Introduction and overview

- Context and use of Nutrition in Lifestyle Medicine
- Lifestyle Medicine: some key objectives in Nutrition
- Nutritional assessment
- Nutritional daily requirements & guidelines
- Nutritional Prescription
- Practical strategies
- Referrals
- Case Study to work through - Herbert

Nutritional Medicine today...

“Fundamental changes are needed to the way we practice and apply nutrition science. Nutrition science needs to:
1. be better integrated across nutrients, foods, meals, diets, and dietary patterns and focus on total diet rather than on single nutrients or commodities
2. be more outward looking to examine the broader context in which food and nutrition issues play out—from individuals to communities to nations and globally
3. operate within a framework that is well founded in theory and encompasses individual biology and relevant aspects of the physical, social and biological environment.”

Australian Academy of Science: Rethinking Food and Nutrition Science: Aspirations, obstacles and strategies for the future 2017.

Context of the Nutrition Prescription in Lifestyle Medicine

- Power of the practitioner intervention – even small suggestions have impact
- Effectiveness of behaviour change in primary medical care setting is poor (Booth 2014)
- Development of better tools and processes is required (Sherson 2014)

Context of the Nutrition Prescription in Lifestyle Medicine

- Nutrition is a CORE element of Lifestyle Medicine
- Focus is on a shift in eating patterns to established healthy eating patterns and habits
- Improved referral recognition: Pathway for referral allied health i.e. Dietician or other trained health professional
- Supporting multidisciplinary case management for comprehensive patient centered care
Nutrition in Lifestyle Medicine

Get insight into the Food patterns – indication of Macro nutrients
Food types – indication of Micronutrients
Food preparation – indication of oxidation

Taken from Dr Wayne Dysinger Nutrition Prescriptions Lecture ACLM

Lifestyle Medicine: Learning Objectives

(1) Demonstrate ability to perform a basic nutrition assessment
(2) Demonstrate ability to make nutrition prescriptions for health maintenance
(3) Describe practical strategies for assisting patients to achieve dietary changes
(4) Understand what the Dietary Guidelines for Americans are and why they are important (and how these compare to Australians)
(5) List the food components most Americans get too much of and in which foods they’re found (and how these compare to Australians)

ABCD for Nutritional Assessment

(1) Demonstrate ability to perform a basic nutrition assessment
A = Anthropometric
B = Biochemical
C = Clinical data
D = Dietary intake

ABCD of Nutritional Assessment: A = Anthropometric

Calculate BMI: \( w \) (kg) / \( h^2 \) (m^2)

<table>
<thead>
<tr>
<th>Classification</th>
<th>BMI</th>
<th>Risk of no morbidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>&lt;18.5</td>
<td>Low (but risk of other clinical problems increased)</td>
</tr>
<tr>
<td>Normal</td>
<td>18.5–24.9</td>
<td>Healthy</td>
</tr>
<tr>
<td>Overweight</td>
<td>25–29.9</td>
<td>Increased</td>
</tr>
<tr>
<td>Obesity</td>
<td>&gt;30</td>
<td>Very severe</td>
</tr>
</tbody>
</table>

ABCD of Nutritional Assessment: A = Anthropometric

Accurate Waist Circumference measurement (AUST):
- Place the tape measure directly on your skin, or over no more than one layer of light clothing.
- The correct place to measure your waist is halfway between your lowest rib and the top of your hipbone. This is roughly in line with your belly button.
- Breathe out normally and measure.
- Make sure the tape is snug, without squeezing the skin.

ABCD of Nutritional Assessment: A = Anthropometric

Australian Waist Circumference (cm) – Measurements and risk guidelines

| Increased | Men | > or = 94 |
|          | Women | > or = 80 |

USA Waist Circumference – Measurements and risk guidelines

| Increased | Men | > 40 inches |
|          | Women | > 35 inches |


ABCD of Nutritional Assessment:
A = Anthropometric

Body Impedance Analysis (BIA)
Machine providing a reading of percentage fat, bone and muscle and hydration status.
Dual-energy X-ray Absorptiometry (DEXA) scan provides gold standard comprehensive data.

ABCD of Nutritional Assessment:
B = Biochemistry

<table>
<thead>
<tr>
<th>Sodium</th>
<th>Blood Glucose Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium</td>
<td>HgbA1C</td>
</tr>
<tr>
<td>Hemoglobin</td>
<td>Triglycerides</td>
</tr>
<tr>
<td>Hematocrit</td>
<td>Cholesterol</td>
</tr>
<tr>
<td>CRP</td>
<td>LDL</td>
</tr>
<tr>
<td>Albumin</td>
<td>HDL</td>
</tr>
</tbody>
</table>

ABCD of Nutritional Assessment:
B = Biochemistry

Additional pathology testing considerations that provide key nutritional insights:
- Vitamin D (blood)
- Vitamin B12 (Serum/blood)
- Iron Studies: Iron
- Ferritin
- Homocysteine

ABCD of Nutritional Assessment:
C = Clinical Data

Common signs and symptoms that can indicate nutritional deficiencies include:
- Recurrent minor infections ie tinea, recurrent colds, mouth ulcers
- Fatigue & Weakness
- Cramping or muscle spasms
- Poor mood, depression and anxiety
- Easy bruising
- Vision problems: dry eyes, cataracts
- Scaly, dry skin
- Coarse, brittle or thinning hair, dandruff

Metabolic syndrome diagnosis – THREE of the following:
- Elevated fasting glucose
- Elevated glucose tolerance test results
- Elevated insulin
- Increased waist circumference or BMI
- High BP (>130/85)
- High triglycerides
- Low HDL
ABCD of Nutritional Assessment:  
D = Dietary Data

- Common diet collection methodologies:
  - 24-hour recall – asking patient to recount what they ate over the past 24 hours
  - 3-day food diary – asking patient to record 3 days of food intake (including one non-work day), and bring along to next appointment for review
  - Food frequency questionnaires
- Generally time consuming and require specially trained professionals (Rao et al 2017)

Assessing diet: ask specific questions:-
- What specific food?
  - “fruit” - Apple, berries, banana, oranges, persimmons, kiwi
- “snack” - nuts, cheese, vegetables, chips, sweet biscuit
- Portion size
  - “Glass” 150 ml or 300ml?
  - “Toast” Number of pieces/slices

Patient provides subjective information
- Important to listen, before advising
- Referral and collaboration with allied health professionals if patient is ready to change
- Collaboration in practice – ongoing inter-professional communication and reinforcement of actions

Aim to understand diet in the context of patients’ lives.
- Why they make certain choices, how they select foods, their patterns in relationship to food.
  - Habits
  - Schedules
  - Lifestyle
- Are they ready to change? Assessing and supporting the behaviour change process

Weight management strategies:
Approaching the discussion of diet & weight
- Approaching the discussion “should be respectful, non-judgmental and delivered in an unhurried fashion” (Rao et al 2011)
- Importance of empathy (Pollack et al 2007)
- Trained in counseling and Motivational Interviewing (MI) (Jay et al 2009)
Weight management strategies – Approaching the discussion

- Framing excessive weight as a medical problem or exacerbating factor in chronic disease (Scott et al. 2004)
- Low percentage of overweight or obese clients discussed weight with their GPs (Scott et al. 2004)
- Patients self-reflections on the causes of their excess weight (Heintze et al. 2010)
- Terms used in the conversation are important i.e. ‘weight’ preferred over ‘obese’ and ‘fat’ (Dutton 2004)

ABCD of Nutritional Assessment: D = Dietary Data

Cultural, social, financial, special needs or functional capacity impacts on diet choices:
- Do you have beliefs that prevent/encourage certain foods?
- How often do you shop? Where do you shop?
- What budget do you have for food each week?
- History of weight – lowest adult weight (after 30 years)? Heaviest adult weight? Experience of diets.
- Capacity to chew. Intolerances?
- Avoid particular foods due to current disease states?

ABCD of Nutritional Assessment: D = Dietary Data

Look for patterns:
- What foods are under-served i.e. vegetables
- What foods are over-served i.e. bread
- Food groups that are omitted or excessive i.e. gluten free (Shepherd & Gibson 2013)
- Eating out i.e. high fat and sugar foods
- Hydration patterns i.e. alcohol, tea, coffee, water

ABCD of Nutritional Assessment: D = Dietary Data

Quick WAVE – 4 areas of assessment: Weight, Activity, Variety & Excess
17-item tool considering:
- Where excess body weight is concentrated
- Sedentary and activity behaviours
- Variety of healthful foods – i.e. vegetables and fruits
- Variety of unhealthful foods – i.e. candy (lollies) and alcohol
- Excess food consumption during stressful times

ABCD of Nutritional Assessment: D = Dietary Data

REAP-S – Rapid Eating Assessments for Participants – Short Version
- Evaluates intake of whole grains, foods high in calcium, vegetables and fruits, fat and cholesterol, sugar, sodium and alcohol.
- Considered valid (Kurka et al. 2014)
- Patient can fill out themselves
- Requires the Physicians key for translation - now outdated and researchers don’t wish to share (2017)
ABCD of Nutritional Assessment:  
D = Dietary Data

Dietary data collection – More Resources (USA):
- The Starting Conversation tool –
  - Consumption of fast foods, fruits & vegetables, soda (soft drinks), margarine or butter, desserts over past few months
- Rate your Plate tool
- Percentage Energy from Fat screener
- Eating Habits Questionnaire

The ABCD Nutritional assessment gives insight into the patient’s nutritional status.

What can be done?
- 60-sec intervention
- 10-minute consultation
- In-depth consult:
  - GPs
  - Non-nutritional allied health practitioners
  - Nutrition trained health care professionals

Nutritional Assessment in Lifestyle Medicine

微创 ACD Nutritional assessment gives insight into the patient’s nutritional status.

What can be done?
- 60-sec intervention
- 10-minute consultation
- In-depth consult:
  - GPs
  - Non-nutritional allied health practitioners
  - Nutrition trained health care professionals

Nutritional Prescription in Lifestyle Medicine

(2) Demonstrate ability to make nutrition prescriptions for health maintenance
AIM: long term compliance to the most effective diet for long term health.
- Easy to follow
- Enjoyable
- Includes variety
- Focussed on where the patient is and willing to do
- Mostly plants
Dietary Guidelines in Lifestyle Medicine

Five Australian Dietary Guidelines are set by National Health and Medical Research Council NHMRC (2013)

Guideline 1: Choose nutritious foods and drinks to meet energy needs to maintain healthy weight

Australian Dietary Guidelines (NHMRC)

Guideline 2: Enjoy a wide variety of nutritious foods from these 5 food groups every day:
1. Vegetables (incl legumes)
2. Fruits
3. Wholegrains and high fibre grains – rice/couscous/pasta/bread
4. Lean meats / nuts seeds/ eggs / tofu / legumes
5. Dairy – yoghurt/cheese/milk or alternatives soy

Guideline 3: Limit intake of foods containing saturated fat, added salt, added sugars and alcohol

Guideline 4: Encourage, support and promote breastfeeding

Guideline 5: Care for your food: prepare and store it safely

Nutritional Consumption Patterns

Most common nutrient deficiencies in Australian soils (and consequent increased deficiency):
- Zinc – Oysters, beef and pumpkin seeds (pepitas)
- Selenium – Brazil nuts

Common nutrient deficiencies in Australia (cont.)
- Vitamin D (Nowson et al 2012)
- Iron: Recognised common deficiencies world wide (WHO)
Nutritional Consumption Patterns

Focus on the Food Group: Rather than on the nutrient

20 Food groups (with example) associated with Health & Disease

- Confectionary (jubes)
- Dairy (cream)
- Eggs (hard boiled)
- Fish (tuna)
- Fruit (apple)
- Herbs and spices (oregano)
- Legumes (pinto beans)
- Mushrooms (portobello)
- Nuts (almonds)
- Oils (canola)
- Poultry (Chicken breast)
- Processed meat (ham)
- Reduced-fat dairy (2% milk)
- Refined grain (white rice)
- Seeds (sesame)
- Snack foods (cracker)
- Soft drink (lemonade)
- Vegetables (broccoli)
- Wholegrain (oatmeal)

Nutrient data on foods in Australia

Nutrient data on 2,668 foods is provided by Food Standards Australia New Zealand (FSANZ) (NUTTAB 2010)

Lifestyle Medicine Nutritional Approaches

Lifestyle Medicine Nutritional approach considers:

1. **Over consumption + Under consumption patterns**
   - leading to imbalances, deficiencies, malnutrition

2. **Encouragement + Discouragement**
   - food groups, and specific foods to avoid or enhance consumption of

Australian Nutritional Consumption Patterns

Australians don’t meet minimum serves of the 5 food groups

- 2.7 serves of vegetables – instead of 5 (adults and children over 8yo). Less than 4% consumed enough vegetables or legumes each day
- 1 in 10 ate sufficient dairy according to guidelines
- 1 in 7 consumed minimum number of lean meats and alternatives

Australian Nutritional Consumption Patterns

Fruits and grains had best compliance – 1 in 3 people consuming minimum recommended number of serves – however 1/3 of fruit serves was from juice and dried fruits 2/3s were from grains and cereals rather than whole grains or high fibre.

1/3 of the population Total Energy Intake came from energy dense, nutrient poor discretionary foods – ie sweet drinks, alcohol, cakes, confectionary, pastry. **Discretionary foods** = generally foods high in saturated fats, salt, sugar, alcohol

11 May 2016 ABS – National Nutrition and Physical Activity Survey
Nutritional Consumption Patterns

Meet Australians need to eat less:
- Meat pies, sausage rolls and fried hot chips
- Potato crisps, savoury snacks, biscuits and crackers
- Processed meats like ham, bacon and sausages
- Cakes, muffins, sweet biscuits and multipurpose nuts
- Confectionery (biscuits and chocolate)
- Ice cream and desserts
- Cream and butter
- Jam and honey
- Soft drinks, cordial, energy drinks and sports drinks
- Wine, beer and spirits

USA Nutritional Consumption Patterns

Foods to emphasize

- Whole (unrefined) plant-derived foods
- In general, lack disease-promoting components
- Also contain "hundreds of naturally-occurring phytoneutrients...that may protect against cancer, heart disease, osteoporosis, and other chronic health conditions." (U.S. Dietary Guidelines Advisory Committee)

Foods to de-emphasize

- Processed and animal-derived foods
- Relative lack of disease-preventing compounds and may contain disease-promoting components

LET’S MOVE
Nutritional Prescription in Lifestyle Medicine

What is the most effective diet for health?
- Mostly plants
- Easy to follow
- Enjoyable
- Includes variety
- Focuses on where the patient is and willing to do

SMART Nutritional Prescription

Specific and Simple – Type of food. Food name
Measurable – How much of the food
Accountable – Who shops? Who prepares? Who oversees this (self reporting/diary)
Realistic – Availability of food, budget, time, something patient is prepared to do (forgiving)
Timed – Frequency of specific food i.e. each meal And for how long? i.e. short and long term goals

Nutritional Prescription

- Work with patient – Engagement and empowerment
- Evidenced based interventions*
- Achievable in regards to patient’s life
- Specific and clear
- Written action plan

Focused, intensive behavioural interventions

Nutritional Prescription

Nutritional Prescription: ‘FAT backwards’

Type of food – specific
Amount – exact amount
Frequency – how often

Positive Prescription:
Focusing on what can be added to the diet

Negative Prescription:
Focusing on what must be removed from the diet

Nutritional Prescription

Eat Food.
Not too much.
Mostly plants.

Nutritional Prescription

Positive Prescription:
Focusing on what can be added to the diet

Negative Prescription:
Focusing on what must be removed from the diet
Nutritional Prescription

Eat Food.
- not “food-like products”
- not heavily processed foods
- whole foods prepared well

Nutritional Prescription

Not too much
- Portion sizes

Nutritional Prescription

Mostly plants: herbs, fruits, vegetables, grasses (grains), seaweeds.

Nutritional Prescription

In addition to plants:
- Algaes (spirulina, chlorella)
- Funghi
- Animal products - as a side or garnish rather than the key item

Case Study – Part 1

67-year old male presents with inability to stop weight gain - Herbert
He has gained 20kg in past 5 years – since his wife died from cancer.
Majority of weight gain occurred since retirement, 2 years ago.
Finds it difficult to live alone. Isolated himself from family and friends. Spends a lot of time watching TV (as a distraction)

Case Study Herbert – Clinical signs

<table>
<thead>
<tr>
<th>Male 67-years old</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height: 175cm</td>
</tr>
<tr>
<td>Weight history: Around 75kg until wife’s death (5yrs ago)</td>
</tr>
<tr>
<td>Medication history: Very little medication history. A few courses of antibiotics. Anti acid tablet once a year.</td>
</tr>
<tr>
<td>Hair: Grey. Male pattern balding.</td>
</tr>
<tr>
<td>Skin: Pale pallor.</td>
</tr>
<tr>
<td>General appearance: Poor posture. Lack of muscle tone in arms.</td>
</tr>
<tr>
<td>Activity level: Very low. No specific data. Often goes out only 1-2 times per week.</td>
</tr>
<tr>
<td>Environmental factors: No cooking with, lives alone.</td>
</tr>
<tr>
<td>Additional: Isolated himself. Grief process still acute (tears in eyes when mentioning wife)</td>
</tr>
</tbody>
</table>
Case Study Herbert – Anthropometrics

Herbert’s Anthropometrics:

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>1.71m</td>
</tr>
<tr>
<td>Weight</td>
<td>99.5kg</td>
</tr>
<tr>
<td>BMI</td>
<td>34</td>
</tr>
<tr>
<td>Lean body mass</td>
<td>49.5kg</td>
</tr>
<tr>
<td>Fat mass</td>
<td>50kg</td>
</tr>
<tr>
<td>Waist circumference</td>
<td>103cm</td>
</tr>
</tbody>
</table>

Case Study Herbert – Biochemistry

<table>
<thead>
<tr>
<th>Test</th>
<th>Unit</th>
<th>Patient Results</th>
<th>Lab Reference Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fasting blood glucose</td>
<td>mmol/L</td>
<td>11.3</td>
<td>&lt;6</td>
</tr>
<tr>
<td>ALT</td>
<td>U/L</td>
<td>56</td>
<td>5 - 40</td>
</tr>
<tr>
<td>ESR</td>
<td>mm/h</td>
<td>25</td>
<td>1-30 (ideally 1-19)</td>
</tr>
<tr>
<td>HDL</td>
<td>mmol/L</td>
<td>3.9</td>
<td>1.2 - 1.9 (ideally lower end)</td>
</tr>
<tr>
<td>Triglycerides</td>
<td>mmol/L</td>
<td>3.4</td>
<td>0.5 - 2.25</td>
</tr>
<tr>
<td>Hydroxycalcirol (Vitamin D)</td>
<td>nmol/L</td>
<td>45</td>
<td>50-150 (ideally &gt;100)</td>
</tr>
<tr>
<td>Homocysteine</td>
<td>umol/L</td>
<td>8</td>
<td>0 - 10 (ideally &lt;1)</td>
</tr>
</tbody>
</table>

Case Study Herbert – Diet Data

Diet overview:
Meals are mainly sandwiches (white bread) with cheese or jam
Sweet biscuits between meals
Occasionally cooks fried eggs and sausages
Gets take-away meals 2-3 times per week (Chinese Sweet and sour pork, vegetables and rice is his favourite)
Fluid intake = 4 cups of coffee/day (with milk and 2tsp sugar), 2 cans soft drink and 4 cans of beer at night.

Food Group       | Herbert’s average daily intake | Rec. serves daily | Average serves/day |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruits</td>
<td>2 serves</td>
<td>2 serves</td>
<td>zero</td>
</tr>
<tr>
<td>Vegetables/legumes</td>
<td>in takeaway ½ cup</td>
<td>5⅔ serves</td>
<td>1 serve</td>
</tr>
<tr>
<td>Grains/Cereals</td>
<td>in takeaway 3 cups</td>
<td>6 serves</td>
<td>6 serves</td>
</tr>
<tr>
<td>Lean meat/nuts/legumes</td>
<td>Fried egg sausage</td>
<td>2½ serves</td>
<td>1 serve</td>
</tr>
<tr>
<td>Milk/cheese</td>
<td>Cheese 2 slices</td>
<td>2½ serves</td>
<td>2½ serves</td>
</tr>
<tr>
<td>Discretionary foods</td>
<td>Jam; Biscuits etc</td>
<td>0-2½ serves</td>
<td>0-2½ serves</td>
</tr>
</tbody>
</table>

Herbert’s Prescription: Case study

What’s the most effective nutritional prescription for Herbert (from a Lifestyle Medicine practitioner)?

- Swap water for soft drink every day
- Include apple and carrots into daily diet (can eat raw)
- Make smoothies – protein powder, mixed berries and almond or rice milk (protein in each meal)
- Wholemeal bread instead of white bread
- Canned fish in brine (mackerel) Lunch 3 x week
- Pre-packed healthy meals he can warm up
- Healthy take away options – Mexican
- Find alternative sweetener for coffees (ie stevia)
Herbert's Prescription: Case study

Long term poor nutritional status may warrant referral to professional who can prescribe supplements:

Suggested for this case:
- Magnesium
- Chromium
- Antioxidant (containing lipoic acid)
- Fish oil
- Vitamin D
- Vitamin B6, B12 and folate

Plants:
Add in apple and carrots to diet, wholemeal bread

Easy: Swap soft drink for water. Healthy pre-packaged meals. Healthy take away options.

Enjoyable: Focus on adding and swapping. What is his favourite fruit? Blending up smoothies.

Variety: Range of healthy premade food options

Patient Centered: Small steps. Discussed with him.

Patient willing: Ready to change

Wider context of Herbert's life:
- Social interaction
- Exercise
- Sunshine and connection with nature
- Learning to cook, shop (upskill)
- Finding new interest

With positive results in weight management, Herbert starts to implement more dietary improvements – ie red wine in place of beer; expanding the meals he can cook

Conclusions

- Human nutrition is a dynamic field
- Nutrition interventions are key to treating chronic diseases
- Collaboration with professionals trained in nutrition is key to comprehensive care

Conclusions

- Application of nutritional interventions require empathy and patient readiness for efficacy (Rao et al 2011)
- Brief Nutritional Assessment tools are needed for busy practice settings
- Focusing on food group, rather than nutrients

Conclusions

- Changing patterns of eating – overconsumption and underconsumption
- Recognising that eating patterns and nutrition fit within a larger context
- Quality of food - level of micro nutrients is key