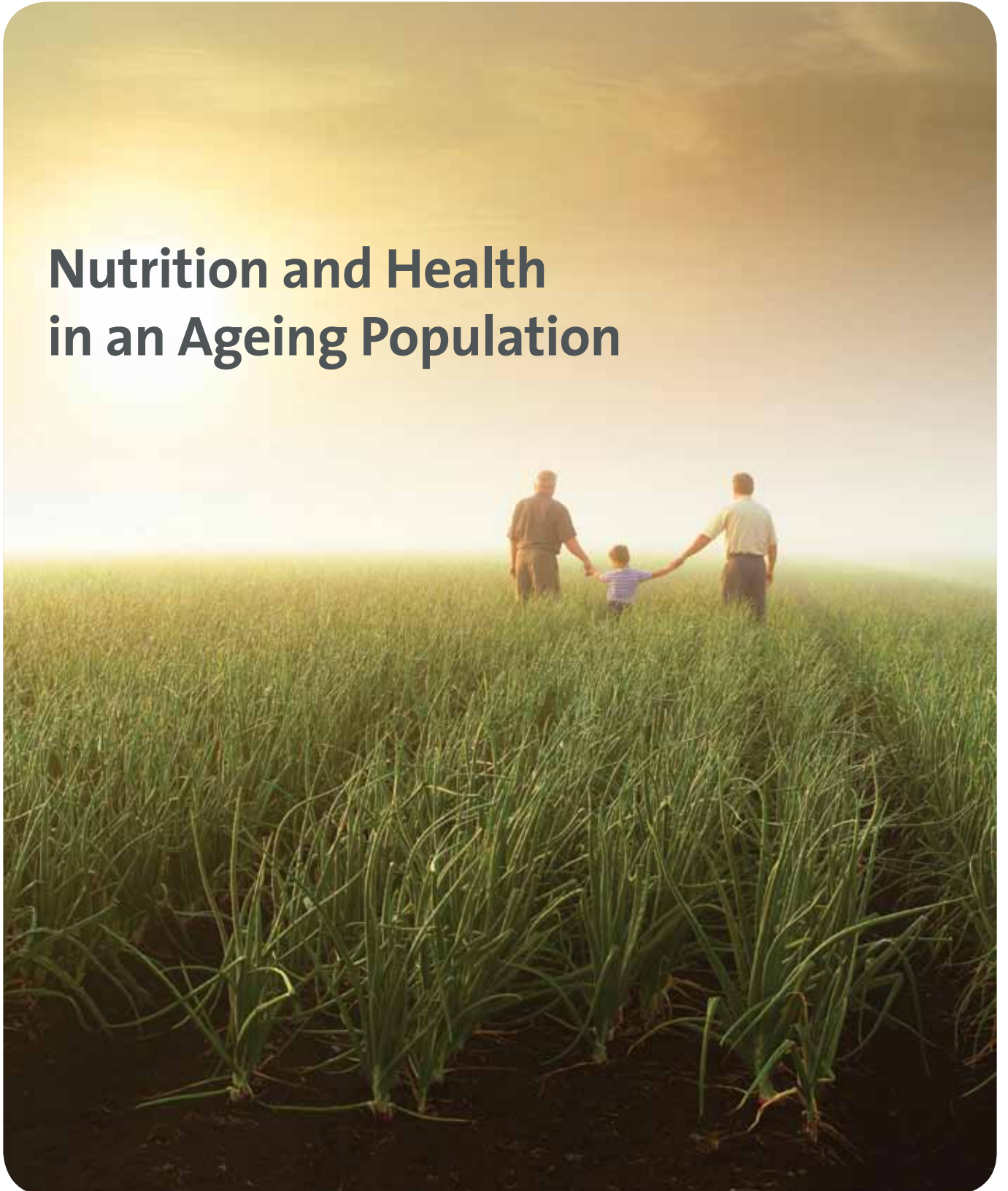




# UCD Institute of Food and Health Policy Seminar Series

MAPPING FOOD AND HEALTH TO THE PUBLIC POLICY LANDSCAPE

## **Nutrition and Health in an Ageing Population**



## Foreword

The UCD Institute of Food and Health intends to translate its research activity into both the economic and policy spheres of Irish Society. In order to advance issues of major public health significance, we have initiated a series of policy seminars in which we will bring together key international and Irish opinion formers.

In the first of our policy seminars we addressed malnutrition in older people in Ireland, which regrettably, is largely ignored within the health policy landscape. Malnutrition has far reaching repercussions for individuals, society and our health service, yet is under recognised, under-detected and under- treated. What has become clear across Europe is that the economic burden of malnutrition is hugely significant, twice that of the costs of obesity, yet attracts far less attention.

As our population grows older, the issue of malnutrition in this age group will have even larger public health consequences, unless a coordinated action plan is put in place. In June 2009 Ireland, along with all other EU Member States, became a signatory of the Prague Declaration. This statement acknowledges the significance of malnutrition as an urgent public health (and economic) issue, and undertakes a commitment to appropriate interventions.

In this report, the papers presented on the seminar day are summarised. A video cast of the talks can be downloaded from the UCD Institute of Food and Health website ([www.ucd.ie/foodandhealth](http://www.ucd.ie/foodandhealth)). I would like to thank all our speakers, the Chair, Dr Dermot Power, and the invited audience for their contributions to the seminar. A special thank you to the Minister for Health and Children, Mary Harney TD, who took the time from her busy schedule to open our inaugural meeting on an issue of such public health significance. We hope that this seminar and document serve to highlight the issue of malnutrition and provide a strategic framework for taking future action.



Professor Mike J Gibney

Director

UCD Institute of Food and Health



## Executive Summary

Nutritional issues play a key role in a wide range of age-related diseases and debility. The potential for good nutrition and physical activity programmes to improve health outcomes in later years are so far under-exploited, yet are urgently called for, as the Irish population ages.

Within the next 40 years, approximately one in four Irish people will be over 65 years of age compared with less than one in nine currently. Without the implementation of strategies to address nutritional issues affecting this age group, such a demographic shift will pose enormous challenges for Irish society and its healthcare system.

Although still under-detected and under-treated, malnutrition has been recognised by Governments across Europe, including Ireland, as an urgent public health issue that needs to be addressed, although a national action plan has yet to be put in place. Whilst not confined to older people, the risk of malnutrition increases with age and is a significant cause of potentially preventable morbidity and mortality in those aged 65 years and older, compromising quality of life; increasing dependency and the need for hospitalisation or long term care.

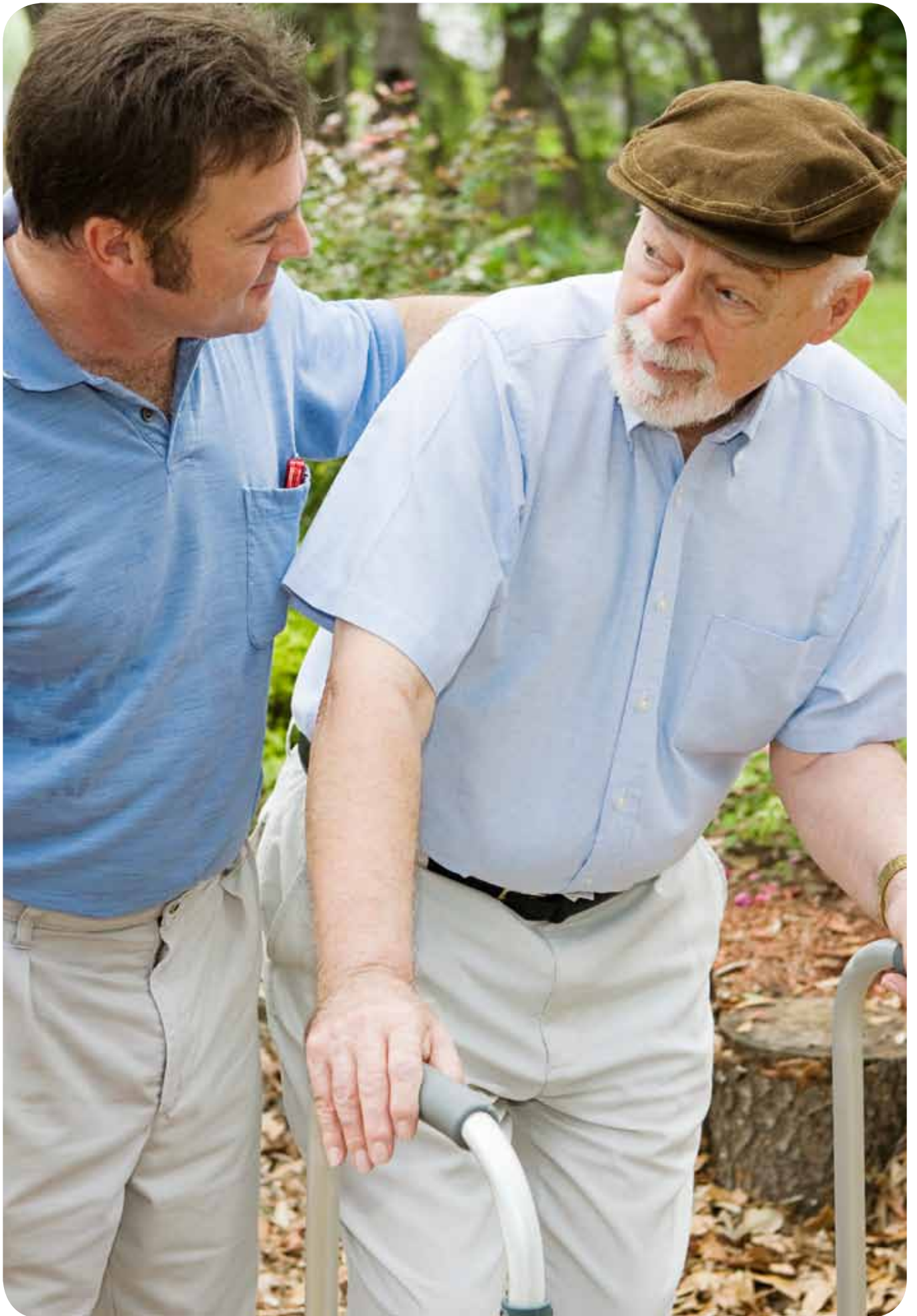
Assuming a similar prevalence to that found in older age groups in the UK, as many as 70,000 Irish people over 65 years of age may be either malnourished or at significant risk of malnutrition. To date, however, no national nutrition survey has been conducted in older people to confirm this number. Collection of such data is essential to determine an accurate picture of the current scale of malnutrition, and will assist in helping to measure the impact of screening and other interventions developed as part of a national strategy.

Arising from an increase in healthcare utilisation and the need for long term care is a high economic burden. The cost of malnutrition in Ireland is estimated to exceed €1.5 billion per annum, representing more than 10% of the healthcare budget. Unless addressed, these costs might be predicted to rise as our population ages.

Given that the cost of malnutrition and its co-morbidities are so substantial, even small percentage reductions in the scale of malnutrition can deliver large overall savings. Analysis of the cost-effectiveness of a screening programme including oral nutritional supplements has shown them to be highly cost effective. The development of econometric models, predicting cost savings in an Irish situation, would ultimately help to direct budgetary policy.

Lack of awareness of the general public and health professionals about the significance of weight loss and its impact in older people, is a significant barrier to the implementation of a national programme to combat malnutrition and must be addressed.

In any public health programme to promote optimal health and nutritional status in older persons, improving physical activity must be included; this is of paramount importance in a physically inactive society, and can also help achieve greater functional benefits when combined with nutritional support in the treatment of those with disease related malnutrition.



## Key Recommendations

The key recommendation from the seminar discussion was the establishment of a national malnutrition task force with responsibility for the development and implementation of a well coordinated cross-sectoral strategy aimed at tackling the issues raised within the 2009 Prague Declaration.

Such a task force would ideally be drawn from both Governmental and non governmental organisations including representatives of healthcare professional organisations, voluntary groups and other relevant parties involved in addressing malnutrition in Ireland. In other countries, it is the local society of parenteral and enteral nutrition that takes the lead in this area and it may well be that the newly formed Irish Society of Parenteral and Enteral Nutrition (ISPEN) is the appropriate multidisciplinary body to lead the establishment of this task force.

Based on the recommendations of the Prague Declaration, and the outcome of the forum discussion, it is proposed that the task force would:

- review the data currently available in relation to malnutrition, assess what additional data might be collected and develop a system for monitoring and collecting data on the impact of any national strategy on malnutrition.
- address the lack of any data on the prevalence of malnutrition in free living older people as a matter of priority through the funding of a limited, but highly targeted, national nutrition and dietary survey of free living individuals over 65 years of age.
- ensure that a national screening and intervention programme is implemented across hospital and community settings to identify, treat and monitor those at risk. The programme would be underpinned by suitable protocols and training programmes that are properly resourced and supported. Such a system would need to be incorporated into standards of care, against which healthcare providers and institutions would be held accountable.
- agree a common definition of malnutrition and use consistent methodologies which allow comparison across care settings. As the Malnutrition Universal Screening Tool ('MUST') is already recommended by the Department of Health and Children for use in hospitals and has been validated for use across care settings, it is proposed that this tool be adopted.
- consider as part of its strategy an awareness programme on malnutrition for the general population, highlighting in particular the importance of monitoring, and acting on, unplanned weight loss in older individuals or at risk groups.
- take into consideration the health economic impact of malnutrition and the cost benefits to be accrued from earlier identification and treatment of those at risk with nutritional support, based where necessary on econometric models developed in other countries.
- establish links with international bodies or task forces with similar aims to ensure that learnings and best practices can be adapted and implemented as part of a national strategy, thus avoiding unnecessary duplication of effort or misuse of resources.
- support the recommendation that the current general health promotion guidance on physical activity be replaced with new, evidence based exercise 'prescriptions' for older people, aimed at obtaining greater public health benefits than current guidelines.



## Background

In Ireland in 2010, one person in nine is over the age of 65 years. By 2050, that number will have risen to one in four (table 1). Over the same 40 year period, the number of people aged 80 years or older will increase from less than 3% to nearly 10%. Economically this shift in population age will also have a dramatic effect, as 40% of citizens will be beyond retirement age as compared to 17% at present.

TABLE ONE: Estimated numbers of the Irish population in older age groups in 2010 and 2050<sup>1</sup>

Age Groups	Estimated numbers in each age group (%)	
	2010	2050
65 years or older	11	24
80 years or older	3	8

With this ageing population comes more illness and disability, yet much of this illness can be minimised through good nutrition and physical activity. In particular, diet-related diseases that affect our bones, our sight, our memory and our muscles will dramatically increase in the older population and significantly contribute to a decline in quality of life in later years. This decline will be exacerbated by the adoption of a progressively sedentary life style, which is common to many industrialised countries around the world.

### The Prague Declaration

The scale and cost of malnutrition in older people was recognised by the EU Ministers for Health when, under the 2009 Czech Presidency, they signed the Prague Declaration committing EU member states to addressing this problem<sup>2</sup>. It is estimated that some 5-15% of the EU population suffer from some form of malnutrition. This rises to 40% among those admitted to hospital and 60% for those in residential nursing homes, most of whom are older citizens. The declaration calls on member

states to initiate mandatory screening for malnutrition; to develop guidelines on the treatment and management of age related malnutrition; and to develop national nutrition care plans:

*“Malnutrition, including disease-related malnutrition, is an urgent public health and health care problem in Europe. Appropriate actions need to be taken to prevent malnutrition from continuing to compromise the quality of life of patients, causing unnecessary morbidity and mortality and undermining the effectiveness of our health care systems across Europe.”*

The European Parliament resolution of 25 September 2008 on the White Paper on nutrition, overweight and obesity-related health issues (2007/2285(INI))<sup>3</sup>, notes that:

*“malnutrition, which particularly affects older people, costs European healthcare systems similar amounts as obesity and overweight”.*

The key recommendations of the Prague Declaration are:

Public Awareness and Education

Guideline Development and Implementation

Mandatory Screening

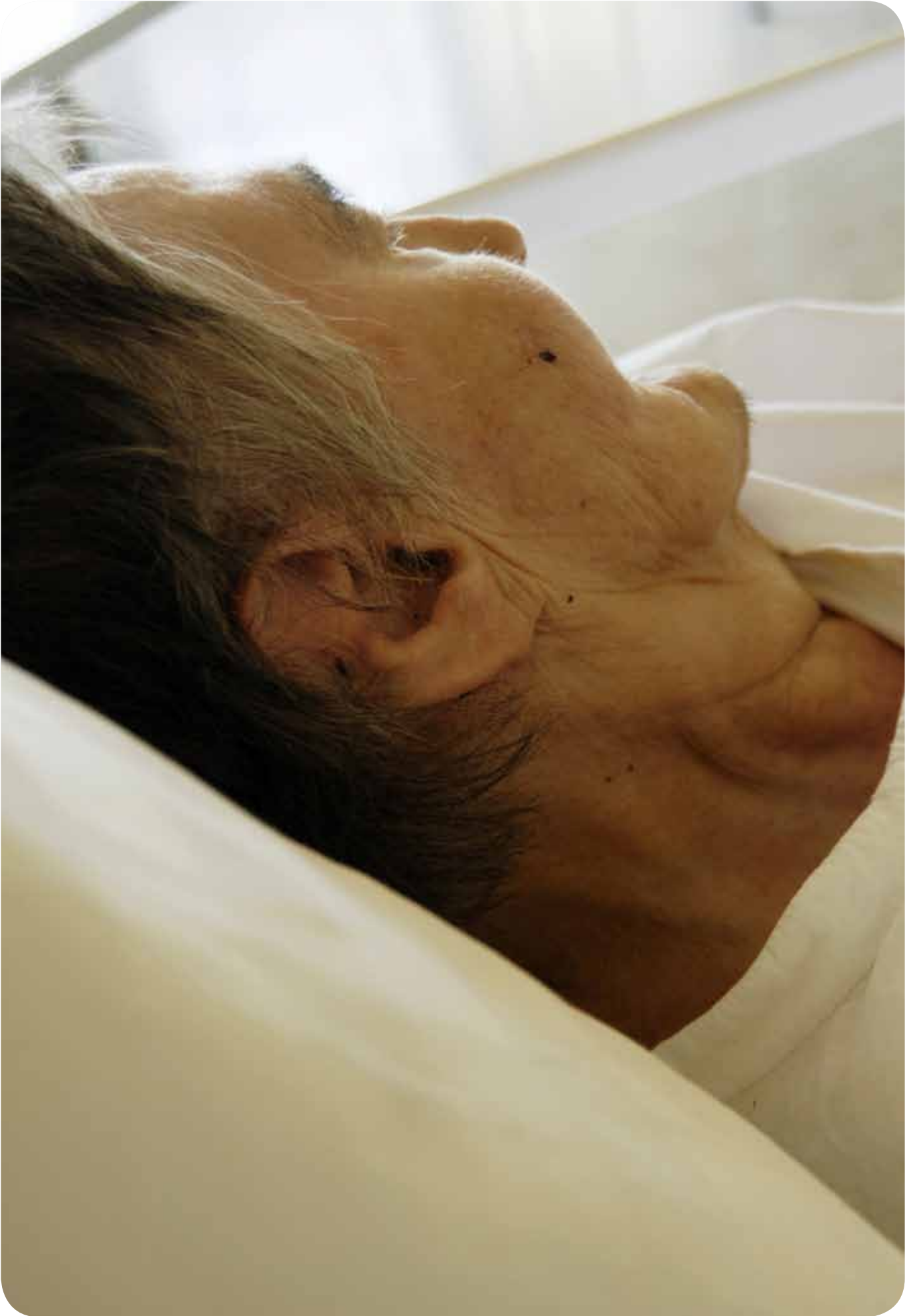
Research on Malnutrition

Training in Nutritional Care

At present, Ireland does not have a cohesive plan to address the issues raised in this declaration. The purpose of the policy workshop was to foster discussion of the topic and to propose a way forward to begin to address the recommendations of the declaration.

- 1 Eurostat (2008) Statistics in focus: Population and social conditions
- 2 [www.european-nutrition.org/files/pdf\\_pdf\\_66.pdf](http://www.european-nutrition.org/files/pdf_pdf_66.pdf)
- 3 [www.europarl.europa.eu/oel/FindByProcnum.do?lang=en&procnum=NI/2007/2285](http://www.europarl.europa.eu/oel/FindByProcnum.do?lang=en&procnum=NI/2007/2285)





# Nutrition and Health Challenges in an Ageing Population

PROFESSOR BRUNO VELLAS, DEPARTMENT OF GERIATRIC MEDICINE, UNIVERSITY OF TOULOUSE

## KEY POINTS

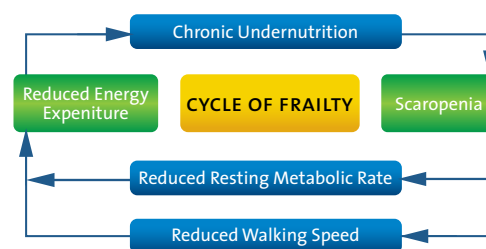
1. Thirty percent of older people are 'frail' and at high risk of age-related disease in which malnutrition is a factor.
2. Muscle wasting (sarcopenia) is a serious cause of loss of independence and disability.
3. Cognitive decline is more likely to affect the frail.
4. Movement and good nutrition are critical for successful ageing.

Nutrition is one of the most important factors in the development of age-related diseases. These include diabetes, vascular diseases, cancer and osteoporosis. More recently these age-related diseases have been extended to include sarcopenia, frailty, cognitive decline and Alzheimer's disease.

Approximately 60% of the older population can be described as healthy, 30% frail, and the remaining 10% dependent, and the needs of these three groups vary. Healthy older people are more likely to get fractures since they are relatively mobile and independent, and thus more likely to encounter falls. Because they live longer they are more likely to develop cognitive impairment and, again because they are not frail, many will actually be overweight and obese and suffer the major morbidities of obesity such as type 2 diabetes. The 30% of the population who are frail have both the risk of becoming dependent and the opportunity to build strength and return to the ranks of the healthy older people. For the remaining 10% or so that are dependent, living in nursing homes or cared for at home, the main nutritional risk is protein energy malnutrition (PEM).

The three main nutritional issues in older people are frailty and sarcopenia, cognitive decline and malnutrition related to dependency. The cycle of frailty starts with chronic malnutrition leading to muscle loss known as sarcopenia. This in turn has two consequences: a reduced resting metabolic rate as a result of a loss of lean body mass, and a reduced mobility because of loss of muscle mass and quality. Consequently there is a reduction in energy expenditure leading to reduced appetite thus completing the cycle of chronic malnutrition (Fig 1).

FIGURE ONE: The Cycle of Frailty



The clinical features of frailty include:

- Sarcopenia
- Weight loss/undernutrition
- Decreased strength, exercise tolerance
- Slowed motor processing
- Decreased balance
- Low physical activity
- Cognitive vulnerability
- Increased vulnerability to stressors

This progressive functional decline in frail elderly is associated with increasing dependency and co-morbidities, leading to hospitalisation and institutionalisation.

## Sarcopenia

The loss of muscle associated with sarcopenia begins when a person reaches about 50 years of age where the rate of loss is about 1-2% per year. By 60 years, about 33% of women and about 66% of men will have reduced muscle mass. After 70 years, about 10 to 30% of the population will have sarcopenia. A recent EU-US consensus on sarcopenia identified a simple test to detect its presence. It begins with a simple pace test to determine if the person can walk 4 metres in 4 seconds. If the test is failed, sarcopenia can be confirmed using a DEXA (Dual Energy X-ray Absorptiometry) scan.

## Cognitive Decline

Globally, every seven seconds a new case of dementia is diagnosed. At present there are 30 million cases of Alzheimer's disease worldwide, with 4.6 million new cases each year. In Ireland, there are approximately 44,000 cases of Alzheimer's disease affecting 55,000 carers.

Dementia is a continuum, ranging from mild cognitive impairment that can be seen from around the age of 40 years, through to dementia including Alzheimer's disease at the other end of the spectrum. Longitudinal studies show that among those who begin to develop dementia, approximately half will progress to Alzheimer's disease.

It has been demonstrated that cognitive decline can be delayed through physical activity<sup>4</sup> and cognitive training<sup>5</sup>. Low intake of many nutrients has been shown in observational studies to be associated with higher risk for Alzheimer's disease, notably folic acid, vitamin B12 and long chain n-3 fatty acids of marine origin. Long-term intervention studies have shown that adherence to a Mediterranean diet reduces the risk of developing dementia. When these subjects also engaged in moderate levels of regular physical activity, the effect of the exercise was additive to the effect of diet alone.

## Protein Energy Malnutrition (PEM)

PEM is common among dependent older people and a rapid and accurate means of assessing this form of malnutrition is the Mini Nutritional Assessment tool (MNA)<sup>6</sup>. At the Toulouse Gerontopole, data have been collected from a large number of studies using the MNA tool to ascertain the level of malnutrition in dependent older people. These findings are summarised in the table 2 below.

## Summary

Nutrition plays a key role in the development of many age-related diseases, with potentially devastating consequences for individuals and significant impact on health resources. Good nutrition combined with physical exercise, is essential to successful ageing. Nutrition therapy can interrupt the cycle of malnutrition in frail older adults and improve nutritional status and outcomes in dependent patients.

TABLE TWO: Nutrition status of older people using the Mini Nutritional Assessment tool (MNA)

Number of studies	Total number of subjects	Location	Nutritional status (%)		
			Malnourished	At risk of malnutrition	Normal
34	43,708	Community	3	26	71
36	6,130	Home care & outpatient	9	43	47
66	14,638	Hospital	23	45	32
55	11,397	Institutions	20	48	32

4 Lautenschlager et al (2008). Effect of physical activity on cognitive function in older adults at risk for Alzheimer Disease. JAMA 300:1027-1037

5 Willis et al (2006) Long term effects of cognitive training on everyday functional outcomes in older adults. JAMA 296:2805-2814

6 www.mna-elderly.com

# Malnutrition in our Older Population and the Public Health Consequences

PROFESSOR MARINOS ELIA, INSTITUTE OF HUMAN NUTRITION, UNIVERSITY OF SOUTHAMPTON

## KEY POINTS

1. Disease related malnutrition (DRM) is estimated to affect more than 3 million people in the UK (5% of total population) and 30 million across Europe.
2. Although DRM affects all age groups, older people are at greater risk.
3. More than one in four patients is already malnourished on admission to hospital, with up to 70% weighing less at discharge.
4. At any time, nearly 98% of malnourished patients are living at home or in community care settings, highlighting the need for a coordinated approach to screening and intervention.
5. In Ireland, there has been no large scale study to establish the prevalence of malnutrition; this should be a priority if malnutrition is to be effectively tackled.

Malnutrition is a common clinical and public health problem, which has adverse effects on every system of the body and on physical and psychological function. Malnutrition is both a cause and consequence of disease, delaying recovery from illness and increasing the risk of complications. This is at enormous cost to individuals, health care systems and society.

Of the more than 3 million people at risk of malnutrition in the UK, 1.3 million (44%) are estimated to be 65 years of age or more, despite the fact that this group accounts for just 16% of the general population<sup>7</sup>. Living in a socially disadvantaged area puts individuals at further increased risk. However, malnutrition crosses all ages and social classes, remaining largely under-recognised and under-treated.

From an EU perspective, malnutrition is a human rights issue and a patient safety issue in both hospitals and care homes, as underlined by the Prague Declaration<sup>8</sup>. The EU wide costs

of malnutrition have been estimated to be as great as the costs of both overweight and obesity together (approximately €170 billion).

There are a number of ways to screen for malnutrition. The 'Malnutrition Universal Screening Tool' ('MUST') is a five-step process including Body Mass Index (BMI), recent unplanned weight loss, and acute disease effect, to generate a score (low risk = 0, medium risk = 1 and high risk = 2 or >2). The 'MUST' has been validated for use in all adults across all healthcare settings allowing continuity of care, and has been shown to be reliable, quick and easy to use<sup>9,10</sup>. In the UK, secondary analysis of the National Diet and Nutrition Survey of Older People using the 'MUST' criteria, indicates that the vast majority of older malnourished people (93%) live in the community, with 5% in nursing homes and 2% in hospitals. The levels of malnutrition existing in the community can be extrapolated from the assessments of those on admission to hospital; in 2008 this figure was estimated to be 28%. In nursing homes, 30-40% of residents were considered to be malnourished. The risk of malnutrition increases with age (the risk increases from 9 to 16% from 65 years to 85 years, respectively).

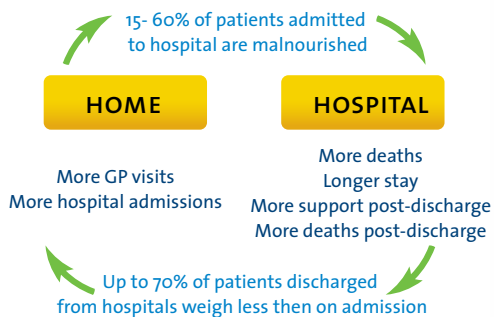
Screening using a validated tool like the 'MUST' should be used in the community with the support of GPs and Public Health Nurses, to improve the links between hospitals and the community. The 2008 Department of Health and Children report 'Food and Nutritional Care in Hospitals,' gave strong support for the use of the 'MUST' in Irish hospitals and there is also strong support for its introduction to community settings, as in the UK<sup>11</sup>.

The consequences of not identifying and treating malnutrition effectively are significant. Studies show that older patients with malnutrition on average have 65% more GP visits, are about 80% more likely to be admitted to hospital, have between 20 and

- 7 Elia M, Stratton RJ. (2009). Calculating the cost of disease-related malnutrition in the UK in 2007. In: Combating malnutrition: recommendations for action. A report from the Advisory Group on Malnutrition led by BAPEN. BAPEN; Report No.: 978 899467 36 5
- 8 Council of Europe - Committee of Ministers. Resolution ResAP (2003)3 on food and nutritional care in hospitals
- 9 Elia M. Screening for malnutrition: a multidisciplinary responsibility. Development and use of the Malnutrition Universal Screening Tool ('MUST') for adults. 2003. Redditch, BAPEN
- 10 Stratton RJ, Hackston A, Longmore D, Dixon R, Price S, Stroud M et al (2004) Malnutrition in hospital outpatients and inpatients: prevalence, concurrent validity and ease of use of the 'malnutrition universal screening tool' ('MUST') for adults. Br J Nutr 92 (5): 799 – 808.
- 11 Department of Health and Children. Food and Nutritional Care in Hospitals: Guidelines for Preventing Under-Nutrition in Acute Hospitals. Dublin: Department of Health & Children; 2009

70% longer hospital stays once there, and are far less likely to be discharged to their own home than a well nourished, age matched patient with a similar diagnosis. This results in a 'malnutrition carousel' (Fig 2), in which the malnourished patient moves between healthcare settings, placing increased demands on both hospital and community health resources. Malnourished patients are also three times more likely to die within 6 months of discharge from hospital. Yet malnutrition is treatable with nutritional interventions shown to be associated with improved clinical outcomes and functional benefits in both hospital and community patients.

FIGURE TWO: The Malnutrition Carousel



Clearly, the breadth of malnutrition as a health issue is too large for one group to be solely responsible for. There needs to be increased awareness among the general public and health care professionals, both in the community and in hospitals. If there is to be any significant progress made in tackling malnutrition, partnerships between government departments and voluntary and professional organisations must be established. A delivery chain of co-ordinated care will ensure there is no unnecessary duplication of effort but consistent messages and better prevention and care of malnutrition.

# Economics of Malnutrition and Nutritional Interventions

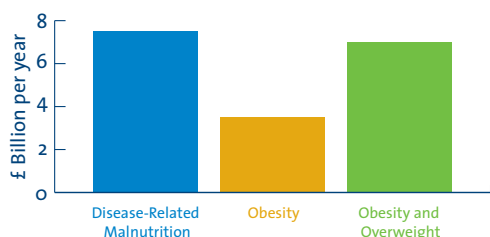
PROFESSOR MARINOS ELIA, INSTITUTE OF HUMAN NUTRITION, UNIVERSITY OF SOUTHAMPTON

## KEY POINTS

1. Disease related malnutrition (DRM) in Ireland is estimated to have cost over €1.5 billion in 2007, representing over 10% of the public expenditure on health and social care.
2. Malnourished patients have more frequent and longer hospital stays; are more likely to require ongoing care after discharge; have more GP and outpatient visits; and have higher prescription costs than well nourished patients, thus driving up healthcare costs.
3. Small percentage cost savings arising from interventions, such as oral nutritional supplements, can result in large absolute cost savings and are therefore justifiable and cost-effective.
4. Ireland needs to take a strategic approach to risk assessment and management of malnutrition, building in protocols for monitoring and evaluation of the effectiveness of interventions.

In the UK, malnutrition was calculated to cost over £13 billion in 2007, representing over 10% of total health and social care expenditure in that year, and almost twice as much as that spent on obesity and its co morbidities (Fig 3). In Ireland, even after adjusting for its younger population relative to the UK, the cost of malnutrition is calculated to have exceeded €1.5 billion, again over 10% of the €13.8 billion health budget that year.

FIGURE THREE: Annual cost of disease-related malnutrition, obesity and overweight in the UK<sup>12</sup>



The higher costs of malnourished individuals can be attributed to the fact that they have more hospital admissions, more out-patient visits, and more GP visits than those who are well nourished (table 3). Because these hospital-related costs are so large, a relatively small percentage cost saving from appropriate interventions can result in a large financial saving.

TABLE THREE: The number of visits or hospital admissions per subject (>65 years) per year<sup>12</sup>

	No Malnutrition*	Malnutrition
GP visits	4.31	7.10
Hospital OP visits	1.02	1.36
Hospital admissions	0.28	0.50**

\* Low risk according to the 'MUST'

\*\* Length of hospital stay increased by >30% in malnourished

Oral Nutrition Supplements (ONS) have been shown to improve health outcomes in a number of controlled trials and also to have cost savings when used in hospitals post-operatively. In an analysis of 34 hospital based studies, ONS reduced mortality from 25% to 19%, reduced complications from 41% to 18%, and reduced the length of hospital stay<sup>13</sup>.

In its guidance on cost saving, the National Institute of Health and Clinical Excellence (NICE) in England identified nutritional support in adults (based on ONS and specialised forms of nutritional support) as the fourth intervention most likely to save money for the NHS. This cost saving was considered to be a conservative estimate.

Cost effectiveness of ONS can be extended to the community setting where they have been shown to increase energy and nutrient intakes among the population at risk of malnutrition. In nursing homes, appropriate nutritional care

12 Elia M, Stratton R, Russell C, Green C, Pang F. (2005). The cost of disease-related malnutrition in the UK and economic considerations for the use of oral nutritional supplements (ONS) in adults. A report by The Health Economic Group of The British Association for Parenteral and Enteral Nutrition (BAPEN). BAPEN: Report No.: 1 899467 01

13 Stratton RJ, Green CJ, Elia M. (2003). Disease-related malnutrition. An evidence-based approach to treatment. Oxford: CABI Publishing (CAB International)

that includes ONS can produce significant benefits, particularly when combined with an exercise programme.

Quality Adjusted Life Years (QALYs) provide an indication of the benefits gained from a variety of medical procedures/interventions in terms of quality of life and survival for the patient. In England, a treatment is considered cost effective if the cost is less than £20,000 to £30,000 and more likely to be recommended by NICE for prescription. When the cost-effectiveness of a screening programme including ONS was analysed, it was shown to be highly cost-effective, particularly given that malnutrition rates in hospitals in the UK are in fact much higher (close to 30%) (table 4).

**TABLE FOUR: Cost-effectiveness (cost per QALY) gained by a screening programme (with supplements), by malnutrition risk and baseline mortality (>65 years)**

	Mortality (60d)	
	3%	5%
Malnutrition		
4%	£9,000	£6,000
6%	£8,000	£5,700
8%	£7,200	£5,200

In the majority of countries, the cost of public health strategies to prevent diseases, such as malnutrition, is a very small percentage of the total expenditure on health. The cost of disease-related malnutrition is very substantial, even based on the most conservative estimates. There is currently no data available for Ireland on the extent of malnutrition in free living older people and only limited data on malnutrition in care settings. Before any prevention strategies can be developed, it is essential that such data are gathered, collated and analysed, to underpin and galvanize these strategies.



# Physical Activity in the Older Population

PROFESSOR GIUSEPPE DE VITO,  
UCD INSTITUTE FOR SPORT AND HEALTH

## KEY POINTS

1. Ageing is associated with a decline in both muscle mass and muscle quality, which combined with a decline in lung and heart function can lead to a significant loss of independent living.
2. Those who are active will be able to maintain a higher level of the activities of daily living than those who are sedentary.
3. Older persons will benefit from aerobic exercise such as brisk walking for three bouts of 10 minutes for 3-5 days of the week. They will also benefit from resistance training in gyms, which will improve muscle mass and quality and will also help with bone health.
4. In any public health programme to promote optimal health in older persons, improving physical activity must be included; this is of paramount importance in a physically inactive society. However, in order to be successful, any physical activity intervention must become part of the normal daily routine in order to guarantee the long term adherence to this regime.

In considering the physiology of older persons in the context of physical activity, it is important to remember that the decline in physiological function will often be confounded by the presence of underlying chronic disease and by a sedentary lifestyle. However, all older individuals, either healthy or where any underlying disease or condition is medically controlled, can benefit from the participation in regular physical activity. A 70-year old person will on average have lost 30-50% of the functional capacity of a younger person at peak fitness. In terms of functional capacity, the focus in older persons should be on muscle and the cardiac systems since any decline in these will greatly affect activities of daily living.

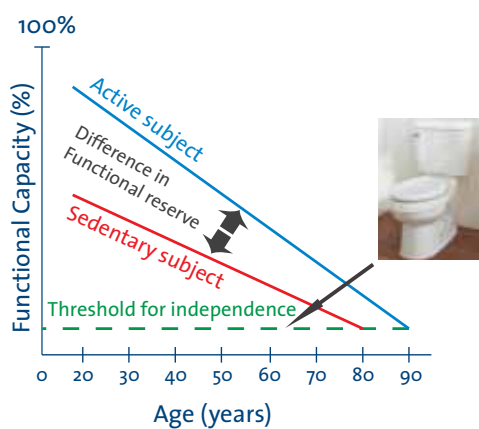
The loss of muscle mass in ageing, also known as sarcopenia, is associated with a decline in muscle quality. There will also be a greater accumulation of fat and connective tissue in the muscle of the older person, and this effectively reduces the true measure of the functional parts of muscle, the muscle fibres. Indeed, in older persons, there is a shift in the type of muscle fibre toward the slow twitch type 1 fibre, which further weakens muscle function, reducing the speed and strength of contraction. The decline in muscle mass and function is not uniformly spread across the body. It is greater in the lower than the upper limbs and the greater decline in muscle function in the legs agrees with findings that in type 2 diabetes, the greatest level of insulin resistance is in the lower part of the body.

Ageing has a greater effect on muscle power than it does on muscle strength. Muscle power is the product of muscle strength and velocity, and thus it is the velocity that declines most with ageing. Thus all activities that require adequate amount of explosive power, such as brisk walking or rising from a sitting position are greatly affected with ageing.

The decline in function of muscle, heart and lungs combine to reduce cardio-respiratory performance and as a consequence of that there is a decline in the Activities of Daily Living (ADL). Because most ADL require a combination of force with power or speed of movement and with cardio-respiratory fitness, it is imperative to preserve these qualities in old age to reduce the risk of disability and loss of independence. Those who maintain a reasonable level of physical activity throughout life will reach the threshold for independence as is illustrated in figure 4 below.



FIGURE FOUR: Physical activity and quality of life through independence



Older persons will continue to benefit from aerobic exercise, improving cardio-respiratory fitness and resistance training, and enhancing muscle mass and muscle quality. In terms of aerobic fitness, the aim should be to accumulate 3 ten-minute bouts of moderately intensive exercising, such as brisk walking or jogging, on 3-5 days per week. Resistance training using weights and other gym devices to strengthen muscles will not only improve muscle quality, but will also improve bone health and these benefits will be observed well into the 9th decade of life.



## Forum Discussion

Professor Mike Gibney, Director of the UCD Institute of Food and Health, opened the discussion by reiterating the key recommendations of the Prague Declaration on malnutrition and posing a number of questions for discussion to the invited audience and panel of speakers.

The Prague Declaration on malnutrition is intended to stimulate EU wide activity in raising awareness of the health consequences of malnutrition, its causes and prevention. What groups are actively engaged in furthering the recommendations of this declaration in Ireland?

It was clear from the discussion that whilst there are a number of local initiatives aimed at tackling malnutrition in older people, there is no national, coordinated and cross-sectoral strategy aimed at early identification and optimal nutritional management of those at risk. There was general agreement that an outcome of the policy workshop should be the establishment of a national, multidisciplinary task force that would advance the recommendations of the Prague Declaration in Ireland and give malnutrition a higher priority, particularly in older people.

What form of national alliance would best meet the needs of that target?

There was widespread support for a national task force to be managed by one single body, although as Professor Elia highlighted earlier, the task force needs to be drawn from both Governmental agencies and voluntary and professional organisations. It was proposed that the newly formed Irish Society for Parenteral and Enteral Nutrition (ISPEN) might be the main driver. This would create a link with the European Society of Parenteral and Enteral Nutrition (ESPEN) which has a major

interest in malnutrition in older persons, and the European Nutrition Health Alliance (ENHA) which championed the Prague Declaration.

The Prague Declaration highlights the need for mandatory screening programmes. How might such a programme be introduced in Ireland, and what are the barriers?

The importance of implementing a national screening programme in both the community and hospitals, using consistent methodologies, was acknowledged as central to tackling the issue and targeting nutritional interventions. However, Dr Power pointed out that a key barrier was that many GPs, nursing homes and hospitals either have no weighing scales or, may not routinely weigh patients on admission or thereafter. This results in a failure to notice or act on any weight loss in older patients. Dr Power also advocated for an awareness programme for the general public about the importance of monitoring weight and acting on unplanned weight loss in older people, otherwise malnutrition would remain under-detected and under-treated.

What information already exists on the scale, causes or impact of malnutrition in Ireland that might inform a strategy to tackle the problem?

It was agreed that there is limited information available on the scale of malnutrition in our older population in Ireland. The Irish Universities Nutrition Alliance (IUNA) has co-ordinated nationally funded surveys of the dietary habits of adults, teenagers, school children, and presently pre-school children. However, similar large scale databases are not currently available for older people. It was therefore proposed that small levels of funding be sought to provide limited, but highly targeted data on malnutrition of free living older individuals in the community,



as the vast majority of those at medium to high risk of malnutrition (93% based on UK data) are in their own home. With regard to establishing prevalence in community and hospital care settings, it was highlighted that members of the Irish Nutrition and Dietetic Institute (INDI) were about to participate, for the first time, in the BAPEN malnutrition screening survey in January 2010 using the 'MUST'. This will provide data from selected wards from approximately 30 hospitals and a smaller number of nursing homes.

How would a programme on the prevention or treatment of malnutrition ensure that all at-risk groups are covered?

Although there is an emphasis on ageing in the Prague Declaration, it is by no means confined to this age group. Other groups, which are at-risk are, infants and young children and those that are disadvantaged from the perspective of social class, education and income. It was agreed that a national strategy aimed at tackling the issue should address malnutrition across all age groups, social classes and in both free living individuals, as well as those in primary and secondary care settings. However, as older people represent a disproportionately higher percentage of those at risk within the Irish population, it should be expected that a task force set up to tackle malnutrition will naturally target its efforts and resources accordingly, thus making those over 65 years of age a priority for initiatives aimed at prevention and implementing effective treatment.

The UCD Institute of Food and Health has as one of its strategic targets, the integration of health economics with food and health studies. In light of the very significant cost of malnutrition, how might we evaluate the economic impact of a national strategy to tackle malnutrition such that it informs policy?

The discussion took account of the decline in national funding for research and advocated the use of data from the UK and other EU countries to create models, which could be populated with any local available data. A task force set up to develop a strategy to tackle malnutrition, would use such econometric models to determine where best to spend the limited funds available and what cost savings might accrue from the implementation of an effective screening and intervention strategy. However, it was also pointed out that estimates of the cost of malnutrition to the health service are so substantial, even small percentage reductions in malnutrition from earlier pick up and treatment interventions, could be expected to deliver large overall savings.

In relation to the promotion of physical activity in the ageing population, are there any such programmes in Ireland and if not, are there examples of activities in other countries we could learn from?

There appear to be no specific programmes promoting physical activity in older people in Ireland, despite the potential of such programmes in helping to maintain independence in older individuals, offering social, health and quality of life improvements. It was underlined by Professor de Vito that new evidence points to the benefits of breaking up exercise for older people into short sessions within the day, and including resistance training alongside aerobic activities. Research at the UCD Institute for Sport and Health could help inform policy makers of the benefits of promoting physical activity in older individuals, and provide an evidence base on which to develop new exercise 'prescriptions' aimed at achieving greater public health benefits than current guidelines.





# UCD Institute of Food and Health Policy Seminar Series

MAPPING FOOD AND HEALTH TO THE PUBLIC POLICY LANDSCAPE

## Nutrition and Health in an Ageing Population - Programme

**Date:** Thursday 3rd December 2009

**Venue:** William Jefferson Clinton Auditorium, UCD Global Irish Institute, Belfield, Dublin 4.

Current perspectives on nutrition and health in an ageing population:

Chair Dr Dermot Power, Consultant Geriatrician, Mater Misericordiae University Hospital, Dublin.

- 8.00 am Registration
- 8.40 am Opening Address – Minister for Health and Children, Ms Mary Harney, TD
- 8.50 am Age-related malnutrition – Setting the scene:  
Prof Mike Gibney, Director, UCD Institute of Food and Health
- 9.05 am Nutrition and health challenges in an ageing population:  
Prof Bruno Vellas, Department of Geriatric Medicine, University of Toulouse
- 9.40 am Measuring the prevalence of malnutrition in our older population and the public health consequences:  
Prof Marinos Elia, Institute of Human Nutrition, Southampton General Hospital
- 10.15 am Coffee Break
- 10.40 am Assessing the economic consequences of interventions for malnourished or at-risk older people:  
Prof Marinos Elia, Institute of Human Nutrition, Southampton General Hospital
- 11.15 am Physical activity in the older population:  
Prof Giuseppe deVito, UCD Institute of Sport and Health
- 11.50 am Seminar discussion setting the agenda for a Nutrition and Health Policy in an Ageing Population:  
Chair Prof Mike Gibney, Director, UCD Institute of Food and Health
- 12.50 pm Summary and closing remarks
- 1.00 pm Close and lunch

## Key Speakers



**Professor Bruno Vellas**  
**Professor of Medicine, Toulouse University**

Professor Vellas is currently Chairman of the Toulouse Gerontopole, Chief of the Department of Internal Medicine and Geriatrics at the Toulouse University Hospital, and Chief of Alzheimer Disease Clinical Research Centre, University of Toulouse and member of INSERM (National Institute of Medical Research) 558 Unit on Ageing. He is also President of the IAGG (International Association of Gerontology and Geriatrics). Professor Vellas obtained his medical degree (MD) and PhD from the University Paul Sabatier, Toulouse, and for more than fifteen years now he has been involved in several studies, including a number of large international trials, on Nutrition or Alzheimer's disease.

Professor Vellas has published over 300 articles in the field and particularly on disease modifying treatment. He is the editor in chief of Research and Practice in Alzheimer's disease and of the Journal of Nutrition Health and Ageing (JNHA). He was nominated « Chevalier de la Légion d'Honneur ».



**Professor Marinos Elia**  
**Professor of Clinical Nutrition and Metabolism, Southampton University**

Marinos Elia is Professor of Clinical Nutrition and Metabolism at the University of Southampton and Consultant Physician at Southampton General Hospital. He obtained a BSc (Hons) in Biochemistry and MB ChB degrees in Medicine from the University of Manchester, before undertaking research for an MD at the MRC Metabolic Research Laboratories, Oxford, headed by Sir Hans Krebs. He then moved to Cambridge, where he headed the Clinical Nutrition Group of the MRC Dunn Nutrition Unit, and the Nutrition Team at Addenbrooke's Hospital, and was Senior Research Fellow at Churchill College, University of Cambridge. He is currently a member of the editorial board of five nutrition journals, and has been editor-in-chief of Clinical Nutrition.

He has served on many national and international committees, and has chaired a number of them, and has been the immediate past chairman of the British Association for Parenteral and Enteral Nutrition (BAPEN). He is currently chairman of the International Society of Body Composition the Research, the Nutritional Screening subcommittee of the Department of Health (Nutrition Action Plan Implementation Board (England)), and the Malnutrition Action Group (MAG) of BAPEN. He also led the teams that developed the 'Malnutrition Universal Screening Tool' ('MUST'), now the most widely used nutrition screening tool in the UK. Professor Elia has published extensively on various aspects of nutritional biochemistry and body composition, as well as various aspects of clinical nutrition and metabolism and evidence-based medicine.



**Professor Giuseppe De Vito**  
**Professor of Performance Science, UCD Institute for Sport & Health**

Professor Giuseppe De Vito was born in 1958 in Blantyre (Malawi). He then grew up in Italy where he graduated in Medicine and Surgery in 1986 at the Medical School of the University of Rome la Sapienza. At the same medical school he completed firstly a clinical specialization in Sports Medicine (1989) and then a PhD in Human and Exercise physiology (1994) presenting a thesis on exercise training adaptations in the older individual. Before joining UCD in July 2007, he previously held academic positions in Glasgow (1996-2005; University of Strathclyde) and in Rome (2005-2007) at the University Institute of Movement Science (now University of Rome, Foro Italico). As specialist in Sports Medicine he has acted as Team Physician to the Italian Olympic Committee, and from 1994 to 1996 was the physician/physiologist of the Italian Olympic Sailing team. In the past, he represented Italy in the World Championships as a Modern Pentathlete.

He is a member of both British and Italian Physiological Societies and an elected Fellow in the Faculty of Sports and Exercise Medicine of the Royal College of Physicians of Ireland. He is also member of the editorial boards of the Journal of Electromyography and Kinesiology and of the Journal of Physical Activity and Ageing. He has published widely on aspects of muscle function and cardiovascular control across the lifespan.

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