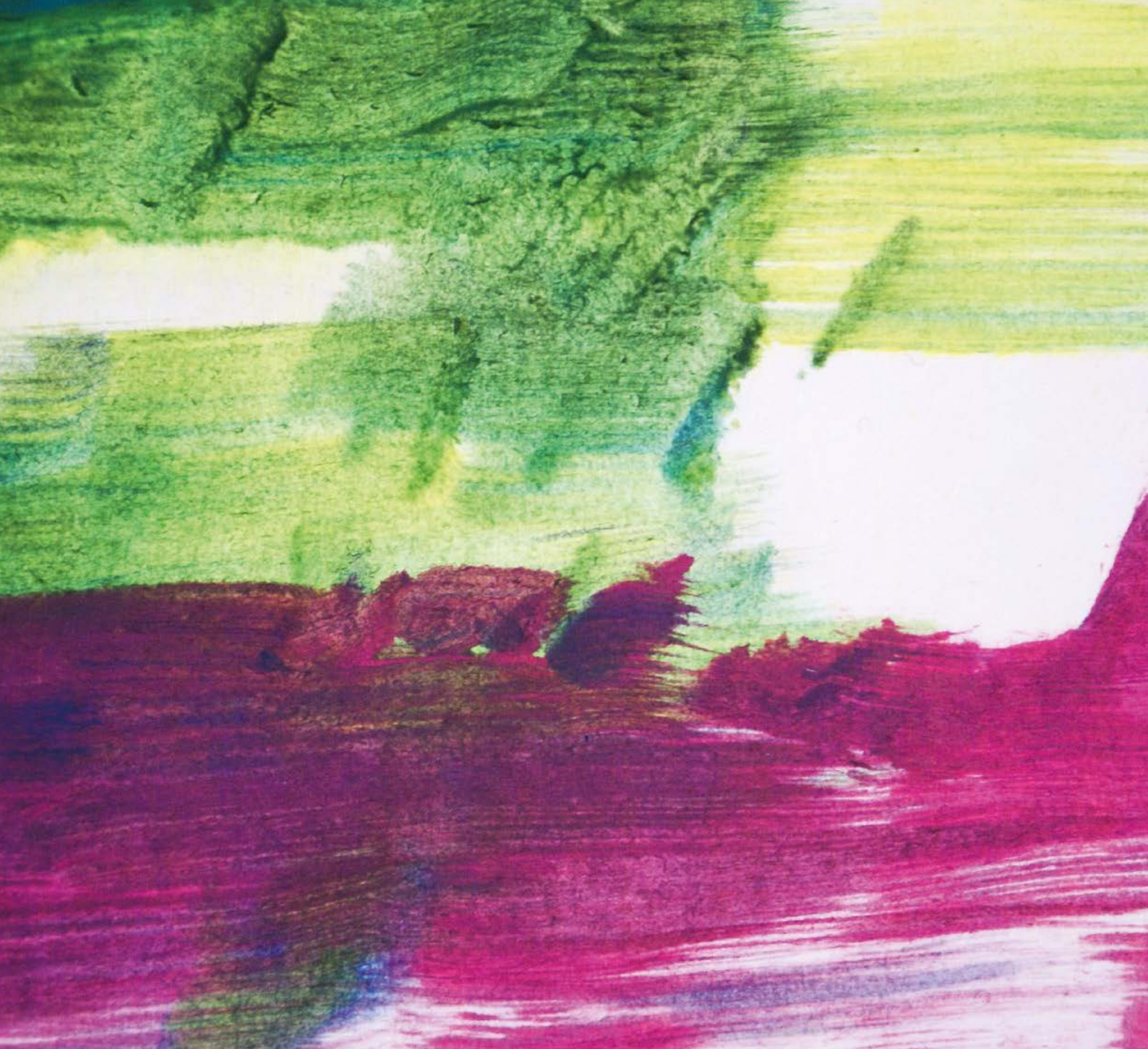




Integrated care for older people

Guidelines on community-level interventions to manage declines
in intrinsic capacity



**World Health
Organization**

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Cover: The painting is "Wet in Wet" by Gusta van der Meer. At 75 years of age, Gusta has an artistic style that is fresh, distinctive and vibrant. A long-time lover of art, she finds that dementia is no barrier to her artistic expression. Appreciated not just for her art but also for the support and encouragement she gives to other artists with dementia, Gusta participates in a weekly art class. Copyright by Gusta van der Meer. All rights reserved.

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Abbreviations

ADLs	activities of daily living
AGREE	Appraisal of Guidelines for Research and Evaluation
GDG	guideline development group
GRADE	Grading of Recommendations Assessment, Development and Evaluation
ICOPE	integrated care for older people
mhGAP	Mental Health Gap Action Programme
PFMT	pelvic floor muscle training
PICO	population, intervention, comparison, outcome
RCT	randomized controlled trial
WHO	World Health Organization

Executive summary

Over the past 50 years, socioeconomic development in most regions has been accompanied by large reductions in fertility and equally dramatic increases in life expectancy. This phenomenon has led to rapid changes in the demographics of populations around the world: the proportion of older people in general populations has increased substantially within a relatively short period of time.

Numerous underlying physiological changes occur with increasing age, and for older people the risks of developing chronic disease and care dependency increase. By the age of 60 years, the major burden of disability and death arises from age-related losses in hearing, seeing and moving, and conditions such as dementia, heart disease, stroke, chronic respiratory disorder, diabetes and musculoskeletal conditions such as osteoarthritis and back pain.

The 2015 World Health Organization (WHO) *World report on ageing and health* defines the goal of *Healthy Ageing* as helping people in “developing and maintaining the functional ability that enables well-being”. Functional ability is defined in the report as the “health-related attributes that enable people to be and to do what they have reason to value”. Intrinsic capacity, finally, is “the composite of all of the physical and mental capacities that an individual can draw on”. The WHO public health framework for *Healthy Ageing* focuses on the goal of maintaining intrinsic capacity and functional ability across the life course.

Health care professionals in clinical settings can detect declines in physical and mental capacities (clinically expressed as impairments) and deliver effective interventions to prevent and delay progression. Yet early markers of declines in intrinsic capacity, such as decreased gait speed or muscle strength, are often not identified, treated or monitored, which are crucial actions if these declines are to be reversed or delayed. The majority of health care professionals lack guidance or training to recognize and manage impairments in

older age. There is a pressing need to develop comprehensive community-based approaches and to introduce interventions at the primary health care level to prevent declines in capacity. These guidelines address this need.

The recommendations provided here on integrated care for older people (ICOPE) offer evidence-based guidance to health care providers on the appropriate approaches at the community level to detect and manage important declines in physical and mental capacities, and to deliver interventions in support of caregivers. These standards can act as the basis for national guidelines and for the inclusion of older people’s health care in primary care programmes, using a person-centred and integrated approach.

Supplementary to the present guidance is an ICOPE implementation guide, which addresses how to set person-centred care goals, develop an integrated care plan, and provide self-management support. This will also include guidance to lead the practitioner through the process of assessing, classifying and managing declining physical and mental capacities in older age in an integrated way.

The present guidelines and the supplementary implementation guide are both organized into three modules.

- **Module I:** Declines in intrinsic capacity, including mobility loss, malnutrition, visual impairment and hearing loss, cognitive impairment, and depressive symptoms
- **Module II:** Geriatric syndromes associated with care dependency, including urinary incontinence and risk of falls
- **Module III:** Caregiver support: interventions to support caregiving and prevent caregiver strain.

The physical and mental impairments were selected because they represent, consistent with the WHO

framework on *Healthy Ageing*, clinically important declines in physical and mental capacities, and are strong predictors of mortality and care dependency in older age. The recommendations need to be implemented using an older person-centred and integrated approach. The rationale and evidence base for doing this has been described previously in the WHO *World report on ageing and health*.

The ICOPE implementation guide will outline the important elements that should be taken into account at the clinical level when designing integrated care for older people, and the steps required to deliver the present community-level recommendations in an integrated manner.

These ICOPE guidelines and associated products are key tools in support of the implementation of the WHO *Global strategy and action plan on ageing and health* approved by the World Health Assembly in 2016. WHO will partner with ministries of health, nongovernmental organizations, professional associations and academic institutions to disseminate these guidelines, and support their adaptation and implementation by Member States.

Guideline development methods

The process followed in the development of these guidelines is outlined in the *WHO handbook for guideline development* and has involved:

(i) establishment of the steering group, guideline development group (GDG), external review group and systematic review team; (ii) declarations of interest by GDG members and peer reviewers; (iii) identification, appraisal and synthesis of available evidence; (iv) formulation of the recommendations with inputs from a wide range of stakeholders; and (v) preparation of documents and plans for dissemination.

The GDG is an international group of experts (Annex 1) representing the six WHO regions. The scope of the guidelines and questions (Annex 3) were defined in consensus with the GDG members. A total of nine PICO (population, intervention, comparison group, outcomes) questions were formulated by the GDG and the steering group with inputs from external reviewers. A series of searches for systematic reviews and randomized controlled trials was conducted across the Cochrane Library, Embase, Ovid MEDLINE and

PsycINFO databases applying a search strategy involving the United States Library of Medicine's MeSH terms where appropriate (Annex 4). For each preselected critical question, evidence profiles following the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach were prepared from existing systematic reviews or systematic reviews updated with newer trials.

The recommendations were formulated by the GDG during a meeting at WHO headquarters in Geneva, Switzerland, 24–26 November 2015. The GRADE methodology continued to be followed, to prepare evidence profiles related to preselected topics, based on up-to-date systematic reviews. The GDG members discussed the evidence, clarified points and interpreted the findings to develop recommendations. The GDG considered the relevance of the recommendations for older people, considering the balance of benefit and harm for each intervention, the values and preferences of older people, and the costs and resource use as well as other relevant practical issues of concern for providers in low- and middle-income countries.

The recommendations now formed in these guidelines are interrelated, and aim to produce synergistic effects on the intrinsic capacities and functional abilities of individuals. Although recommendations were made on the separate interventions, it was recognized that these would be best implemented in the context of a comprehensive needs assessment and an integrated care plan.

The key recommendations for the secondary prevention of declines in physical and mental capacities are classified by the strength of recommendation. When making a strong recommendation, the GDG was confident that any desirable effects outweighed any undesirable effects. For conditional recommendations, the GDG concluded that the desirable effects of adherence probably outweighed any harm. The GDG members reached a unanimous agreement on the majority of the recommendations and ratings. Voting was required on the recommendations about cognitive training and respite care and the GDG decided that, because the evidence was unavailable, the group would not formulate any recommendations on these two interventions.

Recommendations

Module I: Declining physical and mental capacities

Mobility loss	Recommendation 1: Multimodal exercise, including progressive strength resistance training and other exercise components (balance, flexibility and aerobic training), should be recommended for older people with declining physical capacity, measured by gait speed, grip strength and other physical performance measures. (<i>Quality of the evidence: moderate; Strength of the recommendation: strong</i>)
Malnutrition	Recommendation 2: Oral supplemental nutrition with dietary advice should be recommended for older people affected by undernutrition. (<i>Quality of the evidence: moderate; Strength of the recommendation: strong</i>)
Visual impairment	Recommendation 3: Older people should receive routine screening for visual impairment in the primary care setting, and timely provision of comprehensive eye care. (<i>Quality of the evidence: low; Strength of the recommendation: strong</i>)
Hearing loss	Recommendation 4: Screening followed by provision of hearing aids should be offered to older people for timely identification and management of hearing loss. (<i>Quality of the evidence: low; Strength of the recommendation: strong</i>)
Cognitive impairment	Recommendation 5: Cognitive stimulation can be offered to older people with cognitive impairment, with or without a formal diagnosis of dementia. (<i>Quality of the evidence: low; Strength of the recommendation: conditional</i>)
Depressive symptoms	Recommendation 6: Older adults who are experiencing depressive symptoms can be offered brief, structured psychological interventions, in accordance with WHO mhGAP intervention guidelines, delivered by health care professionals with a good understanding of mental health care for older adults. (<i>Quality of the evidence: very low; Strength of the recommendation: conditional</i>)

Module II: Geriatric syndromes

Urinary incontinence	Recommendation 7: Prompted voiding for the management of urinary incontinence can be offered for older people with cognitive impairment. (<i>Quality of the evidence: very low; Strength of the recommendation: conditional</i>) Recommendation 8: Pelvic floor muscle training (PFMT), alone or combined with bladder control strategies and self-monitoring, should be recommended for older women with urinary incontinence (urge, stress or mixed). (<i>Quality of the evidence: moderate; Strength of the recommendation: strong</i>)
Risk of falls	Recommendation 9: Medication review and withdrawal (of unnecessary or harmful medication) can be recommended for older people at risk of falls. (<i>Quality of the evidence: low; Strength of the recommendation: conditional</i>) Recommendation 10: Multimodal exercise (balance, strength, flexibility and functional training) should be recommended for older people at risk of falls. (<i>Quality of the evidence: moderate; Strength of the recommendation: strong</i>) Recommendation 11: Following a specialist's assessment, home modifications to remove environmental hazards that could cause falls should be recommended for older people at risk of falls. (<i>Quality of the evidence: moderate; Strength of the recommendation: strong</i>) Recommendation 12: Multifactorial interventions integrating assessment with individually tailored interventions can be recommended to reduce the risk and incidence of falls among older people. (<i>Quality of the evidence: low; Strength of the recommendation: conditional</i>)

Module III: Caregiver support

	Recommendation 13: Psychological intervention, training and support should be offered to family members and other informal caregivers of care-dependent older people, particularly but not exclusively when the need for care is complex and extensive and/or there is significant caregiver strain. (<i>Quality of the evidence: moderate; Strength of the recommendation: strong</i>)
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1 Introduction

In most regions over the past 50 years, socioeconomic development has been accompanied by large drops in fertility and equally dramatic rises in life expectancy. This phenomenon has led to rapidly ageing populations around the world. The fastest rate of change is occurring in low- and middle-income countries. Even in sub-Saharan Africa, which has the world's youngest population structure, the number of people over 60 years of age is expected to increase over threefold, from 46 million in 2015 to 147 million in 2050 (1).

With increasing age, numerous underlying physiological changes occur, and the risks for older people developing chronic disease and care dependency increase. The major population burdens of disability and death in people over 60 arise from age-related losses in hearing, seeing and moving, and conditions such as dementia, heart disease, stroke, chronic respiratory disorder, diabetes and osteoarthritis. These are not problems just for higher-income countries; in fact, the burden associated with these conditions affecting older people is generally far higher in low- and middle-income countries (2).

Population ageing will dramatically increase the proportion and number of people needing long-term care in countries at all levels of development. This will occur at the same time as the proportion of younger people who might be available to provide care will fall, and the societal role of women, who have until now been the main care providers, is changing. Therefore, an approach to prevent and reverse functional decline and care dependency in older age is critical to improving public health responses to population ageing. Such an approach is needed urgently.

The 2015 World Health Organization (WHO) *World report on ageing and health* defines the goal of *Healthy Ageing* as helping people to develop and maintain the functional ability that enables well-being (1). Functional ability is defined in the report as the "health-related attributes that enable people to be and to do what they have reason to value". Intrinsic capacity is "the

composite of all of the physical and mental capacities that an individual can draw on". A summary of these definitions is given in the box below.

The WHO public health framework for *Healthy Ageing* focuses on the goal of maintaining function across the life course (Fig. 1). Intervening at an early stage is essential because the process of becoming frail or care dependent can be delayed, slowed or even partly reversed by interventions targeted early in the process of functional decline (3–5). Health care professionals in clinical settings can detect declining physical and mental capacities (clinically expressed as impairments) and deliver effective interventions to prevent and slow or halt the progression of these impairments.

In 2016, following the release of the WHO *World report on ageing and health* (1), the *Global strategy and action plan on ageing and health* was adopted by the World Health Assembly (6). Both reflect a new conceptual model for *Healthy Ageing* that is built around the concept of the intrinsic capacities and functional abilities of older people, rather than the absence of disease. The rationale and evidence base for providing older person-centred and integrated care have been described in the *World report on ageing and health* and a publication in *The Lancet* (7). The present community-level ICOPE

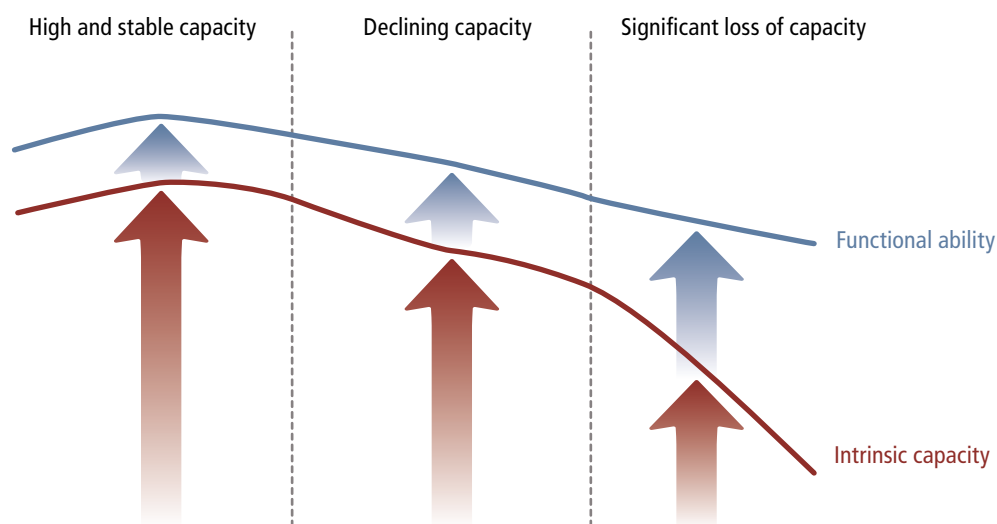


Intrinsic capacity and functional ability

WHO defines intrinsic capacity (IC) as the combination of the individual's physical and mental, including psychological, capacities; and functional ability (FA) as the combination and interaction of IC with the environment a person inhabits.

Fig. 1: A public health framework for *Healthy Ageing*: opportunities for public-health action across the life course

Intrinsic capacity and functional ability do not remain constant but decline with age as a result of underlying diseases and the ageing process.



guidelines were rewritten to align with this new WHO concept of *Healthy Ageing*. The implementation guide to accompany them aims to provide further evidence-based guidance to health care providers on appropriate approaches to detect and manage important reductions in physical and mental capacities, and to deliver interventions to support caregivers.

1.1 Rationale for these guidelines

Declining intrinsic capacity is very frequently characterized by common problems in older age such as difficulties with hearing, seeing, remembering, moving, or performing daily or social activities. Yet these problems are often overlooked by health care professionals. Early markers of decline in intrinsic capacity, such as decreased gait speed or reduced muscle strength, are often not identified, treated or monitored, which is crucial to do if they are to be reversed or delayed. The majority of health care professionals lack guidance or training to recognize and manage impairments in older age.

Based on the belief that there is no treatment available for their problems, older people may disengage from services, not adhere to treatment and/or not attend primary health care clinics. There is a pressing need to develop comprehensive community-based approaches

and to introduce interventions to prevent declining capacity and provide support to informal caregivers. These guidelines address this need.

Approaching older people through the lens of intrinsic capacity and the environment in which they live helps to ensure that health services are orientated towards the outcomes that are most relevant to their daily lives. This approach can also help to avoid unnecessary treatments, polypharmacy and side-effects (1).

1.2 Scope

These guidelines cover evidence-based interventions to manage common declines in capacity in older age, covering mobility, nutrition or vitality, vision, hearing, cognition and mood, as well as the important geriatric syndromes of urinary incontinence and risk of falls.

These conditions were selected because they express reductions in physical and mental capacities, as outlined in the WHO framework on *Healthy Ageing* (7), and are strong independent predictors of mortality and care dependency in older age (8).

Declining physical and/or mental capacity can be identified by the presence of one or more of the following indicators:

Mobility loss: After reaching a peak in early adulthood, muscle mass tends to decline with increasing age, and this can be associated with declining strength and musculoskeletal function (9). One way of measuring muscle function is to measure hand grip strength, which is a strong predictor of mortality (10, 11).

Malnutrition: Malnutrition represents a major problem that affects 22% of older adults (12). It often manifests as reduced muscle and bone mass, and it increases the risk of frailty. Malnutrition has also been associated with diminished cognitive function, diminished ability to care for oneself, and a higher risk of becoming care dependent.

Visual impairment and hearing loss: Ageing is frequently associated with decrements in both vision and hearing. Worldwide, more than 180 million people over 65 years of age have hearing loss that interferes with understanding normal conversational speech. Severe visual impairment is highly prevalent in people over 70 years of age, and a leading cause of blindness in high-income and upper-middle-income countries (13, 14).

Cognitive impairment: Worldwide, 46.8 million older people are living with dementia. This number is expected to double every 20 years, reaching 74.7 million in 2030 (15). Many cognitive functions begin to decline at a relatively young age, with different functions decreasing at different rates. In mild cognitive impairment, the cognitive deficit is less severe than in dementia, and normal daily function and independence are generally maintained. This chronic condition is a precursor to dementia in up to a third of cases (16).

Depressive symptoms: Episodes of affective disorders might be expected to be more prevalent in older age due to the increased risk of adverse life events. Compared with younger adults, older people more often have substantial depressive symptomatology without meeting the diagnostic criteria for a depressive disorder. This condition is often referred to as subthreshold depression, and affects nearly 1 in 10 older adults (17). Subthreshold depression also has a major impact on the quality of life of older people, and is a major risk factor for a depressive disorder (18).

The relationship of these indicators to care dependency, disability and other important adverse health outcomes

has been proposed in numerous different conceptual definitions, and longitudinal studies have shown strong predictive validity for these indicators in relation to the onset of care dependency and mortality (8). A clear understanding of the nature of declining physical and mental capacities, and of the relationships to ageing and chronic diseases, is paramount to informing and prioritizing interventions and strategies.

1.3 Target audience

Health care providers working in communities and in primary and secondary health care settings are the primary audience for these ICOPE guidelines on community-level interventions. Equally, these guidelines are also aimed at professionals responsible for developing training curricula in medicine, nursing and public health.

Other targeted audiences for this document include health care managers – such as programme managers organizing health care services at national, regional and district levels – entities funding and implementing public health programmes, and nongovernmental organizations and charities active in the care of older people in the community setting.

1.4 Guiding principles

The following principles have informed the development of these guidelines and should guide the implementation of the recommendations.

- The guidelines contribute to the achievement of key global goals in the WHO *Global strategy and plan of action on ageing and health* (6, 19), which outlines the role of health systems in promoting *Healthy Ageing* by optimizing the trajectories of intrinsic capacity.
- These guidelines are also a tool for the implementation of the WHO framework on integrated people-centred health services (20). This framework calls for shifting the way health services are managed and delivered, and proposes key approaches to be adopted to ensure quality integrated care for people, including older people: a strong case-management system in which individual needs are assessed; the development of a comprehensive care plan; and services driven towards the goal of maintaining intrinsic capacity and functional ability.

- In addition to promoting integrated person-centred care, the recommendations should be implemented with a view to supporting ageing in place; health services should therefore provide care where people live. The interventions are designed to be implemented through models of care that prioritize primary care and community-based care. This includes a focus on home-based interventions, community engagement and a fully integrated referral system.

These guidelines provide evidence-informed interventions that non-specialized health workers can implement in primary health care and community

settings. One of the key principles to underpin the development of these guidelines is the recognition of the critical role that community health workers play in increasing access to quality essential health services, in the context of national primary health care and universal health coverage. WHO guidance is available for country programme managers and global partners, placing emphasis on those key elements that strengthen the capacity of community health workers. This covers, for example, health system and programme considerations, and the roles and core competencies of community health workers (21).

2 Guideline development process

The *WHO handbook for guideline development* (22) outlines the process used in the development of these guidelines, following the steps below.

2.1 Guideline development group

A WHO guideline steering group, led by the Department of Ageing and Life Course, was established with representatives from relevant WHO departments and programmes with an interest in the provision of scientific advice regarding older people. The guideline steering group provided overall supervision of the guideline development process. Two additional groups were formed: a guideline development group (GDG) and an external review group.

The GDG included a panel of academics and clinicians with multidisciplinary expertise on the conditions covered by the guidelines, plus geriatricians/specialist doctors in the care of older people. Consideration was given to the balance of gender and of geographically diverse representation (see Annex 1).

Potential members of the GDG were selected on the basis of their contribution to the area, as well as on the need for regional and area-of-expertise diversity. As a respected researcher in the field, the chair was selected for his extensive experience of guideline development methodology, and his participation in other guideline development groups. Each potential GDG member was asked to complete the WHO declaration-of-interest form. The personal statements were reviewed by the steering group.

2.2 Declarations of interest and management of conflicts of interest

All GDG members, peer reviewers and systematic review team members were requested to complete the declaration-of-interest form prior to the evidence-review process for guideline development. Invitations to participate in the GDG meeting were sent only after the

declarations of interest had been reviewed and approved. These were reviewed by the responsible technical officer at WHO – in this case the director of the Department of Ageing and Life Course – and, when necessary, legal counsel. The group composition was finalized after this process. Annex 2 gives a summary of relevant declarations of interest.

The declarations were once more assessed for potential conflicts before the meeting in Geneva. The members who were involved in conducting either primary research or systematic reviews that would relate to the recommendations did not participate in the formulation of any recommendations themselves. The majority of the members had no major conflicts of interest. Minor conflicts of interest, of which there were two cases, were managed individually by restricting participation at relevant stages of the GDG meeting. All decisions were documented (see Annex 2).

2.3 Identifying, appraising and synthesizing available evidence

The scope of the guidelines and questions (Annex 3) were defined. A total of nine PICO (population, intervention, comparison group, outcomes) questions (23) were formulated by the GDG and steering group. Outcomes were rated by GDG members and external experts according to the importance of each outcome from the perspectives of older people and service providers, as not important (rated 1–3), important (4–6), or critical (7–9). Outcomes rated as critical were selected for inclusion into the PICO analysis. The GDG engaged in regular communications by email and discussions by teleconference.

When formulating the scoping questions and conducting the reviews, the focus was on evidence that applied specifically to older people who were frail or care-dependent or had priority conditions, and on

interventions that could be used by non-specialist health workers in community settings or primary health care. The steps that were taken for evidence retrieval, assessment and synthesis are summarized in Annex 4. Further detail on the review methods and available evidence is summarized in the evidence profiles supporting these guidelines. The evidence profiles used the Grading of Recommendations Assessment, Development and Evaluation (GRADE) methodology (24) followed by the *WHO guidelines handbook*, and the profiles are available at the WHO web pages for ICOPE (<http://www.who.int/ageing/health-systems/icope>). The search strategy and methods of quality assessment and appraisal are included in each profile. This GRADE methodology for evidence-based medicine was also used to formulate the recommendations on the interventions, by providing a rating of the overall quality of evidence arising from each systematic review. All of the recommendations were based on direct evidence and analysis of quantitative data.

2.4 Consensus decision-making during the guideline development group meeting

The GDG met at the WHO headquarters in Geneva, Switzerland, 24–26 November 2015. The evidence reviews had been sent out in advance and were presented in a summarized version during the meeting. The GDG members discussed the evidence, clarified any points and interpreted the findings, to develop recommendations based on the draft prepared by the WHO Secretariat. The GDG then proceeded with deliberations and considered the relevance of the recommendations for older people based on:

- the balance of benefit and harm of each intervention;
- values and preferences of older people;
- costs and resource use;
- acceptability of the intervention to health care providers in low- and middle-income countries;
- feasibility of implementation;
- impact on equity and human rights.

To evaluate the values and preferences of older people and the acceptability of proposed interventions to health workers, no formal surveys were carried out; the discussion and assessment of these domains instead

relied on the combined expertise and observations of the GDG members. Similarly, no formal cost-effectiveness studies were undertaken; again the GDG members informed the assessments of resource constraints based on their knowledge and experience.

Taking into account all of the above considerations, it was agreed that if a recommendation would be of general benefit, it would be rated as strong. If, however, there were caveats about its benefits in different contexts, and/or the quality of evidence was less robust, the recommendation would be rated as conditional. In the event of a disagreement, the chair and the methodologist would ascertain whether the dispute was related to the interpretation of the data or to the way that the recommendation was formulated. If a consensus agreement was not reached, the GDG members agreed to a simple majority vote (51%/49%), in which voting for this decision was by raised hands. GDG members reserved the right to have any objections recorded. Excluded from voting were any WHO staff members present at the meeting and any technical experts involved in the collection and review of the evidence.

The GDG reached a consensus agreement on the 13 recommendations and ratings given in this document. At the voting stage for recommendations on cognitive training and respite care, these further two were not supported due to insufficient evidence.

2.5 Document preparation and peer review

In addition to the GDG members, four peer reviewers provided expert input from specialized fields – psychiatry, nutrition, physical therapy and geriatrics. A preliminary version of these guidelines and the evidence profiles prepared by WHO staff and the GDG were circulated to the peer reviewers and the WHO steering group. All inputs and remarks from reviewers were discussed and agreed with the GDG by email. Additionally, peer reviewers were asked to rate the quality of the guidelines using a slightly modified version of the tool, Appraisal of Guidelines for Research and Evaluation (AGREE II). The original AGREE II tool lists 23 key items in the following domains: scope and purpose, stakeholder involvement, rigour of development, clarity of presentation, applicability, and editorial independence (25). The reviewers' total AGREE II scores ranged from 22 to 154, and the average was 122.2.

3 Evidence and recommendations

Most of the conditions selected for these integrated care for older people (ICOPE) guidelines share the same underlying factors and determinants. It may be possible to prevent or delay the onset of losses in intrinsic capacity through a unified approach to modifying a set of predisposing factors. For example, highly intensive strength training is the key intervention necessary to prevent and reverse mobility impairments, but it also indirectly protects the brain against depression and cognitive impairment, and prevents falls. Nutrition enhances the effects of exercise and has a direct impact on increasing muscle mass and strength.

It is therefore necessary to implement these guidelines using an older person-centred and integrated approach. The recommendations are specific to the community setting, but many are also applicable to health care facilities.

The rationale and evidence base for the ICOPE approach has been described previously in the WHO *World report on ageing and health* (1).

Providers must ensure the following.

1. The assessment of individual impairments/declines in capacity is used to inform the development of a comprehensive care plan, and all domains are assessed together.
2. Interventions to improve nutrition and encourage physical exercise are included in most of the care plans, and all the interventions needed are delivered in conjunction with each other.
3. The presence of any impairment/decline in capacity always triggers an urgent referral for medical assessment of the associated disease (examples being hypertension, diabetes, chronic obstructive pulmonary disease, and dementia). WHO has developed clinical guidelines to address most of the

relevant chronic diseases, and every health care provider should have access to these (Box 1).

The ICOPE guidelines are organized into three modules.

- **Module I:** Declining physical capacities, including mobility loss, malnutrition, and visual impairment and hearing loss, as well as declines in mental capacities, such as cognitive impairment and depressive symptoms.
- **Module II:** Geriatric syndromes associated with care-dependency in older age, including urinary incontinence and risk of falls.
- **Module III:** Caregiver support.

Box 1: WHO guidelines and resources related to ICOPE

Mental Health Gap Action Programme (mhGAP) – *mhGAP intervention guide for mental, neurological and substance use disorders in non-specialized health settings*, version 2.0 (2016): http://www.who.int/mental_health/mhgap/mhGAP_intervention_guide_02

Package of essential noncommunicable (PEN) disease interventions for primary health care in low-resource settings (2010): http://www.who.int/nmh/publications/essential_ncd_interventions_lr_settings.pdf

Guidelines for hearing aids and services for developing countries (2004): http://www.who.int/pbd/deafness/en/hearing_aid_guide_en.pdf

Global recommendations on physical activity for health (2010): http://www.who.int/dietphysicalactivity/factsheet_recommendations

3.1 Module I: Declining physical and mental capacities

3.1.1 Mobility loss

Mobility is an important element of an older person's physical capacity. The loss of muscle mass and muscle strength, decreased flexibility and problems with balance can all impair mobility. Mobility impairment is found in 39% of people over 65 years of age, which is more than three times higher than among the working population (26). Mobility loss can be detected and its progression stopped or slowed if appropriate exercise interventions are instigated early in the process (27).

Recommendation 1

Multimodal exercise, including progressive strength resistance training and other exercise components (balance, flexibility and aerobic training), should be recommended for older people with declining physical capacity, measured by low gait speed, grip strength and other physical performance measures.

*Quality of the evidence: **moderate***

*Strength of the recommendation: **strong***

Considerations for recommendation 1

- The effects of exercise can be enhanced by combining it with increased protein intake and other nutritional interventions.
- Consult a physical therapist or specialist, if available, before recommending exercise for older people.
- Refer for investigations into, and treatment of, associated underlying diseases, such as arterial and pulmonary disease, frailty and sarcopenia.
- Consider tailored, simple and less structured exercise programmes for older adults with limitations in cognitive function. For older people with severely reduced capacity, advise chair- and bed-based exercise training as a starting point.
- Environmental characteristics associated with older people gaining more physical activity include

providing safe spaces for walking, ensuring easy access to local facilities, goods and services, seeing people of a similar age exercising in the same neighbourhood, and regular participation in exercise with friends and family.

- The effects of multimodal exercise interventions are enhanced when prescribed in association with self-management support. Self-management support also improves adherence.
- Multimodal interventions are a combination of different modes of exercise (aerobic, resistance, flexibility, balance), with an emphasis on important muscle groups and performed in a functional manner. Older adults should be offered guidance on the physical activity recommended for their age and health conditions. WHO provides recommendations that consider different starting points and levels of capacity for physical activity to maintain health (see http://www.who.int/dietphysicalactivity/factsheet_recommendations) (27).

Supporting evidence for recommendation 1

A systematic search identified 130 reviews, 11 of which served as the basis for the primary findings summarized below.

- Further detail on the supporting evidence is in the Evidence profile: mobility loss, available at <http://www.who.int/ageing/health-systems/icope>.

Seven reviews from high-income countries used a multimodal exercise programme of progressive muscle strengthening or generic strength training, balance retraining exercise, aerobic training and flexibility training. Pooled data from the trials included in these reviews indicated that this intervention significantly improved critical outcomes, including muscle strength of the lower extremity (10 trials, 1259 participants), balance (16 trials, 1313 participants), gait speed (15 trials, 1543 participants), chair stand test score (9 trials, 827 participants), overall physical function (9 trials, 976 participants) and activities of daily living (7 trials, 551 cases). The overall quality of evidence was rated as moderate as the results were consistently beneficial for all critical outcomes and the GDG considered that several of the critical outcomes would individually suffice to support a recommendation for the intervention.

Eleven trials, reported in four reviews, investigated the benefit of progressive resistance training in older people with mobility impairment. Evidence suggests that progressive resistance training improves muscle strength of the lower extremity (8 trials, 655 participants) and chair stand test scores (2 trials, 38 participants). The overall methodological quality rating was moderate for the muscle strength outcome and low for the chair stand test. Progressive resistance training had no effect on other critical outcomes (balance, gait speed, Timed Up and Go score, overall physical function and activities of daily living). In addition, three trials of t'ai chi training showed a significant benefit in terms of improving balance (348 cases), but no effect on the gait speed, chair stand score, activities of daily living or the number of falls. The overall methodological quality rating was low for the balance outcome.

Rationale for recommendation 1

Moderate-quality evidence supports the use of multimodal exercise training to improve the functional outcomes in older adults with mobility impairment. The GDG recognized a greater effect on critical functional outcomes for multimodal exercise. The effects and quality of evidence for stand-alone progressive resistance training and t'ai chi were not considered sufficient for incorporation into the recommendation.

Adverse events reported in a small proportion of trials were reviewed. The most commonly reported events were muscle soreness and joint pain. Very few trials reported serious adverse events, such as fracture, hospitalization or death. No clear relationship was noted between severe events and exercise: similar events were reported in the intervention and control groups.

The GDG recognized the additional cost associated with the scaling-up of supervised exercise training for older people. The GDG felt that the programme cost could be reduced through minimal training for family members and the provision of self-help guides.

The GDG agreed that multimodal exercise was critical to maintaining physical capacity in older people, and that it would be acceptable to them, to family members and to other stakeholders. Based on the moderate quality of the evidence, the widespread acceptability of exercise and the potential opportunities to shift health care tasks, the GDG made a strong recommendation.

3.1.2 Malnutrition

Ageing is accompanied by physiological changes that can have a negative impact on nutritional status and, consequently, intrinsic capacity. Sensory impairments (a decreased sense of taste and smell, for example), poor oral health, isolation, loneliness and depression – individually or in combination – all increase the risk of malnutrition in older age. Ageing is associated with changes in body composition; after the age of 60 years, there is a progressive decrease in body weight that results mainly from a decrease in fat-free mass and lean mass, and an increase in fat mass. Stable body weight overall masks such age-related changes in body composition. Older people who do not consume enough protein are at increased risk of developing sarcopenia, osteoporosis and impaired immune response.

Recommendation 2

Oral supplemental nutrition with dietary advice should be recommended for older people affected by undernutrition.

Quality of the evidence: **moderate**

Strength of the recommendation: **strong**

Considerations for recommendation 2

- Nutritional assessments should be specific to the older person and include nutritional history, records of food intake or 24-hour dietary recall, physical examination with particular attention to signs of inadequate nutrition or overconsumption, and specific laboratory tests if applicable. There are several tools available to assess nutritional status in older people (28, 29).
- Assessment of muscle mass and muscle strength must be included in the assessment of nutritional status.
- Dietary counselling to ensure a healthy diet that provides adequate amounts of energy, protein and micronutrients should be encouraged for all older people, including those who are at risk of or affected by undernutrition.
- It is important to consider specially formulated supplementary foods (in ready-to-eat or milled form), which are modified in their energy density,

protein, fat or micronutrient composition, to help meet the nutritional requirements of older people.

- Mealtime interventions (including family-style meals and social dining) are important approaches for managing undernutrition in older people. Consider family-style meals or social dining for older people living alone or who are socially isolated.
- Protein absorption decreases with age. Low protein intake is associated with loss of lean body mass, and standard protein intake may not be sufficient for older people.
- Refer older people with evidence of potentially serious underlying physical illness (gross cachexia, rapid weight loss, obstruction or difficulty swallowing, vomiting, chronic diarrhoea, abdominal pain or swelling) for medical review by a physician or specialist.

Box 2:

Oral supplemental nutrition

Oral supplemental nutrition is the provision of additional high-quality protein, calories and adequate amounts of vitamins and minerals tailored to the individual's needs assessed by a trained health care professional. The assessment allows for the best source and vehicle for these nutrients to be defined, whether through the use of supplements, nutrient-rich foods, or specialized commercial or non-commercial nutritional formulations.

Supporting evidence for recommendation 2

Our search strategy identified three systematic reviews to inform these recommendations (30–32). We conducted an independent search strategy in 2015 to update the 2009 review (31) and identified 29 additional trials.

- Further detail on the supporting evidence is in the Evidence profile: malnutrition, available at <http://www.who.int/ageing/health-systems/icope>.

The search strategy involved older people who were at risk of or affected by undernutrition. All but two of the trials were conducted in high-income countries. The majority of the trials were in hospital settings or

long-term care facilities (nursing, retirement or residential homes). The definition of undernutrition varied in the trials. The majority applied an anthropometric measure – typically body mass index (BMI) – as a nutritional status indicator, and compared it against WHO cut-off values (where underweight is below 18.50 kg/m²). The assessed interventions were aimed at improving the intake of protein and energy using only the normal oral route. Protein was provided together with non-protein energy sources such as carbohydrate and fat, and with or without added minerals and vitamins. The types of intervention considered included supplements in the form of commercial sip feeds; milk-based supplements; fortification of normal food sources; addition of fluid milk (low-fat or fat-free) to the usual daily consumption of dairy products; commercial nourishing drink made up with either milk or water; high-protein and high-calorie feeding supplementary to the hospital diet; commercial supplements or formulated meal-replacement commercial drinks in addition to meals; and other specially formulated nutrition products. Most supplementation trials aimed to provide, per serving, 300–400 kcal, 12–20 g of protein, and additional vitamins and minerals.

The evidence indicated that the consumption of oral supplemental nutrition significantly reduced mortality compared with people on placebo or usual care. In a subgroup analysis, the pooled data from trials conducted in community settings showed no effect on mortality, whereas the treatment effect on mortality remained significant in trials performed in hospital and long-term care settings.

Weight gain, rated as a critical outcome, was reported in 70 trials. These data showed that the intervention improved weight gain for older adults affected by undernutrition. In the subgroup analysis, a significant benefit was indicated in improving weight gain in these older people in trials conducted both in the community setting and in the hospital or long-term care setting.

Rationale for recommendation 2

Moderate-quality evidence showed that administration of oral supplemental nutrition plus dietary advice could prevent mortality and improve weight gain in older people affected by undernutrition. The GDG reviewed the adverse effects associated with this recommendation. Fifteen trials reported adverse effects

in both treatment and control groups, but only four of these (two hospital studies, one nursing home study and one community study) provided a systematic evaluation and comparison of adverse effects in the treatment and control conditions. Common side-effects reported in the studies were gastrointestinal symptoms, nausea and diarrhoea. A higher number of adverse effects were reported in studies conducted in hospital settings; this may reflect the baseline severity of the undernutrition, the intensity of supplementation, the presence of comorbid acute illness or, possibly, increased monitoring of adverse effects. Other trials reported a prevalence of adverse effects in both the intervention and control groups, and the majority of these studies reported no between-group differences in adverse effects. The GDG therefore concluded that the potential risks associated with nutritional intervention were small.

Adherence to the nutritional interventions was discussed in detail. The GDG suggested that oral supplemental nutrition may be acceptable to many older people, and would assist those at risk of, or affected by, undernutrition to meet their nutritional requirements. In conclusion, the GDG agreed that these recommendations would be appreciated by older adults and acceptable to key stakeholders.

The implementation of this recommendation may have major resource implications, particularly in the training of staff members. However, in many low- and middle-income countries, community health workers deliver nutritional interventions for children affected by undernutrition and for pregnant mothers. Based on this experience, the GDG concluded that training could be undertaken for existing human resources to implement these recommendations.

The GDG considered that if recourse to the provision of supplemental nutrition or specific food products was necessary to increase an individual's dietary intake of protein, energy or vitamins and minerals, this should always be combined with dietary advice. Provision of dietary advice will aid an older person's understanding of the need for oral supplemental nutrition and will ensure that their dignity and human rights are respected.

Based on the evidence, the GDG made a strong recommendation in favour of oral supplemental nutrition for older people affected by undernutrition.

The GDG also considered the evidence for increasing dietary intake and mealtime interventions. Although

there was enough evidence about their benefits to support a recommendation, the GDG decided that, due to the generic nature of these two interventions, it was more appropriate not to issue a recommendation.

3.1.3 Visual impairment

Ageing is frequently associated with loss of vision that limits physical performance and activities in daily life. Over half of older adults with impaired vision experience improvements through non-invasive methods, mainly corrective lenses. Some 79% of people over 60 years of age and 90% of people over 70 have cataract, representing the single-most important cause of vision loss (1). These people go back to full visual function with cataract surgery. Yet many older people living in low-income countries have never had even an eye examination, with little opportunity for accessing eye-care services. Community case finding and the immediate provision of eye care or assisted referral for cataract surgery could improve physical capacity and functional ability in older people.

Recommendation 3

Older people should receive routine screening for visual impairment in the primary care setting, and timely provision of comprehensive eye care.

*Quality of the evidence: **low***

*Strength of the recommendation: **strong***

Considerations for recommendation 3

- At the primary health care level, visual screening can be performed using a Snellen chart to screen for visual acuity.
- It is important to improve public awareness and generate demand for services through regular community outreach activities.
- Promote case finding at the primary and community care settings, where health care personnel such as community health workers can be trained to screen for visual acuity.
- Establish comprehensive eye-care services, so that refraction services with the provision of

suitable correction tools are available at the primary health care level.

- Specifically, provide spectacles that are new, of high quality, accessible and affordable in low-income settings.
- The most common causes of vision impairment in older people include presbyopia, cataract, glaucoma, diabetic retinopathy and age-related macular degeneration. Older people found to have a visual impairment should therefore be assessed for these medical conditions.
- Older people who have had diabetes for five years or more must be referred for an assessment with an ophthalmologist. Additionally, it is advisable that people who are at risk of glaucoma (including people of African descent and people with a positive family history), who are at risk of diabetes, or who have severe myopia undergo periodic assessment by an ophthalmologist. The WHO publication, *Prevention of blindness from diabetes mellitus* (33) is available at http://www.who.int/diabetes/publications/prevention_diabetes2006.
- Refer to eye-care practitioners or occupational therapists who have expertise in environmental modifications (working with colour and contrast in the environment of the person with low vision) and can teach activities of daily living and skills, such as washing clothes.

Box 3: **Definitions of low vision**

The following definitions of low vision are in use (34):

- Defined by WHO: visual acuity less than 6/18 in one eye and equal to or better than 3/60 in the better eye with best correction.
- In use by low-vision services or care: impairment of visual functioning for the person even after treatment and/or standard refractive correction, and a visual acuity of less than 6/18 to light perception, or a visual field less than 10 degrees from the point of fixation, but with ability or potential ability to use vision for planning and/or executing a task for which vision is essential.

Supporting evidence for recommendation 3

Evidence was compiled from three systematic reviews: an updated systematic review that identified five trials of screening and referral, an updated systematic review that identified two trials of screening plus provision of immediate eye care, and an updated systematic review that identified three trials of expedited cataract surgery.

- Further detail on the supporting evidence is in the Evidence profile: visual impairment, available at <http://www.who.int/ageing/health-systems/icope>.

No new trials have been identified in a WHO update of a systematic review that was published in 2006 on screening and referral, which found five trials (35). For these guidelines, results from the three initial systematic reviews therefore comprise the evidence base. In it, pooled data from five trials of 3494 participants indicated that there was no evidence to suggest that visual screening alone could improve visual function in older people. The authors concluded that the reasons for the lack of benefit were high loss to follow-up, contamination of the intervention, similar frequencies of vision disorder detection and treatment in both groups, the use of one screening question to identify people for further testing, and a low uptake of recommended interventions.

A review that identified two trials of visual screening combined with immediate referral for correction of refractive errors revealed evidence of beneficial effects. In the first of the two trials, older people in the intervention group received prescriptions and vouchers for free eyeglasses (36), while participants in the second study were immediately provided with corrective glasses (37). The participants in the first trial were people 65 years of age and over living in the community, whereas the second trial recruited nursing home residents 55 years of age and over. In both trials, visual functioning improved in the immediate-treatment groups.

The systematic review that identified three trials examining the effectiveness of expedited cataract surgery found substantial improvements in vision for older people who had undergone expedited surgery, compared with outcomes for people in the routine surgery or waiting list groups (38–40).

Rationale for recommendation 3

The GDG acknowledged the higher prevalence of vision impairment in older people compared with

younger, and the enormous individual and societal burden associated with untreated vision conditions. The group considered the limited supportive evidence for the effects on self-reported visual improvement following screening and referral (35). The GDG agreed that the use of screening as a stand-alone intervention was not warranted and that it should be combined with immediate provision of indicated eye care to improve the visual acuity of older people with visual impairment. In addition, the large beneficial effects of cataract surgery observed in three trials was noted by the GDG in support of the provision of cataract surgery, when indicated. None of the trials reviewed reported any adverse consequences associated with screening for vision plus timely provision of care. The GDG recognized the high acceptability and feasibility of this screening and care. The vision-care experts in the GDG mentioned that in many countries, including low- and middle-income ones, there were national programmes for the management of blindness in place, in which professionals trained in the early identification of avoidable blindness performed vision screening. This screening was focused largely on children, however, while many older people experienced difficulties accessing such screening and timely provision of care. The GDG felt that screening coupled with provision of indicated eye care might increase equity in this field.

Given the minor variability in values and preferences, the feasible and acceptable nature of the intervention, and the potential for benefits to greatly outweigh harms, especially in high-burden countries, the GDG made a strong recommendation despite the low quality of the evidence.

3.1.4 Hearing loss

Untreated hearing loss affects communication and can contribute to social isolation and loss of autonomy, with associated anxiety, depression and cognitive impairment. Despite its considerable individual and social implications, hearing loss is largely undetected and undertreated in older people. Yet this common limitation in intrinsic capacity can generally be managed effectively. Simple interventions and adaptations for hearing loss include fitting hearing aids, environmental modifications, and behavioural adaptations that include reducing background noise and using simple communication techniques, such as speaking clearly.

Recommendation 4

Screening followed by provision of hearing aids should be offered to older people for timely identification and management of hearing loss.

*Quality of the evidence: **low***

*Strength of the recommendation: **strong***

Considerations for recommendation 4

- Community awareness about hearing loss and the positive benefits of audiological rehabilitation in older people, through community case finding and outreach activities, should be promoted.
- Health care professionals should be encouraged to screen older adults for hearing loss by periodically questioning them about their hearing. Audiological examination, otoscopic examination and the whispered voice test are also recommended.
- Hearing aids are the treatment of choice for older people with hearing loss, because they minimize the reduction in hearing and improve daily functioning.
- Medications should be reviewed for potential ototoxicity.
- People with chronic otitis media or sudden hearing loss, or who fail any screening tests should be referred to an otolaryngologist.
- Additional guidance can be found in the WHO *Guidelines for hearing aids and services for developing countries* (41), available at http://www.who.int/pbd/deafness/en/hearing_aid_guide_en.pdf.

Supporting evidence for recommendation 4

Evidence for this recommendation was obtained by reviewing two randomized controlled trials. Both trials demonstrated the benefit of screening and immediate provision of hearing aids in older adults. The earlier of the two found that immediate provision of hearing aids was associated with statistically significant improvements in the hearing-related quality-of-life score the Hearing Handicap Inventory for the Elderly (HHIE), and in the Quantified Denver Scale of Communication Function (QDS) score (42). In the second trial both hearing aid groups experienced greater improvements in hearing-related outcomes compared with the no-treatment and

assistive-listening device groups (43). The mean improvement in HHIE scores in this trial was small for control patients (2.2 points) and those who received an assistive listening device (4.4 points), larger for patients who received a conventional device (17.4 points), and considerable for patients who received a programmable device (31.1 points).

- Further detail on the supporting evidence is in the Evidence profile: hearing loss, available at <http://www.who.int/ageing/health-systems/icope>.

Rationale for recommendation 4

The GDG considered there was low-quality evidence supporting the use of screening and provision of hearing aids as a way to improve critical hearing-related outcomes for older people. In addition to the evidence, however, the GDG also considered issues such as the opportunity costs and usefulness of potential interventions given the very high prevalence of, and the enormous societal implications associated with, undiagnosed and untreated hearing loss; worldwide, one third of older people live with some degree of hearing loss.

The GDG members thus agreed that the benefits of the intervention outweighed the disadvantages and costs. Screening and use of hearing aids does not seem to harm individuals, high-quality hearing aids can now be fitted at an affordable cost, and most older people do not object to being assessed. Based on the acceptability, feasibility and increasing affordability of hearing aids – coupled with the potentially large beneficial effects afforded to older people living in high-burden countries if they are able to engage and communicate effectively within their communities – the GDG decided to issue a strong recommendation despite the low-quality evidence.

3.1.5 Cognitive impairment

Cognitive impairment is a strong predictor of functional disability and the need for care among older people. Mild cognitive impairment increases the risk of developing dementia, and the available evidence suggests that an average five-year postponement of the age of onset would reduce the prevalence of dementia by half (44). Cognitive stimulation therapy, such as participation in a range of activities aimed at improving cognitive and social functioning, is a critical strategy to prevent and reverse declining cognitive capacity and, consequently, to prevent functional disabilities and care dependency in older age.

Recommendation 5

Cognitive stimulation can be offered to older people with cognitive impairment, with or without a formal diagnosis of dementia.

Quality of the evidence: **low**

Strength of the recommendation: **conditional**

Considerations for recommendation 5

- Assessment for cognitive function can be performed using any locally validated tool.
- In the absence of standard assessment, the person, and also someone who knows them well, should be asked about problems with memory, orientation, speech and language, and any difficulties in performing key roles and activities. Memory, orientation and language should be assessed.
- Cognitive stimulation could be delivered in short sessions. In high-income countries, it is usually administered by psychotherapists. Some characteristics of the intervention such as duration or frequency could, however, be adapted for each setting, and it could be administered by suitably trained and supported non-specialists.
- It is important to encourage family members and caregivers to provide older people with regular orientation information (day, date, time, weather, names of people, and so on), to help them remain orientated in time and place. They can use materials such as newspapers, radio and television programmes, family albums and household items to promote communication, orientate the person to current events, stimulate memories and enable them to share and value their experiences.
- Impairment in cognitive function may be associated with memory deficits and difficulties managing instrumental activities of daily living such as finances and shopping, and with impaired social function. Cases should be referred for medical assessment.
- More guidance on dementia can be found in the WHO mhGAP intervention guide (45), available at http://www.who.int/mental_health/mhgap/mhGAP_intervention_guide_02.

Box 4:**How to identify cognitive impairment**

- Assessment for cognitive function can be performed using any locally validated tool.
- In the absence of standard assessment: (a) assess memory by asking the person to repeat three common words immediately, then again 3 to 5 minutes later, (b) assess orientation to time by asking the time of day, day of week, season, and year, and assess orientation to place by asking the person where they are being tested, or where the nearest market or store is to their home, and (c) test language skills by asking the person to name parts of the body and to explain the function of physical items (for example, "What do you do with a hammer?").
- Confirm any cognitive deficit with a family member or someone else who knows the person well.

More detail is found in the WHO mhGAP intervention guide (45), available at http://www.who.int/mental_health/mhgap/mhGAP_intervention_guide_02.

Supporting evidence for recommendation 5

Evidence on the effectiveness of cognitive stimulation interventions for older adults with cognitive impairment was extracted from one systematic review (44). In this study, interventions were typically delivered in day-care or long-term care settings, and involved participants with dementia or mild cognitive impairment, or both. The review analysed pooled data from 17 trials: 12 studies (810 participants) assessed cognitive impairment using the Mini Mental State Examination (MMSE) while the other five trials assessed cognitive function using the Alzheimer's Disease Assessment Scale – Cognitive subscale (ADAS-Cog). Evidence from all of these trials showed significant improvement in cognitive function after the intervention. The overall quality of the evidence was low. New randomized controlled trials are needed to test the efficacy of different types of cognitive-based interventions that exclusively target older adults with cognitive impairment.

- Further detail on the supporting evidence is in the Evidence profile: cognitive impairment, available at <http://www.who.int/ageing/health-systems/icope>.

Rationale for recommendation 5

Low-quality evidence supports the use of cognitive stimulation interventions (of any form) to improve

cognitive function in older people with mild cognitive impairment and dementia. The GDG recommends that health care professionals provide these interventions to people who are eligible. The GDG identified low-quality evidence that the intervention improved important health outcomes, and concluded that the benefits outweighed the adverse effects. The intervention is non-invasive and no trial reported any harms associated with cognitive stimulation. Variability in values and preferences was noted to be minor, and the intervention was considered feasible and acceptable. Resource requirements for delivery of cognitive stimulation interventions would initially be considerable, but the GDG argued that adaptation of the intervention for specific settings, and investment in training of non-specialists, would potentially discount future costs. The strength of this recommendation is conditional, due to the low quality of the evidence – most trials involved older people who had dementia, and the effects of cognitive stimulation interventions in those with mild cognitive impairment without dementia remains unclear.

3.1.6 Depressive symptoms

Depressive symptoms (or sub-threshold depression) apply to older adults who have two or more simultaneous symptoms of depression present for most or all of the time, for at least two weeks in duration, but who do not meet the criteria for a diagnosis of a major depressive disorder. This is an important condition that affects between 6% and 10% of older adults in primary care settings, 30% in medical and long-term care settings, and is associated with declining intrinsic capacity (46).

Recommendation 6

Older adults who are experiencing depressive symptoms can be offered brief, structured psychological interventions, in accordance with WHO mhGAP intervention guidelines, delivered by health care professionals with a good understanding of mental health care for older adults.

Quality of the evidence: **very low**

Strength of the recommendation: **conditional**

Considerations for recommendation 6

- Older people can experience psychological difficulties consistent with the symptoms of depression but without these necessarily meaning they have moderate-to-severe depression. When assessing older people, it is important to assess whether the person has depressive symptoms, but also if these are associated with social isolation, and whether the person has difficulties in day-to-day functioning due to depressive symptoms.
- Cognitive impairment and dementia may be associated with depressive symptoms and must be assessed. People with dementia often present with complaints of mood or behavioural problems, such as apathy, loss of emotional control, or difficulties carrying out usual work or domestic or social activities.
- The management and assessment of depressive symptoms is covered by the WHO mhGAP intervention guide (45) (within the module for 'Other significant emotional or medically unexplained somatic complaints; see Box 5).
- Older people who qualify for a diagnosis of depressive disorder should be advised and treated as recommended in the mhGAP guidelines.
- Physical exercise should be considered as an adjunct to structured psychological treatments to improve intrinsic capacity in older people (see the guidance in section 3.1.1 on mobility loss).

Supporting evidence for recommendation 6

Evidence on the benefit of psychological intervention for managing depressive symptoms in older adults was extracted from two systematic reviews (47, 48). All the trials reviewed were conducted in high-income countries and administered by trained mental health care professionals.

Pooled data from six trials (826 older adults) that used cognitive behavioural therapy, problem-solving therapy and life-review therapy indicated that these interventions considerably reduced depressive symptoms in older adults. The overall quality of the evidence was low. Another review examined the effectiveness of behavioural activation specifically in reducing depressive symptoms in adults. However, only three of the included trials recruited older adults. Evidence from these trials (102 older adults) showed that behavioural activation significantly reduced

Box 5:

Summary information for treatment of depression

Brief, structured, psychological treatment:

- Interpersonal therapy and cognitive behavioural therapy (CBT) (including behavioural activation), and problem-solving treatment should be considered as psychological treatment of depressive episode/disorder in non-specialized health care settings if there are sufficient human resources (supervised community health workers, for example). In moderate and moderate-to-severe depression, problem-solving treatment should be considered as adjunct treatment.
- A problem-solving approach should be considered in people with depressive symptoms (in the absence of a depressive episode disorder) who are in distress or have some degree of impaired functioning.
- Psychological treatment based on CBT principles should be considered in repeat adult help-seekers with medically unexplained somatic complaints who are in substantial distress and who do not meet the criteria for depressive episode/disorder.

More detail and further recommendations are in the WHO mhGAP intervention guide (45), available at http://www.who.int/mental_health/mhgap/mhGAP_intervention_guide_02.

depressive symptoms in the intervention group. The overall quality of the evidence was very low.

- Further detail on the supporting evidence is in the Evidence profile: depressive symptoms, available at <http://www.who.int/ageing/health-systems/icope>.

Rationale for recommendation 6

Very low-quality evidence supports the use of psychological interventions (cognitive behavioural therapy, problem-solving therapy, interpersonal counselling, behavioural activation therapy and life-review therapy) to reduce depressive symptoms in older adults. No trials reported harms associated with these interventions. In the absence of any specific harms, the GDG concluded that these interventions were likely to have limited potential for harm. The administration of behavioural activation is a relatively unsophisticated intervention that can be learned more quickly than

most other evidence-based psychological treatments. The intervention has been studied mainly as a multiple-session intervention performed by specialists, however, which may not generalize to non-specialized health care and carries considerable resource implications. Nonetheless, the intervention could be modified into a brief intervention as an adjunct treatment or as part of a first step in a comprehensive care approach in primary health care. Although the evidence specifically for older people is scarce, WHO has comprehensive tools and guidelines to manage depressive symptoms in adults. Given that depression is associated with a severe decline in functional ability among older people – and that a recommendation in favour of the provision of brief psychological interventions would be consistent with the existing WHO mhGAP recommendation for depression (45) – the GDG concluded that the benefits outweighed the harms. In view of the very low quality of evidence and the possible lack of generalizability to all community settings, the GDG issued a conditional recommendation for the treatment of depressive symptoms in older adults.

3.2 Module II: Geriatric syndromes

3.2.1 Urinary incontinence

Urinary incontinence – involuntary leakage of urine – affects about a third of older people worldwide (49–51). Continence depends not only on lower urinary tract function but also on intact mobility,

cognition and motivation. Urinary incontinence has important medical repercussions and is associated with decubitus ulcers, sepsis, renal failure, urinary tract infections and increased mortality. Psychosocial implications of incontinence include loss of self-esteem, restriction of social and sexual activities, and depression. Urinary incontinence is also a key determinant of care dependency in older age.

Considerations for recommendations 7 and 8

- Urinary incontinence in older people is multifactorial and needs evaluation and treatment that is not focused solely on the lower urinary tract. Although an assessment of urinary incontinence can be made by non-specialized health workers, full evaluation is the responsibility of a medical professional or clinician. The full assessment is needed because of the multifactorial nature of urinary incontinence in older people. The examination should include cardiovascular, abdominal and neurological systems as well as assessment of mobility and cognition.
- An assessment of urinary incontinence includes the evaluation of fluid intake, medications, physical and cognitive capacity (including mobility), and previous urological surgeries.
- The single best question to ask when diagnosing urge incontinence is: “Do you have a strong and sudden urge to void that makes you leak before reaching the toilet?”
- A good question to ask when diagnosing stress incontinence is: “Is your incontinence caused by coughing, sneezing, lifting, walking or running?”
- The person needs to be assessed for reversible causes of urinary incontinence, such as delirium, infection, atrophic vaginitis, pharmaceutical causes such as medication-induced urinary retention, psychological disorder (depression), excessive urine output (hyperglycaemia, for example), and stool impaction.
- As a first-line treatment, provide advice on bladder training for a minimum of 6 weeks. Bladder training involves advising the older person to follow a strict schedule for bathroom visits. The schedule starts with bathroom visits every 2 hours, but the time between visits should be gradually increased to improve bladder control.

Recommendations 7 and 8

7. Prompted voiding for the management of urinary incontinence can be offered for older people with cognitive impairment.

*Quality of the evidence: **very low***

*Strength of the recommendation: **conditional***

8. Pelvic floor muscle training (PFMT), alone or combined with bladder control strategies and self-monitoring, should be recommended for older women with urinary incontinence (urge, stress or mixed).

*Quality of the evidence: **moderate***

*Strength of the recommendation: **strong***

- Pelvic floor muscle training (PFMT) strengthens the muscles that support the urethra and augment its closure. Often used for stress urinary incontinence, PFMT may help with urge leakage as well. Similar to other muscle-strengthening regimens, PFMT is based on controlled repetitions of high-intensity contractions, held for as long as possible. A starting regimen could be 3 sets of 10 contractions (with adequate relaxation between each) repeated 2–3 times per week.
- Key to the success of PFMT is correct identification of the target muscles and appropriate motivation to continue the programme.

Supporting evidence for recommendations 7 and 8

Five systematic reviews were identified, of which two systematic reviews served as the basis for the primary findings on prompted voiding and PFMT interventions (52, 53).

7: Prompted voiding

Four of the reviewed trials were conducted in the United States of America, and most of the participants in these had moderate-to-severe cognitive impairment. All except one of the trials recruited older adults with urinary incontinence in nursing home settings. The duration of the intervention ranged from 20 days to 32 weeks. The evidence showed that the prompted voiding intervention significantly reduced the number of incontinence episodes in 24 hours.

Data for self-initiated toileting outcomes were reported in four trials, but only one provided sufficient data. All of these trials showed a significant increase in independent requests for the toilet as a result of the prompted voiding intervention. The overall quality of the evidence was low.

- Further detail on the supporting evidence for both prompted voiding and PFMT is in the Evidence profile: urinary incontinence, available at <http://www.who.int/ageing/health-systems/icope>.

8: Pelvic floor muscle training (PFMT)

Evidence for PFMT was derived primarily from five randomized controlled trials that investigated the benefit of PFMT compared with placebo or control. Two of these trials were conducted in Brazil, two in Japan, and

one in the United States. The mean age of the study participants ranged from 60.2 years to 76.6 years. All of the trials recruited older women living in the community. Participants' perceived cure of urinary incontinence was reported in three trials. The data showed that PFMT significantly increased the perceived cure rate and significantly reduced urinary incontinence symptoms. The overall quality of the evidence for PFMT was low.

The benefit of PFMT when combined with bladder control strategies, with or without biofeedback, has been examined. All of the trials reviewed recruited older adults living in the community, and the majority of the participants had mixed urinary incontinence. The combined intervention was administered at home and in clinical settings. The mean age of the study participants ranged from 65.4 years to 74.7 years. All except one of the trials recruited only older women. The pooled data from five trials (709 participants) indicated that this intervention significantly reduced the number of incontinence episodes over 6–24 weeks of follow-up. The overall quality of the evidence was moderate.

Rationale for recommendations 7 and 8

Low-quality evidence supports the use of prompted voiding to reduce episodes of urinary incontinence among older people with cognitive impairment. Urinary incontinence is common among those with cognitive impairment and increases the need for formal and informal care. No trial has reported adverse effects associated with prompted voiding interventions. All of the included trials were conducted in high-income countries in long-term care settings and the GDG recognized that these interventions may be difficult to implement in community settings reliant on the help of family caregivers. Based on the low-quality evidence and the potential challenges to implementation in community settings, the GDG made a conditional recommendation.

Low-quality evidence supports PFMT when used on its own to reduce incontinence in older women with urinary incontinence. When combined with bladder control strategies and self-monitoring, the quality of evidence increases to moderate in support of using PFMT. Urinary incontinence has a profound impact on the older person's quality of life and functional ability, and increases the need for care. No trial has reported adverse effects associated with this intervention, and the GDG considered that the potential for harm from PFMT

was likely to be low given the non-invasive nature of the intervention. The GDG indicated that the recommendation was likely to be valued by older women with urinary incontinence, and that the intervention was highly acceptable to health care providers. Based on the moderate quality of the evidence for the combined approach, and the minimal harms, the GDG made a strong recommendation for provision of PFMT both alone and in combination with other strategies.

3.2.2 Risk of falls

Declining physical capacity in older people often manifests in falls and fall-related injuries. Around one third of people over 65 years of age and living in the community have a fall each year, many of whom are experiencing recurrent falls (54, 55). Falls are the leading cause of hospitalization and injury-related death. Fatal

fall rates rise considerably to sharply with five-year increases above 60 years of age (56). Accidental falls are due to a combination of extrinsic (environmental) and intrinsic (organ system abnormalities affecting postural control) factors. Extrinsic factors include environmental hazards such as loose rugs, clutter, poor lighting and improper foot wear such as ill-fitting, floppy slippers. Intrinsic factors include abnormalities in any of the organ systems that contribute to postural control such as sensory, musculoskeletal and central nervous system. Older people can decrease their fall risk with exercise, physical therapy, home-hazard assessments and adaptations, and withdrawal of psychotropic medications.

Considerations for recommendations 9–12

- Older people who present for medical attention because of a fall, report recurrent falls in the past year, or demonstrate abnormalities of gait and/or balance should be offered a comprehensive risk assessment.
- A comprehensive assessment may include the following items: history of falls; gait, balance, mobility and muscle weakness; osteoporosis risk; fear of falling, vision impairment, cognitive impairment, neurological examination; urinary incontinence; home hazards; cardiovascular examination; and medication review.
- Multimodal exercise, including progressive resistance training and other exercise components (balance, flexibility and aerobic training) must be included in every care plan for older people at risk of falls (see Recommendation 1 on mobility loss).
- Identification of older people with visual impairment and their referral for interventions should be implemented in any approach to prevent falls. To prevent falls for older people with cataract, for example, immediate surgery should be recommended.
- Medication review by a trained health care professional, especially to reduce psychotropic medication, has been shown to reduce falls. Older people should be encouraged to reduce their use of sleeping aids, including over-the-counter medication containing diphenhydramine or other sedating antihistamine. Benzodiazepines and antidepressants have also been associated with falls.

Recommendations 9–12

9. Medication review and withdrawal (of unnecessary or harmful medication) can be recommended for older people at risk of falls.

*Quality of the evidence: **low***

*Strength of the recommendation: **conditional***

10. Multimodal exercise (balance, strength, flexibility and functional training) should be recommended for older people at risk of falls.

*Quality of the evidence: **moderate***

*Strength of the recommendation: **strong***

11. Following a specialist's assessment, home modifications to remove environmental hazards that could cause falls should be recommended for older people at risk of falls.

*Quality of the evidence: **moderate***

*Strength of the recommendation: **strong***

12. Multifactorial interventions integrating assessment with individually tailored interventions can be recommended to reduce the risk and incidence of falls among older people.

*Quality of the evidence: **low***

*Strength of the recommendation: **conditional***

Supporting evidence for recommendations 9–12

One systematic review of interventions designed to reduce the incidence of falls in older people living in the community was identified (55). The review included 159 randomized controlled trials with a total of 79 193 participants. Most trials compared a falls prevention intervention with no intervention or one that was not expected to reduce falls.

9: Medication review and withdrawal

Evidence is limited for the effectiveness of interventions targeting medications (withdrawal of psychotropic medications, for example, or educational programmes for family physicians). Only one study showed that withdrawal of psychotropic medication was effective in reducing the rate of falls. Another study indicated that educational programmes on medical review and modification for general practitioners were effective in reducing the numbers of falls. The quality of evidence was low.

10: Multimodal exercise

Fifty-nine trials (13 264 participants) tested the effect of exercise on falls in older people. Trials that combined two or more categories of the following exercise components were grouped as multicomponent exercise interventions, delivered in groups or individually: gait, balance and functional training; strength and resistance training; flexibility; t'ai chi; general physical activity; and endurance.

Sixteen trials (3622 participants) found evidence of effects of multicomponent group exercise interventions in preventing falls in older people. The quality of the evidence was low.

Five trials (1563 participants) tested t'ai chi exercise delivered as a group intervention. T'ai chi reduced the rate of falls and the risk of falling. The benefit of t'ai chi exercise on the rate of falls was greater for the subgroup not selected for a higher risk of falling. Thus, t'ai chi seems to be more effective in people who are not at a high risk of falling. The overall quality of the evidence was low.

Eight trials delivered individual exercise interventions at the participant's home. Home-based interventions achieved a statistically significant reduction in the rate of falls and the risk of falling. A trial that examined the role

of balance and strength training in daily activities showed a statistically significant reduction in the rate of falls. The overall quality of the evidence was moderate.

11: Home modifications

Six trials (4208 participants) investigated the effectiveness of home safety interventions for reducing the rate of falls and the risk of falling. The mean age of the trial participants was over 75 years and the follow-up period ranged from 3 to 18 months. Overall, home safety assessment and modification interventions were effective in reducing the rate of falls. Subgroup analysis revealed that a home safety intervention delivered by an occupational therapist was effective in reducing the rate of falls in older adults who were at risk of falling compared with delivery by a non-occupational therapist (including nurses and trained research staff). The overall quality was moderate.

12: Multifactorial interventions

Nineteen trials investigated the benefit of multifactorial interventions (assessment and referral, or provision of active interventions) in preventing falls in older people. Multifactorial interventions that integrated assessment with individualized intervention, usually involving a multidisciplinary team, were effective in reducing the rate of falls. All of the trials recruited older people living in the community. Only one study was from a middle-income country (Thailand); the other 18 trials were from high-income countries, mainly Australia, Canada, China, Denmark, Finland, the Netherlands, Taiwan, the United Kingdom and the United States. The overall quality of evidence was low.

Rationale for recommendations 9–12

9: Medication review and withdrawal

Low-quality evidence supports the effectiveness of reviewing the use of psychotropic medication and of medication withdrawal in reducing the incidence of falls in older adults. The GDG was unclear about the harm associated with these interventions, as no trials had reported potential harm. Polypharmacy is acknowledged as one of the main risk factors for falling. Medication review should be part of any integrated care programme addressing the risk of falls. A review of medications – in particular the withdrawal of any – requires consultation with specialists (pharmacologists, geriatricians, mental health care professionals). The GDG acknowledged that

the recommendation may be less feasible in low-resource health care settings, where primary care professionals have limited support from specialized health care professionals. Given the low quality of the evidence and the potential challenges of generalizing implementation to settings where specialists are scarce, the GDG issued a conditional recommendation.

10: Multimodal exercise

Moderate-quality evidence supported the use of multimodal physical exercise to prevent falls. This is in line with the physiopathology and strong association of falls with loss of muscle mass and strength as people age. The GDG had made a prior strong recommendation in the guideline meeting for using multimodal exercise to reverse declining physical capacity, and based on that review of evidence, found very low risks associated with the intervention. The GDG concluded that the benefits of this recommendation outweighed any associated harms, provided that multimodal exercise (mainly strength and balance) training was administered by appropriately trained professionals. The GDG identified that interventions to prevent falls would be highly valued by older people and that provision of exercise was acceptable to health care providers and feasible for implementation in the community. The GDG recognized that resource requirements were potentially large but that task-shifting away from professionals, and engagement of family members could reduce the overall costs, provided that adequate training would be available. Given the moderate quality of the evidence, the large potential benefits and high acceptability and feasibility, the GDG made a strong recommendation for multimodal exercise to prevent falls – consistent with the previous recommendation on physical exercises to improve mobility.

11: Home modifications

Moderate-quality evidence supports the effectiveness of providing a home-hazard assessment and environmental modifications for older people at risk of falls. A combination of advice with educational interventions to increase confidence, risk awareness and home safety is most effective. A lengthy debate ensued regarding who should carry out the home-hazard assessments. The GDG recognized that, in practice, this may be by any trained professional rather than always a health care professional. The majority of the trials involved assessments by trained health care professionals,

including doctors, occupational therapists, nurses, physiotherapists, social workers and trained assessors. The GDG acknowledged the limited specialist human resources (occupational therapists, for example) in low-resource settings and the associated higher costs of delivering adequate assessments via such professionals. The GDG recognized that, with sufficient training, non-specialist health care professionals could perform home-hazard assessments for at-risk older adults. Given the moderate quality of the evidence and the potential for task-shifting, the GDG made a strong recommendation.

12: Multifactorial interventions

Low-quality evidence supports multifactorial interventions targeted at the risk factors of falls as a way to reduce their incidence in older adults living in the community. A definite recommendation from this evidence is difficult for the specific components. A sensible strategy may therefore be to refer older people for interventions that target known risk factors. The GDG recognized that multifactorial interventions may have resource implications for health care and for individuals. The existing evidence base is poor for judging the cost-effectiveness of these interventions. However, if at-risk older adults are identified and undergo interventions, multifactorial intervention is likely to be cost-effective when compared with no treatment. On this basis, and considering the low quality of the evidence, the GDG decided to issue a conditional recommendation.

3.3 Module III: Caregiver support

Worldwide, 349 million people are estimated to be care dependent, of whom 5%, 18 million, are children younger than 15 years, and 29%, 101 million, are people 60 years of age and over (57). Care dependence arises when functional ability has fallen to a point that the individual is no longer able without assistance to undertake the basic tasks needed for daily living. Coexisting chronic diseases (multimorbidity) are frequently associated with the need for health and social care for older people (58). Such care in most countries is provided by informal caregivers (for example, the care receiver's spouse, adult children or other relatives or friends), and women are the primary caregivers (59). Caregivers of people with severe declines in intrinsic capacity are at higher risk of

experiencing psychological distress and depression themselves (60). In many low- and middle-income countries, the formal system of long-term care is poorly developed, with the result that the negative effects of caregiving have a profound impact on the physical, emotional and economic status of women and other family caregivers.

Recommendation 13

Psychological intervention, training and support should be offered to family members and other informal caregivers of care-dependent older people, particularly but not exclusively when the need for care is complex and extensive and/or there is significant caregiver strain.

*Quality of the evidence: **moderate***

*Strength of the recommendation: **strong***

Considerations for recommendation 13

- The focus of the support intervention should be the primary family caregivers. During the initial contact, ask the older person to identify their primary caregiver.
- Caregiver support should be provided by appropriately trained health care professionals who are given support and supervision relevant to their level of involvement.
- Psychological distress and psychosocial impact on carers should be identified.
- Family caregivers experiencing stress should be offered a needs assessment and access, whether in primary or secondary care settings, to psychosocial support.
- Family caregivers identified with caregiving strain should be assessed for depression. Refer to the WHO mhGAP intervention guide for information on assessment and management of depression (45).
- The focus of a caregiver support intervention should be based on the carer's choice, and the emphasis should be on optimizing their well-being.
- Acknowledgement should be given to caregivers that it can be extremely frustrating and stressful to care for

people with dementia. It is nonetheless important to help ensure that carers continue to support care-dependent older people, avoiding hostility or neglect.

- Carers can be encouraged to respect the dignity of older people through being involved in decisions about the person's life as far as possible.
- Training and support can be given to caregivers for specific skills, such as managing difficult behaviour.
- If possible, practical support should be considered. Where feasible, home-based respite care is one example, whereby another family member or other suitable person can supervise and care for the older person. This may relieve the main caregiver who can then rest or carry out other activities.
- If feasible, the carer's psychological stress could be addressed with support and problem-solving counselling.
- Exploration can be made as to whether the person qualifies for any social benefits or other social or financial support. This may be from government or nongovernmental sources.

Supporting evidence for recommendation 13

Evidence on caregiver support interventions was extracted from three systematic reviews (61–63). One of these included 78 trials with six different interventions, including psycho-educational interventions, supportive interventions, psychotherapy, respite care, training of the care recipient, and multicomponent interventions (62). The evidence from these trials indicated that caregiver support interventions significantly improved several critical and important outcomes (carer burden, depression, well-being, ability/knowledge). In particular, psychological education for carers of older people with mental disorders showed significant effects in reducing caregiver strain and improving ability and knowledge. Supportive interventions (including professional- and peer-led groups for support and discussion) have positive effects on the care burden. The overall quality of evidence was moderate.

Rationale for recommendation 13

Moderate-quality evidence supports the effectiveness of psychological intervention, support and caregiving training for reducing caregiver strain. The significant beneficial effects of psychological interventions on the

critical outcomes of caregiver burden and depression were considered sufficient to warrant a recommendation in favour of the intervention. The balance of harms and benefits was discussed by the GDG. No trials had identified any harm for care-dependent older people or their caregivers that was directly related to caregiving support interventions. The GDG concluded that limited potential for harm was associated with these interventions. Such interventions are frequently very resource intensive and may require specialist delivery. The GDG acknowledged that the

implementation of these approaches may face challenges in community settings. In those settings where implementation would be possible, the GDG agreed that the interventions would be highly valued by caregivers and would be acceptable to health care providers. In view of equity, with the health of caregivers frequently being ignored in the delivery of care for older people, and coupled with the moderate quality of the evidence, the GDG made a strong recommendation in favour of psychological interventions for caregivers.

4 Implementation considerations

The recommendations in these guidelines need to be implemented using an older person-centred and integrated approach. The rationale and evidence base for providing older person-centred and integrated care has been detailed in the WHO *World report on ageing and health* (1). WHO describes this type of health care needed for ageing populations as integrated care for older people (ICOPE).

In general, ICOPE can involve integration at the policy or sector level (macro), at the organizational or professional level (meso), and at the clinical or intervention level (micro) (64, 65). The approach of WHO to populations of older people spans all these levels, but as the entry point emphasizes integration at the level of community care.

This approach is person-centred and grounded in the perspective that older people are more than the vessels of their disorders or health conditions – they are individuals with unique experiences, needs and preferences. ICOPE also encompasses the context of individuals' daily lives, both in terms of the people close to them and those who are in their lives as part of a community.

Important elements for designing ICOPE for people with chronic and multiple conditions include community-based interventions and (66):

- comprehensive assessment and care plans shared with all providers;
- common treatment/care goals;
- strong referral and monitoring;
- community engagement and caregiver support.

These ICOPE guidelines are aligned with the wider WHO framework on strengthening integrated people-centred health services (20), which was adopted in 2016 by the 69th session of the World Health Assembly (67).

The five steps needed to deliver the ICOPE recommendations in an integrated manner are outlined in Fig. 2.

Comprehensive assessments and care plans

Effective interventions start with a comprehensive assessment of the intrinsic capacity of the older person, and the associated conditions, impairments, behaviours and risks that may influence future capacity, and of the person's environment. These assessments include not only a traditional history-taking and, if appropriate, a physical examination, but also a thorough analysis of the person's values, priorities and preferences concerning the course of their health and its management. Comprehensive assessments and care plans should promote the identification of underlying conditions associated with impairments such as hypertension, diabetes and dementia, and establish pathways for referral and treatment.

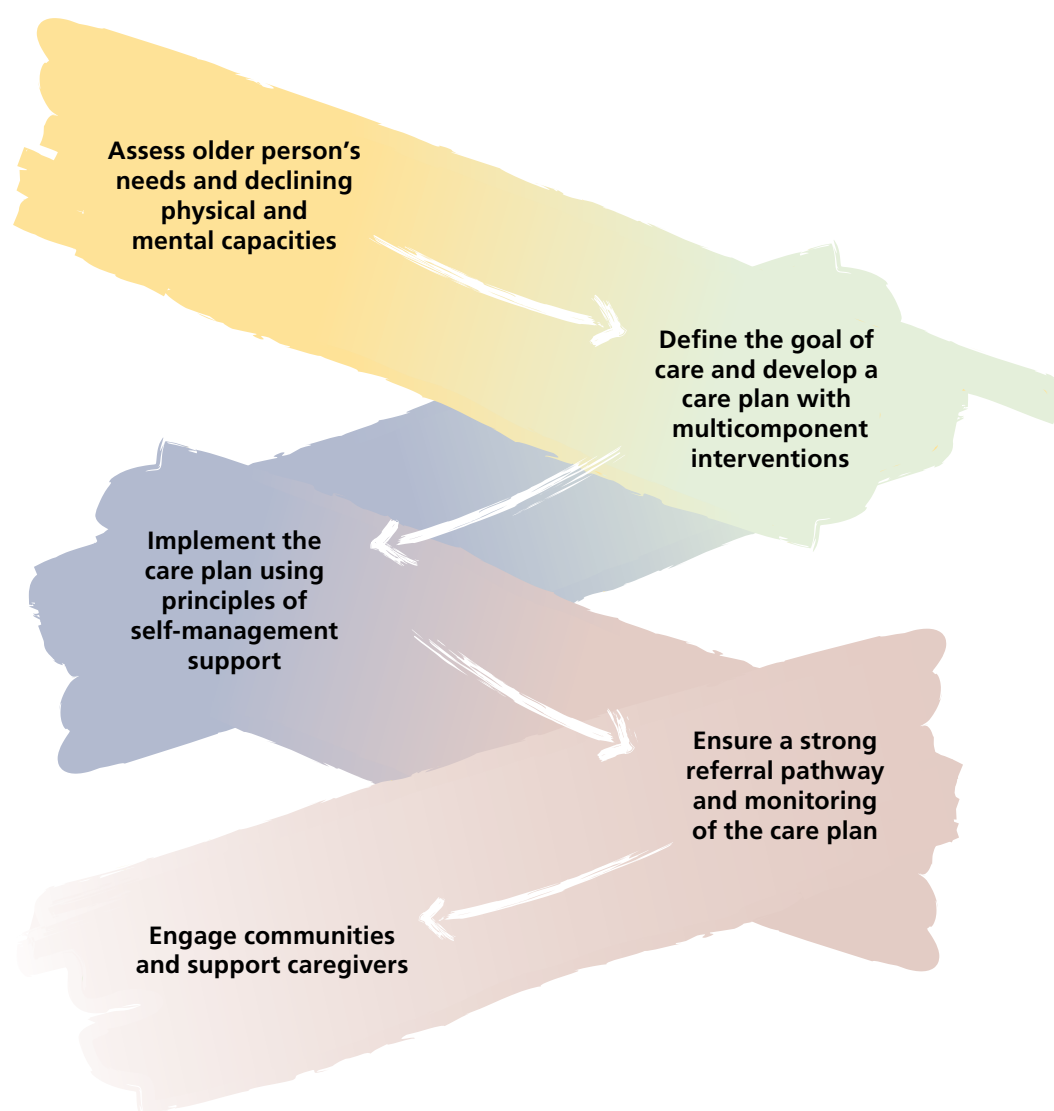
This assessment is essential to the development of a care plan and to tailoring interventions that are acceptable and appropriate for the older person. Comprehensive assessments and care plans unite different providers around one goal: to maintain intrinsic capacity and functional ability. They can ensure that the necessary follow-up occurs and that links are made between health care and social care.

The ICOPE implementation guide to accompany the present document is focused on this process for developing an older person's comprehensive assessment and care plan.

Shared decision-making and goal-setting

Integration of care can be achieved only if services and providers are working towards the single goal of maintaining intrinsic capacity and functional ability. It is essential that the older person is involved with decision-making and goal-setting from the outset, and that goals are set in accordance with the person's needs and preferences.

Fig. 2: Delivering ICOPE in an integrated way



Strong referral, monitoring and support

Regular and sustained follow-up of older people, with integration among different levels of care, is essential for implementing the interventions recommended in these guidelines. Such an approach promotes early detection of complications or of changes in functional status, thus preventing unnecessary emergencies and related inefficiencies. It also provides for a forum for monitoring progress against the care plan, as well as a means for arranging additional support as needed. Follow-up and support might be especially important following major changes in the disease status, treatment plan or social role/situation (a change in residence, for example, or the death of a partner).

Community engagement and caregiver support

Caregiving can be demanding, and caregivers of people with severely declining capacity are often isolated and at high risk of experiencing psychological distress and depression. In addition to these guidelines' recommendations to support caregivers, caregivers also need basic information about the older person's health conditions, and encouragement to develop a range of practical skills, such as how to transfer a person from a chair to a bed safely or how to help with bathing. The older person and/or caregiver should be provided with information about the community-based resources

available to them. Opportunities to involve communities and neighbourhoods more directly in supporting care must be explored, particularly by encouraging local volunteering and enabling older community members to add contributions. The associations and groups that draw together older people are one mechanism by which such activities could happen.

The recommendations of these guidelines should be adapted into a locally appropriate document that can meet the needs of each country and its health services. The headquarters of WHO will work closely with its regional and country offices, as well as WHO implementing partners, to ensure the communication and country-specific adaptation of these guidelines, through regional and national meetings.

As countries consider how to implement these guidelines, an analysis should be made of the budgetary and human resource requirements, and of other health system implications, to identify which inputs and systems are available and which areas require additional investment. Extra input may be needed for the training

of health workers, the use of medical products and technologies, or with regard to adaptations to health information systems to collect data on intrinsic capacity and functional ability.

An enabling environment should be created for following these recommendations, including through support to health care practitioners in the use of evidence-based practices. In this process, the role of local professional societies is important, and an all-inclusive and participatory process should be encouraged.

The inclusion of ageing and health into national policies and plans should be considered. Creating and strengthening linkages with other health and non-health programmes towards achieving broader goals can greatly enhance sustainability and effectiveness.

To further support country implementation, WHO is producing a series of subsidiary tools to address the clinical and service-delivery aspects of implementing the recommendations of these ICOPE guidelines.

5 Publication, dissemination and evaluation

5.1 Publication and dissemination

These guidelines are to be disseminated as a print publication and electronically at a dedicated section of the WHO website (<http://www.who.int/ageing/health-systems/icope>). The information here is organized in line with the priorities of the WHO *Global strategy and action plan on ageing and health* (6). All of the evidence profiles are available online, giving detailed information about the available evidence, the GRADE (Grading of Recommendations Assessment, Development and Evaluation) quality analyses, the narrative descriptions of the evidence that was not included in the GRADE tables, and the considerations of values, preferences and feasibility.

A series of subsidiary products deriving from these ICOPE guidelines support the implementation of module I (declining physical and mental capacities), module II (geriatric syndromes) and module III (caregiver support). These products include:

- The ICOPE implementation guide for integrated clinical care for older people, with:
 - ▶ steps on how to set person-centred care goals, develop an integrated care plan, and provide self-management support; and
 - ▶ a set of colour-coded algorithms to lead the practitioner through an integrated process of assessing, classifying and managing declining physical and mental capacities in older age;
- A country toolkit comprising guidance for implementing and evaluating integrated health and social care services for older people in communities;
- ICOPE mobile phone technology for health workers and older people (the WHO mAgeing initiative).

The guidelines and products are developed in English to be translated into other WHO official languages for wider dissemination in collaboration with WHO regional offices.

Dissemination will be supported by the publication of selected systematic reviews and evidence in peer-reviewed journals, and presentations and workshops at key conferences and events.

These ICOPE guidelines and products are key tools to support the implementation of the *Global strategy and action plan on ageing and health*; activities for disseminating them were included in the strategy's action plan approved by the World Health Assembly in 2016 (19). Actions include the piloting and evaluation of these guidelines in 20 countries by 2020.

5.2 Monitoring and evaluation

Implementation of these recommendations will be monitored at the community and health-facility levels. Data will be collected through surveys or updated lists of service availability. Special studies can be considered where routine monitoring is not feasible or appropriate. A monitoring and evaluation framework, including a list of core indicators, is to be developed and included in the ICOPE country toolkit. Indicators will measure the performance of service delivery (the health system inputs, and the processes and outputs of service delivery), as well as the feasibility and acceptability of the recommendations. An international working group of experts, including representatives of the WHO regions and countries, will develop the framework and oversee monitoring and evaluation activities. Broader stakeholder engagement in policy design, implementation, and monitoring and evaluation will help to ensure that the national adaptation of these guidelines results in programmes that are legitimate, acceptable, effective, equitable, and address community needs.

Intermediate health systems outcomes and the impacts of the interventions will be measured by the WHO global survey on *Healthy Ageing*, which was also included in the WHO *Global strategy and action plan on ageing and health* approved by the World Health Assembly (6). The global survey will provide information at a country level

on health status, health needs, and how well needs are being met. This information will form the basis for international comparisons and a baseline against which to measure the impact of the programme.

The WHO Department of Ageing and Life Course will work closely with the Health Data Collaborative¹ to ensure harmonization of standards and tools and alignment with the WHO *2015 global reference list of 100 core health indicators* (68).

5.3 Future review and update

The WHO Department of Ageing and Life Course will regularly monitor new evidence in priority areas, with

the assistance of WHO collaborating centres. The department will also collect regular feedback from country implementation teams on ICOPE products.

These ICOPE guidelines will be updated after a four-year period, applying a similarly rigorous methodology. WHO welcomes suggestions for any additional issues that should be considered for inclusion in future guidelines. Please email these to Dr Islene Araujo de Carvalho: araujodecarvalho@who.int.

¹ Further information is available at <http://www.healthdatacollaborative.org>

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Annex 1: Guideline development group (GDG) members

Emiliano Albanese, World Health Organization (WHO) Collaborating Centre, University of Geneva, Geneva, Switzerland.

Olivier Bruyère, Department of Public Health, Epidemiology and Health Economics, University of Liège, Liège, Belgium.

Matteo Cesari, Gérontopôle, Centre Hospitalier Universitaire de Toulouse, Toulouse, France.

Alan Dangour, London School of Hygiene & Tropical Medicine, London, United Kingdom of Great Britain and Northern Ireland.

Amit Dias, Department of Preventive and Social Medicine, Goa Medical College Bambolim, Goa, India.

Astrid Fletcher, Department of Epidemiology and Population Health, London School of Hygiene & Tropical Medicine, London, United Kingdom.

Dorothy Forbes, Faculty of Nursing, University of Alberta, Edmonton Clinic Health Academy, Edmonton, Alberta, Canada.

Anne Forster, Stroke Rehabilitation, Academic Unit of Elderly Care and Rehabilitation, University of Leeds, Leeds, United Kingdom.

Mariella Guerra, Institute of Memory, Depression and Related Disorders, Lima, Peru.

Jill Keefte, L.V. Prasad Eye Institute, WHO Collaborating Centre for Prevention of Blindness, Hyderabad, India.

Ngaire Kerse, School of Population Health Faculty of Medical and Health Sciences, University of Auckland, Auckland, New Zealand.

Qurat ul Ain Khan, Department of Psychiatry, Aga Khan University Hospital, Karachi, Pakistan.

Chiung-ju Liu, Department of Occupational Therapy, School of Health and Rehabilitation Sciences, Indiana University, Indianapolis, Indiana, United States of America.

Gudlavalleti V.S. Murthy, Indian Institute of Public Health, Hyderabad, Madhapur, India.

Serah Nyambura Ndegwa, University of Nairobi, Nairobi, Kenya.

Joseph G. Ouslander, Department of Integrated Medical Sciences, Charles E. Schmidt College of Medicine, Florida Atlantic University, Boca Raton, Florida, United States.

Martin Prince (GDG chair), Institute of Psychiatry, Psychology and Neuroscience, King's College London, United Kingdom.

Jean-Yves Reginster, Department of Public Health, Epidemiology and Health Economics, University of Liège, Liège, Belgium.

Luis Miguel F. Gutiérrez Robledo, Instituto Nacional de Geriátria, Institutos Nacionales de Salud de México, Mexico City, Mexico.

John F Schnelle, Center for Quality Aging Geriatric Research, Education and Clinical Center, Vanderbilt University Medical Center, Nashville, Tennessee, United States.

Kelly Tremblay, University of Washington, Seattle, Washington, United States.

Jean Woo, Department of Medicine and Therapeutics, and Institute of Aging, The Chinese University of Hong Kong, Hong Kong, China.

Annex 2: Assessment of conflicts of interest

Individuals involved in the assessment of conflicts of interest:

- John Beard, Director, Department of Ageing and Life Course, WHO headquarters
- Islene Araujo De Carvalho, Senior Policy and Strategy Adviser, Department of Ageing and Life Course, WHO headquarters
- Nandi Siegfried, Independent Consultant, Guideline Methodologist
- Jotheeswaran Amuthavalli Thiyagarajan, Technical Officer, Department of Ageing and Life Course, WHO headquarters
- Martin Prince (guideline development group [GDG] chair), Professor of Epidemiological Psychiatry, Health Services and Population Research Institute of Psychiatry, King's College London, London, United Kingdom of Great Britain and Northern Ireland.

The minutes presented below summarize the discussions with the ICOPE GDG chair and the director of the Department of Ageing and Life Course on the management of declarations of interest for GDG members and external resource people for the GDG meeting held at WHO headquarters in Geneva. The follow-up and suggested actions agreed on to manage the conflicts of interest declared are summarized below:

- I. WHO is under scrutiny on the management of known and perceived conflicts of interest. The revised declaration-of-interest policy for experts² and the framework of engagement with non-state actors³ are followed.

² Available at http://www.who.int/occupational_health/declaration_of_interest.pdf

³ Available at <http://www.who.int/about/collaborations/non-state-actors>

- II. Conflicts of interest are a subjective matter and it is very important that not only the known but also the perceived conflicts of interest are declared and managed appropriately, particularly for guideline development at WHO.
- III. The declarations are shared only with the WHO steering group for guideline development and only summaries of the declarations are available to meeting participants.
- IV. Specific cases in which potential conflicts of interest have been declared will be discussed and the agreements and follow up actions summarized below.
- V. Participants of the GDG meetings participate in their individual capacities and not as institutional representatives.
- VI. The WHO Secretariat and external resource people do participate in deliberations leading to decision-making (voting). They do not participate in any of the closed sessions.

A. Members and contributors with no relevant interests declared on the declaration-of-interest form and no relevant interests found in the CV/ résumé:

- Martin Prince, GDG chair, Professor of Epidemiological Psychiatry, Health Services and Population Research Institute of Psychiatry, King's College London, London, United Kingdom
- Emiliano Albanese, Head, Division of Public Mental Health, and Aging, Institute of Global Health, Geneva, Switzerland
- Olivier Bruyère, Department of Public Health, Epidemiology and Health Economics, University of Liège, Liège, Belgium
- Kralj Carolina, King's College London, London, United Kingdom

- A.B. Dey, Professor and Head of Department, Department of Geriatric Medicine, All India Institute of Medical Science, New Delhi, India
- Amit Dias, Department of Preventive and Social Medicine, Goa Medical College Bambolim, Goa, India
- Meredith Fendt-Newlin, Social Care Workforce Research Unit, King's College London, London, United Kingdom
- Astrid Fletcher, Faculty of Epidemiology and Population Health, London School of Hygiene & Tropical Medicine, London, United Kingdom
- Dorothy Forbes, Faculty of Nursing, University of Alberta, Edmonton Clinic Health Academy, Alberta, Canada
- Anne Foster, Professor of Stroke Rehabilitation, Faculty of Medicine and Health, Leeds Institute of Health Sciences, University of Leeds, Leeds, United Kingdom
- Mariella Guerra, Institute of Memory, Depression and Related Disorders, Lima, Peru
- Jill Keeffe, L.V. Prasad Eye Institute, WHO Collaborating Centre for Prevention of Blindness, Hyderabad, India
- Qurat Khan, Assistant Professor, Department of Psychiatry, Aga Khan University Hospital, Karachi, Pakistan
- Gudlavalleti V.S. Murthy, Indian Institute of Public Health, Hyderabad, Madhapur, India
- Joseph G. Ouslander, Chair, Department of Integrated Medical Science, and Senior Associated Dean of Geriatric Programs, Charles E. Schmidt College of Medicine, Florida Atlantic University, Boca Raton, Florida, United States of America
- Minha Rajput-Ray, Medical Director, Need for Nutrition Education/Innovation Programme, Global Centre for Nutrition and Health, Cambridge, United Kingdom
- Sumantra Ray, Lead Clinician (National Diet and Nutrition Survey), Medical Research Council (Human Nutrition Research), Cambridge, United Kingdom
- Luis Miguel F. Gutiérrez Robledo, Director-General, Instituto Nacional de Geriatria Institutos Nacionales de Salud de México, Mexico City, Mexico
- John F. Schnelle, Professor of Medicine, Director, Center for Quality Aging Geriatric Research, Education and Clinical Center, Vanderbilt Center for Quality Aging, Nashville, Tennessee, United States
- Alessandra Stella, Independent consultant, Rome, Italy
- Richard Uwakwe, Faculty of Medicine Nnamdi Aikiwe University Nnewi Campus, Awka, Nigeria
- Abebaw Fekadu Wassie, Associate Professor, Addis Ababa University, College of Health Science, Department of Psychiatry, Addis Ababa, Ethiopia
- Jean Woo, Department of Medicine and Therapeutics, and Institute of Aging, The Chinese University of Hong Kong, Hong Kong, China

B. Guideline development group members who have declared an interest on the declaration-of-interest form or for whom a potentially relevant interest has been noted from the CV/résumé:

1. Olivier Bruyère, Department of Public Health, Epidemiology and Health Economics, University of Liège, Liège, Belgium

Professor Bruyère did not declare any interests on the declaration-of-interest form. It is noted from his CV that he is a member of the Scientific Advisory Board of the European Society for Clinical and Economic Aspects of Osteoporosis, Osteoarthritis and Musculoskeletal Diseases (ESCEO).

ESCEO is a not-for-profit organization, dedicated to a close interaction between clinical scientists dealing with bone, joint and muscle disorders, the pharmaceutical industry developing new compounds in this field, regulators responsible for the registration of such medications, and health policy-makers, to integrate the management of osteoporosis and osteoarthritis within the comprehensive perspective of health resources utilization.

The objective of ESCEO is to provide practitioners with the latest clinical and economic information, allowing them to organize their daily practice, using an evidence-based-medicine perspective, with a cost-conscious perception. Financial details can be found in the organization's annual report.⁴

⁴ Available at <http://www.esceo.org/reports>

Action: It was felt that this interest was insignificant or minimal and unlikely to affect, or be reasonably perceived to affect, Professor Bruyère's judgement in the development of the present guidelines. No further action was necessary.

2. Alan Dangour, London School of Hygiene & Tropical Medicine, London, United Kingdom

Dr Dangour declared in the declaration-of-interest form that he had received from the United Kingdom Department of Health a competitive grant (£660 000) to conduct research on nutrition in older people. He also provided expert opinion to the same department for a judicial review on nutrition in older people.

Action – Participation with verbal disclosure: It was felt that this interest was relatively minor and Dr Dangour should continue his involvement in the GDG. At the start of the meeting, he was requested to verbally disclose the research involvement to all meeting participants.

3. Jean-Yves Reginster, Department of Public Health Sciences, University of Liège, Liège, Belgium

Professor Reginster declared that he was president of the European Society for Clinical and Economic Aspects of Osteoporosis, Osteoarthritis and Musculoskeletal Diseases (ESCEO). ESCEO is a not-for-profit organization, dedicated to a close interaction between clinical scientists dealing with bone, joint and muscle disorders, pharmaceutical industry developing new compounds in this field, regulators responsible for the registration of such medications and health policy-makers, to integrate the management of osteoporosis and osteoarthritis within the comprehensive perspective of health resources utilization. The objective of ESCEO is to provide practitioners with the latest clinical and economic information, allowing them to organize their daily practice, using an evidence-based-medicine perspective, with a cost-conscious perception. Financial details can be found in the organization's annual report.⁵

Action – Partial exclusion: It was decided that Professor Reginster could continue as a member of the GDG and participate in the deliberations of the

evidence to inform all of the guidelines. He will be excluded from participating in the decision-making (voting) process relating to drafting the final recommendation on nutritional supplements for lean muscle mass and muscle strength. At the start of the meeting, Professor Reginster was asked to disclose verbally his position in ESCEO, his intellectual interests and the interests of his organization in the guidelines related to nutritional interventions targeting muscle strength and lean muscle mass.

4. Matteo Cesari, Geronotopôle, Centre Hospitalier Universitaire de Toulouse, Toulouse, France

Professor Cesari declared that he was a speaker for Nestlé. Nestlé is a leading company that manufactures nutritional supplements for older people, targeting their unique nutritional needs. A small number of the trials included in the reviews had been funded by Nestlé or tested the benefit of Nestlé nutritional supplements for older people.

Action – Partial exclusion: It was decided that Professor Cesari could continue as a member of the GDG and participate in the deliberations of the evidence to inform all guidelines. He was excluded from participating in the decision-making (voting) process relating to the drafting of the final recommendation on oral nutritional supplementation for older people with undernutrition.

C. External resource people with no relevant interests declared on the declaration-of-interest form or for whom such interests declared are insignificant or minimal

1. Nandi Siegfried, Consultant, Guideline Methodologist, Independent Consultant

Dr Siegfried did not declare any interests on the declaration-of-interest form. It was noted from her CV/résumé that she has provided technical support, expert input, and facilitation to WHO clinical guidelines development processes in the fields of HIV/AIDS and nutrition.

Action: Dr Siegfried was a technical resource and did not therefore participate in any of the closed sessions (voting on or drafting of final recommendations).

⁵ Available at <http://www.esceo.org/reports>

Annex 3: Scoping questions

1. Mobility loss

Does physical exercise training (progressive resistance training or multimodal exercise) produce any benefit or harm for older people with limitations in activities of daily living (ADLs)?

Population

- Non-institutionalized older people with limitations in ADLs

Intervention

- Progressive resistance training
- Physical exercise (balance training or multicomponent)
- Physical rehabilitation (tailored to older person's need)

Comparison

- No intervention
- Control (low physical activity or any social or other intervention)
- Usual care activities

Outcomes

- Main function measure (higher score = better function)
- Physical function domain of Short Form Health Survey (SF-36/SF-12)
- ADLs measure
- Activity level measure
- Main lower limb strength measure
- Main measure of aerobic function
- Six-minute walk test (metres)
- Balance measures (higher = better balance)
- Gait speed (metres/second)
- Timed walk (seconds)
- Timed "up-and-go" (seconds)
- Time taken to stand from seated in a chair
- Stair climbing (seconds)
- Chair stand within time limit (number of times)
- Vitality (SF-36/Vitality plus scale, higher = more vitality)

- Pain (higher score = less pain, bodily pain on SF-36)
- Pain (lower score = less pain)
- Mortality
- Adverse effect

2. Undernutrition

Does oral nutritional supplement, dietary advice or mealtime enhancement produce any benefit for older people at risk of undernutrition or who are affected by undernutrition?

Population

- Older people, 60 years of age and over (both male and female) at risk of undernutrition
- Older people, 60 years of age and over (both male and female) affected by undernutrition

Intervention

- Oral nutrition supplement (macro- and/or micronutrients)
- Dietary advice
- Mealtime strategy to improve food intake

Comparison

- Placebo
- Usual care
- Control group (waiting to receive intervention)

Outcomes

- Critical: mortality, weight change
- Important: hand grip strength, ADLs

Setting

- Primary health care/community

3. Vision impairment

For older people with vision impairment, does case finding, provision of care or referral produce any benefit and/or harm compared with controls?

Population

- Older people 60 years of age and over (both male and female) with refractive errors or cataract

Intervention

- Case-finding and referral for refractive error or cataract
- Case-finding and immediate provision of care for refractive error

Comparison

- Usual care

Outcomes

- *Critical:* visual acuity, vision-related quality of life, self-reported improvement
- *Important:* social function, depression

Setting

- Primary health care/community

4. Hearing loss

Does case-finding and provision of hearing aids or assistive listening devices produce any benefit or harm for older people 60 years of age and over with hearing loss?

Population

- Older people 60 years of age and over (both male and female) with hearing loss

Intervention

- Screening and provision of hearing aid or assistive listening device
- Educational intervention to improve uptake or use of hearing aid

Comparison

- Referral or no service or delayed treatment

Outcomes

- *Critical:* improvement in communication, social function, hearing function
- *Important:* depression, quality of life, use of verbal communication strategy, self-reported hearing handicap scale

5. Cognitive impairment

Does cognitive stimulation, cognitive training or rehabilitation produce any benefit for older people with cognitive impairment or early stage of dementia?

Population

- Older people 60 years of age and over (both male and female) with cognitive impairment or mild cognitive impairment
- Older people 60 years of age and over (both male and female) with early stage of Alzheimer's disease and vascular dementia

Intervention

- Cognitive stimulation
- Cognitive training
- Cognitive rehabilitation

Comparison

- No treatment/usual care/standard treatment
- Waiting list control
- Active control condition

Outcomes

- *Critical:* cognitive functions assessment by Mini Mental State Examination (MMSE) and Alzheimer's Disease Assessment Scale – Cognitive subscale (ADAS-Cog), immediate and delayed memory recall

6. Depressive symptoms

Does psychological intervention (behavioural activation, cognitive behavioural therapy, psychoeducational therapy, interpersonal therapy, problem-solving therapy, stepped-care protocol therapy, or life-review therapy) produce any benefit or harm for older people with depressive symptoms?

Population

- Older people 60 years of age and over (both male and female) with depressive symptoms with or without diagnostic status (depressive episode or disorder)

Interventions

- Behavioural activation, cognitive behavioural therapy, psychoeducational therapy, interpersonal therapy, problem-solving therapy, stepped-care protocol therapy, or life-review therapy

Comparison

- Usual care or waiting list

Outcomes

- *Critical:* depressive symptoms, incidence of clinically significant depression (depressive episode or major depressive episode)

7. Urinary incontinence

Do non-pharmacological interventions (prompted voiding, timed voiding, toilet training, habit retraining, pelvic floor muscle training) produce any benefit and/or harm for older people with urinary incontinence?

Population

- Older people with urgency or stress or mixed urinary incontinence

Intervention

- Prompted voiding
- Timed voiding
- Bladder training
- Habit retraining
- Pelvic floor muscle training

Comparison

- No intervention/usual care

Outcomes

- Critical: proportion of mean change in frequency of urinary incontinence, change in mean proportion of hourly checks that are wet, number of patients with reductions in incidence of daytime incontinence, number of patients with reductions in incidence of night-time incontinence, incontinent episodes in 24 hours, mean urinary incontinence incidence per 24 hours, urinary incontinence symptoms
- Important: perceived cure, self-initiated toileting, median percentage of checks wet, number of incontinent episodes, urinary incontinence urgency, urinary incontinence frequency, nocturia, quality of life

8. Risk of falls

Do interventions to prevent falls produce any benefit or harm for older people (60 years of age and over) at risk of falls?

Population

- Older people 60 years of age and older (both male and female) at risk of falls

Intervention

- Multicomponent exercise programme/strength training

- Falls risk assessment by the physiotherapist to develop individualized falls and injury prevention
- Individually tailored exercises
- Medication review
- Withdrawal of psychotropic medication
- Multifactorial interventions with comprehensive geriatric assessment
- Environmental modification for home safety
- Assistive technology (walking aid, hearing aid, personal alarm system)
- Footwear assessment
- Insertion of a pacemaker (carotid sinus hypersensitivity)

Comparison

- Usual care or standard care
- Placebo or no active intervention
- Waiting list control
- Active control intervention

Outcome

- Critical: rate of falls

Setting

- Primary health care/community

9. Caregiver support

Does respite care or psychosocial support produce any benefit or harm for family caregivers of care-dependent older people?

Population

- Family caregivers (both male and female) of care-dependent people of 60 years of age and over

Intervention

- Respite care
- Psychosocial support
- Technology-based interventions

Comparison

- Usual or standard care
- Waiting list control
- Active control intervention

Outcomes

- Critical: caregiver burden, caregiver depression, care recipients' symptoms
- Important: well-being, ability/knowledge, quality of life, anger, anxiety

Annex 4: Evidence process

STEP ONE

Search

For the evidence synthesis, we performed a comprehensive search for published systematic reviews and randomized controlled trials (RCTs) using the Cochrane Library, Embase, Ovid MEDLINE and PsycINFO databases.⁶ A search strategy was developed for each of the scoping questions (Annex 3). Details of the search strategies can be found in the GRADE (Grading of Recommendations Assessment, Development and Evaluation) tables⁷ and evidence profiles appended to these guidelines, which are available at <http://www.who.int/ageing/health-systems/icope>.

STEP TWO

Screening

Identified references were exported to reference manager software and duplicates were identified and deleted. References were screened first by title and abstract and then by full text to identify systematic reviews and RCTs. Details of the search process and the number of records retrieved and assessed for eligibility are presented in a PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flow diagram for each PICO (population, intervention, comparison, outcome) question in the relevant GRADE evidence profile documents.

STEP THREE

Eligibility

Systematic reviews that reported the methodological quality assessment of included RCTs were eligible for inclusion. Of the 32 included systematic reviews, 20

were published between 2011 and 2015 and were updated with newer RCTs identified in consultation with guideline development group (GDG) members. The remaining 12 systematic reviews were published before 2011, and were updated with new RCTs identified from the search strategies during screening.

STEP FOUR

Quality assessment of included studies

The AMSTAR appraisal tool was used on each included systematic review to provide an indication of review conduct quality (see Fig. 3). No review was excluded based on the cut-off points in the AMSTAR tool as there is no score recommended for separating high- from low-quality reviews.

STEP FIVE

Meta-analysis

Where new trials were identified and included comparable interventions and outcomes, meta-analysis was conducted either as an update to the analyses contained in a previous review, or as a de novo meta-analysis. Review Manager 5 (RevMan 5) software was used to calculate mean differences and standardized mean differences between intervention and control groups. Relative risks or odds ratios were presented for categorical outcomes.

STEP SIX

GRADE assessment

The meta-analysed results were exported to the GRADE profiler software for evidence grading work.⁸ The evidence was graded as very low, low, moderate, or high, based on the limitations of the included

⁶ See:

— Cochrane Library (<http://www.cochranelibrary.com/cochrane-database-of-systematic-reviews>)

— Embase (<http://www.elsevier.com/solutions/embase-biomedical-research>)

— Ovid MEDLINE (<http://ovid.com/site/catalog/databases/901.jsp>)

— PsycINFO (<http://www.apa.org/pubs/databases/psycinfo/index.aspx>)

⁷ Guyatt G, Oxman AD, Akl EA, Kunz R, Vist G, Brozek J et al. GRADE guidelines: 1. Introduction – GRADE evidence profiles and summary of findings tables. *J Clin Epidemiol*. 2011;64(4):383–94. doi:10.1016/j.jclinepi.2010.04.026.

⁸ GRADE's software for summary of findings tables, health technology assessment and guidelines [website]. Hamilton (ON): McMaster University and Evidence Prime; 2015 (<http://gradepr.org>, accessed 11 September 2017).

studies, specifically in terms of inconsistency, indirectness, imprecision and publication bias. Except for one Cochrane review, none of the included systematic reviews performed GRADE assessments. Therefore, for each meta-analysis, we conducted an independent assessment of the quality of results using GRADE profiler software.

STEP SEVEN

Reporting

The final outcome of the systematic reviews, meta-analysis and the evidence-grading exercise was summarized in a 2×2 table of all results and interventions, which was then discussed with the GDG.

Fig. 3: Assessment of systematic review quality using the 11 questions of the AMSTAR checklist tool⁹

Study ¹⁰		1. "Was an 'a priori' design provided?"	2. "Was there duplicate study selection and data extraction?"	3. "Was a comprehensive literature search performed?"	4. "Was a list of studies (included and excluded) provided?"	5. "Were the characteristics of the included studies assessed and documented?"	6. "Was the scientific quality of the included studies assessed?"	7. "Were the methods used to combine the findings of studies appropriate?"	8. "Was the likelihood of publication bias assessed?"	9. "Was the conflict of interest included?"
Mobility impairment	Cadore et al.	+	+	+	+	+	+	+	+	+
	Chou et al.	+	+	+	+	+	+	+	+	+
	Daniels et al.	+	+	+	+	+	+	+	+	+
	de Vries et al.	+	+	+	+	+	+	+	+	+
	Gine-Garriga et al.	+	+	+	+	+	+	+	+	+
	Howe et al.	+	+	+	+	+	+	+	+	+
	Van Abbema.	+	+	+	+	+	+	+	+	+
	Liu C et al.	+	+	+	+	+	+	+	+	+
	Burton et al.	+	+	+	+	+	+	+	+	+
	Forbes et al.	+	+	+	+	+	+	+	+	+
	Pitkala et al.	+	+	+	+	+	+	+	+	+
Undernutrition	Milne et al.	+	+	+	+	+	+	+	+	+
	Baldwin et al.	+	+	+	+	+	+	+	+	+
	Munk et al.	+	+	+	+	+	+	+	+	+
Falls	Gillespie et al.	+	+	+	+	+	+	+	+	+
Cognitive impairment	Martin et al.	+	+	+	+	+	+	+	+	+
	Kurz et al.	+	+	+	+	+	+	+	+	+
Sub-threshold depression	Ekers et al.	+	+	+	+	+	+	+	+	+
	Cuijpers et al.	+	+	+	+	+	+	+	+	+
	van Zoonen et al.	+	+	+	+	+	+	+	+	+
Urinary incontinence	Wallace et al.	+	+	+	+	+	+	+	+	+
	Ostaszewicz.	+	+	+	+	+	+	+	+	+
	Eustice et al.	+	+	+	+	+	+	+	+	+
	Ostaszewicz et al.	+	+	+	+	+	+	+	+	+
	Dumoulin et al.	+	+	+	+	+	+	+	+	+
Caregiver stress	Mason et al.	+	+	+	+	+	+	+	+	+
	Shaw et al.	+	+	+	+	+	+	+	+	+
	Sorensen et al.	+	+	+	+	+	+	+	+	+
	Pinquart et al.	+	+	+	+	+	+	+	+	+
	Lopez-Hartmann et al.	+	+	+	+	+	+	+	+	+
Vision impairment	Smeeth et al.	+	+	+	+	+	+	+	+	+
Hearing loss	Barker et al.	+	+	+	+	+	+	+	+	+

Key:
 + Yes - No ? Unclear

⁹ Shea BJ, Grimshaw JM, Wells GA, Boers M, Andersson N, Hamel C, et al. Development of AMSTAR: a measurement tool to assess the methodological quality of systematic reviews. BMC Med Res Methodol. 2007;7(1):10. doi:10.1186/1471-2288-7-10.

¹⁰ For full study details, see the ICOPE evidence profiles available at <http://www.who.int/ageing/health-systems/icope>.

Glossary

Activities of daily living (ADLs): The basic activities necessary for daily life, such as bathing or showering, dressing, eating, getting in or out of bed or chairs, using the toilet, and getting around inside the home.

Behavioural activation: A behavioural treatment for depression in which guidance is given to increase the number of rewarding activities in the person's life.

Bladder training: A form of behavioural therapy to treat urinary incontinence that aims to increase the interval between voids. This training is composed of patient education, scheduled voiding and positive reinforcement.

Caregiver: A person who provides care and support to someone else. This may include the following:

- helping with self-care, household tasks, mobility, social participation and meaningful activities;
- offering information, advice and emotional support as well as engaging in advocacy, facilitation of decision-making and peer support, and helping with advance-care planning;
- offering respite services; and
- engaging in activities to foster intrinsic capacity.

Caregivers may include family members, friends, neighbours, volunteers, care workers and health care professionals.

Caregiver stress: The cumulative effect of the physical, emotional and economic pressures put on a caregiver.

Case finding: A strategy for targeting resources at individuals or groups who are suspected to be at risk for a particular disease or adverse health outcomes. It involves actively, systematically searching for at-risk people, rather than waiting for them to present with symptoms or signs of active disease or health conditions.

Care dependence: This arises when functional ability has fallen to a point where an individual is no longer

able without assistance to undertake the basic tasks necessary for daily living.

Chronic condition: A disease, disorder, injury or trauma that is persistent or has long-lasting effects.

Comprehensive geriatric assessment: A multidimensional assessment of an older person that includes medical, physical, cognitive, social and spiritual components; may also include the use of standardized assessment instruments and/or an interdisciplinary team to support the process.

Cognitive behavioural therapy (CBT): A type of psychological therapy that involves identifying and correcting distorted maladaptive beliefs, while using thought exercises and real experiences to facilitate symptom reduction and improved functioning.

Cognitive impairment: A loss or abnormality in attention functions, memory functions or higher-level cognitive functions.

- Attention functions are mental functions that focus on an external stimulus or internal experience for a specific period of time.
- Memory functions are mental functions that register and store information and retrieve it as needed.
- Higher-level cognitive functions, often called executive functions, are mental functions that involve the frontal lobes of the brain. They include complex goal-directed behaviours such as decision-making, abstract thinking, making and carrying out plans, mental flexibility and deciding which behaviours are appropriate under specific circumstances.

Cognitive rehabilitation: A method to maximize memory and cognitive functioning despite neurological difficulties. Cognitive rehabilitation focuses on identifying and addressing individual needs and goals,

which may require strategies for taking in new information, or compensatory methods such as using memory aids.

Cognitive stimulation: Participation in a range of activities designed to improve cognitive and social functioning.

Cognitive training: Guided practice of specific standardized tasks designed to enhance particular cognitive functions.

Community health worker: Individuals who provide health education, referral and follow up, case management, and basic preventive health care and home-visiting services to specific communities. They provide support and assistance to individuals and families in navigating the health and social services system.

Depressive symptoms: The presence of distress or some degree of impaired functioning in the absence of depressive episode/disorder.

Dietary advice: Recommendations for a healthy diet to help protect against malnutrition and undernutrition as well as noncommunicable diseases.

Falls: Inadvertently landing on the ground, floor or other lower level.

Functional ability: The combination and interaction of intrinsic capacity with the environment a person inhabits.

Geriatric syndromes: Complex health states that tend to occur only later in life and that do not fall into discrete disease categories; often the consequence of multiple underlying factors, and dysfunction in multiple organ systems.

Habit retraining: A form of toileting assistance given by a caregiver to adults with urinary incontinence. This method involves identification of an incontinent person's natural voiding pattern and the development of an individualized toileting schedule, which pre-empts involuntary bladder emptying.

Healthy Ageing: The process of developing and maintaining the intrinsic capacity and functional ability that enables well-being in older age.

Hearing loss: Loss or abnormality in sensory functions relating to perception of the presence of sounds or discriminating the location, pitch, loudness or quality of sounds.

Intrinsic capacity: The combination of the individual's physical and mental, including psychological, capacities.

Malnutrition: Deficiencies, excesses or imbalances in a person's intake of energy and/or nutrients. The term malnutrition covers two broad groups of conditions. One is "undernutrition" – which includes stunting (low height for age), wasting (low weight for height), underweight (low weight for age) and micronutrient deficiencies or insufficiencies (a lack of important vitamins and minerals); the other is overweight, obesity and diet-related noncommunicable diseases (such as heart disease, stroke, diabetes and cancer).

Mealtime enhancement strategy: Interventions to improve the mealtime routine, experience or environment by providing assistance (directly or indirectly): encouragement with eating, a more stimulating environment to eat in, increased access to food, more choice of food or more appealing food (visually, sensorially).

Mild cognitive impairment: A disorder characterized by memory impairment, learning difficulties and reduced ability to concentrate on a task for more than brief periods. There is often a marked feeling of mental fatigue when mental tasks are attempted, and new learning is found to be subjectively difficult even when objectively successful. None of these symptoms is so severe that a diagnosis of either dementia or delirium can be made.

Mobility loss: A loss or abnormality in any form of moving by changing body position or location or by transferring from one place to another, by carrying, moving or manipulating objects, by walking, running or climbing, or by using various forms of transportation.

Multimorbidity: The co-occurrence of two or more chronic medical conditions in one person.

Multimodal exercise training: Exercise interventions composed of multiple modalities such as strength training, aerobic training, balance training or flexibility exercises.

Multifactorial assessment: A comprehensive assessment to define all possible factors that may be causing a specific symptom or condition.

Multifactorial intervention: An intervention to address multiple contributing factors; an approach may include modification plus education, or action to minimize risk factors.

Non-specialist health care providers: General physicians, family physicians, nurses and other clinical officers working in a health centre or as part of a clinical team, commonly within a primary health care setting.

Older person: A person whose age has passed the median life expectancy at birth.

Person-centred services: An approach to care that consciously adopts the perspectives of individuals, families and communities, and sees them as participants in, as well as beneficiaries of, health care and long-term care systems that respond to their needs and preferences in humane and holistic ways. To ensure that person-centred care is delivered requires that people have the education and support they need to make decisions and to participate in their own care. Person-centred care is organized around the health needs and expectations of people rather than diseases.

Pelvic floor muscle training (PFMT): Exercises that involve contraction and relaxation of the pelvic muscles, aiming to strengthen the muscles and enable increased urethral-closing pressure.

Primary care professionals: Members of a primary care team, a group of professionals with complementary contributions, mutual respect and shared responsibility in patient care. Primary care teams are patient-centred, so their composition and organizational model can change over time.

Progressive resistance training: A type of exercise in which participants exercise their muscles against a force or some type of resistance that is progressively increased as strength improves.

Problem-solving therapy: A type of psychological therapy in which the person systematically identifies their problems, generates alternative solutions for each problem, selects the best solution, develops and conducts a plan, and evaluates whether this has solved the problem.

Psychological therapies: Interpersonal, individualized treatments to help with a psychiatric or psychological disorder, problem or adverse circumstance. Treatments may include cognitive behavioural therapy, problem-solving therapies, interpersonal therapy or integrative therapeutic techniques.

Physical activity: Any bodily movement produced by skeletal muscles that requires energy expenditure – including activities undertaken while working, playing, carrying out household chores, travelling or engaging in recreational pursuits.

Physical exercise: Subcategory of physical activity that is planned, structured, repetitive and aims to improve or maintain one or more components of physical fitness.

Primary health care: A concept based on the principles of equity, participation, intersectoral action, appropriate technology and a central role played by the health system. Patients usually have direct access without the need for referral.

Prompted voiding: A non-pharmacological, behavioural-therapy approach to urinary incontinence using verbal prompts and positive reinforcement, for people with or without dementia.

Respite care: Time off from caregiving responsibilities so that caregivers can restore and maintain their own physical and mental health.

Undernutrition: A global problem that is usually caused by a lack of food, or a limited range of foods with inadequate amounts of specific nutrients or other food components, for example protein, dietary fibre and micronutrients.

Urinary incontinence: Involuntary leakage of urine. The majority of causes can be divided into three types:

- urge incontinence: involuntary leakage of urine associated with, or immediately following, a sudden compelling need to void;
- stress incontinence: involuntary leakage when performing physical activity, coughing or sneezing; and
- mixed urinary incontinence: a combination of urge incontinence and stress incontinence.

Visual impairment: A loss or abnormality in sensory functions relating to the perception of the presence of light, or to sensing the form, size, shape or colour of the visual stimuli.

World Health Organization
Department of Ageing and Life Course
Avenue Appia 20
1211 Geneva 27
Switzerland

Email: ageing@who.int
Website: www.who.int/ageing



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