

Cracking geriatric complexity: key messages from the Italian Society of Geriatrics Hospital and Territory Young Masterclass

Liliana Mazza,¹ Francesca Crosta,^{2,3} Roberto Caragnulo,⁴ Moira Ceci,⁵ Claudio De Lucia,^{6,7} Simone Dini,⁸ Lorenzo Palleschi⁵

¹Unit of Geriatrics, Department of Integration, Maggiore Hospital, AUSL Bologna; ²Unit of Geriatrics, Pescara Hospital; ³Department of Life, Health and Environmental, University of L'Aquila; ⁴Unit of Geriatrics, Neuromotor and Rehabilitation Department, Arcispedale Santa Maria Nuova Hospital, Reggio Emilia; ⁵Unit of Geriatrics, Medical Department, San Giovanni Addolorata Hospital, Rome; ⁶ASL Napoli 3 Sud, Naples; ⁷Health District 60, ASL Salerno, Nocera Inferiore (SA); ⁸Unit of Geriatrics, Department of Geriatric Care, Orthogeriatrics and Rehabilitation, Galliera Hospital, Genoa, Italy

Abstract

The population is aging worldwide, and multimorbidity, polypharmacy, atypical symptoms, and geriatric syndromes are highly prevalent in older adults. Therefore, a personalized approach to care is essential. Adequate training for geriatricians is mandatory to guarantee homogeneity of care for complex patients.

Correspondence: Liliana Mazza, Unit of Geriatrics, Department of Integration, Maggiore Hospital, AUSL Bologna, largo B. Nigrisoli 2, Bologna, Italy.
E-mail: liliana.mazza3@gmail.com

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The Italian Society of Geriatrics Hospital and Territory (*Società Italiana Geriatria Ospedale e Territorio*, SIGOT) is committed to providing appropriate geriatric education through various projects and initiatives. Notably, the masterclass “Taking charge of the complexity between different care settings”, which was held in Bertinoro (Emilia-Romagna, Italy), addressed key geriatric topics in geriatrics such as antimicrobial stewardship, malnutrition, sarcopenia, psychogeriatrics, cardiogeriatrics, and transitional care. The event brought together young specialists and residents with experienced experts for 3 days of intensive learning, knowledge sharing, and professional networking. This consensus statement article summarizes the most important concepts discussed during this impactful event.

Introduction

The aging population requires healthcare systems to be prepared to address the different needs of the increasingly older, frail, and multi-pathological population. By 2030, 1 in 6 people in the world will be 60 years old and above, and those aged 80 years or more are expected to triple between 2020 and 2050 to reach 426 million.¹

Italy is one of the oldest countries in the world, as over 14 million Italians are aged 65, with half of them being more than 75 years old. Not only that, healthy life expectancy is also significantly lower than the European average, standing at 58.2 years at birth and around 14 years at 65, indicating that many live for long periods with disabilities or functional limitations.²

According to the Italian National Institute of Statistics, 85% of people aged 74 or more are affected by chronic diseases. In this age group, comorbidity (*i.e.*, the coexistence of two or more chronic diseases) covers over 65%.³ The presence of multiple pathologies is considered a key item for the development of complexity, which is also accompanied by polypharmacy, functional dependency, and frailty. Consequently, the demographic trend has already impacted the political level. In Italy, the National Recovery and Resilience Plan (PNRR),⁴ which derives from Next Generation EU policies,⁵ has faced on several occasions the theme of older people and their assistance. In Mission 5 “Inclusion and Cohesion”, component 2 “Social Infrastructures, Families, Communities and Third Sector” aims at interventions for independent living, as well as interventions to strengthen home social services to ensure early discharge and prevent hospitalization and institutionalization.⁶ Mission 6 “Health” insists on the creation of community houses and taking charge of the person and the implementation of home and territorial services,

especially for chronic patients.⁴ Multiple decrees have been declined starting from PNRR principles, such as the Legislative Decree n. 33/2023, which describes the subject of active aging, the promotion of social inclusion, and the prevention of frailty, focusing on non-self-sufficient older people and long-term care facilities.⁷

Thus, geriatrics is facing multiple challenges: the increase in the volume of the aged population, the complexity of clinical management of patients, and the advances in legislative terms that require prompt updates. Furthermore, the peculiarity of the geriatric approach, which is comprehensive and person-tailored, configures geriatrics as a discipline of precision and preventive medicine.

Based on these considerations, the multidimensional challenges in the management of aged patients, with a special focus on transitions and continuity of care in various care settings, have been treated profusely in an event organized by the Italian Society of Geriatrics Hospital and Territory (*Società Italiana Geriatria Ospedale e Territorio*, SIGOT). Held from October 25 to 27, 2024, in Bertinoro, Emilia-Romagna, the masterclass “Taking charge of the complexity between different care settings” brought together young specialists and residents in geriatrics with experienced experts for 3 days of intensive learning, knowledge sharing, and professional networking.⁸ In this consensus statement article, we aim to summarize the key messages from the hot topics that were discussed in those thrilling days.

Infection management and antimicrobial stewardship

Multidrug-resistant organisms (MDROs) pose a significant threat to public health, particularly among older adults who frequently require hospitalization and long-term care. Increasingly prevalent infections by MDROs, such as methicillin-resistant *Staphylococcus aureus* (MRSA), carbapenem-resistant enterobacteriales, and vancomycin-resistant enterococci, call for urgent action in geriatric care settings. The unique vulnerability of older adults exacerbates the challenges of managing these infections effectively. Isolation from MDRO is of utmost importance in patients with healthcare-associated infections, which represent a significant global burden, especially in frail individuals. Antimicrobial stewardship (AMS) programs are vital in reducing the emergence of resistance and ensuring optimal treatment outcomes. Among geriatric patients, tailored AMS interventions are critical, given their higher likelihood of adverse drug reactions and pharmacokinetic changes affecting drug efficacy and toxicity. Practically, research indicates that AMS strategies targeting antibiotic de-escalation based on culture results can minimize unnecessary exposure to broad-spectrum antibiotics, thereby reducing selective pressure for resistance development.⁹ Geriatricians should be skilled in AMS, as antimicrobial resistance (AMR) is a natural consequence of antibiotic misuse, which may be prevalent in older patients. AMS programs prioritize the appropriate use of antibiotics, reducing selective pressures that drive resistance. Surveillance of

resistance patterns, such as MRSA and carbapenem-resistant *Acinetobacter* species, aids in tailoring stewardship interventions. Italy, for instance, has reported carbapenem resistance exceeding 50% for certain pathogens, emphasizing the need for targeted action.¹⁰

Accurate diagnosis is a cornerstone of effective infection management. In geriatric care, the appropriate use of microbiological tests and their interpretation needs emphasis. The overuse of blood cultures or urine cultures in asymptomatic patients, for example, can lead to unnecessary antibiotic administration and increased resistance rates. The use of molecular diagnostic tools, which offer rapid and precise identification of resistant pathogens, may be instrumental in initiating timely and targeted therapy while avoiding empirical broad-spectrum antibiotics.¹¹

In addition to adhering to AMS strategies, the World Health Organization highlights the key roles of infection prevention and control (IPC) measures to address AMR (Table 1). These include evidence-based guidelines, staff training, multimodal strategies, and ongoing monitoring with feedback.¹² Reliable metrics and regular audits are indispensable for assessing program efficacy and identifying gaps in IPC. Surveillance systems tracking MDRO incidence and infection rates should be implemented in hospitals.¹³

Malnutrition and dysphagia

The prevalence of malnutrition in older adults varies considerably due to variations in both the tool used for its assessment and the population studied.¹⁴ In community-dwelling older adults, the prevalence of malnutrition is 3.1% according to a meta-analysis of prevalence rates using the Mini Nutritional Assessment (MNA), the most commonly used nutritional assessment tool in older adults.^{15,16} In addition to malnutrition, the risk of malnutrition (together with the indication of nutritional support needed) as assessed by MNA is present in almost 30% of community-dwelling older adults.¹⁷

Malnutrition prevalence increases concomitantly with functional dependency, affecting 8.7% of older adults receiving home-care services, 22% of older adults in hospitals, and 28.7% of older adults in long-term care facilities.¹⁸ Prevalence is higher in women, rural populations, populations aged over 80 years, and those affected by chronic illness.^{19,20} Malnutrition predisposes older adults to an increased risk of adverse clinical outcomes such as frailty, osteoporosis, muscle wastage, and mortality. Etiology can be distinguished in i) inflammation-related; ii) without inflammation; iii) without disease (e.g., hunger-related).

Successful management requires routine screening for malnutrition paired with nutritional assessment, an individualized and comprehensive nutritional care plan, food fortification, education, nutritional counseling, and oral nutritional supplements. Management options may be inhomogeneous due to the availability of resources, the priority placed on the nutritional care of older adults, and the nutritional knowledge of healthcare professionals.¹⁴ The optimiza-

Table 1. Key interventions for infection and prevention control according to the World Health Organization.

Key intervention	Description
Hand hygiene	The single most effective measure to reduce HAIs, compliance with hand hygiene protocols remains suboptimal, often below 40% (Pittet 2001). Educational initiatives and adherence monitoring are essential to improve practice
Environmental hygiene and equipment	Ensuring the availability of IPC infrastructure, including cleaning agents and sterilization equipment, is crucial
Targeted surveillance	Monitoring specific indicators, such as catheter-related bloodstream infections and ventilator-associated pneumonia, facilitates timely intervention and outbreak management

HAIs, healthcare-associated infections; IPC, infection prevention and control.

tion of nutritional pathways should be promoted to reduce gaps between evidence-based knowledge and current clinical practice.

One of the causes of malnutrition can be dysphagia. In long-term care facilities, patients generally present dysphagia symptoms related to established chronic medical conditions. Overall, 30% of nursing home and rest home guests are reported to be dysphagic or pre-bisphagic, and dysphagic guests are typically older people assuming polypharmacy.

The proper diagnosis of dysphagia is based upon a careful history, clinical examination, endoscopy, dynamic imaging (videofluoroscopy, videoesonography), and electrophysiologic procedures (including pharyngoesophageal manometry, electromyography, and pH determinations).^{21,22} The clinical evaluation of a patient with symptoms of dysphagia involves two principal aspects: determining the functional level of swallowing ability and the etiology of the swallowing disorder. Drugs can play a causal role in dysphagia, especially in the geriatric setting, because of diverse mechanisms: they may alter smooth and striated muscle motility, or act as inhibitors or chemical agonists of nervous neuromodulators. These may be considered as reversible causes of dysphagia.²² Drug history is crucial to identify causes of dysphagia secondary to side effects or complications of drug treatment. Dysphagia may occur as a normal drug side effect or as a complication of drug action and may be caused by allergic complications or drug-induced esophagitis. In conclusion, prioritizing nutritional support and dysphagia management is essential for preserving the dignity, health, and independence of older adults.

Psycho-cognitive issues

Dementia is a major health challenge that is responsible for high rates of disability, hospitalization, and mortality in older adults. Strategies that can promote prevention, facilitate early diagnosis, and delay the onset of the disease are urgently needed. Thus, the “Dementia prevention, intervention, and care” report by the Lancet has been recently updated clarifying two new risk factors (high low-density lipoprotein cholesterol and vision loss) for dementia and indicating that nearly half of all dementia cases worldwide may be prevented or delayed by addressing 14 modifiable risk factors (Table 2).²³ To provide evidence-based recommendations and guarantee adequate clinical practices throughout the whole care process, a panel of Italian experts has recently published “The Italian guideline on diagnosis and treatment of dementia and mild cognitive impairment”.²⁴ It provides key recommendations on both pharmacological and non-pharmacological approaches, discusses tailored interventions that include a comprehensive cognitive assessment and palliative care, and examines management strategies for people living with dementia/mild cognitive impairment (MCI) as well as caregivers.

Early diagnosis of cognitive impairment is crucial to applying

effective and appropriate strategies and interventions. Therefore, the development of new diagnostic tests, that enable the detection of Alzheimer’s Disease (AD) at an early stage with high specificity and sensitivity at a relatively reasonable cost and with low or non-invasive evaluation, is certainly warranted.²⁵ Three monoclonal antibodies (aducanumab, lecanemab, and donanemab) directed against the amyloid protein have been recently approved by the Food and Drug Administration for the treatment of MCI and mild AD, in addition to medications for cognitive symptom management, such as acetylcholinesterase inhibitors and the N-methyl-D-aspartate antagonist.²⁶ Of note, the European Medicines Agency has only recently expressed a positive opinion on the marketing of lecanemab for the treatment of early-stage AD. Importantly, new therapeutic targets such as mitochondrial dysfunction, oxidative stress, neuro-inflammation, and neuronal transmission are under investigation.²⁷

Behavioral and psychological symptoms of dementia (BPSD) are a core part of the syndrome of dementia. Around 90% of dementia patients develop BPSD throughout their lives, while 35-85% of people with MCI experience neuropsychiatric symptoms.²⁸ The presence of BPSD not only influences the quality of life of patients and caregivers but also increases the risk of mortality.^{29,30}

BPSD can be grouped in clusters according to the main symptom: apathy (presenting with withdrawal, lack of interest, demotivation), depression (exhibiting crying, sadness, despair, low self-esteem, anxiety, guilt), aggression (both verbal and physical), psychosis (showing hallucinations, delusions), agitation (that may include wandering, restlessness, disinhibition, repeated and stereotyped actions, sleep disturbances).^{31,32}

Clinical guidelines recommend nonpharmacological approaches as the first choice in the treatment of BPSD, such as cognitive stimulation, reminiscence therapy, sensory therapy, behavior therapy, music/dance therapy, social contact, structured activities, exercise therapy, animal-assisted therapy, and environmental interventions.³³ Pharmacological therapy should be initiated as a second-step treatment in case of failure of non-pharmacological therapy. Acetylcholinesterase inhibitors, memantine, antipsychotic drugs, antidepressants, mood stabilizers, and benzodiazepines comprise the medications for the treatment of BPSD. The administration of antipsychotics should always be initiated at a low dose to be titrated up to the minimum effective dose, to avoid adverse effects.³⁴

Future research will be essential in driving the development of new pharmacological strategies to combat dementia and its behavioral manifestations.

Sarcopenia and hypokinesia

Sarcopenia is widely prevalent in older adults, and it is evident in 10% of community-dwelling people, increasing up to 40 to 50% among those living in nursing homes.

Table 2. Modifiable risk factors for dementia, according to “Dementia prevention, intervention, and care” report by The Lancet.²³

Modifiable risk factors for dementia	
Low quality of education in early life	Diabetes
Social isolation	Obesity
Air pollution	Physical inactivity
Traumatic brain injury	Smoking
Hearing loss	Excessive alcohol consumption
Depression	High low-density lipoprotein cholesterol levels
High blood pressure	Vision loss

The European Working Group on Sarcopenia in Older People (EWGSOP) fostered the recognition of sarcopenia as a geriatric syndrome.³⁵ The 2018 revised criteria (EWGSOP-2) prioritize decreased muscle strength as the most critical diagnostic parameter since it is the best predictor for detrimental outcomes of sarcopenia.³⁶

EWGSOP-2 algorithm for sarcopenia recommends a pathway of Find-Assess-Confirm-Severity (Figure 1). In clinical practice, EWGSOP-2 advises the use of the SARC-F questionnaire to find individuals with probable sarcopenia. Grip strength and chair stand measures are associated with low muscle strength. To generate evidence that confirms muscle of low quantity or quality, the guidelines recommend evaluation of muscle by dual-energy X-ray absorptiometry (DXA) and bioelectrical impedance analysis methods in usual clinical care, and by DXA, magnetic resonance imaging, or computed tomography in research and specialty care for individuals at high risk of adverse outcomes. To assess the severity of sarcopenia, the guidelines suggest the measurement of physical performance using appropriate scores such as the Short Physical Performance Battery, the Timed Up and Go test, and the 400-m walk test.

The etiology of sarcopenia is connected to multiple theories of aging,³⁷ which can be distinguished into pathologic (osteoarthritis, metabolic diseases, and cardiovascular diseases) and non-pathological (aging, irrational diet structure, and physical inactivity) causes. These are united by low blood flow, excessive oxidative stress and inflammation, cell apoptosis, and protein degradation in skeletal muscle.

Current recommendations for the treatment of sarcopenia are mainly defined by the practice of strength exercise and increased energy food intake with a diet rich in protein. Encouraging older adults to participate in resistance training at least twice a week and consume ~1.6 g/kg/day of high-quality protein is considered protective for sarcopenia. A multi-component intervention that targets

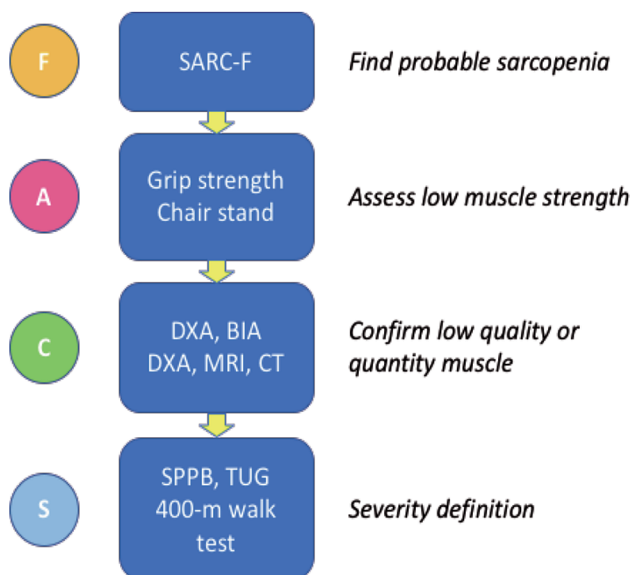


Figure 1. European Working Group on Sarcopenia in Older People-2 algorithm for sarcopenia.³⁸ F, find; A, assess; C, confirm; S, severity. SARC-F, sarcopenia screening test; DXA, dual-energy X-ray absorptiometry; BIA, bioelectrical impedance analysis; MRI, magnetic resonance imaging; CT, computed tomography; SPPB, Short Physical Performance Battery; TUG, Timed Up and Go test.

both physical activity and nutrition is preferable for the greatest benefits for both individuals at risk of sarcopenia and those with mild forms of the disease.

Nevertheless, effective nutritional support and exercise programs may be challenging in clinical practice, especially in old, frail patients. Most drug trials were performed [testosterone, selective androgen receptor modulators, estrogen, dehydroepiandrosterone, insulin-like growth factor-1, growth hormone (GH), GH secretagogue, drug targeting myostatin, and activin receptor pathway, vitamin D, angiotensin-converting enzyme inhibitors and angiotensin receptor blockers, or β -blockers]; however, although some being effective in improving muscle mass and/or strength, clinical relevant improvements in physical performance were not observed.³⁸ Some promising molecules, including apelin and irisin, are under investigation in ongoing clinical trials in the pre-clinical phase.

To date, prevention measures remain the most effective weapon to combat sarcopenia.³⁹ In this context, early mobilization interventions, especially in inpatients, defined as assessing for mobility and functional status within the first 24 hours of admission, have been demonstrated to prevent the onset of sarcopenia in hospitalized older adults. Older people are often confined to bed even after their acute illness has improved, not only because of physical factors such as potentially unnecessary urinary catheters and monitoring equipment but also because of the culture often found in hospitals of keeping patients in bed for most of the day. Bed rest is associated not only with sarcopenia but also with infections and greater length of stay.^{40,41} The use of the Comprehensive Geriatric Assessment (CGA) can help identify frail patients in their admission to decrease acute care length of stay, decrease incidence and duration of delirium, increase rates of discharge to home, and reduce patient sarcopenia and consequent disability caused by hospitalization.⁴²

Hot topics in cardiogeriatrics

The field of cardiogeriatrics, which combines cardiology and geriatrics, has become increasingly important due to the aging global population. As people live longer, the prevalence of cardiovascular diseases is on the rise. While some cardiac conditions, such as ischemic heart disease, are notoriously known as common in older people, others have been only recently recognized as frequent in advanced age, such as cardiac amyloidosis.

Chronic ischemic heart disease (CIHD) in the elderly is a common condition among older patients, and it is still the major cause of death and cardiovascular mortality,⁴³ accounting for a substantial proportion of all increasing health care costs. In older adults, CIHD often presents with atypical symptoms, such as shortness of breath, fatigue, or confusion, rather than classic chest pain, and this can make diagnosis more challenging. A recent update in the guidelines for the management of CIHD has been made by the European Society of Cardiology,⁴⁴ which proposes a stepwise approach for a correct diagnosis (Figure 2). Recent studies confirm that percutaneous coronary intervention is associated with relief in symptoms and health status rather than medical therapy.^{45,46} Also, a lower risk of cardiovascular mortality was associated with an initial invasive strategy.⁴⁷

Although it may be classified as a rare condition, cardiac amyloidosis is increasingly recognized as a clinically relevant disease in older people, leading to significant morbidity and mortality. Almost 95% of cases are due to light chains and transthyretin (ATTR) misfolding.⁴⁸ Diagnosis can be challenging, as symptoms may mimic other heart conditions. Some clinical “red flags” are considered for guiding the clinical suspicion (Table 3).^{49,50}

In the presence of cardiac and other findings suggestive of amyloidosis, the next step is to perform serum κ/λ free light chain ratio analysis, serum protein immunofixation, and urine protein immunofixation. If one or more of these tests identify monoclonal protein, referral to a hematologist is recommended for evaluation and further assessment. Non-cardiac tissue biopsy (fat pad, liver, kidney) and cardiac magnetic resonance findings consistent with amyloid cardiomyopathy confirm the diagnosis. If monoclonal protein is not identified by any of the three tests mentioned above, further management is based upon the results of bone tracer scintigraphy with technetium 99m (99mTc-pyrophosphate, 99mTc 3,3-diphosphono-1,2-propanodicarboxylic acid, or 99mTc-hydroxymethylene diphosphonate) to identify the presence and extent of cardiac uptake. Bone tracer cardiac scintigraphy is a hallmark test for identifying ATTR amyloidosis, and the presence of grade 2 or 3 scintigraphy has high sensitivity and specificity for cardiac amyloidosis compared with tissue biopsy. Loop diuretics constitute a mainstay of the management of heart failure in amyloidosis. For patients with ATTR cardiomyopathy with New York Heart Association class I to III, tafamidis is an effective therapy. Tafamidis stabilizes the transthyretin tetramer, leading to reduced formation of ATTR amyloid. Tafamidis was found to reduce mortality and cardiovascular-related hospitalizations while it further improved quality of life and reduced declines in functional capacity.

Timely and accurate diagnosis of cardiac amyloidosis can make a significant difference in patient management. Consequently, it is essential that physicians are aware of the signs and symptoms and refer suspected patients to specialized centers for diagnostic confirmation and treatment.

Transitions across different care settings

Transitions between care settings are a common experience for older adults, often impacting their well-being and requiring careful management. On the other side of the coin, some settings have been particularly marked by population aging. For example, the emergency department (ED) is a place of care that has been greatly impacted by the changing global demography. Older patients often present with greater urgency and are more likely to be admitted to hospital. They experience longer waits and suffer poorer health outcomes after ED attendance, with higher mortality rates and greater dependence on activities of daily living or rates of admission to nursing homes.⁵¹ Older people's assessment and management in the ED can be complex, time-consuming, and require specialist skills. The interplay of acute illnesses with multiple comorbidities and functional decline results in a complex state of frailty that can predispose to poor health outcomes and greater care needs. Skilled observation of atypical symptoms is crucial to avoid misdiagnosis and to manage hospital admissions appropriately.⁵² Identifying patients with frailty can be critical to supervising those at the highest risk of poor outcomes and most likely to benefit from further clinical interventions. In this context, the CGA and the intervention of a multidisciplinary care team (geriatrician, nurse, social assistant, physiotherapist, palliative care specialist, and bed manager) provide a multidimensional and person-centered approach, which allows for early discharge from the ED in an appropriate setting.⁵³ The COVID-19 pandemic emphasized the need for geriatric care pathways, especially in frail patients, and some programs for hospital-at-home service have been implemented in Italy.⁵⁴

Table 3. Clinical “red flags” for the clinical suspicion and diagnosis of amyloidosis.^{49,50}

Red flags of amyloidosis		
Extracardiac manifestations	Cardiac manifestations	Image findings
Bilateral carpal tunnel syndrome	Persistent mildly elevated troponin levels	Echocardiography: increased thickness of left ventricle, right ventricular free wall, atrioventricular valves, interatrial septum
Unprovoked biceps tendon rupture	Symptomatic hypotension or orthostasis in response to hypertensive medication	Electrocardiography: discrepancy in QRS voltage and left ventricular thickness
Lumbar stenosis	Unexplained atrioventricular block, heart block, or bundle branch block	Strain electrocardiography: longitudinal impairment with apical sparing
Sensorimotor polyneuropathy	Elevated N-terminal-pro-brain natriuretic peptide not proportionate to the severity of heart failure	Cardiac magnetic resonance imaging: increased extracellular volume or late enhancement
Autonomic dysfunction	Family history of cardiomyopathy	Chest radiography: cardiomegaly

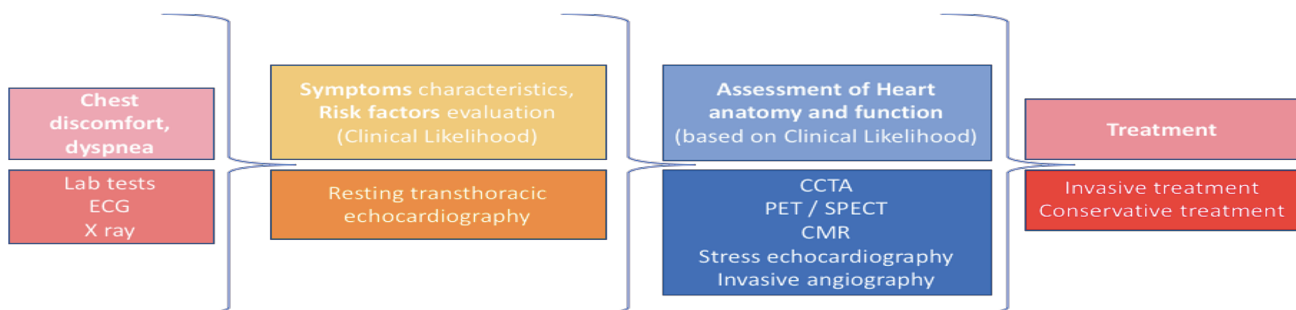


Figure 2. Stepwise approach for the diagnosis of chronic coronary disease according to European Society of Cardiology guidelines.⁴⁶ ECG, electrocardiogram; CCTA, coronary computed tomography angiography; PET/SPECT, positron emission tomography/single-photon emission computed tomography; CMR, Cardiac Magnetic Resonance.

Another example of the impact of population aging on care settings is in orthopedics. A well-established combination of geriatric care in a surgical ward is orthogeriatrics, which provides geriatric care to patients with fragility fractures. The role of multiprofessional assessment and team evaluation in orthogeriatric patients is properly defined according to the positive impact on the acute management of the current fracture episode and its direct and indirect consequences. An adequate rehabilitation to recover function, independence, and quality of life should start immediately after prompt surgery and should be continued outside the hospital, in a home setting or long-term setting, in a logic of transmurality.⁵⁵

New frontiers regarding transitional care are presupposed in telemedicine programs, whose implementation has been boosted during the COVID-19 outbreak,⁵⁶ which represent a relevant innovation in the approach to chronic patients in multiple health fields. For example, telecardiology has the potential to revolutionize the way heart health is managed. By leveraging technology, healthcare providers can remotely monitor patients with cardiovascular conditions.⁵⁷ This involves the use of wearable devices and telemonitoring systems that transmit vital signs and other relevant data to healthcare professionals. Telecardiology enables early detection of potential complications, such as arrhythmias or heart failure exacerbations, allowing for timely interventions. Similarly, rehabilitation programs can be developed for both the cognitive and the motor/functional areas, allowing more people to benefit from their own homes. The benefits of telemedicine include improved patient outcomes, reduced hospitalization rates, and enhanced patient satisfaction. Additionally, it provides more convenient and accessible care, especially for patients living in remote or underserved areas.

Conclusions and future perspectives

Population aging is a global phenomenon, and the demographic trends suggest this will continue for decades. Healthcare professionals must stay updated, as aged patients often present with numerous and complex clinical conditions. Furthermore, evolving legal frameworks require timely updates to ensure optimal care within healthcare system strategies and resources. Geriatricians play a pivotal role as specialists in this complexity. Therefore, raising awareness and sharing the latest advancements in the field is crucial. Events like the SIGOT Masterclass highlight the importance of ongoing education and dialogue among geriatric professionals.

Looking ahead, it is vital that this event becomes a regular annual fixture to foster collective knowledge and mutual learning, particularly among new generations of geriatricians. Such events should evolve beyond mere updates to become powerful “calls to action”. This entails actively promoting the practical application of acquired knowledge, encouraging research and innovation, and building collaborative professional networks. Moreover, it is crucial to engage institutions and policymakers to support continuous education and the adoption of patient-centered care models for older people. Only through this proactive, collective effort can we ensure high-quality, sustainable geriatric care in the long term.

References

1. World Health Organization. Ageing and health. 2024. Available from: <https://www.who.int/news-room/fact-sheets/detail/ageing-and-health>.
2. ISTAT. Censimento e dinamica demografica. 2022. Available from: <https://www.istat.it/it/files/2023/12/CENSIMENTOEDINAMICADEMOGRAFICA2022.pdf>. [Material in Italian].
3. ISTAT. Annuario statistico italiano. 2022. Available from: <https://www.istat.it/storage/ASI/2022/capitoli/C04.pdf>. [Material in Italian].
4. AGENAS. Missione 6 salute. Available from: <https://www.agenas.gov.it/pnrr/missione-6-salute>. [Material in Italian].
5. European Union. NextGeneration EU. Available from: https://next-generation-eu.europa.eu/index_it#pi%C3%B9-sana.
6. Italian Government. PNRR: inclusione e coesione. Available from <https://www.governo.it/it/approfondimento/inclusione-sociale/16706>. [Material in Italian].
7. Italian Republic. Legge 23 marzo 2023, n. 33. Deleghe al Governo in materia di politiche in favore delle persone anziane. In: Official Journal, n. 76, 30/03/2023.
8. Mazza L, Palleschi L. Education and training in geriatrics: guiding the generational change of health professionals. *Geriatr Care* 2025;11:13378.
9. Biagetti C, Tatarelli P, Tebano G, et al. Containment of carbapenem-resistant Enterobacterales colonisations and infections: Results from an integrated infection control intervention in a large hospital trust of northern Italy. *Am J Infect Control* 2024;52:66-72.
10. Iacchini S, Caramia A, Fadda G, et al. Rapporto ISS Sorveglianza RIS-3/2023 - CRE: sorveglianza nazionale delle batteriemie da enterobatteri resistenti ai carbapenemi. Dati 2022. Available from: <https://www.iss.it/-/rapporto-iss-sorveglianza-ris-3/2023-cre-sorveglianza-nazionale-delle-batteriemie-da-enterobatteri-resistenti-ai-carbapenemi-dati-2022-simone-iacchini-alessandra-caramia-giulia-fadda-stefania-giannitelli-monica-monaco-giulia-errico-maria-del-grosso-maria->. [Material in Italian].
11. Zakhour J, Haddad SF, Kerbage A, et al. Diagnostic stewardship in infectious diseases: a continuum of antimicrobial stewardship in the fight against antimicrobial resistance. *International journal of antimicrobial agents*, 2023;62:106816.
12. World Health Organization. Guidelines on core components of infection prevention and control programmes at the national and acute health care facility level. 2016. Available from: <https://www.who.int/publications/i/item/9789241549929>.
13. Boni S, Sartini M, Del Puente F, et al. Innovative approaches to monitor central line associated bloodstream infections (CLABSIs) bundle efficacy in intensive care unit (ICU): role of device standardized infection rate (dSIR) and standardized utilization ratio (SUR)-an Italian experience. *J Clin Med* 2024; 13:396.
14. Dent E, Wright OR, Woo J, Hoogendijk EO. Malnutrition in older adults. *Lancet* 2023;401:951-66.
15. Leij-Halfwerk S, Verwijs MH, van Houdt S, et al. Prevalence of protein-energy malnutrition risk in European older adults in community, residential and hospital settings, according to 22 malnutrition screening tools validated for use in adults \geq 65 years: a systematic review and meta-analysis. *Maturitas* 2019;126:80-9.
16. Cereda E, Pedrolli C, Klersy C, et al. Nutritional status in older persons according to healthcare setting: A systematic review and meta-analysis of prevalence data using MNA®. *Clin Nutr* 2016;35:1282-90.
17. Kushwaha S, Khanna P, Srivastava R, et al. Estimates of malnutrition and risk of malnutrition among the elderly (\geq 60 years) in India: a systematic review and meta-analysis. *Ageing Res Rev* 2020;63:101137.
18. Nazri NS, Vanoh D, Leng SK. Malnutrition, low diet quality and its risk factors among older adults with low socio-economic status: a scoping review. *Nutr Res Rev* 2021;34:107-16.

19. Crichton M, Craven D, Mackay H, et al. A systematic review, meta-analysis and meta-regression of the prevalence of protein-energy malnutrition: associations with geographical region and sex. *Age Ageing* 2019;48:38-48.
20. Fusco S, Cariati D, Schepisi R, et al. Management of oral drug therapy in elderly patients with dysphagia. *JGG* 2016;64:9-20.
21. Boccardi V, Ruggiero C, Patrì A, Marano L. Diagnostic assessment and management of dysphagia in patients with Alzheimer's disease. *J Alzheimers Dis* 2016;50:947-55.
22. Cicala G, Barbieri MA, Spina E, de Leon J. A comprehensive review of swallowing difficulties and dysphagia associated with antipsychotics in adults. *Expert Rev Clin Pharmacol* 2019;12:219-34.
23. Lee KH, Lee JY, Kim B. Person-centered care in persons living with dementia: A systematic review and meta-analysis. *Gerontologist* 2022;62:e253-64.
24. Fabrizi E, Ancidoni A, Locuratolo N, et al. The Italian guideline on diagnosis and treatment of dementia and mild cognitive impairment. *Age Ageing* 2024;53:afae250.
25. Klyucherev TO, Olszewski P, Shalimova AA, et al. Advances in the development of new biomarkers for Alzheimer's disease. *Transl Neurodegener* 2022;11:25.
26. Qi X, Nizamutdinov D, Yi SS, et al. Disease modifying monoclonal antibodies and symptomatic pharmacological treatment for Alzheimer's disease. *Biomedicines* 2024;12:2636.
27. Alan E, Kerry Z, Sevin G. Molecular mechanisms of Alzheimer's disease: from therapeutic targets to promising drugs. *Fundam Clin Pharmacol* 2023;37:397-427.
28. Finkel SI, Miller S, e Silva JC, et al. Behavioral and psychological signs and symptoms of dementia: a consensus statement on current knowledge and implications for research and treatment. *Int Psychogeriatr* 1996;8:497-500.
29. Hurt C, Bhattacharyya S, Burns A, et al. Patient and caregiver perspectives of quality of life in dementia: an investigation of the relationship to behavioural and psychological symptoms in dementia. *Dement Geriatr Cogn Disord* 2008;26:138-46.
30. Brånsvik V, Granvik E, Minthon L, et al. Mortality in patients with behavioural and psychological symptoms of dementia: a registry-based study. *Aging Ment Health* 2021;25:1101-9.
31. McShane R. What are the syndromes of behavioral and psychological symptoms of dementia? *Int Psychogeriatr* 2000;12:147-53.
32. D'Antonio F, Tremolizzo L, Zuffi M, et al. Clinical perception and treatment options for behavioral and psychological symptoms of dementia (BPSD) in Italy. *Front Psychiatry* 2022;13:843088.
33. Abraha I, Rimland JM, Trotta FM, et al. Systematic review of systematic reviews of non-pharmacological interventions to treat behavioural disturbances in older patients with dementia. The SENATOR-OnTop series. *BMJ Open* 2017;7:e012759.
34. Cummings J, Sano M, Auer S, et al. Reduction and prevention of agitation in persons with neurocognitive disorders: an international psychogeriatric association consensus algorithm. *Int Psychogeriatr* 2024;36:251-62.
35. Cruz-Jentoft AJ, Baeyens JP, Bauer JM, et al. Sarcopenia: European consensus on definition and diagnosis: report of the European working group on sarcopenia in older people. *Age Ageing* 2010;39:412-23.
36. Cruz-Jentoft AJ, Bahat G, Bauer JM, et al. Writing Group for the European Working Group on Sarcopenia in Older People 2 (EWGSOP2), and the Extended Group for EWGSOP2. Sarcopenia: revised European consensus on definition and diagnosis. *Age Ageing*, 2019; 48(1), 16.
37. Pratt J, Boreham C, Ennis S, et al. Genetic associations with aging muscle: a systematic review. *Cells* 2019;9:12.
38. Rolland Y, Dray C, Vellas B, et al. Current and investigational medications for the treatment of sarcopenia. *Metabolism* 2023;149:155597.
39. Janssen I, Heymsfield SB, Wang Z, Ross R. Skeletal muscle mass and distribution in 468 men and women aged 18-88 yr. *J Appl Physiol* 2000;89:81-8.
40. van Kan GA, Houles M, Vellas B. Identifying sarcopenia. *Curr Opin Clin Nutr Metab Care* 2012;15:436-41.
41. Surkan MJ, Gibson W. Interventions to mobilize elderly patients and reduce length of hospital stay. *Can J Cardiol* 2018;34:881-8.
42. Tsiachristas A, Langhorne P, Burke O, et al. Comprehensive geriatric assessment for older adults admitted to hospital. *Cochrane Database Syst Rev* 2017;9:CD006211.
43. Timmis A, Vardas P, Townsend N, et al. European Society of Cardiology: cardiovascular disease statistics 2021. *Eur Heart J* 2022;43:716-99.
44. Vrints C, Andreotti F, Koskinas KC, et al. 2024 ESC guidelines for the management of chronic coronary syndromes: developed by the task force for the management of chronic coronary syndromes of the European Society of Cardiology (ESC) endorsed by the European Association for Cardio-Thoracic Surgery (EACTS). *Eur Heart J* 2024;45:3415-537.
45. Maron DJ, Hochman JS, Reynolds HR, et al. Initial invasive or conservative strategy for stable coronary disease. *N Engl J Med* 2020;382:1395-407.
46. Spertus JA, Jones PG, Maron DJ, et al. Health-status outcomes with invasive or conservative care in coronary disease. *N Engl J Med* 2020;382:1408-19.
47. Hochman JS, Anthonopolos R, Reynolds HR, et al. Survival after invasive or conservative management of stable coronary disease. *Circulation* 2023;147:8-19.
48. Zampieri M, Nardi G, Del Monaco G, et al. Changes in the perceived epidemiology of amyloidosis: 20 year-experience from a Tertiary Referral Centre in Tuscany. *Int J Cardiol* 2021;335:123-7.
49. Porcari A, Merlo M, Rapezzi C, Sinagra G. Transthyretin amyloid cardiomyopathy: an uncharted territory awaiting discovery. *Eur J Intern Med* 2020;82:7-15.
50. Garcia-Pavia P, Rapezzi C, Adler Y, et al. Diagnosis and treatment of cardiac amyloidosis: a position statement of the ESC Working Group on Myocardial and Pericardial Diseases. *Eur Heart J* 2021;42:1554-68.
51. Fimognari FL, Lelli D, Landi F, Antonelli Incalzi R. Association of age with emergency department visits and hospital admissions: a nationwide study. *Geriatr Gerontol Int* 2022;22:917-23.
52. SIGOT. Position Paper SIGOT - SIMEU. Approccio al paziente anziano in ospedale. 2018. Available from: https://www.sigot.org/allegato_docs/1418_Positon-Paper-SIGOT-SIMEU.pdf
53. Cozza M, Paglia A, Dini S, et al. The comprehensive geriatric assessment in emergency and intensive care unit settings. *Geriatr Care* 2024;10:12156.
54. Rivasi G, Bulgaresi M, Mossello E, et al. A new hospital-at-home model for integrated geriatric care: data from a preliminary Italian experience. *J Am Med Dir Assoc* 2024;25:105295.
55. Marsh D, Mitchell P, Falaschi P, et al. The multidisciplinary approach to fragility fractures around the world: an overview. In: *Orthogeriatrics: the management of older patients with fragility fractures*. Falaschi P, Marsh D, eds. Cham (CH): Springer; 2021.
56. Omboni S, Padwal RS, Alessa T, et al. The worldwide impact of telemedicine during COVID-19: current evidence and recommendations for the future. *Connect Health* 2022;1:7-35.
57. Zhu Y, Gu X, Xu C. Effectiveness of telemedicine systems for adults with heart failure: a meta-analysis of randomized controlled trials. *Heart Fail Rev* 2020;25:231-43.