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STUDY DESIGN

Global Registries and Surveys Programme–Heart Failure (GRASP-HF): Rationale, study design and research implications

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Heart failure (HF) is characterized by increasing prevalence, high morbidity and mortality, poor quality of life, and substantial healthcare costs. Despite advancements in pharmacologic and device-based therapies, translating evidence from randomized controlled trials into clinical practice remains suboptimal. The Global Registries and Surveys Programme–Heart Failure (GRASP-HF) is a pan-European, snapshot, observational study, aiming at assessing the real-world implementation of evidence-based HF management. GRASP-HF captures both acute and chronic HF presentations to assess the adherence to the 2021 and 2023 European Society of Cardiology (ESC) HF Guidelines. It also serves as a platform for the accreditation of HF centres for the Improving Care through Accreditation and Recognition in Heart Failure (ICARe-HF) programme. This manuscript outlines the rationale, methodology, and design of GRASP-HF. Unlike previous registries, GRASP-HF ensures that all patients are consecutively enrolled over a pre-defined 2-month period, minimizing selection bias. GRASP-HF offers a real-time perspective on diagnostic strategies, use of guideline-recommended medical therapy and implementation of quality-of-care indicators. In addition, GRASP-HF addresses less explored domains by other registries, such as frailty, rare aetiologies (e.g. amyloidosis, genetic cardiomyopathies, Takotsubo syndrome), as well as non-fatal events during hospitalization and follow-up. GRASP-HF is also designed to inform ESC educational strategies and to benchmark progresses in HF care across European and non-European centres. In conjunction with ICARe-HF, annual repetition of GRASP-HF aims to facilitate continuous feedback between evidence, practice, and quality improvement. GRASP-HF will assist National Cardiac Societies in shaping national and institutional policies and will contribute with data-driven insights to future guideline development.

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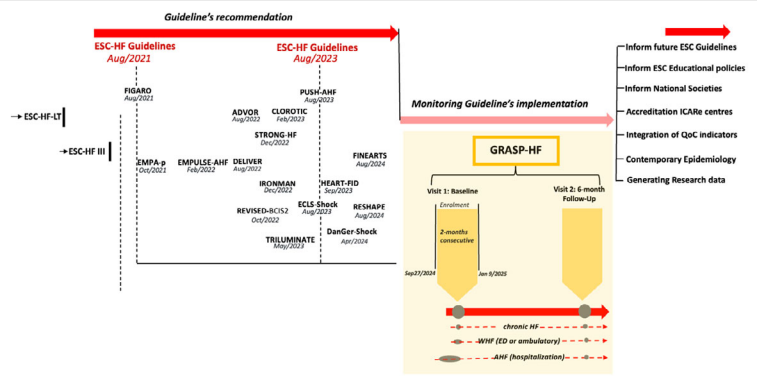
ESC GRASP-HF Study National Leaders and Investigators are listed in the Supporting Information.

[Correction added on 4 December 2025, after first online publication: Appendices has been added in this version.]

Graphical Abstract



Rationale, design and objective of GRASP-HF. Previous ESC heart failure registries did not capture trial evidence* which determined new guideline recommendations in the 2021 and 2023 ESC Guidelines. The GRASP-HF snapshot study is a prospective, international, multicentre, longitudinal study with short period of enrolment (2 months per site and up to 4 months overall) and a 6-month follow-up. Main objective of GRASP-HF is to assess adherence to guideline-recommended therapies and interventions. AHF, acute heart failure; ED, emergency department; ESC, European Society of Cardiology; ESC-HF III, European Society of Cardiology Heart Failure III registry; ESC-HF-LT, European Society of Cardiology Heart Failure Long-Term registry; GRASP-HF, Global Registries and Surveys Programme–Heart Failure; HF, heart failure; ICARe-HF, Improving Care through Accreditation and Recognition in Heart Failure; QoC, quality of care; WHF, worsening heart failure. *Clinical trials are presented in *Figure 1*.

Keywords Heart failure • Registries • Guideline implementation

Introduction

Heart failure (HF) is a growing public health challenge, characterized by increasing prevalence, high morbidity and mortality, poor quality of life, and rising healthcare costs.[1,2]

Despite notable progress in pharmacological and device-based therapies, translating evidence from randomized controlled trials (RCTs) into clinical practice remains suboptimal, particularly when system-level care disparities exist.[3] Several national HF registries[4,5] and administrative databases[6] documented a substantial geographic variation in patient management and showed that implementation of trial evidence and guideline recommendations is resource-variable. Also, there is an inherent delay between guideline publication and the real-world implementation of guideline recommendations.

The 2021 and 2023 European Society of Cardiology (ESC) HF Guidelines[7,8] have undergone substantial updates in response to recent RCTs. These include HF prevention strategies (sodium–glucose co-transporter 2 inhibitors [SGLT2i] and mineralocorticoid receptor antagonists [MRAs]) in patients with diabetes and kidney disease, new therapeutic recommendations (e.g. SGLT2i in HF with ejection fraction >50%, iron repletion strategies in chronic and acute HF), the emphasis on early and simultaneous initiation followed by rapid up-titration of guideline-recommended medical therapies (GRMTs), and decongestion strategies. Although, ESC developed several large and well-designed global registries[9–11] to describe treatment pattern in patients with HF, there was an inherent time-gap between time of data collection in these registries and the publication of the pivotal RCTs,[12–41] and subsequent changes in guidelines. Thus, previous ESC registries did not capture trial evidence[25–36] that determined updated guideline recommendations and cannot be used to analyse the implementation or adherence to the therapeutic regimens recommended by the recent ESC Guidelines[7,8] (*Figure 1*). Also, these registries[9–11] had inherent limitations related to representativity, with only a limited number of centres participating and being mainly represented by highly specialized centres. Importantly, the enrolment in previous registries was not truly consecutive, particularly due to the long enrolment time period (*Table 1*). These factors substantiate an imperious need for high-quality observational data for a periodical evaluation of contemporary practice patterns and guideline adherence.

The Global Registries and Surveys–Heart Failure (GRASP-HF) was established as a snapshot study, aiming at capturing contemporary patterns in HF diagnosis, treatment, and outcomes across diverse healthcare environments. The GRASP-HF study closely aligns with the overarching mission of the ESC, to reduce the burden of cardiovascular disease in Europe, by generating high-quality, real-world data that will inform ESC and consequently can drive improvements in clinical care, education, healthcare

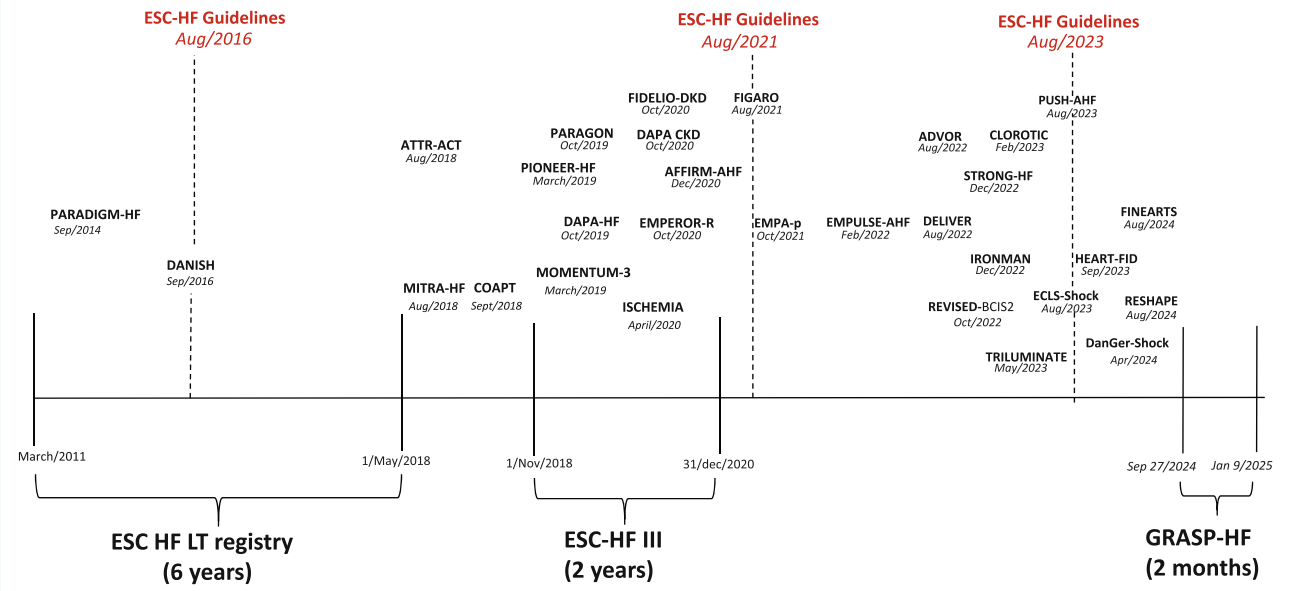


Figure 1 Time gap between publication of major randomized controlled trials*, European Society of Cardiology (ESC) Guidelines calendar and enrolment period in ESC heart failure registries. ADVOR, Acetazolamide in Decompensated Heart Failure with Volume Overload; AFFIRM-AHF, A Randomised, Double-blind Placebo Controlled Trial Comparing the Effect of Intravenous Ferric Carboxymaltose on Hospitalizations and Mortality in Iron Deficient Subjects Admitted for Acute Heart Failure; ATTR-ACT, Transthyretin Amyloidosis Cardiomyopathy Clinical Trial; CLOROTIC, Safety and Efficacy of the Combination of Loop with Thiazide-type Diuretics in Patients with Decompensated Heart Failure; COAPT, Cardiovascular Outcomes Assessment of the MitraClip Percutaneous Therapy for Heart Failure Patients with Functional Mitral Regurgitation; DanGer Shock, Danish–German Cardiogenic Shock; DANISH, Danish Study to Assess the Efficacy of ICDs in Patients with Non-ischemic Systolic Heart Failure on Mortality; DAPA-CKD, Dapagliflozin and Prevention of Adverse Outcomes in Chronic Kidney Disease; DAPA-HF, Dapagliflozin and Prevention of Adverse Outcomes in Heart Failure; DELIVER, Dapagliflozin Evaluation to Improve the Lives of Patients with Preserved Ejection Fraction Heart Failure; ECLS-SHOCK, Extracorporeal Life Support in Infarct-Related Cardiogenic Shock; EMPA-p (EMPEROR-Preserved), Empagliflozin Outcome Trial in Patients with Chronic Heart Failure with Preserved Ejection Fraction; EMPEROR-Reduced, Empagliflozin Outcome Trial in Patients with Chronic Heart Failure and a Reduced Ejection Fraction; EMPULSE-AHF, A Study to Test the Effect of Empagliflozin in Patients Who Are in Hospital for Acute Heart Failure; ESC-HF III, European Society of Cardiology Heart Failure III registry; ESC-HF-LT, European Society of Cardiology Heart Failure Long-Term registry; FIDELIO-DKD, Finerenone in Reducing Kidney Failure and Disease Progression in Diabetic Kidney Disease; FIGARO, Finerenone in Reducing Cardiovascular Mortality and Morbidity in Diabetic Kidney Disease; FINEARTS-HF, Finerenone Trial to Investigate Efficacy and Safety Superior to Placebo in Patients With Heart Failure; GRASP-HF, Global Registries and Surveys Programme–Heart Failure; HEART-FID, Ferric Carboxymaltose in Heart Failure with Iron Deficiency; IRONMAN, Effectiveness of Intravenous Iron Treatment versus Standard Care in Patients with Heart Failure and Iron Deficiency; ISCHEMIA, International Study of Comparative Health Effectiveness with Medical and Invasive Approaches; MITRA-HF, Percutaneous Repair with the MitraClip Device for Severe Functional/Secondary Mitral Regurgitation; MOMENTUM-3, Multicenter Study of MagLev Technology in Patients Undergoing Mechanical Circulatory Support Therapy with HeartMate 3; PARADIGM-HF, Angiotensin-neprilysin inhibition versus enalapril in heart failure; PARAGON-HF, Prospective Comparison of ARNI [angiotensin receptor–neprilysin inhibitor] with ARB [angiotensin-receptor blockers] Global Outcomes in Heart Failure with Preserved Ejection Fraction; PIONEER-HF, Comparison of Sacubitril–Valsartan versus Enalapril on Effect on NT-proBNP in Patients Stabilized from an Acute Heart Failure Episode; PUSH-AHF, Pragmatic Urinary Sodium-based treatment algoritHm in Acute Heart Failure; RESHAPE-HF2, Randomized Study of the MitraClip Device in Heart Failure Patients With Clinically Significant Functional Mitral Regurgitation; REVISED-BCIS2, Revascularization for Ischemic Ventricular Dysfunction; STRONG-HF, Safety, tolerability and efficacy of up-titration of guideline-directed medical therapies for acute heart failure; TRILUMINATE, Trial to Evaluate Cardiovascular Outcomes in Patients Treated with the Tricuspid Valve Repair System. *Clinical trials are presented with acronym and date of publication.

policy, and guideline development (*Graphical Abstract*). GRASP-HF is strategically synchronized and serves as a platform for the Improving Care through Accreditation and Recognition in Heart Failure (ICARe-HF) programme, by providing real-world data for the accreditation of HF centres, allowing a link between institutional performance metrics, broader policy, and guideline objectives. The ICARe-HF programme represents a pan-European quality improvement framework for HF care delivery developed by the Heart Failure Association (HFA) of the ESC. Through synchronization with the ICARe-HF programme and alignment with the 2021 and 2023 ESC Guidelines, GRASP-HF intends to act as both a monitoring tool and a strategic driver to improve HF quality

Table 1 Methodological comparisons between GRASP-HF and previous ESC registries

	ESC-HF pilot registry	ESC-HF-LT registry	ESC-HF III	GRASP-HF
Enrolment period	Oct 2009–May 2010	March 2011–Sept 2018	01 Nov 2018–31 Dec 2020	27 Sep 2024–09 Jan 2025
Type of enrolment	All period	All period	All period	2 months consecutive
No. of countries	12	33	41	45
No. of centres	136	211	220	260
No. of patients	5118	25 621	10 162	11 345
No. patients/centre/month	4.7	1.5	3.8	21.8
Follow-up	12 months	12 months	12 months	6 months

ESC, European Society of Cardiology; ESC-HF III, European Society of Cardiology Heart Failure III registry; ESC-HF-LT, European Society of Cardiology Heart Failure Long-Term registry; GRASP-HF, Global Registries and Survey Programme–Heart Failure.

of care and patient outcomes (*Graphical Abstract*). GRASP-HF also supports the development of national HF networks by supplying evidence for benchmarking, certification, and resource allocation.

Methods

Design

The GRASP-HF snapshot study is a prospective, international, multicentre, longitudinal study with short period of enrolment (2 months per site and up to 4 months overall) and a 6-month follow-up (*Figure 2*). This observational study is based on the consecutive enrolment of patients presenting to cardiology centres in ESC members, ESC affiliated countries and some non-European countries. Site selection in each participating country targets a sample of hospitals of different levels of complexity. It will focus on a broad spectrum of cardiology and HF specialty units that regularly follow patients with chronic HF and/or admit patients with acute, pre-existing or new-onset HF, in order to build up a network of centres representative of a wide spectrum of real-world HF care.

Patients are followed for 6 months (±2 weeks) after enrolment (*Figure 2*). Due to the real-world nature of this snapshot, there is no attempt to interfere with the routine clinical care of the patients who, according to disease condition, are expected to attend at least one visit during the follow-up time period. A visit close to 6 months after the in- or outpatient index entry visit allows to collect data on changes in therapeutic regimens and on outcomes, e.g. hospitalization and mortality. A phone call can replace the follow-up clinical visit when the patient cannot participate in person due to clinical or logistical reasons.

Data are collected in electronic case report form (e-CRF) via a secure web-based platform and include demographics, clinical presentation, comorbidities, diagnostic tests, pharmacological and device therapies, comorbidities, and outcomes.

Study management and organization

The GRASP-HF snapshot study is part of a broader programme of observational studies coordinated by the ESC. The main objective of this programme is to evaluate the implementation of ESC clinical practice guidelines. Oversight is provided by the ESC Patient Data Research Group, composed of domain-specific experts who identify priority topics for evaluation and appoint a Chair to lead each Study Task Force.

The organization of the GRASP-HF study includes a study Chair, study Task Force members, a Steering Committee and the ESC Registries team. The GRASP-HF Study Task Force is composed of independent scientists and experts, all being representatives of the HFA of the ESC. The protocol was written by the GRASP-HF Chair with input from the GRASP-HF Task Force (online supplementary *Appendix S1*).

The Steering Committee is composed of the Chair of the study and a National Coordinator from each participating country, as designated by each respective National Cardiac Society (Appendices I and II). The role of the ESC Registries team is to coordinate the project operationally, provide support to the Study Task Force, National Coordinators and participating centres, and ensure adherence to the registry methodological concepts. More specifically, they ensure consistent quality control and continuity to guarantee the timely completion of the study.

Selection of countries and sites

All 55 National Cardiac Societies (https://www.escardio.org/The-ESC/Member-National-Cardiac-Societies) included in the ESC network in 2024 were contacted to participate in the study and to appoint a National Coordinator. This strategy aimed to ensure representativeness of the data collected in Europe. In addition, and upon their request, countries with an affiliation with the ESC and other non-European countries were allowed to participate. Hospitals participating in the ICARe-HF programme had an obligation to enrol patients in the GRASP-HF snapshot.

Each centre participated on a voluntary basis and they had to sign a non-financial agreement with the ESC before being able to start enrolling patients. A ratio of one centre/per 3 million people was set for each country. Cardiac centres (hospitals or ambulatory clinics affiliated to hospitals) were predefined as: (A) centres without cardiac surgery and interventional procedures; (B) centres with interventional procedures but without cardiac surgery; and (C) centres with both cardiac surgery and interventional procedures. The A/B/C ratio was >2/1/1. The National Coordinators were requested to outline the profile of the medical centre and to indicate whether the proposed medical centre was tertiary/community, with/without cardiac surgery, with/without interventional cardiology. At time of study enrolment, a number of 260 active centres from 45 countries (37 ESC National Cardiac Societies, 7 ESC affiliated National Cardiac Societies and 1 other non-European without ESC affiliation) participated in the study (*Figure 3*) (online supplementary *Table S1*).

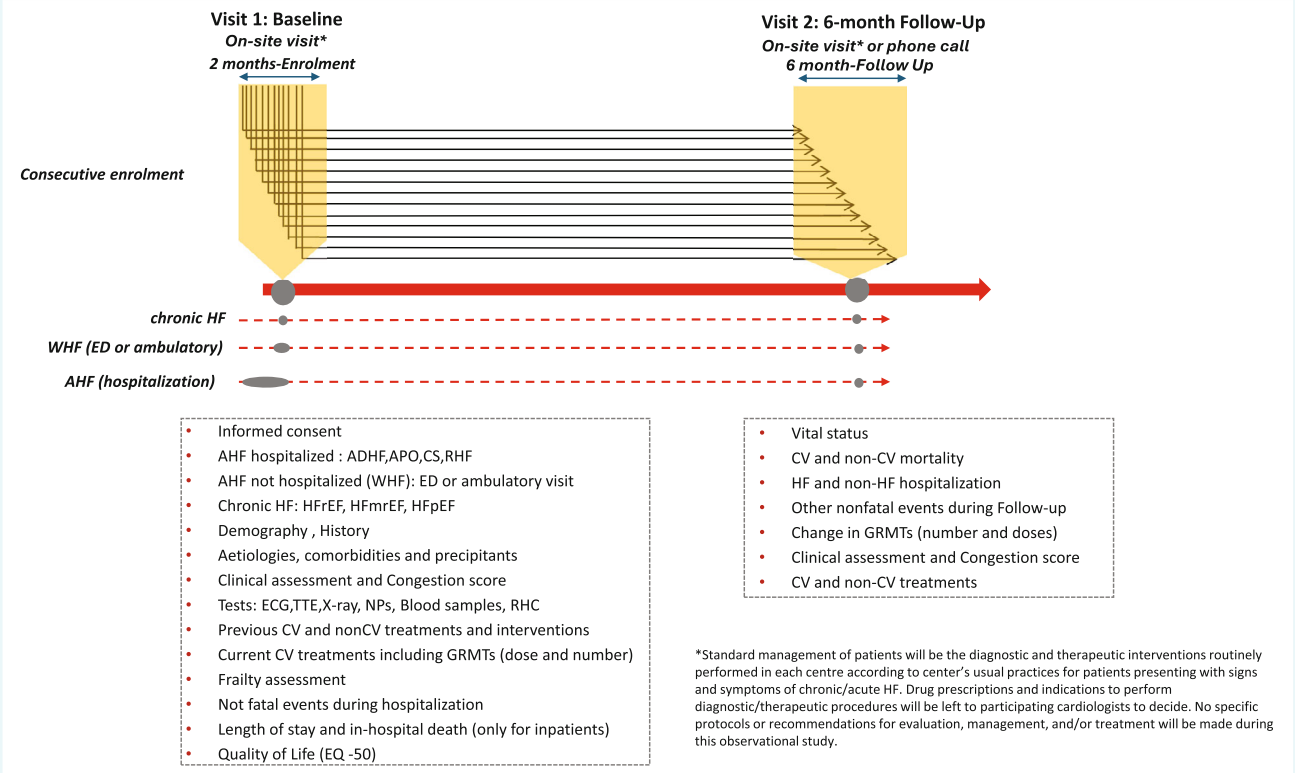


Figure 2 Overview of the GRASP-HF study design. Inclusion criteria were heart failure (HF) diagnosis in the judgement of the investigator, and that patients with acute HF/worsening HF (AHF/WHF) also needed to be treated with intravenous medications of HF (diuretics, vasodilators, and/or inotropes) and/or mechanical circulatory support or had died shortly after acute presentation before such treatment was instituted. The only exclusion criterion was age <18 years and refuse to consent to the study. Patients were eligible regardless of ejection fraction (reduced ejection fraction ≤40% [HFrEF]; mildly reduced ejection fraction EF 41%–49% [HFmrEF]; or preserved ejection fraction [HFpEF] ≥50%). AHF category included both de novo and WHF. WHF episodes defined as deterioration of HF signs and symptoms in patients with previous HF, despite previous stable background therapy, that requires urgent escalation of therapy, including hospitalization, emergency department (ED) visit, or outpatient intravenous diuretic therapy. Patients hospitalized for AHF were further classified as acute decompensated heart failure (ADHF), acute pulmonary oedema (APO), cardiogenic shock (CS) and right heart failure (RHF). CV, cardiovascular; ECG, electrocardiogram; EQ-50, European questionnaire for quality of life; GRMT, guideline-recommended medical therapy; HFrEF, heart failure with reduced ejection fraction; HFmrEF, heart failure with mildly reduced ejection fraction; HFpEF, heart failure with preserved ejection fraction; NP, natriuretic peptide; RHC, right heart catheterization; TTE, transthoracic echocardiography.

Patient population and inclusion and exclusion criteria

The GRASP-HF methodology was set to enrol consecutive adult patients with a HF diagnosis, according to current ESC criteria (Study Protocol Supporting Information as defined by 'investigator-judgement', treated for acute HF or seen in ambulatory HF clinics, with HF diagnosis at 'investigator-judgementi according to current ESC criteria (Study Protocol Supporting Information). An AHF episode included both de novo and worsening HF. Similar to ESC-HF III,[11] GRASP-HF included worsening HF episodes defined as deterioration of HF signs and symptoms in patients with previous HF, despite previous stable background therapy requiring urgent escalation of therapy, during either hospitalization, emergency department visit, or outpatient intravenous diuretic therapy (*Figure 2*).[42]

Each centre enrolled consecutive eligible patients for a time period of 2 months (*Figure 2*). However, considering the differences in the time required to obtain local regulatory approvals, and the varying start dates of enrolment, the overall enrolment period varied but did not exceed 4 months. Each centre was requested to enrol at least 15 patients, but there was no maximum number of patients. The number of patients per centre, and the number of centres involved in each country were set up in advance in consultation with the National Coordinators, who have knowledge of clinical practices specific to each country. All participating centres need an ethics approval before starting enrolment, and no data are collected before detailed information is provided to the patient and written informed consent is obtained.

Inclusion criteria allowed enrolment of HF patients irrespective of ejection fraction, or settings of care. Exclusion criteria were limited in order to ensure generalizability and include age <18 years and refusal to consent (e-CRF Supporting Information).

The enrolment period started on 27 September 2024 and ended on 9 January 2025 (*Figure 3*). At time of baseline database lock, of a total number of 11 652 enrolled patients, 307 patients were excluded and not entered in a full analysis data set (duplication errors, absence

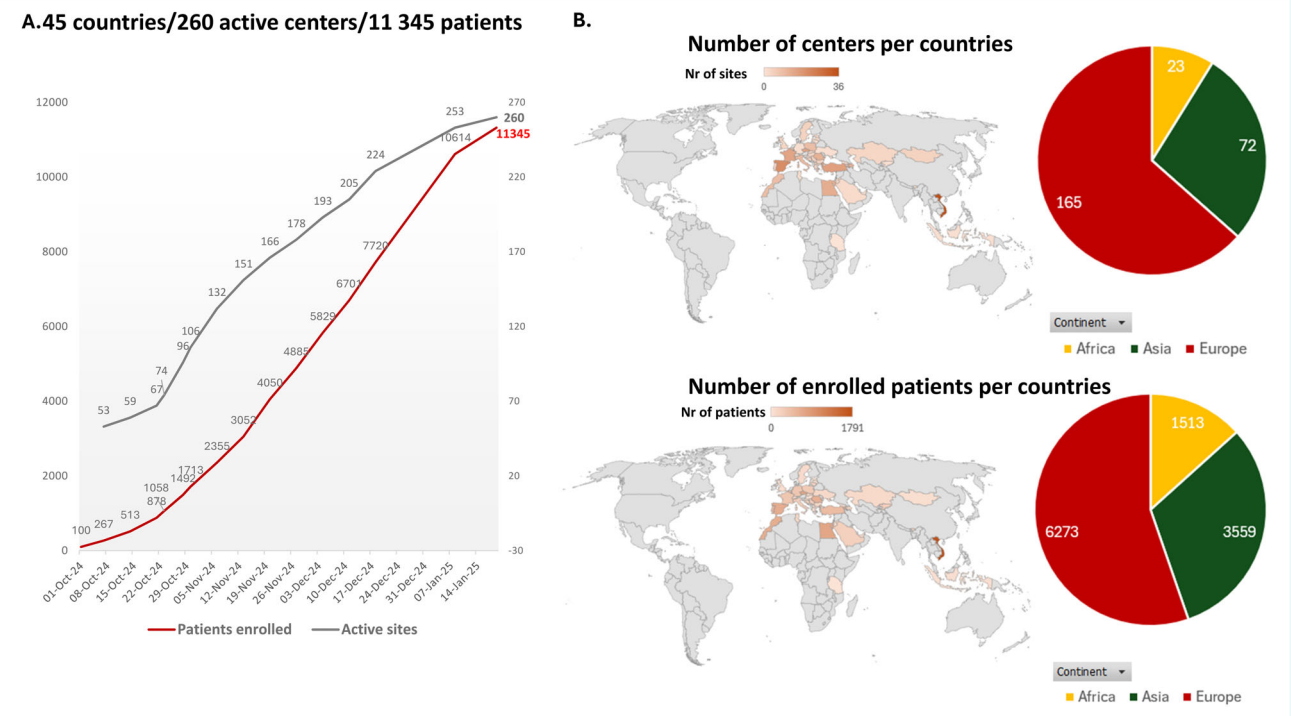


Figure 3 (*A*) Overall enrolment rate and activation of centres. (*B*) Number of patients and centres per country and continent.

of informed consent, unvalidated data). Of 11 345 patients, 5807 HF patients came from 106 ICARe centres and 5538 patients were enrolled in 154 non-ICARe centres.

Study objectives

GRASP-HF provides a valuable platform for assessing how innovations in pharmacological and device therapies translate into real-world clinical practice. While GRASP-HF is not aimed to evaluate treatment efficacy, since it is a non-interventional registry, it offers a robust framework for exploring patterns of care, implementation of GRMTs (number and doses) and other HF interventions, and heterogeneity in clinical decision-making. The primary objective of GRASP-HF is to document the clinical presentation, management, and 6-month outcome of patients with acute and ambulatory HF across participating centres, with a particular focus on adherence to the 2021 and updated 2023 ESC Guidelines on HF. Through comprehensive data collection, the registry enables the identification of treatment gaps, characterization of patient phenotypes associated with specific therapeutic pathways, and evaluation of the real-world use of disease-modifying therapies. Although causality cannot be inferred from this observational design, extensive analyses can be performed to assess the degree of implementation and the clinical profiles of patients who do or do not receive certain interventions. GRASP-HF thus contributes to a deeper understanding of patient selection for treatment use, eventual therapeutic inertia, and cause-specific outcomes associated with contemporary HF care strategies. Study objectives are further summarized below:

- To characterize characteristics and outcomes of contemporary patients with HF
- To assess adherence to guideline-recommended therapies.
- To describe treatment patterns across countries, institutions, and care settings.
- To identify under-treated populations and gaps in GRMT implementation.
- To provide real-world evidence for updating of the ESC Guidelines.
- To enable quality benchmarking and support for ICARe-HF accreditation.

Statistical considerations

The study being observational, a formal sample size has not been calculated. Descriptive statistics are presented for all patients, for chronic HF outpatients by ejection fraction and acute HF inpatients by clinical profile and are summarized baseline characteristics, treatments, and outcomes. Comparisons are stratified by age, sex, atrial fibrillation, anaemia, diabetes mellitus, estimated glomerular filtration rate, geographical region and type of centres (ICARe-HF vs. non-ICARe-HF).

Quality indicators and adherence for 2021 and 2023 recommendations are calculated.

Kaplan–Meier curves and multivariable analyses are done on different outcomes (as in-hospital deaths and 6-month all-cause deaths, cardiovascular deaths, HF hospitalizations). A backward multivariable Cox regression analysis is performed to identify the independent predictors of event. Missing data are handled by multiple imputations.

Data quality

The eCRF includes automated cross-checks for data completeness and accuracy, which trigger alerts, allowing investigators to resolve issues directly in the system. In addition, data were regularly reviewed and validated by the ESC Data Manager with study Chair for medical input. Queries were issued for clarification and correction purposes when appropriate.

In addition, quality checks were conducted by the statistician on half of the baseline database to support the data cleaning process. Two further quality checks were subsequently performed, including a final one on the complete baseline dataset.

Discussion

GRASP-HF builds upon previous registries by providing a high-granularity (internal validity) yet representative (external validity) snapshot of HF care in European and non-European countries. Its harmonization with ESC definitions facilitates data interoperability. GRASP-HF is uniquely positioned within the ecosystem of international HF registries by addressing several persistent limitations in prior observational studies.

Although, previous ESC registries[9–11] have offered valuable insights, they often suffered from heterogeneity due to evolving practices, a time-lag in relation to relevant guidelines, regional disparities in patient selection, and consecutiveness. To note, earlier registries were primarily structured around long-term enrolment phases that accumulated data over extended periods, while GRASP-HF introduces a time-synchronized 'snapshot' approach. This model allows for the yearly, repeated capture of real-world clinical practice, enabling a dynamic assessment of temporal trends and responsiveness to new evidence or guidelines. GRASP-HF also features a broader geographical reach, including a larger number of countries and centres than its predecessors, thereby strengthening geographical representation and its external validity. A key advantage of GRASP-HF is methodological aspect of 'true consecutiveness' in patient enrolment (*Table 1*). GRASP-HF mandates the enrolment of all eligible HF patients during the 2-month observational window, minimizing selection bias. While the need for consent, a mandatory feature of all ESC registries,[9–11] may introduce a selection effect, the consecutive screening process minimizes bias and preserves representativeness. This approach enhances the external validity and representativeness of the registry, ensuring that the entire spectrum of HF, from de novo to chronic and from mild to advanced stages, is adequately reflected. This feature allows GRASP-HF to better quantify care gaps, especially among underrepresented or complex populations.

Over the last 5 years, several RCTs have led to changes in the 2021 and 2023 ESC HF Guideline recommendations, but this new clinical trial evidence was not captured by previous ESC registries (*Figure 1*). GRASP-HF enables real-time monitoring of whether, when, and how these new therapies or new recommendations are adopted in clinical practice and may also assesses the impact of trial results on practice pattern and clinical outcomes (*Table 2*). Importantly, annual iteration of GRASP-HF will provide timely data on uptake of new recommendations and will inform the next ESC HF Guidelines.

Due to synchronization with ICARe-HF, GRASP-HF provides a dynamic data stream that supports ICARe-HF accreditation processes. By measuring key performance indicators across centres, GRASP-HF helps identifying best-performing institutions and disseminating models of excellence. GRASP-HF data allow for investigation into quality-of-care indicators, derived from ESC documents,[43] their validation, and their predictive value for outcomes. The integration of quality-of-care indicators provides a structured benchmark for evaluating institution-level performance. These indicators include documentation of the clinical type of HF, electrocardiogram performed during the visit, proportion of patients on individual GRMT classes, triple/quadruple GRMTs, device therapy eligibility, and post-discharge follow-up planning. These metrics are key in the ICARe-HF accreditation system and allow the translation of registry data into actionable quality improvement. The performance of centres in GRASP-HF will determine the thresholds of the quality-of-care indicators to allow transition from pre-accreditation to full accreditation in the ICARe-HF programme.

Table 2 Research domains explored by GRASP-HF

- Management of iron deficiency in chronic and acute HF
- SGLT2i in HFmrEF and HFpEF
- SGLT2i in AHF
- Rapid up-titration of GRMTs
- Decongestion strategies in AHF
- MRAs (finerenone) for the prevention of HF
- MRAs (finerenone) in HFmrEF and HFpEF
- MCS in CS
- PCI for ischaemic LV dysfunction

AHF, acute heart failure; CS, cardiogenic shock; GRMT, guideline-recommended medical therapy; HF, heart failure; HFmrEF, heart failure with mildly reduced ejection fraction; HFpEF, heart failure with preserved ejection fraction; LV, left ventricular; MCS, mechanical circulatory support; MRA, mineralocorticoid receptor antagonist; PCI, percutaneous coronary intervention; SGLT2i, sodium–glucose co-transporter 2 inhibitor.

The GRASP-HF registry is timely placed to explore a broad spectrum of contemporary and emerging clinical questions in HF, many of which have remained insufficiently addressed in previous ESC registries. By leveraging consecutive, real-world patient data from diverse European and non-European settings, GRASP-HF may identify critical gaps in practice, while also providing granular insights into patient subgroups that have historically been underrepresented in clinical research. These include, but are not limited to:

- How do HF therapies change over 6 months?
- Contemporary in-hospital mortality.
- Contemporary 6-month outcomes.
- Frailty and its impact on therapy uptake and outcomes.
- Valvular heart disease management patterns and outcomes in HF.
- Non-cardiac comorbidities (chronic kidney disease, diabetes, chronic obstructive pulmonary disease, anaemia, cancers, cognitive disorders); complex comorbidity clusters and outcome implications.
- Rare aetiologies such as amyloidosis, hypertrophic cardiomyopathy, Takotsubo syndrome, and genetic cardiomyopathies; clinical presentation patterns, and unmet treatment needs.
- Non-fatal events during hospitalization (e.g. bleeding, sepsis, bedsores, allergic reactions) or during follow-up (e.g. stroke, acute myocardial infarction, device-related complications)

- History of sudden cardiac death or familial sudden cardiac death: patterns of implantable cardioverter-defibrillator utilization, risk profiling, and care pathways.

These domains are underrepresented in most registries and are critical for tailoring future therapeutic algorithms and setting research priorities.

GRASP-HF will be conducted on an annual basis, and this would allow the registry to assess not only the implementation of the guidelines but also to contribute critical continuous real-world insights that can inform future updates. By maintaining this cycle of feedback and evaluation, GRASP-HF can serve as a bridge between evidence generation, guideline construction, and finally practical application in the clinical setting.

Importantly, GRASP-HF will also contribute to informing National Cardiac Societies in participating countries and drive enhancements in the quality of HF care at both the institutional and national levels. Furthermore, the data derived from GRASP-HF may inform educational priorities of the ESC by highlighting gaps in care and knowledge. This will help to shape targeted educational and training programmes. In the long term, GRASP-HF is expected to serve as a valuable foundation for the development of future ESC Guidelines, by offering granular, real-world insights that complement randomized trial data and ensure the guidelines remain both evidence-based and practice-relevant.

Finally, GRASP-HF can help to improve the design and conduction of future RCTs by informing about appropriate site selection and expected enrolment rates, while ensuring geographical representativity. GRASP-HF provides detailed data on baseline relevant comorbidities and frailty that influence eligibility to the study medication, and very important, provides data about real-life use of GRMTs. By capturing contemporary event rates, GRASP-HF supports a more precise sample size estimation for the future RCTs, informing about trial feasibility, and may help to identify enrichment criteria to increase event rates in selected populations.

Limitations

Patients are enrolled only in cardiology wards or outpatient clinics, thus not considering HF patients seen in other units, such as internal medicine or geriatric services, which may compromise generalizability of the study results. Several major European countries, including Norway, Denmark and Ireland, did not participate to GRASP-HF.

Compared to platforms like EuroHeart, GRASP-HF provides a 2-month snapshot rather than continuous surveillance. This may limit detection of seasonal or longitudinal trends. However, its design allows for rapid, broad participation and easier data harmonization. Also, iterative character, with annual data collection, provides a good compromise between consecutiveness and continuous data collection.

Clinical diagnosis was made by each investigator without central confirmation. There was no central committee to adjudicate cause-specific outcomes, and this may introduce a misclassification bias. Nonetheless, real-world practice often lacks central adjudication, and GRASP-HF reflects this pragmatic reality.

Currently, no universal thresholds exist for 'acceptable' performance for many quality-of-care metrics. GRASP-HF offers an opportunity to build consensus around such thresholds and develop audit tools for ICARe-HF accreditation.

Conclusions

GRASP-HF represents an international, contemporary and quality-focused registry platform that addresses the limitations of previous ESC initiatives while aligning closely with contemporary ESC Guidelines and the ICARe-HF programme. Its snapshot design, rich phenotypic characterization and policy integration, enable actionable insights to drive guideline adherence and improve HF care across Europe. Its annual implementation, especially after ESC Guideline updates, is crucial for measuring change, driving education, supporting accreditation, and ultimately improving patient outcomes.

Supplementary Information

Additional supporting information may be found online in the Supporting Information section at the end of the article.

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17 December 2025, after first online publication: Josip A. Borovac name has been corrected in this version.]

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