Integrated Care for **Older People** (ICOPE)

A Manual for Primary Care Physicians

World Health Organization
REGIONAL OFFICE FOR South-East Asia

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(Trainee's Handbook)

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Title: Integrated care for older people: A manual for Primary Care Physicians (Trainee's Handbook)

ISBN: ISBN 978-92-9022-757-1

Suggested citation. [Integrated Care for Older People (ICOPE) manual for Primary care Physician in Member States of the WHO South-East Asia Region]. [New Delhi]: World Health Organization, Regional officer for South-East Asia; [2020]. Licence: CC BY-NC-SA 3.0 IGO.

Cataloguing-in-Publication (CIP) data. CIP data are available at http://apps.who.int/iris.

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Printed in India

Foreword

Populations across the WHO South-East Asia Region are ageing. Whereas in 2010 older people accounted for 8% of the Region's population, by 2017 they accounted for 9.8%. This number will continue to rise, with older people expected to make up 13.7 percent of the population by 2030 – or 289 million people – and a significant 20.3% by 2050. Though the proportion of older people in the Region is projected to remain below global levels, the speed of the Region's demographic transition is faster.

To ensure all older people can access quality health services, health workers must be equipped to provide dedicated care to older people. WHO's 2020-2030 "Decade of Healthy Ageing" is clear: all countries must focus on ensuring the human resources necessary for integrated care. To do this, pre-service and in-service training for health workers, especially at the primary health care level, is crucial.

This manual is designed to help primary health care physicians in the Region provide the health services required for older people. The manual has 16 modules, each of them addressing a specific area of care. The contents are in line with the ICOPE (Integrated Care for Older People) approach to old age care, which proposes evidence-based recommendations for health care professionals to prevent, slow or reverse declines in the physical and mental capacities of older people.

By adopting and implementing the manual, policymakers and administrators will help ensure primary health care in the Region can meet the challenges of today and prepare for the challenges of tomorrow. WHO stands committed to supporting Member States in the Region as together we strive to achieve health for all at all ages.

Dr Poonam Khetrapal Singh
Regional Director

PREFACE

People are living longer than ever before owing to the advancements in the field of medicine as well as the improvement in access to health care. As service providers, health professionals now have to take care of an increasing number of older patients in their everyday practice. The subject of geriatric medicine as a distinct entity is relatively new in medical education, especially in the South-East Asia Region. On a global scale, substantial knowledge has been created in the field of geriatrics and gerontology in the last two decades. This knowledge has the potential to change the older population's quality of life and must reach those who need it most and benefit from it.

The medical education training system in the Region provides inadequate exposure to the principles and practice of old age care. As a result, physicians do not have enough theoretical knowledge and clinical skills to address complex health issues of old age, in spite of expanding technology and understanding in the field. While strengthening the undergraduate curriculum is a necessity in the long term, there is a need for practising primary care physicians to gain an understanding of the health-care needs of older people through short-term training. The Member States in the Region must take steps to improve the skills of health professionals in old age care, as well as improve access to health care.

The contents of the manual are in line with the ICOPE (Integrated Care for Older People) approach to old age care, developed by the World Health Organization (WHO). Efforts have also been made to harmonize this manual with other guidelines and intervention models developed by WHO. This is not a textbook or reference book in geriatric medicine, though most of the information has been derived from standard textbooks and journals of medicine and geriatric medicine. Only select common problems encountered in old age are included as alterations to normal age-related changes.

The manual has been designed in a comprehensive manner, the aim being to provide a holistic approach to the short-term development of human resources, with a focus on primary care physicians. This is a reference manual meant for primary care physicians who will provide care to older people in primary health care facilities. The information on old age care is meant to be incorporated into the everyday clinical practice of primary care physicians. This manual will help to enhance the knowledge and skills of physicians. It is expected that the use of the manual will improve the approach to issues of old age and promote holistic care of older people, which will ultimately improve their quality of life.

CONTENTS

Introduction to geriatrics

CHAPTER 1

Health and ageing in the South-East Asia Region

Learning outcomes

- To understand challenges of population ageing;
- To understand social dimensions of ageing issues;
- To understand older people and primary health care;
- To upgrade skills of primary care physicians in old age care.

Introduction

The demographic transition, coupled with the epidemiological transition, presents several challenges for all institutions of the civil society the world over. Older people living in the community depend on their family, the community, local social services and health services for most of their subsistence and health needs. Every society has its age care system that has evolved over generations and centuries. Towards the later part of the twentieth century, it was recognized that the traditional age care system does not suffice to support the ever-increasing number of older people in the face of the rising costs of care and the crumbling family and social support systems.

Challenges of population ageing

The UN defines a country as "ageing" when the proportion of people over 60 years of age reaches 7%. The dependency ratio is rising steadily. This means that the burden of a larger group of older people is borne by a relatively smaller group of younger working adults. Demographic changes influence the health, economic activity and social condition of the people. As the age structure of developing countries changes, the demands on resources by different segments of the population are expected to grow. Older people are marginalized because of their decreased physical, economic and sociopolitical clout. Nearly 60–75% of older people are economically dependent on others, usually their children. After retirement, there is a decline in the economic status of even those with pensions. Medical expenses consume a major share of the savings of older people. As for those who are already poor, living longer

may ultimately mean living with unattended medical problems as health services cannot be readily purchased.

With urbanization, families are becoming nuclear and smaller, and are not always capable of caring for older relatives. The unconditional respect and authority that older people used to enjoy in traditional rural extended families have been gradually eroded in recent years. In most of the developed world, women live longer than men by four to eight years. This is not the case in the Region due to the patriarchal social system, the generally low status of women and the fact that their access to health care is limited. Older women are likely to be illiterate, poor and widowed. They have more health problems and report more psychological distress than men.

Social dimensions of ageing

Older people are a vulnerable group in most societies in the Region. They face the threat of poverty consequent to retirement from the organized workforce or a decline in their functional capacity, making them unfit for productive work. The expenditure incurred by older people rises due to various health and health-related issues. Poverty in old age may also reflect a lifetime of deprivation and impoverishment. There is a perception in the health system that the increasing expenditure on health care is due to ageing of the population, and that older patients are responsible for the nonavailability of hospital beds, rising demand for services and long waiting lists. Such beliefs and perceptions have an overall negative impact.

The United Nations High Commission for Human Rights has recognized discrimination on the grounds of ageing as a major human rights issue. The access of older people to health care remains a major concern in most societies. Ensuring that health systems are accessible, available and affordable to all, including older people, may appear to be a utopian goal, but it needs to be pursued if the gains of longevity are to be enjoyed by all. While the right to health may not provide an instant solution to the multifaceted challenges of old age, it would allow a paradigm shift from a needs-based approach to a rights-based one.

Ageing and gender issues

As mentioned earlier, ageing has a gender component. It affects men and women similarly in terms of physical functioning, economic insecurity, isolation and emotional deprivation, lack of shelter and space, poor access to healthcare, abuse, etc. However, women face greater social deprivation and less access to resources. They have fewer opportunities for employment during adulthood and their income is lower. This adversely affects their entitlement to retirement benefits and access to health insurance. In addition to social deprivation, the health status of older women does not hold much promise. Despite being insulated from major metabolic and vascular diseases in early adulthood, older women have a much higher burden of illnesses in the domains of depression, dementia, sensory deficits in vision and hearing, osteoporosis and musculoskeletal disorders. The usual strategies for the control of noncommunicable diseases are directed at men and need to be re-examined in the context of older women, who may not have a similar risk profile. The public health implications of ageing are thus a combination of societal negativity and vulnerability.

Health and heath care in old age

Older people have a plethora of problems related to health and functional impairment. These are complex, and the cost and care required to deal with them are considerable. Acute and communicable diseases have been slowly replaced by chronic noncommunicable diseases. Multi-organ morbidities have now become much commoner than single-organ diseases. This epidemiological transition has an impact not only on the functioning of the health system, but also on medical education, training and research.

Geriatric medicine (clinical aspect of health in old age) and gerontology (the science of ageing) are new disciplines of medicine. Geriatric medicine as a specialty provides expertise in the ageing process, the impact of ageing on illness, multimorbidity, diagnosis of medical problems, pharmacotherapy, maintenance of health and rehabilitation. The model of care involves working closely with other professionals, such as nurses, pharmacists, physiotherapists, occupational therapists and social workers.

In developing countries, especially in the Region, organized and focused training in geriatric medicine is limited. Recent trends in medical education reflect that students and trainees have an inadequate knowledge of and skills related to old age health and care. This leads to frustration and potential adverse outcomes in practice. Geriatric medicine has been perceived to be significantly different from internal medicine and other areas of medical science as, in contrast to younger patients in clinical practice, it suitably addresses the multifactorial nature of disease in older people, polypharmacy, the high prevalence of cognitive disorders and the need to involve the family and any other support system. Conventional medical education programmes do not teach or discuss several issues that are important among older people, such as deterioration in intrinsic and functional capacities, frailty, falls, andropause and polypharmacy.

Older people and primary health care

Primary health care (PHC), which is based on the principles of equity, participation, intersectoral action and the use of appropriate technology, has a central role in the health system. Primary care is the first-contact care accessible and available at all times. Ideally, PHC should be continuous, comprehensive and coordinated. It should have the capability to provide short-term and long-term care. The range of services offered should be wide and appropriate to the common problems of the population. There should be provision for coordination with specialists that the patient may need. The single most significant player around which primary care revolves is the primary care physician.

A primary care physician is a physician who provides both the first-contact care for an undiagnosed health problem in the short term and continued care for varied medical conditions, irrespective of cause, organ system or diagnosis. The essential qualification for a primary care physician is a medical degree (MBBS or equivalent). However, in many developed countries, postgraduate training is required to be able to practise as a primary care physician. In developing countries, especially in the Region, postgraduate training in family medicine or general practice may not be available except Indonesia. The concept of family medicine (FM) or primary care teams is evolving, depending on the goal and functioning of the health system. While the core team includes the physician and a nurse, it can be a

multidisciplinary team of professionals, including community nurses, midwives, field workers, dentists, physiotherapists, social workers, dietitians, pharmacists and administrative staff. Primary care/family medicine teams are patient-centred and their composition and organizational model can change over time. It can well be seen that PHC, by definition, composition and functioning, has the capability of addressing the health needs of the ageing population. Thus, ensuring a functioning PHC system will go a long way towards providing care to the ever-increasing ageing population.

Skill upgradation of primary care physicians in old age care

It is obvious that in the Region, physicians in primary care have few opportunities to train in old age care during their undergraduate education. They also do not have the opportunity to learn the subject while serving either in the public or private sector. Some Member States, which are developing old age care services in their health systems, have attempted to address the issues of training and skill upgradation by organizing short-term training programmes on service delivery for primary care physicians and long-term training on leadership development for specialists and medical school teachers.

The WHO Regional Office for South-East Asia has been providing technical and financial assistance to Member States in this area since the late 1990s. The first country to take a step in this direction was India. In a well-designed programme, initiated in 1998–1999 and funded by the Regional Office, 180 medicine teachers in 100 medical schools were sensitized in the care of older people; and more than 2000 primary care physicians were provided short-term training over the next decade or so. Training modules were prepared for primary care physicians, community health workers, nurses and informal caregivers. The programme created awareness among professionals, the public and policy-makers of issues related to ageing and the need for dedicated services. Further, it provided a critical mass of health professionals trained in the care of the older population. The ultimate result of these activities was the formulation and launch of a National Programme for Health Care of the Elderly (NPHCE) in India.

The Ministry of Social Justice and Empowerment of the Government of India runs special training courses for doctors, paramedical staff and lay persons in caregiving history, caregiving by family and community caregivers. These courses are managed by the Regional Resource Training Centre and National Institute of Social Defence, which conduct awareness programmes on intergenerational bonding for students in schools and colleges, and organize regular workshops and conferences on issues related to ageing. They also conduct awareness programmes for the community on the Maintenance and Protection of Parents and Senior Citizens Act, 2007 and modifications made to the Act in 2018.

Under the NPHCE, multiple projects on the health of the older people are carried out by the National Health Mission through mobile medical units. The Ministry of Social Justice and Empowerment runs mobile medical units for senior citizens in rural areas.

In Maldives, local NGOs with expertise have been active in conducting workshops for the community, as well as for health personnel. In Myanmar, health-care professionals are provided with two days of basic training in outpatient geriatric care. Provisions exist for the training of volunteers in various old age care services. In Indonesia, training programmes for health service providers in health centres, internists, and older people and their caregivers are an integral part of the old age care programme of the Government of Indonesia.

In Nepal, there is no formal institutional mechanism for the training of health and social support workers in the care of older people. However, the Patan Academy of Health Sciences (PAHS), the only medical institute with a dedicated geriatric facility in Nepal, in collaboration with the Ministry of Health and Population and the Ministry of Women, Children and Senior Citizens, organizes annual training for medical officers, nurses, paramedics and caregivers from institutions working for senior citizens all over the country.

The Regional Office has sponsored training programmes on old age care in India, Maldives, Myanmar, Sri Lanka and Timor-Leste in collaboration with the WHO country offices and agencies of the Member States. In-service training and continuing medical programmes involving old age health have also been organized in several Member States in recent times. Myanmar had arranged for several such programmes, both at the state as well as professional society levels.

The Region is home to a large proportion of the world's ageing population and more needs to be done for the health care of these people in terms of human resource development. The training of human resources should be of good quality and its content must be uniform. The involvement of the state as well as professional associations must be ensured. Most importantly, these programmes must cover physicians both in the public as well as private sectors, as older patients seek care from any health system which they can access with ease and which is cost-effective.

CHAPTER 2

Health of older people and geriatric medicine

Learning objectives

- To understand the health of older people and geriatric medicine;
- To understand important concepts and principles of geriatric medicine;
- To understand comprehensive geriatric assessment; and
- To understand the role of primary care physicians in old age care.

Introduction

Ageing is a normal developmental event and refers to the process of "accruing maturity with the passage of time". It begins with conception and continues throughout life, until death. Ageing is progressive, ubiquitous and inevitable in the case of all living things. Normal ageing is a complex, individualized and multidimensional process, which is associated with changes in the genetics, biochemistry, physiology and anatomy of the body. With ageing, a deterioration occurs in the functional, emotional, socioeconomic and cognitive areas.

Normal ageing refers to those normal deteriorative processes that all human beings will experience if they live long enough. These include stiffening of the arterial wall, decreased bone mass, presbycusis and cataracts. These progressive changes start as early as the third decade of life, which is the origin of the expression, “Ageing begins at 30”. In normal ageing, the body's ability to withstand stress and challenges worsens as homoeostatic mechanisms declines over time. This is called homoeostenosis. The physiological changes that occur with ageing often become a problem only during times of stress, that is, acute illness. Frailty consists of a series of changes that occur over a period of time. It causes cellular and physiological deterioration, increases vulnerability to disease, decreases the ability to adapt to stress and impairs bodily functions. However, the belief that old age is invariably associated with profound intellectual and physical infirmity is a myth. There are many older people who are maintaining high intellectual and physical capacity even in their 80s and 90s by healthy life style.

Ageing is chronological as well as biological. Biological ageing involves a generalized impairment of functions, resulting in the loss of an adaptive response to stress and an increasing risk of age-related diseases. It is associated with a complex interaction between an individual and the environment over time. Chronological ageing is important for people in the organized sector in that they can determine the date of retirement. It is also a necessity for accessing the benefits provided by the State. The cut-off of "60 years" has been accepted by all UN agencies, keeping in mind the needs of the developing countries, where the life expectancy may not be as high as in the developed countries.

Health challenges in old age

Older people carry a great burden of diseases and functional impairment. The common diseases of old age are: hypertension, cataract, osteoarthritis, chronic obstructive pulmonary disease, ischaemic heart disease, diabetes, benign prostatic hypertrophy, gastrointestinal dysmotility, depression, cancer, stroke, dementia and Parkinson's disease. The common causes of death among older people are pneumonia, ischaemic heart disease, stroke, cancer and tuberculosis. Older people do have frequent acute illnesses that require an intervention by the health system. Acute health problems usually result from vascular events, infections, accidents and injuries.

The origin of the diseases of old age can be conceptualized in three broad formats: biological decline, lifestyle-related and environmental exposure. The last two are potentially preventable, while those related to biological decline need to be ameliorated by corrective interventions. The risk factors mentioned above are commonly encountered among older people in the countries of the Region and require aggressive control measures.

It must be considered that the common health problems mentioned above often exist in multiples and multimorbidity is the rule rather than the exception. Consequent to multimorbidity is polypharmacy or the use of a large number of medications, both prescribed as well as over-the-counter (OTC) medicines and products from complementary and alternative systems of medicine. Polypharmacy increases the risk of adverse reactions, which may often be serious enough to require hospitalization and may even lead to death.

Besides the conditions mentioned earlier, older people suffer from complex medical conditions called "geriatric syndromes". These are generally multifactorial in origin and difficult to treat. They involve a significant social and caregiving component and may require prolonged hospitalization and institutionalization or may even indicate proximity to death. These conditions include frailty, sarcopenia, immobility, hearing and visual impairment, malnutrition, dementia, incontinence, falls and depression. Older patients often present with pain related to musculoskeletal problems and managing pain in old age is often a challenging job.

Chronic noncommunicable diseases (NCD) are common among older people. According to WHO, NCDs are the leading cause of death in the world, accounting for over 71% of all deaths. The countries of the Region also follow the global trend. Previously, chronic NCDs were considered a problem limited mostly to high-income countries. Now, however, almost 80% of deaths due to chronic NCDs worldwide occur in low- and middle-income countries, highlighting the enormity of the challenge before the health systems of the Region. WHO has identified cardiovascular disease, diabetes, cancer and chronic respiratory disease, along with mental health issues, as the NCDs for which preventive interventions should be prioritized. The important risk factors for NCDs are raised blood pressure, raised cholesterol, use of tobacco, consumption of alcohol, a sedentary lifestyle and overweight. The other factors associated

with a higher risk of NCDs include a person's economic and social conditions, also known as the "social determinants of health".

Normative changes of ageing vis-á-vis pathological states

The determinants of ageing are genetic influence, and the influence of the individual's lifestyle as well as his/her environment. Because of these influences, the organs of the body change at every level, starting from the molecular level to the cell, tissue, organ and organ system levels. The rate of change shows individual variation and the organs of the same individual also age at a different pace. As tissues and organs exhibit changes in structure, their function also changes, and older people become extremely heterogeneous in appearance and functioning. Normal age-related changes should be distinguished from pathological changes that may be taking place because of exposure to various health risks. In general, normative changes are gradual and are difficult to perceive initially. However, pathological changes are not so subtle in their appearance and make their presence felt by various symptoms and signs. The distinction between normative changes and pathological states needs to be emphasized during training in the care of older people.

Geriatric medicine

All physicians are likely to encounter more and more older patients in their daily practice, and are thus responsible for preventing avoidable death and improving the quality of life in old age. The increasing number of older patients and their differing clinical responses, and the fact that these patients use a substantial amount of health-care resources, necessitates special health care for them. Ignatz Nascher first proposed the term "geriatrics" in 1909 for the diseases and medical care of the aged as a separate specialty. Geriatric medicine is "a branch of medicine that concerns itself with the ageing process; the prevention, diagnosis and treatment of health-care problems in the aged; and the social and economic conditions that affect the health care of the older people".

The practice of geriatric medicine involves some important concepts and principles. The goal of geriatric medicine is to maximize the positive aspects of ageing. The compression of morbidity, therefore, is a major goal of geriatrics. This can be achieved by delaying the onset of chronic disease and maximizing function in spite of the disease.

The strategies of assessment and the approach to complex health and functionality issues also differ from those in adult medicine. The key strategy here is to break down the complex issues into multiple simple problems, and to address them individually in terms of diagnostic tests, therapeutic interventions or rehabilitation. Symptomatic and syndromic management strategies are critical to the success of old age care.

Important concepts in geriatric medicine

Geriatric medicine, or the science of healthcare of older people, is based on several concepts. These include the following.

- Ageing does not produce an abrupt decline in organ function, but disease may cause. Individuals gradually become more and more heterogeneous or dissimilar as they age. The ageing process is accentuated by disease and attenuated by the modification of risk factors, such as smoking, sedentary lifestyle and obesity.
- Ageing is associated with a decline in the older person's expectation of remaining healthy. Underreporting of symptoms, ultimately leading to late recognition of illness and delayed intervention, is widely prevalent.
- Older people and their caregivers often fail to recognize certain symptoms as abnormal. Diseases manifest themselves at an earlier stage because of the impaired physiological reserve in older patients. The symptoms always reflect an imbalance between the severity of the disease and intrinsic compensatory mechanisms. Since pre-existing diseases or physiological decline impair these mechanisms, even mild disease often tips the balance.
- Multiple pathology or concurrence of diseases is common. In older patients, multiple symptoms are usually due to multiple diseases and the use of several medicines. The usual practice of using a single pathology to explain all symptoms and signs (Law of Parsimony), as in a younger patient, does not hold true in geriatric practice. Many symptoms, such as falls, syncope, dizziness, incontinence and delirium are caused by multiple pathological states and it is often non productive to make extensive investigations for a unifying diagnosis.
- Functional loss is a common pathway for most clinical problems in older people especially those over the age of 75 years. The lesson for physicians and caregivers is that functional loss, especially if abrupt, is an alarm sign of disease. Rapid and comprehensive evaluation should be the immediate clinical response.
- Older patients present with nonspecific problems that may, in fact, be functional deficits. Systems that are especially vulnerable are likely to decompensate early due to systemic disease elsewhere in the body. As the most vulnerable organ system – "the weakest link" – is often different from the newly diseased one, the presentation of the disease is atypical. The usual "weakest link" organs are the brain, lower urinary tract, cardiovascular system and musculoskeletal system. Thus, confusion, depression, incontinence, heart failure, falls and syncope are the common symptoms with which older patients present in diverse disease conditions.
- Atypical presentation of disease poses another challenge in the case of older patients. Blunting or absence of classic or common clinical signs and symptoms is well known. Clinical signs considered abnormal among younger patients are often common and normal among older people and may not be associated with a particular disease. Premature ventricular contractions and asymptomatic bacteriuria are common among older patients and may not be pathological or require therapy, in contrast to entities such as arrhythmia or urinary tract infection.
- Multiple small abnormalities in many organ systems produce significant clinical abnormality and, when corrected, the overall effect is gratifying. Confusion in a patient with dementia may be due to deafness, poor vision, heart failure, infection or electrolyte imbalance, all of which, when corrected, produce a significant improvement in cognition.

- Adverse consequences of diseases are more frequent among older patients. The prevention and early treatment of diseases is thus desirable. The treatment of hypertension and transient ischaemic attack, and immunization for pneumococcal pneumonia, influenza, zoster are some of the measures which can be cost-effective in preventing myocardial infarction, stroke, life-threatening pneumonia, influenza and disabling post-herpetic neuralgia respectively.

Frailty syndrome

Frailty is "a physiologic syndrome characterized by decreased reserve and resistance to stressors, resulting from cumulative decline across multiple physiologic systems, and causing vulnerability to adverse outcomes" (Linda Fried et al. 2003). Features like recurrent falls and injuries, frequent hospitalization, or progressive functional impairment often provide clinicians with evidence that a patient is afflicted with frailty. In contrast to these late manifestations, frailty in its earliest stage is often not clinically apparent.

Frailty syndrome is

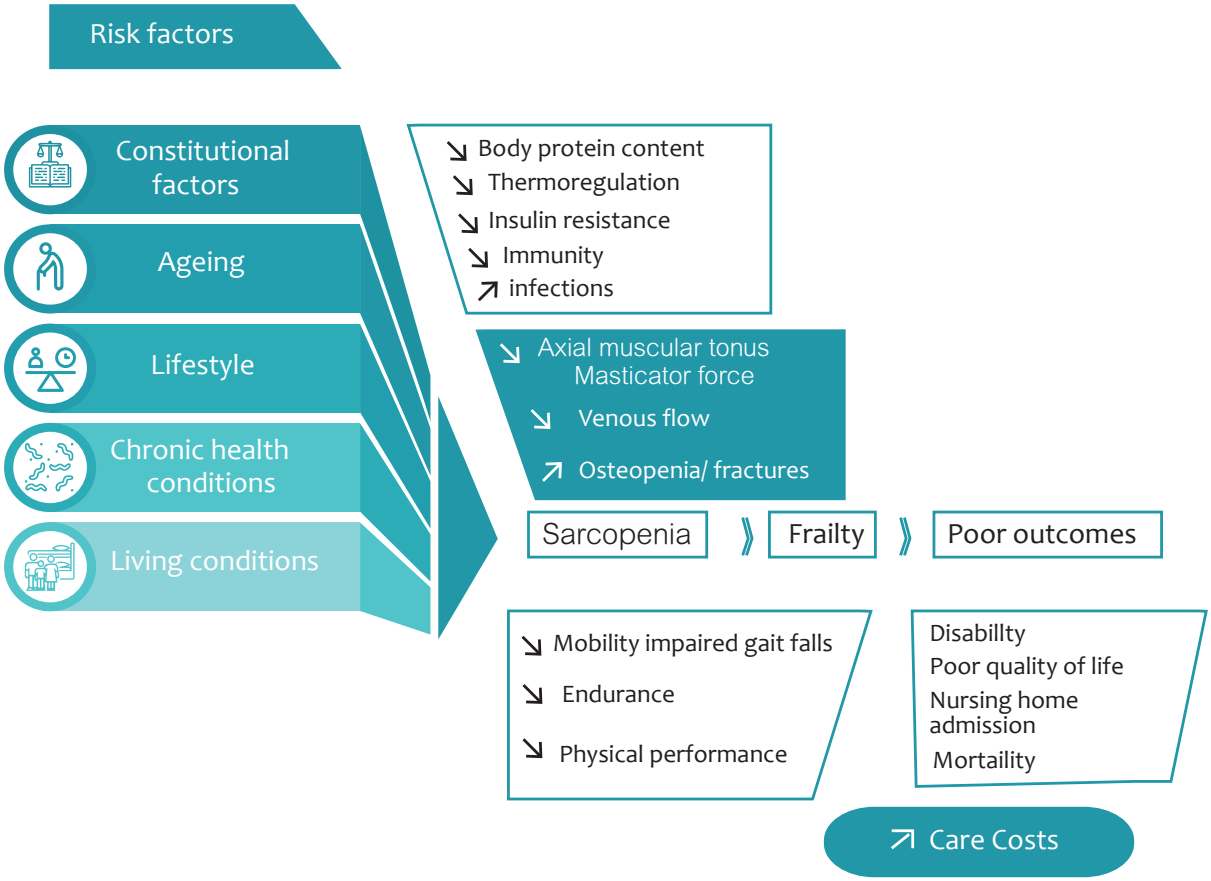
- associated with an increased risk of mortality, irrespective of the morbidity or intervention;
- directly proportional to the prevalence of geriatric syndromes;
- associated with an increased prevalence of falls, hip fractures, functional impairment and hospitalization;
- predicts adverse outcomes related to renal transplantation, general surgery (elective and emergency), cardiac surgery and many other forms of interventions;
- likely to increase the potential for medicine interactions and adverse effects;
- associated with increased mobilization of health-care resources; and
- associated with increased caregiver burden.

There are various questionnaire-based scales proposed for the clinical diagnosis of frailty. But, many of these questionnaires contain sociocultural issues which may not be applicable across all societies. Similarly, frailty syndrome does not have a distinct biomarker for diagnosis. It does not have any definite treatment. Till now, the management of frailty has focused on dietary and exercise interventions.

Sarcopenia

Sarcopenia is a syndrome characterized by progressive and generalized loss of skeletal muscle mass and strength. It carries the risk of adverse outcomes such as physical impairment, poor quality of life, and death (Sarcopenia: European consensus on definition and diagnosis, 2010). Sarcopenia is the most important cause of frailty in older persons. It has numerous causes, including anorexia, inflammation, hypogonadism, lack of activity, hypovitaminosis D, loss of motor neurons, insulin resistance, poor blood flow to the muscles, mitochondrial dysfunction and genetic factors. SARC-F is a simple screening test for sarcopenia. (Refer to annexure 2 A for details)

Figure A: Mechanism of Sarcopenia



Source: Cruz-Jentoft, A. J., Landi, F., Topinková, E., & Michel, J. P. (2010). Understanding sarcopenia as a geriatric syndrome. Current Opinion in Clinical Nutrition & Metabolic Care, 13(1), 1-7.

Acute care in old age

Older people come to the acute care set-up with common conditions like respiratory failure, sepsis, acute abdomen, acute coronary syndromes and cerebrovascular accidents. The primary care physician needs to recognize these conditions and initiate emergency treatment.

Atypical presentation of diseases in old age and multimorbidity, further complicated by geriatric syndromes, can make the diagnostic and management process very complicated. Eliciting a detailed medical history in acutely ill old age patients is sometime difficult, with their cognitive and physical deficits. Past medical and surgical problems, along with the history of medications and subtle physical signs, make the challenge greater.

Among acutely ill, hospitalized older patients, functional outcomes are critical determinants of the quality of life, independence, cost of care, and prognosis. A comprehensive geriatric approach to the evaluation of acutely ill older persons will improve the functional outcome, shorten the hospital stay and reduce the need for long-term institutional care. Such an approach should lay greater emphasis on the early recognition and management of geriatric syndromes during hospitalization, and on rehabilitation and planning of discharge.

Stereotyping of ageing

It is often considered that "older people are less productive than their younger counterparts", "all old people have problems remembering things" or "all old people are diseased and disabled". Scientific evidence suggests that, on the contrary, older people are more heterogeneous than people of any other age group. Stereotyping of old age and older persons can be seriously harmful to them. It can contribute to discrimination, loss of self-esteem, and physical and mental decline. Stereotyping also serves to counteract positive interventions for the promotion of health. Stereotyping must be abolished from the mindset of health professionals if older patients are to be provided with quality healthcare.

Comprehensive Geriatric Assessment

The Comprehensive Geriatric Assessment (CGA) refers to the multifaceted approach of diagnosing and managing complex physical, psychological and functional problems in older people. It focuses on the preservation or improvement of the older person function rather than the curative aspect. The ultimate aims of such an assessment are to promote cost-effective use of services, keep the patient active and provide a good quality of life.

The domains covered in a CGA include:

- taking the medical history and performing a physical examination
- reviewing the medications
- assessing the intrinsic capacity
- assessing the functional status
- assessing geriatric syndromes
- assessing support provided by caregivers
- assessing the emotional status of the patient and caregivers.

Geriatric history

History-taking can be difficult in the case of older patients because of age-associated disabilities, such as hearing loss, impairment of vision, dysarthria (due to a stroke or lack of dentures), aphasia (due to a stroke), anxiety, confusion or language barriers. One must be patient and let the patient talk freely at first. If there is difficulty in getting the required information, change from open-ended to close-ended questions. One should have the patient's history confirmed by a reliable witness if memory loss

is suspected. While taking history, the questioning should be as complete and relevant as possible, and care must be taken not to make it too exhaustive. In the case of frail old patients or those with disturbed mental health, it is essential to obtain collateral information from sources like the patient's caregivers and health-care providers. A few tips on how to talk and listen to older patients are to offer them their eyeglasses and hearing aids (and dentures so that they can speak), use body language, stay in their visual field, and speak in a deep, low voice. The room should be quiet and well-lit, free from distractions. Relevant enquiries should be made in the following domains:

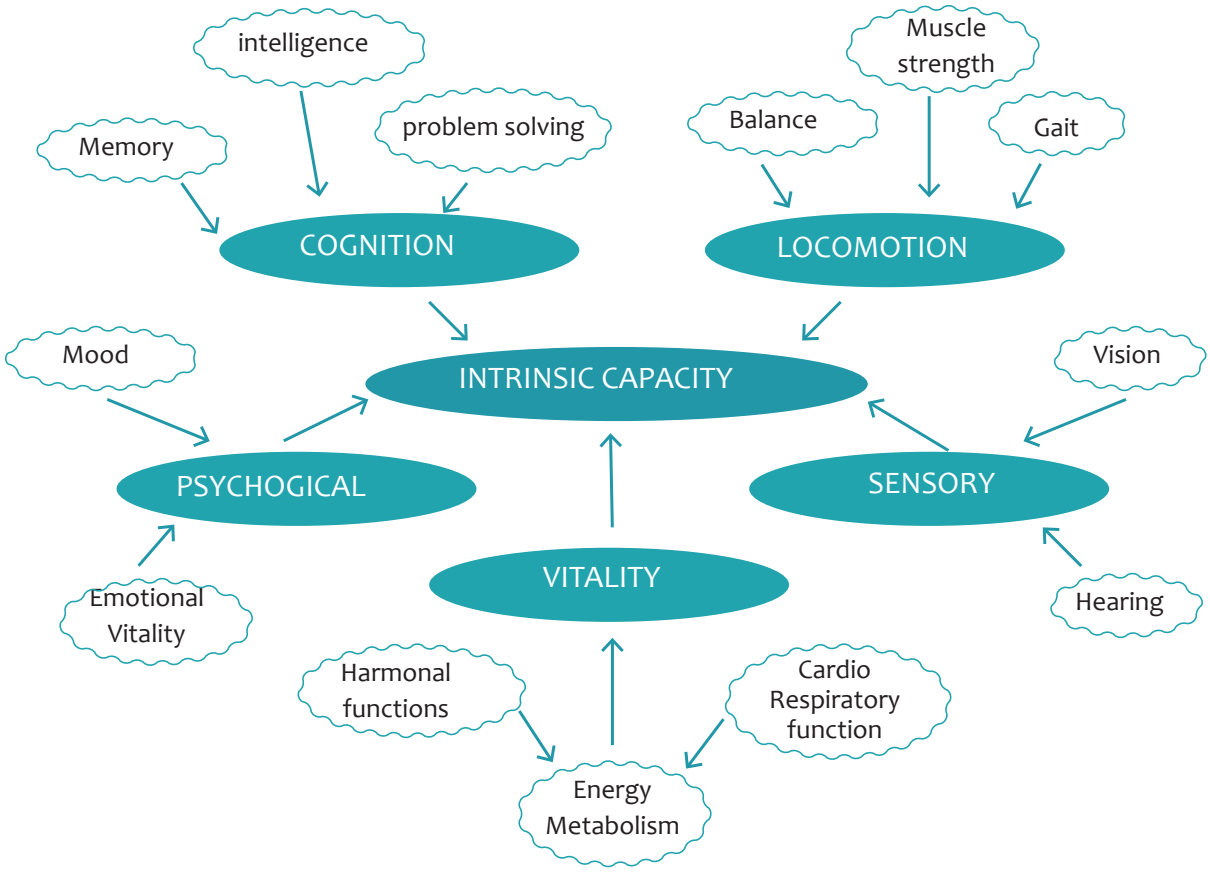
- cognitive impairment
- mood disorder
- history of medication
- falls and instability
- mobility
- incontinence
- hearing and vision
- immunization
- diet pattern
- exercise
- social support
- hospitalization

Physical examination

Age-related changes and abnormalities that are commonly found in old age need to be considered. Frail, ill geriatric patients who are bedridden present a special challenge because they may not be able to cooperate fully with an examination. It is essential to check the following in the physical examination:

- vital signs
- postural drop in blood pressure
- oral hygiene and dentures
- skin, hair and nails
- breast and genitalia
- systemic – attention to organ systems that predispose individuals to chronic illnesses (for example, cardiopulmonary, gastrointestinal, musculoskeletal and nervous systems).

Figure B: Domains of intrinsic capacity



Source: Cesari, M., Carvalho, I.A., Thiyagarajan, J.A., Cooper, C., Martin, F.C., Reginster, J., Vellas, B., & Beard, J.R. (2018). Evidence for the Domains Supporting the Construct of Intrinsic Capacity. The Journals of Gerontology: Series A, 73, 1653–1660.

WHO defines intrinsic capacity as a combination of the individual's physical and mental, including psychological, capacities. The intrinsic capacities of an individual decline with ageing because of the ageing process itself, as well as the underlying diseases. The intrinsic capacity varies among people. The variation is far greater among older people than across younger groups. Such diversity is one of the hallmarks of ageing. The various domains of intrinsic capacity (locomotion, vitality, cognition, sensory impairment and mood) of an older individual can be assessed with the help of ICOPE screening questionnaires, followed by a detailed assessment of the domain with the deficit. (Details in Module 1: Integrated care for older people (ICOPE)

Assessment of functional ability

WHO defines functional ability as a combination and interaction of intrinsic capacity with the environment a person inhabits. The assessment of functional ability should form a part of the evaluation of geriatric patients. An assessment of the basic activities of daily living and the activities instrumental to daily living provide an insight into the patient's abilities and the effects of illness. Functional assessment also serves as a benchmark that allows one to monitor the effects of illness or interventions. (Details in Module 2: Functional Assessment of Older People)

Laboratory investigations

There is no "geriatric panel" available for diagnostic purposes. Only tests with relatively high pretest probabilities should be ordered on an individualized basis.

Role of primary care physician in care of older people

- The primary care physician is usually the first point of healthcare for a large majority of older patients.
- Primary care physicians play a crucial role in geriatric care, particularly in the prevention, early detection and management of most diseases or geriatric syndromes.
- They perform screening and provide preventive care for geriatric conditions and syndromes.
- They play a role in detecting early functional decline and dependence by using simple screening tools.
- Home care is another core aspect of primary healthcare, both for chronic patients with severe functional impairment and for acute patients with problems that do not allow them to go to the clinic. Primary care physicians can make home visits and promptly identify any impending complications. They can also empower caregivers by giving them on-site training and management tips.
- Geriatric patients receive healthcare at various levels, and the primary care physician has the opportunity to monitor the patient, coordinate everything that happens to each patient and ensure continuity of care. They play a crucial role in the implementation and follow-up of the recommendations provided by the geriatric team. Primary care physicians also play a vital role in providing palliative care and end of life care.
- They not only initiate early intervention but appropriate referral too. The most practical and effective way to address health issues is to create a list of priorities. This should take into account the acuteness and seriousness of the health problem from the physician's point of view and functional needs from the patient's point of view. After arriving at a consensus on what is desired by the patient, what is required immediately and what is achievable from the point of view of feasibility, a plan of action should be decided upon. It must also be kept in mind that while making a care plan, the autonomy and independence of the patient, as well as the financial capacity and concerns of the caregiver, are considered.
- The primary care physician must make the referral at the right time and to the right person as this is crucial to the health and well-being of the patient. While unnecessary referral has an adverse impact on the patient's financial situation, late referral may lead to complications and a poor outcome.
- Primary care physicians have a major role in the long-term management of chronic diseases, as well as in the detection of new health risks and the promotion of the health of older people in their care.

Systemic modules

MODULE 1

Integrated care for older people (ICOPE)

Learning objectives

- To understand integrated care for older people;
- To learn to measure the intrinsic capacity of older people; and
- To learn about the concept of ICOPE person-centred and care pathways.

Introduction

Conventional approaches to health care for older people have focused on medical conditions. The diagnosis and management of disease have been central to this approach. Addressing disease remains important. However, it tends to overlook the more general losses in the intrinsic capacity of older persons. These include difficulties with hearing, seeing, remembering or moving. Identifying and managing these problems will enhance the well-being of virtually every older person at some time in life. Thus, if the health-care system pays attention to the intrinsic capacity of older people, it will contribute broadly to the welfare of a large and growing part of the population. Integrated care may also lead to earlier and thus more cost-effective diagnosis and treatment of the conditions concerned.

Most health professionals lack the guidance and training to recognize and effectively manage declines in intrinsic capacity. WHO's ICOPE programme addresses the pressing need to develop comprehensive community-based approaches, which include interventions to prevent declines in intrinsic capacity, foster healthy ageing and support the caregivers of older people.

In order to maintain intrinsic capacity and functional ability as far as possible through primary and community-based care, ICOPE proposes an approach based on the assessment of individual needs, preferences and goals; the development of a comprehensive care plan that includes multiple interventions to manage losses in intrinsic capacity; and coordination of the services available.

It is very difficult to measure the intrinsic capacity of an older individual, but the multiple domains that contribute to this totality can be assessed. The five key domains of intrinsic capacity are:

- locomotor capacity
- vitality
- sensory capacity
- psychological capacity
- cognitive capacity

The WHO tool for screening intrinsic capacity consists of certain assessment techniques that measure the intrinsic capacity in the domains mentioned above.

Steps of person-centred assessment and care pathways in primary care

Step 1: Screen for losses in intrinsic capacity (using the ICOPE: Intrinsic Capacity Assessment Tool) (Table 1-1)

Table 1-1: WHO ICOPE: Intrinsic Capacity Assessment Tool

Domains of intrinsic capacity	Tests	If any checked, assess fully	If none checked, full assessment is not needed
Locomotor (Details in module 8)	Chair-rise test: Rise from chair 5 times without using arms. Did the person complete 5 chair rises within 14 seconds?	No	Yes
Vitality (Details in module 3)	Weight loss: Have you unintentionally lost more than 3 kg over the last 3 months?	Yes	No
	Appetite loss: Have you experienced loss of appetite?	Yes	No
Sensory: Vision (Details in module 13)	WHO simple eye chart for distance vision: Pass the distance vision test (one eye at a time, then together)	Fail	Pass
Sensory: Hearing (Details in module 13)	Hears whispers (whisper test) or Passes automated app-based digits-in-noise test	No	Yes
Cognition (Details in module 11)	Remember 3 words	(Not scored)	
	Orientation in time and space: What is the full date today? Or, Where are you now?	Wrong or does not know	Answers correctly
	Recalls the three words?	Can't recall all 3 words	Recalls all 3 words
Psychological (Details in module 12)	Over the past two weeks, have you been bothered by • Feeling down, depressed or hopeless?	Yes	No
	• Little interest or pleasure in doing things?	Yes	No

Step 2: Undertake a person-centred assessment

- Assess the domain associated with loss of intrinsic capacity in greater depth.
- Understand the life of the older person – conventional history-taking with a thorough understanding of the person's life, values, priorities and preferences regarding his/her health and its management.
- Assess and manage the underlying diseases – assess the underlying chronic illnesses and assess for polypharmacy.
- Assess the social and physical environments.
- Assess the patient's needs for social care support (home, institution).

Step 3: Define the goal of care and develop a personalized care plan

- Together with the older person and his/her caregivers, define the goal of care according to the person's priorities, needs and preferences.
- Design a personalized care plan, following an integrated approach to implement interventions that address losses in various domains of intrinsic capacity. The plan should include:
  - multicomponent interventions (related mostly to nutrition and exercise) to manage losses in intrinsic capacity;
  - the management and treatment of underlying diseases, multimorbidities and geriatric syndromes;
  - support for self-care and self-management;
  - the management of any advanced chronic conditions (palliative care, rehabilitation) or ensuring that the person can continue to lead a meaningful and dignified life;
  - social care and support, including environmental adaptations, to compensate for any functional losses; and
  - steps to meet social care needs with the help of family members, friends and community services.

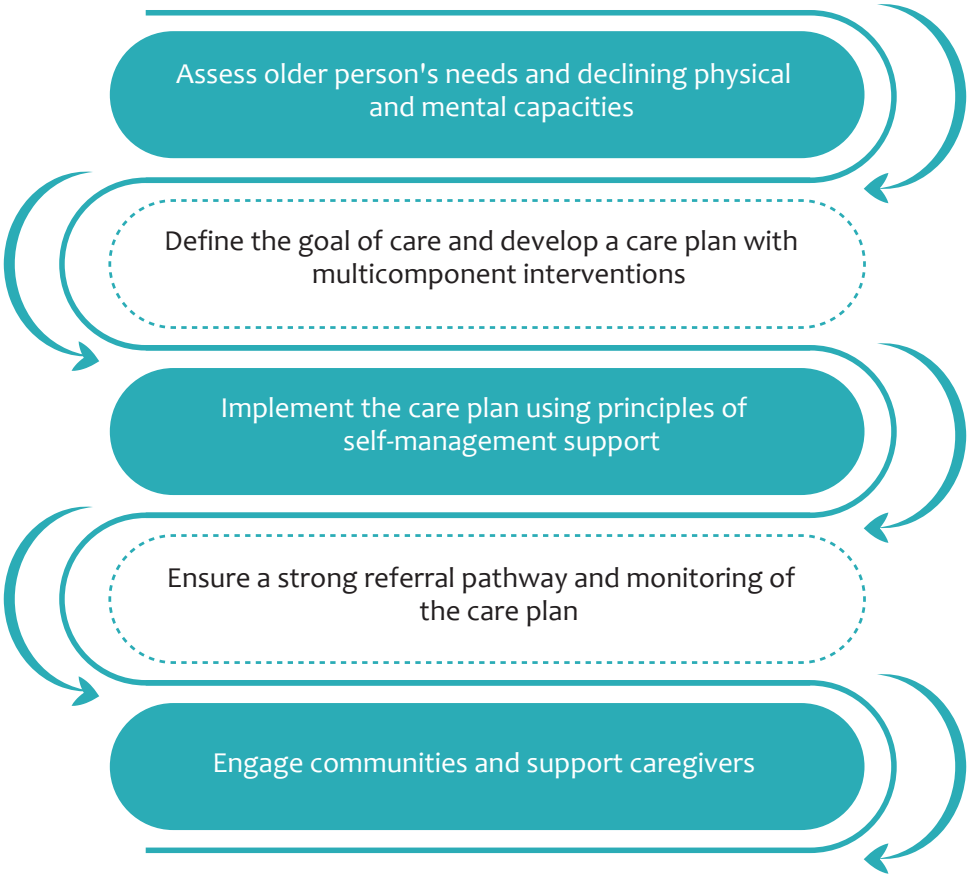
Step 4: Ensure referral pathways and monitoring of care plan

- Ensure regular and sustained follow-up that integrates different levels and types of services.
- Set up strong referral pathways.
- Link up with specialized geriatric care.

Step 5: Engage communities and support caregivers

- Give the older person and caregiver information on the community-based resources available to them.
- Explore opportunities to involve communities, associations and neighbourhoods more directly in supporting care, particularly by encouraging volunteering and enabling older members of the community to contribute.

Figure 1-1: Steps to address older people's health and social care needs



Source: Integrated Care for Older People. World Health Organization. Geneva, 2019.

MODULE 2

Functional assessment of older people

Learning objectives

» To understand the relevance of good functional status in older patients; and

» To learn to use tools for the assessment of functional status.

Introduction

- Functional status is a measure of the overall impact of an individual's health in the context of his or her environment and social support network. It reflects the ability of an individual to perform the physical and social tasks necessary for their usual activities and roles. The most commonly used measures of function evaluate the following three levels of activity of daily life:
  - basic activities of daily living (BADLs)
  - instrumental activities of daily living (IADLs)
  - advanced activities of daily living (AADLs)
- **Basic activities of daily living:** These are self-care activities that are independent of culture and education. They include bathing, dressing, going to the toilet, transferring (moving from place to place), continence and feeding. The inability to perform even one of these activities independently may indicate the need for supportive services.
- **Instrumental activities of daily living:** IADLs are higher-level activities that individuals must perform to remain independent in their homes. They depend on the person's culture and socioeconomic status, and include using a telephone, shopping, preparing meals, housekeeping, using public transport, taking medication, handling money and nowadays, using technology such as cell phones and computers. The evaluation of IADLs provides a basis for considering the type of services necessary for the patient to maintain his/her independence.
- **Advanced activities of daily living:** AADLs are dependent on the person's culture, socioeconomic status and past profession. They include recreational, occupational and community activities. AADLs are optional activities that are personal and can change with time for health reasons or simply because of personal preferences.

Functional assessment

- Functional assessment should be part of the evaluation of a geriatric patient.
- An assessment of the BADLs and IADLs provides an insight into the patient's abilities and the effects of illness.
- Understanding the baseline function allows one to set appropriate expectations and goals with respect to medical therapy.
- A functional assessment can provide valuable prognostic information to direct the necessary diagnostic evaluation, treatment plans and discussions on goals.
- Measuring the functional status is an excellent way to follow the progress of a patient with chronic disabilities and acute illness.
- A practical approach to collecting information on ADL and IADL consists of administering a pre-visit questionnaire that the patient or caregiver can complete. These self-administered questionnaires also allow for the identification of those who help when assistance is needed.
- While evaluating their functional status, individuals tend to over-report, whereas their family members may under-report their abilities.
- A functional assessment can help guide rehabilitation goals and care needs.

A few of the commonly used scales used for functional assessment are:

- Katz Index (Table 2-1)
- Modified Barthel ADL Index *(Refer to Annexure 2B for details)*
- Lawton IADL scale *(Refer to Annexure 2C for details)*.

Table 2-1: Katz Index of ADL

Activities points (1 or 0)	Independence: 1 point (No supervision, direction or personal assistance)	Dependence: 0 points (With supervision, direction, personal assistance or total care)
Bathing	Bathes self completely or needs help in bathing only a single part of the body such as the back, genital area or disabled extremity.	Needs help with bathing more than one part of the body, getting in or out of the tub or shower.
Dressing	Gets clothes from closets and drawers and puts on clothes and outer garments complete with fasteners. May need help tying shoe.	Needs help with dressing self or needs to be completely dressed.
Toileting	Goes to toilet, gets on and off, arranges clothes, cleans genital area without help.	Needs help transferring to the toilet, cleaning self or uses bedpan or commode.
Transferring	Moves in and out of bed or chair unassisted. Mechanical transferring aides are acceptable.	Needs help in moving from bed to chair or requires a complete transfer.
Continence	Exercises complete self-control over urination and defecation.	Is partially or totally incontinent of bowel or bladder.
Feeding	Gets food from plate into mouth without help. Preparation of food may be done by another person.	Needs partial or total help with feeding or requires parenteral feeding.

Source: Slightly adapted from Katz, S., Down, T.D., Cash, H.R., & Grotz, R.C. (1970) Progress in the development of the index of ADL. The Gerontologist, 10(1), 20-30.

TOTAL POINTS = _____, 6 = High (patient independent), 0 = Low (patient very dependent)

Clinical implications of functional impairment

- Functional impairment results in difficulty in performing, or requiring the assistance of another person to perform, one or more of the domains of the ADLs.
- Functional loss is a final common pathway for most clinical problems in older patients, especially after the age of 75. Impaired functional status can often be the first sign of the onset of disease, deconditioning or inadequate social support.
- Impairment of ADLs is a stronger predictor of hospital outcomes (functional decline, length of stay, institutionalization and death) than diagnoses at admission and other physiological indices of the burden of illness.
- Impairment of ADLs is also a risk factor for long-term care, emergency room visits and death among community-dwelling adults.
- Functional impairment affects the targets of disease management in older people.
- Impairment in the domains of the BADLs results in an inability to perform even the basic elements of self-care independently and may indicate a need for supportive services or long-term care.
- Impairment in the domains of the IADLs is associated with a loss of independence and a dwindling social role in the community. Such impairment provides a basis on which to decide the type of services necessary to maintain independence.

MODULE 3

Health promotion and disease prevention in old age

Learning objectives

- To assess the general status of older people in terms of health promotion;
- To enumerate strategies for health promotion among older people; and
- To enumerate strategies for disease prevention in old age.

Introduction

The life course approach to healthy adulthood and old age ideally starts very early in fetal life, going on to childhood, adolescence, young adulthood and middle age. The older people treated today may become a frail older people in the following 10 years or so. Functional capabilities, such as muscular strength, cardiac output and vital lung capacity, increase through childhood and adolescence. They peak in early adulthood and begin to decline as one ages. While the process of decline is relentless, the rate of decline is largely determined by individual factors related to the adult's lifestyle – consumption of tobacco, alcohol consumption, physical activity and diet.

The process of decline can be slowed down with interventions such as the adoption of healthy eating habits, smoking cessation, improvement in physical fitness and reduction in the risk of coronary heart disease. A person's social class and economic status also affect their functional capacity in old age. Poor education, poverty, harmful living conditions and hazardous working conditions reduce the functional capacity later in life. There is scope for interventions to deal with the risk factors of poor health and functionality throughout the life process. Modification of unhealthy behaviours can have a beneficial effect in 3–5 years' time and measures to promote health improve the health and functional status in old age.

Health promotion strategies

Nutrition

Ageing is associated with an increasing incidence of weight loss, being underweight and protein–energy malnutrition. Under-nutrition leads to sarcopenia, frailty, physical dependence and premature death, in addition to impairment of the immune system, an increased risk of infection and poor wound-healing. Over-nutrition causes obesity and is associated with hypertension, ischaemic heart disease and diabetes, which are among the commonest health problems in old age.

The requirement for energy declines with age due to a reduction in the body mass, metabolism and physical activity. Yet, older people are at a high risk of under-nutrition due to the following reasons:

- Food is less palatable than before due to changes in taste and smell;
- Lack of teeth, gum problems and ill-fitting dentures make eating painful;
- The appetite decreases due to lack of exercise, loneliness, depression, chronic debilitating disease, confusion, forgetfulness, side-effects of medicines, alcohol and smoking; and
- The common nutritional deficiencies relate to iron, fibre, folic acid, vitamin C, vitamin D, vitamin B12, calcium, zinc, riboflavin and vitamin A.

Figure 3-1: Role of primary care physicians in nutritional assessment

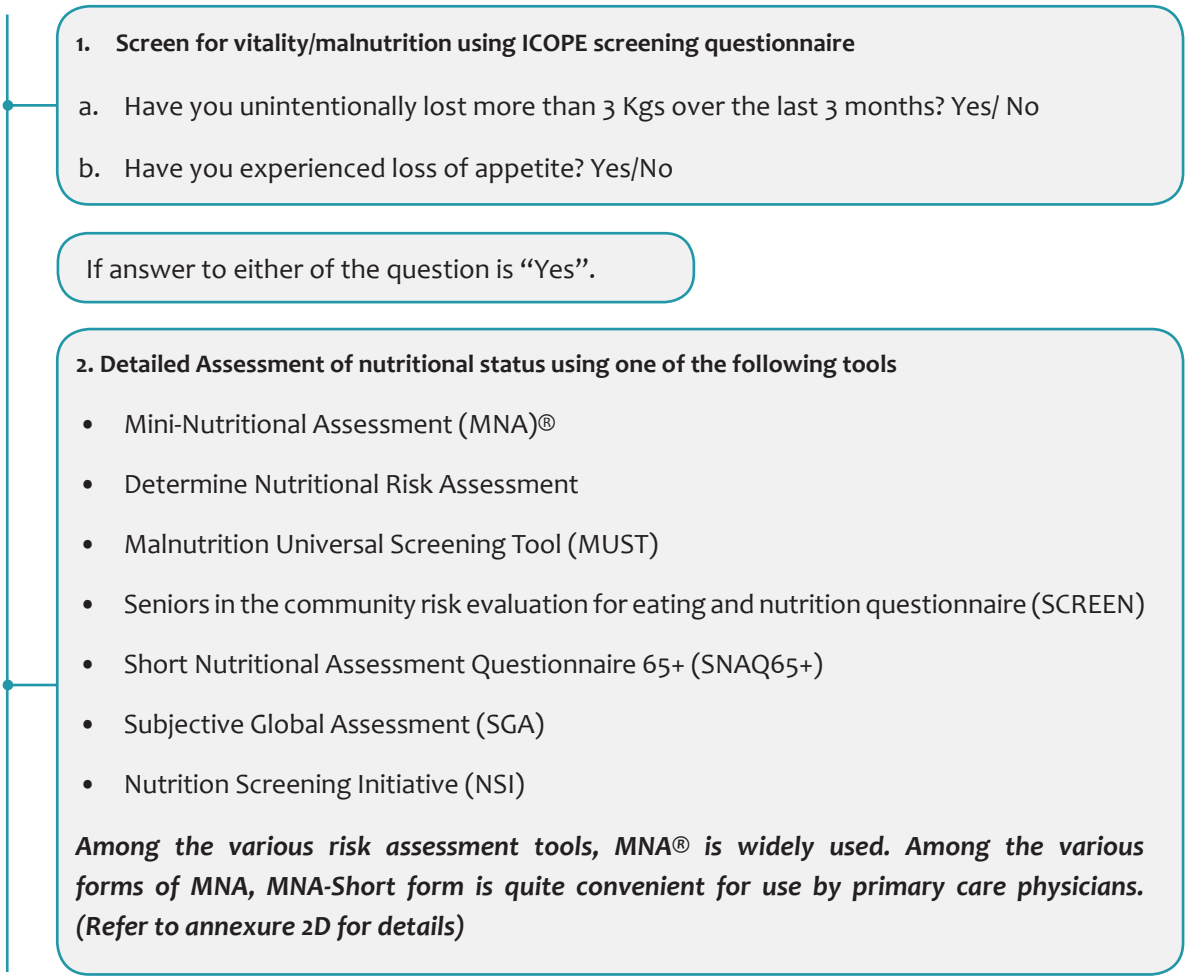


Table 3-1: MNA score-based nutrition management strategy

MNA score	Interpretation	Management strategy
12-14	Normal Nutritional Status	Reinforce generic health and lifestyle advice or usual care
8-11	At risk of malnutrition	Offer dietary advice Consider Oral Supplemental Nutrition (OSN) if unable to improve food intake Monitor weight closely Consider Multimodal exercise
0-7	Malnourished	Refer to a dietician/nutritionist if available Nutritional Intervention necessary Give OSN with increase protein intake (400-600 Kcal/day) Offer dietary advice Monitor weight closely

Source: Integrated Care for Older People, World Health Organization, Geneva, 2019

Note: Oral supplemental nutrition is defined by the WHO guideline as 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.

Dietary advice for older people

- It should be ensured that older people are eating nutritious and easily digestive diet and have access to food that is tasty and easy to prepare. A prudent diet that not only restricts total and saturated fat, but also avoids excessive caloric intake is recommended.
- A healthy diet varies widely depending on the availability and cultural acceptability of food. Most traditional diets are now considered to be close to being ideal, at least for adults and the older people.
- Protein requirements for older people:

Condition	Protein requirement
Healthy older person	1-1.2 g/kg/day
Recovering from weight loss, acute illness or injury	Up-to 1.5 g/kg/day
Older patient with pressure sore	very high protein diet (Contains 25% of calories as protein)

- Calorie requirements:

Condition	Calorie requirement
Healthy ambulant older person	30 – 35 kcal /kg/day
Bedbound older person	25 – 30 kcal/kg/day

Source: 10.3390/nu8060359

- Plant proteins are partial proteins. Two different partial proteins must be eaten together for complete nutrition, for example, cereals and pulses.

- The intake of complex carbohydrates and fibres (fruits, vegetables and greens) should be increased. High-fibre foods help to lower cholesterol, blood pressure and glucose intolerance and prevent constipation.
- The intake of salt should be limited to not more than half a teaspoon every day.
- Certain foods with antioxidant properties (green, yellow and orange vegetables and fruits, such as carrots, sweet potatoes, spinach, tomato and orange) are recommended.
- Routine prescription of multivitamin supplements is not indicated for older people.
- The intake of calcium and vitamin D in the form of milk, curd, cheese, small fish and certain green vegetables should be increased to compensate for osteoporotic changes.
- Exposure to sunlight is necessary to make the skin produce vitamin D. For older people, Vitamin D is necessary not only for bone and muscle health but overall health,. A blood test is necessary to measure whether a person's vitamin D level is adequate. (Supplementation of Vitamin D is explained in detail in Module 8.)
- Vegetarians require vitamin B-12 supplementation.

Exercise

Ageing causes a progressive decline in the power, strength and endurance of the skeletal and cardiac musculature. A sedentary lifestyle and lack of physical activity accelerate this decline and are associated with a higher risk of morbidity and mortality. For adults of the age of 65 years and above, physical activity consists of leisure-time physical activity (walking, dancing, gardening, hiking, swimming), transportation (walking or cycling), occupational activities (if the individual is still engaged in work), household chores, and games, sports or planned exercise.

- Overall, there is strong evidence that compared to less active men and women, older people who are physically active have lower rates of all-cause mortality, coronary heart disease, high blood pressure, stroke, type 2 diabetes mellitus, cancer of the colon or breast. In addition, they have a higher level of cardiorespiratory and muscular fitness and a healthier body mass and composition.
- Compared to the biomarker profile of older people who do not exercise, that of those who do is more favourable for the prevention of cardiovascular disease, type 2 diabetes mellitus and the enhancement of bone health. The latter exhibit higher levels of functional health, and have a lower risk of falling, better cognitive function, and a reduced risk of moderate and severe functional limitations and role limitations.
    - Older people should perform at least 150 minutes of moderate-intensity aerobic physical activity throughout the week or at least 75 minutes of vigorous-intensity aerobic physical activity throughout the week or an equivalent combination of moderate- and vigorous-intensity activity.
    - Aerobic activity should be performed in spells of at least 10 minutes' duration.
    - Muscle-strengthening activities, involving the major muscle groups, should be done 2 or more days of the week.

- Older people with poor mobility should perform physical activity to enhance their balance and prevent falls 3 or more days of the week.
- When older people cannot perform the recommended amounts of physical activity due to their health condition, they should be as physically active as their abilities and conditions allow.
- While prescribing physical exercise, the physician must evaluate the risks of exercise, potential for falls and accidents, and the medication the person is on. The nutritional adequacy and motivation of the person must also be taken into account. The older person must be advised on self-monitoring of the symptoms of ischaemic heart disease (IHD) and must know when to stop if symptoms appear.
- Physical exercise in old age is limited by reduced maximum exercise capacity, IHD and chronic degenerative diseases of the musculoskeletal system, which reduce exercise tolerance. However, the greatest barrier to physical activity is attitude.

Types of physical activity: effects and examples

Moderate-intensity: Makes older people feel warmer and breathe harder, and their hearts beat faster. However, they should still be able to carry on a conversation. Example: Brisk walking

Vigorous-intensity: Makes older people feel warmer and breathe much harder, and their hearts beat rapidly, making it more difficult to carry on a conversation. Examples: Climbing stairs, running

Strength exercise: Causes older people to use all the major muscle groups. Examples: Carrying or moving heavy loads such as groceries, activities that involve stepping and jumping such as dancing, chair aerobics

Improving balance and coordination: Tai chi, yoga, Nordic walking

Minimizing sedentary behaviour: Reducing time spent on watching TV, taking regular walk breaks around the garden or street, breaking up sedentary time, such as by walking part of the way while making a long trip

Social support and social interaction

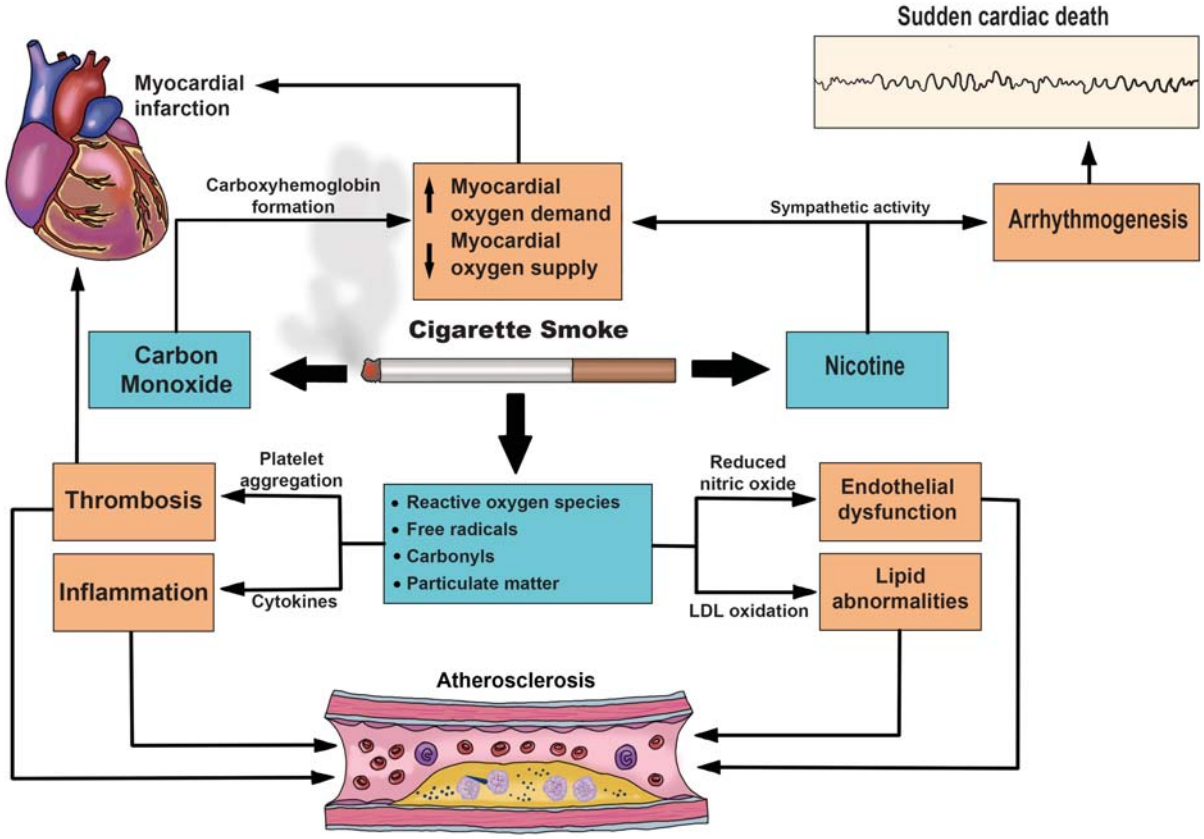
- The primary care physician should evaluate the social interaction of the older people and promote such interaction.
- Social support and the strengths and abilities of the family and community are important for the promotion of health, as well as the prevention and treatment of disease and functional impairment.
- Social networks and interactions help to promote the mental health of older people and prevent mental ill.
- People who are isolated have an increased risk of mortality from several causes. For example, social support is particularly important for survival after myocardial infarction.
- For social support to promote health, it must provide a sense of belonging and intimacy. It must also help people be more competent and self-efficacious.

Disease prevention strategies

Prevention of smoking and tobacco chewing

Cigarette smoking is the leading preventable cause of morbidity and mortality in old age. Smoking is responsible for most of the respiratory problems of older people. It causes a variety of cancers. Smoking is an important cause of IHD and stroke. It is also associated with osteoporosis. Smoking is one of the three determinants of functional functional impairment in old age (the other two are obesity and lack of physical activity). Despite a knowledge of the advantages of the cessation of smoking, most smokers have difficulty quitting due to withdrawal symptoms (nicotine craving, irritation, frustration, anxiety, restlessness and difficulty in concentrating) and lack of motivation.

Figure 3.2: Smoking and cardiovascular disease



Source: J Am Coll Cardiol. 2018 Aug, 72 (9) 1030-1045.

In this region, a greater percentage of people chew tobacco rather than smoke. This leads to cancer of the buccal cavity, which is the most common concern of older people, mostly in villages. Therefore, tobacco cessation programmes should be introduced in all institutions, including primary care centres, old age homes and long-term care centres.

It is of key importance that the primary care physician should make older people who smoke understand that the benefits of quitting are the same in older age as among younger individuals. Attempts must be made to eliminate smoking. However, if the person cannot quit smoking, he/she should at least cut down.

Signs of severe dependence are:

- Smoking more than 1 pack a day
- Smoking within 5 minutes of waking up
- Smoking even while sick
- Waking up at night to smoke
- Smoking to ease symptoms of withdrawal
- The more of these that apply, the more serious the dependence.

If the older person is ready to quit smoking, he/she should be referred to a smoking cessation support team or a psychiatrist. Medicines, including bupropion, clonidine and nortriptyline, and behavioural and cognitive strategies help in smoking cessation.

Nicotine replacement is one of the effective pharmacological interventions that can help a person quit. It is available in the form of chewing gums and skin patches.

Prevention of alcoholism

Alcohol abuse in older subjects may be missed due to misconceptions regarding the association of alcoholism with a higher social status, lack of communication skills that makes it difficult to ask uncomfortable questions on alcoholism, and a fatalistic attitude.

An excessive intake of alcohol increases the potential for diseases such as cardiomyopathy, cirrhosis of the liver, atrophic gastritis, chronic pancreatitis, peripheral neuropathy, dementia, malnutrition and immune suppression. Further, there is a risk of social isolation, and falls and accidents are more likely. It may be difficult to detect alcohol abuse among older patients due to:

- age-related physiological changes
- the presence of chronic disease
- the effects of medication
- denial by the patient and family.

Alcohol increases the depressant effects of neuroleptic medicines, analgesics and central nervous system (CNS) depressants, such as sedatives, tricyclic antidepressants, anxiolytics and benzodiazepines. In old age, relatively small amounts of alcohol can cause intoxication due to decreased metabolism arising from an increase in body fat, slowed down metabolism of liver and an increased sensitivity of the brain to the effect of alcohol.

The symptoms of intoxication and withdrawal can be easily mistaken for diseases and age-related physical changes. One must be mindful of the fact that several features of alcohol abuse – such as memory loss, poor balance and frequent falls – may be ignored as consequences of ageing.

One can find out whether an older person has a drinking problem through direct or indirect questioning. Indirect questions would focus on the history of falls, accidents and episodes of confusion; symptoms of self-neglect, such as weight loss or poor hygiene; and lack of attention to the usual activities. The family should also be used as a source of information.

The primary care physician should refer the older person to a specialized centre/psychiatrist for the management of alcoholism. The management of alcoholism requires hospitalization of the person and a specialized effort by a multidisciplinary team. Nutritional support, the treatment of withdrawal symptoms, psychiatric support and group therapy are some of the measures which are a part of managing chronic alcoholism.

Screening for disease prevention

- Early detection and treatment play an important role in the secondary prevention of disease and functional impairment. Regular screening for common, life-threatening and disabling diseases is important for the promotion of health. The primary care physician can follow a systematic strategy for screening important health problems.
- Screening for hypertension, diabetes and hypercholesterolemia should be carried out at least once a year.
- The vision, hearing, teeth and feet of older people should be inspected periodically.
- Table 3-2 shows the recommendations for cancer screening. The primary care physician should be vigilant about the following alarm signs and symptoms and refer the patient to a higher centre for ruling out the possibility of cancer. (Details in Module 14, Cancer and palliative care)

Table 3-2: Cancer screening recommendation

Cancer screening	Recommendation	When not to screen
Breast cancer screening	Women between 50- 69 years of age, screening for breast cancer with mammography should be done every 2 years. If mammography is not available, the women may be advised and taught to carry out self-examination of breast at regular intervals	No recommendation for breast cancer screening after 70 years of age.
Cervical cancer screening	Women could be advised to undergo a Pap smear test after 40 years of age till 65 years, every 3-5 years, depending on the availability of resources.	
Prostate cancer Screening		There is no consensus on regular blood examination for prostate specific antigen and rectal examination for cancer of prostate. However, older patient must be informed about availability of such screening.
Colorectal cancer screening	People who are in good health and with a life expectancy of more than 10 years should continue regular colorectal cancer screening through the age of 75. For people ages 76 through 85, the decision to be screened should be based on a person's preferences, life expectancy, overall health, and prior screening history.	People over 85 should no longer get colorectal cancer screening.

Source: American Cancer Society

The American Cancer Society recommends that people at increased or high risk of colorectal cancer might need to start colorectal cancer screening before age 45, be screened more often, and/or get specific tests. This includes people with:

a. A strong family history of colorectal cancer or certain types of polyps

b. A personal history of colorectal cancer or certain types of polyps

c. A personal history of inflammatory bowel disease (ulcerative colitis or Crohn's disease)

d. A known family history of a hereditary colorectal cancer syndrome such as familial adenomatous polyposis (FAP) or Lynch syndrome (also known as hereditary non-polyposis colon cancer or HNPCC)

e. A personal history of radiation to the abdomen (belly) or pelvic area to treat a prior cancer

Vaccination

Immunosenescence, also known as age-related decline in immunity, contributes significantly to the susceptibility of older people to serious, vaccine-preventable conditions, including influenza, pneumonia and shingles.

The following are a few of the vaccines for older people recommended by Centre for disease control CDC, US.

Influenza vaccine

The person should be administered 1 dose annually, especially before the onset of winter or the time of the year when there is a local flu epidemic. His/her close contacts and caregivers should also receive the vaccine annually.

Pneumococcal vaccine – capsular polysaccharide vaccine (PPSV-23), conjugate vaccine (PCV-13)

- The person should be 65 years of age or older and immunocompetent. He/she should be administered 1 dose of PCV-13, followed by 1 of PPSV-23 after 1 year.
- For those who have previously received PPSV-23 but not PCV-13 at the age of 65 years or more, 1 dose of PCV-13 should be administered at least 1 year after PPSV-23.
- When both PCV-13 and PPSV-23 are indicated, administer PCV-13 first (PCV-13 and PPSV-23 should not be administered during the same visit).
- Those of the age of 60–65 years should also be vaccinated against pneumococcus if they have a chronic medical condition or immune-compromising condition, such as chronic kidney disease, chronic heart failure, chronic liver disease, malignancy, diabetes mellitus, chronic alcoholism, chronic smoking and chronic immune-suppression.

Zoster vaccine

One dose of zoster vaccine live should be administered after the age of 60 years. If live zoster vaccine is contraindicated and affordability is not an issue, administer 2 doses of recombinant zoster vaccine (2–6 months apart) after 50 years of age.

Tetanus toxoid

One dose should be administered every 10 years. If available, administer 1 dose of Tdap (tetanus, diphtheria and pertussis), followed by a Td booster dose every 10 years.

Prevention of polypharmacy

Polypharmacy, a common and important problem related to use of medicine, occurs subsequent to multimorbidity among older people in all populations. There is no single universal definition of polypharmacy. It is generally considered to be the use of five or more medicines, both prescribed as well as over-the-counter, by a single individual. Owing to the changes brought about in a person's physiology by ageing, the pharmacodynamic and pharmacokinetic properties of medicines change significantly. This puts older individuals at a greater risk of adverse effects and deleterious medicine-medicine interactions, which has a wide variety of clinical implications for the older person. In general, polypharmacy increases the risk of "geriatric syndromes" such as falls, incontinence and cognitive impairment.

Poor adherence to medication prescription is another issue with polypharmacy leading to poor management of the morbidity status. Some behavioural factors of older people, health literacy, and social and caregiver factors may affect the adherence to medications in older people.

Principles of prescribing for older people

- Always review the entire prescription at each visit.
- Primary care physicians should be aware of the complete list of medications, including prescribed medicines, herbal, ayurvedic and homeopathic medicines, and over-the-counter medications. They should also know their dosage and side-effects.
- Consider the use of non-pharmacological rather than pharmacological therapy in the initial management of the patient.
- Consider discontinuing any medicine which no longer has clear indication of use.
- Always start with a low dose that is likely to be sufficient for the disease condition.
- Always consider the potential side-effects and their impact on the patient.
- When selecting medicines from a pharmacological class, consider which member of that class is best for the patient.
- Always look out for adverse effects and always consider whether an adverse effect is the cause for a new symptom.
- Consider the patient's socioeconomic condition as it may determine his/her ability and desire to comply with the prescription.

Tools for reducing polypharmacy

Various tools are available for guiding the appropriate prescription of medicines to an individual. The frequently used tools are as follows:

- American Geriatric Society (AGS) 2019 updated AGS Beers Criteria (Refer to Annexure 3 for details)
- START/ STOPP criteria
- Medication Appropriateness Index (MAI)

Physicians should heed the following recommendations as it would significantly reduce the chances of inappropriate prescription for older people.

- Do not use antipsychotics as the first choice to treat the behavioural and psychological symptoms of dementia.
- Avoid using medications other than metformin to achieve haemoglobin A1c <7.5% in most older people. Moderate control is generally better.
- Do not prescribe benzodiazepines or other sedative–hypnotics to older people as the first choice for insomnia, agitation or delirium.
- Do not use antimicrobials to treat bacteriuria among older people unless specific urinary tract symptoms are present.
- Do not prescribe cholinesterase inhibitors for dementia without making periodic assessments for perceived cognitive benefits and adverse gastrointestinal effects.
- Avoid prescribing appetite stimulants or high-calorie supplements for the treatment of anorexia or cachexia among older people.
- Do not prescribe a medication without conducting a medicine regimen review.

Cardiovascular system

Learning objectives

» To enumerate age-related changes which occur in the cardiovascular system;

» To enumerate common cardiovascular diseases and strategies to screen for these; and

» To develop short-term and long-term care plans.

Age-related changes in the cardiovascular system

- Functional and structural changes in the cardiovascular system decrease the cardiac reserve capacity, limit physical activity and reduce the ability to tolerate a variety of stresses.
- The maximal heart rate response to exercise declines. However, cardiac dilatation, which allows for an increase in the stroke volume, compensates for the diminished heart rate response to maintain the increase in cardiac output required for exercise.
- Both the systolic and mean blood pressure increase with a widening of the pulse pressure.
- Baroreceptor responses are blunted and consequently, the heart rate response to orthostasis and hypotension are impaired.
- The number of SA node pacemaker cells and that of bundle branch cells in the cardiac skeleton decrease, and fibrosis and calcium deposition occur. This increases the risk for sick sinus syndrome, atrial fibrillation and atrial flutter.
- The alterations in cardiac function with age are the manifestations of a decreased β-adrenergic responsiveness.

Primary prevention of cardiovascular diseases

As older people have many risk factors related to cardiovascular diseases (CVDs), primary care physicians have to play a major role in addressing these risk factors and contributing to the primary prevention of CVDs.

- All older people should be advised to consume a healthy diet that is high in vegetables, fruits, nuts, whole grains, or lean animal protein (preferably fish). Such a diet has been shown to lower the risk of all-cause mortality, compared to a controlled or standard diet.
- All older people should be encouraged to undertake physical activity.
- They should be supported in bringing about optimal control of diabetes mellitus.
- They should be supported in achieving optimal control of hypertension.
- All older people should be assessed at every visit for tobacco use. Those who use tobacco should be assisted and strongly advised to quit during every visit.

Aspirin therapy

Low-dose aspirin should be avoided for the primary prevention of CVDs among older people.

Cardiovascular problems

Hypertension

Hypertension is the most common health problem in old age. More than half (50–70%) of the older population in all developed and most developing societies has hypertension. A majority of the patients with hypertension in the developing countries are undiagnosed or their condition is uncontrolled. This is associated with an increased risk of adverse outcomes. Systolic blood pressure (SBP) has greater predictive value than diastolic blood pressure (DBP) for vascular events, such as stroke, coronary artery disease (CAD), congestive heart failure (CHF) and mortality, in older people. At any level of DBP, adverse events are progressively greater at higher levels of SBP. A large number of hypertensive older people have isolated elevation of the SBP, which also greatly enhances cardiovascular risk.

- Primary or essential hypertension is the most common type of high blood pressure in old age.
- Hypertension being a silent disease, every older patient must be subjected to blood pressure measurements during each consultation or visit to the physician.
- Hypertension should not be diagnosed on the basis of a single measurement. The diagnosis should be based on at least three different measurements, taken on two separate office visits.

Diagnosis of hypertension

The diagnosis of hypertension should be confirmed during an additional patient visit, usually one to four weeks after the first measurement. In general, hypertension is diagnosed if:

- The SBP is ≥140 mmHg on both days and/or
- The diastolic blood pressure is ≥90 mmHg on both days.

The white coat effect is more prominent among older people. Ambulatory 24-hour blood pressure readings (if the facility is available) may provide a better indicator of the risk of subsequent cardiovascular events than standard monitoring of blood pressure.

The measurement of postural changes in blood pressure is important, both during diagnosis and follow-up.

Management of hypertension

- For most patients, blood pressure is considered to be under control when the SBP is <140 mmHg and the DBP is <90 mmHg. However, for patients with diabetes or a high risk of CVD, certain guidelines recommend lower targets: SBP <130 mmHg and DBP <80 mmHg.
- The control of hypertension in old age produces major benefits and reduces the incidence of stroke, CAD, CHF and chronic kidney disease (CKD).
- The treatment should begin with advising patients to avoid a sedentary lifestyle, increase their leisure time and activity in the workplace, exercise, limit the intake of salt by avoiding salt-rich food and additional salt, and impose dietary restrictions to lose weight.
- The treatment of hypertension with medicines must be individualized. In general, the choice of medicine should be based on comorbid conditions, that is, the medicine should have a salutary effect on the comorbid condition or its complications.
- The starting dose should be lower than that for a younger adult. It should then be gradually increased. (Start low; go slow)
- Medication causing orthostatic hypotension should be avoided (α-adrenergic antagonists [prazosin, terazosin], and high-dose diuretics). Medication that causes cognitive dysfunction (clonidine) should also be avoided.

Patients with an SBP ≥160 mmHg or DBP ≥100 mmHg may be indicated for immediate treatment based on one assessment. The primary care physician should refer these patients to a higher centre for further evaluation and management.

Special considerations

- If there has been a prior heart attack or stroke, or the person is otherwise at a high risk of CVD, start a statin at the same time as starting antihypertensive medication.
- If there has been a prior heart attack or ischaemic stroke, start low-dose aspirin.
- If the patient feels faint on standing, check his/her blood pressure while he/she is standing.
- If the SBP is consistently less than 110 mmHg in a patient on medical treatment, consider reducing the dosage or number of medications used.

Special precautions

- Ankle oedema may occur in up to 10% of patients on calcium-channel blockers (CCB), particularly with intensification of the dose, in the absence of an angiotensin-converting enzyme inhibitor (ACEI) or angiotensin receptor blocker (ARB).

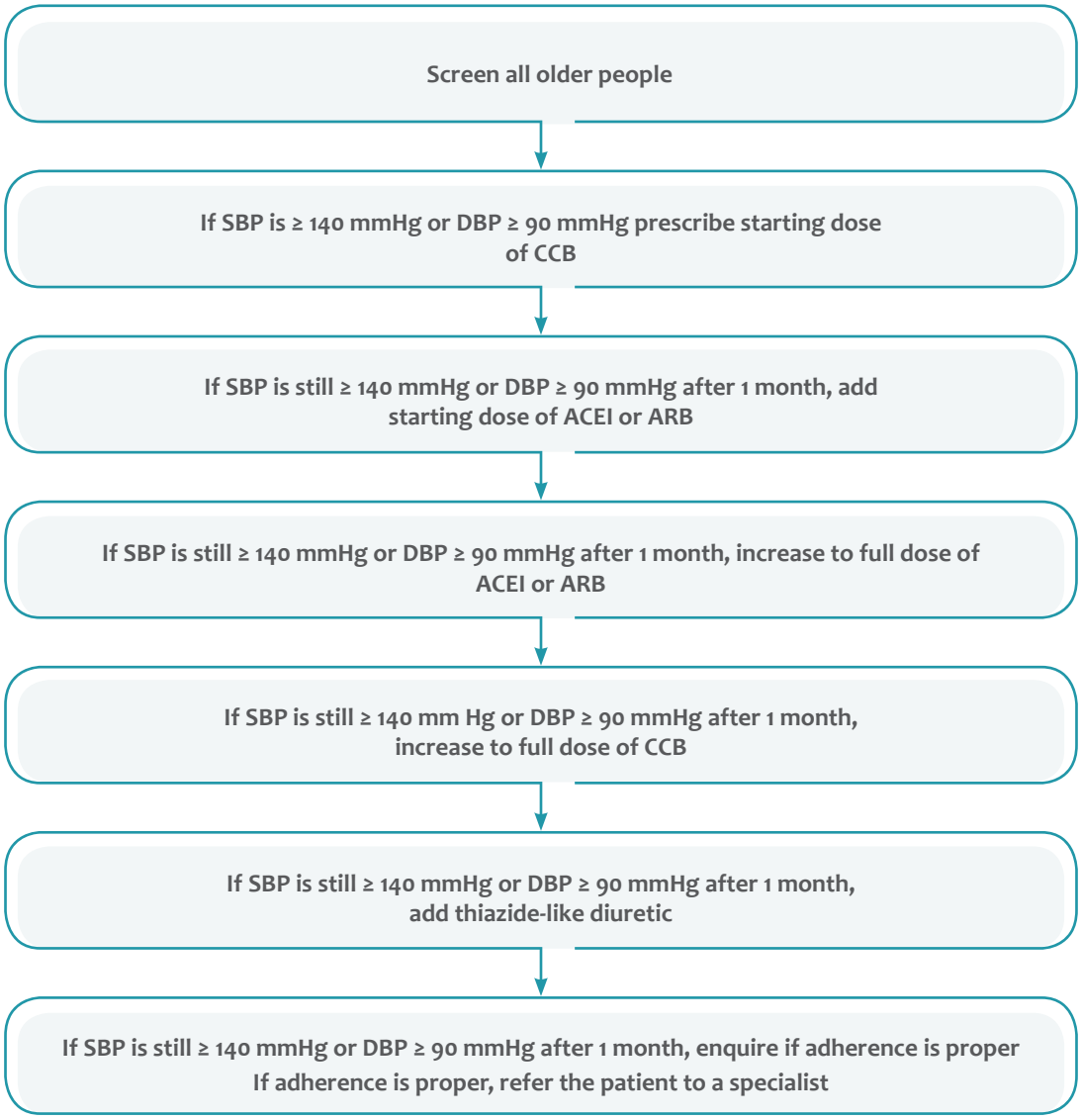
- ACEI cause chronic cough in approximately 10% of patients.
- It is vital to avoid the triple whammy, which is the combined use of ACEI, nonsteroidal anti-inflammatory drugs (NSAIDS) and diuretics as this increases the risk of acute renal failure among older people.
- Check for renal function before starting ACEI or ARB and when increasing the dose.
- Do not combine ARB with ACEI.
- Be cautious while combining ACEI with aldosterone antagonist (e.g. spironolactone) because it increases the risk of hyperkalemia.
- Thiazides should not be combined with loop diuretics as this can cause hypernatremia and hypovolemia.
- Smaller dosage of thiazide may also cause significant hyponatremia in older people.
- Beta blockers should not be used as the first-line agent for hypertension.

Table 4-1: Medicines and dosages for hypertension

Class	Medication	Starting dose	Intensification of dose
CCB	Amlodipine	5 mg	10 mg
ACEI	Enalapril	5 mg	10 mg
	Ramipril	2.5 mg	10 mg
ARB	Losartan	25 mg	100 mg
	Telmisartan	40 mg	80 mg
Thiazides	Hydrochlorothiazide	12.5 mg	50 mg
	Chlorthalidone	12.5 mg	25 mg

Source: Am Fam Physician, Combination Antihypertensive Drugs: Recommendation for Use, 2000 May 15;61(10):3049-3056

Figure 4-1: Screening and management protocol for hypertension



Source: HEARTS. Technical package for cardiovascular disease management in primary health care. WHO. 2018.

Acute coronary syndrome

Acute coronary syndrome (ACS) is defined as unstable angina, non-ST elevation myocardial infarction (NSTEMI) and ST elevation myocardial infarction (STEMI). These entities remain among the commonest life-threatening illnesses in old age, irrespective of socioeconomic status and gender.

ACS can often present atypically and be missed due to the absence of pain (silent ischaemia). Dyspnoea and fatigue may be the only manifestations. The rate of survival after acute myocardial infarction in old age is much lower than that among younger patients. The prevalence of congestive cardiac failure after ACS is high among older patients.

Typical symptoms suggestive of an ACS

- Chest pain and/or pain in areas such as the upper arms, back and jaw, lasting longer than 15 minutes;
- Chest pain in combination with nausea and vomiting, sweating, breathlessness, and particularly a combination of all these symptoms;
- Chest pain in combination with dizziness or feeling light-headed; and
- New-onset chest pain, or a sudden deterioration in previously stable angina, with chest pain episodes lasting longer than 15 minutes, recurring frequently and following little or no exertion.

Atypical symptoms of ACS

Older people may also present with ACS without chest pain (silent ACS). Chest pain as a presenting symptom occurs in only 40% of patients older than 85 years.

In patients who present without chest pain, the diagnosis of ACS is often missed or delayed, leading to worse outcomes.

Among older people, acute-onset dyspnoea, epigastric discomfort, diaphoresis, nausea and vomiting, and syncope may be the symptoms of ACS.

Steps for immediate management of ACS in primary care before transfer to proper facility

The prompt diagnosis of ACS is important since appropriate therapy during the golden hour (up to six hours) can markedly improve the patient's prognosis.

The treatment of ACS requires hospitalization. The primary care physician should immediately refer the older individual to an appropriate facility.

- If an appropriate facility is available, an ECG should be performed in all cases in which one cannot reasonably exclude the possibility of a cardiac cause of chest pain.
- If an ST segment abnormality, particularly ST segment elevation, is detected or the ECG is inconclusive, but suspicion of a cardiac cause remains, refer the patient to a hospital immediately and alert the on-call cardiologist or emergency department consultant.
- While awaiting transfer:
  - ✓ Monitor the blood pressure, heart rate and oxygen saturation;
  - ✓ Give intravenous morphine (if available) for pain relief;
  - ✓ Give 300 mg aspirin per oral;
  - ✓ Give 300 mg clopidogrel if there is evidence of ischaemia on ECG or elevated troponin levels (if facility is available); and
  - ✓ Administer oxygen only if the patient is breathless, the oxygen saturation is <93%, the patient has heart failure or is in cardiogenic shock.

Dizziness and syncope

- Patients frequently complain of dizziness alone or as a prodrome to syncope and unexplained falls.
- Syncope is defined as a sudden transient loss of consciousnesss associated with a loss of postural tone and spontaneous recovery without resuscitation.
- Nearly 3% of older people's visits to the emergency department are due to syncope or falls.
- 50% of older patients do not give an accurate history of syncope and the history given is very unreliable in the presence of cognitive impairment.
- Cause of Syncope in older people
    a. Cardiac syncope accounts for up to 15% of cases of syncope in the older people. It is caused by impaired cardiac output due to arrhythmia or structural heart disease with outflow obstruction.
    b. Reflex or Neurally Mediated Syncope is a heterogeneous group of conditions, including vasovagal syncope, situational syncope, and carotid sinus syndrome, and is the most frequent cause of syncope in the older people (44% of cases).
        A. Vasovagal syncope- Vasovagal syncope is the most common form of reflex syncope and is mediated by the vasovagal reflex. The most common triggers in older people are prolonged standing or sitting and use of vasodilator medicines. The classic prodromal features (pallor, diaphoresis, nausea, and warmth) are less prominent in older people.
        B. Situational syncope occurs in conditions that trigger the Valsalva manoeuvre, such as urination, defaecation, coughing, and swallowing.
        C. Carotid sinus hypersensitivity (CSH) may be precipitated by sudden head turning and wearing tight clothing around the neck. CSH is regarded as a significant cause of syncope and unexplained falls in older people.
        D. Orthostatic hypotension (OH) is prevalent in older people and in those who are frail, affecting up to 18% of people aged 65 years or older and up to 52% of institutionalised older patients. OH is defined as a sustained reduction in systolic blood pressure of at least 20 mmHg or in diastolic blood pressure of 10 mmHg, within 3 minutes of standing. Repeated blood pressure measurement is needed—preferably in the morning—to diagnose OH. Occurrence of OH is significantly related to the number of co-morbidities and to potentially causative medications.

Agents causing or exacerbating orthostatic Hypotension

- Angiotensin-converting enzyme inhibitors
- Angiotensin receptor blockers
- α- blockers
- β- blockers
- Calcium channel blockers
- Diuretics
- Nitrates
- Sildenafil citrate

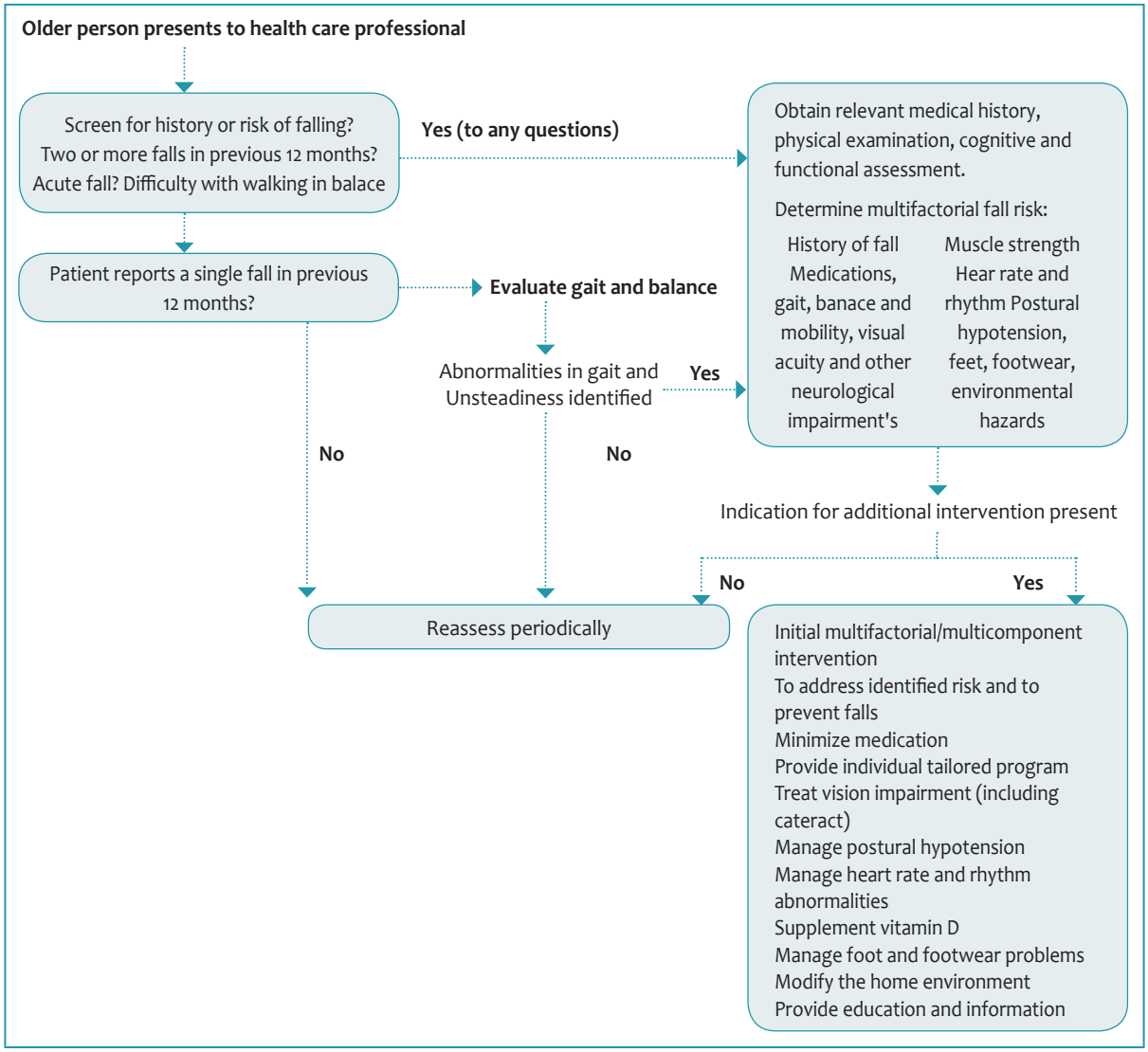
- Phenothiazine
- Opiates
- Tricyclic antidepressant
- Ethanol
- Bromocriptine

Evaluation of dizziness and syncope

- Review medical history carefully and conduct a physical examination;
- Check for postural drop in blood pressure;
- Evaluate for volume depletion;
- Review medications; and
- Perform ECG (if available).

The primary care physician should refer to the specialist if cardiac or neurogenic syncope is suspected.

Figure 4-2: Approach to fall



Source: Reference American family physician guidelines

Respiratory system

Learning objectives

» To enumerate age-related changes which occur in the respiratory system;

» To enumerate common respiratory diseases; and

» To develop screening strategies and care plans for these conditions.

Age-related changes in the respiratory system

- Increased size of the larger airways, calcification of the cartilaginous airways and hypertrophy of the mucous glands of the airways are characteristic of ageing airways.
- Though the size of the alveoli increases in old age, their number decreases. Therefore, the alveolar surface is reduced and the exchange of oxygen and carbon dioxide is less effective.
- The elastic recoil of the chest walls and the lungs decreases. The decrease in the elastic recoil of the lungs is due to a decrease in the alveolar surface area, which decreases the surface tension forces of the alveoli.
- The strength of the respiratory muscles declines due to age-related changes in the muscles. The thoracic cage becomes stiff and rigid because of ossification of costal cartilage and kyphosis of the spine, which affects ventilation.
- Most lung volumes and capacities fall with ageing. The vital capacity and maximum breathing capacity decline.
- The ventilatory responses both to hypoxia and hypercapnia are impaired in old age.
- The central control of breathing is impaired.
- There is also a decrease in the cough reflex and in ciliary action in the lungs. Bacterial colonization of the airway is frequent. All these changes are worsened by smoking and air pollution.

Common diseases of the respiratory system

Community-acquired pneumonia

Pneumonia is the most common infectious disease among older people, causing 50% of all deaths due to respiratory disease. Lower respiratory tract infections are 50 times more common among older people than young people. Pneumonia is the cause of fever in more than 60% of febrile episodes among older inpatients. It is also the third most frequent cause of the hospitalization of older people, the first and second being myocardial infarction and stroke. In addition, pulmonary infections are the terminal event in patients with other serious or chronic diseases, such as stroke, degenerative neuro-muscular diseases, dementia, congestive heart failure and malignancies. Despite impressive advances in the treatment of pneumonia, such as with antimicrobial agents in intensive care, one-third of older people requiring hospitalization die of severe pneumonia.

Atypical features of pneumonia in old age

- The clinical manifestation and outcome of pneumonia among older people tend to be different from those among other age groups.
- The presentation of pneumonia in older people is often atypical, with prominent nonrespiratory symptoms like confusion, incontinence and immobility.
- The signs of inflammation, such as fever, tachycardia and leucocytosis, may be absent.
- Some form of pre-existing morbidity is present in most patients, chronic obstructive airway disease being the most common.
- The progression and resolution of pneumonia are slower in old age and the patient must prepare for a prolonged stay in hospital.

Assessment of severity and prognosis of pneumonia in older people

There are various tools for the assessment of the severity of pneumonia and for prognostication. A few of them are as follows:

- CRB-65
- CURB-65
- Pneumonia severity index.

Of these, CRB-65 can be readily used before the results of laboratory tests.

Components (CRB-65)

Table 5-1: CRB-65: assessment and management strategy

Assessment criteria (Yes: Score 1, No: Score 0)
• Confusion
• Respiratory rate: >30/min
• Blood pressure: systolic ≤90 mmHg and diastolic ≤60 mmHg
• Age: ≥ 65 years

Source: Br J Gen Pract. 2010 Oct 1; 60(579): e423–e433.

Total score	Management strategy
0	Likely to be suitable for OPD-based treatment
1-2	Consider admission to hospital or refer
3-4	Urgently refer to a system with intensive care facility

Empirical treatment of pneumonia

The initial treatment of pneumonia for all age groups, including older people, is largely empirical because of the nonspecificity of the clinical and radiographic features and the limitations of diagnostic testing in identifying an etiological pathogen. The initial empirical therapy is based on the principle of covering all common organisms for that age group and locality.

Table 5-2: Empirical treatment of pneumonia

Site	Precondition	Empirical regimen
OPD:	Previously healthy patient who has had no antibiotics in previous 3 months	Azithromycin 500 mg orally, once a day for 5 days or doxycycline 100 mg orally, twice a day for 5 days
	Has comorbidities such as chronic heart, lung, liver or renal disease, diabetes mellitus, alcoholism, malignancies, asplenia, immunosuppressing medications or conditions, or has had antibiotics within previous 3 months	(Amoxycillin-clavulanate 625 mg orally, three times a day or Cefuroxime 500 mg orally, twice a day) + Azithromycin 500 mg orally, once a day for 5-7 days
IPD	**Non-ICU**	Injection Ceftriaxone 1 g intravenous twice daily + Azithromycin 500 mg orally or intravenous, once daily for 5-7 days

Note: Avoid floroquinolones in the South-East Asia Region due to the endemicity of tuberculosis.

Tuberculosis

Infection with Mycobacterium tuberculosis (TB) is often universal in developing countries, though the prevalence of the disease varies within populations, depending on the socioeconomic status. The prevalence of TB among the aged has always been considered to be higher than among younger individuals. The risk of TB is higher among older people due to several reasons.

Atypical presentation of TB in old age is as follows.

- There is a difference between older people and younger individuals as far as the clinical manifestations, response to medication therapy and outcome from tubercular infection are concerned.
- Fever, night sweats, haemoptysis and cough tend to be uncommon and nonspecific complaints and weight loss may be prominent.
- Radiological manifestations also differ in the aged, comprising widespread and patchy infiltrates and a miliary pattern rather than a classical upper lobe lesion.
- The tuberculin reaction is often negative.

The treatment of TB for older people is similar to that for younger subjects.

WHO recommends a short-course chemotherapeutic regimen, supervised or directly observed, with isoniazid, rifampicin, ethambutol and pyrazinamide. Adverse medication reactions of all antitubercular medicines are frequent in old age.

Role of primary care physicians in TB management

- The degree of suspicion of TB in older people should be relatively higher. The sputum should be sent for examination even in the case of patients who have had a history of cough for one week, and not two, as is the general practice. This is especially applicable to those who have diabetes or are immunocompromised for any reason.
- Primary care physicians should refer to the WHO/national guidelines for the management of TB.
- He/she should be vigilant about the signs and symptoms of antitubercular therapy-induced hepatitis, like right upper abdominal quadrant pain, anorexia, vomiting and jaundice. Such cases should be referred to a higher centre.

Chronic obstructive pulmonary disease (COPD)

- The three most common symptoms of COPD are cough, sputum production and exertional dyspnoea. Many patients have such symptoms for years before seeking medical attention. As COPD advances, the principal feature is exertional dyspnoea, which significantly limits everyday activities. The frequency of exacerbations increases over time.
- The symptoms of hypoxia, which include fatigue, malaise, weight loss and sleep disturbances, are other common symptoms of COPD in older people.
- The signs of COPD include a hyper-inflated chest, wheezing, polycythaemia and cyanosis, and oedema and raised jugular venous pressure (JVP) in the presence of right heart failure.
- The clinical features and chest X-ray are diagnostic. These can be confirmed by an obstructive pattern without reversibility in pulmonary function testing.
- Concomitant chronic diseases such as cardiovascular diseases, skeletal muscle dysfunction, metabolic syndrome, osteoporosis, depression, anxiety and lung cancer occur more frequently among COPD patients.

Principles of management of COPD

- Inhalers are the mainstay of the treatment of COPD.
- The inhaler has to be individually tailored and the choice will depend on the access to the inhaler, its cost, the prescriber and most importantly, the patient's ability and preference.
- The primary care physician should provide instructions and may demonstrate the proper inhalation technique when prescribing the device. He/she should re-check the technique at each visit.

- Long-acting beta-2 agonists (LABAs such as salmeterol, formoterol) and long-acting muscarinic agonists (LAMAs such as tiotropium) are preferred over short-acting ones (salbutamol, ipratropium), except in cases with occasional dyspnoea.
- The patient may be started on single LABA or LAMA therapy or dual LABA+LAMA therapy. For patients who have persistent dyspnoea and are on one bronchodilator, the treatment should be escalated to two bronchodilators.
- Theophylline is not recommended unless other long-term bronchodilators are unavailable or unaffordable. If theophylline is given orally, sustained release preparations are preferred.
- Long-term treatment with inhaled corticosteroids as well as LABAs may be considered for patients with a history of exacerbation despite appropriate treatment with LAMAs or LABAs.
- Medicines approved for primary pulmonary hypertension are not recommended for patients with pulmonary hypertension secondary to COPD.
- The primary care physician should strongly urge all COPD patients to quit smoking and educate them on the benefits of quitting, as smoking cessation is beneficial for the survival of patients with COPD.
- COPD is a strong indication for influenza and pneumococcal vaccination.
- Pulmonary rehabilitation, if available, improves the quality of life of patients with COPD.

Indications for long-term oxygen therapy (LTOT)

- Room air saturation of ≤88% confirmed twice over a 3-week period.
- Room air saturation of 88% with evidence of pulmonary hypertension, cor pulmonale or polycythaemia (haematocrit >55%).

Role of primary care physician in COPD management

- Manage stable COPD with the administration of appropriate therapy;
- Educate patients on appropriate techniques for the use of inhalers;
- Encourage smoking cessation;
- Administer vaccines;
- Prescribe LTOT as needed;
- Recommend appropriate physical activity and a nutritious diet; and
- Refer to a specialist on observing the signs and symptoms of COPD exacerbation.

Lung cancer

Lung cancer is possibly the most common cancer among older men all over the world and its prevalence among older women is rising steadily. 95% of these cancers are related to cigarette smoking.

The clinical features of lung cancer (cough, haemoptysis, chest pain and weight loss) in older patients are no different than those among younger patients, though older patients tend to present at a much more advanced stage of the disease.

As the diagnostic evaluation of lung cancer in old age should aim both at tissue diagnosis and operability from the anatomical as well as functional points of view, the primary care physician should refer the patient to an appropriate centre on the basis of the X-ray and clinical suspicion.

Digestive system

Learning objectives

- To enumerate the age-related changes in the digestive system;
- To enumerate common diseases of the digestive system among older patients; and
- To screen for common disease conditions and develop care plans.

Age-related changes in the digestive system

With ageing, several changes take place throughout the gastrointestinal tract and organs related to the digestive system. The loss of teeth due to periodontal disease, poor oral hygiene and resorption of the mandible are important markers of the ageing person. In addition, there is atrophy of the oral mucosa, loss of taste buds, decline in salivary secretion and weakness of the muscles involved in mastication. Overall, eating becomes laborious and the dietary intake is affected.

The swallowing mechanism is affected by disturbed co-ordination between oropharyngeal muscles and upper oesophageal sphincter. Poor oesophageal peristalsis leads to dyspagia in older people.

Gastric emptying for liquids is delayed whereas that for solids remains normal. Gastric acid secretion may increase or decrease depending on the presence of H. pylori infection and the concomitant use of medicines.

Bacterial overgrowth in the small intestine can lead to malabsorption. Absorption of fat takes longer, and postprandial serum bile acid levels are reduced. These changes may lead to early postprandial satiety, leading to decreased overall intake.

Prolonged colonic transit time, decreased mucus secretion, increased colonic connective tissue and smooth muscle atrophy, along with weakness of abdominal muscles may predispose to constipation.

Liver volume, blood flow and perfusion decline with age. The ability to regenerate after injury or resection is diminished. Due to circulatory and enzyme changes, metabolism of some medicines is altered. This may lead to medication toxicity at standard doses.

Common disorders of the digestive system

Compromised oral health

- Compromised oral health is extremely common in old age. This affects the general health and quality of life of the person.
- It affects the dietary intake adversely and may lead to malnutrition. In addition, concerns about improving overall oral health have been raised because of the high risk of aspiration pneumonia and association with CHD.
- The primary care physician may often be called upon to advise on benign oral conditions among patients who use dentures. These include oral candidiasis, traumatic ulcers, fissured tongue, coated tongue, glossitis and angular stomatitis. Patients also present with not so benign conditions, such as leukoplakia, erythroplakia and oral cancer.
- Older persons often seek the opinion of the primary care physician on the use of dentures.
- The physician should refer the patient to a qualified oral health specialist (dentist) if the diagnosis is not certain or if the management of the condition requires a specialist's expertise.
- Oral cancer is a major health risk in the Region. If detected on time, it can be treated for cure.

Hiatus hernia and gastro-oesophageal reflux

- Hiatus hernia and gastro-oesophageal reflux are common problems of the upper gastrointestinal tract in old age.
- Their prevalence increases after the age of 50 and they are more common among women.
- The symptoms typical of these conditions include pyrosis and sour regurgitation.
- Persistent, untreated or undertreated symptoms may lead to complications of acid reflux disease, including oesophagitis, peptic strictures, oesophageal ulcers with bleeding, and Barrett's oesophagus.
- Many older patients with gastro-oesophageal disease have reduced symptoms because of decreased visceral sensation or the use of medications that may blunt or reduce sensation. Quite commonly, however, patients have atypical symptoms, such as a chronic cough, difficult-to-control asthma, laryngitis and recurrent chest pain.
- Oesophagi-gastro-duodenoscopy should be performed among all patients with persistent reflux despite medical therapy, patients with a history of acid reflux for more than five years, and patients with complications.

Interventions to correct the situation

The following are some of the interventions to correct the problem.

- Minimize the intake of fats, alcohol, caffeine and nicotine at night.
- Avoid eating at least 3–4 hours prior to bedtime.

- Sleep with the head end of the bed elevated by around 6 inches.
- Medicines such as H2 receptor antagonists (ranitidine, famotidine), proton pump inhibitors (omeprazole, pantoprazole, rabeprazole) and pro-kinetic agents (domperidone, itopride) are recommended.

Gastropathy and peptic ulcer

More than 40% of older people are prescribed NSAIDs, and up to 8% are hospitalized because of a complication of NSAID use within the first year of initiating treatment. All NSAIDs increase the risk of peptic ulcer disease, although some appear to carry a lower risk of inducing an ulcer than others. Cyclo-oxygenase-2 (COX-2) inhibitors have been shown to have less overall gastrointestinal toxicity. However, little data exist on the complications of the chronic use of COX-2 inhibitors among older people.

Peptic ulcers induced by NSAIDs, *H. pylori* or other causes tend to be very virulent in old age. The presentation of ulcer disease is usually acute, often with bleeding or perforation as a feature, though gastric ulcer may remain subtle. Anaemia due to chronic blood loss, fatigue and weight loss may be the only complaints in some patients.

Proton pump inhibitors (PPI) should be started and continued for eight weeks. Patients who need to use an NSAID or aspirin chronically should be treated concurrently with a PPI.

Cancers of the gastrointestinal tract

Cancers of the gastrointestinal tract increase with age. Cancer of the colon is more common among women than men, while cancer of the rectum is more common among men. The symptoms include a change in bowel habits, new onset of constipation or diarrhoea, decreased size of stool, blood in the stool, loss of appetite, wasting and weight loss.

The incidence of cancer of the oral cavity also increases with age. Oral screening should be performed for sores and other signs of cancer, especially among persons who are at a high risk due to smoking, chewing tobacco and drinking alcohol.

A high index of suspicion and referral to a specialist can go a long way in improving the prognosis.

Constipation

Older people complain of constipation more frequently than younger people do. This, however, is not a part of normal ageing. A diet deficient in fibres and low intake of fluids are the most important causes of constipation in old age. The other causes of constipation are:

- medicines, such as diuretics, anticholinergics, opiates and antidepressants;
- mental health problems, such as depression and dementia;
- abuse of laxatives;
- chronic debilitating disease and functional impairment; and
- lack of physical exercise.

The long-term complications of constipation are faecal impaction, mega colon, urinary retention and infection, incontinence and confusional state.

Management of constipation

- Impacted stool may need to be removed manually.
- Increasing fluid intake, exercise and bowel training regimens help in relieving the problem to a large extent, as does education of the patient.
- Bulk-forming agents or stool softeners may be used as first-line therapy.
- Osmotic agents like milk of magnesia and lactulose may be tried if the initial agents do not work. The long-term use of stimulatory agents like senna or bisacodyl is best avoided.

Diarrhoea among older people

- Acute diarrhoea among older people is usually caused by viral gastroenteritis, which is a self-limiting disease.
  - » Most patients do not require a laboratory work-up, and routine stool cultures are not recommended.
  - » The treatment focuses on preventing and treating dehydration. Oral rehydration therapy with early refeeding is the preferred treatment for dehydration.
  - » The patient should be referred to a higher centre in case of severe dehydration or illness, persistent fever, pain in the abdomen or bloody stool.
- Irritable bowel syndrome is the most common cause for chronic diarrhoea in older people.

Liver, gallbladder and pancreas

Most liver functions are well preserved in advanced age. Acute liver injury due to viral infections (hepatitis A, hepatitis B, hepatitis C and hepatitis E) and antitubercular medicines is common in the Region, and follows a similar epidemiological profile as in young age.

Chronic liver diseases are being commonly diagnosed among older patients due to increased survival and are not age-related. These conditions include nonalcoholic fatty liver disease, alcohol- and hepatitis-related cirrhosis and hepatocellular carcinoma. Many chronic liver diseases which have a slow and indolent course and a nonspecific clinical presentation may be diagnosed in old age. There are no significant differences in the diagnostic investigations or treatment options between older people and the young, though the comorbidities of old age may limit the use of many of the interventions.

Diseases of the gallbladder and bile ducts are common in old age. By the age of 70 years, cholelithiasis (gallstone disease), the most common gallbladder disease, affects a third of the population and by 80 years of age, the figure rises to nearly 50%, as reported from different parts of the world. However, no specific data are available from the Region.

Other related problems include gallbladder cancer and cholangitis. While gallstones present with biliary colic or pain, obstructive jaundice is the usual manifestation of gallbladder cancer.

Older people may suffer from gallstone-related acute pancreatitis, idiopathic acute pancreatitis, chronic pancreatitis and pancreatic cancer. 90% of pancreatic cancers are usually diseases of old age.

The primary care physician should refer the older individual to an expert on observing the following red flag symptoms and signs:

- haematemesis/melaena
- stool positive for occult blood
- unexplained weight loss
- unexplained loss of appetite
- sensation of early satiety
- persistent sensation of fullness of abdomen
- persistent vomiting
- appearance of jaundice
- acute onset alteration of bowel habit for > 2 weeks
- nocturnal diarrhoea
- recurrent abdominal pain.

Any symptoms and signs suggestive of acute abdomen: Primary care physicians should be aware that the classic signs of inflammation may not be present. So, a high index of suspicion is required.

Endocrine system

Learning objectives

» To enumerate the normal age-related changes in the endocrine system;

» To develop care plans for older patients with diabetes mellitus; and

» To identify thyroid disease among older patients and develop care plans.

Age-related atypical presentation of endocrine disorders

- The presenting manifestations of endocrine disorders in older people are often nonspecific, muted or atypical.
- Hypothyroidism and hyperthyroidism may present similarly among older people, with nonspecific symptoms such as weight loss, fatigue, weakness, constipation and depression.
- The signs and symptoms of endocrine diseases may also be classic for older patients, yet atypical compared to those commonly observed among younger patients.
- Thyrotoxic older patients may exhibit apathy and depression, with psychomotor retardation ("apathetic hyperthyroidism").
- Diabetes mellitus may present with hyperosmolar nonketotic state, a classic presentation rarely seen in individuals younger than the age of 50 years.
- With ageing, it is increasingly common for illnesses to present without any appreciable symptoms. Some examples are hypothyroidism or hypercalcaemia secondary to hyperparathyroidism.

The manifestations of endocrine disease may be altered or masked by coexisting illnesses and the medications used to treat common comorbidities among older people. For example, the exacerbation of congestive heart failure or angina may be precipitated by hyperthyroidism in older patients with pre-existing cardiac disease, but health professionals may mistakenly attribute the symptoms to worsening primary cardiac disease rather than thyrotoxicosis.

Common endocrine problems

Diabetes mellitus

Diabetes mellitus is a common health problem in old age and more than 50% of all diabetics are over the age of 60 years. The majority of older diabetics have Type 2 diabetes.

Apart from the issues of detection, management, control and monitoring, diabetes in old age is associated with a huge burden of serious long-term complications, such as retinopathy, nephropathy, neuropathy, vascular complications and depression. Diabetes also raises the risk of dementia.

Table 7-1: Diagnostic criteria for diabetes

Diagnosis	Fasting plasma glucose (mg/dl)	Plasma glucose (mg/dl) two hours after 75gm oral glucose	A1C % (Glycosylated hemoglobin or HbA1c)
Diabetic	126 and above	200 and above	6.5 and above
Pre-diabetic	100-125	140-199	5.7-6.4

Various classes of medicines may be used for the management of diabetes mellitus in older people as shown in the table below.

Table 7-2:

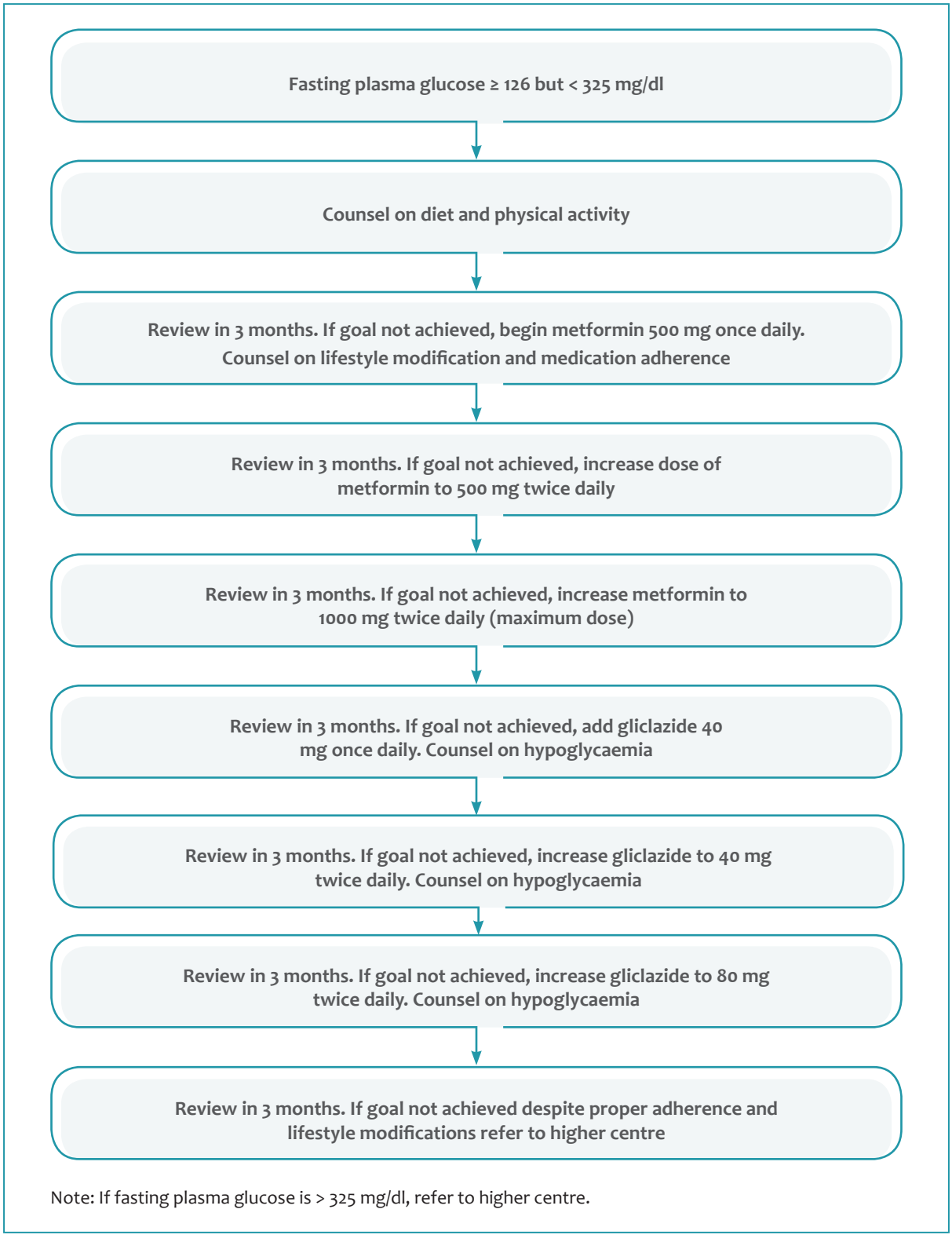
Class	Medicine and regimen
Biguanides	Metformin: 500-2000 mg/day in 2 divided doses
Sulphonylureas	Gliclazide: 40-160 mg/day in 2 divided doses
DPPV-4 inhibitors	Sitagliptin: 25-100 mg in single dose Linagliptin: 5 mg in single dose
SGLT-2 inhibitors	Empaglifl ozin: 10-25 mg in single dose Canaglifozin: 100-300 mg in single dose
Insulin	Available in various preparations

The strategies to manage diabetes among older persons are summarized below:

Table 7-3: Target for diabetes management depending on health status

Patient characteristics/health status	Fasting/pre-prandial glucose (mg/dl)	Reasonable HbA1c goal (%)
Healthy (few coexisting chronic illnesses, intact cognitive and functional status)	<126	7.5%
Complex/intermediate health (multiple coexisting chronic illnesses or 2+ instrumental ADL impairments or mild-to moderate cognitive impairment)	90-150	<8%
Very complex/poor health (older people in long-term-care or with end-stage chronic illnesses or moderate to-severe cognitive impairment or 2+ ADL dependencies)	100-180	<8.5%

Figure 7-1: Protocol for diabetes management



Source: World Health Organization. Regional Office for South-East Asia. (2018). Package of Essential Noncommunicable (PEN) disease and healthy lifestyle interventions Training modules for primary health care workers

Recommendations for clinical practice

- Provide counselling on lifestyle changing, including diet, physical activity and smoking cessation.
- Prescribe medications to be taken once daily, less expensive generics, and longer lasting supplies of medicine whenever possible.
- Explain, especially to caregivers, the potential adverse effects of the medications and what to do if these occur (e.g. hypoglycaemia).
- During every visit, review if the patient is adhering to the medications, if there have been any adverse reactions and if lifestyle changes have been made.
- Prescribe aspirin for patients with cardiovascular and cerebrovascular diseases.
- Measure the patient's blood pressure during every visit. Treat as per hypertension protocol if it is ≥130/80 mmHg.
- Measure the patient's weight and calculate the body mass index during every visit.
- Take HbA1c measurements every three to six months, and every six months if the patient is stable on unchanging treatment.
- Arrange lipid panel testing annually, if available.
- Conduct a foot examination to check for the risk of amputation. This examination should be conducted annually, or during every visit if the risk is high.
- Conduct an annual urine protein dipstick test (microalbuminuria dipstick, if available, to calculate the albumin to creatinine ratio). Also, take a serum creatinine measurement (calculation of glomerular filtration rate [GFR]) for screening for CKD, which is defined by a GFR of <60 ml/min/1.73 m_2 OR presence of moderate or severe albuminuria (albumin–creatinine ratio ≥30 mg/mmol).
- Conduct retinal examination by fundoscopy every two years, if available.

Hypoglycaemia and its management

- Hypoglycaemia is the primary short-term risk of a hyperglycaemia treatment programme, particularly one that is targeted at achieving near-normal control of glucose levels.
- The risk factors are autonomic dysfunction with ageing, irregular/poor diet, cognitive impairment, alcohol use, polypharmacy, chronic diseases of the liver/kidney and the use of sulfonylureas/insulin.
- An older person with diabetes may begin to develop symptoms of hypoglycaemia even at a glucose level in the range of 80–100 mg/dl.
- To prevent hypoglycaemia, the older person and his/her caregivers should be educated on the symptoms of hypoglycaemia and its management at home when the patient develops the initial symptoms (to give sweets, sugary drinks, etc.).

- The symptoms progress as follows:
  - » initially, there are autonomic symptoms (hunger, tachycardia, nervousness and a sweating response);
  - » as hypoglycaemia progresses, the patient experiences neuroglycopenic symptoms (lethargy, anxiety, confusion followed by seizure and coma, if still unmanaged); and
  - » hypoglycaemic unawareness (neuroglycopenic symptoms preceding the autonomic symptoms) may occur among older people.
- **Management**
  - » Hypoglycaemia can be life-threatening, but prompt recognition of hypoglycaemia is rewarding for the primary care physician.
  - » If the patient is conscious and oriented, one should give sugary drinks/sweets.
  - » If the patient presents with neuroglycopenic symptoms, administer a bolus of 50 ml of 50% intravenous dextrose solution. Patients often recover with a single bolus dose.
  - » Review the medications and the patient's adherence to them.

Hyperglycaemic hyperosmolar state

- The hyperglycaemic hyperosmolar state, in which the serum glucose level rises to 600 mg/dl or above, is one of the life-threatening complications of severe hyperglycaemia among older person. It can occur even at levels <600 mg/dl.
- The mortality rate is high because there is often a severe underlying illness, such as pneumonia or a cardiovascular event.
- The manifestations of the condition are severe hyperglycaemia, hyperosmolarity, severe volume depletion, renal insufficiency and changes in mental status.
- Management at the primary health-care level:
  - ▸ The signs (severe hyperglycaemia) and symptoms must be recognized promptly; and
  - ▸ Set up an intravenous drip of 0.9% NaCI and then refer to a hospital.

Diabetic foot disease

This is one of the common long-term complications of diabetes mellitus and carries a high risk of functional impairment and dependence.

- Calluses, oedema, sensory neuropathy and peripheral vascular disease have also been identified as risk factors for the development of diabetic foot ulcers.
- The evaluation of foot ulcers should include an assessment of the patient's neurological and vascular status, and an evaluation of the wound itself. In the case of those at a high risk for diabetic foot ulcers, the primary care physician should examine the patient's feet as well as footwear at every visit.
- The primary care physician should refer the patient to a higher centre if diabetic ulcers develop.

Hypothyroidism

- Hypothyroidism is a common problem among older people and more so among women. In old age, it manifests itself in an insidious manner over many years.
- The classic features of hypothyroidism are detected in only 10% of laboratory-confirmed cases.
- Psychiatric manifestations are frequent and include cognitive impairment, dementia, depression and delirium.
- Some unusual manifestations are ataxia and carpal tunnel syndrome. Acute stress can precipitate an acute decline in mental status, leading to coma.
- Subclinical hypothyroidism, in which abnormalities of lipid metabolism may be the only manifestation, is not an uncommon problem in old age.

The management of hypothyroidism involves the establishment of the diagnosis with the demonstration of high serum TSH levels (>10 mU/L), with low free T3 and free T4. Replacement of L-thyroxin is the definitive treatment of hypothyroidism. Among older patients, replacement should start with a very low dose (25 mcg) and should be increased slowly to avoid cardiovascular toxicity.

The TSH level should be periodically assessed, every four to six weeks, until a normal TSH level is reached. Thereafter, it can be assessed every three months.

It is not essential to treat subclinical hypothyroidism even when the TSH is as high as 10 mU/L as thyroid hormones themselves increase the risk of atrial fibrillation and osteoporosis among older people.

Hyperthyroidism

- The clinical presentation of hyperthyroidism is rarely classical. It includes progressive functional decline, anorexia, weight loss, fatigue, cardiac arrhythmia and cardiac failure.
- Older people may present with "apathetic hyperthyroidism", the features of which are weakness, lethargy, listlessness, depression and chronic wasting. The features of hyperactivity, irritability and restlessness, which are common in younger age groups, are absent.
- Subclinical hyperthyroidism among older patients may present itself as refractory atrial fibrillation.
- The diagnosis of hyperthyroidism requires the demonstration of high levels of circulating T3 and T4, with undetectable TSH values in the blood.
- In the primary care set-up, the management of hyperthyroidism in old age requires early control of cardiovascular manifestations with β-adrenergic blocking agents, and the control of toxic symptoms with antithyroid medicines (propylthiouracil, carbimazole).
- The primary care physician needs to monitor the free T4 levels every four to six weeks and accordingly titrate the dosage of medications, following the standard guidelines.

MODULE 8

Musculoskeletal system

Learning objectives

» To enumerate normal age-related changes in the musculoskeletal system;

» To enumerate common musculoskeletal disorders of older patients; and

» To identify common musculoskeletal diseases and develop care plans.

Age-related changes in the musculoskeletal system

Muscles

Approximately 30% of muscle mass is lost between the ages of 30 and 80 years. The cross-sectional area of muscle fibres decreases, leading to a significant loss of strength. The ability to repair or build new muscle declines with age.

Bones

Bone loss starts between 35 and 40 years of age among both sexes. It accelerates in the decade following menopause. Women lose 35–50% of the trabecular bone (vertebrae, hip and end of long bones) and 25–30% of the cortical bone (shaft of long bones), while men lose 15–45% of the trabecular bone and 5–15% of the cortical bone. All this can lead to osteopenia and osteoporosis.

Joints and periarticular soft tissues

Ageing is associated with a decrease in tensile stiffness, resistance to fatigue and the strength of the joints. There is thickening, distortion and fibrosis of the joint capsules. Ligaments and tendons lose their tensile strength.

The consequences of age-related changes in the musculoskeletal system are as follows:

- the marked loss of muscle quality as well as quantity leads to functional impairment;
- the range of movement of the spine and peripheral joints decreases and there is a loss of joint

proprioception, contributing to problems of balance;

- changes in the vertebrae lead to kyphosis and a loss of height;
- these changes lead to joint and periarticular pain, as well as difficulty in initiating movement due to stiffness. This limits the functionality of the older person; and
- the person's susceptibility to trauma increases.

Locomotor capacity in older people

- Mobility is a critical determining factor for healthy ageing. It is important for maintaining autonomy and preventing dependence on care.
- Locomotor capacity should be assessed together with other aspects of intrinsic capacity, such as the cognitive, sensory, and psychological capacities, and vitality.
- Limited mobility is a common problem among older people, but it is not inevitable.
- A programme of regular exercise, tailored to individual capacities and needs, is the most important way to improve or maintain locomotor capacity.
- Adapting to one's environment and using assistive devices are good ways of maintaining mobility despite reduced locomotor capacity.

Care pathways for locomotive capacity

- Screen the patient for losses in mobility, using the "chair-rise test". (Is the older person able to complete five chair-rises in 14 seconds without using the arms?). If screening is positive for losses, assess the patient's mobility using the short physical performance battery (SPPB). (Refer to Annexure 2E for details)
- If the older person displays "limited mobility" on SPPB:
    - Advise multimodal exercise with close supervision on
        - strength/resistance training
        - aerobic/cardiovascular training
        - balance training
        - flexibility training;
    - Consider referral to rehabilitation;
    - Consider increasing protein intake; and
    - Consider and provide assistive device to aid mobility.
- Assess and manage associated conditions, such as:
    - Polypharmacy (review medications that can impair mobility or interfere with balance);
    - Evaluate for osteoarthritis, osteoporosis and one-joint conditions; and
    - Consider pain management.
- Assess and manage the person's social and physical environments to reduce the risk of falls.

Common conditions

Osteoarthritis

- Osteoarthritis (OA) is the most common chronic joint disorder among older people.
- Osteoarthritis of the knee is the most important cause of chronic pain and functional limitation among older people living in the community.
- Osteoarthritis tends to affect the distal interphalangeal joints, base of the thumb, knee, hip, and intervertebral facet joints.
- The clinical features of OA are pain, stiffness, bony swelling and crepitus, loss of movement, instability and loss of function.
- Patients with mild OA of the knee have low levels of or intermittent knee pain. The joint function and quality of life are relatively well-preserved.
- Patients with moderate to severe OA of the knee have persistent pain, which significantly impairs functionality, participation in activities and the quality of life.

Management of pain in OA

- Topical NSAIDs may provide short-term relief from painful symptoms of OA of the knee.
- Paracetamol remains the medicine of choice for the management of OA (only contraindication is deranged liver function test or known case of CLD). It should be used at a dose not exceeding 1 g two to three times daily. It is well tolerated.)
- If available and affordable, selective COX-2 inhibitors, e.g. eterocoxib, can be used for SOS pain relief.

Nonpharmacological therapy for OA of the knee

- Patients should use a walking stick (cane), held in the contralateral hand (unaffected side), if there is significant impairment of mobility.
- Encourage low-impact aerobic fitness training, e.g. walking and cycling, combined with exercises to strengthen the lower limbs, e.g. for the quadriceps and hamstrings.
- Exercises that have a high impact on the joints, such as running and jumping, are usually discouraged.

Lifestyle modifications for OA

- Use commode-type toilets/commode chairs instead of pan-type toilets.
- Avoid sitting/working on the floor with knees flexed.

Referral to an orthopaedician

- Patients should be referred to a higher centre if they have moderate to severe OA of the knee/hip that significantly impairs functionality, participation in activities and the quality of life.

Osteoporosis

- Osteoporosis is now recognized as a common health problem in old age.
- It is estimated that about 35% of post-menopausal women are osteoporotic.
- Osteoporosis is silent until the occurrence of a medical complication, which is an osteoporotic fracture.
- The number of older women who have osteoporosis-related crush fractures of the spinal vertebrae or fractures of either the radius or the neck of the femur has reached epidemic proportions.
- The most common fractures are those of the wrist, hip and vertebra.
- Hip fractures are the most severe of these fractures and are associated with significant morbidity and mortality.
- A significant collapse of one vertebral body usually leads to severe pain. In addition to repeated pain, numerous crush fractures result in loss of height and often, in a marked kyphosis. The kyphosis, in turn, may lead to cardiopulmonary embarrassment and severely reduced exercise tolerance and functional impairment.
- Osteoporotic fractures have led to a significant increase in morbidity and mortality. They also entail an enormous financial burden. All these factors make osteoporosis a major public health problem.

Risk factors

The etiology of osteoporosis is multifactorial. The primary risk factors are increasing age, heredity and the oestrogen status. The other risk factors are:

- premature and surgical menopause
- heavy use of tobacco and caffeine
- alcoholism
- inadequate dietary intake of calcium and vitamin D
- sedentary lifestyle
- use of corticosteroids
- prolonged intake of antiepileptic medications
- comorbid conditions, such as thyroid diseases and diabetes mellitus.

Diagnosis

The early diagnosis of osteoporosis is based on the measurement of the bone mineral density (BMD). Of the several techniques to measure bone density, dual-energy X-ray absorptiometry (DEXA) is the most reliable.

WHO diagnosis of osteoporosis

According to the WHO criteria, osteoporosis is defined as a BMD that lies 2.5 standard deviations or more below the average value for young healthy women (a T-score of < -2.5 SD).

Management of osteoporosis

To begin with, it is necessary to prevent osteoporosis by addressing the modifiable risk factors. If osteoporosis has already set in, the primary goal of its management is to prevent fractures by treating it. Comprehensive strategies for the treatment of osteoporosis should include dietary measures, adequate exposure to sunlight, exercise, the prevention of falls and fractures, and pharmacotherapy.

Exposure to sunlight

The best source of vitamin D is exposure to natural sunlight, without sunscreen. It is not known exactly how much time one must spend in the sun to make enough vitamin D to meet the body's requirements.

Nutrition

The primary care physician may advise an osteoporosis-friendly diet, which is important even with medications. The dietary recommendations for the prevention and treatment of osteoporosis are same and largely involve the consumption of food rich in calories (to avoid malnutrition), calcium and vitamin D. Some types of fish (salmon, tuna, mackerel and sardines), egg yolk and fortified dairy products are good sources of vitamin D.

Exercise

Various types of exercises, including resistance training, jogging, jumping and walking, are considered effective against osteoporosis.

Calcium supplementation

Older males or postmenopausal women with an inadequate dietary intake of calcium should take supplemental elemental calcium (generally 500 to 1000 mg/day) in divided doses at mealtime, such that their total calcium intake (diet plus supplements) approximates 1200 mg/day.

Vitamin D supplementation

Older males should supplement their dietary intake of vitamin D with 600 IU of vitamin D a day, while postmenopausal females should take 800 IU/day.

Bisphosphonate therapy

Correction of hypocalcaemia and vitamin D deficiency is necessary prior to the administration of the bisphosphonate medicines shown in Table 8-1.

Table 8-1: Bisphosphonate therapy

Medicine	Dosing frequency	Precautions
Alendronate	70 mg once weekly or 10 mg daily (per oral). Should be administered in the morning, with at least 250 mL of water, at least 30 minutes before the first food or other medications.	Should not be administered to those with swallowing difficulties or oesophageal motility disorders, or those who are unable to stand or sit upright for ≥ 30 minutes.
Zolendronic acid (for patients who cannot tolerate oral bisphosphonates)	4-5 mg yearly by 30-minute intravenous infusion.	Measure serum calcium before administration. If calcium level is low, get it corrected before initiation of zolendronic acid. This medicine is not recommended for use in patients with creatinine clearance ≤35 mL/min.

Source: National Osteoporosis Foundation 2018.

Falls and fractures

- 75% of falls occur among older people.
- Approximately 35–40% of persons of the age of 65 years and above fall in a given year. Half of those who fall do so more than once.
- The incidence increases steadily after the age of 60 years. Approximately 50% of persons of the age of 80 years and above fall in a year.
- Women are more likely to fall than men.
- More than half of all falls in the community occur at home.
- Falls are the second leading cause of accidental death. Of the older people who sustain a hip fracture and are hospitalized as a result of a fall, one-third die within a year.
- Falls not only affect the quality of life of the individual, but also influence the caregiver and family.
- Even if the fall does not result in hospitalization, fear of falling becomes a major factor.
- Fear leads to inactivity and loss of confidence. This, in turn, produces a cycle of fear, loss of self-confidence and inactivity, which decreases the quality of life and increases the risk of a fall.

Risk factors for falls

Intrinsic factors

These are old age, female sex, low body mass index, frailty and sarcopenia. Among the neurological factors are cognitive impairment, Parkinson's disease, stroke and peripheral neuropathy. The musculoskeletal factors are foot disorders and weakness of the lower limb muscles. Cardiovascular problems such as postural hypotension and arrhythmias are often responsible for falls. Among the medications that put a person at risk of a fall are sedatives, neuroleptics, antidepressants, antihypertensives, diuretics, antiarrhythmics and anticholinergic medications. Visual disturbances, polypharmacy, delirium, alcohol intoxication and depression are the other intrinsic risk factors.

Environmental factors

Uneven and slippery ground surfaces increase the likelihood of a fall, as do poor lighting and glare from lamps. Low furniture and chairs without arms can also cause falls. Finally, improper walking aids and footwear put older people at risk of falls.

Multicomponent programmes for reducing risk of falls

- Exercise and training to improve deficits in balance, mobility and strength
- Correction of sensory deficits (vision, hearing, vestibular and proprioceptive function)
- Evaluation and treatment of postural hypotension
- Review and reduction of medications
- Treatment of foot problems
- Environmental modification and use of adaptive equipment at home, if indicated.

Genitourinary system

Learning objectives

» To enumerate normal age-related changes in the genitourinary system;

» To enumerate common health problems related to the genitourinary system; and

» To identify common diseases of the urinary system and develop care plans.

Age-related changes in the genitourinary system

- Prostatic enlargement occurs among older men, leading to various urinary symptoms, such as urgency, frequency, nocturia and overflow urinary incontinence.
- In older women, the pelvic musculature becomes lax, resulting in incontinence of urine.
- Older people usually suffer a loss of muscle tone in the abdomen (and women in the pelvis as well), which makes bladder control more difficult.
- The capacity of the bladder decreases from 500–600 ml to about 250 ml. Other than the lowered capacity, more residual urine remains after voiding. The smaller capacity of the bladder, coupled with higher night-time glomerular filtration, results in nocturia among older persons.
- The GFR declines by nearly 50% between the ages of 20 and 90 years. This necessitates renal adjustment for various medication dosages.
- The size of kidneys and the number of nephrons decline with age. The number of nephrons per kidney decreases by 30–50% between the ages of 25 and 85 years.

The net result of the changes in the kidney and urinary tract are:

- higher risk of infection
- risk of life-threatening hyponatraemia
- nocturia
- urinary incontinence
- necessity for adjustment of medication dosage.

Common diseases of the urinary tract

Urinary tract infection

Apart from the clinical symptoms of frequency and dysuria, delirium can be one of the manifestations of urinary tract infections (UTI) among older people. The prevalence of bacteriuria increases with age and it is more common among women. Asymptomatic bacteriuria can be detected in 30% of older females and 10% of older males above the age of 65 years. The prevalence of asymptomatic bacteriuria is much higher among chronically ill patients and can be detected in 20% of males and 60% of females.

Asymptomatic bacteriuria does not require therapy and is not significantly associated with serious renal disease.

The factors that encourage the growth and persistence of infection in the urinary tract are:

- structural abnormalities in the urinary tract (prostatic hypertrophy, uterine prolapse, strictures, stones and neurogenic bladder)
- renal scars associated with vesicoureteric reflux
- vascular insufficiency
- declining immunity
- diabetes mellitus
- in-dwelling catheters
- frequent instrumentation.

Symptomatic UTI always needs to be treated. UTI can involve the upper or lower urinary tract. The primary care physician should send a urine sample for culture before initiating empirical antibiotics. Among patients living in the community, *E. coli* is the most common organism and it is isolated in 85% of cases. However, among institutionalized older people, Proteus, Klebsiella and Pseudomonas are more common.

A 5–7-day course of therapy with oral antibiotics (depending on the local antibiotic resistance pattern) is usually sufficient for uncomplicated lower UTI.

In the presence of complicated lower UTI or upper UTI (pyelonephritis), especially if accompanied by shock and septicaemia, the primary care physician should immediately refer the patient to a higher centre for management.

Benign prostatic hypertrophy

- Benign prostatic hypertrophy (BPH) is an extremely common problem of advancing age.
- The primary care physician can diagnose BPH with a digital rectal examination.
- The physician can also get an impression of BPH or malignant prostatic enlargement on the basis of digital rectal examination.

- The physician should refer the patient for ultrasonographical evaluation of the bladder and the prostate. Uroflowmetry and measurements of the residual urine volume post-voiding are useful in making a diagnosis. Urodynamic studies are needed in more complex cases.
- For patients who require treatment, it is reasonable to initiate a trial of medical therapy once the physician is convinced that the presenting signs and symptoms are consistent with BPH.
- The decision to medically treat BPH involves balancing the severity of the patient's symptoms with the potential side-effects of the therapy.
- Unless a patient has developed bladder outlet obstruction, BPH requires therapy only if the symptoms have a significant impact on the patient's quality of life.

Referring to a specialist

The physician should refer the older person to a specialist in the following situations:

- complications of bladder outlet obstruction – hydronephrosis or renal insufficiency or lower tract injury and recurrent infection;
- symptoms in the setting of autonomic or severe peripheral neuropathy;
- symptoms following invasive treatment of the urethra or prostate;
- abnormality on prostate examination (nodule, induration or asymmetry);
- the presence of haematuria in the absence of infection;
- incontinence among men; and
- severe symptoms (IPSS ≥20).

Medical management of BPH

Selective alpha-1 adrenergic antagonists

Medicines under this group are tamsulosin (0.4 mg once a day) and alfluzosin (10 mg once a day). It may take patients one to two weeks to see the benefits of these medicines.

5-alpha-reductase inhibitors

Finasteride (0.5 mg once a day) and dutasteride (0.5 mg once a day) are medicines in this group. They are more effective among men with larger prostates. These medicines act by reducing the size of the prostate gland and have demonstrated the potential for a long-term reduction in the prostate volume. They reduce the need for prostate surgery as well. Generally, treatment is required for 6–12 months before the size of the prostate is sufficiently reduced to bring about an improvement in the symptoms. It needs chronic treatment for more than a year for these medications to prevent acute urinary retention and reduce the need for surgery.

Malignancy of the prostate

- Cancer of the prostate is a common malignancy of old age that can be detected early by screening and managed satisfactorily.
- The clinical manifestations are either silent or similar to those of benign hypertrophy in the early stages.
- In the late stages, when skeletal metastasis is frequent, prostate cancer becomes one of the most painful conditions.
- Unfortunately, the majority of patients with prostate cancer present with metastatic disease.

The primary care physician should have a high index of suspicion of cancer of the prostate in the following situations and must urgently refer the patient to a urologist:

  - » prostatic symptoms, with digital rectal examination revealing a prostate of firm to hard consistency, together with nodules, loss of medial sulcus and immobile overlying mucosa;
  - » the presence of haematuria, painful ejaculation and impotence;
  - » new-onset low back pain with fatigue, malaise and weight loss.

The management of the disease involves radical surgery in the early stages, when comorbid conditions do not seriously impair the patient's functional status. In not-so-fit patients, hormonal manipulation with antiandrogens, namely nonsteroidal flutamide and steroidal diethyl-stilbestrol, has been found to be effective when combined with bilateral orchidectomy. Radiotherapy is another alternative in such cases.

Early detection through regular digital examination and assay of a specific marker (prostate-specific antigen) has currently emerged as a useful strategy for secondary prevention.

Urinary incontinence

- Urinary incontinence is defined as the involuntary loss of urine in sufficient amount or frequency to be a social and/or health problem.
- It is a common, potentially disabling problem, which is often curable when identified.
- The prevalence of urinary incontinence is higher among women than men, and increases with ageing and functional impairment. In the community, the prevalence varies from 15–20% above the age of 70 years, and reaches 50% in older people placed in long-term care facilities.
- Unfortunately, urinary incontinence is often neglected by the patient as well as the physician, leading to under-reporting and under-treatment.
- Specific and direct questioning on incontinence should be a part of the geriatric screening and history-taking, so that this potentially treatable medical and social problem can be identified.
- Adequate mobility, normal cognition and effective functioning of the lower urinary tract are essential to maintain continence. Incontinence can occur due to a problem with any of these functions.

- Incontinence is classified into acute and transient and chronic and established, depending on the onset and duration of the problem.
- From the clinical point of view, the four basic categories of incontinence are urge incontinence, overflow incontinence, stress incontinence and functional incontinence.
- Based on the etiology, it is classified as urologic, neurological, psychological and functional.
- It is important to distinguish between urologic and neurological disorders and problems like diminished mobility and cognition.
- Like other geriatric problems, incontinence is often due to multiple disorders that occur as a result of the changes brought about by ageing.

Acute and transient incontinence

- Acute and transient urinary incontinence is very common among older people in acute care settings.
- Incontinence that is sudden in onset is usually related to acute illness, such as delirium, caused by infection or metabolic abnormality.
- Faecal impaction is a common problem which can cause mechanical obstruction of the bladder outlet, resulting in overflow incontinence.
- Inflammation of the lower urinary tract due to atrophic vaginitis and urethritis can contribute to incontinence.
- Hyperglycaemia, fluid overload and cardiac failure can lead to transient incontinence.
- An iatrogenic cause of incontinence is medications, which commonly include diuretics, anti cholinergics and psychotropics. Identifying and treating the underlying problem resolves the incontinence.

Chronic and established incontinence

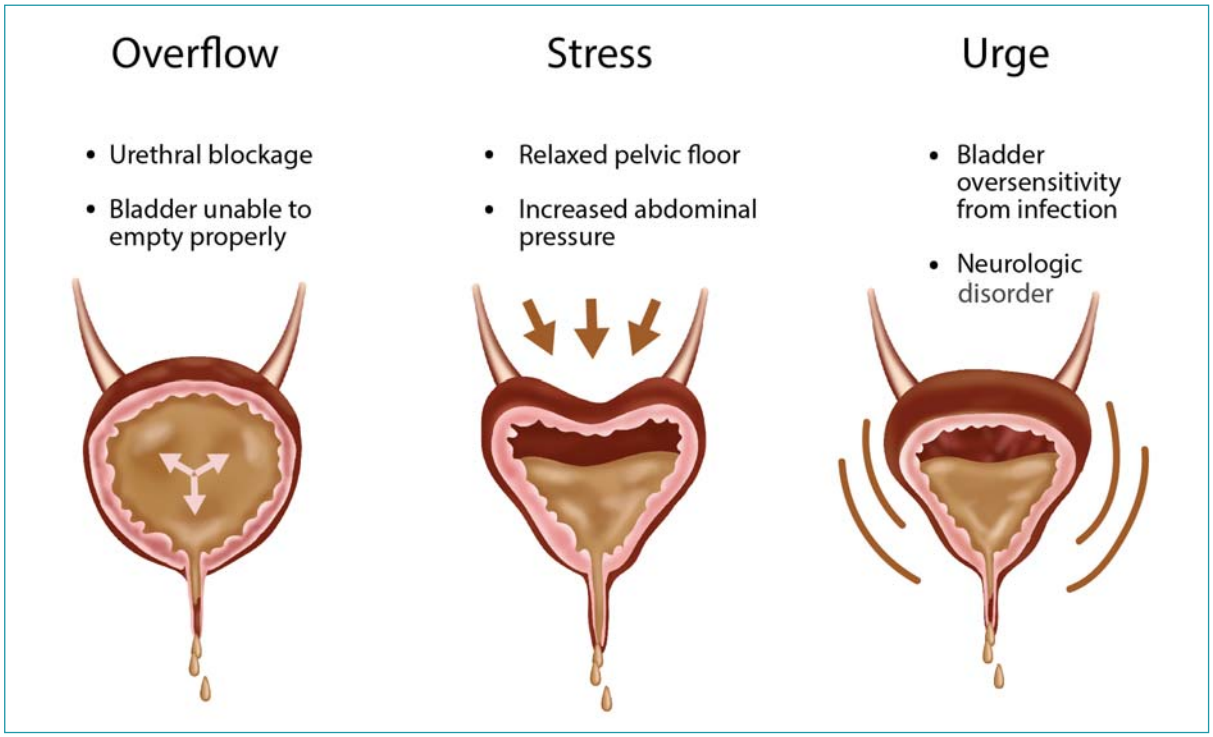
Table 9-1: Types of incontinence

Name	Features
Stress incontinence	It is an involuntary loss of urine due to an increased intra-abdominal pressure during coughing, sneezing, laughing or other activities that increase intraabdominal pressure.
Urge incontinence	It is the involuntary loss of urine associated with a strong desire or need to urinate. It is usually, associated with premature detrusor muscle contractions. It may be result of a sudden, involuntary bladder contraction caused by inflammation or irritation within the bladder due to calculi, malignancy, infection or atrophic vaginitis-urethritis. Urge incontinence is the most common type of incontinence in older people with benign prostate hypertrophy.
Mixed incontinence	It is a combination of both stress and urge incontinence. It is most common in older women.
Overflow incontinence	It is the involuntary loss of urine resulting from an over-distended bladder. It may have a variety of presentations, including frequent or constant dribbling, or urge or stress incontinence symptoms. Overflow may be caused by an inactive or acontractile detrusor, or bladder outlet or urethral obstruction secondary to medicines, neurologic conditions such as diabetic neuropathy, low spinal cord injury, or radical pelvic surgery that interrupts the motor innervation of the detrusor muscle.

Transient Incontinence	It is a result of a reversible medical condition. The patients may be suffering from delirium, urinary tract infection, atrophic vaginitis, psychological problem (such as depression), endocrine disorder, impaired immobility and/or stool impaction. It may be due to medications such as diuretics and sedatives.
Functional Incontinence	It is caused by factors outside the lower urinary tract such as impairment of physical or cognitive functioning, or both. It is important to note that immobile and cognitively impaired individuals may also have other types and causes of UI.

Source: Nursing clinical practice guidelines (Nursing Management of Patients with Urinary Incontinence). Ministry of Health. Singapore. 2003.

Figure 9-1: Types of incontinence



Source: https://images.app.goo.gl/uW5Jdam4iGWu1smt8

Management of incontinence

Behavioural techniques

- The patient should be taught how to train the bladder. He/she should be advised to delay urination after getting the urge to go; start with holding off for 10 minutes and prolong the hold until the time between the trips to the toilet reaches two to four hours.
- Double voiding consists of urinating, and then waiting a few minutes and trying again.
- Another technique is to make scheduled trips to the toilet: urinating every two to four hours rather than waiting for the need.
- Patients can benefit from fluid and diet management. They should reduce their intake of caffeine and acidic food, as well as liquid consumption.
- Pelvic floor muscle exercises strengthen the pelvic floor muscles that help control urination. To do pelvic floor muscle exercises, the patient must imagine that she is trying to stop the urine flow and then tighten (contract) the muscles to stop urinating. She should then hold for five seconds and then relax for five seconds. This work-up to hold the contractions may be increased to 10 seconds at a time and three sets to be repeated 10 times a day.

Medications

Several medicines have been tried to treat urinary incontinence:

- anticholinergics such as oxybutynin;
- alpha blockers such as tamsulosin, alfuzosin, silodosin, terazosin and doxazosin for men; and
- topical estrogen such as vaginal cream, ring or patch to rejuvenate the tissues in the urethra and vaginal areas, as this may reduce some of the symptoms of incontinence.

Medical devices

Several devices have been designed to treat women with incontinence. These include urethral inserts and pessaries.

Absorbent pads and catheters

When the measures mentioned above fail to control incontinence completely, the patient can be advised to:

- use pads and protective garments
- opt for self-catheterization.

In many cases, the treatment strategies mentioned above may not suffice and the patient may require referral for an invasive intervention with electrical stimulation, interventional therapies or pelvic surgery. However, these modalities are available only in tertiary care centres.

Changes in the reproductive system

Women (menopause)

- Natural menopause is defined as the permanent cessation of menstrual periods, determined retrospectively after a woman has experienced 12 months of amenorrhoea without any other obvious pathological or physiological cause. Besides the natural decline of the reproductive hormones, hysterectomy, chemotherapy, radiation therapy and primary ovarian insufficiency can also result in menopause.
- Every woman experiences menopause; however, the degree of its impact on the quality of life and the symptoms vary among individuals. Menopause is accompanied by several physical and emotional changes, which have short-term and long-term implications. The long-term implications include structural changes in the sex organs, urinary tract and skin.
- The signs and symptoms experienced in the months or years leading up to menopause (peri-menopause) are irregular periods, vaginal dryness, hot flashes, chills, night sweats, sleep problems, mood changes, weight gain, urinary incontinence, sexual dysfunction, slowed metabolism, thinning hair, dry skin and loss of fullness of the breast. After menopause, the risk of certain medical conditions, such as IHD, osteoporosis, cognitive decline and certain types of cancer, increases.
- Fortunately, many of the signs and symptoms associated with menopause are temporary. Menopause requires no medical treatment. Instead, treatments focus on relieving the signs and symptoms and preventing or managing chronic conditions that may occur with ageing.

- There are many effective measures that can be taken, from adjustments in lifestyle to hormone therapy. Treatment includes hormone therapy, and the use of vaginal estrogen, low-dose antidepressants, gabapentin, clonidine and medications to prevent or treat osteoporosis.
- Certain antidepressants related to the selective serotonin reuptake inhibitor (SSRI) class of medications may decrease menopausal hot flashes. A low dose of an antidepressant for the management of hot flashes may be useful for women who cannot take estrogen for health reasons or those who need an antidepressant for a mood disorder.
- Strengthening the pelvic floor muscles with Kegel exercises and using a topical vaginal estrogen may help relieve symptoms of urinary incontinence. Hormone therapy may also be an effective treatment option for menopausal changes in the urinary tract and vagina, which can result in urinary incontinence.
- Vaginal dryness due to decreased production of moisture and loss of elasticity can cause discomfort and slight bleeding during sexual intercourse. Also, decreased sensation may reduce the desire for sexual activity (libido). Water-based vaginal moisturizers and lubricants may help. If a vaginal lubricant does not suffice, the woman can benefit from the use of local vaginal estrogen treatment, available as a vaginal cream, tablet or ring.
- Adjusting one's lifestyle, such as by taking a balanced diet, getting adequate sleep, using relaxation techniques and exercising regularly, helps to relieve or prevent symptoms.
- Many complementary and alternative treatment approaches have been promoted as aids in managing the symptoms of menopause, but there is not much scientific evidence to back them. Some such options that have been or are being studied include plant estrogens (phytoestrogens), bio-identical hormones, yoga, acupuncture and hypnosis.

Men

The levels of total testosterone as well as free and bio-available testosterone decline with age, as does the circadian fluctuation in testosterone.

The signs of testosterone deficiency include a loss or decrease of libido; a decrease in muscle mass, strength and visuospatial skills; osteoporosis; arthralgia; diminished well-being; impaired mood; fatigue; anaemia; increased irritability and lethargy.

Late-life sexuality

- Cultural norms, the attitude of the individual and the family, value systems, religious beliefs, physical and emotional health, and environmental factors affect the expression of sexuality. Sexuality is an area that is often minimized or ignored in the context of older people. Older people have the right to make decisions about their sexuality. An older person's attitude to sexuality depends on his/her past experiences, positive psychological development and physical health. Health problems, the loss of a partner and the regular physiological changes of ageing all affect sexual practice. However, many individuals maintain an active interest in sex in old age.

- Age-related changes have a considerable impact on the sexual practices of older people. In general, sexual response time slows with ageing but the ability to enjoy various expressions of sexuality remains throughout life. A loss of or decrease in reproductive capacity does not imply a decrease in or loss of sexual desire. The common sexual dysfunctions are erectile dysfunction (ED) among older men and dyspareunia among older women.
- Health problems, such as cardiovascular disease, respiratory diseases, cancer, arthritis, osteoporosis, stroke, Parkinson's disease, anaemia, diabetes, chronic prostatitis in men and chronic cystitis in women, urinary incontinence and functional limitations, can reduce sexual desire and activity. Many medicines have side-effects which either reduce sexual desire or cause erectile dysfunction among men. These are sedatives, certain analgesics, antispasmodic medicines, antidepressants and certain antihypertensives.
- Sexuality is more than just a physical desire. It gives the ageing person the opportunity to express and receive affection, and to experience a sense of connection and emotional bonding. Therefore, preserving sexual health should be an integral part of the care of older people. Information on safe sex should be made available to older people, as the rate of sexually transmitted diseases is on the rise in this age group.

MODULE 10

Neurological diseases of old age

Learning objectives

- To enumerate normal age-related changes in the nervous system;
- To diagnose stroke and understand the factors that cause stroke in old age;
- To enumerate the management strategy and understand the need for timely referral of stroke; and
- To detect Parkinson's disease and other common movement disorders and arrange for referral.

Age-related changes in the nervous system

- Numerous changes occur in the brain structure with age. These include a loss of neurons, reduction in the size of the brain, the enlargement of ventricles and accumulation of lipofuscin and plaque, including amyloid.
- The efficiency of transmission is also reduced, probably due to the smaller number of cells and lower levels of certain neurotransmitters.
- There is a fall in the number of receptors and changes occur in the sensitivity of receptors.
- The cerebral blood flow decreases by about 20% and there is an alteration in cerebral auto-regulation.
- These structural and functional changes have no real significance since the brain of a normal older person is still quite capable of normal functioning.

Common diseases of the nervous system

Stroke

- Stroke ranks first in frequency as well as in urgency among the neurological disorders, accounting for more than half of all admissions for neurological problems among older people.
- Stroke continues to be one of the top three leading dependence and death in later life. More than half of all stroke patients die within one year of the episode. Only one-third of the survivors make a good recovery.
- Stroke is responsible for more than a quarter of all cases of severe functional impairment in the community.

Clinical manifestations

Any abrupt-onset focal neurological deficit should be taken as stroke, unless proved otherwise. Stroke can present in any of the following ways and the primary care physician should have a very high clinical suspicion of stroke on observing the sudden onset of the following symptoms:

- numbness or weakness of face, arm or leg, especially on one side of the body;
- confusion, trouble speaking or understanding;
- trouble seeing with one or both eyes;
- trouble walking, dizziness, loss of balance or coordination; and
- severe headache with no known cause.

Role of primary care physicians in stroke management

The primary care physician has the following roles to play:

- recognize the above-mentioned symptoms and refer to a specialist centre immediately;
- help in post-stroke rehabilitation to minimize disabilities after the patient is discharged from hospital;
- help in secondary prevention of stroke.

Post-stroke rehabilitation

The rehabilitation of stroke patients is a multidisciplinary activity which focuses on problem-solving and educating the patient about functional impairment. The basic principles of rehabilitation are documentation of the impairment and disabilities, maximization of independence and minimization of dependency. A holistic approach that takes into account the physical and mental state of the patient is required to achieve the best results.

The rehabilitation programme should address several sequelae which affect the patient's quality of life: cognitive impairment, dysphagia, various speech defects, problems of perception (neglect, agnosia and apraxia), spasticity, frozen shoulder, swollen limb, seizures, depression and apathy.

Idiopathic Parkinson's disease

- Idiopathic Parkinson's disease is the second most common neurodegenerative disorder among older people, after Alzheimer's disease.
- It causes severe functional impairment and all treatment strategies provide only limited relief.
- Parkinson's disease (PD) is an insidious and asymmetric disease with a progressive course.

Diagnosis of Parkinson's disease

The diagnosis of PD is clinical. It is diagnosed by the presence of bradykinesia with at least one of the following symptoms:

  - » rigidity
  - » resting tremor (often unilateral to begin with)
  - » postural instability (often the late manifestation).

- The motor symptoms of Parkinsonism are often accompanied by nonmotor symptoms and sometimes, by neuropsychiatric ones such as sleep disorders, olfactory dysfunction, fatigue, constipation, depression, anxiety disorder, apathy, cognitive dysfunction and psychosis.
- The early onset of cognitive dysfunction, autonomic disturbances and postural instability/falls virtually rules out PD and suggests the possibility of rarer Parkinson-plus syndromes.
- A history of stroke, trauma to the head and the presence of other neurological disorders excludes the possibility of idiopathic PD.
- All symptoms intensify with the progression of the disease and most patients will be severely disabled in 10–15 years.
- **The management of PD requires specialist care and the patient should be referred promptly for diagnosis and treatment.**

Essential tremor

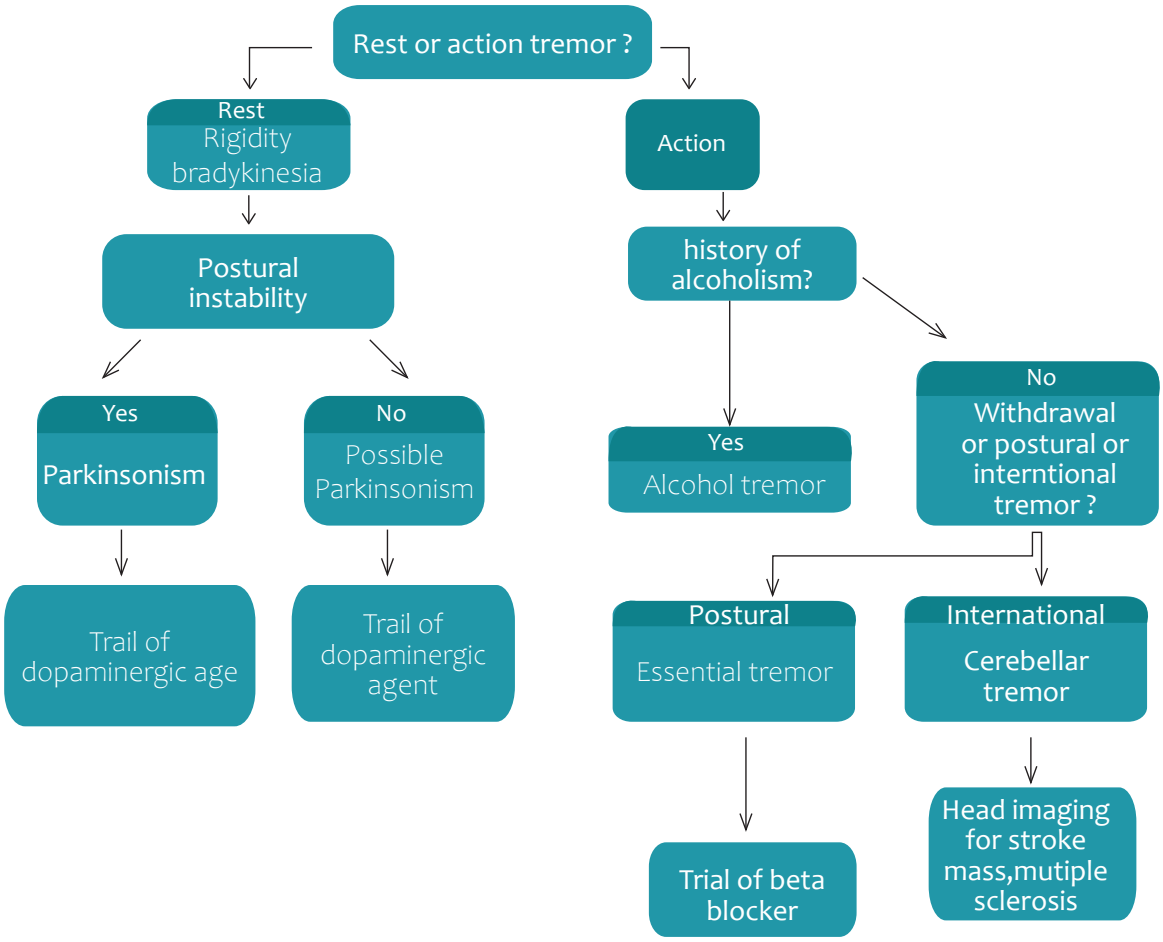
- Essential tremor (ET) is the most common movement disorder.
- This progressive disorder is often inherited and generally starts at an advanced age.
- It usually involves the upper limbs. The patient experiences the symptoms when the arms are held up (such as when reading the newspaper) or when the hands are used for any activity (writing, holding food for eating, holding a glass).
- In addition, the tremors may involve the head, voice, tongue and legs.
- The condition worsens in stressful situations, with fatigue, out of anxiety and after the intake of stimulant medications.
- Nonpharmacological treatment of ET involves the application of weight on the affected limbs (at the wrist) and bio-feedback techniques to relieve anxiety.
- **The role of primary care physicians is to assure the patient that the condition is of a benign nature. In addition, they should refer to the specialist for a confirmation of the diagnosis and advice on further management.**

Table 10-1: Differences between Parkinson's disease tremor and Essential tremor

Clinical features	Parkinson's disease tremor	Essential tremor
Family history	Around 10-15 %	Around 50%
Symmetry	Often asymmetrical	Often symmetrical
Character	At rest	Postural, kinetic
Distribution	Hands, legs, chin, tongue	Hands, head, voice
Associated features	Bradykinesia, rigidity, postural instability, micrographia	Gait disorder often absent

Source : By Author

Figure 10-1: Approach to Essential Tremor in older people:-



Source: American Geriatric society guidelines 2010

Acute confusional state (delirium)

- Acute confusional state is a common, serious and often unrecognized neuropsychiatric disturbance among older patients.
- It is a common presentation of various disorders, with an adverse outcome. Various reports have suggested that the prevalence rates range from 10–30% and incidence rates from 4–53% in the hospital setting.
- Around two-thirds of older patients undergoing emergency surgery develop an acute confusional state. The rates are the highest among frail patients and those with dementia.

Table 10-2: Etiology of delirium

Precipitants of delirium	Examples
Geriatric conditions	Polypharmacy Urinary retention Fecal impaction Use of NG tubes, catheters or physical restraints Poor sleep Loss of visual or hearing aid Change of physical environment in patients with dementia
Medications and toxins	Prescription medications (eg, opioids, sedative-hypnotics, antipsychotics, lithium, skeletal muscle relaxers) Steroids Nonprescription medications (eg, antihistamines) Alcohol intoxication and withdrawl Atypical alcohols (ethylene glycol, methanol) Medication side effects (e.g., hyperammonemia from valproic acid, confusion from quinolones, serotonin syndrome) Medication with anti-cholinergic potential (e.g. Amitryptilline, Tizanidine, Clozapine)
Infection	Sepsis, UTI, Pneumonia, Fever
Metabolic derangements	Electrolyte disturbance (elevated or depressed): sodium, calcium, magnesium, phosphate Endocrine disturbance (depressed or increased): thyroid, parathyroid, pancreas, pituitary, adrenal Hyperglycemia and hypoglycemia Hypercarbia, hypoxia Hyperosmolar and hypo-osmolar states Nutritional: Wernicke encephalopathy, vitamin B12 deficiency, possibly folate and niacin deficiencies
Brain disorders	Stroke CNS infections: encephalitis, meningitis, brain or epidural abscess Epileptic seizures, especially non-convulsive status epilepticus Traumatic brain injury Hypertensive encephalopathy
Systemic organ failure	Cardiac failure Hematologic: thrombocytosis, hyper-eosinophilia, leukemic blast cell crisis, polycythemia Liver failure: acute, chronic Pulmonary disease Uremia
Physical disorders	Burns Electrocution Hypothermia, Hyperthermia

Diagnosis of delirium

For the diagnosis of delirium, the older people should fulfill all the first 3 criteria along with criterion 4 or 5 of the confusion assessment method (Table 10-3).

Table 10-3: Confusion Assessment Method (CAM)

Criteria	Symptoms	Evidences
1	Acute change in mental status	Observation by a family member, caregiver or primary care physician
2	Symptoms that fluctuate over minutes or hours	Observation by nursing staff or other caregivers
3	Inattention	Patient's history, poor digital recall
4	Altered level of consciousness	Hyperalertness, drowsiness, stupor or coma
5	Disorganized thinking	Rambling or incoherent speech

Management of delirium

The management of delirium involves the following steps:

- identification of the precipitating cause;
- management of the cause;
- control of the behavioural symptoms.

Pharmacological management

When indicated, antipsychotic agents are generally used to treat patients with severe agitation because their symptoms are associated with self-harm and effective alternatives are not available.

Haloperidol

Low-dose haloperidol (0.5–1 mg) may be prescribed on an SOS basis. Haloperidol can be administered orally, intramuscularly or intravenously. After intravenous administration, it may start to act within just 5–20 minutes.

Risperidone

A dose of 0.5 mg od may be administered. If there is no improvement, it could be increased to 0.5 mg bd.

Nonpharmacological management

- Mild confusion and agitation may improve with interpersonal and environmental manipulations;
- Frequent reassurance, touch and verbal orientation can reduce disruptive behavior, preferably, the family members or other familiar persons should be by the patient's side;
- Helping the patient to get a good night's sleep. Avoid sensory overstimulation, especially at night;

- Providing clocks, calendars and windows with views of the surroundings outside, and verbally reorienting the patient may mitigate the confusion that results from disorientation in unfamiliar environments;
- Providing visual and hearing aids to patients with these impairments; and
- Reviewing medication which may potentially precipitate delirium.

Role of a primary care physician in delirium management

- Diagnose delirium using the CAM score; and
- Urgently refer the patient to a higher centre.

MODULE 11

Brain ageing and cognitive impairment

Learning objectives

» To enumerate age-related changes in cognition;

» To screen for and identify cognitive impairment; and

» To assess and develop care plans for older patients with dementia.

Age-related changes in cognition

- The structural and functional changes that take place in the brain with ageing have no real significance since the normal older brain is still quite capable of learning and remembering.
- However, among some individuals, the age-related changes in the brain (as mentioned in the preceding module) are excessive. They cause significant functional impairment, which is termed "cognitive impairment". This signifies a change in how a person remembers, thinks, reacts to emotions, or behaves.
- Cognitive decline is manifested as increasing forgetfulness, loss of attention and a reduced ability to solve problems.
- Declines in cognitive capacity can be minimized and sometimes reversed by a generally healthier lifestyle, cognitive stimulation and social engagement.

Table 11-1: Differences between normal age-related memory changes and cognitive impairment/dementia

Normal age-related memory changes	Symptoms suggestive of cognitive impairment/dementia
Able to function independently and pursue normal activities, despite occasional memory lapses	Difficulty performing simple tasks and forgetting how to do things that one has done many times in the past
Able to recall and describe incidents of forgetfulness	Unable to recall or describe specific instances in which memory loss caused problems
May pause to remember directions, but does not get lost in familiar places	Gets lost or disoriented even in familiar places, unable to follow directions
Occasional difficulty finding the right word, but no trouble holding a conversation	Words are frequently forgotten, misused or garbled; repetitive in conversation
Judgment and decision-making ability intact	Trouble making choices; poor judgment or socially inappropriate behavior

Dementia

Dementia is an acquired brain syndrome characterized by a decline in the previous level of cognitive functioning. It is associated with impairment in two or more cognitive domains, such as memory, executive functions, attention, language, social cognition and judgment, psychomotor speed and visuoperceptual or visuospatial abilities.

Etiology of dementia

Irreversible causes of dementia

Degenerative diseases

- Alzheimer's dementia
- Dementia with Lewy bodies
- Frontotemporal dementia
- Parkinson's-associated dementia.

Vascular

- multi-infarct dementia
- lacunar infarct
- small vessel disease.

Infective

- AIDS dementia complex
- Creutzfeldt–Jakob disease.

Potentially reversible causes

Vitamin deficiencies (For example: B12 deficiency).

Hypothyroidism

Normal pressure hydrocephalus

CNS tumours

Subdural haematoma.

Chronic alcoholism

Depression (pseudodementia)

Electrolyte disorders (hyponatraemia, hypercalcaemia)

Late-onset psychosis

Side-effects of medication (sedatives, anticonvulsants, antihypertensives, anticholinergics, first-generation neuroleptics, etc.)

Obstructive sleep apnoea
Subacute CNS infections (For example: Neurosyphilis)

Clinical manifestations of dementia

Cognitive and other problems in dementia

- Memory loss
- Poor concentration
- Visuospatial difficulties
- Speech and language defects
- Inability to recognize self and others
- Seizures
- Disturbances of gait
- Bladder and bowel incontinence
- Total confinement to bed.

Behavioural and psychological problems

- Agitation
- Personality change
- Abnormal eating behaviour

- Wandering
- Mood disorder, depression
- Anxiety, phobias, fear
- Restlessness
- Hallucinations, delusions
- Aggression, shouting, rage, violence
- Dis-inhibition
- Compulsive behaviour
- Hypersexuality
- Repeating stories and statements
- Hoarding
- Resisting care
- Psychosis
- Screaming
- Taking clothes off in inappropriate places
- Smearing faecal matter.

Role of primary care physicians

Assessment and management of cognitive impairment

Step 1. Conduct cognitive screening

WHO-ICOPE stresses cognitive screening and assessment as a component of global intrinsic capacity measurement. It recommends the following memory and orientation screening test.

- Learning three words: Say three words and ask the person to remember them. Use simple, concrete words, such as "flower", "door" and "rice".
- Orientation in time and space: Then, ask, "What is the full date today?" and "Where are you now?"
- Recalling the three words: Now ask the person to repeat the three words you had mentioned, that is "flower", "door" and "rice".

If a person cannot answer one of the two questions about orientation OR cannot remember all three words, cognitive impairment is likely and further assessment is called for.

Step 2. Assess with the use of validated scales

- Almost all standard cognitive assessments used for screening or diagnosis of cognitive impairment assume a minimal amount of school education. In some geographical areas, this assumption may not be justified.

- If a person has less than five or six years of schooling or no schooling, cognitive assessment cannot be carried out with the use of formal tools.
- Assess for signs and symptoms of dementia.
- Assess for cognitive impairment using Mini-Cognitive Assessment (MINI-Cog). [Refer to Annexure 2G for details]

Step 3. Ruled out other explanations for the symptoms

- delirium and depression (pseudodementia).

Step 4. Evaluate for other medical issues

- onset of symptoms associated with head injury, stroke, or altered or loss of consciousness
- clinical history of goitre, slow pulse, dry skin (hypothyroidism)
- history of sexually transmitted infection, including HIV/AIDS.

Step 5. Manage other comorbidities accordingly, with a special focus on cardiovascular risk factors

Step 6. Assess for and manage any "behavioural and psychological symptoms of dementia (BPSD)"

- Identify and treat underlying physical health problems that may affect behaviour. Check for pain, infections, etc. during the physical examination.
- Identify events (like shopping at a busy market) or factors (such as going out alone) that may precede, trigger or enhance problem behaviours. Modify these triggers, if possible.
- Consider environmental adaptations, such as appropriate seating, safe wandering areas, signs (e.g. 'no exit' sign on the street door or signpost to toilet).
- Encourage soothing, calming or distracting strategies. Suggest an activity the person enjoys, such as going for a walk, listening to music and engaging in conversation, especially when he/ she is feeling agitated.

Step 7. Evaluate the needs of caregiver

- Is the caregiver having difficulty coping with and experiencing strain?
- Does the caregiver feel depressed?
- Is the carer facing loss of income and/or additional expenses because of the needs of caregiver?

Step 8. Manage on the basis of BPSD

A. Dementia without BPSD

- Provide the carers with basic education on the nature and progression of the illness.
- Encourage carers to conduct interventions to improve cognitive functioning.

- Promote independence, functioning and mobility.
- Refer to a specialist for the diagnosis of Alzheimer's and other dementia subtypes.

B. Dementia with BPSD

- Follow the management steps for dementia without BPSD.
- Start quetiapine 25 mg once a day. Gradually increase to 25 mg twice daily.
- If the BPSD does not come under control with the above dose, refer the patient to a specialist.

Step 9. Conduct follow-up

- Assess for improvement, and review adherence, adverse medication reactions and dosing.
- Review the psychosocial interventions.
- Evaluate the patient for comorbidities.
- Review BADL (Basic activity of daily living) and IADL (Instrumental Activity of daily living) dependence.
- Review for safety risks and recommend appropriate modification of behaviour if the disease has progressed (limit driving, cooking, etc.).
- Review for new BPSD or symptoms of depression: refer to a specialist.

(Source: mhGAP intervention guide. version 2.0. WHO. 2016)

Interventions to improve cognitive functioning

To improve the patient's cognitive functioning, carers must be encouraged to:

- Regularly provide information to orient the patient (day, date, time, names of people).
- Use materials such as newspapers, radio or TV programmes, family albums and household items to promote communication, orient patients to current events, stimulate memories, and enable them to share and value their experiences.
- Use simple short sentences to make verbal communication clear. Try to minimize competing noises, such as radio, TV or other conversation. Listen carefully to what the person has to say.
- Keep things simple, avoid changes to the patient's routine and, as far as possible, avoid exposing him/her to unfamiliar and bewildering places.

Carer support

- Assess the impact providing care on the Carer' needs to ensure that they have the support and resources necessary for their family life, employment, social activities and health.
- Acknowledge that it can be extremely frustrating and stressful to take care of people with dementia. Carer need to be encouraged to respect the dignity of people with dementia and avoid hostility towards, or neglect of, them.
- Encourage Carer to seek help if they are experiencing difficulty or strain in caring for their loved one.

- Provide the Carer with information on dementia, keeping in mind the wishes of the person with dementia.
- Provide the Carer with training and support in specific skills, e.g. managing difficult behaviour, if necessary. It would be most effective to elicit active participation, e.g. role play.
- Consider providing practical support when feasible, e.g. home-based respite care. Another family or suitable person can supervise and care for the patient to give the main Carer some relief and rest to carry out his/her other activities.
- Explore whether the person qualifies for any disability benefits or other social/financial support (government or nongovernmental).

MODULE 12

Mental health

Learning objectives

» To enumerate the common stresses of old age;

» To enumerate the social and cultural barriers to seeking mental health services; and

» To identify common mental health problems among older patients and develop care plans.

Common stresses of old age

The common stresses that older people have to cope with are:

- widowhood and the death of other significant friends and relatives
- caregiver stress
- fear of death
- financial difficulties
- loss of independence
- changes in living arrangements and previous roles
- social isolation
- chronic diseases.

The emotional responses to these problems include grief, guilt, loneliness, loss of meaning in life, lack of motivation, anxiety, anger, feelings of powerlessness and depression.

Barriers to accepting mental health problems in old age

Though a positive mental outlook is essential to healthy ageing, many issues faced in old age create serious emotional challenges for the older people. Resources and strategies for coping with emotional challenges in old age are largely influenced by the prevailing value system and cultural traditions. The acknowledgement of mental health problems and the willingness to accept mental health interventions and services are also influenced by cultural factors.

Older people and their families usually deny the existence of mental health problems because:

- They feel these problems are shameful;
- They see the problem as retribution for the bad deeds done in an earlier life;
- They are convinced that the cure of illnesses is in god's hands;
- They think suffering should be endured;
- They want to appear in control in order to maintain their dignity; and
- Emotional control is valued in society and admitting the need for help suggests that one is not in control.

As a result, older patients may seek medical care for nonspecific somatic complaints, such as headache, insomnia, dizziness and other vague physical symptoms, instead of seeking psychiatric care. It is also extremely common to seek help from traditional healers for such symptoms before approaching the modern health-care system. Thus, the mental health needs of older people are greatly underestimated despite the very high prevalence of psychiatric illnesses.

Sleep

- With the decrease in the time spent in the deepest stages of sleep, the sleep pattern changes as a person ages. The duration of sleep is shortened and the quality of sleep also becomes poorer. Sleep disturbances are common among older people and are related to various factors, including the use of caffeine, tobacco and alcohol, sleep habits and comorbid diseases. Insomnia is the most common problem experienced by older people, and it could be due to many factors.
- When older people complain of insomnia, it is essential to first assess treatable medical conditions and the use of medications that may be responsible for insomnia. Only after this should one initiate the use of hypnotics.
- The manifestations of insomnia among older people include difficulty in initiating sleep (sleep-onset insomnia), difficulty in maintaining sleep (sleep maintenance), waking up earlier than desired, resistance to going to bed according to the appropriate schedule, and difficulty sleeping without the caregiver's intervention.
- Difficulty remaining asleep at night-time may cause fatigue/malaise, impairments in attention, concentration, or memory, impaired performance in the social, family, occupational or academic spheres, mood disturbance/irritability, daytime sleepiness, behavioural problems (hyperactivity, impulsivity, aggression, etc.), reduced motivation energy/initiative, proneness to making errors/ getting into accidents, and concerns about or dissatisfaction with sleep.

Role of primary care physicians

The primary care physician should educate the older person as well as the caregivers on sleep hygiene rules (mentioned below).

If the older person insists that he/she wants sleep-inducing medications, the primary care physician may prescribe the following for the shortest possible duration.

- For sleep onset insomnia: zolpidem (immediate-release) 5 mg before bed
- For both sleep initiation and maintenance insomnia: zolpidem (extended release) 6.25 mg before bed.

If the older person has problems with sleep despite behavioural and environmental modifications, the help of a mental health specialist should be sought.

Sleep hygiene rules for older people

Table 12-1: Sleep hygiene riles for older people

Rule	Features
Limiting daytime naps to 30 minutes	Napping does not make up for inadequate nighttime sleep. However, a short nap of 20-30 minutes can help to improve mood, alertness and performance.
Avoiding stimulants such as caffeine and nicotine close to bedtime	While alcohol is well-known to help you fall asleep faster, too much close to bedtime can disrupt sleep in the second half of the night as the body begins to process the alcohol.
Exercising to promote good quality sleep	As little as 10 minutes of aerobic exercise, such as walking or cycling, can drastically improve nighttime sleep quality. For the best night's sleep, most people should avoid strenuous workouts close to bedtime. However, the effect of intense nighttime exercise on sleep differs from person to person, so find out what works best for you.
Lite dinner	Heavy or rich foods, fatty or fried meals, spicy dishes, citrus fruits, and carbonated drinks can trigger indigestion for some people. When this occurs close to bedtime, it can lead to painful heartburn that disrupts sleep.
Ensuring adequate exposure to natural light	This is particularly important for individuals who may not venture outside frequently. Exposure to sunlight during the day, as well as darkness at night, helps to maintain a healthy sleep-wake cycle.
Establishing a regular relaxing bedtime routine	A regular nightly routine helps the body recognize that it is bedtime. This could include taking warm shower or bath, reading a book, or light stretches. When possible, try to avoid emotionally upsetting conversations and activities before attempting to sleep.

Making sure that the sleep environment is pleasant	Mattress and pillows should be comfortable. Bright light from lamps, cell phone and TV screens can make it difficult to fall asleep, so turn those light off or adjust them when possible. Consider using blackout curtains, eye shades, ear plugs, "white noise" machines, humidifiers, fans and other devices that can make the bedroom more relaxing.

Source: Sleep foundation. 2020. (https://www.sleepfoundation.org/articles/sleep-hygiene, accessed on 20 May)

Psychiatric diseases of old age

The common psychiatric disorders of old age are summarized as follows:

- depression
- personality disorders
- anxiety disorders
- post-traumatic stress disorder and bereavement
- somatoform disorders
- late-life delusional disorders
- obsessive compulsive disorders
- self-neglect
- alcoholism.

Depression

Depression in later life is a public health problem. If left untreated, it causes considerable distress and functional impairment, affecting the individual, family and society. Diagnostically, it poses a challenge to the primary care physician because of the atypical symptoms and comorbid conditions.

The point prevalence of major depressive illness among community-dwelling older people ranges from 1–9%, while it is about 36–46% in acutely ill hospitalized older people. It is about 10–22% among older people in long-term care facilities. Many older people with depression may complain about somatic symptoms and may be less likely to report the emotional or ideational components of their condition. Particularly common are physical symptoms, such as headaches, fatigue, disturbed sleep, dizziness, chest pain and vague joint or limb pain.

Role of primary care physicians

The primary care physician should take the following steps to assess and manage the psychological capacity of older people.

Step 1. Screening for depression

Screening for depressive symptoms is a component of the "Intrinsic capacity assessment" of the WHO-ICOPE.

Table 12-2: Mood assessment and score interpretation

Over the last two weeks, have you been bothered by any of the following problems? (Yes: Score 1, No: Score 0)
• Trouble falling or staying asleep or sleeping too much; • Feeling tired or having little energy; • Poor appetite or overeating; • Feeling bad about yourself, or that you are a failure, or that you have let yourself or your family down; • Trouble concentrating on things such as reading the newspaper or watching television; • Moving or speaking so slowly that other people could have noticed; • Being so fi dgety or restless that you have been moving around a lot more than usual; and • Thoughts that you would be better off dead or thoughts of hurting yourself in some way.

Score	Interpretation	Management
0-2	Presence of depressive symptoms	Brief structured psychological intervention
≥ 3	Depression	Psychological intervention + antidepressants

Over the past two weeks, have you been:

- feeling down, depressed or hopeless;
- losing interest or pleasure in doing things?

Step 2.

If the answer to either or both of the questions is "Yes", the primary care physician should perform an assessment of mood, using the following set of questions.

Brief structured psychological intervention

Health professionals with training in mental health usually administer these interventions. Community health workers could also provide them if they are skilled in their use and trained in the mental health issues related to older people. These consist of the following:

- cognitive behavioural therapy
- problem-solving counselling or therapy
- behavioural activation
- mutimodal physical exercise
- mindfulness practice.

Step 3. Rule out other possible conditions that can resemble or exacerbate depression

Some conditions that give rise to symptoms similar to those of depression or exacerbate depression are:

- anaemia
- malnutrition
- hypothyroidism
- mood changes from substance use
- side-effects of medications, e.g. steroids.

Step 4. Assess for history of mania

Take the patient's history from the caregiver, asking whether the patient suffered from several of the following symptoms simultaneously, for at least one week, and severely enough to interfere significantly with work and social activities, or requiring hospitalization or confinement.

- Elevation of mood and/or irritability
- Decreased need for sleep
- Increased activity, feeling of increased energy, increased talkativeness or rapid speech
- Impulsive or reckless behaviours, such as excessive spending, making important decisions without planning and sexual indiscretion
- Loss of normal social inhibitions resulting in inappropriate behaviours
- Being easily distracted
- Unrealistically inflated self-esteem.

If the patient has the above symptoms, the diagnosis of a depressive episode in bipolar disorder is likely and the patient needs to consult a specialist.

Step 5. Management of depression

The primary care physician should take the following steps for the management of depression:

- Educate the patient and the family members on depression.
- Ask the person's carers to keep and monitor the medications, and to follow up frequently to prevent overdose of any medication.
- Consider prescribing an antidepressant (if a specialist's support is not available).

Selective serotonin reuptake inhibitors (SSRIs) are the first-choice antidepressants. Avoid amitriptyline in older people. Use a low dose of benzodiazepine (0.25 mg clonazepam once daily) with the antidepressant for a maximum of two weeks to prevent rebound anxiety.

Antidepressants take at least a week or two to demonstrate gradual benefit. Medications should never be stopped just because the person experiences some improvement. Antidepressants usually need to be continued for at least 6–9 months after the resolution of symptoms.Then gradually SSRIs should be tapered down to minimal dose and stop over 2 to 4 weeks.

Table 12-3: Medications for management of depression

Medication	Dosage	Side effects	Contraindications
Fluoxetine (should be preferred in obese patient)	Start at 10 mg per day, increase to 20 mg after 1 week	Common for all: sedation, insomnia, headache, dizziness, gastrointestinal disturbances, sexual dysfunction Serious: Bleeding abnormalities in those using aspirin or other NSAIDs, hyponatremia	Avoid combination with warfarin (may increase risk of bleeding), may increase levels of tricyclic antidepressants, antipsychotics, and beta-blockers, may cause QT prolongation in susceptible individuals
Escitalopram (should be preferred in thin build patient)	Start at 5 mg per day. Increase to 10 mg after 1 week		
Sertraline (should be preferred in patient with cardiac problems)	Start at 25 mg per day, increase to 50 mg		

The primary care physician should refer the patient to a mental health specialist in the following situations:

- depressive episode in bipolar disorder;
- if lower doses of medicines do not manage the symptoms/in case of treatment failure;
- if the patient has suicidal ideation and makes attempts; and
- when the use of the antidepressant leads to a manic switch.

Generalized anxiety disorder

Though it is often undiagnosed, anxiety is a common illness among older people, affecting as many as 10–20% of the older population, poor health, memory problems and the loss of beloved ones or friends can lead to anxiety disorders among older people. Those with generalized anxiety disorder (GAD) suffer constant worries, and there may be nothing or little to cause these worries. Those with GAD are overly concerned about health issues, money, family problems or possible disaster.

Older people with GAD have difficulty relaxing, sleeping and concentrating, and get easily startled. The symptoms include fatigue, chest pains, headaches, muscle aches, difficulty swallowing, trembling, twitching, irritability, sweating, nausea, light-headedness, having to visit the toilet frequently, feeling out of breath, and hot flashes.

Untreated anxiety can lead to cognitive functional impairment, poor physical health, and a poor quality of life. SSRIs are effective for the treatment of anxiety disorders.

Sensory system

Learning objectives

» To describe the normal age-related changes in the sensory system and their implications; and

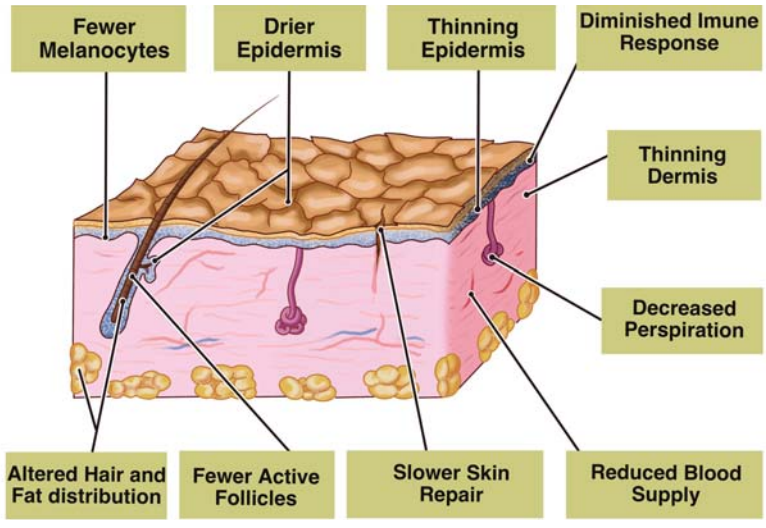
» To identify the common health problems related to the sensory system and develop care plans for them.

Skin

Age-related changes

- Both layers of the skin, that is, the epidermis and dermis, change with advancing age.
- The thickness of the epidermis decreases.
- The stratum corneum loses moisture, making the skin dry and rough.

Figure 13-1: Ageing changes in skin



Source: https://images.app.goo.gl/evzzAwgd426Q1MDQ7

- The number of melanocytes declines. This reduces protection against sun rays and leads to the of appearance of small hypopigmented spots (actinic lentigines).
- There is a reduction in the number of skin Langerhans cells. As a result, immunity against infection declines.
- The number of fibroblasts in the dermis decreases, as does the production of extracellular matrix. This is the single most important reason for the wrinkling of the skin in old age.
- The vascularity of the skin declines, which slows down the healing of wounds.
- The secretions of the sweat and sebaceous glands decrease and the nerve supply gets disorganized.
- The hair turns grey due to the loss of melanin and there is loss of hair on the scalp.
- The growth of nails slows down.

Care of skin for older people

- Older people should bathe periodically to relieve dry skin.
- The use of coconut oil and emollients can help to relieve pruritus induced by dry skin.
- Older people should be encouraged to wear gloves while doing household or other work.
- The primary care physician should examine the skin for any signs of skin cancer.
- Caregivers dealing with older people in long-term care should be educated on how to prevent bedsores.

Common disease conditions

- Infections: The common infections among older people are herpes zoster, scabies, decubitus ulcer and pyoderma
- Pruritus: This may be caused by dryness or systemic disease. Apply coconut oil, emollients (gycerine, paraffin). Antihistaminics should be avoided or prescribed for short duration (2 to 4 weeks) for intractable pruritis.
- Seborrhoeic dermatitis: Treat this with topical antifungal or cortisone cream
- Medication reactions
- Cancers, e.g. basal cell carcinoma, squamous cell carcinoma and malignant melanoma
- Pressure ulcers.

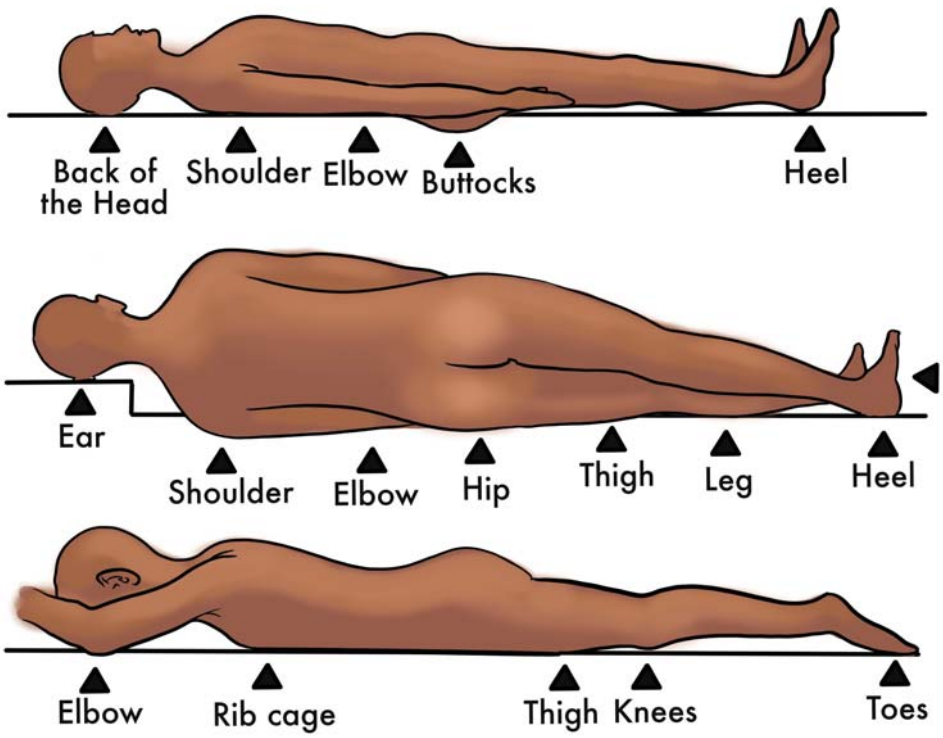
Pressure ulcers

This is a common problem among patients requiring long-term care. Preventing pressure sores is far easier than curing them. To prevent pressure sores among ADL dependent patients, the primary care physician can educate the caregivers on maintaining hygiene and skin integrity.

Table: 13-1: Risk factors for pressure ulcers:

Intrinsic factors	Extrinsic factors
Altered consciousness	Undue and prolonged pressure
Peripheral neuropathy	Shear
Malnutrition	Friction
Anaemia	Moisture
Edema	Abnormal posture
Atherosclerosis	Impaired mobility
Age-related skin changes	Bed of the patient
Smoking	Prolonged hospital stays
Medications	Prolonged surgical duration

Figure 13.2: Common sites of pressure-ulcers



(**Source:** NHS. Pressure Ulcer Prevention and Management Best Practice Guideline.2019)

Prevention and Management of pressure-sores:

Prevention

1. Pressure sore risk assessment
2. Prompt identification of the reddened skin
3. Skin care

4. Documentation (initial & on-going assessment)
5. Prevention of pressure damage
6. Positioning and re-positioning
7. Mobilization
8. Nutritional support

Risk assessment: Waterlow Ulcer Risk Assessment Scale (Please refer to annexure for details)

- Assessment of risk is fundamental to pressure ulcer prevention
- This assessment should be done within 6 hours of admission and should be documented in the nursing care plan
- Risk assessment should be repeated dependent on the patient's level of risk and co-morbidities
- Pressure areas should be checked daily
- It should also be undertaken if there is any change in the patient's condition
- Both patients and nurses should be fully aware of the level of risk.

Warning signs of skin-damage:

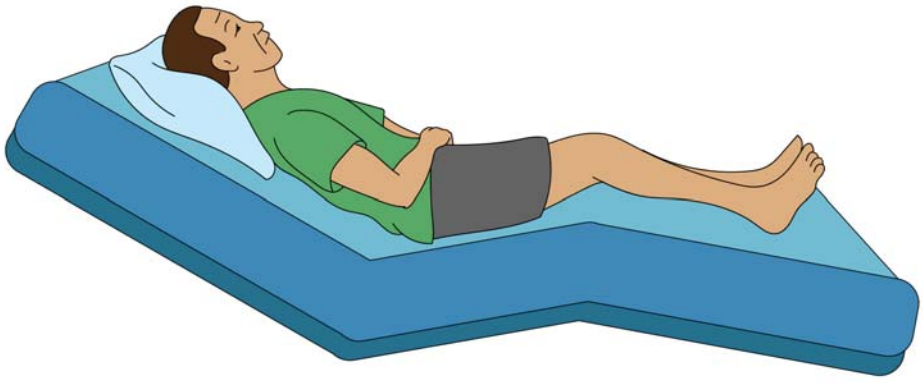
- Skin redness (Earliest sign)
- Discomfort/pain at the site to the patient
- Persistent erythema
- Non-blanching hyperemia
- Blisters (superficial)
- Warm to touch
- Localised edema
- Induration
- Purplish/bluish localised areas in those with dark skin.

Table 13-2: Prevention of Pressure Damage:

Do	Don't
Ensure 24-hour accessibility of pressure redistribution/relieving equipment (e.g. air mattress) to all the older individuals who are 'at risk' of pressure sore development.	Avoid positioning on existing pressure ulcer damage or over bony prominences, particularly hips
Encourage the patients to stand, mobilize, be positioned and repositioned either with support, or independently every 2-6 hours; whenever possible.	Avoid turning the individual onto a body surface which remains reddened from a previous positioning
Restrict seating time to less than 4 hours per session for those with intact skin and 2 hours with broken skin. Pay attention to heel and elbow position whilst seated	Passive movements should always be considered for patients with pressure ulcers who have compromised mobility.
When using transfer aids to reduce friction and shear take care to lift and not drag the individual while repositioning.	Positioning the individual directly onto medical devices, such as tubes or drainage systems
Repositioning should be undertaken using the 30-degree Semi-Fowler position or the prone position and the 30 degree-tilted side-lying position (alternately right side, back, left side) if the individual can tolerate this position and her/his medical condition allows.	

Source: By Author

Figure 13-3: Semi-Fowler's position



Source: https://images.app.goo.gl/F6ttuP9Tiw8NwbV29

Management of existent pressure damage:

A) Assessment of the pressure sore:

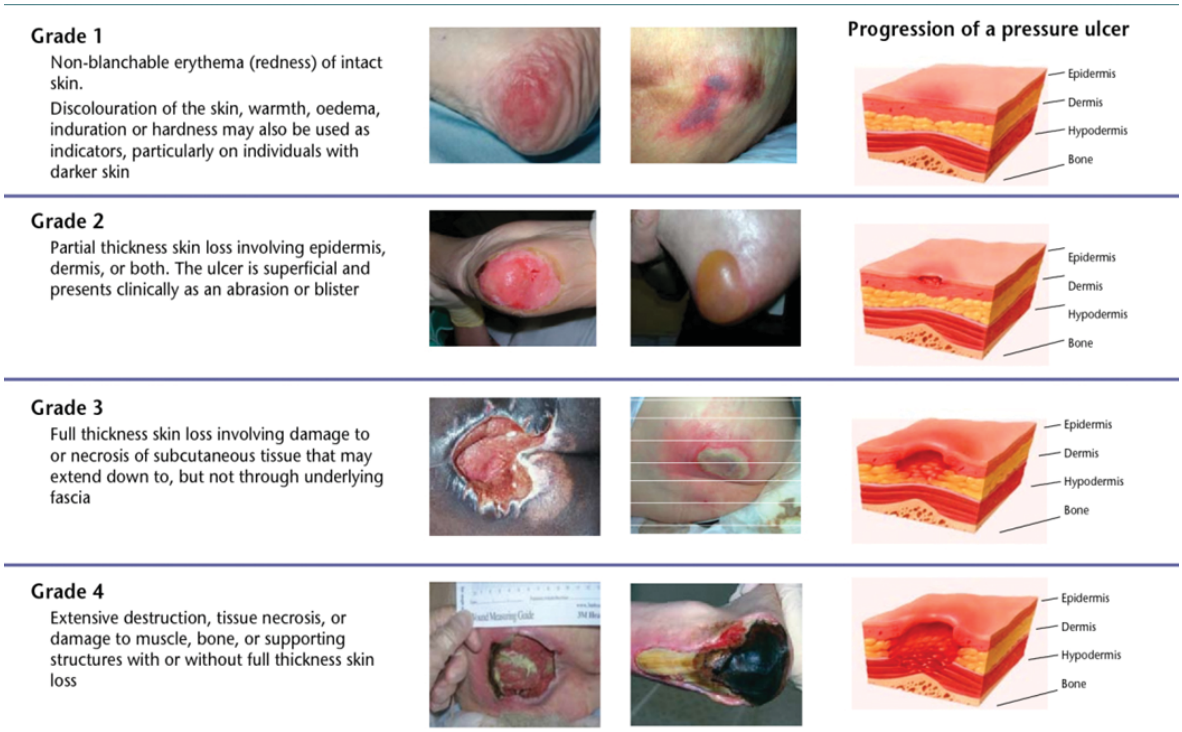
- Site/location
- Grading

- Pain
- Exudate amount and type
- Local signs of infection
- Peri wound/Surrounding skin
- Consider undermining, tracking, sinus or fistula
- Size - length, width and depth.

B) Use baseline photographs for serial monitoring of the healing process. (Using phone-camera)

C) Wound-dressing and debridement (for grade 3,4 ulcers).

Figure 13-4: Grading of pressure-sore



Source: European Pressure Ulcer Advisory Panel (EUPAP) Grading tool.

Wound dressing:

- Cleanse most pressure ulcers with normal saline.
- Non infected ulcer should not be cleaned with antimicrobial solution as that will delay the healing process.
- A hydrocolloid dressing molds to the pressure sore and promotes healing and skin growth. These dressings can stay on for several days at a time.

Wound - debridement:

The doctor should consult and discuss in the team regarding the necessity of wound debridement. The pressure sore needs debridement in the following situations:

- Presence of devitalized tissue within the wound bed or edge of pressure ulcers

- Presence of biofilm is suspected or confirmed in the wound bed. (Suspicion of presence of biofilm is made when the wound has delayed healing (≥ 4 weeks) and fails to respond to standard wound care and/or antimicrobial therapy)
- Presence of local infection in the ulcer

Have a high index of suspicion of local infection in a pressure ulcer in the presence of:

- Lack of signs of healing for two weeks
- Friable granulation tissue
- Malodor
- Increased pain in the ulcer
- Increased heat in the tissue around the ulcer
- Increased drainage from the wound
- An ominous change in the nature of the wound drainage (e.g., new onset of bloody drainage, purulent drainage)
- Increased necrotic tissue in the wound bed
- Pocketing or bridging in the wound bed.

Eyes

- The eyelids become lax. The lid margins rotate away from the eyeball, causing a disruption in the flow of tears
- There is a decrease in secretion by the lachrymal gland, making the eyes dry
- The subconjunctival vessels become fragile. This can lead to subconjunctival haemorrhage
- There is accumulation of fluid in the endothelial cells of the cornea, which clouds its transparency
- The deposition of fluid in the periphery of the cornea gives rise to arcus senilis
- Distortion of the anterior aspect of the uveal tract leads to chronic close-angle glaucoma
- The lens becomes rigid and there is a loss of accommodation (presbyopia)
- The denaturation of lens protein leads to the formation of cataract
- Different layers of the retina undergo degeneration. This manifests itself as macular degeneration if that part of the retina is involved
- The net effect of these age-related changes in the eyes consists of:
    - inability to see small objects and details
    - defective accommodation and depth perception
    - extra-sensitivity to glare
    - defective colour vision, that is, red, orange and yellow seen better than blue, green and purple.

Visual impairment

Vision is a critical component of intrinsic capacity, enabling people to be mobile and interact safely with their peers and the environment. Visual impairment can make it difficult to maintain family and social relationships, access information, move safely (especially in the context of balance and risk of falls), and perform manual tasks. Such difficulties may lead to anxiety and depression.

Visual acuity assessment in primary care settings

Simple screening for loss of vision should be carried out in a community setting at least once a year for people of the age of 50 and above. It can be performed using the WHO simple eye chart to test both distance and near vision. (Refer to annexure 4 for details)

Role of primary care physician

If the patient fails the test for near vision, check whether the problem is solved if he/she wears off-the-shelf glasses. If it does not help, refer the person to an ophthalmologist for comprehensive care.

Similarly, if the patient fails the test for distance vision, he/she should be referred to an ophthalmologist.

Common disease conditions causing visual impairment

Cataract

- Cataract is the most common cause of visual impairment and blindness in old age
- It is characterized by painless blurring of the eye, a gradual loss of vision, increased sensitivity to glare and general darkening of vision
- The signs and symptoms include
  - frequent changes in eyeglasses;
  - needing brighter light for reading;
  - poor night vision; and
  - fading or yellowing of colours.
- The diagnosis of cataract is not difficult and can be made during a routine eye examination
- The primary care physician has a major role to play in diagnosing cataract and referring patients to an institution involved in cataract surgery.

Other causes

- Glaucoma
- Age-related macular degeneration
- Diabetic or hypertensive retinopathy.

Glaucoma

Most people who have glaucoma feel fine and do not notice any change in their vision at first. This is because the initial loss of vision affects the side or peripheral vision, and visual acuity is maintained until late in the disease. The symptoms of acute angle glaucoma are as follows:

- hazy or blurred vision
- the appearance of rainbow-coloured circles around bright lights
- severe pain in the eye and head
- nausea or vomiting (accompanying severe eye pain)
- sudden loss of sight.

Acute angle closure glaucoma is a sight-threatening condition. The primary care physician should have a high degree of suspicion on observing the symptoms mentioned above and should immediately refer the patient to a higher centre.

Ears

Age-related changes and common diseases conditions

Uncompensated loss of hearing can make older people appear mentally impaired and withdrawn. Inadequate hearing can result in a lack of comprehension and the older person's inappropriate response or expression may be wrongly interpreted as confusion or problems with mental status. Hearing loss can also interfere with socialization, as making an effort to listen becomes too embarrassing. Eventually, the older individual starts to avoid participating in activities involving talking and listening.

Earwax is frequently a cause of, or at least aggravates, hearing difficulties. Therefore, this should be the first thing to be checked. Wax-dissolving drops are usually inserted into the ear before cleaning so as to loosen the cerumen.

The following behaviours suggests hearing loss associated with ageing:

- The person tends to shout, and others tend to speak very loudly to them;
- The person often requests that things be repeated;
- The person talks little, appears not to participate, or appears to ignore what is going on when in a group of people; and
- The person becomes suspicious that things are being said about him/her.

Screening for hearing loss in primary care settings

Whisper test

The following are the steps of the whisper test:

- Stand about an arm's length away behind and to the side of the person

- Ask the person or an assistant to close off the opposite ear by pressing on the tragus
- Breathe out and then softly whisper several words. Use any common, unrelated words
- Ask the person to repeat the words. If the person repeats the words and you are sure that he/she can hear you clearly, then the person is likely to have normal hearing in this ear
- Repeat the same with the other ear.

If the person fails the screening test, he/she should be referred to a specialist for further management.

MODULE 14

Cancer and palliative care

Learning objectives

- To enumerate the peculiarities of cancer in old age;
- To enumerate the alarm signs for cancer in old age; and
- To enumerate the role of primary care physicians in palliative care.

Introduction

Cancer is one of the most common noncommunicable diseases in old age. It is one of the five common causes of death in old age and among the top three causes of death in old age all over the world. Cancer frequently causes patients to seek very specialized tertiary care.

In the countries of the Region, the diagnosis and treatment of cancer continue to be a challenge for the health system. The diagnosis is often delayed, and the patient has to face several barriers before he/she can get treatment. Consequently, the large majority of older patients with cancer do not receive any effective treatment.

Provisions for palliative care and pain relief in the Region are very poorly developed and the large majority of older patients with cancer suffer terminal pain without any relief. This module discusses issues related to cancer in old age.

Ageing tissues are more prone to the development of tumours. However, in many cases, the aggressiveness and spread of cancer tends to decrease with advancing age. It must be kept in mind, however, that the diagnosis of cancer among older patients is made at a much later stage than among younger patients.

In developed societies, 55–60% of all cancers and 70% of all cancer deaths occur after the age of 65 years. Limited data from the Region suggest that 20% of all cancers are reported among patients above 60 years of age.

There are certain cancers which occur mostly after the age of 50 years. These include head and neck cancers, and cancers of the cervix, upper and lower gastro-intestinal tract, pancreas and prostate. Half of the breast and haematological malignancies are encountered after the age of 60 years.

There is evidence to suggest that though the progression of cancer may be slow in old age, its diagnosis among older patients is invariably made at an advanced stage of the disease.

Causes for delay in diagnosis

- People are not particularly interested in screening for cancer
- There is a lack of awareness of the problem
- In general, the attitude towards cancer is fatalistic. Older patients are usually under-treated due to a widely prevalent misconception that they are less eligible for surgery and they tolerate radiotherapy and chemotherapy poorly. There are scant scientific data on very old patients with cancer as most studies tend to exclude this group of patients. While deciding on the treatment, the life-expectancy of older patients should not be underestimated
- An older patient with cancer should be approached with the same principles of therapy as patients of any other age group. The perceived frailty of the patient in the absence of any objective evidence should not prevent the physician from providing appropriate therapy. Age does not adversely influence the efficacy of treatment, nor does it predispose individuals to higher toxicity.

The state of physical fitness and mental health should be the consideration rather than the chronological age of the person, and all options of therapy (surgery, radiotherapy and chemotherapy) should be considered. Several tools are available to assess functional status in cancer. Of these, the Karnofsky performance status scale and Eastern Cooperative Oncology Group performance status are commonly used in clinical practice.

Alarm symptoms and signs of cancer

The primary care physician should take into consideration the following symptoms, which may be related to cancer. Accordingly, the patient should be referred to a specialist for further diagnosis and management.

- Changes in bowel or bladder habits
- A sore that does not heal
- Unusual bleeding or discharge
- Thickening or lump in breast or any other part of the body
- Difficulty swallowing
- Recent change in wart or mole or any new skin change
- Nagging cough or hoarseness
- White patches inside the mouth or white spots on the tongue
- Unexplained changes in weight.

Role of primary care physician in management of cancer in the community

The primary care physician has a major role to play in managing old patients with cancer in the community. Contrary to the belief among most physicians, the task of a physician is not over once they have referred a patient to a specialist. The physician's role includes:

- screening for cancer and detecting cancer at an early stage;
- referring the patient to a specialized unit involved in the management of cancer;
- addressing pre-treatment health issues;
- detecting and managing comorbidities, and making the necessary referrals;
- detecting and managing post-treatment health problems;
- providing palliative care; and
- providing care in the terminal stage.

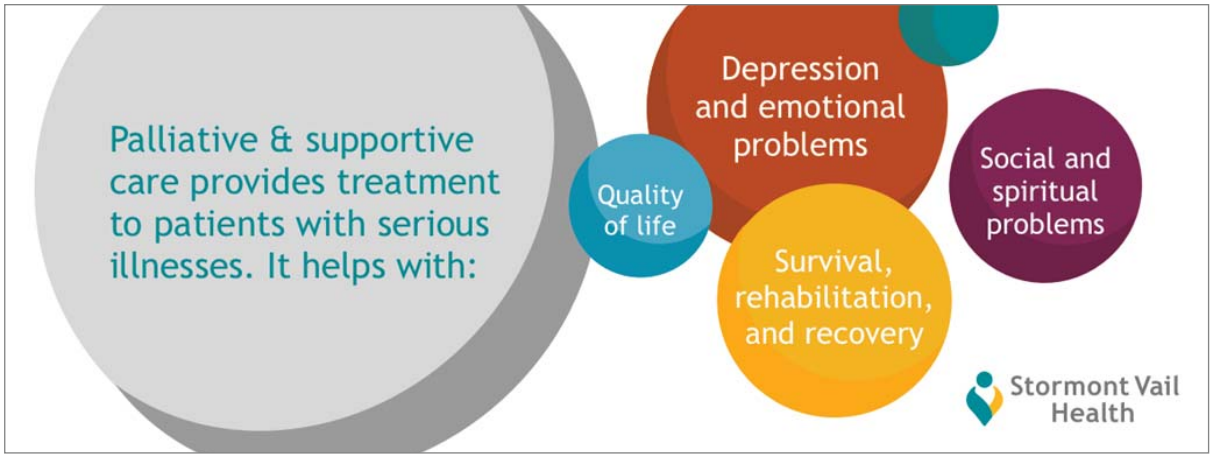
Palliative Care

WHO has defined palliative care as "an approach that improves the quality of life of patients and their families facing the problem associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual".

The majority of adults in need of palliative care have chronic diseases, such as cardiovascular diseases (38.5%), cancer (34%), chronic respiratory diseases (10.3%), HIV-AIDS (5.7%) and diabetes (4.6%).

Palliative care may be necessary for patients with many other conditions, including kidney failure, chronic liver disease, rheumatoid arthritis, neurological disease, dementia, congenital anomalies and drug-resistant tuberculosis.

Figure 14-1: The benefits of palliative and supportive care



Source: https://www.stormontvail.org/department/palliative-medicine-supportive-care/

At a minimum, palliative care services should:

- identify patients who could benefit from palliative care;
- assess and reassess patients for physical, emotional, social and spiritual distress, and (re)assess the family members for emotional, social or spiritual distress;
- relieve pain and other distressing physical symptoms;
- address the patient's spiritual, psychological and social needs; and
- determine culturally appropriate goals of care on the basis of the patient's values.

Palliative care is not intended to hasten or postpone death, but uses ethical principles, shared decision-making and advanced planning of care to identify the patients' priorities and goals for their care at the end of life.

Palliative care should:

- provide relief from pain and other distressing symptoms;
- affirm life and view dying as a normal process;
- intend neither to hasten, nor postpone death;
- integrate the psychological and spiritual aspects of caring for a patient;
- offer a support system to help the patient live as actively as possible until death;
- offer a support system to help the family cope during the patient's illness and during their bereavement;
- use a team approach to address the needs of patients and their families, including bereavement counselling, if indicated;
- enhance the quality of life, and perhaps also positively influence the course of illness; and
- be started early in the course of illness, in conjunction with other therapies that are intended to prolong life, such as chemotherapy or radiation therapy, and include those investigations needed to better understand and manage distressing clinical complications.

Components of palliative care

The components of palliative care are to identify, evaluate, diagnose, treat, apply solution measures for:

- physical care needs
- pain (all types)
- respiratory problems (dyspnoea, cough)
- gastrointestinal problems (constipation, nausea, vomiting, dry mouth, mucositis, diarrhoea)
- delirium
- wounds, ulcers, skin rash and skin lesions

- insomnia
- fatigue
- anorexia
- anaemia
- drowsiness or sedation
- sweating
- psychological/emotional needs
- psychological distress
- anxiety
- suffering of family or caregivers
- spiritual needs and existential distress
- depression
- bereavement problems of family/caregivers.

Role of primary care physician

- Identify sources of support and the resources available
- Develop and implement a care plan based on the patient's needs
- Provide care in the last weeks/days of life
- Facilitate the availability of and access to medications (especially opioids)
- Identify the psychosocial/spiritual needs of the professionals providing care (including yourself).

Control of cancer pain

- Pain is a complex subjective phenomenon, which results from a variety of physical and nonphysical factors. In cancer, pain can arise from: a tumour bulk, compression of the viscera, stretching of an organ capsule, bone metastases, pathological fracture, pleuritic pain, nerve compression, irritation of a nerve, radicular pain from spinal cord compression, rectal tenesmus, skin metastases, cystitis, bladder spasm, headache from raised intracranial pressure, intrinsic or extrinsic oesophageal mass, diaphragmatic pain, reflux oesophagitis, gastritis, etc.
- While assessing pain, the following factors need to be ascertained:
  - precipitating and relieving factors
  - quality of pain
  - radiation of pain
  - severity of pain
  - temporal factors.

- The control of pain is the cornerstone of palliative care. It must be realized that it may not be possible to eradicate pain altogether and bringing down the intensity of the pain to a tolerable level may be a more realistic goal.
- Mood disturbances are common among cancer patients with uncontrolled pain and may need specific management. After an assessment and with the adoption of a systematic approach to the choice of analgesics, using WHO's three-step analgesic ladder, over 80% of cancer pain can be controlled with inexpensive medicines. These can be self-administered by mouth at regular intervals.
- In addition to surgery, radiotherapy and appropriate tumoricidal treatments, the analgesic ladder is the mainstay of the approach to analgesia. The choice of medicine should be based on the severity of the pain, not the stage of the disease. Medication should be administered in standard doses at regular intervals in a step-wise fashion, as shown in Table 9.

Table 14-1: The WHO analgesic ladder

Step	Step 1	Step 2	Step 3
Type of medication	Nonopioid ± adjuvant	Mild opioid ± non-opioid ± adjuvant	Strong opioid ±nonopioid ±adjuvant
Examples	Paracetamol NSAIDS	Codeine Tramadol	Morphine Fentanyl Methadone

Principles governing the use of morphine in advanced cancer

- Use when a weak opioid and an NSAID are no longer adequate
- Continue to prescribe an NSAID, unless there is a major contraindication
- Administer by mouth
- Administer regularly by the clock, with additional doses (as needed) or rescue doses
- Titrate the dose according to the individual's need
- Anticipate and treat vomiting and constipation
- Monitor the response
- Use adjuvant analgesics or non-pharmacological treatments if the response remains poor.

Elder abuse

Learning objectives

» To understand the concept and health consequences of abuse of elders; and

» To understand the measures for preventing abuse of elders.

Introduction

WHO defines abuse of elders as "a single or repeated act, or lack of appropriate action, occurring within any relationship where there is an expectation of trust which causes harm or distress to an older person".

On the basis of the evidence available, WHO estimates that 15.7% of people of the age of 60 years and above are subjected to abuse. These prevalence rates are likely to be higher as many cases of abuse of elders are not reported. Globally, the numbers of people affected are predicted to increase as the populations of many countries are ageing rapidly.

The health effects of abuse include traumatic injury and pain, as well as depression, stress and anxiety. Abuse can increase the risk of the abused needing to be placed in a nursing home. It can also necessitate the use of emergency services and hospitalization, besides causing death.

Types of abuse

Several types of abuse are described below, together with examples.

Physical

This involves the use of nonaccidental physical force that may result in bodily injury, physical pain or impairment. Some examples are striking (with or without an object), hitting, beating, pushing and shoving, shaking, slapping, kicking, pinching, burning and force-feeding the older people. Inappropriate use of medicines and physical restraints, and physical punishment of any kind are other examples.

Neglect

The refusal or failure to fulfil any part of one's obligations or duties towards an older person constitutes neglect. Some examples are the refusal or failure to provide an older person with food, water, clothing, shelter, requirements of personal hygiene, medicine, personal safety and other essential needs, if these duties have been implied or agreed upon.

Abandonment

This is the desertion of an older person by an individual who has assumed responsibility for providing care and support for the older person, or by an individual who has guardianship and administration responsibilities for the older person. The desertion of an older person at a hospital, nursing care facility or similar institution is an example of abandonment, as is desertion at a shopping centre or other public place. An older person's own report of being abandoned is considered abandonment.

Emotional

The infliction of anguish, pain or distress through verbal or nonverbal acts constitutes emotional abuse.

Verbal assaults, insults, threats, intimidation, humiliation, harassment, treating the older person like an infant, isolating the person from his/her family, friends or regular activities, giving the person the "silent treatment", and forced social isolation are forms of emotional abuse.

Sexual

Nonconsensual sexual contact of any kind with an older people is a type of abuse. Some examples are unwanted touching; forcing the individual to undress, watch sex acts or pornography; and all types of sexual assault or battery, such as rape, sodomy, coerced nudity, and sexually explicit photographing.

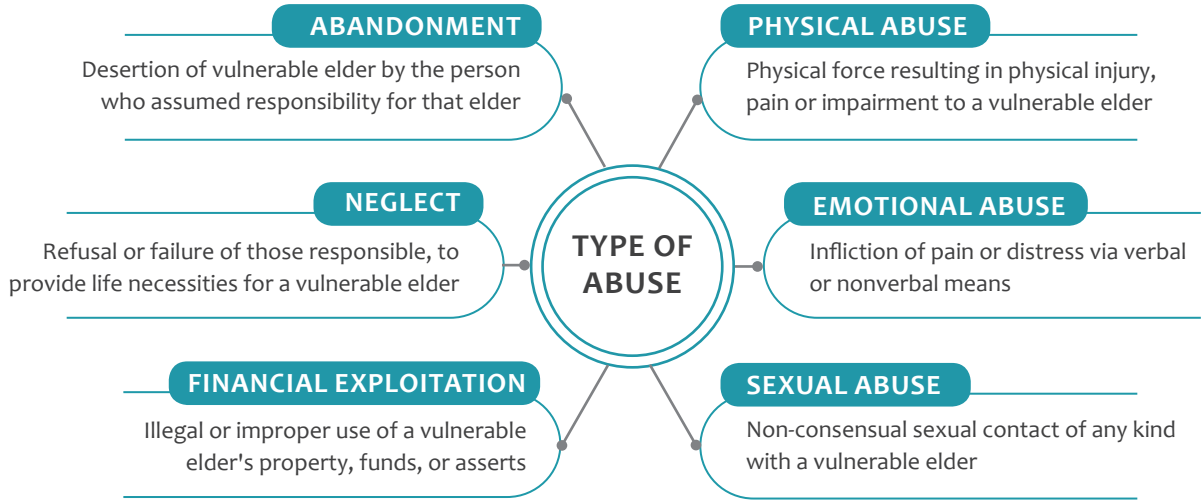
Financial

Illegal or improper use of an older person's finances, property or assets is a form of abuse. Cashing an older person's cheques without authorization or permission is one example, as is forging an older person's signature. Misusing or stealing an older person's money or possessions, coercing or deceiving an older person into signing any document (e.g. contracts or will), and Improper use of conservatorship, guardianship or power of attorney are other examples.

Spiritual

Spiritual abuse refers to when a person in religious authority or with a unique spiritual practice misleads and maltreats other people in the name of god or the church or any spiritual concept. The person may, for example, exercise unreasonable control over the basic right of older people to make a choice on spiritual matters. Older people may be prevented from practising their own faith. Further, they may suffer isolation or separation from family and friends due to their religious affiliation. This type of abuse may also be linked with physical abuse, including physical injury, deprivation of sustenance, and sexual abuse.

Figure 15-1: Types of elder abuse



Source: https://images.app.goo.gl/hgBQBiyWpJSkoQnk9

Risk factors for abuse

Older people who are commonly abused are those with dementia, a poor educational status, physical disabilities, depression and lack of social support. Those who are lonely, abuse alcohol or other substances, are verbally or physically combative with the caregiver, share their living quarters, suffer from mental impairment and are dependent on their care provider fall in the category of those who are most commonly abused.

Signs and symptoms of abuse

Primary care physicians should take the following information into account when they are considering whether there is a high suspicion of elder abuse:

- bruises, pressure marks, abrasions, scars, burns, weight loss, dehydration, malnutrition (which may be indicative of physical abuse), neglect or mistreatment;
- fracture of bones other than at the usual sites, for example rib fracture;
- changes in personality or behaviour, such as unexplained withdrawal from normal activities, a sudden change in alertness and unusual depression (may indicate emotional abuse);
- bruises around the breasts or genital area, which often occur due to sexual abuse;
- sudden changes in financial situation – can be the result of exploitation;
- bedsores, unattended medical needs, poor hygiene, poor foot care and unusual weight loss, which are indicators of possible neglect;
- behaviour such as belittling, threats, and other manifestations of power and control on the part of the patient's spouse, indicating verbal or emotional abuse; and
- strained or tense relationships, frequent arguments between the caregiver and older person.

Management and prevention of abuse

The management of the abuse of elders requires the involvement of several professionals. The physician should use tact and discretion while dealing with the problem.

The steps involved are:

- assessment of the older person's physical and mental capacity, general quality of care, relationship with the abuser at home or institution, and assessment of the abuser for his/ their problems;
- counselling of the abuser;
- documentation, liaison and interaction with other professionals (police, social worker) when the victim is incapable of caring for himself/ herself or does not want to accept help; and
- involvement of other family members, relatives and community leaders, and admission to sheltered accommodation, such as an old age home or nursing home, if the abuse cannot be prevented by the above means.

MODULE 16

Long-term care and caregiver issues

Learning objectives

- To understand the concept of long-term care;
- To understand the need for long-term care;
- To understand the issues related to caregiving.

Figure 16-1: Concept of long term care planning

Source: https://images.app.goo.gl/oCfxb5aTQxPH55AK6

Definition

Long-term care covers activities undertaken by people to ensure that individuals with, or at risk of, a significant ongoing loss of intrinsic capacity can maintain a level of functional ability consistent with their basic rights.

Most long-term care is provided by a host of individuals, loosely referred to as informal support. They may be family, friends or neighbours. Informal care has been and remains the backbone of long-term care, with 85% of people who need long-term care receiving assistance from family and friends. Among family caregivers, 72% are women, one-third are over the age of 65 years and one-third are in poor health themselves, suffering from unrecognized caregiver stress.

There has been an increasing demand for formal care due to:

- migration of the younger generation;
- trend towards nuclear families and break-up of joint families;
- rapid increase in the older population;
- severe functional impairment resulting from the complications of rising noncommunicable diseases;
- increase in the prevalence of neurodegenerative diseases; and
- living alone without any surviving caregiver.

Long-term care should ideally be provided through home and community based outpatient programmes. This patient-focused approach supports the wishes of most patients to live at home in their own communities for as long as possible. According to the ideal programme, older people would be able to stay at home, relying on the family as the first line support, while the programme would bolster their efforts with formal assistance, providing professional services and occasional respite care. Long-term care includes both noninstitutional and institutional care.

Role of primary care physicians

Primary care physicians have the following roles to play.

- They should know how to handle agitated, demented or delirious patients
- They should assess gait disorders and balance in all the older patients
- They should develop a preliminary plan for the management of all patients, including those presenting with functional deficits. The plan should include adaptive interventions and involve interdisciplinary team members
- They should know about home safety assessment and eliminating hazards in the home including those related to falls

Noninstitutional care

The following are some ways in which noninstitutional care is provided:

- home care (home nursing)

- adult foster care
- assisted living
- hospice/terminal care
- caregiver support
- congregate housing
- meals (congregate and in-home)
- day health care
- home respite care
- home hospice care
- community residential care
- telehealth.

Various models of cost-effective health-care delivery systems for long-term home- or community-based care are in use. The concept of day health centres, where frail older people are transported during the day for health and supportive services, avoids institutionalization. It allows their family members to work during the day and enables the older people to receive health care, benefit from supervised exercise and recreational services, and escape the isolation of the home. Chronic care provided by regional population-based prevention and disease management systems, which combine specialized medical care, assistive technology and home support, can improve the delivery of care, reduce costs and prevent institutionalization.

Institutional care

In the West, nursing homes have emerged as the touchstone of institutional long-term care. They are an important part of the health-care delivery system for frail older people.

Goals of institutional care

- Provide a safe and supportive environment for chronically ill and dependent people
- Restore and maintain the highest possible level of functional independence
- Preserve individual autonomy
- Maximize the patient's quality of life, perceived well-being and satisfaction with life
- Provide comfort and dignity to terminally ill patients and their loved ones
- Stabilize and delay the progression, whenever possible, of chronic medical conditions
- Prevent acute medical and iatrogenic illnesses, and identify and treat them rapidly when they occur.

Those who need institutional care

Institutional care is needed by patients who:

- are actively recuperating or being rehabilitated;
- have substantial physical dependencies;
- have primarily severe cognitive losses;
- are receiving terminal care; and
- are in a permanent vegetative state.

Institutional residents

Institutional residents may be of the following kinds:

- Short stayers (1–6 months)
  - terminally ill
  - in need of short-term rehabilitation
  - medically unstable or suffering from subacute illness.
- Long stayers (6 months to years)
  - primarily cognitively impaired
  - primarily physically impaired
  - both physically and cognitively impaired.

However, institutional care has its limitations since the residents live out the last days of their lives in an enclosed society.

Several major societal dynamics indicate that the need for long-term care in the years immediately ahead will grow tremendously. As the cost of long-term care is high, providing it is a critical challenge. The development of home- and community-based systems that are appropriate for the region and use the resources available requires innovative means, for example, the physician could provide leadership with support from key public officials.

Caregiving

With increasing age and the health problems that accompany it, older people tend to lose their functional independence and autonomy. Some of them may need assistance in various domains of basic activities of daily living and instrumental activities of daily living. The quantum of assistance or care varies with the degree of dependence. Older patients with physical or cognitive functional impairment require continuous care from informal (family members) or formal (paid) care providers. The duration and intensity of the care that must be provided depends on the nature of the patient's health problem, probability of recovery/improvement and proximity to death. In the case of terminal cancer or heart failure, long-term care will be required for a considerably shorter duration than in the case of dementia or stroke and other neurodegenerative illnesses. Long-term care often causes the caregiver to experience stress, and feel a sense of burden and pressure. Long-term care has a considerable economic cost.

Issues related to long-term caregiving

Long-term care of a frail and physically dependent older person causes the caregiver to feel a variety of stresses, such as physical, emotional, social and financial. This is termed "caregiver burden". The caregiver is usually the "hidden patient" and the health-care worker must direct some attention towards his/her needs. The prolonged stress of caring ultimately affects the well-being and living conditions of the older person.

Assessment of caregiver stress

The predictors of stress on the caregiver that need to be assessed for intervention include:

- the older person's capacity to care for himself/herself;
- the type of care required by the older person (feeding, dressing, bathing, toilet);
- the amount of extra time the caregiver needs to spend on caring for the older person;
- arrangements for rest and relaxation for the caregiver;
- resources and support systems available to the caregiver;
- vague physical health-related complaints by a caregiver, which should make one suspect that he/she needs more assistance in the home.

Supporting the caregiver

While developed countries have a mechanism in place for supporting the stressed caregiver, no such formal mechanism exists in the health and social welfare systems of countries in the Region. Despite that, the caregiver must be supported to:

- maintain her/his physical and mental health;
- avoid the development of an abusive situation;
- reduce the risk of institutionalization; and
- promote a good quality of life for the entire family.

Role of the primary care physician

In the prevailing system, the primary care physician has a rather limited role in supporting the caregiver. The physician should interpret the nonspecific health problems of the caregiver correctly by relating them to caregiving stress. He/she should intervene with counselling and find ways of reducing the older patient's requirement of care. Several interventions can be organized with community support, without the need for too many resources. Some of the methods of providing assistance to caregivers are as follows.

- The primary care physician should educate the caregiver and the family members on ways to recognize danger signs in the person receiving care
- The physician should teach the caregivers at home about the prevention of complications, such as bedsores, aspiration pneumonitis, catheter-related infections and deep-vein thrombosis

- Primary care physicians should know innovative ways of leadership training and getting support from key public officials, such as government and police officials
- They may consult a psychiatrist, as psychiatrist services are very important
- The caregiver should be made aware of the social and spiritual problems involved in terminal care, ethical issues, the need for informed consent and the decision of the patient to be treated
- Primary care physicians can play a role in organizing day hospitals, day-care centres and centres for seniors that provide engagement and food
- The provision of respite care, which is aimed at sharing the burden of care with the family and other informal caregivers, can play an important role
- The primary care physician should be involved in outpatient and inpatient care for the investigation of major problems
- In case of patients requiring palliative care, the physician could refer them to religious/spiritual services.

ANNEXURES

ANNEXURE 1

Ageing scenario in the South-East Asia Region

Table 1: Total population of the age of 60 years or above in Member States, as estimated in 2017, 2030 and 2050 (in thousands)

Country	2030	2050
Bangladesh	21,681	44,501
Bhutan	103	235
DPR Korea	5347	6963
India	189,137	316,759
Indonesia	38 241	61 729
Maldives	57	164
Myanmar	7732	11,544
Nepal	3577	6510
Sri Lanka	4543	5984
Thailand	18,687	22,954
Timor-Leste	107	162
SEARO – Total	289,212	477,505
Global	1402,405	2080,459

Table 2: Percentage distribution of population by age group (60+ and 80+ years) in Member States in 2017 and 2050

Country	2017		2050	
	60+	80+	60+	80+
Bangladesh	7.3	1.1	22.0	3.9
Bhutan	7.3	1.0	23.7	3.7
DPR Korea	13.5	1.5	26.0	5.3
India	9.4	0.9	19.1	2.6
Indonesia	8.6	0.7	19.2	2.3
Maldives	6.3	0.8	28.4	3.9
Myanmar	9.4	0.8	18.5	2.0
Nepal	8.8	0.7	18.0	2.3
Sri Lanka	14.9	1.6	28.8	6.8
Thailand	16.9	2.4	35.1	10.2
Timor-Leste	5.4	0.4	6.7	1.0
SEAR	9.8	1.0	20.3	3.1

Table 3: Life expectancy at birth and at 60 years for males and females in the Member States [2010 and 2015]

Country	Life expectancy at birth (years) 2010–2015		Life expectancy at age 60 (years) 2010–2015	
	Female	Male	Female	Male
Bangladesh	72.9	69.8	20.3	18.2
Bhutan	68.9	68.6	20.1	20.2
DPR Korea	74.1	67.2	19.9	14.3
India	69.1	66.2	18.5	17.0
Indonesia	70.7	66.6	17.8	15.2
Maldives	77.4	75.4	20.1	18.9
Myanmar	68.3	63.7	17.7	15.7
Nepal	70.4	67.4	18.1	16.4
Sri Lanka	78.0	71.2	21.6	19.1
Thailand	78.4	70.8	23.1	20.0
Timor-Leste	69.5	66.1	17.7	16.1
SEAR	70.4	66.4	18.9	17.0
Global	73.1	68.6	21.6	18.8

Sources for Table 1–3: i) World Population Ageing 2017, ii) World Population Prospects 2017, United Nations Department of Economic and Social Affairs, Population Division.

Note: Values for the Region are weighted means calculated using WPP 2017.

ANNEXURE 2

Scales for screening and assessment

A. SARC-F questionnaire for screening of sarcopenia

Component	Question	Scoring	Score
Strength	How much difficulty do you have in lifting and carrying 10 pounds?	None: 0 Some: 1 A lot or unable: 2	
Assistance in walking	How much difficulty do you have walking across a room?	None: 0 Some: 1 A lot, use aids or unable: 2	
Rise from chair	How much difficulty do you have transferring from a chair or bed?	None: 0 Some: 1 A lot or unable without help: 2	
Climb stairs	How much difficulty do you have climbing a flight of 10 stairs?	None: 0 Some: 1 A lot or unable: 2	
Falls	How many times have you fallen in the past year?	None: 0 Some: 1 A lot or unable: 2	
Total score			

Interpretation: A score equal to or greater than 4 is predictive of sarcopenia and poor outcomes.

B. Assessment of basic activities of daily living: modified Barthel ADL index

Bowels 0 = Incontinent or needs enemas 1 = Occasional accident (1x/wk) 2 = Continent	Transfer (bed to chair and back) 0 = Unable, no sitting balance 1 = Major help (1 or 2 people), can sit 2 = Minor help (verbal or physical) 3 = Independent
Bladder 0 = Incontinent or needs enemas 1 = Occasional accident (1x/wk) 2 = Continent	Mobility 0 = Immobile 1 = Wheelchair independent (including corners) 2 = Walks with the help of 1 person (physical or verbal help) 3 = Independent (may use aid)
Grooming 0 = Needs help with personal care 1 = Independent (including face, hair, teeth, shaving	Dressing 0 = Dependent 1 = Needs help – can do ~ ½ unaided 2 = Independent (including buttons, zips, laces, etc.)
Toilet Use 0 = Independent 1 = Needs some help 2 = Independent	Stairs 0 = Unable 1 = Needs help (verbal or physical) 2 = Independent
Feeding 0 = Unable 1 = Needs help, e.g. cutting 2 = Independent	Bathing 0 = Dependent 1 = Independent (bath or shower)

Source: Oxford Handbook of General Practice, Third edition

Score interpretation:

BADL total score	Interpretation
<15	Moderate disability
<10	Severe disability

C. The Lawton IADL scale

Scoring: For each category, circle the item description that most closely resembles the client's highest functional level (either 0 or 1).

I. Ability to use telephone		**V. Laundry**	
1. Operates telephone on own initiative; looks up and dials numbers	1	1. Does all his/her personal laundry work	1
2. Dials a few well-known numbers	1	2. Launders small items, rinses socks, stockings, etc.	1
3. Answers telephone, but does not dial	1	3. All laundry must be done by others	0
4. Does not use telephone at all	0		
II. Shopping		**VI. Mode of transportation**	
1. Takes care of all shopping needs independently	1	1. Travels independently on public transportation or drives own car	1
2. Shops independently for small purchases	0	2. Arranges own travel via taxi but does not otherwise use public transportation	1
3. Needs to be accompanied on any shopping trip	0	3. Uses public transportation when assisted or accompanied by another	1
4. Completely unable to shop	0	4. Travel limited to taxi or automobile with assistance of another	0
III. Food preparation		5. Does not travel at all	0
1. Plans, prepares, and serves adequate meals independently	1	**VII. Responsibility for own medications**	
2. Prepares adequate meals if supplied with ingredients	0	1. Is responsible for taking medication in correct doses at correct time	1
3. Heats and serves prepared meals or prepares meals but does not maintain adequate diet	0	2. Takes responsibility if medication is kept in separate dosages in advance	0
4. Needs to have meals prepared and served	0	3. Is not capable of dispensing own medication	0
IV. Housekeeping		**VIII. Ability to handle finances**	
1. Maintains house alone with occasional assistance (heavy work)	1	1. Manages financial matters independently (makes budgets, writes cheques, pays rent and bills, goes to bank), collects and keeps track of income	1
2. Performs light daily tasks such as washing dishes and making beds	1	2. Manages day-to-day purchases, but needs help with banking, major purchases, etc.	1
3. Performs light daily tasks, but cannot maintain acceptable level of cleanliness	1	3. Incapable of handling money	0
4. Needs help with all home maintenance tasks	1	**Total score:**	
5. Does not participate in any housekeeping tasks	0		

D. Mini nutritional assessment

Mini Nutritional Assessment
MNA®

Last name: First name:

Sex: Age: Weight, kg: Height, cm: Date:

Complete the screen by filling in the boxes with the appropriate numbers. Total the numbers for the final screening score.

Screening

A Has food intake declined over the past 3 months due to loss of appetite, digestive problems, chewing or swallowing difficulties?
0 = severe decrease in food intake
1 = moderate decrease in food intake
2 = no decrease in food intake ☐

B Weight loss during the last 3 months
0 = weight loss greater than 3 kg (6.6 lbs)
1 = does not know
2 = weight loss between 1 and 3 kg (2.2 and 6.6 lbs)
3 = no weight loss ☐

C Mobility
0 = bed or chair bound
1 = able to get out of bed / chair but does not go out
2 = goes out ☐

D Has suffered psychological stress or acute disease in the past 3 months?
0 = yes 2 = no ☐

E Neuropsychological problems
0 = severe dementia or depression
1 = mild dementia
2 = no psychological problems ☐

F1 Body Mass Index (BMI) (weight in kg) / (height in m)^2
0 = BMI less than 19
1 = BMI 19 to less than 21
2 = BMI 21 to less than 23
3 = BMI 23 or greater ☐

IF BMI IS NOT AVAILABLE, REPLACE QUESTION F1 WITH QUESTION F2.
DO NOT ANSWER QUESTION F2 IF QUESTION F1 IS ALREADY COMPLETED.

F2 Calf circumference (CC) in cm
0 = CC less than 31
3 = CC 31 or greater ☐

Screening score (max. 14 points)

12 - 14 points: Normal nutritional status
8 - 11 points: At risk of malnutrition
0 - 7 points: Malnourished ☐☐

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For more information: www.mna-elderly.com

E. Short physical performance battery (SPPB)

SHORT PHYSICAL PERFORMANCE BATTERY (SPPB)

While a wide range of physical performance tests is available, the SPPB is recommended, as it has superior measurement properties and is useful across a range of abilities. The SPPB measures timed performance on three tasks, each scored out of four, to derive a score from zero (worst performance) to 12 (best performance).

First, describe each test and ask if the person feels able to do it. If not, score accordingly and move to the next step.

1. **Balance tests:** Stand for 10 seconds with feet in each of the following three positions. Use the sum of the scores from the three positions.

2. **Gait speed test:** Time to walk four metres. (If they use a cane or walking aid and feel they need it to walk a short distance, they may use it.)

   Time for four-metre walk:

< 4.82 seconds	4 points
4.82 – 6.20 seconds	3 points
6.21 – 8.70 seconds	2 points
> 8.70 seconds	1 point
Unable to complete	0 points

3. **Chair rise test:** Time to rise from a chair five times

< 11.19 seconds	4 points
11.2 – 13.69 seconds	3 points
13.7 – 16.69 seconds	2 points
16.7 – 59.9 seconds	1 point
> 60 seconds or unable to complete	0 points

Final SPPB score = sum of scores from the three tests above.

1

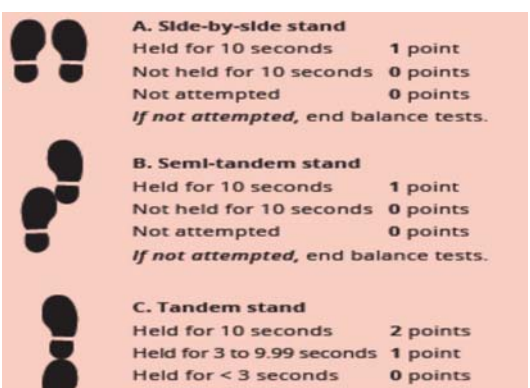
CHAIR RISE TEST

A simple test can decide whether an older person needs further assessment for limited mobility.

Instructions: Ask the person, "Do you think it would be safe for you to try to stand up from a chair five times without using your arms?" (Demonstrate to the person.)

If YES, ask them to:
– sit in the middle of the chair
– cross and keep their arms over their chest
– rise to a full standing position and then sit down again
– repeat five times as quickly as possible without stopping

Time the person taking the test – further assessment is needed if they **cannot stand up five times within 14 seconds.**



A. Side-by-side stand

Held for 10 seconds	1 point
Not held for 10 seconds	0 points
Not attempted	0 points

If not attempted, end balance tests.

B. Semi-tandem stand

Held for 10 seconds	1 point
Not held for 10 seconds	0 points
Not attempted	0 points

If not attempted, end balance tests.

C. Tandem stand

Held for 10 seconds	2 points
Held for 3 to 9.99 seconds	1 point
Held for < 3 seconds	0 points
Not attempted	0 points

F. Examples of cognitive assessment tools for use in primary health-care settings

Tool/test	Advantage	Disadvantage	Time
Mini-Cog	Brief; minimal language, educational and racial bias	Use of different word lists may affect scoring	2–4 min
Montreal cognitive assessment (MoCA)	Can identify mild cognitive impairment; available in multiple languages	Educational and cultural bias; limited published data	10–15 min
Mini mental state examination (MMSE)	Widely used and studied	Subject to age and cultural bias, ceiling effects	7–10 min
General practitioner assessment of cognition (GPCOG)	Minimal cultural and educational bias; available in multiple languages	May be challenging to get| an informant's report	5–6 min

G. Mini-Cog cognitive assessment tool

Step 1: Three Word Registration

Say any three unrelated words to the person. Then ask him/her to repeat the words. If the person is unable to repeat the words after three attempts, move on to Step 2 (clock drawing).

Step 2: Clock Drawing

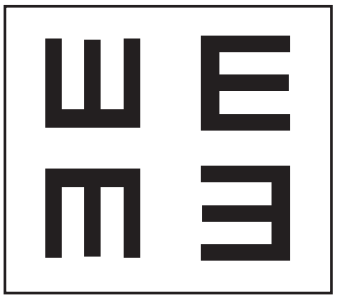
Ask the person to draw a clock by putting all the numbers in the correct positions in an already preprinted circle. When that is completed, ask the person to set the hands to 10 past 11. Repeat instructions as needed as this is not a memory test. Move to Step 3 if the clock is not complete within three minutes.

Step 3: Three Word Recall

Ask the person to recall the three words you stated in Step 1. Record the person's answers.

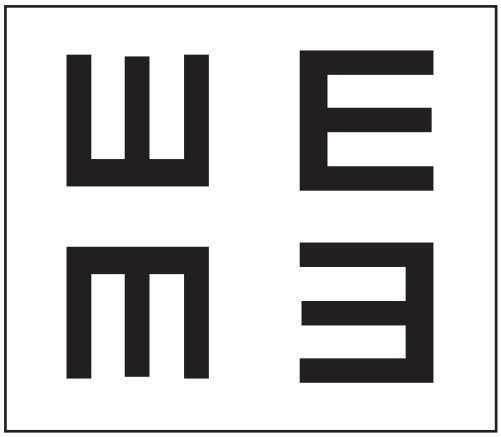
Word recall (0-3 points)	Points:	1 point for each word spontaneously recalled without clues
Clock Draw (0 or 2 points)	Points:	Normal clock = 2 points (all numbers placed in the correct sequence and approximately correct position) Inability or refusal to draw a clock (abnormal) = 0 points
Total score	points	Total score = Word Recall score + Clock Draw score A cut point of <3 has been validated for dementia screening.

H: WHO simple eye chart



WHO Simple Eye-chart with

4 small Es for near vision



WHO Simple Eye-chart with

4 Large Es for distance vision

ANNEXURE 3

American Geriatric Society: modified Beers Criteria

According to the AGS modified Beer's Criteria, it is potentially inappropriate to prescribe a few classes of medication to older patients.

Table 1: Medicines to avoid prescribing to older people

Medicine/ Class of medicine	Recommendation	Rationale
1st-generation antihistaminics: diphenhydramine, promethazine, hydroxyzine	Avoid	Risk of confusion, dry mouth, constipation
Benzhexyl/trihexiphenidyl for Parkinsonism	Avoid	Risk of confusion, dry mouth
Antispasmodic: dicyclomine	Avoid	Dry mouth, constipation
Antibiotic: nitrofurantoin	Avoid when creatinine clearance is <30	Potential for pulmonary toxicity, hepatotoxicity and peripheral neuropathy
Nonselective alpha blockers: prazosin, alfluzosin	Avoid use in patients on other antihypertensives	High risk of orthostatic hypotension
Central alpha blockers: clonidine, methyldopa	Avoid	High risk of adverse CNS effects, bradycardia and orthostatic hypotension
Digoxin	Avoid dosage exceeding 0.125 mg/ day	Use in atrial fibrillation: may increase mortality Use in heart failure: higher dosage is not associated with additional benefit and may increase toxicity
Amiodarone	Avoid as 1st line for atrial fibrillation unless patient has heart failure or substantial left ventricular hypertrophy	Higher toxicities as compared to other anti-arrhythmics
Antidepressants (amitryptilline, imipramine, nortryptilline, paroxetine)	Avoid	Highly anticholinergic, sedating and cause orthostatic hypotension
Antipsychotics (conventional and atypical)	Avoid in patients with dementia	Increased risk of cerebrovascular accident, greater risk of cognitive decline and mortality in patients with dementia

Medicine/ Class of medicine	Recommendation	Rationale
Benzodiazepines – short- / intermediate-acting (lorazepam)	Avoid	Increased risk of cognitive decline, delirium, falls, fractures and motor vehicle crashes
Concurrent use of opioids with either benzodiazepines or gabapentinoids	Avoid	Increased risk of overdose and severe sedation-related adverse events, such as respiratory depression and death
Trimethoprim-sulfamethoxazole in patients taking an angiotensin-converting enzyme (ACE) inhibitor or angiotensin II receptor blocker (ARB)	Avoid	Serious hyperkalaemia can occur
H2-receptor antagonists	Avoid in delirium	H2 blockers can precipitate delirium
Aspirin for primary prevention of cardiovascular disease or colorectal cancer	Caution necessary for patients of 70 years of age or older	Increased risk of bleeding
Serotonin-norepinephrine reuptake inhibitors (SNRIs) e.g. duloxetine, venlafaxine,	Avoid in older patients with a history of falls or fractures	Increased risk of falls, fractures and mortality

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