



Dietary Assessment

Unit: 3.2.2

Presenters:

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About us



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Declarations

- Joanna is a nutrition consultant to Boundary Bend Olives (producers of extra virgin olive oil) and is on their scientific advisory board
- Flavia is a founding board member of the Australasian Society of Lifestyle Medicine, the Director of Operations for Nutrigenomix Australia and the Olive Wellness Institute Advisory Panel member

Learning outcomes



By the end of this topic, you will be able to:

1. Describe the aspects of a basic dietary assessment
2. Demonstrate how to get relevant nutrition information from your patient



Readings



Recommended reading

- The NutComp Tool (Healthy Primary Care, n.d.). Test your nutrition competence and identify possible areas for improvement.
- SNAP: Population health guide to behavioural risk factors in general practice – The 5As: Section 2.1 and Section 3.3 (Royal Australian College of General Practitioners (RACGP), 2015)
- Nutrition assessment: REAP and WAVE: New tools to rapidly assess/discuss nutrition with patients (Gans et al., 2003)
- Nutritools: Supporting dietary assessment through guidance and access to validated interactive dietary assessment tools (Nutritools)

Additional resources

- Healthy eating quiz: How healthy is your diet? <https://healthyeatingquiz.com.au/> (Collins, n.d.) 10 minute self-assessment tool
- Eat for health calculators <https://www.eatforhealth.gov.au/eat-health-calculators> (NHMRC, 2019)
- Calculators to estimate energy (kilojoule) needs, nutrient requirements, and number of serves from the five good groups.



Why assess diet?

1. Help assess a patient's nutritional status
2. Key for patients where diet and nutrition plays a major role in their condition or disease – and for prevention!
3. Know where a referral to an APD is beneficial for more specialist or detailed advice & support
4. Point of reference in their LM management plan
5. To provide a nutrition prescription

Think we talk here about the fact that of course if you are a GP you won't have time to do a full nutrition/dietary assessment but understanding the methods dietitians and researchers use is important – we will highlight the simpler methods that can be utilised by other HCPs, the basic advice that can be given and then emphasise when to refer on.



The basic nutrition assessment (Ax)

Anthropometry
Biochemical data
Clinical assessment
Dietary assessment

It doesn't start with D. A, B and C are all integral and essential to assess someone's diet (will discuss why in detail).

Age affects BMR, energy requirements, nutrient requirements, type of work, cooking skills, shopping skills, food access, food knowledge etc. all can influence nutritional needs and status.

The ABC information collected

Anthropometry

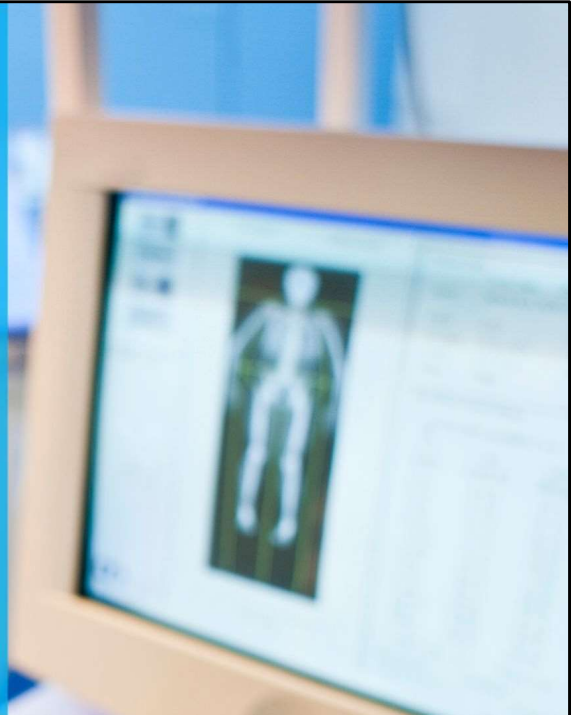
- Height and weight (and hx), BMI
- Waist circumference
- DEXA, calipers, biomedical impedance

Biochemical data (lab work)

- Extremely important - nearly all related to nutritional status
 - ❖ Glucose, insulin, HbA1c, liver function tests (alcohol)
 - ❖ Lipid profile
 - ❖ Vitamin D, vitamin B12, iron studies, iodine, folate

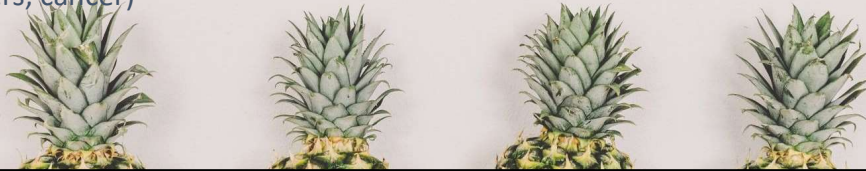
Clinical

- Age, sex, medical history, physical activity level
- Relevant medical history (i.e. family history diabetes, heart disease, on blood pressure medication, bone density)
- Visual assessment (hair, skin, nails, muscle fitness/wasting, hydration)




Nutrition related 'clinical' assessment

- **Nutritional history:** weight, dieting, seeing a nutrition professional, malnutrition/deficiencies
- **Family structure** (how many people live in the household, who does the food cooking/shopping?)
- **Cultural or religious** factors that affect diet (i.e. fasting, no pork, vegetarian)
- **Food security** (any issues with food budget, access to food)
- **Individual factors** (intolerances, bloating/constipation, allergies, ability to chew/swallow)
- **Behavioural factors** (emotional eating, yo-yo dieting)
- **Medical nutrition therapy** needs (renal disease, bariatric surgery, weight disorders, cancer)



Top tips when collecting dietary information

- 
- ✓ Portion size
 - ✓ Frequency
 - ✓ Probe for foods/drinks eaten together
 - ✓ Usual day?
 - ✓ Supplements and formulated drinks
 - ✓ Food preparation/cooking
 - ✓ Added salt, sugar, sauces
 - ✓ Type of fat used cooking
 - ✓ Eating out vs homemade food
 - ✓ Meal pattern

Get portion size, use reference to size (deck of cards, dice, or food models, etc.)

Talk about frequency that the food/drink is consumed

Probe for foods/drinks that go together (i.e. spread on bread, dressing on salad, sugar in coffee)

Ask about usual/typical day

Ask about nutritional supplements including meal replacements, bars, shakes (you'd be surprised!)

How food is prepared/cooking method

What is often added to food (sauces, salt, sugar)

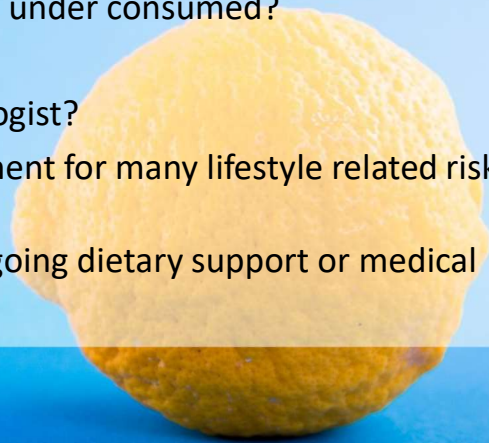
What fat is used when cooking

Eating out vs homemade food

Meal pattern (timing, schedule, place, activities while eating)

Quick assessment

- ✓ Any food groups or nutrients over or under consumed?
- ✓ Food likes/dislikes?
- ✓ Need to refer to a dietitian? Psychologist?
- ✓ Nutrition is often the primary treatment for many lifestyle related risk factors and co-morbidities
- ✓ No need to develop a meal plan, ongoing dietary support or medical nutrition therapy (dietitian's role)

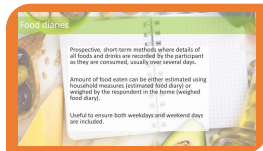


Online diet assessments

- The Healthy Eating Quiz (AUS)
 - <https://healthyeatingquiz.com.au/>
- Ask the Dietitian (USA)
 - <http://www.dietitian.com/healthy-body-calculator/>
- Energy intake calculator (GREAT TOOL!)
 - <https://www.niddk.nih.gov/bwp>
- Fruit, Vegetable, Fiber screener (USA)
 - <https://nutritionquest.com/wellness/free-assessment-tools-for-individuals/fruit-vegetable-fiber-screener/>
- Dietary assessment tools for research
 - <https://www.nal.usda.gov/fnic/dietary-assessment-instruments-research>
- Validated nutrition assessment tools
 - <https://www.nutritools.org/tools>

Top 2 aimed at consumers.

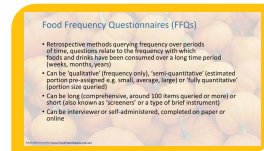
Dietary assessment tools



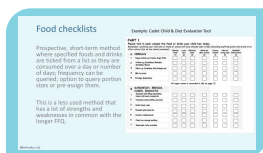
Food diaries



24-hour recall



Food frequency questionnaires



Food checklists



Diet histories



Emerging technology

Food diaries



Prospective, short-term methods where details of all foods and drinks are recorded by the participant as they are consumed, usually over several days.

Amount of food eaten can be either estimated using household measures (estimated food diary) or weighed by the respondent in the home (weighed food diary).

Useful to ensure both weekdays and weekend days are included.

Food diaries

Strengths

- Provides detailed data on all foods & drinks consumed along with portions sizes
- Doesn't rely on memory if written in real time i.e. at time of consumption or immediately after
- Can also provide contextual info such as meal timing, eaten with whom, location, mood, symptoms, etc.
- Cheap – although emerging technologies may have higher costs

Weaknesses

- Labour intensive – people don't always like doing it
- Likelihood of changes to usual food choice & omissions
- Completion rate tends to fall with an increasing number of days
- Good literacy & numeracy needed
- Time consuming to interpret & analyse

24-Hour recall

- Retrospective, short-term method where details of foods and drinks consumed over previous 24 hours recalled.
- Can be administered as a single recall (for group-level assessment) or on multiple days (multiple recall) (required to capture individual variation).



(Nutritools, n.d.)

24-Hour recall

Strengths

- If done well provides good estimates of short-term total diet and nutrient intake
- Element of surprise lowers reactivity i.e. changes to food intake as can happen with food diary
- Less burden on participant than food diary
- Literacy issues minimised
- Can provide contextual info such as location, behaviours (in front of TV/at desk), with whom, etc.

Weaknesses

- Relies on memory – forgotten items common
- Single 24-hr recall unable to provide day to day variation
- Relies on ability of the individual to describe portion sizes (photos can help)
- Misses irregularly consumed foods – this may or may not matter

(Nutritools, n.d.)

Interview techniques

- Be careful of making assumptions, leading questions or making judgemental statements
 - *What did you eat for breakfast yesterday?*
vs
What was the first thing you ate or drank yesterday morning?
- Probe for more info and on portions sizes
 - What type of bread? White, wholemeal, multigrain
 - Use household measures or photos to help with portion sizes
 - What oil was used in cooking/dressings, was butter in the sandwich, what cut of meat was used, was it homecooked or eaten out, where was food or drink consumed and with whom, etc.

Additional information to consider:

Was the day typical, weekday or weekend

Food Frequency Questionnaires (FFQs)

- Retrospective methods querying frequency over periods of time, questions relate to the frequency with which foods and drinks have been consumed over a long time period (weeks, months, years)
- Can be 'qualitative' (frequency only), 'semi-quantitative' (estimated portion pre-assigned e.g. small, average, large) or 'fully quantitative' (portion size queried)
- Can be long (comprehensive, around 100 items queried or more) or short (also known as 'screeners' or a type of brief instrument)
- Can be interviewer or self-administered, completed on paper or online

Australian example: <https://healthyeatingquiz.com.au/>

Food Frequency Questionnaires

Strengths

- Estimates long term usual diet
- Short FFQ have low participant burden
- Useful for large population studies
- Online versions automatically provide results & report without requiring analysis by you

Weaknesses

- In depth FFQs are long & have high participant burden
- Short FFQs not reliable for measuring total diet or nutrient intakes
- Prone to mis-reporting
- Requires good memory, literacy & numeracy
- Cultural differences – may require different FFQs

(Nutritools, n.d.)

Prospective, short-term method where specified foods and drinks are ticked from a list as they are consumed over a day or number of days; frequency can be queried; option to query portion sizes or pre-assign them.

Example: Cadet Child & Diet Evaluation Tool

Please tick in each column the food or drink your child has today.

Remember, anything your child ate or drank at school will have already been ticked (including anything eaten and drunk at an after-school club on the school premises).

[illegible]

Food checklists

- Most likely to be utilised by healthcare professionals in LM
- Can be useful for quick assessment of patient's diet – for example:
 - How many serves of vegetables do you have per day? Fruit?
 - How often do you eat nuts?
 - Queries on specific foods high in a nutrient e.g. iron or calcium
- Used in some studies – similar pros and cons to FFQ

Diet histories

Combination of short-term and long-term methods, usually 24 hr recall, FFQ and food diary

More often used in a clinical setting by experienced dietitians to provide in-depth assessment at individual level



(Nutritools, n.d.)

Diet Histories

Strengths

- Good for estimating usual intakes of foods and nutrients over long period
- Assesses meal patterns, food preparation & habits

Weaknesses

- Requires skilled HCP to interview and interpret
- High participant burden
- Takes a lot of time
- Complex analysis

(Nutritools, n.d.)

Emerging technologies

Dietary data collected and processed making use of hardware plus software (e.g. devices such as sensors and optical readers) or software such as web-based versions and apps based on traditional DATs.

More advanced method of collecting data, which could be based on traditional methods (FFQs, food diary or 24 h recall). It is a rapidly evolving area.

Emerging technologies

Strengths

- Can provide real-time results without manual analysis
- Potential to enhance portion size & food waste estimations
- Participants may be more motivated to complete
- Prompting may reduce misreporting
- May be more truthful than answering direct to HCP?

Weaknesses

- Requires technological ability, literacy & numeracy
- Access to smart phone and/or computer
- Participants may need training if tool not intuitive
- Potential high cost

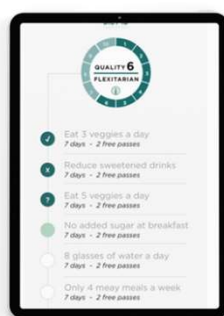


An example of a digital platform for dietary assessment – currently based on US dietary patterns, but expanding globally

Not adapted for or validated in Australasian populations (yet)



Measure diet intake and deficiencies in minutes using our image-based pattern recognition system



Receive a real time personalised blueprint for change



Provide clients with personalised digital coaching based on blueprint

Dietid.com

Easy Diet Diary

Track dietary
fibre → diet
quality
indicator



(Xyris Software (Australia) Pty Ltd, n.d.)

Case studies



~ 80 consults within the same office

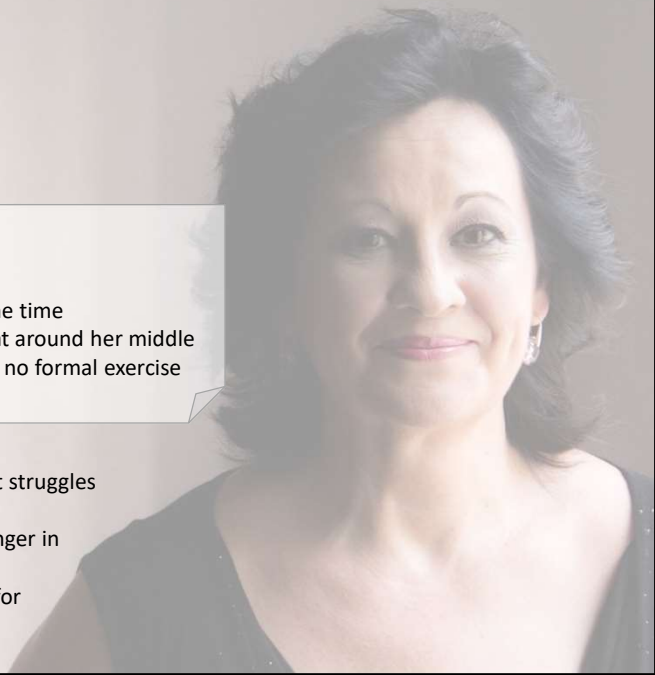
49-year-old female

- 1.67m 78kg
- Gradual weight gain over last few years
- Pre-menopausal
- Italian ancestry

- Hx low ferritin
- Insulin resistance?
- Low energy – tired all the time
- Finding it hard to lose fat around her middle
- Walks the dog daily, but no formal exercise

DIET

- Lacto-ovo vegetarian
- Loves coffee - drinks several cups a day
- Has heard a low carb diet is good to lose weight, but struggles to stick to it
- Eats little in the day, but succumbs to cravings & hunger in evening
- Loves to cook & entertain, has big family she cooks for



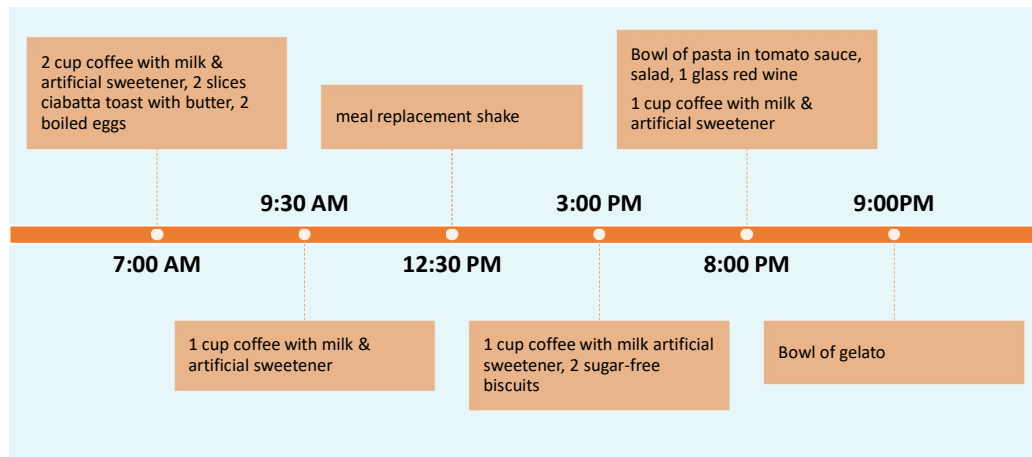
Iron intake – how to improve on vegetarian diet - discuss supplement use (short term measure – risks with long term use)

Exercise – briefly mention exercise options to build muscle & protect bone density moving towards menopause

Discuss low GI, smart carbs & reduced carb diet rather than low carb – focusing on wholegrains, legumes, fruit... limiting the refined processed foods

Discuss options for weight loss – intermittent fasting, kJ-controlled diet, meal replacements for 2 meals a day?

Current diet – 24h Recall



Nutritional assessment

- ❖ Inadequate iron and requirements elevated due to vegetarianism & pre-menopausal status
- ❖ Excess caffeine – may interfere with iron absorption
- ❖ Inadequate vitamin D → blood tests (supplementation may be needed)
- ❖ Not meeting requirements for fruit, vegetables, wholegrains, nuts or legumes
- ❖ Insufficient protein in day leading to increased appetite and overeating in evening

Briefly touch on what the nutrition prescriptions would then be in this case

Iron bioavailability and choice

Lentil; spinach; dried fruit

Vitamin C (lemon squeeze, fruit with meals)

Consider limited suppl. if required

Remove coffee with meals, reduce overall caffeine intake

CURRENT DIET

- **7 AM:** 2 cup coffee with milk & artificial sweetener, 2 slices ciabatta toast with butter & jam
- **9:30 AM:** 1 cup coffee with milk & artificial sweetener
- **12:30 PM:** meal replacement shake
- **3 PM:** 1 cup coffee with milk artificial sweetener, 2 sugar-free biscuits
- **8 PM:** Bowl of pasta in tomato sauce, salad, 1 glass red wine
1 cup coffee with milk & artificial sweetener
- **9 PM:** Bowl of gelato

TWEEKED DIET

- **7 AM:** 2 cups coffee with milk, 2 slices wholegrain toast with avocado, tomato & 2 boiled eggs
- Iron supplement (only until stores adequate)
- **9:30 AM:** 1 cup coffee with milk
- **12:30 PM:** Mixed salad with marinated tofu, slice wholegrain bread & EVOO & vinegar dressing
- **2:30 PM:** Greek yoghurt with fruit/berries & sprinkle of mixed nuts
- **4PM:** Cup of tea
- **8 PM:** Bowl of wholemeal pasta in tomato sauce with beans & vegies, salad, 1 glass red wine
- **9 PM:** Cup of herbal tea

Nothing wrong with using meal replacement shakes if they want to for portion and kJ control but whole foods more nutritious for long term

Discuss pros and cons of artificial sweeteners (negative impact on microbiome – trains for sweet taste – but probably better than sugar – hopefully can get her to give both up!)

Discuss potential for extending overnight fast – or at least limiting/cutting out evening snacks. Kitchen closed after dinner.

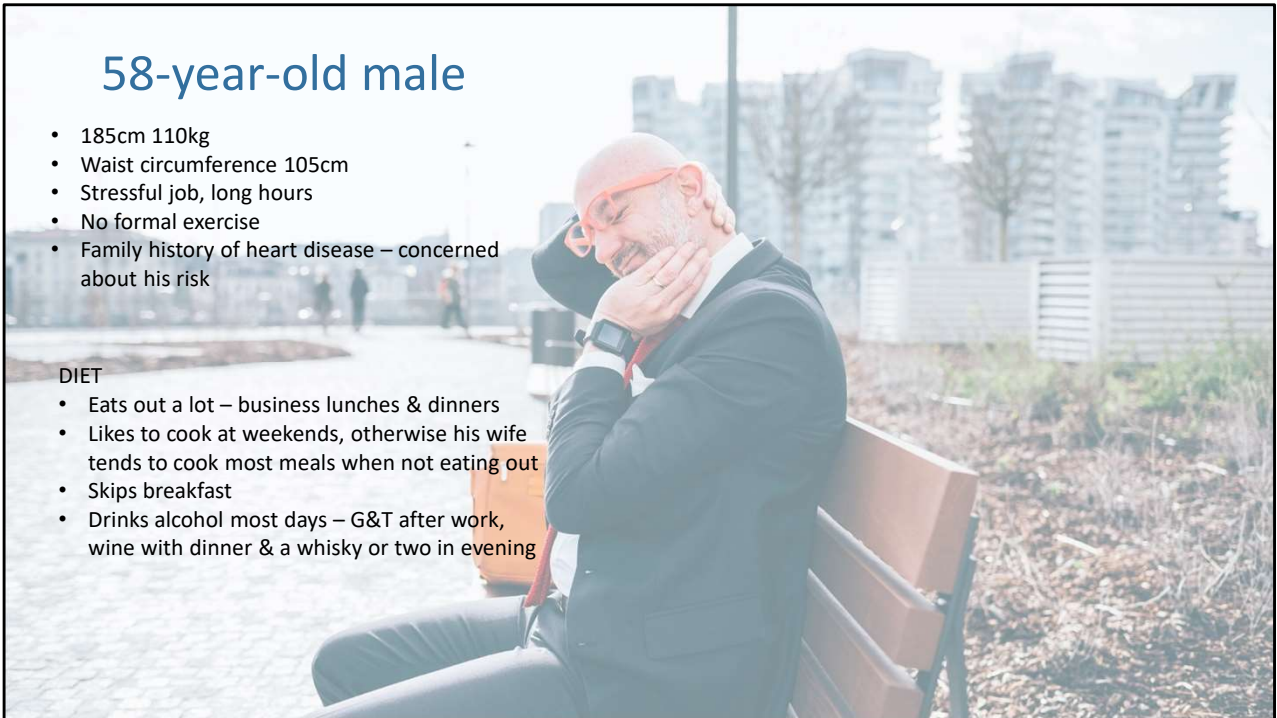
Discuss plant sources of iron – tofu, green vegies, nuts etc

58-year-old male

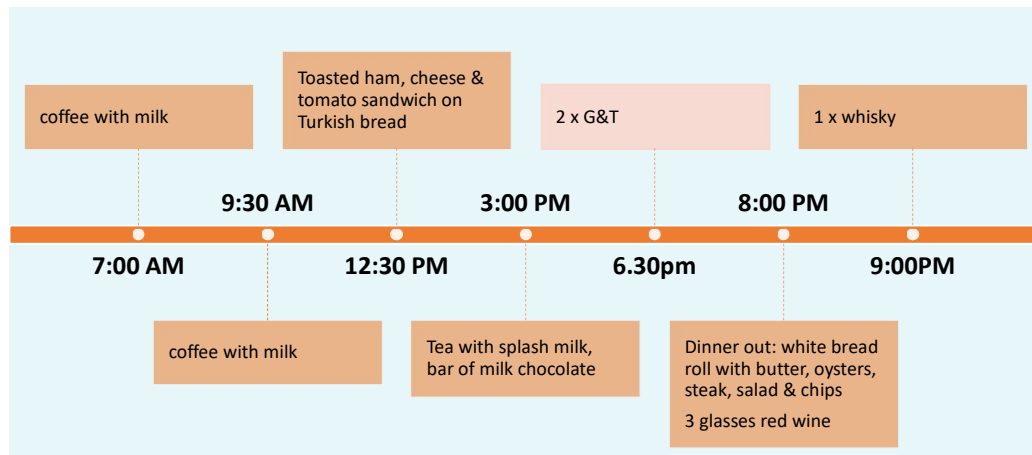
- 185cm 110kg
- Waist circumference 105cm
- Stressful job, long hours
- No formal exercise
- Family history of heart disease – concerned about his risk

DIET

- Eats out a lot – business lunches & dinners
- Likes to cook at weekends, otherwise his wife tends to cook most meals when not eating out
- Skips breakfast
- Drinks alcohol most days – G&T after work, wine with dinner & a whisky or two in evening



Current diet – 24h Recall



Nutritional assessment

- ❖ Too much alcohol
- ❖ Too much red & processed meat
- ❖ No fruit & low on vegies
- ❖ Refined grains
- ❖ Eating out often an issue
- ❖ Feels like he doesn't eat much, but has central obesity

CURRENT DIET

- **7 AM:** coffee with milk
- **9:30 AM:** coffee with milk
- **12:30 PM:** Toasted ham, cheese & tomato sandwich on Turkish bread
- **3 PM:** Tea with splash milk, bar of milk chocolate
- **6.30 PM:** 2 x G&T
- **8 PM:** white bread roll with butter, oysters, steak, small salad & chips, 3 glasses red wine
- **9 PM:** 1 x whisky

TWEEKED DIET

- **7 AM:** coffee with milk
- **9:30 AM:** coffee with milk
- **12:30 PM:** Wholegrain bread sandwich with chicken, salad & avocado, bowl of vegetable soup
- **3 PM:** Tea with splash milk, handful nuts, mixed berries & 2 squares dark chocolate
- **6.30 PM:** discuss alcohol free options
- **8 PM:** rye bread roll with extra virgin olive oil, oysters, small fillet steak*, large salad, 2 glasses red wine (discuss min. 2 AFDs)
- **9 PM:** sparkling water or herbal tea

*Recommend seafood 2-3x a week, choosing white or game meats more often

Discuss breakfast – if he really doesn't like breakfast he doesn't need to have it! Or give options for healthy breakfast.

Discuss strategies for cutting down on alcohol

Boosting wholegrains, handful nuts a day reduces CVD risk, using EVOO, avoiding refined grains and too much sugar

And what exercise options he would like as well as minimising sedentary hours & boosting activity in day

Stress management

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