World Heart Federation Roadmap for Heart Failure

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In 2012, all Member States of the World Health Organization (WHO) endorsed a historical target to reduce premature mortality from noncommunicable diseases (NCD). This commitment was echoed in 2015 by the United Nations Sustainable Development Goals, which included a target to reduce premature mortality (the measure of unfulfilled life expectancy and deaths between the ages of 30 and 70 years) from NCD by 30% by the year 2030. The Sustainable Development Goals are especially relevant to cardiovascular disease (CVD), the leading cause of death globally, with increasing prevalence in low- and middle-income countries (LMIC).

In support of reaching the Sustainable Development Goals targets, the World Heart Federation (WHF) has undertaken an initiative to develop a series of Roadmaps [1–6] to 1) promote development of national policies and health systems approaches; 2) identify potential roadblocks to effective prevention, detection, and management of CVD; and 3) provide strategies for overcoming roadblocks. These Roadmaps (Figure 1) provide guidance for countries to develop or update national NCD programs, using the framework provided by the WHO Global Action Plan for the Prevention and Control of NCD 2013 to 2020 [7]. The aim of the WHF Roadmap initiative is to drive efforts within national agendas to meet the ambitious targets set out by the UN National Assembly in line with the WHF strategy to translate science into policy and to influence agencies, governments, and policy makers alike.

As care for patients living with heart failure involves the patients, their families, nurses, dieticians, public health experts, general physicians, cardiologists, and dedicated heart failure specialists, the WHF Heart Failure Roadmap is relevant for all professionals caring for patients with this condition. This document aims to provide comprehensive guidance on the complex syndrome of heart failure from a global perspective, by exploring the epidemiology of heart failure, outlining evidence-based therapies that have been shown to improve outcomes [8–10], creating a graphical display of the ideal pathway for heart failure care, identifying roadblocks, and providing potential solutions for overcoming obstacles to prevention, diagnosis, treatment, and monitoring, in addition to providing recommendations on how to adapt and implement the Roadmap at a national level.

With the overall objective of reducing the burden of heart failure globally, this Heart Failure Roadmap provides WHF Members (including cardiac societies, foundations, and associations) and policy makers with a framework to guide initiatives within their national context, catalyze initial discussions and plan a "call to action," form Roundtable discussions with key opinion leaders, and leverage support and raise awareness for heart failure.

METHODOLOGY AND SELECTION AND THE EXPERT WRITING GROUP

To ensure a best practice approach and a consensus document (Figure 2), the WHF Heart Failure Roadmap was developed through review of published guidelines and research papers, in consultation with a dedicated writing group composed of experts in heart failure management and health systems research. WHF regional Members were invited to nominate an expert to the writing group to ensure that the content of the Roadmap has true global representation.

An extensive review of the applicability and acceptability of the outlined roadblocks and proposed solutions was conducted. A survey was sent to all WHF Members using snowball sampling to widen the consultation, not only to regional members, but also to national representatives. A total of 146 responses was collated through this process, offering feedback on the proposed Ideal Heart Failure Continuum of Care Pathway (Figure 3) and the presented roadblocks and solutions (Table 1). The results were analyzed, open comments were reviewed and consolidated, and the findings were incorporated into this document.

The development of the Heart Failure Roadmap forms part of a larger global project that seeks to create living documents that inform initiatives in response to the global

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needs of patients with CVD. Using publication as a first step in organizing and establishing consensus on the heart failure "care gap," the WHF Heart Failure Roadmap can be used as a springboard to initiate a call for action and prescribe measurable steps toward a common goal, at national and international levels.

HEART FAILURE DEFINITION

> *"Heart failure is a complex clinical syndrome caused by any cardiac structural and/or functional abnormality that results in impairment of ventricular filling or ejection of blood"* [9].

Heart failure can present acutely or as a progressive disease characterized by worsening shortness of breath, coughing or wheezing, tiredness and fatigue, fluid retention with swelling of the legs and/or abdomen, and/or reduced ability to do physically demanding tasks or exercise [8].

Central to diagnosing heart failure is the demonstration of underlying structural and/or functional cardiac abnormalities. Accepted definitions used to categorize heart failure include [8,9]: heart failure with reduced ejection fraction ([HFrEF]; left ventricular ejection fraction [LVEF] <40%); heart failure with preserved ejection fraction (LVEF ≥50%); and heart failure with midrange ejection fraction (LVEF 40% to 49%). Patients with heart failure with preserved ejection fraction often have history of hypertension and/or atrial fibrillation [10], whereas patients with HFrEF are often younger and may have a history of ischemic heart disease or cardiomyopathy (Online Tables 1 and 2) [11—15].

RELEVANCE OF HEART FAILURE TO THE GLOBAL BURDEN OF CVD

It has been estimated that there are approximately 26 million cases of heart failure worldwide [15]. This does not account for the cases of heart failure that are undiagnosed or misdiagnosed and, therefore, a true estimate of the global burden heart failure remains unclear [16]. Mortality rates for heart failure patients remain high with 17% to 45% of deaths occurring within 1 year of diagnosis—with the majority of deaths occurring within 5 years of admission [8].

Of the annual 17.9 million cardiovascular-related deaths worldwide, 80% occur within LMIC [15,17—19], a trend replicated in heart failure where mortality rates are higher in these regions [18—21]. Despite this, our understanding of heart failure is largely based on studies undertaken in high-income countries and building a picture that truly reflects the epidemiology of heart failure across *all* regions, especially LMIC where mortality risk and specific death causes from heart failure are still largely unexplained [17], remains a challenge.

The few data available clearly show that the prognosis in heart failure varies according to geographic area [8]. One-year death rates in patients with heart failure remain high in LMIC, reaching 34% in Africa, 23% in India, 15% in South East Asia, 9% in South America, and 7% in China [17]. Disparities in patient outcomes may be explained by differences in the severity of heart failure at presentation, available therapies, resources, and health care systems [20]. However, further analysis of specific causes of death and related comorbidities is needed to improve patient care.

Numerous causes of heart failure have been described including infectious diseases (Chagas and rheumatic heart disease) and cardiac conditions (hypertension, heart muscle disease, coronary heart disease, valve disease, congenital heart disease, pericardial disease, cor pulmonale, and rhythm disorders) [8]. Figure 4 highlights the most common causes contributing to heart failure by region [17,22,23]. It is evident from this regional map that ischemic heart disease and hypertension are the most common causes of heart failure globally.

SUMMARY OF HEART FAILURE MANAGEMENT GUIDELINES

To prevent the development of the heart failure syndrome, one needs to address its most common causes (e.g., hypertension, ischemic heart disease, rheumatic heart disease) and, ideally, should consider screening for asymptomatic left ventricular (LV) dysfunction in high-risk individuals (Online Table 2) [8,11—15].

The goals of heart failure management are to 1) treat the underlying cause; 2) improve clinical status, functional capacity, and quality of life; 3) prevent hospitalizations; and 4) reduce mortality. Drug therapy for the treatment of the clinical syndrome of heart failure includes diuretic agents to relieve the signs and symptoms of congestion and disease-modifying therapies, such as angiotensin-converting enzyme inhibitors (or angiotensin receptor blockers), beta-blockers, mineralocorticoid receptor antagonists, angiotensin-receptor-neprilysin inhibitor, and ivabradine. These drugs have been shown to reduce hospitalization and improve survival when used as specified by the guidelines [8,9]. Additional therapies, such as hydralazine-isosorbide dinitrate and digoxin, may be used in symptomatic patients with HFrEF. Device therapy (e.g., cardiac resynchronization therapy, implantable cardioverter-defibrillators, LV assist devices) and heart transplantation may be indicated in selected patients with advanced disease. Table 2 represents a summary of heart failure guidelines from European Society of Cardiology and American College of Cardiology/American Heart Association.

CARE GAP AND THE IDEAL HEALTH CARE JOURNEY FOR HEART FAILURE

The "care gap" refers to the difference between optimal, evidence-based, guideline-recommended care and what is

delivered in practice. Although the care gap may be considered larger in LMIC, disparities have been reported in screening, diagnosis, treatment, and monitoring of patients across all income settings. The ideal pathway of care (referred to in this Roadmap as the "continuum of care pathway") was developed using an evidence-informed approach and considers the entire journey of the patient and a best-practice treatment approach.

The Ideal Journey for Heart Failure Patients

Each step along the heart failure journey is important, with many shared determining factors, regardless of local and regional differences in resources or health service delivery. The continuum of care focuses on a common pathway for heart failure patients (Figure 3) and includes identifying individuals at risk, diagnosing heart failure, outlining necessary investigations, treatment initiation, and follow-up. The aim of this section is not to reiterate published guidelines, but rather to investigate best-practice approaches for each step in the care pathway and to identify important stakeholders that may strengthen health care delivery to patients with heart failure.

Heart Failure Prevention. *General Population:* There is considerable evidence that the onset of heart failure may be delayed or prevented through interventions aimed at modifying risk factors, as outlined in previously published WHF Roadmaps (Figure 1) [1–6]. Heart failure prevention strategies (Figure 3) are not dissimilar to those across the spectrum of CVD, and it is, therefore, appropriate to dedicate time and effort on key primary prevention strategies such as smoking cessation [21,24], alcohol reduction or cessation [25], exercise training [26], as well as secondary prevention measures, as described in previous Roadmaps.

Opportunistic Screening and Diagnosis. *Individual at Risk:* Screening plays an essential role in the early diagnosis of heart disease and is useful in identifying those at higher risk of developing heart failure. Screening needs to be adapted according to affordability and availability of a health care system and the different underlying causes per region. Globally underlying causes of heart failure include hypertension (the most common cause of heart failure), myocardial infarction, diabetes, and valvular heart disease, including rheumatic heart disease and cardiomyopathies [27–29]. In addition to those with traditional CVD risk factors, individuals at increased risk of developing heart failure include peripartum women, those who have received chemotherapy, individuals with systemic inflammatory conditions, and those with a positive family history of heart disease or sudden cardiac death (Figure 3).

Regional and national guidelines in acute and chronic heart failure offer quality recommendations in the diagnosis and management of heart failure, yet for a number of reasons including poor adherence and health economic factors, these recommendations lead to a gap between best-practice recommendations and implementation [8]. Careful history taking, systematic clinical examination, and appropriate investigations are necessary to follow a best-practice approach [9]. A woman's pregnancy history is an integral part of her assessment and pregnancy-related diagnoses, such as pre-eclampsia, eclampsia, or gestational diabetes, could signal premature development of CVD with a 4-fold risk of incident heart failure [30].

Despite resource limitations, a diagnosis of heart failure can be made at the primary care level. Careful assessment of symptoms (breathlessness, ankle swelling, and fatigue) and signs (elevated jugular venous pressure, pulmonary crackles, and peripheral edema) can be helpful, but may not be sufficient to confirm a diagnosis of heart failure [8]. The electrocardiogram (ECG) is widely recognized as having an essential role in the diagnosis of underlying cardiac disease [8,9], and, whereas an abnormal ECG has low specificity [31], heart failure is highly unlikely to be present if the ECG is completely normal [32]. Basic investigations, including biomarkers (B-type natriuretic peptide, N-terminal pro–B-type natriuretic peptide), ECG, and focused point-of-care echocardiogram, are useful tools for screening high-risk individuals and confirming a diagnosis of heart failure and, ideally should be accessible at primary care facilities. Future artificial intelligence-enabled "smart" tools for both ECG [33] and echocardiography [34] may further enhance early detection of heart failure at the community level. Patients diagnosed with heart failure usually require referral to higher levels of care for more comprehensive clinical evaluation and investigation, particularly those with advanced disease, to confirm and manage the underlying cardiac condition. A table of diagnostic investigations can be found in Online Table 2 [8,11–15].

Treatment: Initiation of Guideline-Based Therapy and/or Treatment of the Specific Cause. New-onset heart failure requires urgent initiation of therapy [35]. Heart failure management requires the use of: 1) a guideline-based approach with pharmacological and/or nonpharmacological therapies [9]; 2) a patient-centered approach promoting shared decision making with patients [36]; and 3) patient education to improve treatment adherence [37]. Regardless of whether a patient presents with asymptomatic LV dysfunction or overt heart failure, careful consideration of their history and examination is required to implement an appropriate guideline-based treatment plan [8] (Figure 3, Table 2, Online Table 3).

Heart failure is a clinical syndrome, and a comprehensive diagnosis is dependent on the demonstration of an underlying cardiac cause to ensure appropriate and specific treatment [8]. The diagnostic work-up of the underlying cardiac cause should therefore be conducted in conjunction with the therapeutic management of the heart failure syndrome. Furthermore, to provide holistic care to heart failure patients, other medical and social cofactors, such as concomitant comorbidities, contraception, vaccination,

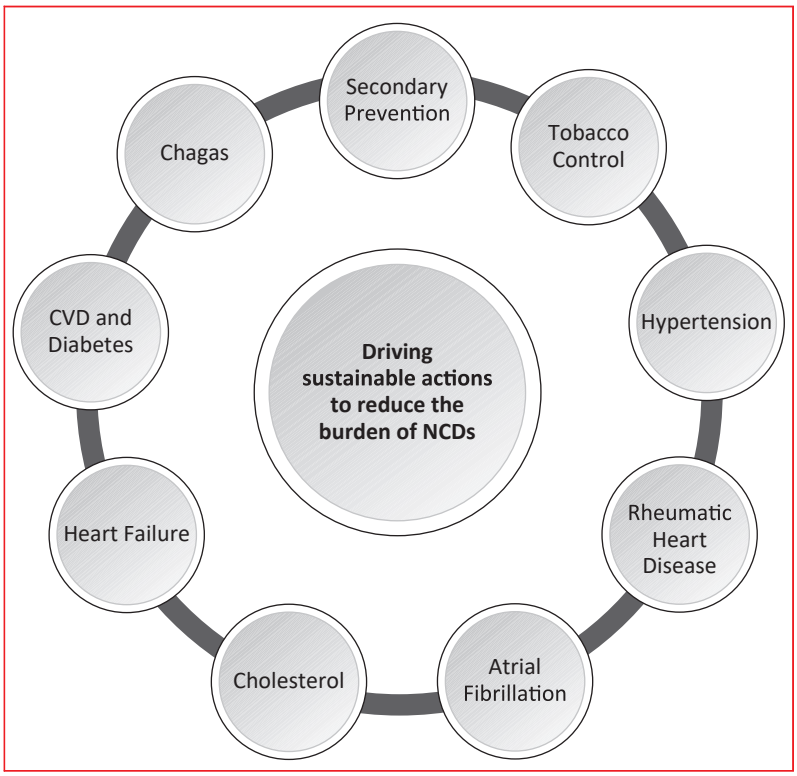

FIGURE 1. The WHF roadmap initiative. CVD, cardiovascular disease; NCD, noncommunicable diseases; WHF, World Heart Federation.

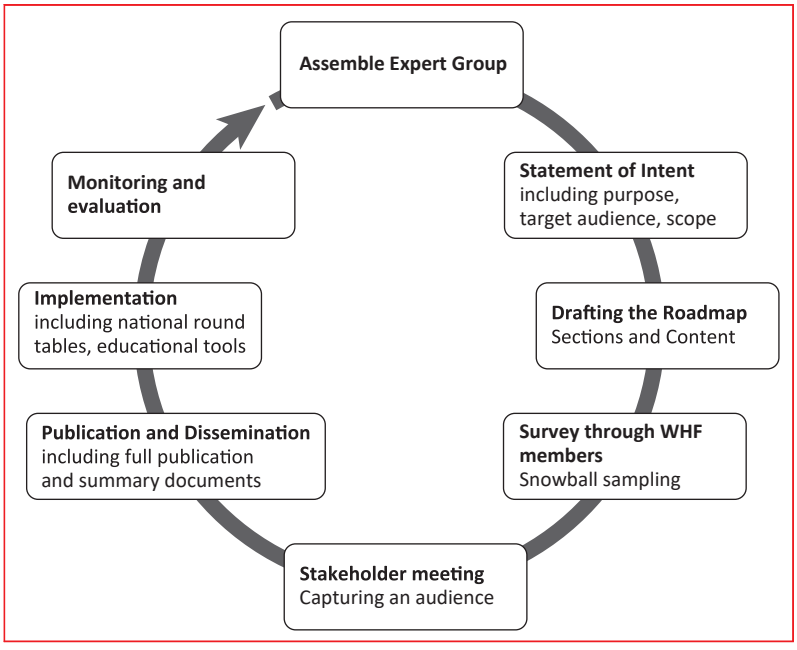

FIGURE 2. The design and methodology framework. WHF, World Heart Federation.

nutrition, work, driving, and transportation, need to be addressed simultaneously.

Monitoring and Follow-Up: Stable Patient Follow-Up as per Guidelines. Monitoring and follow-up are an essential part in the overall management of heart failure and are discussed in detail in the published guidelines (see Figure 3). The primary goal in monitoring and follow-up is to detect possible decompensation (worsening heart failure) and prescribe appropriate therapy as early as possible. This may be achieved through consultation in a heath care facility, via telephone or, more recently, through the use of mobile health (mHealth) packages [38].

PERSPECTIVES ON HEART FAILURE

Heart failure is a chronic, progressive condition with a poor prognosis if left untreated [39]. For the purpose of this Roadmap, barriers and possible solutions to care will be presented from the perspective of: 1) patients, families, communities, patient organizations, and civil society; 2) health care professionals, including clinicians and allied health professionals; and 3) decision makers, nonprofit organizations, government officials, and leaders in heart failure.

Heart failure can be a life-changing and debilitating disease [40]. The diagnosis may lead to inaccurate assumptions and misconceptions about the condition [41–43]. The gradual decline of patients with heart failure, often interrupted by episodes of acute deterioration, recurrent hospitalizations, or sudden unexpected death can have devastating effects on both patients and their families [44].

> *"A lot of people with heart failure think that's the end of their lives, as soon as they get a diagnosis. I did at first, I thought, that's it." "With heart failure it's very unknown, people just don't know what it is"* [45].

Differences in perspectives between patients and health care professionals may affect patient care. One study reported that patients and caregivers believed that "trouble breathing" was a reason for hospitalization, whereas clinicians identified nonadherence to diet and medications, progression of disease, and various socioeconomic factors, such as a lack of social support and access to medications, as reasons for hospital admissions. The investigators suggest that health care workers may not recognize some of the biggest challenges facing heart failure patients [46]. The *Handbook of Multidisciplinary and Integrated Heart Failure Care* supports a patient-centered–care approach that is flexible and adaptable to the patients' needs [47] (Figure 5). The purpose of this Roadmap is to propose strategies and interventions to improve the care of patients with heart failure across all settings. A unified approach to care requires an improved understanding and appreciation of the daily challenges faced by patients and caregivers, dedicated funding, and well-designed health systems that meet the specific needs of these patients.

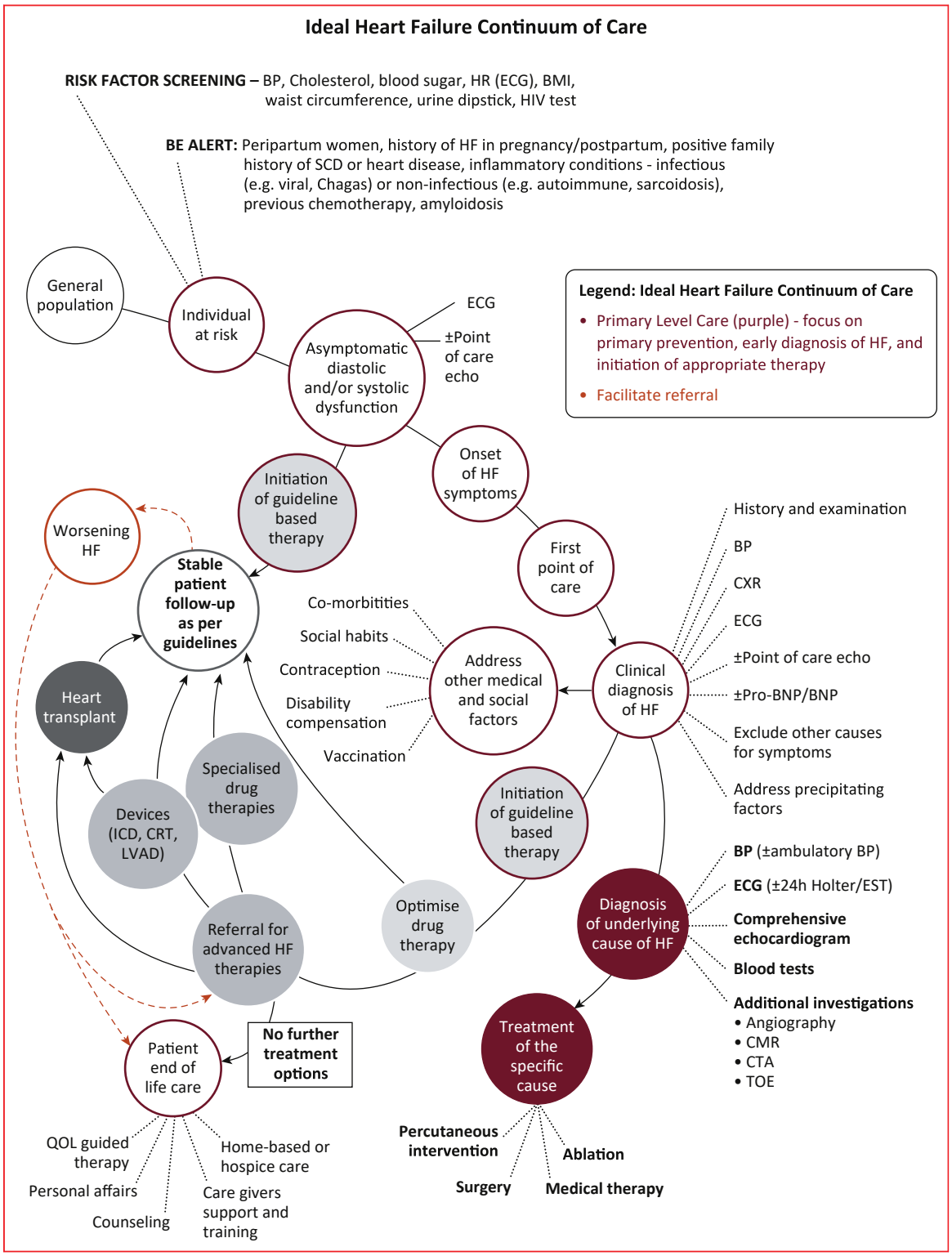

FIGURE 3. Ideal HF continuum of care pathway. BMI, body mass index; BNP, B-type natriuretic peptide; BP, blood pressure; CMR, cardiac magnetic resonance; CRT, cardiac resynchronization therapy; CTA, computed tomography angiography; CXR, chest x-ray; ECG, electrocardiography; HIV, human immunodeficiency virus; HF, heart failure; HR, heart rate; ICD, implantable cardioverter-defibrillator; LVAD, left ventricular assist device; QOL, quality of life; SCD, sudden cardiac death; TOE, transoesophageal echocardiography.

TABLE 1. Roadblocks and solutions

Level	Roadblocks	Potential Solutions
Prevention of Heart Failure		
Patient factors	**Lack of patient education and awareness**	**Develop public awareness programs about risk factors and HF**
	Lack of affordability of healthier lifestyle choices and therapies to address risk factors	**Implement community-based healthy living programs**
Health care workers	**Lack of education and/or training among physicians about the importance of HF screening and prevention**	**Improve HF awareness among health care professionals**
	Physician apathy and/or lack of incentive	**Address risk factors for CVD using WHF Roadmaps and published guidelines—emphasis on identifying individuals at risk and preventative strategies**
Health care systems	**Lack of patient education programs**	**Engage at government level between sectors to address education and environmental barriers**
	Environmental barriers to lifestyle modification	
	Lack of training initiatives for health care workers	**Subsidize training initiatives**
	Lack of country-specific protocols for screening	**Develop region-specific protocols for screening**
	Lack of, or inadequately supported, screening programs—staff, equipment, space	**Provide government-subsidized screening programs**
Diagnosis of Heart Failure—Factors That Delay Diagnosis and Result in Delayed Treatment Initiation		
Patient factors	Limited access to health care facilities with sufficient expertise to diagnose HF	Standardize costs for investigation, lobby for government-driven cost subsidies for essential diagnostic investigations
	Affordability of specialized investigations	
	Late presentation due to socioeconomic status, poor education, or rural isolation	Engage across multiple sectors to improve socioeconomic status, education, living conditions, road access, transportation services
	Patient fears, social implications, and stigma of having a diagnosis of HF	Engage in the community to improve patient awareness and education
Health care workers	Lack of education and training among physicians about HF diagnosis and treatment	Improve awareness of diagnostic criteria and clinical practice guidelines
	Lack of downstream support from specialist services to facilitate referral	Facilitate interaction between primary level health care workers and specialists
Health care systems	Resource limitations at the various levels of care	Provide access to investigations necessary to diagnose or exclude HF at a primary care level—e.g., natriuretic peptide, point-of-care echocardiography
	Lack of the appropriate tests/equipment to make a HF diagnosis—ECG, echocardiogram, natriuretic peptide	Implement health care worker outreach programs
	Lack of funding for experienced and/or qualified staff	Establish referral protocols to ensure equity of care—accessibility to diagnostic services
Treatment of Heart Failure—Accessibility and Affordability of Therapies		
Patient factors	**Out-of-pocket expenditure for medications, hospitalization, or intervention**	**Ensure availability of application for disability compensation, if appropriate, and engage with employers**
	Adherence on treatment	**Address adherence to treatment**
	Failure to attend follow-up—travel time and transport cost, leave from work, lack of child-care services, impaired mobility due to advanced disease	**Disseminate patient education (pamphlets, waiting room education initiatives, nurse-driven counseling) to improve patient awareness**
	Patient fears and lack of understanding about HF treatment	**Promote patient-driven HF associations and family and/or community engagement**
	Advanced disease at presentation due to late presentation to health care facility	

(continued)

TABLE 1. Continued

Level	Roadblocks	Potential Solutions
Health care workers	Clinician inexperience and lack of adherence to guidelines	Offer periodic training of health care professionals
	Poor tolerability of drugs due to inadequately treated congestion, side effects, or rapid titration	Provide summarized guideline-based protocols to assist clinicians in practice
	Management challenges related to persistent congestion	Disseminate clinician education on drug therapy side effects, titration protocols, red flags, monitoring (e.g., digoxin toxicity)
	Inadequate dosing of diuretic therapy, poor absorption of oral diuretics, diuretic resistance	Develop problem-based training initiatives for doctors and nurses
	Reduced renal perfusion and/or renal impairment	Dosing of diuretic agents and use of combination diuretic therapy
	Failure to optimize drug therapies directed at neurohormonal activation (RAAS)	Indications for hospitalization for IV diuresis (±inotropes)
	Failure to titrate doses of medical drug therapies	Monitoring of renal function and management of renal impairment in HF
	Infrequent follow-up	Introduction and titration of disease-modifying therapies
	Failure to identify and manage precipitating factors (e.g., anemia) and comorbidities	Counsel patients regarding adherence, potential drug side effects, fluid and salt restriction, weight-guided adjusted diuretic therapy
	Failure to identify and treat underlying cause of HF	Establish nurse-run clinics for follow-up
	Failure to refer patients for advanced HF therapies (e.g., drug therapies, devices, transplant, surgery, percutaneous intervention)	Standardize investigations in HF at different levels of care, aimed at identifying etiologies, precipitating factors, and comorbidities
	Lack of knowledge about available services for advanced HF care	Develop referral protocols specific to local resources and services to facilitate appropriate referral
Health care systems	Lack of availability of essential medications	Create a national EDL listing of essential medications
	Lack of affordability of essential medications	Ensure availability of EDL-listed drug therapy
	Lack of monitoring of drug quality	Implement quality assurance strategies
	Lack of standardized procurement protocols	Implement cost-reducing strategies—development and procurement of generic therapies, standardization of drug costs, tendered procurement of drugs
	Pharmacy administrative challenges and stock-outs	Lobby for government-subsidized care
	Lack of appropriately trained pharmacists	Develop HF-specific services at various levels of care
	Lack of advanced HF specialist services	Develop industry-related initiatives to reduce costs of devices and equipment
	Lack of surgical and percutaneous intervention expertise and/or facilities	Encourage private fundraising initiatives
	Lack of rehabilitation services	Collaborate with NGO and government
	Lack of palliative care programs	Invest in HF-directed research initiatives—directed at new and affordable therapies, evidence-based health care performance measures, cause and effect
	Prolonged waiting periods related to service delivery	Develop e-health platforms for monitoring

CVD, cardiovascular disease; ECG, electrocardiogram; EDL, essential drug list; HF, heart failure; IV, intravenous; NGO; nongovernmental organization; RAAS, renin-angiotensin-aldosterone system; WHF, World Heart Federation.

ROADBLOCKS AND SOLUTIONS

This section of the WHF Heart Failure Roadmap has been developed in consultation with WHF Members who were offered the opportunity to comment, via a WHF survey, on proposed roadblocks and solutions relevant to their specific contexts. WHF Members were asked to comment on the following: 1) the setting for care; 2) the roadblock(s) and evidence; 3) an integrated approach to specific solutions; and 4) examples of initiatives that have been implemented in practice. A summary of the identified roadblocks and possible solutions is presented in Table 1. The WHF survey, rolled out using the snowball sampling method, gathered >100 responses regarding key questions linked to the proposed ideal pathway of care for heart

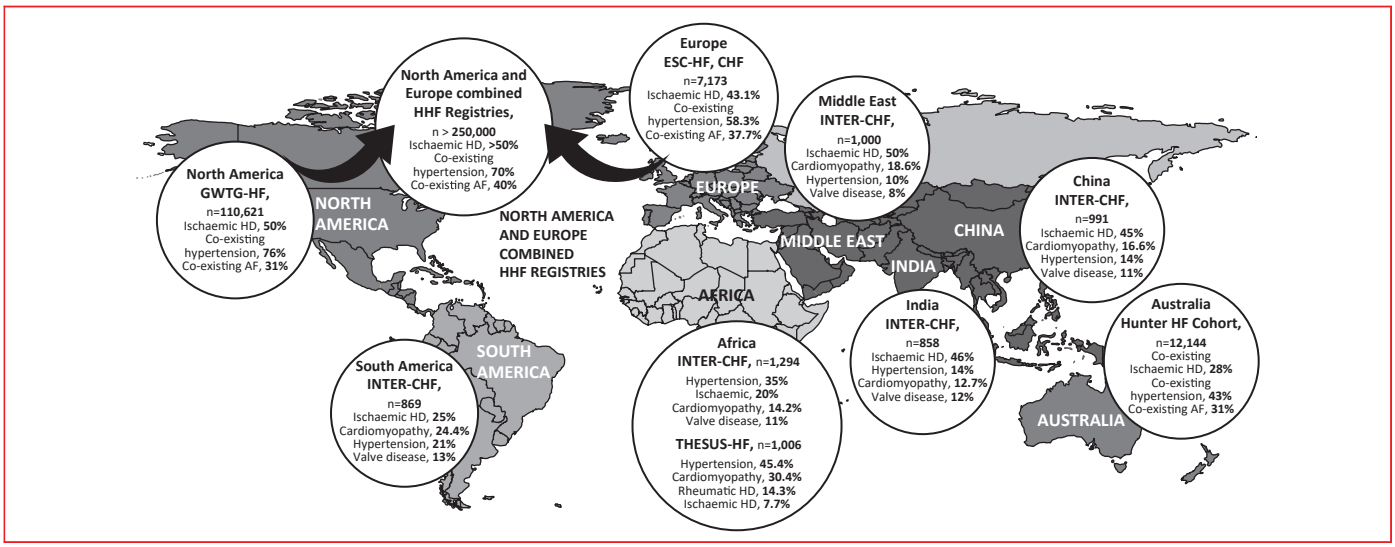

FIGURE 4. Most common causes of HF geographically. HHF (Hospitalized Heart Failure) Registries include ADHERE (Acute Decompensated Heart Failure National Registry); ADHERE-AP (Acute Decompensated Heart Failure National Registry International—Asia Pacific); AHEAD (Acute Heart Failure Database); ALARM-HF (Acute Heart Failure Global Registry of Standard Treatment); ATTEND (Acute Decompensated Heart Failure Syndromes); EFICA (Epidémiologie Francaise de l'Insuffisance Cardiaque Aigue); EHFS II (European Heart Failure Survey II); ESC-HF (European Society of Cardiology—Heart Failure); GWTG-HF (Get With The Guidelines—Heart Failure); IN-HF (Italian Registry on Heart Failure); OPTIMIZE-HF (Organized Program to Initiate Lifesaving Treatment in Hospitalized Patients With Heart Failure), RO-AHFS (Romanian Acute Heart Failure Syndromes); THESUS-HF (The Sub-Saharan Africa Survey of Heart Failure) [22], INTER-CHF (International Congestive Heart Failure) [17], Hunter HF [23]. AF, atrial fibrillation; HD, heart disease.

failure. Information gathered from this survey has enabled us to focus on high priority areas and to include specific examples of interventions and evidence in practice.

Note: Within this section not all roadblocks and solutions are discussed. The focus has been targeted on the areas that received highest levels of agreement within the WHF survey results from April 2019, with support from reported roadblocks from published findings.

Screening and Early Diagnosis

Setting: General Public and Civil Society.

A "low level of understanding among patients with heart failure" was the highest ranked perceived roadblock in early diagnosis; almost 48% of survey respondents cited this as the highest, or second highest, priority area in the prevention of heart failure in the general population. In addition, a well-noted barrier in both the published reports and the WHF survey, was "a low level of awareness and knowledge on symptoms of heart failure among health care professionals, particularly at primary care level" [42], and "the general public" (SHAPE [Study Group on HF Awareness and Perception in Europe] study) [48,49]. More recent studies reiterate that awareness of heart failure has not improved in the past 10 years, despite a rising incidence of heart failure worldwide, with a reported lifetime risk of 1 in 5 [50]. Low awareness of the symptoms associated with heart failure in communities may delay the presentation of patients to a health care facility, potentially postponing diagnosis and treatment. Heart failure has and continues to be fraught with misunderstandings, inaccuracies, and misconceptions [43].

Possible solutions to overcome low awareness of heart failure requires local, national, regional, and international efforts to improve the public's understanding of heart failure using all possible communication channels and community-based healthy living programs. The website www.heartfailurematters.org is a useful and easy-to-access source of information for patients, families, and caregivers, and is translated into 9 languages [51]. European Heart Failure Awareness Week, Heart Failure Awareness Week—"Do Your Part, Know Your Heart" Campaign (Heart Failure Society of America) and "Keep it Pumping" Campaign (Cardiology Society of India) are examples of programs designed to create awareness among patients and caregivers and gather the support of national societies. Whereas evidence is lacking in the effectiveness of awareness campaigns in heart failure specifically, research in other disease areas indicates that increased awareness directly correlates with earlier detection and diagnosis [52,53]. The key action area is to create open, direct, and innovative communication opportunities that all people involved in the global fight against heart failure can actively support.

Screening

Screening patients for asymptomatic LV systolic dysfunction, risk of heart failure, or minimal symptoms such as

TABLE 2. Summary of HF treatment guidelines

	ESC 2016 (Evidence Class, Level)	ACCF/AHA 2013/2016 (Evidence Class, Level)
Recommended therapies to prevent or delay the onset of HF ACCF/AHA Stages A and B	Treatment of hypertension (I, A) Treatment with statins in patients with CAD or at high risk of CAD (I, A) ACE-I can be considered in patients with asymptomatic LV dysfunction with or without a prior MI (I, A; I, B). ACE-I can be considered in patients with stable CAD regardless of LVEF (IIa, A) BB in asymptomatic LV dysfunction and prior MI (I, B) Empagliflozin can be considered in DM2 (IIa, B) Lifestyle modification—smoking cessation (I, C), alcohol intake reduction (I, C), other risk factors reduction (IIa, C)	Stage A: Treatment of hypertension and lipid disorders (I, A) Treatment of other conditions—obesity, DM, tobacco use, and cardiotoxic agent avoidance (I, C) Stage B: ACE-I in asymptomatic patients with reduced EF with or without a history of MI or ACS (I, A) and BB in asymptomatic patients with reduced EF with (I, B) or without (I, C) a history of MI and/or ACS Statins in patients with a history of MI and/or ACS (I, A) Treatment of hypertension (I, A)
Diuretics to relieve symptoms and signs of congestive HF ACCF/AHA Stages C and D	Diuretics are recommended to reduce signs and symptoms of congestion (I, B). Loop diuretic agents produce a more intense and shorter diuresis than thiazides. The combination may be used to treat resistant edema	Diuretics are recommended in patients with HFrEF who have evidence of fluid retention to improve symptoms (I, C). Loop diuretic agents are preferred; however, thiazide diuretic agents may be considered in hypertensive patients with mild fluid retention
Recommended first-line OMT for symptomatic HF—see guidelines for details on dose titration ACCF/AHA Stages C and D	ACE-I and BB are recommended in patients with HFrEF (I, A) MRA is recommended for patients with HFrEF who remain symptomatic despite treatment with an ACE-I and a BB (I, A) ARB can be used in ACE-I—intolerant patients (I, B)	ACE-I and BB (bisoprolol, carvedilol, or metoprolol) are recommended in all patients with HFrEF (I, A) MRA is recommended in patients with NYHA functional class II—IV HF with LVEF ≤35% (I, A), or following an acute MI in patients with LVEF ≤40% who develop HF or have DM (I, B)—see guidelines for strategies to minimize hyperkalemia ARB can be used in ACE-I—intolerant patients (I, A)
Recommended therapies (where resources allow) in patients with LVEF ≤35% that remain symptomatic despite first-line OMT ACCF/AHA Stages C and D	Drug therapies: Ivabradine for patients in sinus rhythm with HR ≥70 beats/min (IIa, B), or in patients unable to tolerate BB (IIb, C) ARNI to replace ACE-I in symptomatic patients (able to tolerate ACE-I or ARB and on OMT) (I, B) Device therapies (only I, A/B recommendations): CRT for symptomatic patients with HF in sinus rhythm and LBBB, with QRS interval ≥150 ms (I, A), or QRS interval 130 to 149 (I, B). Consider CRT rather than RV pacing for patients with an indication for ventricular pacing and high-degree AV block ICD for patients with LVEF ≤35% despite OMT (IHD—I, A; DCM—I, B) or history of a VT/VF (I, A) Mechanical circulatory support and transplantation as per guidelines	Drug therapies: Ivabradine may be used in patients in sinus rhythm with HR ≥70 beats/min, on OMT including maximal tolerate BB dose ARNI may be used in conjunction with a BB and MRA in selected patients with HFrEF (I, B-R) Device therapies (only I, A recommendations listed): CRT for patients with LVEF ≤35%, sinus rhythm, LBBB, QRS interval ≥150 ms and Class II to IV (ambulatory) symptoms (I, A for Class III/IV, and I, B for Class II) ICD for primary prevention of SCD in selected patients with LVEF ≤35% and NYHA functional class II/III symptoms on OMT with an expected survival of >1 yr (I, A) (at least 40 days post-MI, if present) Mechanical circulatory support and transplantation as per guidelines (Stage D)
Additional therapies for symptomatic patients with HFrEF ACCF/AHA Stage C and D	Digoxin may be considered in patients in sinus rhythm on OMT to reduce hospitalizations (IIb, B) Combination of hydralazine and isosorbide dinitrate can be considered in black patients on OMT (IIa, B), or in patients unable to tolerate ACE-I/ARB (IIb, B)	Digoxin can be given to patients with HFrEF (IIa, B) The combination of hydralazine and isosorbide dinitrate is recommended for African Americans with NYHA functional class III to IV HFrEF receiving OMT with ACE-I and BB (I, A) or in patients who cannot be given an ACE-I or ARB (IIa, B)

(continued)

TABLE 2. Continued

	ESC 2016 (Evidence Class, Level)	ACCF/AHA 2013/2016 (Evidence Class, Level)
Treatments with unproven benefit in symptomatic patients in HFrEF	Statins (unless otherwise indicated); anticoagulation or antiplatelet therapy (unless otherwise indicated); renin inhibitors	Nutritional supplements, hormonal therapies
Treatments that may cause harm in patients with HFrEF	**Thiazolidinediones, NSAID or COX-2 inhibitors, diltiazem, verapamil, ARB in combination with ACE-I and MRA, ARNI in combination with ACE-I, CRT is contraindicated if QRS interval is ≤130 ms**	**Verapamil, ARB in combination with ACE-I and MRA, long-term infused positive inotropic agents, ARNI should not be given in patients with a history of angioedema or with an ACE-I (36-h washout period)**

ACCF/AHA stages are defined as follows: Stage A as being at high risk but without structural heart disease or symptoms of HF; Stage B as structural heart disease but without signs or symptoms of HF; Stage C as structural heart disease with prior or current symptoms of HF; and Stage D as refractory HF requiring specialized interventions.
ACCF, American College of Cardiology Foundation; ACE-I, angiotensin-converting enzyme inhibitor; ACS, acute coronary syndrome; AHA, American Heart Association; ARB, angiotensin receptor blocker; ARNI, angiotensin receptor neprilysin inhibitor; AV, atrioventricular; BB, beta-blocker; CAD, coronary artery disease; COX-2, cyclooxygenase 2; CRT, cardiac resynchronization therapy; DCM, dilated cardiomyopathy; DM2, diabetes mellitus type 2; ESC, European Society of Cardiology; HF, heart failure; HFrEF, heart failure with reduced ejection fraction; HR, heart rate; ICD, implantable cardioverter-defibrillator; IHD, ischemic heart disease; LBBB, left bundle branch block; LV, left ventricular; LVEF, left ventricular ejection fraction; OMT, optimal medical therapy; MI, myocardial infarction; MRA, mineralocorticoid receptor antagonist; NSAID, nonsteroidal anti-inflammatory drugs; NYHA, New York Heart Association; RV, right ventricular; SCD, sudden cardiac death; VF, ventricular fibrillation; VT, ventricular tachycardia.

mild dyspnea is not straightforward and there is no single investigation that can conclusively confirm a diagnosis of heart failure [9]. Evidence continues to emerge for implementing standardized screening for heart failure [54]. Screening of high-risk patients using algorithms such as the SCORE (Systematic COronary Risk Evaluation) Risk Charts or the Framingham risk calculator have reported mixed success [55]. Targeting high-risk populations require effective strategies for identifying at-risk patients within clinical practice [55]. Whereas current guidelines underline the importance of natriuretic peptides for the purpose of early diagnosis of heart failure, evidence is building in support of their use in prevention and screening in high-risk individuals [54–56]. Examples of the use of natriuretic peptides in practice is further discussed within the diagnostic section of this document.

For an integrated approach to improving awareness of heart failure, see Table 3 [54,57,58].

Diagnosis

Setting: Primary Care, Community Care, Specialist Centers.

Making an accurate comprehensive diagnosis requires a range of diagnostic tools and information, in conjunction with clinical judgment and expert knowledge. Whereas the diagnosis of patients presenting with the classic symptoms of heart failure can be relatively straightforward [59], it can be more difficult in the early stages of disease when symptoms and signs may be less obvious, particularly if there is limited availability of the necessary investigative modalities [32]. A number of studies have sought to investigate clinically relevant diagnostic research at the primary care level in the detection of heart failure [60–62] subsequently confirmed following investigations by a cardiologist at a specialist clinic [61].

An Integrated Approach to Address Roadblocks to Diagnosis, Examples in Practice. *Limited investigations at primary care level:* The role of primary care in the detection and diagnosis of heart failure is critical [63]. Disparities in the diagnosis and management of heart

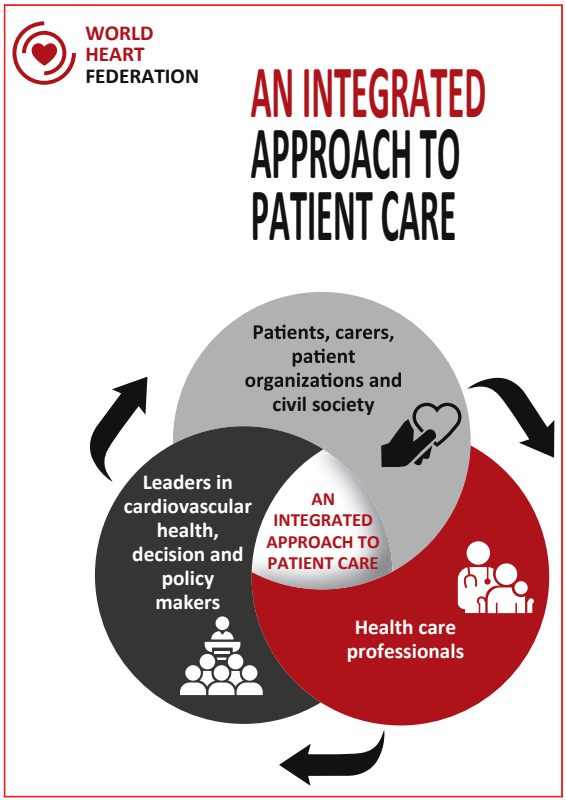

FIGURE 5. An integrated approach to patient care.

failure patients have been reported in various studies worldwide, highlighting the importance of training health care providers within the primary care settings to improve patient outcomes. One example in practice was the launch of the One Simple Blood Test campaign by the Pumping Marvellous Foundation in the United Kingdom to raise awareness among general practitioners on the use of natriuretic peptides testing to facilitate earlier diagnosis of heart failure at the primary care level [64–66]. There are an increasing number of studies that support the use of natriuretic peptides biomarkers in early detection of heart failure [9,65,66].

Improving access to diagnostic tests: Late presentation of heart failure patients (due to poor socioeconomic status, low levels of education or rural isolation) was the highest ranked roadblock related to diagnosis from the WHF survey, with 89% of survey respondents in agreement. Another frequently cited roadblock was access to specialist clinics for diagnosis and management of heart disease. Echocardiography is the single most important diagnostic imaging technique [67], yet 10% to 25% of patients admitted to hospitals in Europe and the United States with a primary diagnosis of heart failure do not undergo echocardiography [68]. Overcoming this barrier requires: 1) the improvement of service delivery models; and 2) upskilling and task shifting of specific skills of health care workers along the care pathway.

For early detection and diagnosis, there is a need to commission cost-effective testing opportunities, most notably for echocardiography [8] and natriuretic peptides [69] to facilitate the diagnosis of heart failure. Both these recommendations are set forth in the 2016 *Focus on Heart Failure* report [70]. It is well recognized that CVD is common in LMIC, and 44% of patients with newly diagnosed CVD present with heart failure [71]. In Africa, a large percentage of the population simply do not have access to the necessary care, with limited access to doctors, particularly specialists residing in capital cities, and have challenges associated with transportation, particularly in rural areas [72].

The following example tells a compelling story of an effort, supported of the Rwandan Ministry of Health, to reach a large at-risk population in Rwanda. With an aim of decentralizing services for heart failure, integrated nurse-led and physician-supervised clinics were set up in 2 rural public-sector district hospitals. A strategy to disseminate the use of portable echocardiography and simplified algorithms for diagnosis was established. Nurses were trained to perform and interpret limited echocardiographic studies using visual qualitative inspection to make a preliminary diagnosis, with a confirmatory diagnosis made following referral to a cardiologist. This simplified approach to early diagnosis in a resource-limited setting is just an example of how to provide care in difficult-to-reach populations [73]. Access to specialist care at a district level can also be achieved by arranging rotational specialist visits and may help to address a number of reported roadblocks along this care pathway.

For an integrated approach to improve access to diagnostic tests, see Table 4 [74,75].

Treatment

Setting: Specialist centers, primary care, community care centers, home care visits.

The aim of heart failure treatment is to improve life expectancy and quality of life [76]. Within the pathway of care, initiation of treatment and therapeutic strategies for heart failure patients varies considerably depending on the cause of heart failure. Patients with asymptomatic LV systolic dysfunction may follow a treatment pathway that differs considerably from the approach for patients with overt heart failure following a cardiac event [9]. Determining the primary diagnosis can be particularly challenging in patients with multiple cardiovascular and noncardiovascular comorbidities, and diagnostic uncertainty may sometimes delay the implementation of appropriate treatment strategies. Treatment pathways may vary depending on disease severity, the underlying cause, and the classification (HFrEF, heart failure with midrange ejection fraction, or heart failure with preserved ejection fraction) of heart failure and may involve nonpharmacological, pharmacological, and invasive (percutaneous or surgical) interventions [8]. In *Disease Control Priorities, Third edition,* chapter 10, "Heart Failure," offers a summary report of heart failure interventions applicable across geographic settings [77].

Medication may help to slow disease progression, improve symptoms, and decrease hospital readmissions in heart failure patients [76,78], yet adherence to medication remains among the greatest perceived barriers to care among health care professionals and researchers in cardiovascular health [79–81]. This perception was reflected in the WHF survey to Members with "adherence on medication" reported as the greatest barrier (over 90% agreement) to best-practice treatment. Additional barriers include a low level of knowledge among patients about the medication they are prescribed [82], and prescribed treatment may not be in alignment with published guidelines and evidence-based therapy [83].

An Integrated Approach to Address Roadblocks to Treatment, Examples in Practice. There are a number of trials and studies that support the positive effect of patient interventions pre-discharge and at 60 and 90 days following hospital admission, particularly with regard to medication adherence (IMPACT-HF [Initiation Management Predischarge: Process for Assessment of Carvedilol Therapy in Heart Failure] trial [84]; BRING-UP [Beta-blockers in Patients With Congestive Heart Failure: Guided Use in Clinical Practice] [85]; OPTIMIZE-HF [Organized Program to Initiate Lifesaving Treatment in Hospitalized Patients With Heart Failure] [86]). To design targeted interventions, better understanding about the factors that lead to poor adherence to medications from the patient and

TABLE 3. An integrated approach to improving awareness of heart failure

Target	Roadblock	Possible Solutions
Patients, carers, families, patient organizations, and civil society	Lack of awareness and lack of knowledge of heart failure	Support patient organizations to *communicate* with the general public, patients, and caregivers by providing the information they need to empower patients to make informed decisions on seeking treatment, identifying risks, and playing a role in the management of their own health.
Patients, carers, families, patient organizations, and civil society		Harness *advocacy* as a powerful tool to bring together those with a common cause to raise the profile of heart failure on national agendas, thereby raising awareness of heart failure among patients, but also among decision and policy makers.
Leaders in cardiovascular health		Strengthen *leadership* among policy and decision makers, so they better recognize and understand the challenges of heart failure care. Policy continues to fail in making the essential link between scientific evidence to set policy decisions.
Leaders in cardiovascular health		Drive *action among leaders* to reduce inequalities across geographic settings. Strengthen *communication* across sectors to ensure alignment in strategies from national to urban and rural settings with a view to putting heart failure on national priority agendas.
Health care workers (primary and secondary care setting)		Work *collaboratively* with patients to reduce their risk of developing heart failure and help them to manage their health. Build *evidence* on the use of natriuretic peptide-based screening and collaborative care.
Evidence in Practice PAHO Rallies New Partners for Chronic Disease Prevention: the Pan American Health Organisation (PAHO) brought together health advocates across the continent to become partners in a public-private effort to fight NCD focusing on key actions areas including changing policy, reducing risk factors, and improving treatment. "Policy makers' perceptions of the high burden of heart disease in rural Australia" [57]: a paper highlighting inequality in resourcing, and political pressure and education as key constraints to evidence-based policy in rural communities. Pan African Ministries of health meeting on hypertension: an example of a regional meeting involving ministries of health, education, agriculture, transport and finance, among other stakeholders, to support a move from science into policy and to leverage support for key recommendations in addressing hypertension in Africa [58]. STOP-HF (Natriuretic peptide-based screening and collaborative care for heart failure) randomized study: the first reported example to show a reduction in newly diagnosed heart failure, suggesting that a targeted strategy for the prevention of heart failure using natriuretic peptides and collaborative care in a community population may be effective [54].		

NCD, noncommunicable diseases.

community perspective is required. Studies for other chronic conditions, such as the antiretroviral qualitative study in human immunodeficiency virus (HIV) conducted in South Africa [87], provide valuable insights into population-specific challenges related to adherence.

The economic burden of heart failure, particularly the cost related to hospitalizations, has generated research interest into the various models of care that may improve outcomes, particularly rehospitalization [88]. Several studies have successfully shown the importance of community-based programs in improving patient adherence to medication [80,89] and reducing hospitalization [90]. In an effort to improve medication adherence for antiretroviral therapy in HIV, Antiretroviral Therapy Clinics in South Africa have introduced a "dual solution approach." This approach focuses on pairing up "community-based patient follow-up programs and patient education" initiatives (discussed in more detail in the Monitoring section) on key messages and specific information considered essential for patients to manage their disease.

For other possible solution focused on treatment, see Table 5 [89,91–94].

Monitoring

Setting: Primary care, community care centers, home care visits, specialist centers.

Heart failure monitoring refers to the follow-up of patients to detect and treat the signs and symptoms of heart failure to prevent disease progression. Recurrent hospitalizations are common in heart failure [8,9] and may be a consequence of disease progression, suboptimal treatment, a lack of psychosocial support, poor diet and/or impaired capacity for overall self-care [92,95]. A collaborative multidisciplinary approach is often required to reduce hospital readmissions and improve quality of life [96,97]. A lack of knowledge of the purpose of medications and how to self-manage symptoms of deterioration [98,99] was the highest reported roadblock to best patient care. Furthermore, a limited understanding of heart failure among patients and caregivers is

TABLE 4. An integrated approach to improve access to diagnostic tests

Targeted at	Roadblocks	Possible Solutions
Patients, carers, families, patient organizations, and civil society	Lack of access to primary care clinics for diagnosis	Implement patient *communication* and *education* initiatives that are essential to deliver best-practice care to heart failure patients. Early detection and diagnosis are uniformly linked to awareness and prevention. Recognizing the signs and symptoms of heart failure, understanding specific risk factors, and communicating with health care professionals is an essential step.
Leaders in cardiovascular health	Lack of knowledge among the general public to recognize symptoms and seek medical attention	Improve access for patients to overcome social inequalities and late presentation due to poor education or rural isolation. Invest in *leadership and agency in health system planning* to set up decentralized heart failure clinics linked to centralized advanced treatment centers.
Health care workers (primary and secondary care setting)		Support patients with low health literacy using e-health in a collaborative approach to care. Appoint experts to lead heart failure *care and advocacy* across settings and disciplines. This is an evidence-based consensus policy recommendation that focuses on an integrated approach to care to develop protocols, training and local auditing [74].
Evidence in Practice Decentralized heart failure centers established linked to a centralized care unit across South India to improve access for patients: this intervention has yet to be published but was shared with WHF during the survey process. HeLP-GP (Health eLiteracy for prevention in General Practice) intervention from Australia [75]: this study investigates the impact and outputs of a mobile health application for adults with lower levels of health literacy in the primary care setting.		

WHF, World Heart Federation.

reflected by reports of poor correlation between symptoms, such as breathlessness, and the disease itself [44,45,98].

An Integrated Approach to Address Roadblocks to Monitoring, Examples in Practice. *Patient education:* Educating patients is central to patient care and has been shown to improve patient outcomes and quality of life [99,100]. There are numerous approaches to patient education, and consideration of different learning styles in the dissemination of key messages is essential when choosing an approach. The use of blended learning and a multimethod approach tailored to patient needs may be required [101,102]. In addition, follow-up programs must consider the most appropriate intervention for each patient according to their specific needs [103]. The

TABLE 5. Other possible solutions focused on treatment

Targeted at	Roadblock	Possible Solutions
Patients, carers, and health care professionals	Lack of medication adherence	Encourage informed decision making with patients and carers. Equip patient education initiatives with behavioral supports to improve medication adherence. Implement patient education programs and interventions to support treatment adherence.
Leaders in cardiovascular health		The treatment of patients with a polypill that is affordable [91] is well reported to improve adherence. This solution could well be adapted for heart failure [92]. Policy interventions that reduce direct costs to patients for prescriptions through reduced medication copayments or improved prescription drug coverage have been shown to improve adherence to medication.
Health care workers (primary and secondary care setting)		Take a collaborative approach to care that has been shown to systematically improve adherence to medications.
Evidence in Practice World Health Organization and Sri Lanka study: underlines effectiveness and safety of treating patients with a polypill [93]. Copayment reductions: generate greater medication adherence in targeted patients 2010 [94]. Pharmacist intervention to improve medication adherence in heart failure: a randomized trial 2007 [89].		

TABLE 6. An integrated approach to improving patient monitoring and follow-up

Targeted at	Roadblock	Possible Solution
Patients, carers, families, patient organizations, and civil society	Lack of follow-up programs for patients	Improve health literacy among patients through targeted programs. *Education* for self-care through follow-up programs has been shown to have a positive impact on reduced mortality and reduced hospitalization.
Leaders in cardiovascular health	Lack of collaboration across care settings	Implement education and capacity-building programs for health care professionals at primary and community care level as a first-line approach to improving monitoring and follow-up of patients.
Health care workers (primary and secondary care setting)		Implement interventions and follow-up treatment programs, including mHealth and e-health interventions. Where this may be difficult to achieve telephone support services have also shown better self-care behavior.
Evidence in Practice CardioMEMS heart failure system (Abbott, Abbott Park, Illinois), which measures the pulmonary artery pressure and heart rate through an implanted sensor: daily blood pressure readings transmit data to either a primary care or specialist doctor supporting continuous monitoring [107]. "Effect of a medication-taking behavior feedback, theory-based intervention on outcomes in patients with heart failure" 2011 [108]. DIAL (Randomised trial of telephone intervention in chronic heart failure) trial, which tested the effectiveness of a telephone-based intervention covering more than 50 centers and 1,500 patients: highlighted the positive impact of this follow-up program to reduce heart failure hospital admissions by 30% [106].		

mode of delivery of education may vary depending on the setting, the health care team, and how civil society organizations deliver key disease messages. Educational frameworks and design methodology are essential considerations in implementing effective education programs [104].

Disease management: A recent Cochrane review evaluated the role of disease management for patients with heart failure. Disease management refers to a model of care that emphasizes proactive and preventive care in hospitals, clinics, or homes, rather than crisis intervention as per the traditional model. These models are typically run by nurses and/or multidisciplinary teams. Data from 47 randomized clinical studies (10,869 participants) suggested that case management and multidisciplinary interventions may reduce all-cause mortality; however, there is limited evidence that disease management decreases hospital readmissions or heart failure–related deaths. Although promising, the overall quality of evidence is low and most of the studies related to disease management have been conducted in high-income countries [105].

Telemonitoring: Another recent Cochrane review evaluated the role of noninvasive home telemonitoring and telephonic support for people with heart failure [106]. The review identified 41 randomized controlled trials: 25 studies (9,332 participants) evaluating telephonic support, and 18 evaluating telemonitoring (3,860 participants). Only 2 studies evaluated both interventions and most of the studies were conducted in high-income countries. There was moderate evidence that home telemonitoring or telephonic support reduces all-cause mortality and hospitalization due to heart failure.

Whereas interventions such as education, multidisciplinary teams, disease management, and technology for monitoring are promising, their implementation and sustainability in real-world settings remain a challenge. Further implementation research is needed to fully understand how these complex interventions affect patient care and outcomes, particularly in LMIC where there is a paucity of data.

For an integrated approach to improving patient monitoring and follow-up, see Table 6 [106–108].

ADAPTING TO NATIONAL ROADMAPS—FROM PRESCRIBED RECOMMENDATIONS TO PRACTICE IMPLEMENTATION

This Roadmap describes an ideal continuum of care pathway for heart failure, explores the roadblocks along this pathway, and considers potential solutions based on available research and examples in practice. To move from prescribed global recommendations to local and national implementation, a number of specific actions are required to plan, design, and implement change. Previous Roadmaps have outlined steps for adapting suggested frameworks at the national level: multisectorial coalition; situational analyses to consider the national needs, the health care system, and policy environment; policy dialogues to identify and discuss specific barriers and potential strategies; and plan of action to design and implement specific interventions [4]. These steps provide guidance in the development of a call for action for improving heart failure care and reducing the burden of this rising epidemic. This process is well described in previous Roadmap recommendations [1–6].

The WHF implementation toolkit (Figure 6) offers a step-by-step approach to specific action areas and highlights the importance of an integration across multiple care settings. To move from a global Roadmap initiative to a national

call for action to service implementation, strong leadership and integration between sectors is required, including national ministries of health, education, labor, finance, and transport; health care system decision makers; health care professionals; and representatives from industry, patients, carers, and civil society. Bringing key leaders and stakeholders together for national Roundtable discussions to consider a unified heart failure agenda based on national and local needs is considered a necessary first step.

WHF continues to support national and regional societies and Members to raise the profile of heart failure as a priority area, by facilitating national Roundtable stakeholder discussions, national scorecards, and by creating a global network of research, through initiatives such as the WHF Emerging Leaders program, in addition to providing supporting toolkits for implementation and guidance in key actions areas such as advocacy. All WHF initiatives are aimed at supporting national efforts to reduce the growing burden of heart failure.

FINAL CONSIDERATIONS FOR THE FUTURE OF HEART FAILURE PATIENTS

With an estimated 26 million individuals living with heart failure globally [16], the burden of heart failure is felt at every level of health care: for systems and health care workers confronted by greater numbers of ill patients; and for health economies faced with increasing costs associated with heart failure. Social and geographic inequalities add to this burden for those most vulnerable. Despite challenges in the delivery of high-quality care to heart failure patients, there are many examples of successful interventions that have been implemented in various socioeconomic settings that may pave the way for a brighter future for heart failure patients.

This WHF Heart Failure Roadmap offers an outline of an ideal continuum of care pathway for heart failure that is relevant across all countries and regions. Specific roadblocks may differ depending on local context. By raising awareness of heart failure among health care professionals and key stakeholders, addressing the inequities of care to patients with heart failure, highlighting common challenges in the delivery of care globally, and bridging the care gap between knowledge and implementation, this Heart Failure Roadmap provides a platform on which to build services that prioritize patients and improve outcomes for heart failure patients.

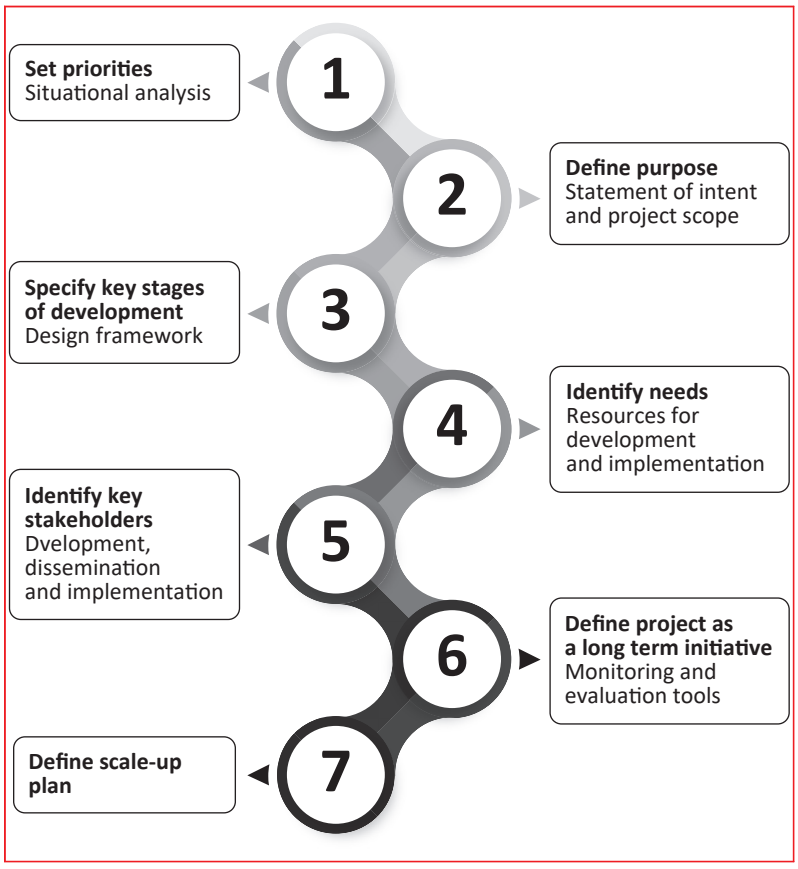

FIGURE 6. Implementation toolkit.

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