liver's ability to remove harmful cholesterol
- 6 monthly injection
- Available to prescribe for specific patients
- Very limited side effects limited mainly to injection site irritation
- Can be used with other cholesterol lowering medications

Inclisiran – who is eligible?

- Secondary prevention patients only
- Intolerant to statins or on maximum tolerated dose and LDL cholesterol remains high
  - LDL more than 2.6

We are regularly searching for suitable patients to offer an appointment with me for full counselling.

Currently over 100 eligible patients found on searches we are working through.

Mounjaro

- Tirzepatide
- Activates the actions of two substances called glucose-dependent insulinotrophic polypeptide (GIP) and glucagon-like-peptide 1 (GLP1)
- Functions:
  - For diabetes – will encourage insulin release when your blood sugar is high
  - Reduces food cravings
  - Slows down how fast food leaves your stomach – keeping you feeling fuller for longer
  - Regulates fat utilisation
- Two uses
  - Treatment of type 2 diabetes
  - Treatment for weight loss

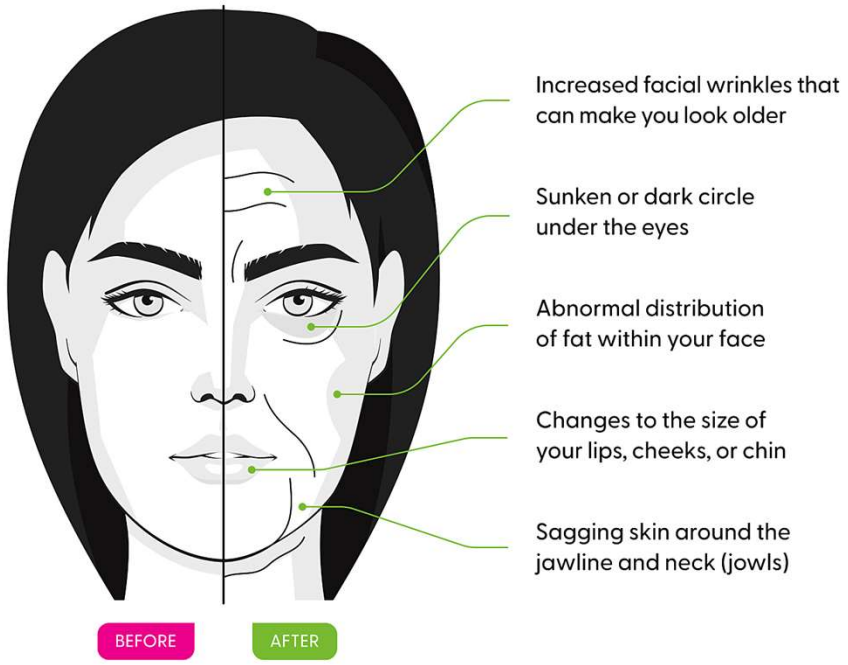
Mounjaro – who is eligible?

- NICE guidance and local guidance currently are very different
- Why?
- Buckinghamshire has initiated a 7 year roll out of this medication to be issued within General Practice as part of a Locally Enhanced Service (LES)
- The first year has VERY strict criteria
  - BMI more than 40
  - 4 out of the 5 risk factors
    - Diagnosed high blood pressure
    - Diagnosed sleep apnoea
    - Diagnosed type 2 diabetes
    - Diagnosed cardiovascular disease
    - Diagnosed high cholesterol

On patient data searches we currently have **3** patients who fit this criteria!

Mounjaro – word of caution

- NICE guidance specifically states that Mounjaro needs to be taken as part of a low calorie diet.
- Simply injecting Mounjaro will help with weight loss but wont necessarily help with nutrition.
- Mars bar analogy.
- Therefore you need careful consideration of your diet alongside taking Mounjaro injections.
- Mounjaro is not always the answer.



Summary

- Foods are made from complex cocktails of macronutrients
- There are no good or bad macronutrients – it is the balance of them that is important
- This is most simply described in the Eat Well Guide
- If the goal is weight reduction then initially aim for a calorie deficit rather than interrogating your macronutrients!
- For long term health and wellbeing a balance between appropriate macronutrient makeup, calorie intake and exercise is key.

Any questions?

Don’t forget to complete and
hand back your feedback forms