Review Article

Cardiogeriatrics: a 21st Century Perspective

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ABSTRACT

Cardiogeriatrics in the 21st century has become a central discipline in the face of accelerated aging in Latin America. This article reviews the historical background, demographic transition, and clinical challenges posed by multimorbidity, frailty, polypharmacy, and healthcare inequities. It examines the evidence gap due to the underrepresentation of older adults in clinical trials and highlights the importance of integrating biological age, functional status, and cognition into risk stratification. Expanded prevention strategies are emphasized—including adapted Life's Essential 8, vaccination, and social determinants of health—along with the partial reversibility of frailty through telerehabilitation and rehabilitation that include gerontology. Finally, the GOAL algorithm is presented as a practical framework for patient-centered decision making in older adults with cardiovascular disease. In cardiogeriatrics, the future is prevention.

HISTORICAL AMERICAN CONTEXT FOR THE 21ST CENTURY

The concept of Geriatric Cardiology has Egyptian roots, by the acknowledgement of the relationship of age with the heart; similarly, indigenous Latin American cultures (with the sonqo for the Incas, the yollotl for the Mexica and py'a in the Guaraní peoples) associated the heart with life, energy and the passing of time. Geriatric cardiology is defined as the adaptation of the principles of geriatrics to the practice with evidence from daily cardiology. Its modern development in America started at the mid-20th century, with studies like Framingham (1948), Baltimore (1958), Bogalusa (1972) and the Cardiovascular Health Study (1989), that defined the relationship between ageing, risk factors, frailty and cardiovascular outcomes in the elderly. In a parallel way, key institutions were created in the United States, such the National Institute on Aging (NIA). In that country, in 1970, the first English-language textbook on the field was written by Dr. Raymond Harris, and in 1985, the Council on Geriatric Cardiology was created, with its own journal, directed by Nanette Wenger, although modern cardiogeriatrics gained momentum with the Editorial by William W. Parmley in 1997 in JACC.[1] Finally, at the beginning of the 21st century, the discipline was integrated to the American College of Cardiology (ACC), consolidating in 2010 with the Geriatric Cardiology Section Leadership Council.[1]

In Latin America, in a parallel way with college academic support, Brazil and Mexico were pioneers. Brazil had taken its first steps in 1982, when Prof. Luis Gastão Costa Carvalho do Serro Azul created the Clinical Unit of Cardiogeriatrics of the InCor, and in the 1990s, the Brazilian Society of Cardiology formally acknowledged the field, first as a study group (GEBRAC), and since 2005, as a department (DECAGE), besides starting specific conferences.[2]

In Mexico, the Instituto Nacional de Cardiología Ignacio Chávez (founded in 1944) had shown interest, at the end of the 20th century, along with the Mexican Society of Cardiology (SMC), founded in 1935, and the Inter-American Society of Cardiology (IASC) founded in 1944, both the result of the work by the master Chávez; however, it was formally at the beginning of the 21st century that Dr. Luis Alberto Lasses y Ojeda created the first Service of Geriatric Cardiology, and the course of High Specialty of the UNAM, integrated to the institute, besides formal sections within the society.[3]

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Since 2017, several Latin American societies have created formal sections, such as the Colombian of Cardiology, the Argentine one (the Argentine Federation of Cardiology and the Argentine Society of Cardiology) and the Interamerican Society of Cardiology, while others (Chile, Uruguay, Ecuador, etc.) included sessions, symposia or consensuses in their academic meetings, generally jointly with societies of geriatrics and gerontology in the region.

In brief, the last 10 years have been witnesses to the emergence of cardiogeriatrics in Latin America: groups were formally created, alliances were created, guides were disseminated, books were written and specific conferences were carried out. This regional effort of the continent aligns with the international tendency of preparing cardiologists and geriatricians for a differentiated care for older patients, and there is a call to build today, as a region, the geriatric cardiology of the 21st century, where the future of cardiogeriatrics is prevention.

DEMOGRAPHIC TRANSITION AND CARDIOVASCULAR LOAD IN THE ELDERLY

Latin America is going through an accelerated demographic transition: ~15% of the population already exceeds 60 years, and by 2050, one in every four Latin Americans will be a senior citizen; the subgroup ≥80 years will triple its size; with the subsequent increase in the demand for health care and pressure on sanitary systems.[1] This outlook turns cardiogeriatrics into a strategic axis, because cardiovascular diseases (CVD) concentrate a great load of disease and disability after the 70 years of age. Beyond mortality, there is a concern about functionality and autonomy: heart failure (HF), ischemic heart disease (IHD), atrial fibrillation and cerebrovascular CVD explain a substantial volume of lost disability-adjusted life years, with a strong social and financial repercussion.[2]

DEMYSTIFYING CARDIOGERIATRICS: MORE THAN "CARDIOLOGY FOR OLD PEOPLE"

The distinctive clinical feature of this population is multi-morbidity and therapeutic complexity: most senior citizens will combine several chronic conditions, polypharmacy (>5 drugs) and high biological heterogeneity. For this reason, cardiogeriatrics proposes a change in paradigm: to go from protocols focused on a single disease and chronological age, to health care plans focused on the individual with a biological age, prioritizing the results that matter to the patient (function, independence, quality of life), integrating a brief geriatric assessment into cardiovascular practice and preventing "iatrogenesis by omission" (not offering effective therapies due to ageism).[2] This practical integration requires, at least, a fast screening for frailty, falls, cognition and pharmacological load to decide when to apply the comprehensive geriatric assessment (CGA) in more detail and to adjust goals.

Frailty is a prognostic modulator. As a vulnerability syndrome increased by a lower physiological reserve, it is associated with a greater risk of events, prolonged hospital stays and worse outcomes after interventions such as TAVI or heart surgery, regardless of chronological age. Prevalence is around ~7-12% in people older than 65 years of age, and it increases with age. Measuring it (for instance, Fried frailty phenotype, gait speed <0.8 m/sec or simple tools such as the FRAIL) enables anticipating complications and planning adjusted prehabilitation, nutrition and rehabilitation.[3] It is important to highlight that frailty is not the same as terminality or disability: it could be partially reversible with multimodal interventions.[3]

Equity by sex and gender adds another layer of complexity. Older women, a demographic majority in advanced ages, are still underrepresented in studies, present different clinical profiles (e.g.: a higher rate of HF with preserved ejection fraction) and suffer more adverse pharmacological effects. Reducing these gaps entail improving their inclusion in evidence and personalizing doses/therapeutic choices, avoiding both overmedicating and undertreating.

In decision-making, two operative concepts guide practice: time to benefit (TTB) and strategic deprescribing (suspending therapies). TTB helps to align preventive interventions (e.g.: statins in primary prevention, blood pressure goals) with life expectancy and goals of the patient; its systematic use prevents treatments with unlikely benefits in the clinical horizon of very fragile senior citizens, and in turn, it supports early benefit therapies (e.g.: anticoagulation in AF). Deprescribing (planned, monitored and shared) reduces the load of medications, interactions and adverse events, and improves adherence, not giving up highly important drugs.[2,4]

THE FUTURE OF CARDIOGERIATRICS IS PREVENTION

We should control risk factors since middle age, promote healthy ageing and, in elderly people, add vaccination, exercise, nutrition and rehabilitation focused on function. In summary, with a rapidly ageing population and high cardiovascular load, an efficient cardiogeriatrics in Latin America combines evidence-based medicine, geriatric reading of risk (frailty, cognition, function) and decisions guided by TTB, with the aim of extending life and preserving independence, from prevention.[1,4]

In this line of prevention, we should conduct an active assessment with the practical approach of "2-minute screening", to identify early whether older patients require complete CGA and to prevent events *(Figure 1).*

EVIDENCE GAP AND WHAT WE DO KNOW

Randomized clinical trials (RCTs) are the strongest source to guide medical decisions, but the elderly are still underrepresented. A systematic review showed that 53% of studies explicitly dismissed patients older than 65 years, with just 12.3% of participants being ≥75 years, very far from the real profile of patients cared for in clinical practice.[5,6] In ischemic heart disease, more than half of trials establis-

FIGURE 1.
Example of cardiogeriatric screening in 2 minutes.
It includes gait speed, falls, FRAIL, Mini-Cog and drug count. If one is positive, specialized support should be requested to perform a comprehensive geriatric assessment.
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hed maximum age limits (75-80 years), with a mean age of just 62.7 years.[6] This bias is concerning, as cardiovascular disease is the main cause of morbidity and mortality in >65 years.

Even in iconic studies, such as the PARADIGM-HF (heart failure) and the SYNTAX (coronary artery disease), patients older than 75 years were barely represented ~20% and ~13% of the sample, respectively. However, post-hoc analyses suggest that the benefits observed also extend to older patients.[6] In contrast, TAVI (Transcatheter aortic valve implantation) trials (e.g.: PARTNER) achieved a better inclusion, with an average age of ~81 years, although with a bias toward selected patients, without extreme comorbidities or advanced frailty.[6]

A counterintuitive finding is that, between 2006-2015, the rate of trials that exclude elderly people increased, in spite of the recommendations for a greater inclusion.[6] There are multiple causes: biological heterogeneity, multimorbidity, polypharmacy, functional deterioration, a greater risk of adverse effects and limited life expectancy.

Furthermore, enrollment and retention are complex: elderly patients may leave out of fatigue or disease, compromising external validity.[7]

The result is clear: a good part of cardiovascular guidelines is supported on evidence generated in younger adults, then being applied incompletely or in a risky manner to older patients *(Table 1).*

In Latin America, the challenges are amplified due to inequality of access to advanced technologies, heterogeneity in health care systems and a limited capacity to generate robust regional registries.[7] Overcoming this gap entails encouraging pragmatic trials, designs based on our own registries and metrics relevant to older people, including functional outcomes and quality of life.

BIOLOGICAL AGE VS CHRONOLOGICAL AGE

Chronological age per se does not reflect the heterogeneity of ageing. In practice, patients of the same age may radically differ in physiological reserve and risk. Biological age is defined by the degree of accumulative changes at molecular, cellular and functional level; while the deviation between biological and chronological ages (AgeDev) has been proposed as a marker of accelerated or delayed ageing.[8]

In individuals with normal ageing, both ages coincide, but there are extremes: from premature ageing syndromes to hundred-year old individuals with delayed vascular ageing. With this aim, ageing biomarkers have been explored, which may be better than chronological age to predict morbimortality.[8]

Biomarkers are divided into three categories:

Molecular:

Telomere shortening, associated to cellular senescence and cardiovascular risk, although without clear causality.[9]

Epigenetic clocks (DNAmAge, PhenoAge, GrimAge), based on methylation patterns, that predict with remarkable accuracy outcomes like mortality and diseases related to age.[8]

Omics:

Transcriptomics and miRNA: they reflect the dynamic response of the genome to the environment, linked to ageing and CVD.[10]

Proteomics: linked to phenotypes of frailty and cognition, although yet in its initial stages.[10]

Inflammaging: characterized by high levels of CRP and IL-6, associated with higher mortality and CVD.[8,9]

Physiological and functional: they include VO2max, gait speed, hand grip strength, carotid intima-media thickness and coronary artery calcium.[8]

Digital (imaging): parameters such as BrainAge, retinal or facial age.

The BrainAge gap (difference between brain and chronological ages) correlates with an accelerated ageing, cognitive deterioration and risk of dementia and depression.[11]

Between the combined tools, the Fragility Index (FI) stands out, which integrates accumulated deficits and predicts mortality, risk of falls and fractures, even being better than some epigenetic clocks in its prognostic capacity, but it includes disabilities.[10]

The evidence gap in senior citizens conditions the clinical applicability of a large part of current cardiology *Table 2.* In a parallel manner, the integration of biological age and cognition opens a new way to individualize attention. Incorporating practical biomarkers, frailty measures and

TABLE 1.
Recent evidence and representation gap of older adults in cardiovascular trials .

Area	Trial (year)	N / Mean age	Participation of older adults	Main findings
Heart failure with preserved EF	EMPEROR-Preserved (2021)	5988 / 72 years	≥75 years ~45%	Empagliflozin reduces CV death and hospitalization due to HF, with consistent benefits in ≥75 years.[6]
Heart failure with preserved or reduced EF	DELIVER (2022)	6263 / 72 years	≥75 years with similar effects	Dapagliflozin decreases hospitalization due to CVDs and HF, regardless of age.[6]
Coronary arteries stable with moderate ischemia	ISCHEMIA (2019; subanalysis in older patients)	5179 / 64 years	Subgroup ≥75	Invasive strategy not better to conservative one in death/MI; decisions should be individual, frailty.[6]
ACS with no ST elevation in ≥70 years	POPular AGE (2020)	1002 / ≥70 years	100% ≥70	Clopidogrel reduces bleeding in comparison with ticagrelor/prasugrel, with no increase in ischemia.[6]
AF in very old and frail patients	ELDERCARE-AF (2020)	984 / 86 years	Frail, eighty-year old people	Edoxaban 15 mg reduces thromboembolic events; greater bleeding but manageable, low weight.[6]
TAVI in low risk (5-year follow-up)	PARTNER 3 (2023)	1000 / 73 years	A few ≥80	Within 5 years, TAVI ≈ SAVR in death/stroke/readmission; evidence in eighty-year old people still limited.[6]
Anticoagulation post-TAVI with AF	ENVISAGE-TAVI AF (2021)	1426 / 82 years	Predominance of eighty-year old patients	Edoxaban not inferior in efficacy vs VKA; more gastrointestinal bleeding.[6]
Post-AMI multimodal rehabilitation in older patients	NEJM Multidomain Rehabilitation (2025)	1500 / 80 years	100% ≥75	Multicomponent program reduced CV mortality and readmission after AMI in older adults.[17]
Primary prevention in dyslipidemia	ESC/EAS Focused Update (2025, analysis in >75)	Based on large European registries	Subanalysis in older adults	Use of statins and lipid-lowering agents shows benefits, but direct evidence in ≥85 years and frail patients is still limited. [21]

VKA: vitamin K antagonists; **CV:** cardiovascular; **RCT:** randomized controlled trial; **EF:** ejection fraction; **HF:** heart failure; **AMI:** acute myocardial infarction; **MI:** myocardial infarction; **SAVR:** surgical aortic valve replacement; **ACS:** acute coronary syndrome; **TAVI:** transcatheter aortic valve implantation. The gap persists, even with the partial inclusion of older adults; frail patients are those mostly absent.

functional outcomes will enable the design of interventions aligned with true risks and benefits expected in this population.

Thus, cardiogeriatrics in the 21st century should advance toward:

1. More inclusive and pragmatic trials.
2. Incorporation of accessible and validatable biomarkers.
3. Acknowledgement of frailty and biological age as modulators.
4. Clinical decisions that prioritize quality of life, independence and preferences of patients.

This change in paradigm is essential to construct an equitable and efficient cardiovascular medicine in population ageing in Latin America, besides local studies.

ENHANCED PREVENTION IN THE 21ST CENTURY

Enhanced prevention: from Life's Essential 8 to the 5Ms of geriatrics

Chronological age is still the main risk factor for chronic diseases, including cardiovascular ones. In 2022, the American Heart Association (AHA) updated the classical Life's Essential 7 to the Essential 8, adding sleep as a new pillar along with diet, physical activity, weight control, smoking, diabetes, cholesterol and blood pressure. These determinants, essential over life, acquire a particular relevance in elderly people, where multimorbidity, frailty, sarcopenia and cognitive deterioration condition cardiovascular prevention.[12]

However, applying the Essential 8 to older adults requires adapting them to a geriatric framework. In this regard, the 5Ms of geriatrics (mind, mobility, medications, multicomplexity and what matters most) constitute a conceptual bridge. This integration allows preventive goals to not only reduce cardiovascular risk, but also preserve quality of life and functional independence, essential goals in modern cardiogeriatrics *(Figure 2)*.[12]

VACCINATION AS CARDIOVASCULAR STRATEGY

Respiratory infections are a well-known trigger for cardiovascular events, for their impact on inflammation. Influenza, pneumococcal pneumonia, SARS-CoV-2, the respiratory syncytial virus (RSV) and recently herpes zoster have proven to be associated to a greater risk of infarction, stroke and heart failure. Recent studies estimate that up to 5% of hospital admissions by influenza in patients with heart failure are directly attributable to the infection.[13]

TABLE 2.
Chronological vs biological ageing: repercussions on cardiogeriatrics.

Dimension	Chronological	Biological	Measurement/ examples	Clinical relevance
Definition	Years since birth	Accumulated molecular, cellular and functional changes.[1]	—	It explains why two 80-year-old patients can present different risks.[1]
Variability	Scant	High (AgeDev: accelerated or delayed)[2]	—	It requires personalization of goals and therapies. [6]
Molecular biomarkers	—	Telomere shortening, epigenetic clocks (DNAmAge, PhenoAge, GrimAge).[12]	qPCR, DNA panels	They predict mortality, even without consensus for routine use[12]
Omics and inflammation	—	Transcriptomic/miARN, proteomic, "inflammaging" (CRP, IL-6)[3,4]	Molecular profiles	Related to frailty and CV events; still in research[3,4]
Physiological biomarkers	—	VO_2max, gait speed, hand grip strength, PWV, coronary artery calcium[12]	Physical tests, CT	Accessible and prognostic; applicable in clinical practice[12]
Digital biomarkers	—	BrainAge, retinal age, ECG-age[4,5]	MRI, PET, AI	BrainAge gap predicts cognitive deterioration and risk of dementia[5]
Composite tools	—	Fragility index (FI) or multidimensional[1,3,4]	Frailty scores	They integrate biology and clinics; key in therapeutic decisions; they may confound with disability.[4]
Clinical evidence	Based on age	Underrepresentation of ≥75 years and frail patients in CGA[6,7]	CGA reviews	It compromises external validity; it is urgent to include frail older patients in trials[6,7]

CV = cardiovascular; **DNAmAge/PhenoAge/GrimAge =** epigenetic clocks; **miARN:** microARN; **PWV:** pulse wave velocity; **CT:** computed tomography; **MRI:** magnetic resonance imaging; **PET:** positron emission tomography; **FI:** fragility index.

The population attributable risk of influenza over CAD has been estimated in 3.9%, and it has been documented that for every 5% increase in monthly activity of influenza, the rate of hospitalizations by heart failure increases by 24%.[13] Likewise, infections such as RSV, adenovirus and pneumococcal pneumonia display similar effects. In this scenario, vaccination becomes an indirect but critical cardiovascular prevention tool, particularly in frail older adults, in whom infectious and cardiovascular outcomes are usually interlinked.

SOCIAL DETERMINANTS AND SANITARY LITERACY IN THE 21ST CENTURY

Social determinants of health (SDOH) constitute the framework where people are born, grow up and grow old. The WHO differentiates between structural determinants (socioeconomic conditions, gender, education) and intermediate determinants (housing, transportation, employment, support networks).

In Latin America, social inequality is translated to substantial gaps in access to prevention and cardiovascular treatment, with a particularly negative impact on older people in vulnerable situations.[14]

We can add to this, the need to strengthen sanitary and digital literacy. In a world with an increasing use of telemedicine and health devices, the senior citizens that have access to these tools show higher rates of adherence and early detection of risks. In a context of frailty, digital health offers new opportunities for a hybrid follow-up (home and virtual), early identification of complications and promotion of physical activity.

FIGURE 2.
Integration of the Essential 8 of cardiovascular prevention with the 5Ms of geriatrics (mind, mobility, medications, multicomplexity and what matters most) as a conceptual bridge in cardiogeriatrics

FIGURE 3.
Prevention of delirium in 21st century cardiogeriatrics, a contribution made by the Task Group in Cardiogeriatrics of the Fundación Cardiovascular de Colombia

FRAILTY: MODIFIABLE AND CENTRAL IN 21ST CENTURY CARDIOLOGY

Frailty affects up to 60% of patients with CVD and it constitutes a stronger prognostic determinant than chronological age. Its predictors include: advanced age, multimorbidity, polypharmacy, recent hospitalizations, depression, falls, malnutrition and lack of social support. Evaluating it is crucial, not just to stratify risk, but also to guide preventive and therapeutic interventions.[15]

Different publications highlight that frailty should not be considered irreversible. On the contrary, strategies such as cardiac rehabilitation and programs combined with early geriatric rehabilitation have proven to improve strength, mobility and functional performance in older adults with CVDs, discharged after hospitalization.[15] Initiating these programs early allows to partially reverse frailty and improve quality of life. An emergent area is AgeTech: reminders of medication, activity monitors and remote surveillance systems, which favor independence and deterioration detection. Evidence shows that senior citizens that use digital technologies participate more in exercise and prevention programs, key in the fight against frailty.[16]

PREVENTION OF PERIOPERATIVE DELIRIUM AND PREHABILITATION

In major cardiovascular interventions, perioperative delirium is a frequent complication, devastating in cardiogeriatrics, particularly in frail patients, so its prevention is imperative in the 21st century, to be implemented in coronary care units and other noncardiological units *(Figure 3)*. Cardiogeriatric prehabilitation strategies, with an approach on multicomponent exercise, nutrition and cognitive stimulation, reduce its incidence *(Figure 4)*.

The WHO recommends for older adults to perform at least 150 minutes of moderate aerobic physical activity or 75 minutes of vigorous activity per week, along with two sessions of strength, resistance and balance exercises. The implementation of personalized programs not only decreases disabilities, but also prepares senior citizens to better tolerate surgeries and hospitalizations.[17]

HOW TO MAKE DECISIONS IN CARDIOGERIATRICS

We propose the GOAL algorithm, a clear and shared pathway to provide care for older patients with heart diseases, aligning decisions with the values of patients, their multimorbidity and their biological age (not just chronological age) to maximize functionality, quality of life and neat clinical benefits.

- ***G: Goals*** (including longevity, function and cognitive independence)
- ***O: Organ systems & Overload*** (multimorbidity, renal function, cognitive state, polypharmacy).
- ***A: Ageing and Ability*** (biological age: frailty, performance, biomarkers).
- ***L: Likelihood of Benefit and Harm*** (real neat clinical benefits, TTB, load of treatment). Integration of shared decisions and deprescribing.

Goals of patients. The first step is to agree on explicit goals: realistic longevity, control of symptoms, preservation of independence and cognition. Decision-making focused on the priorities of patients reduces health care overload and improves results in multimorbidity, by focusing treatments on what matters most, and by dismissing low-performance interventions.[18,19,20] Simple tools (Katz, Barthel, Lawton; Mini-Cog/MoCA) facilitate translating values into measurable plans (for instance, avoiding readmissions, although this implies deprescribing late-benefit drugs).

Organ systems & Overload (multimorbidity and therapeutic load). Most course with combinations of HTN,

FIGURE 4.
GOAL algorithm to know how to act in cardiogeriatrics, based on goals, treatment options, comprehensive assessment and life plans

T2DM, CKD, COPD, depression and cognitive deterioration, with polypharmacy and risk 3-5 times greater of adverse effects. The ESC 2024 Guidelines for chronic coronary syndromes underscore personalizing goals and therapies in the elderly, weighing comorbidities, renal function and frailty.[21]

In the practice, a benefit/risk balance requires: adjustment of dose per estimated GFR (anticoagulation, diuretics), systematic screening of interactions, and planned deprescribing of drugs with no significant benefit for this life horizon (e.g.: aspirin), with reevaluation after each discharge or clinical change *(Table 3)*.[19,21]

Ageing & Ability (biological age and functional capacity). Therapeutic decisions are nuanced: in severe frailty, control of symptoms and deprescribing are prioritized; in robust older patients, modifier therapies are maintained when they offer concrete gains.

Likelihood of Benefit & Harm (time to benefit [TTB] and treatment load). The real neat clinical benefit should be estimated for each intervention, contrasting TTB with life expectancy and with diet load (monitoring, visits, adverse effects). In stable chronic patients, invasive revascularization is rarely better than optimized pharmacological therapy in hard outcomes (except for severe ischemia or acute syndromes) and its indication in frail patients should be exceptional and through consensus.[21] A shared decision (materials, structured conversation) improves adherence and aligns therapies with preferences.[20]

KEY QUESTIONS

Does the treatment provide a real neat benefit in this patient?

What is the expected TTB (time to benefit) and is it compatible with life expectancy?

Does the load of treatment (adverse effects, controls, impact on quality of life) exceed the benefits?

Other 21st century challenges in cardiogeriatrics are technologies with sense, such as telemonitoring, home cardiac rehabilitation and mHealth, which can decrease readmissions and sustain functionality by allowing an early detection of decompensations, a timely adjustment of drugs and continuous education. The evidence summarized in recent meta-analyses shows significant reductions in admissions due to HF and by all causes, with improvements in functional capacity similar to in-person programs, if patient-carer training is guaranteed, integration with the team and data protection.[22] The AgeTech (smart pillboxes, environmental sensors) adds safety at home and favors self-care in frailty scenarios.

TABLE 3.
Models of transitional care in older adults with heart diseases[19,20,22]

Strategy	Impact on readmissions	Impact on patients	Impact on carers
Home visits	↓ readmissions within 30 days	+ adherence, satisfaction	+ safety and support
Case managers	↓ readmissions and costs	+ continuity of care	+ coordination and support
Tele-rehabilitation	Equivalent to rehabilitation in person	+ functional capacity	+ active participation
Multidisciplinary teams	↓ mortality and readmissions	+ comprehensive approach	+ reduction in overload
Education of carers	↓ visits to the ER	+ self-efficacy of patients	+ less emotional overload

Note: adapted from evidence on transitional models in older adults with CVDs.

TABLE 4.
Checklist of Transition of Care in Older Adults with Heart Diseases

Área	Verification items (□)
1. Early contact	□ Phone call within the first 48 hours after discharge. □ Schedule early home visit (first 7 days). □ Confirmation of control visit with cardiogeriatrics/cardiology/geriatrics/others.
2. Drug review	□ Verify updated list of medications. □ Identify drugs without benefits on survival for possible deprescribing. □ Confirm adherence and understanding by patient/carer. □ Coordination with clinical pharmacy for polypharmacy adjustment.
3. Patient and carer education	□ Explain diagnosis and treatment plan with clear language. □ Train in administration of medications. □ Teach vital signs monitoring (weight, pressure, heart rate). □ Deliver written plan for home management.
4. Review of needs for infrastructure at home	□ Evaluate home accessibility (stairs, handrails, safe bathroom). □ Verify appropriate bed availability and room for medical devices. □ Necessary adjustments for mobility and safety.
5. Basic goods and equipment	□ Sphygmomanometer and scales available at home. □ Home oxygen when indicated. □ Goods for glycemia control (when applicable). □ Basic first aid material (in the case of wounds).
6. Identification of warning signs	□ Progressive respiratory difficulties. □ Sudden weight increase (>2 kg within 3 days). □ Limb or abdominal edema. □ Persistent chest pain. □ Dizziness, syncope or confusion. □ Severe hypotension or hypertension.
7. Coordination and continuity of care	□ Communication with primary care. □ Reference to cardiac rehabilitation programs or tele-rehabilitation. □ Clear information about how to contact the health care team in case of emergency. □ Schedule periodical phone follow-up.

However, preventing the fragmentation of cardiogeriatric care and fighting it with transitional models that work and a checklist may work *(Table 4)*. Post-discharge home visits, case management led by nurses/social workers, tele-rehabilitation and multidisciplinary teams (cardiology-geriatrics-pharmacy-physiotherapy-psychology) reduce readmissions and costs, and empower both patients and carers, the operative core of the GOAL.

An efficient 21st century cardiogeriatrics requires prevention, measurement of frailty with no disability, focusing on the priorities of patients, and a practice guided by TTB and neat benefits, supported by useful technology. GOAL offers the structure for wise and humane decision-making, based on evidence in a population that will continue to grow.[18,22]

Dedicated to the founders of the Latin American geriatric cardiology: Prof. Dr. Luis Gastão Costa Carvalho do Serro Azul and Prof. Dr. Luis Alberto Lasses y Ojeda.

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