



# FUTURE-PROOF YOUR HEALTH FROM THE MIDDLE YEARS

Essential nutrients in the 30s, 40s and 50s  
and how they support healthy ageing



## INTRODUCTION

# Anti-ageing from the inside out

Research shows we spend £210 million on anti-ageing skincare in the UK per year<sup>1</sup>. But we are overlooking the simplest of anti-ageing options - a healthy and nutritious diet.

New research<sup>2</sup> shows that **nearly 1 in 5 people believe that you can wait until age 40 or over** before your diet impacts your health in later life.

A wealth of evidence shows that good nutrition is a foundation for good health<sup>3,4</sup> and, as an increasingly ageing population, it has never been more important to look after our health to stack the odds in our favour. Whilst genes and luck inevitably play a part in health and appearance as we age, it is time to take control by looking after our diet – and learning about the roles of essential vitamins and minerals – in our 30s, 40s and 50s.

As a population, we are living longer; **the average life expectancy in the UK is now 79.1 years for a male and 82.8 years for a female**<sup>5</sup>. Yet on average, older men will spend one fifth of their lives and older women will spend one quarter of their lives in poor health or with a disability<sup>6</sup>. Such a prognosis is great motivation for working towards change. Adopting a strong preventative approach as far as nutrition is concerned can reduce the risk of infirmity and chronic disease as we age, future-proofing health as much as possible.

SECTION 1:

# Health in the middle years

The middle years are often spent sandwiched between caring for growing children and ageing parents, leaving people little time for themselves. But these are years when we need to begin making dietary and health choices which will enable us to reap the benefits in later life. Unfortunately, it seems we are simply not making the right choices about our diets at this critical life stage.

Government data show that **only 27% of adults aged 19 to 64 years meet the 5-A-Day recommendations for fruit and vegetable intakes<sup>7</sup>. One fifth of adults have low levels of vitamin D in the summer, when it is possible to make this nutrient from sunlight; this rises to a quarter of the population in the autumn and winter<sup>8,9</sup>. The data also show low intakes of multiple other nutrients including vitamin A, iron, riboflavin and vitamin B12<sup>10</sup> as well as intakes of oily fish, a key source of omega-3 fatty acids, which are well below the recommendations<sup>11</sup>.**

Habitual behaviour, including diet and lifestyle choices, can be hard to change, particularly for the stressed and time-poor. However, according to Dietitian Dr Carrie Ruxton, from the **Health and Food Supplements Information Service (HSIS)**, a change could mean an adjustment as small as including a multivitamin, multimineral and fish oil supplement in our everyday diet.

“The irony is that many people don’t think twice about buying a new beauty product or trying new treatments to slow down the effects of ageing on the outside, but don’t always seem ready to try something that will help from the inside – nutrition.

“People need to start thinking about nutrition in their middle years in order to set themselves up to be healthier as they become older.”

Women are more likely than men to have nutrient intakes below the lower reference nutrient intake (LRNI: the intake level at which deficiency is likely to occur), with intakes of minerals generally poorer than intakes of vitamins<sup>12</sup>. **Both men and women in their middle years have intakes below LRNI levels for ten essential nutrients – vitamin A, riboflavin, folate, calcium, magnesium, potassium, iron, zinc, selenium and iodine. And although vitamin D does not have an LRNI, data reveal extremely low intakes and status<sup>13</sup>.**

### What can be done?

Alongside a multivitamin and multimineral, Dr Ruxton recommends that the two thirds of us who do not meet the recommended weekly intake for oily fish could consider taking a fish oil supplement which supplies valuable omega-3 fatty acids. Most of us would also benefit from a vitamin D supplement, and most multivitamins now contain the recommended 10 micrograms.

### Dr Ruxton says:

**“Whilst the effects of ageing can be clearly visible from the outside, what is going on internally is of much greater significance to our long term health and wellbeing. We need to look after our entire selves, not simply our appearance.”**

**“For those of us who have a rather erratic diet, something like a daily multivitamin and multimineral can be really useful for helping meet recommended levels of key nutrients.”**



SECTION 2:

# Your future is in your hands

Many people expect they will develop health problems as part of the natural progression of ageing, but this does not have to be the case. By implementing positive and healthy lifestyle changes as early as our 30s, it is possible to support healthy ageing and help to reduce the chances of developing lifestyle-related diseases, such as diabetes, cardiovascular disease and certain cancers.

However, not everyone is aware of – or believes in – the positive impact nutritional changes can have. Research<sup>14</sup> conducted in 2017 found that...

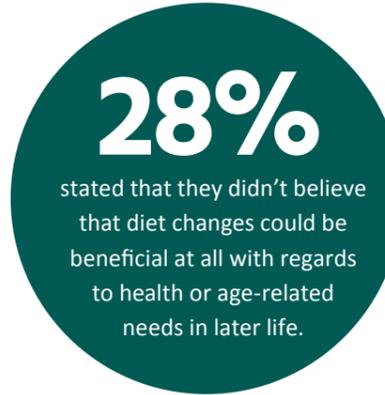
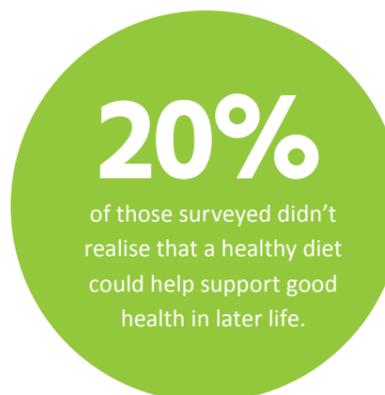
Of the respondents who agreed that diet directly impacts health in older age, **85% believed that eating specific foods could help maintain particular areas of health** – for example, eating oily fish to maintain joint health; and **44% believed that taking a food supplement would help.**

It is vitally important to address nutritional needs early on – waiting until the last decades of life is too late, as permanent damage has already occurred, increasing the risk of disability and chronic disease<sup>15</sup>.

Our modern diets and lifestyles can set the patterns of health we are subject to throughout our lives. Obesity can trigger metabolic changes, including the development of diabetes. Indications of cardiovascular disease have been found during post-mortems of young adults, years before any symptoms would have been noticed, or diagnosis made. This evidence supports the idea that adjusting eating habits during the middle years is vital; people in their 30s, 40s and 50s should follow a healthy anti-ageing diet that is balanced in energy (calories), low in saturated fats and salt, and rich in fibre, unsaturated fats, vitamins and minerals.

According to registered Public Health Nutritionist Dr Emma Derbyshire, future-proofing your diet can help to support many aspects of health in later life:

“As we age, we are more prone to health problems, but if we adopt healthier dietary patterns in our 30s 40s and 50s we may be able to reduce our risk of developing long term health issues.”



“Sadly, by the time the health issues become apparent, it is often too late for dietary changes to have any significant, positive effects. Maintaining a healthy and balanced diet containing suitable levels of vitamins and minerals throughout the middle years can go a long way towards future-proofing your health for later life.”

But that’s not all. A healthy lifestyle isn’t just about what you put into your body; it’s also about its other needs, one of which is exercise. It is vital to ensure that you are getting enough exercise which, according to the NHS, is at least 150 minutes of moderate aerobic activity, such as fast walking or cycling, plus two sessions of strength exercises per week; or 75 minutes of vigorous aerobic activity, such as running or tennis, plus two sessions of strength exercises per week<sup>16</sup>, for adults aged 19 to 64. On top of that, regular health checks can help ensure that any health issues are picked up early.

**Dr Carrie Ruxton says:**

**“It is absolutely crucial that we all implement changes to our diet and lifestyles as early as possible, ideally by our 30s but at the latest in our 50s. This has been shown to help future-proof our health for those later years.”**

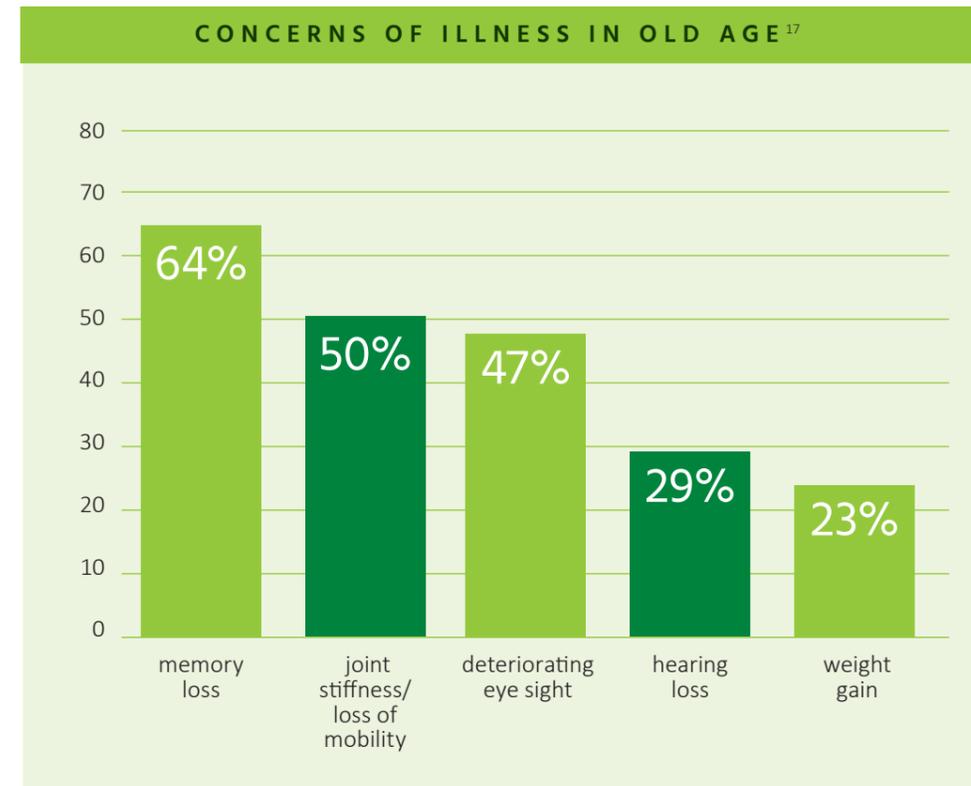


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**SECTION 3:**

# Your ticking health clock

With the state pension age rising to cope with an ageing population, many people are now retiring later, needing their good health to last longer than ever to enable them to keep up with the pressures of an extended working life. Many fear becoming ill in old age, with the top five concerns being:



What is very telling is the issues that seem to hold the least concern for participants, such as bone density, heart disease and strokes. These, and other potential health issues, are being overlooked by too many in their middle years. Medical and nutritional research tells us that many of these chronic and degenerative diseases are preventable but without action being taken now by the current middle years’ generation, a health crisis is brewing for the future.

**Dr Carrie Ruxton says:**

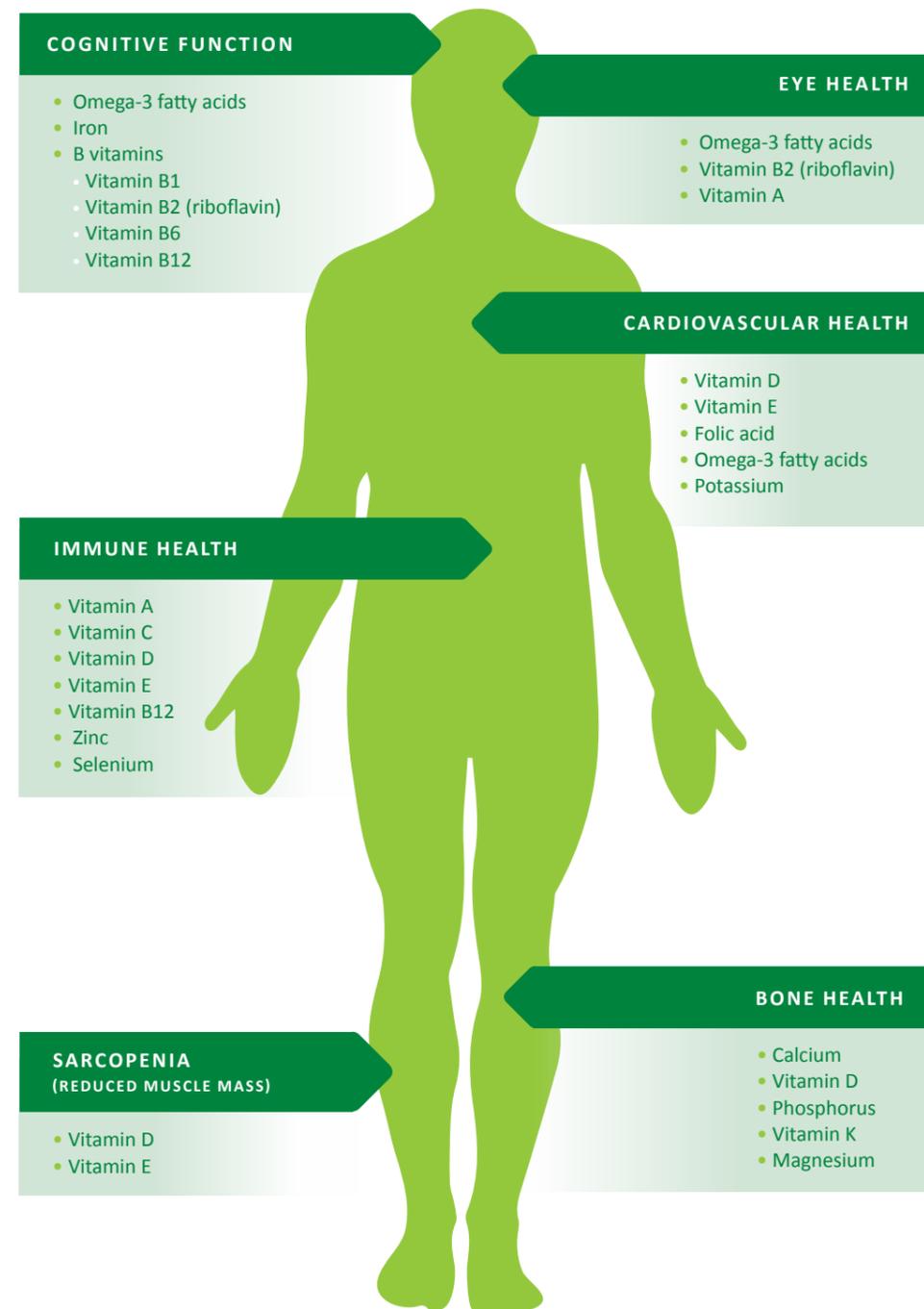
**“It may seem as though there are many health concerns to worry about in later life but, in reality, it is possible to utilise a healthy diet, along with vitamin and mineral supplements, to help to prevent common health worries. It is a pity that many people don’t seem to be considering protecting certain areas of their health, such as bone health and cardiovascular health, in their middle years, whilst they still can. It is paramount to take a preventative proactive approach to these diseases, which have the potential to blight older age, or worse still, to prevent you reaching it at all.”**

SECTION 4:

# Time for action

Experts agree that a proactive approach to nutrition in your middle years is the best way to grow old healthily, but with so much advice available, it's understandable for people to feel overwhelmed by too much information.

Here we chart the health areas of concern for the middle years and the vitamins and minerals required to help support them:



## SUPPORTING COGNITIVE FUNCTION

### Why is it a concern?

Cognitive skills tend to decline with age, with studies revealing that some aspects of cognitive function begin to decline as young as age 45<sup>18,19</sup>. Measurable amounts of decline in men and women from 45 years were found across verbal and mathematical reasoning, short-term verbal memory and verbal fluency<sup>20,21</sup>. Experts now believe that adverse cognitive outcomes such as dementia are considered to be the result of long-term processes over at least 20 or 30 years<sup>22</sup>.

### What can we do?

To help protect against age-related brain decline we need to make sure that our diet is rich in the nutrients required to support cognitive function.

**Omega-3 fatty acids** – have a range of benefits for cognitive function. They can help to reduce levels of LDL cholesterol in the body<sup>23,24</sup> reducing furring up of the arteries, which can lead to an increased risk of a heart attack or stroke<sup>25</sup>. The essential acids also help with brain memory and performance<sup>26</sup> and have anti-inflammatory actions<sup>27</sup>. Symptoms of deficiency include poor memory, mood swings or depression<sup>28</sup>

**Iron** – is needed to help support cognitive function<sup>29</sup>. It is a key factor in the making of neurotransmitters – chemicals affecting neuron signalling including dopamine, serotonin and norepinephrine<sup>30</sup> and is also required for myelin synthesis and maintenance<sup>31</sup> which is essential for the nervous system to function

**B vitamins** – help to reduce cognitive decline – studies not only show that patients with Alzheimer's often have low levels of B vitamins, but also that supplementation of B vitamins can improve memory and slow the progress of brain atrophy<sup>32</sup> (the loss of neurons and connections between them)

**Vitamin B1** – is essential for the transmission of certain types of nerve signals between the brain and spinal cords<sup>33</sup>

**Vitamin B2 (riboflavin)** – a low biomarker status of riboflavin is a predictor of cognitive decline<sup>34</sup>

**Vitamin B6** – a low status is associated with greater risk of cognitive decline<sup>35,36</sup>

**Vitamin B12** – shown to slow brain shrinkage by 30%<sup>37</sup>, whilst low levels have been linked to poor performance on brain function tests<sup>38,39</sup>

**Dr Emma Derbyshire says:**

“A nutrient-rich diet is the simplest way of helping to reduce the risk of cognitive decline in later years, and omega-3 fatty acids along with certain vitamins and minerals such as iron and B vitamins are vital for protecting brain function and are found in numerous everyday food items. For example, to meet the health recommendations for omega-3 fatty acids, we would only need to eat one portion of oily fish each week”.





## BONE HEALTH

### Why is it a concern?

Osteoporosis, the breaking down of bones as we age<sup>40</sup>, affects three million people in the UK<sup>41</sup>, with 42% of sufferers in daily pain and feeling socially isolated. One of the most common first signs of osteoporosis is hip fracture; these take up 1.5 million hospital beds every year and cost the NHS and social care £1 billion<sup>42</sup>. The total amount of bone for women peaks between 25 – 30 years and from this point bone is lost each year<sup>43</sup>. Bone loss rapidly increases after menopause as the decline of oestrogens lead to an increased bone turnover, a decrease in bone mineral density and an elevated fracture risk<sup>44</sup>. Men are also affected, but it usually starts later and progresses slower<sup>45</sup>.

### What can we do?

Dr Carrie Ruxton says:

“It is important to protect bones from a young age, which is why it is recommended that everyone aims to have a diet rich in calcium, vitamin D, phosphorus, vitamin K and magnesium.”

**Calcium** – is crucial for building and maintaining strong teeth and bones<sup>46,47</sup>

**Vitamin D** – is essential to assist the body in the absorption of calcium<sup>48</sup> and to help prevent falls<sup>49</sup>. It is difficult to get enough vitamin D from diet alone, therefore a daily dose of sun, in the spring and summer helps to increase our vitamin D levels. During dark autumn and winter months the sun does not get high enough in the sky to stimulate vitamin D manufacture in the skin. In order to protect bone, and muscle health, Public Health England recommends that people consider taking a daily supplement containing 10 micrograms of vitamin D in autumn and winter and that at risk groups (including pregnant and breastfeeding women, those with little skin exposure, children aged under five years, and people from ethnic minority groups), should supplement year-round<sup>50</sup>

**Phosphorus** – is essential for bone health. Calcium, which provides bones and teeth with strength, needs to be combined with phosphorus to become stable before it can be effective<sup>51</sup>

**Vitamin K** – is required for the formation of the proteins that play a crucial part in the maintenance of healthy bones and teeth<sup>52</sup>

**Magnesium** – is required for the formation of bones<sup>53</sup>

## EYE HEALTH

### Why is it a concern?

From the age of 40 onwards, it is expected that most of us will wear spectacles for reading<sup>54</sup>, with the strength of glasses required increasing as we age. Age-related macular degeneration (AMD) affects more than 600,000 people in the UK<sup>55</sup> and tends to begin around the age of 50. It is estimated that by 2020 that figure will rise, with 700,000 adults living with late-stage AMD. However, there is compelling evidence that supplements help stabilise eye health as we age, with the long-running Age Related Eye Disease Study (AREDS) reporting that, “high levels of antioxidants and zinc significantly reduce the risk of advanced age-related macular degeneration.”<sup>56</sup>

### What can we do?

A 2012 study found that vision improved by taking 1000mg of DHA a day for 90 days<sup>57</sup>, and a combination of essential fatty acids and antioxidants reduced the levels of inflammatory chemicals that are associated with dry-eye disorders<sup>58</sup>.

**Omega-3 fatty acids** – help to reduce dry eyes<sup>59</sup>

**Vitamin B2 (riboflavin)** – is essential for maintaining eye health<sup>60</sup>

**Vitamin A** – is crucial for good eyesight, including the normal function of the retina and visual adaptation in darkness<sup>61</sup>



## CARDIOVASCULAR HEALTH

### Why is it a concern?

Cardiovascular disease is responsible for approximately 42,000 deaths of under-75s in the UK each year<sup>62</sup>, however it is important to note that cardiovascular health can be supported by a variety of nutrients.

### What can we do?

Several vitamins play a key role in maintaining cardiovascular health, and a nutrient-rich diet is essential for maintaining a healthy cardiovascular system.

**Vitamin D** - is responsible for supporting heart function. A lack of vitamin D is associated with heart failure<sup>63, 64</sup> and daily doses have been shown to have an effect on the elasticity of blood vessels<sup>65</sup>. This may be one of the key reasons low levels of vitamin D are associated with an increased risk of CVD.

**Vitamin E** – is an antioxidant that helps neutralise free radicals in the body that can be potentially damaging<sup>66</sup>. It is especially important for maintaining a healthy heart, circulation, nerves, muscles and red blood cells<sup>67</sup>

**Folic acid** – plays a central part in the formation of red blood cells<sup>68</sup>. Folic acid, vitamin B6 and vitamin B12 have also been found to reduce blood levels of homocysteine, an amino acid linked to an increased risk of cardiovascular disease<sup>69,70</sup>

**Omega-3 fatty acids** – play a crucial role in cardiovascular health. They help lower cholesterol, protect against abnormal heart rhythms and the build-up of plaque in arteries and can also lower blood pressure and reduce inflammation<sup>71,72,73,74,75,76</sup>

**Potassium** – plays a pivotal role in regulating the electrical activity of the heart, and reducing the risk of strokes<sup>77,78</sup>



## SARCOPENIA – REDUCED MUSCLE MASS



### Why is it a concern?

From as early as our 30s, we start to lose skeletal muscle mass and strength, with physically inactive people losing as much as 3-5% each decade. This age-related disease, known as sarcopenia, speeds up at around the age of 75, and increases the likelihood of falls and fractures in older people.

### What can we do?

The nutrients required for healthy muscle include vitamin D, which reduces the risk of falls in older adults<sup>79</sup>, and vitamin E. Sarcopenia is also associated with macronutrient malnutrition<sup>80</sup> so it is crucial to watch protein and calorie intakes in order to sustain muscle mass.

**Vitamin D** – is important for muscle growth, development and function<sup>81</sup> and, when combined with calcium, reduces the risk of falls in older adults<sup>82</sup>

**Vitamin E** – is important for maintaining muscles. Research has found that it is essential to repair plasma membranes of cells, such as muscle cells, which tear from just being used<sup>83,84</sup>

## IMMUNE HEALTH



### Why is it a concern?

The immune system, an intricate network of cells, tissues and organs, weakens with age<sup>85</sup>. As we age, our bodies produce fewer immune cells and existing immune cells become less able to communicate with each other, meaning they react slower to harmful organisms<sup>86</sup>.

### What can we do?

Several nutrients play a vital role in maintaining our immune systems.

**Vitamin A** – is essential for effective functioning of the immune system<sup>87,88</sup>

**Vitamin C** – is an antioxidant that helps protect cells from free radicals, thus supporting the immune system<sup>89</sup>

**Vitamin D** – is an influencer in both the innate and adaptive immune responses, with deficiency increasing the risk of auto-immune diseases and infections<sup>90</sup>. Laboratory tests show that vitamin D arms and activates our immune systems T cells<sup>91</sup>

**Vitamin B12** – is crucial for the functioning of the immune system<sup>92</sup>

**Zinc** – activates the T cells that fight infection<sup>93</sup>, supporting basic cellular functions, helping to stabilise cell membranes<sup>94</sup> whilst also acting as an antioxidant

**Selenium** – helps to protect the body's cells from damage, whilst maintaining its defence system<sup>95</sup>

### Dr Carrie Ruxton says:

“It’s a good idea to check in with your pharmacist or healthcare professional about your diet and lifestyle to see if there are key nutrients you may be missing and what actions you can take to achieve a healthy balanced diet and reach recommended nutrient intakes.”

## SECTION 5:

# The role of supplements

We are most likely to hit our recommended level of nutrients, called the Reference Nutrient Intake (RNI), if we follow Public Health England’s Eatwell Guide. This is designed to ensure a healthy, balanced diet that is filled with essential vitamins and minerals<sup>96</sup>.

However, there is a significant gap between current government advice and the present UK diet. Furthermore, the limited sunlight all year round in the UK makes reaching vitamin D levels a challenge. The latest National Diet and Nutrition Survey (NDNS) shows that around one fifth of adults aged 19 to 64 years had low blood levels of vitamin D<sup>97</sup>. Therefore, along with a healthy, balanced diet supplementation has a key role to play and can help us reach our recommended intakes. Public Health England now recommends vitamin D supplementation<sup>98</sup>, as previously mentioned.

**Recent research<sup>17</sup> from HSIS revealed that more than one third of those surveyed (34%) worry that they may not be getting the recommended amount of vitamins and minerals needed, yet one in five (19%) are not doing anything about it.**

Dr Carrie Ruxton says:

“It can be challenging to obtain all the nutrients you need from food sources alone, so topping up your diet with a daily multivitamin and multimineral plus a fish oil supplement can help plug dietary gaps.”

The current UK recommendation is to eat at least one portion (140g) of oily fish per week. However, the latest data from the NDNS show that mean consumption of oily fish is well below the recommendation, being just 54 to 87 grams per week for adults.

Red meat is a great source of iron, essential for the formation of haemoglobin – the substance that transports oxygen around the body, yet worryingly, NDNS data reveal that 27% of women aged 19 to 64 are getting less than the LRNI of the mineral. This high-risk group is eating an average of just 47 grams of red meat (cooked weight) per day, a third less (33%) than the average daily consumption of 70 grams a day<sup>99</sup>.

While selenium is crucial for the body’s immune system, NDNS data have also shown that nearly half (46%) of females aged 19 to 64 years fall below the LRNI for this nutrient, which rises to 52% of women aged over 65 years. Men are also low, with more than 26% of those aged 19 to 64 years falling short which rises to 34% of those over 65. UK adults are also falling below the LRNI for vitamin A (essential for eye and immune health), riboflavin/vitamin B2 (crucial for cognitive function, energy production, and eye health), folate (important for cardiovascular health, the formation of red blood cells, and neural tube development), calcium (necessary for bone and nerve health) and magnesium (necessary for bone health).

**Due to the range of shortfalls, topping up the diet with a daily multivitamin and mineral plus an omega-3 supplement will help to plug potential dietary gaps and reach recommended levels of key nutrients necessary to support healthy ageing.**

# Conclusion

There is an ongoing demographic shift in the UK towards an ageing population but health during older years should not be taken for granted or left to chance.

Good nutrition is a foundation for good health and we can help future-proof our wellbeing for years to come by taking a preventative and holistic approach by addressing our health and nutrition in our middle years.

Alongside the health impact on individuals, there is also a large economic effect with malnutrition costing the UK an estimated £7.4 billion each year<sup>100</sup>.

Dr Carrie Ruxton says:

“Having a healthy, balanced diet rich in key nutrients is an easy step to support healthier ageing, combined with regular exercise. The concern, however, is that studies have found that UK adults are missing out on optimal intakes of essential nutrients, many of which could target the consequences of ageing. Taking a daily multivitamin, multimineral plus a fish oil omega-3 supplement can help address nutrient gaps.”

“As experts now believe that conditions, such as dementia, are the result of long-term processes over at least 20 to 30 years<sup>101</sup>, it is essential that UK adults take action as early as possible – ideally in their 30s - to ensure they can stay healthier as they age.”

Dr Emma Derbyshire adds:

“Encouraging dietary change is the ideal way forward. However, as this report has highlighted, a range of nutritional shortfalls are evident. In these cases, food supplements have a role in helping to top up vitamin and mineral intakes to ensure that people in the UK are reaching their recommended intake levels.

“These days, in the era of preventative medicine, we can also look into taking health into our own hands in order to prevent disease and disability. So reflect on your diet to see if it’s as balanced as it could be. You could also speak to a healthcare professional such as a pharmacist if you have any particular concerns about dietary shortfalls that you may have. Addressing this sooner rather than later will also help you to put your best foot forward at living a healthier life as you age.”

““ food supplements have a role in helping to top up vitamin and mineral intakes to ensure that people in the UK are reaching their recommended intake levels ””



## VITAMINS AND MINERALS, WHERE TO FIND THEM, AND THEIR NUTRIENT REFERENCE VALUES:

FAT-SOLUBLE VITAMINS	
Vitamin A	Found in oily fish, egg yolk, dairy, and orange and yellow vegetables. EU NRV 800mcg.
Vitamin D	Found in oily fish, eggs, fortified dairy foods and red meat. It is difficult to get enough vitamin D from diet alone, therefore a daily dose of sun helps to increase our vitamin D levels. In order to protect bone and muscle health, Public Health England recommends that people consider taking a daily supplement containing 10 micrograms of vitamin D in autumn and winter and that at risk groups, including pregnant and breastfeeding women, those with little skin exposure, children aged under five years, and people from ethnic minority groups, should supplement year-round <sup>102</sup> .
Vitamin E	Found in seed oil, olive oil, muesli, nuts and leafy green vegetables. EU NRV 12mg.
Vitamin K	Found in kale, spinach, potatoes, soya beans and liver. EU NRV 75mcg.
FATTY ACIDS	
Omega-3 fatty acids	Found in oily fish, red meat, eggs and fortified dairy products. The UK’s Scientific Advisory Committee on Nutrition (SACN) recommends 400mg per day of EPA (eicosapentaenoic acid) plus DHA (docosahexaenoic acid) – the two main omega-3 fatty acids found in oily fish and fish oil.
WATER-SOLUBLE VITAMINS	
Folic acid	Found in fortified foods, including breakfast cereals, Marmite, Bovril and fat spreads. EU NRV 200mcg.
Vitamin B1	Found in brown rice, peas, eggs and pork. EU NRV 1.1mg.
Vitamin B2 (riboflavin)	Found in fortified breakfast cereals, milk and eggs. EU NRV 1.4mg.
Vitamin B6	Found in liver, pork, bananas and wholemeal bread. EU NRV 1.4mg.
Vitamin B12	Found in milk, yoghurt, mushrooms, nuts and meat. EU NRV 2.5mcg per day.
Vitamin C	Found in oranges, strawberries, kiwi, kale, broccoli, potatoes, tomatoes and peppers. EU NRV 80mg.
MINERALS	
Calcium	Found in dairy foods, nuts, seeds, and green leafy vegetables. EU NRV 800mg.
Magnesium	Found in green leafy vegetables, peanuts, unrefined cereals and wholemeal bread. EU NRV 375mg.
Phosphorus	Found in red meat and poultry, potatoes, eggs, nuts, milk products and grains. EU NRV 700mg.
Potassium	Found in fruit, vegetables and beans. EU NRV 2000mg.
TRACE ELEMENTS	
Iron	Found in red meat, liver, kidney, eggs and leafy green vegetables. EU NRV 14mg.
Selenium	Found in meat, eggs, fish and Brazil nuts. EU NRV 55mcg.
Zinc	Found in seafood, poultry, red meat and fish. EU NRV of zinc 10mg.

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