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Back to Basics:
Understanding Protein

The Issue
with Protein

A Food First
Approach

Protein

Benefits in healthy ageing





There is no question that nutrition is a significant issue for our elderly. This issue of NutriPro highlights protein as a nutrient that should feature widely in nourishing menus for the aged.

We start with a look at the basics of protein in health across life stages, where to find it, and then identify who it is that really needs more.

Focussing our attention on the over 70's, we then shine the spotlight on the challenges to nutrition with age and translate the science on protein quality, amount and timing over the day.

Finally as always, we offer you a series of practical and cost effective ideas and tips to allow you to create tasty, protein-rich, nourishing meals and menus for your patients or residents.

Karen Kingham
BRAND NUTRITIONIST
Nestlé Professional

Back to basics

Understanding

Protein is one of the seven essential nutrients we all need for optimum health and it's vital for growth and the maintenance of muscle mass.

Protein plays an important role at the extremes of our life stages. In the early years adequate protein is essential for our children's normal growth and development while in later years it's vital for the preservation of muscle mass and the benefits this brings to strength, mobility and general health.

What's a protein?

Protein in our body is made from a variety of small units called amino acids. Different combinations of around 20 of these amino acids will make all the 100 000 or so different types of proteins our body needs to function well.

Protein in your diet

Protein rich foods in our diet supply the bulk of our body's protein needs and can come from either animal or plant sources:

- Beef, lamb, pork, chicken, fish, seafood
- Eggs
- Nuts and seeds
- Dried beans and lentils
- Dairy products; milk, yoghurt, cheese
- Soy products; tofu, tempeh, soy beverages

Best protein choices for health are those that are lower in saturated fat.

protein

The fate of protein

The protein foods we consume as part of our diet are broken down during digestion to release the amino acids from which they are built. These amino acids are then used to build new proteins for our body where they will be used for cell turnover, repair of muscle and other body tissues and to make the hormones, enzymes and transmitters that support our metabolic functions.

Quality protein foods

The nutritional value of dietary protein is determined by the amount and types of amino acids it contains.

Nine amino acids are considered 'essential' because we are unable to make them ourselves, and so must get them from the food we eat. A high quality protein or complete protein will contain all nine of these amino acids in good amounts.

Generally speaking high quality proteins come from animal foods, but some plant based foods also contain high quality protein (see table for food sources).

DID YOU KNOW?

Estimates suggest protein makes up around half of the human body's dry weight.¹

Can vegetarians get enough good quality protein?

Because most plant foods don't contain high quality protein, following a strict vegetarian or vegan diet means you need to choose a variety of protein-rich plant foods to get the amino acids you need. For example, a day that includes protein from wholegrains and legumes will provide all the essential amino acids typically found in a high quality protein such as red meat.

Food sources of high quality protein

ANIMAL BASED	chicken, beef, lamb, pork, eggs, milk, yoghurt, cheese, fish, seafood
PLANT BASED	soy based foods, quinoa, buckwheat, amaranth (seed of a green leafy vegetable)



Your seven essential nutrients are:

proteins · fats · carbohydrates · fibre · vitamins · minerals · water

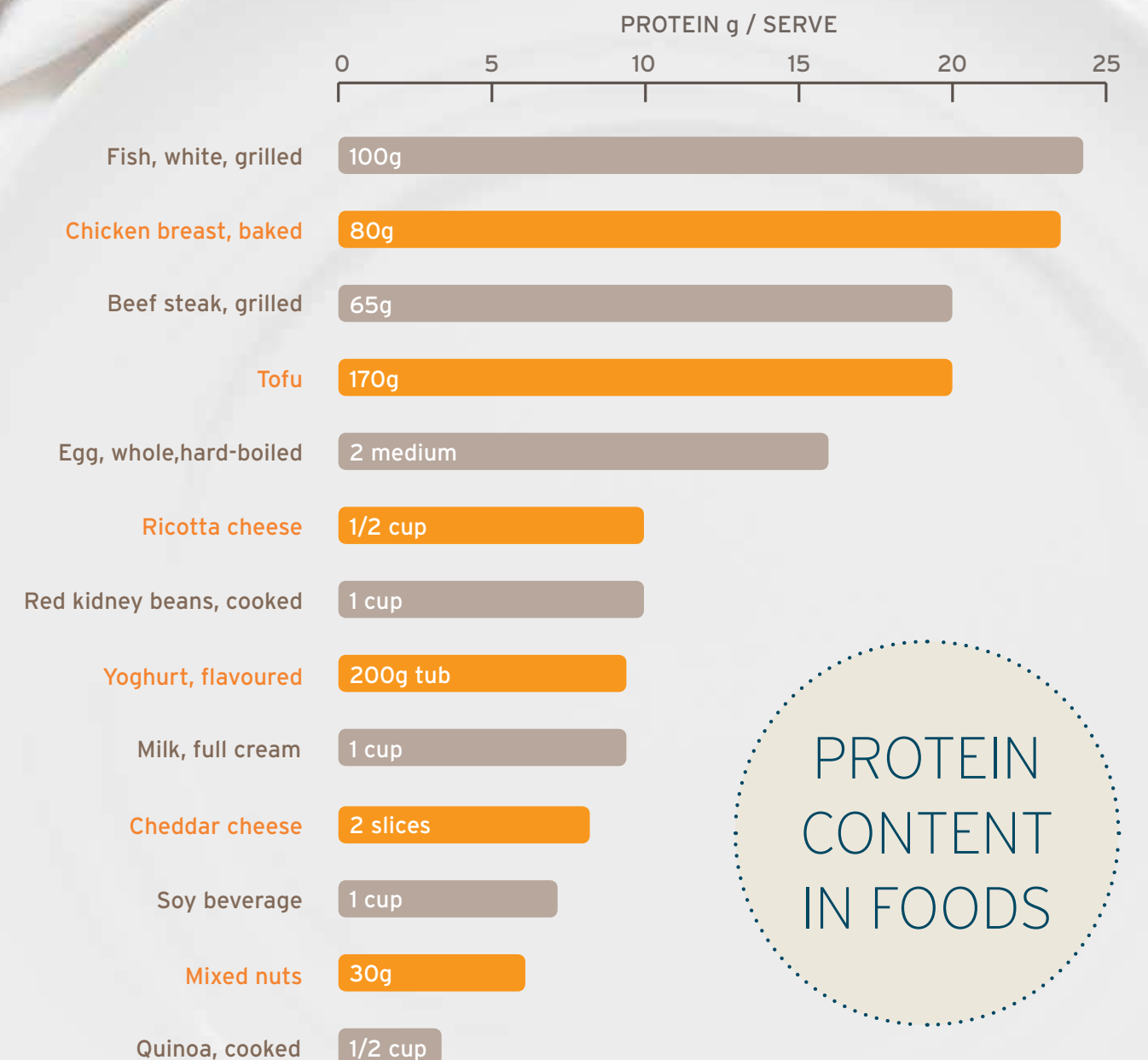
Protein needs

FOR HEALTH ACROSS YOUR LIFE STAGE

Protein needs across our life stages will vary according to growth, age, body weight and level of physical activity (see table²)

	Protein needs per day (g/kg body weight)	Protein needs per day* (g)
MEN		
19-70 YEARS	0.84	64
OVER 70 YEARS	1.07	81
WOMEN		
19-70 YEARS	0.75	46
OVER 70 YEARS	0.94	57
PREGNANT	1.00	60
BREASTFEEDING	1.10	67

* Australian & New Zealand recommended daily protein intake based needs of a 76kg man and 61kg woman



Source: FoodWorks 7 Version: 7.0.3016

PROTEIN CONTENT IN FOODS

Too much protein?

It's not hard to eat more protein than you need. And in health this may not be a big deal, but eating more protein than you need may mean more kilojoules, leading to weight gain. Additionally, protein from meat or other animal sources can be high in saturated fat and may increase the risk of high cholesterol and heart disease. And, if you have a medical condition such as kidney disease or diabetes, too much protein may also cause other health problems.

getting *the protein* you need

To help Australians and New Zealanders meet their daily protein needs, the Australian Dietary Guidelines³ and the Eating and Activity Guidelines for New Zealand Adults⁴ recommends the number of serves of protein rich foods we should aim to eat each day.

**Lean meat and poultry,
fish, eggs, tofu, nuts
and seeds and legumes/
beans food group³**

SERVES RECOMMENDED EACH DAY

MEN AGED 19-50 YEARS = 3 SERVES

MEN AGED 51 YEARS AND OVER = 2.5 SERVES

WOMEN AGED 19-50 YEARS = 2.5 SERVES

WOMEN AGED 51 YEARS AND OVER = 2 SERVES

PREGNANT WOMEN = 3.5 SERVES

BREASTFEEDING WOMEN = 2.5 SERVES

WHAT'S A SERVE?

- 65g cooked (90-110g raw) lean meats such as beef, lamb, veal, pork, goat or kangaroo
- 80g cooked (110g raw) lean poultry such as skinless chicken or turkey
- 100g cooked (115g raw) fish fillet or one small can of fish
- 2 large eggs
- 1 cup (150g) canned (preferably with no added salt) or cooked dried beans, lentils, chickpeas or split peas
- 170g tofu
- 30g nuts, seeds, peanut or almond butter or tahini or other nut or seed paste (preferably no added salt or sugars).

**Dairy and alternatives
(mostly reduced fat) food group³**

SERVES RECOMMENDED EACH DAY

MEN AGED 19-70 YEARS = 2.5 SERVES

MEN AGED 71 YEARS AND OVER = 3.5 SERVES

WOMEN AGED 19-50 YEARS = 2.5 SERVES

WOMEN AGED 51 YEARS AND OVER = 4 SERVES

PREGNANT WOMEN = 2.5 SERVES

BREASTFEEDING WOMEN = 2.5 SERVES

WHAT'S A SERVE?

- 250mL (1 cup) fresh, UHT long life, reconstituted powdered milk or buttermilk
- 120mL (1/2 cup) evaporated milk
- 200g (3/4 cup) yoghurt
- 40g (2 slices) hard cheese such as cheddar
- 120g (1/2 cup) ricotta cheese
- 250mL (1 cup) soy beverage which contain at least 100mg of added calcium per 100mL

DID YOU KNOW?

Our bodies don't store proteins like they store carbs and fats. This is why you need a steady supply of protein every day

When you NEED MORE

According to our most recent health survey⁵, almost all (99%) Australians meet their daily needs for protein for health, including vegetarians and those with higher needs such as pregnant and breast feeding women.

Unfortunately those over 70 years of age are not well represented in this group, with the survey also showing protein intake declines as your age increases⁶. This is despite the recommendations for more protein in this age group.

Additionally, needs for protein rise considerably in times of illness, injury and chronic disease. Hospital studies show that inadequate protein (and energy) intake can be found in as many as 50% of patients in Australian hospitals⁷.



Nutritional needs as you age

Advancing age comes with challenges that make it harder to keep up a good food intake. And a declining food intake in the elderly can quickly increase the risk of weight loss and malnutrition.

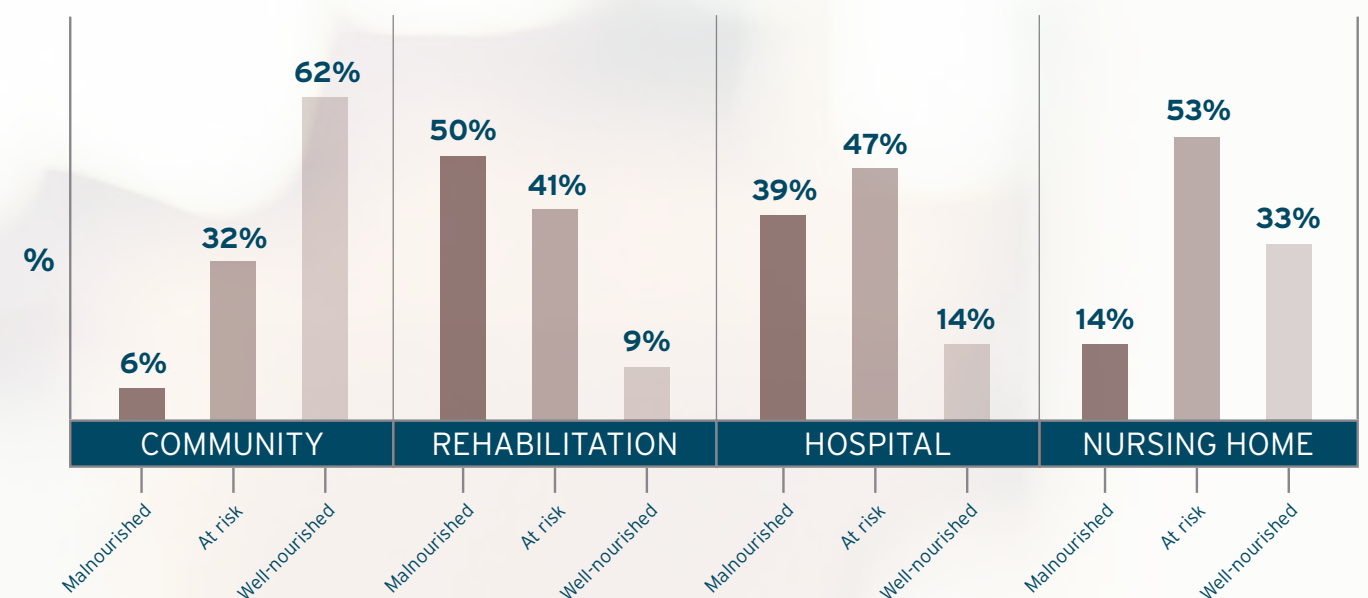
International reviews⁸ show poor nutrition among the elderly is a worldwide issue, with those in hospital, rehabilitation and residential aged care most at risk.

Malnutrition among the elderly living at home is also significant, and the Australian picture is similar, with the prevalence of malnutrition reported to be as high as 70% in some residential aged care facilities and as much as 30% among those living at home⁹.

DID YOU KNOW?

In times of injury, acute or chronic illness, the body's need for protein may be more than double what's recommended for health (see page 4 for protein RDI's).

NUTRITIONAL STATE OF THE ELDERLY ACROSS THE SPECTRUM OF CARE⁸



challenges to *nutrition*

with age are not solely
related to ill health and frailty

Ageing and its effect on nutrition can be considered a continuum, that if addressed early enough, can support healthy ageing and the maintenance of life quality.

Increased requirements for nutrients²

Despite declining activity levels and a lower need for kilojoules, age related metabolic changes in the elderly increase the need for many other nutrients, not simply protein.

Age related loss of taste and smell¹⁰

The decline in sense of smell with age compounds the changes that also take place to taste. Research shows salt added to a soup needed to be two to three times greater to be detected in older age groups compared to younger.

Poor appetite (anorexia of aging)¹¹

A lack of appetite and subsequent poor food intake is largely due to changes that impair the body's response to hunger. This may then be compounded by other impacts on food intake outlined here such as; reduced taste perception, swallowing and chewing issues and the side effects of medication.

Side effects of medications¹²

It's not uncommon for the elderly to suffer from multiple chronic illnesses. The number of medications necessary to treat these can produce side effects such as nausea, sedation (sleepiness), early satiety (fullness), swallowing issues or constipation which will all impact on appetite and food intake.

Poor dentition (problems with teeth or dentures)¹²

Poor oral care or ill-fitting dentures can result in difficulty with chewing. The forced choice of softer foods and potentially painful eating can impact on enjoyment and appetite at meals.

Difficulty swallowing (dysphagia)¹³

Dysphagia [dis fa jah] is the medical term for difficulty swallowing and has been found in as many as 68% of residents in aged care facilities. It may occur simply as a result of changes due to age or to many of the diseases that are common among the elderly such as stroke, Parkinson's disease, multiple sclerosis, cancer of the mouth, throat or oesophagus (food pipe).

Chronic disease¹²

Illness and disease have effects on appetite and metabolic processes that are independent of age. Because the elderly are very likely to have multiple medical issues the effects on nutritional state are often compounded.

Dementia¹⁴

Nutrition is impacted in many ways by the onset and progression of dementia, and this chronic degenerative disease presents many challenges for carers attempting to support nutrition and adequate food intake.

Depression¹⁵

Older people are at greater risk of mental health issues due to the additive effects of chronic disease and social isolation. It's estimated that 10-15% of Australia's elderly are affected by depression with rates in residential aged care as high as 35%.

texture MODIFIED DIETS

Texture modified diets provide food with a consistency that makes it easier and safer to chew and/or swallow.

The specific texture of the diet is generally prescribed by a speech pathologist. In Australia there are three types of diets prescribed for people with dysphagia¹⁶:

TEXTURE A or SOFT:

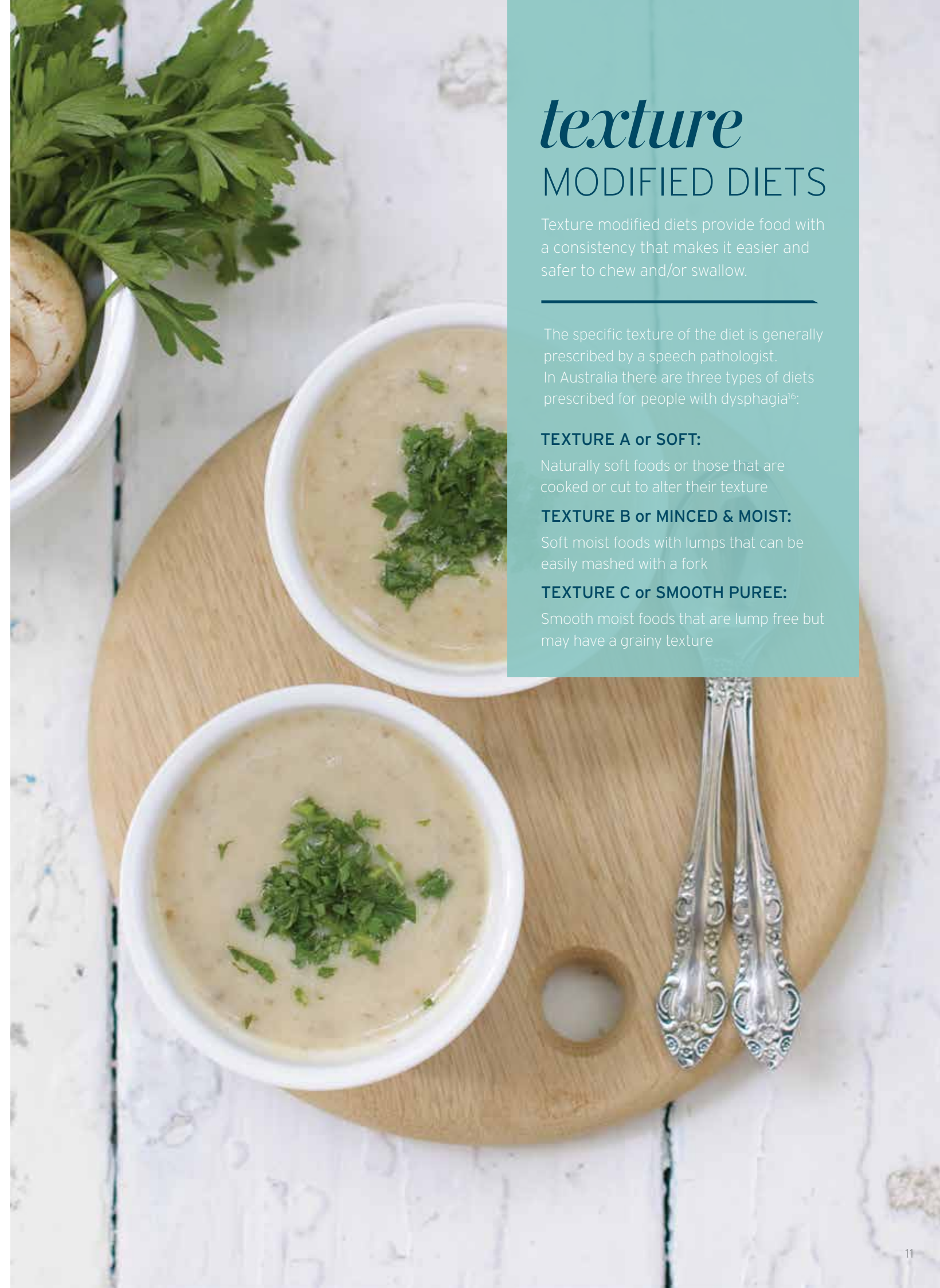
Naturally soft foods or those that are cooked or cut to alter their texture

TEXTURE B or MINCED & MOIST:

Soft moist foods with lumps that can be easily mashed with a fork

TEXTURE C or SMOOTH PUREE:

Smooth moist foods that are lump free but may have a grainy texture



The issue

WITH PROTEIN

The ability to use protein from the food we eat is an important part of health at any age.

Metabolic changes that take place with age mean **the elderly are unable to utilise protein from food as well as they did when they were younger.** The result is a need to eat more protein for the same benefit. This is the basis for higher protein intake recommendations for the over 70's².

The issue with protein is that surveys⁶ tell us many of our elderly are not eating enough. This puts them at increased risk of frailty, falls and a declining ability to carry out the routine activities of their life (see figure on page 13).

GOOD TO
REMEMBER

More Protein?

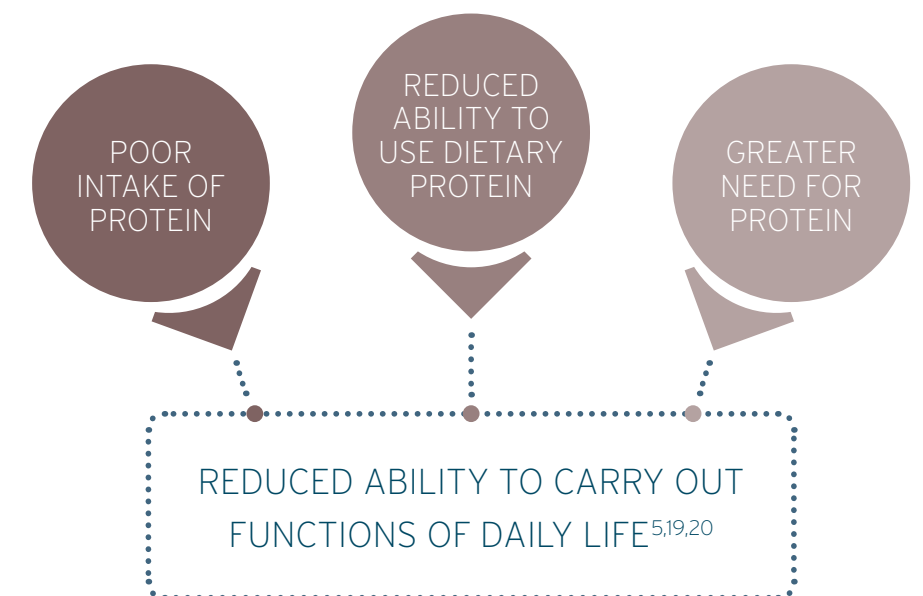
Australian and New Zealand recommendations for protein intake in the over 70's are already around 25% more than those for younger adults. However an International Working Group recommends even greater amounts for better support of good health, recovery from illness and maintenance of normal levels of physical activity¹⁷.

Muscle loss with age: SARCOPENIA

Loss of muscle and muscle strength is an inevitable result of ageing for everyone and has a scientific name; sarcopenia. In health, our muscle mass peaks in our 30's and from this point on starts to decline.

In the absence of health issues muscle loss has been estimated to take place at a rate of around 3-8% a decade. But, in the event of illness or accident, particularly that which reduces mobility for any length of time, this process is dramatically accelerated.

Chronic muscle loss is thought to affect around a third of adults over 65 years and over half of those older than 80 years. This loss contributes to frailty, risk of falls and increased difficulty with carrying out the general activities needed for independent living^{18,19}.



Preserving muscle mass is best with a two pronged approach involving a good diet and regular physical activity. Without attention to these we are all at risk of losing muscle from around 30 years of age. For a 75kg man estimates suggest these losses could be as much as 6kg every decade^{18,19}.

translating the science

The dilemma of promoting healthy ageing is complex, but research tells us that optimising protein intake at all meals is an important part of the process²⁰.

What type of protein⁶?

Research shows that age doesn't affect how we digest and absorb protein foods. As such, protein choices for the elderly should focus on high quality protein foods where ever possible (see page 3).

How much protein²⁰?

While age makes no difference to how we digest and absorb protein, the body's ability to use it to build or repair body tissues like muscle is reduced.

Research suggests the optimal amount of protein for the over 65's at any particular eating occasion is around 25-30g, or the equivalent of a 100g piece of cooked lean steak.

The best time for protein²⁰?

Because the optimal amount of protein at any eating occasion is around 25-30g, meeting daily needs, which may be more than 100g protein/day, means including quality protein foods at every main meal and when needs are particularly high at mid-meal snacks as well.

DID YOU KNOW?

International recommendations for daily protein in the over 65's are greater than those currently recommended in Australia and New Zealand^{2,20} (see table page 4):

- 1.0-1.2g protein per kg body weight in healthy older adults OR 76-91g protein/day*
- 1.2-1.5g/kg protein per kg body weight in older adults who are unwell or suffering a chronic disease OR 91-114g protein/day*

*Based on weight of 76kg

putting it into *practice*

Recipes based on protein rich staples or ingredients higher in protein simplify the creation of nourishing menus for the elderly.

Making every bite count

Appetites are often small in the over 70's so it's important to make every bite count. Replace low protein, low kilojoule foods or fortify them with higher protein ingredients so they can make a more valuable contribution to your residents daily nutrition needs (see page 19 for practical tips).

What's in a name

Protein content claims on packaged foods and ingredients can be used to guide higher protein options on your menus. Food standards Australia New Zealand (FSANZ) regulate how the protein content of foods or ingredients can be described based upon how much protein they contain²¹.

CLAIM	Protein per serve
Contains protein, Source of protein	At least 5g
Good source of protein. High in protein	At least 10g
Protein increased, Increased in protein, Higher in protein	At least 5g of protein and 25% or more protein than the reference food

What does it look like?

The days menu below provides around 80g of protein over three meals, timing valuable amounts of protein at all meals across the day.

It's important to note that a hot, protein-rich breakfast is pivotal to achieving the day's protein goal.

BREAKFAST (27g)

Eggs (2) on toast
Glass milk



LUNCH (26g)

Meat based soup
Cheese sandwich
Milk based dessert



DINNER (27g)

Meat based main (65g meat)
Mashed potato
Vegetables
Milk based dessert



A FOOD FIRST *approach*

with higher protein pantry staples

Nestlé Professional's executive chef, Mark Clayton, recommends taking a food first approach to nourishing patients and residents. By boosting protein and energy in basic menu items using added nutrient dense kitchen staples, a fortified menu for those in need can be achieved.

“Not only are these staples ready to hand in your kitchen, but they’re also a cost effective way to boost the nutrition of your menu for those in need”

Items on your menu most easily fortified include porridge, scrambled eggs, soup, mashed potato, sauces, milk based desserts and milk drinks. Small additions of protein rich ingredients to multiple menu items over the day have the capacity to make a significant difference to the daily protein intake of poor eaters.

KITCHEN TIP

“Milk powder (full cream or skim) is an easy way to fortify a soup base, but take care to add it at the end of cooking to prevent your soup from burning”

Mark Clayton
Executive Chef Nestlé Professional

MAKING LESS MORE: QUICK NUTRITION FIXES

LESS NOURISHING	MORE NOURISHING
Dehydrated flavoured crème soup base	Make up with full cream milk rather than water with added milk powder at the end of cooking
Consommé	Add noodles and minced beef
Mashed potato	Make with full cream milk, butter and grated cheese
Tomato sandwich	Add sliced cheese
Salad sandwich	Add mashed egg
Porridge	Make with full cream milk rather than water and add extra milk powder or evaporated milk
Green salad	Add boiled egg, slice ham, turkey or chicken
Stewed fruit	Serve with yoghurt, custard or ice cream
Jelly	Serve with yoghurt, custard or ice cream
Instant mousse mixes	Make up with full cream milk or evaporated milk

MAKING LESS MORE: FORTIFY WITH THESE NOURISHING PANTRY STAPLES

INGREDIENTS	PROTEIN (g)	ENERGY (kJ)	ENERGY (kCal)
Milk (full cream) 40mL (2tbsp)	1.5	116	28
Evaporated milk 20mL (1tbsp)	2	126	30
Milk (powder, skim) 8g (1tbsp)	3	116	28
Milk (powder, full cream) 8g (1tbsp)	2	172	41
Tasty Cheese (grated) 30g (1/4 cup)	6	411	98
Beans, cannellini (canned or cooked, drained) 45g (1/4 cup)	3	163	39
Lentils (canned or cooked, drained) 30g (2tbsp)	2	98	23
Chicken mince, cooked 20g (1tbsp)	5	179	43
Beef mince, cooked 20g (1tbsp)	5	185	44
Leg ham 20g (1tbsp)	4	89	21
Egg 55g (medium)	7	304	73
Custard (regular) 70g (1/4 cup)	3	288	69
Ice cream (regular) 50g (scoop)	2	394	94

Nutritional values sourced from AUSNUT 2007

The role of *nutritional* SUPPLEMENTS

Nutritional supplements in health and aged care are an important strategy for supporting nutritional intake in those with increased needs²².

Nutritional supplements used in hospitals and aged care are most commonly liquid beverages that may be ready-to-drink or prepared from powder. To meet a variety of needs they may be: high in protein, kilojoules and added vitamins and minerals, and some may be what is known as complete. Meaning when consumed in a given amount, they can provide 100% of a person's total daily nutrition needs.

Typically supplements are prescribed by a dietitian, and their most useful role is to provide a high protein/energy menu with a nutritional boost. Supplements appear to be most effective when they are given between meals rather than with meals.

Guiding menu standards for nutrition in health and aged care

Australia and New Zealand have no national nutrition standards for menus in aged care. However, Australian state based menu nutrition standards for hospitals exist in NSW, Victoria, South Australia, Western Australia and Queensland^{7,23,24,25,26}. Of these, Victoria and Queensland make specific reference to the needs of the aged.

Nutrition standards provide a framework within which to design menus as well as provide detail around portion

size, and nutritional content of menu items such as main dishes, soups, sandwiches, desserts, breakfast foods and snacks/mid-meals etc (see below).

Protein and energy recommendations made in these standards can be used as a guide when developing nourishing recipes, or fortification strategies for use with existing menu items.

Recommendations for protein and energy*

SOUPS	Portion/Serve size	Energy per serve	Protein per serve (g)
QLD (Group 1)	120-200mL	At least 600kJ	At least 8g
QLD (Group 2)	120-200mL	At least 400kJ	At least 5g
NSW/WA/Vic/SA Band or Type 1	180mL	At least 360kJ	At least 5g
NSW/WA/Vic/SA Band or Type 2	180mL	At least 180kJ	At least 2g

DESSERTS			
QLD (Group 1)	Not greater than 180g	At least 800kJ	At least 8g
QLD (Group 2)	90-120g	At least 800kJ	At least 4g
QLD (Group 3)	90-120g	At least 500kJ	At least 4g
NSW/WA/Vic/SA Band or Type 1	90-120g	At least 500kJ	At least 4g
NSW/WA/Vic/SA Band or Type 2	90-120g	At least 800kJ	At least 4g

SNACKS/MID MEALS			
QLD/SA High protein, high energy	Not specified	At least 500kJ	At least 5g
QLD/SA Moderate protein, high energy	Not specified	At least 500kJ	At least 2g
NSW	Not specified	At least 500kJ	Not specified

*Selected details of nutrition guidance provided in current Australian state-based menu standards^{7,23,24,25,26}.

GOOD TO KNOW

Nutritional supplements have been formulated to provide a significant nutrition boost to the diets of those with increased needs. Standard powdered formulations can provide as much as 14g protein per serve, around the amount found in two medium eggs. More concentrated liquid supplements also exist and may provide as much as 20g of protein per serve or the amount found in a small cooked steak.

Good to *remember*

- Getting enough protein is important for growth and the maintenance of muscle mass.
- Protein needs are increased during pregnancy, breastfeeding, illness, injury and with advancing age.
- Best quality protein foods are those from animal sources.
- The ability to utilise protein to maintain and repair muscle mass declines with age.
- Best way to slow age related muscle loss is with a protein rich diet and an active lifestyle where possible.
- To support healthy ageing, 25-30g of quality protein at least three times a day is best.
- Menu nutrition standards exist in each Australian state against which to benchmark nutritional qualities of meals and menus.
- Recipes based on protein-rich staples or ingredients higher in protein simplify the creation of nourishing menus.

BEST PRACTICE RESOURCE FOR YOUR KITCHEN

The Best Practice Food and Nutrition Manual for Aged Care Homes Edition 2 was released in 2015. An excellent plain English manual describing the various issues faced in feeding the frail elderly, this online document provides many practical details about planning menus and catering for residents in aged care and can be found at this link: <http://www.cclhd.health.nsw.gov.au/ourservices/nutrition/Documents/BestPracticeFoodandNutritionManual-Edition2.pdf>

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