

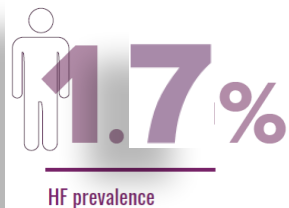
INSUFFICIENZA CARDIACA: THE REVOLUTION

HFrEF: gestione attuale e strategie per l'ottimizzazione terapeutica

Mauro Gori, MD FESC
Responsabile USS UTIC Papa Giovanni XXIII Bergamo
Università Milano Bicocca



ITALIA



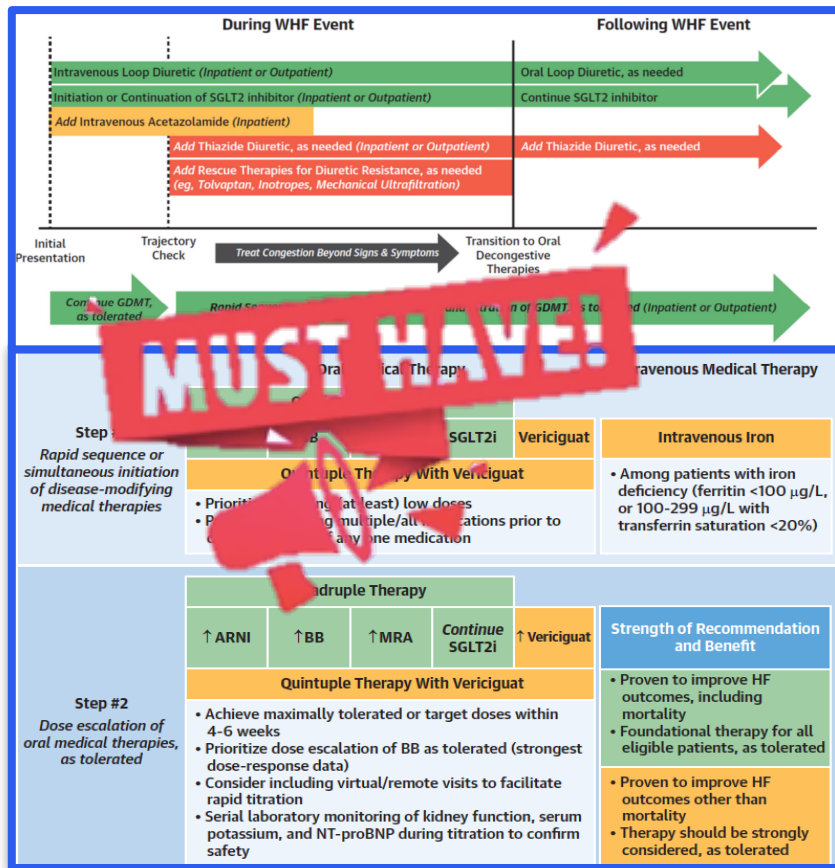
INCREASING PREVALENCE
increases with age: aprox. 15% of
people aged 85 and older¹

HUGE (INCREASING) COST
Aprox. 2.4% of the national healthcare
budget

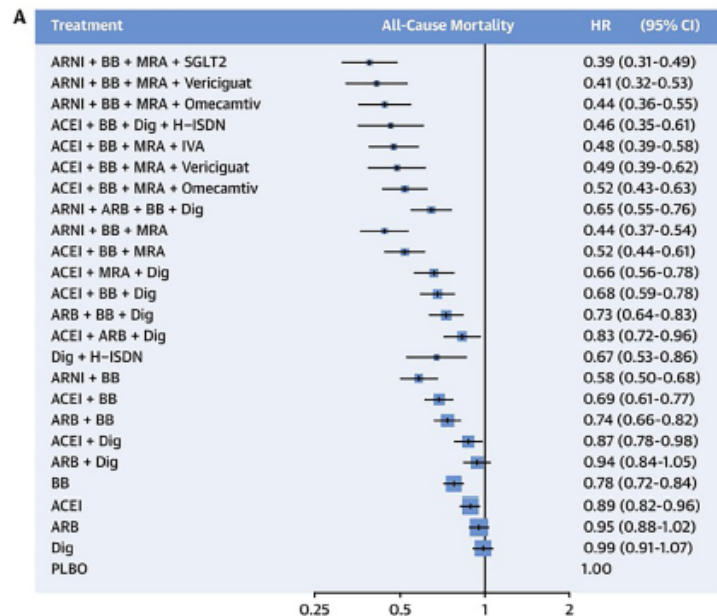
**Second cause of
HOSPITALISATION,**
median length: 9.3 days²



HFrEF MUST 1>>> GDMT



CENTRAL ILLUSTRATION: Relative Risk Reduction of Different Pharmacological Treatment Combinations for Heart Failure



Tromp, J. et al. J Am Coll Cardiol HF. 2022;10(2):73-84.

HFrEF MUST 2>>> DECONGESTIONE in HHF



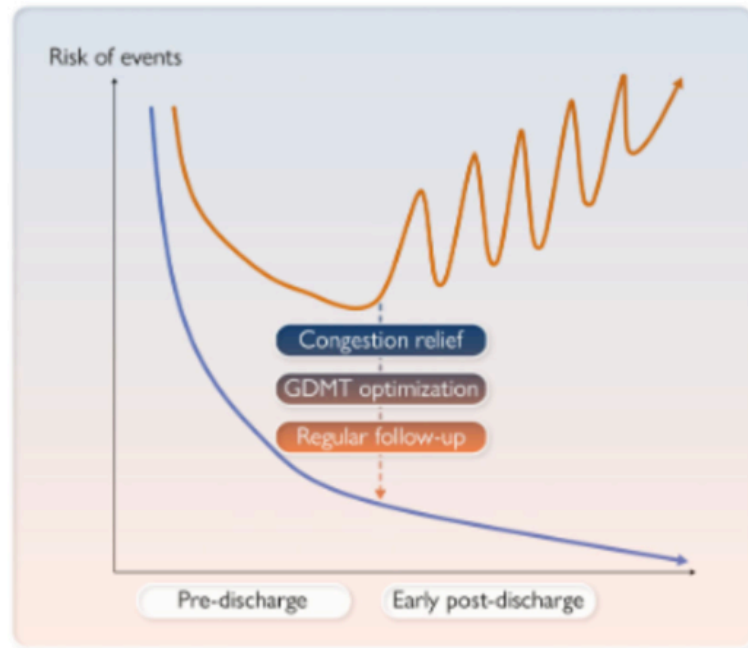
ESC

European Society
of Cardiology

European Journal of Heart Failure (2023) 25, 1115–1131
doi:10.1002/ehf.2888

CONSENSUS STATEMENT

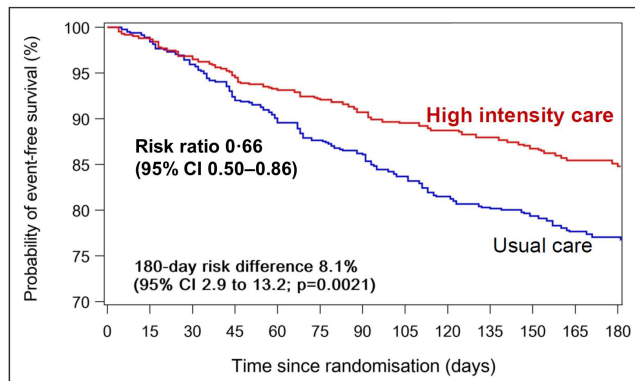
**Pre-discharge and early post-discharge
management of patients hospitalized for acute
heart failure: A scientific statement by the
Heart Failure Association of the ESC**



HFrEF MUST 3>>> FOLLOW-UP STRETTO

Primary endpoint:

180-Day Readmission for HF or All-Cause Death



Recommendation Table 3 — Recommendation for pre-discharge and early post-discharge follow-up of patients hospitalized for acute heart failure

Recommendation	Class ^a	Level ^b
An intensive strategy of initiation and rapid up-titration of evidence-based treatment before discharge and during frequent and careful follow-up visits in the first 6 weeks following a HF hospitalization is recommended to reduce the risk of HF rehospitalization or death. ^{c,d,e 16}	I	B

- ✓ rapida introduzione
- ✓ beneficio basse dosi
- ✓ migliore tollerabilità
- ✓ rapida titolazione
- ✓ maggiore aderenza cronica
- ✓ benefici precoci (<30gg)

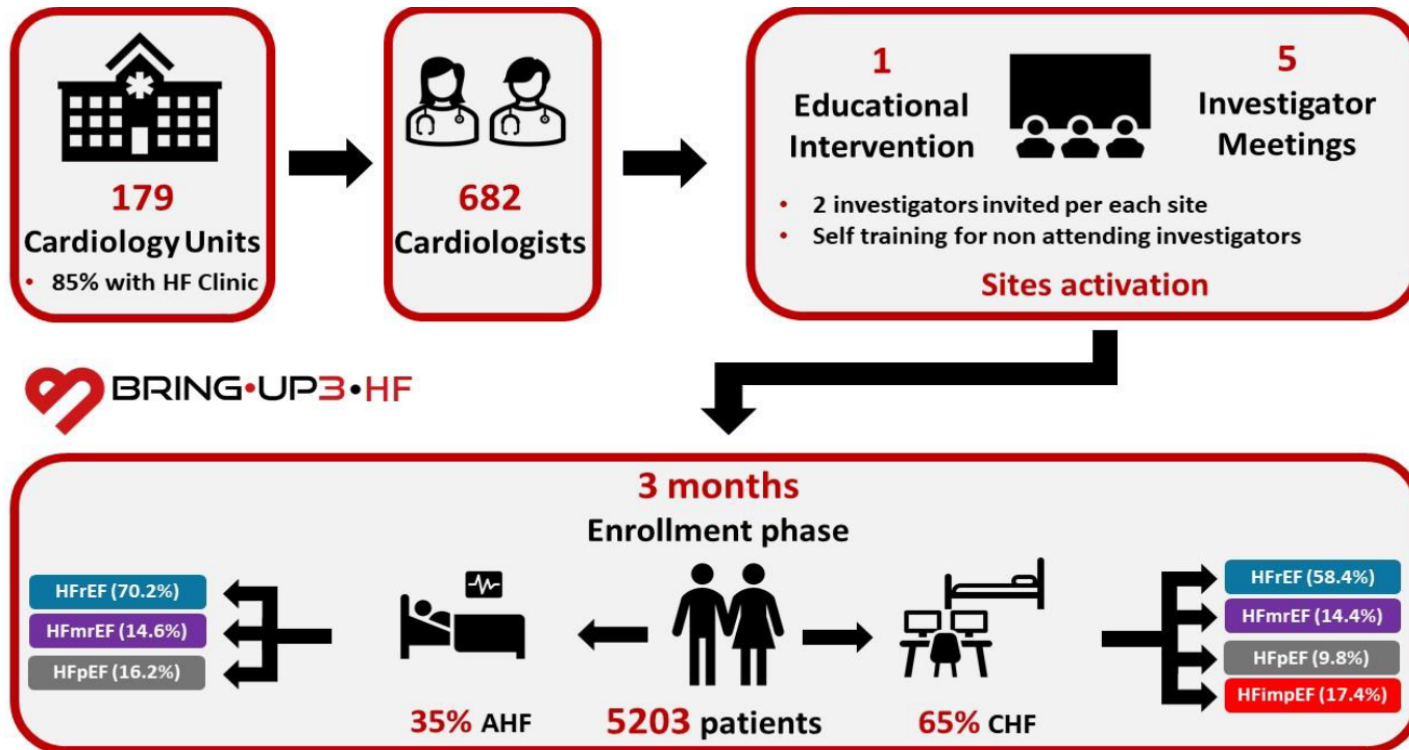
Mebazaa A et al Lancet 2023
McDonadh T et al. EJHF 2023

*ma il mondo reale è
differente...*



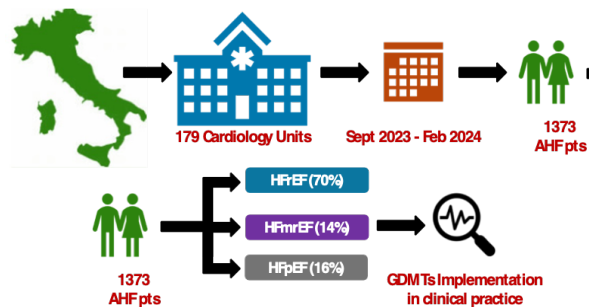
HFrEF MUST numero 1: GDMT

TODAY

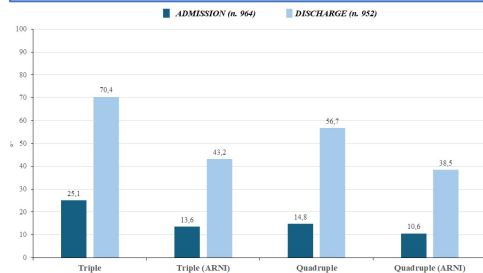




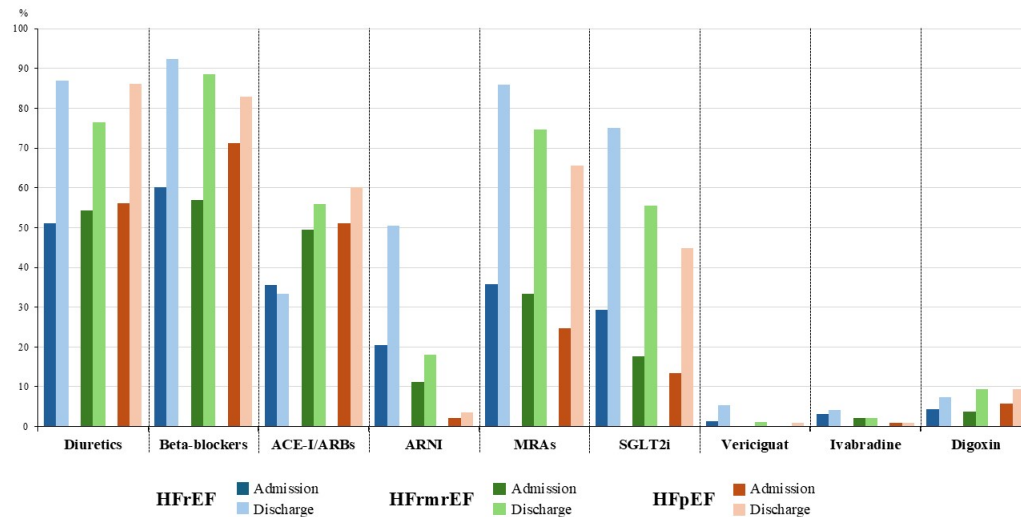
Setting acuto



In HFrEF 56.7% received the 4 GDMT at discharge



Medical treatment prescription on admission and at discharge among different groups of patients according to LVEF are shown





Therapeutic pillar % (N)	Drug % (N)	Target dose	
Beta-blockers 96.1% (2149)	Bisoprolol	72.6% (1562)	<50% 48.0%
	Metoprolol	17.1% (367)	50-99% 32.5%
	Carvedilol	7.8% (167)	100% 19.5%
	Nebivolol	0.8% (17)	
	Other	1.7% (36)	
RASI 92.2% (2062)	ACE-I 8.2% (170)		
	Ramipril	83.5% (142)	<50% 59.7%
	Enalapril	5.9% (10)	50-99% 30.5%
	Perindopril	4.1% (7)	100% 9.8%
	Captopril	0.6% (1)	
	Lisinopril	0.6% (1)	
	Other	5.3% (9)	
	ARBs 6.9% (142)		
	Valsartan	78.9% (112)	<50% 92.2%
	Losartan	8.5% (12)	50-99% 6.2%
	Olmesartan	5.6% (8)	100% 1.6%
	Candesartan	3.5% (5)	
	Irbesartan	1.4% (2)	
	Other	2.1% (3)	
	ARNI 84.9% (1750)		
	Sacubitril/Valsartan	100% (1750)	<50% 47.4%
			50-99% 30.8%
			100% 21.8%
MRA 81.6% (1826)	Canrenone	54.4% (993)	<50% 6.5%
	Potassium Canrenoate	18.4% (337)	50-99% 51.7%
	Spirolactone	16.2% (295)	100% 41.8%
	Eplerenone	10.9% (199)	
	Other	0.1% (2)	
SGLT2i 84.4% (1887)	Dapagliflozin	67.5% (1273)	NA
	Empagliflozin	31.7% (598)	
	Other	0.8% (16)	

SCARSA TITOLAZIONE DI GDMT NEL MONDO REALE



Fattori correlati al Medico:

Inerzia Terapeutica
Percezione di basso rischio
Non-prescrizione di GDMT
Dosi target
Paradosso rischio/trattamento



Fattori correlati al Paziente:

Età avanzata /fragilità
Comorbidità
Aderenza
Scarsa consapevolezza



Fattori correlati al Sistema:

Assistenza frammentata
Scarso follow-up
Rapporto medico-Paziente
Protocolli /PDTA assenti / obsolete
Digital gap

How to tackle therapeutic inertia in heart failure with reduced ejection fraction. A scientific statement of the Heart Failure Association of the ESC

Cause

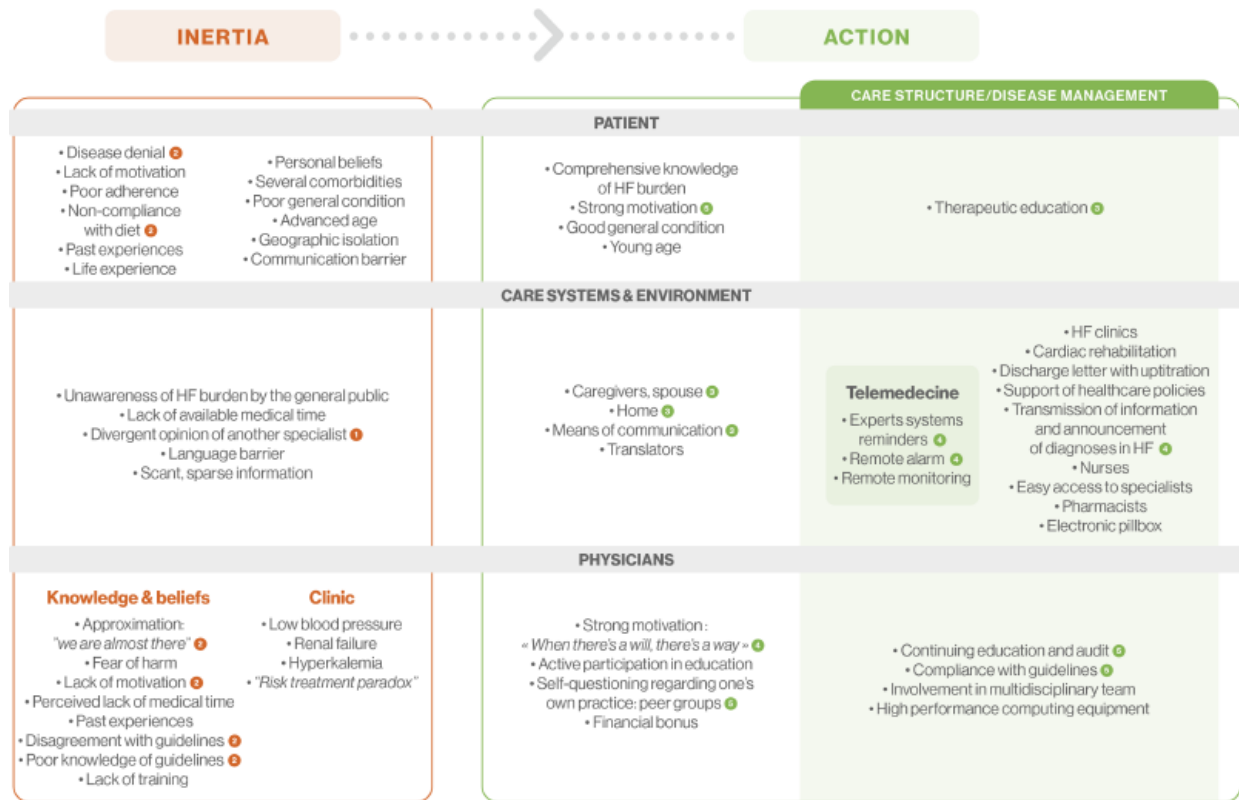
- ✓ Ipotensione arteriosa
- ✓ Peggioramento fx renale
- ✓ Iperkalemia
- ✓ Congestione residua
- ✓ BPCO/comorbidità
- ✓ Fragilità e età avanzata
- ✓ Fattori socio-economici
- ✓ Poli-terapia



Soluzioni

- ✓ inizio intra-H di 4 pilastri e titolazione
- ✓ titolazione secondo fenotipo clinico
- ✓ eliminare farmaci ipotensivanti non necessari
- ✓ SGLT2-i e potassium-binders
- ✓ "risk treatment paradox" (pz a > R sono meno trattati): monitoraggio stretto

DETERMINANTI & SOLUZIONI DI INERZIA TERAPEUTICA



Agire
su 3
livelli

HFrEF MUST numero 2: DECONGESTIONE

- Il 30-50% circa dei pazienti viene dimesso con segni clinici di congestione persistente
- Nel periodo vulnerabile (1-3 mesi post evento acuto): il rischio di ospedalizzazione è del 30% e di morte del 10%

Table 1 Risk factors of residual congestion at discharge and/or for heart failure readmission

Clinical factors

- NYHA class >2
- ≥ 1 HF hospitalization within 6 months
- Low blood pressure (SBP <90 mmHg)

Factors related to therapies

- GDMT discontinuation during hospitalization
- Intolerance to GDMT
- High diuretic dose

Laboratory exams

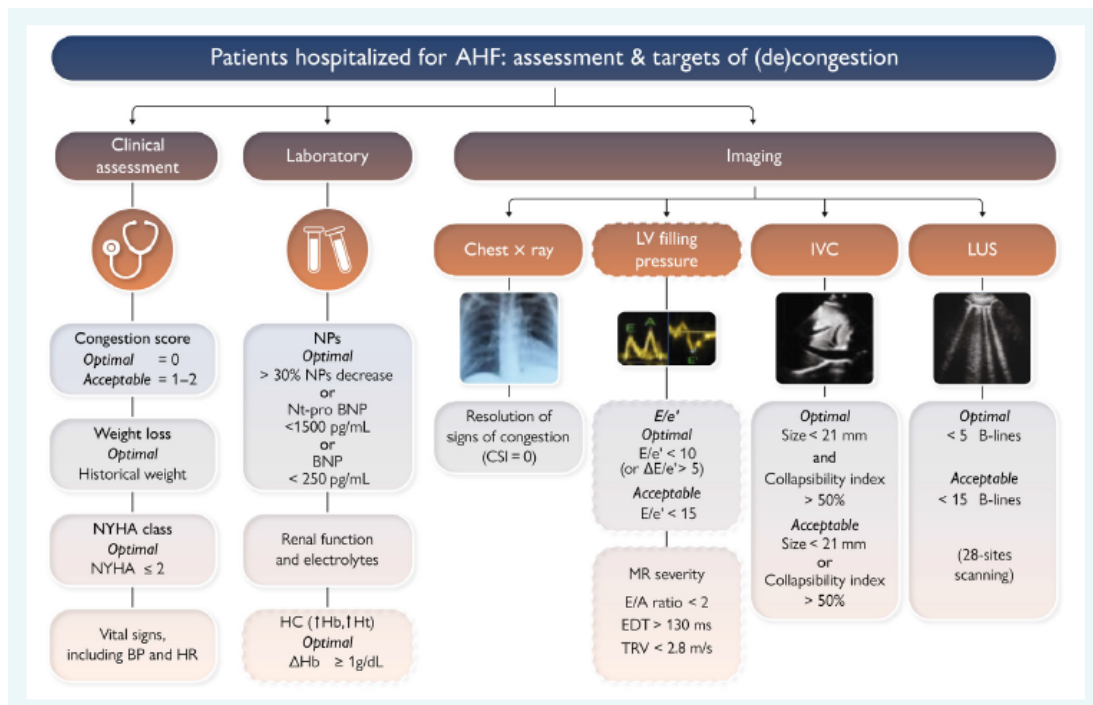
- Renal dysfunction
- Electrolyte disturbance
- High NP levels
- Anaemia

ECG and imaging

- QRS duration >130 ms without CRT
- Ventricular arrhythmias
- LVEF <20%
- High pulmonary pressure
- High LV filling pressures
- Moderate/severe tricuspid regurgitation
- IVC >21 mm
- B-lines >15

Comorbidities

- Diabetes mellitus
- Valvular heart disease
- Coronary artery disease
- Atrial fibrillation
- Pulmonary disease
- Frailty



HFrEF MUST numero 3: FOLLOW-UP STRETTO

Tabella 1. Indicazioni delle linee guida europee e americane per il follow-up nel contesto acuto (post-ricovero) e cronico (ambulatoriale).

	ESC ¹	AHA/ACC/HFSA ¹¹
Contesto acuto		
Timing prima visita post-dimissione	<u>1-2 settimane (IC)</u>	Entro 7 giorni (IIaB)
Timing FU successivo alla prima visita post-dimissione	Strategia intensiva (STRONG-HF) nelle 6 settimane successive al ricovero (IB)	1-2 settimane per la rapida titolazione in HFrEF (IIaC); ND in HFmrEF e HFpEF
Programma di gestione multidisciplinare e auto-gestione alla dimissione	Raccomandato (IA)	Raccomandato nei pazienti con SC ad alto rischio e WHF (IB)
Stratificazione con biomarcatori alla dimissione	ND	Consigliato (IIaB)
Stratificazione con score di rischio alla dimissione	ND	Consigliato (IIaB)
Contesto cronico		
Scompenso de novo ambulatoriale	ND; FU ravvicinato per la rapida ottimizzazione	1-2 settimane per la rapida titolazione in HFrEF (IIaC); ND in HFmrEF e HFpEF
FU paziente stabilizzato	<u>Almeno ogni 6 mesi</u>	ND
Programma di gestione multidisciplinare e auto-gestione	Raccomandato (IA)	Raccomandato (IA)
Stratificazione con biomarcatori	Solo nel paziente con SC avanzato	Raccomandato (IA)
Stratificazione con score di rischio	Solo nel paziente con SC avanzato	Consigliato (IIaB)
Ecocardiogramma	A 3-6 mesi con ottimizzazione della terapia, poi non indicato (IIIC), salvo peggioramento clinico	IIIC
Test cardiopolmonare con consumo di ossigeno	Consigliato come parte della valutazione per HTx e LVAD (IC)	In alcuni pazienti per determinare l'appropriatezza di trattamenti avanzati (HTx, LVAD) (IC)
Telemonitoraggio con dispositivo	Efficacia incerta (IIbB)	Efficacia incerta (IIbB)

➤ 50-60% dei pazienti nella fase “vulnerabile” riceve una **rivalutazione clinica entro 14 giorni** esclusivamente dal medico di medicina generale e appena **il 20-25% dal cardiologo**, con implicazioni negative sull’implementazione della GMDT.

Timing del follow-up del paziente con SC:

40% di pz francesi non visitato in 1 aa

Prognostic value of heart failure stratification, and cardiologist follow-up in a nationwide cohort



French-DataHF: nationwide cohort study identified from French health insurance databases



655 919 HF patients



48%



80y (70-87)

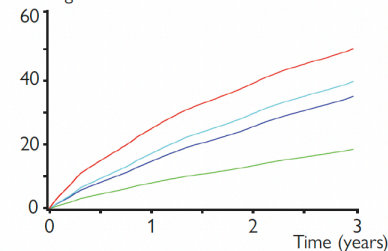


All-cause mortality (ACM) according to severity group



Association of cardiologist consultations and 1-year absolute risk of ACM

Percentage with event

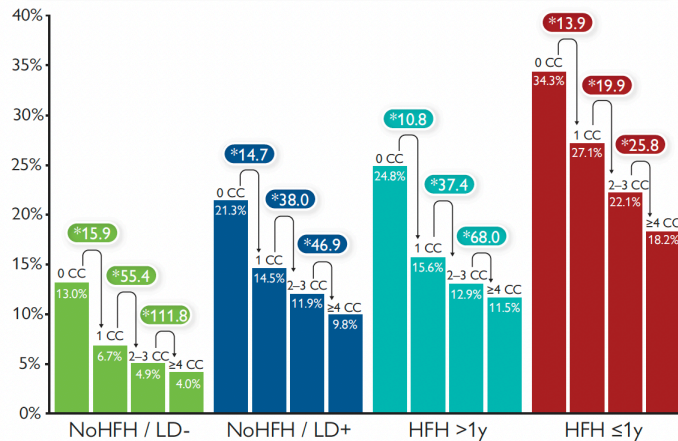


NoHFH / LD- Not hospitalized in the past 5 years, not using loop diuretics (23.7%)

NoHFH / LD+ Not hospitalized in the past 5 years, but using loop diuretics (28.3%)

HFH >1y Heart failure hospitalization 1-5 years ago (27.6%)

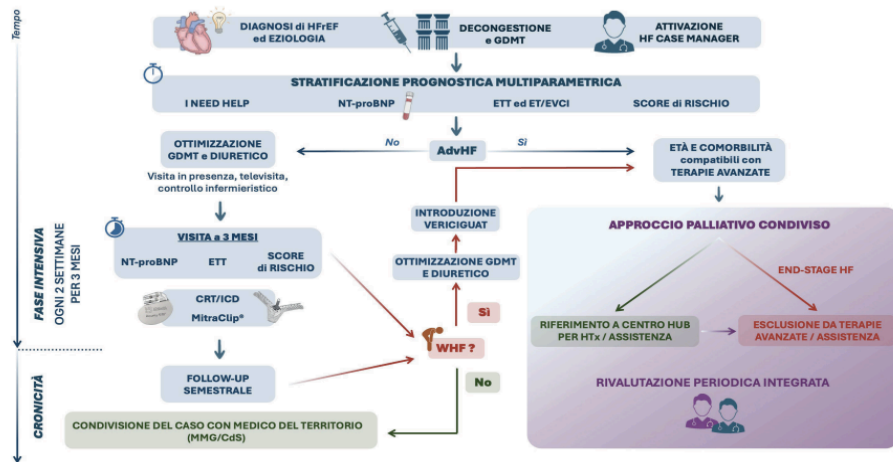
HFH ≤1y Heart failure hospitalization within the past year (20.4%)



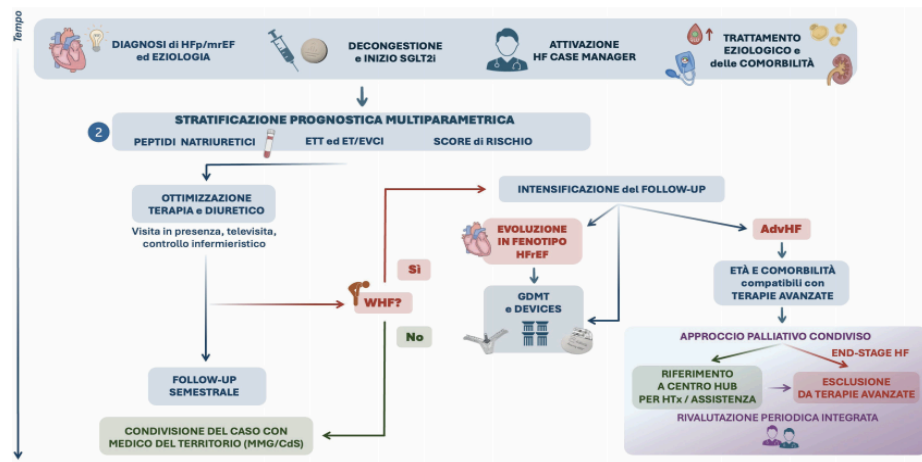
*Number needed to consult (NNC): number of patients requiring an incremental number of cardiologist consultations (CC) to avoid one modeled death within one year

NUOVE STRATEGIE: PIANIFICARE IL FOLLOW-UP IN BASE A STRATIFICAZIONE DEL RISCHIO

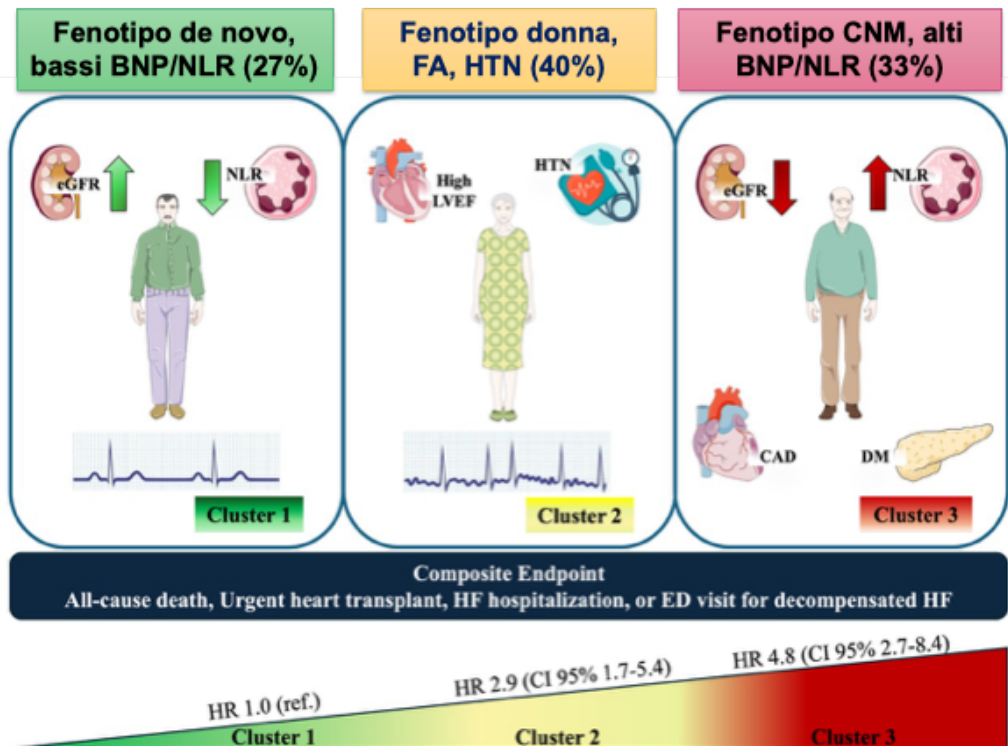
HFrEF



HFpEF

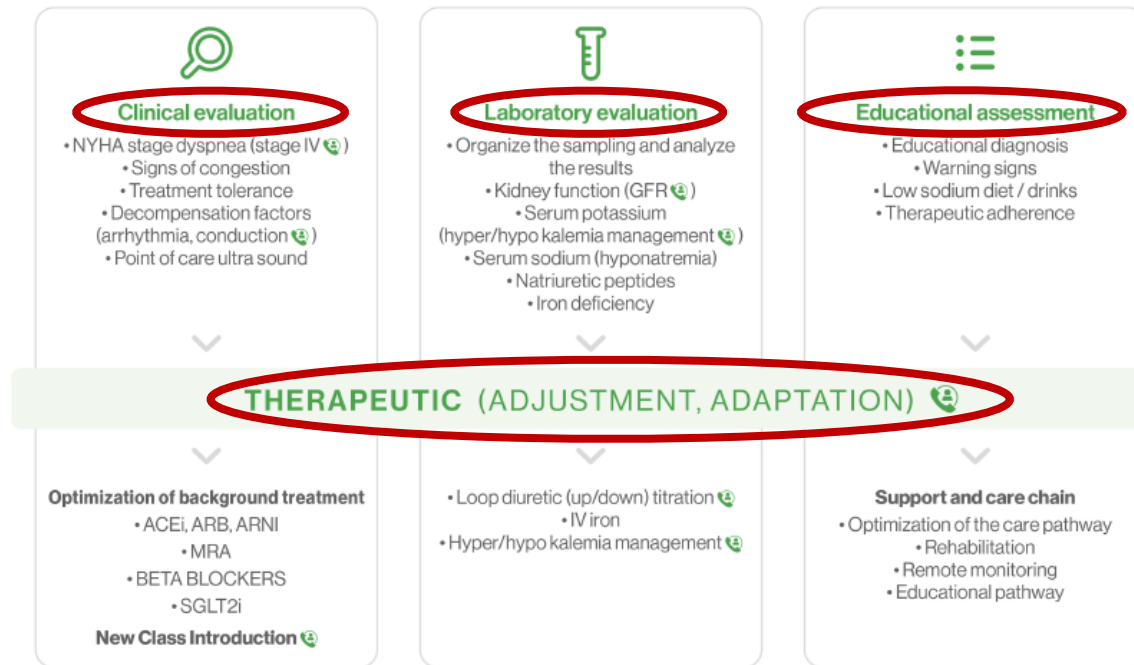


NUOVE STRATEGIE: PIANIFICARE IL FOLLOW-UP IN BASE A STRATIFICAZIONE DEL RISCHIO



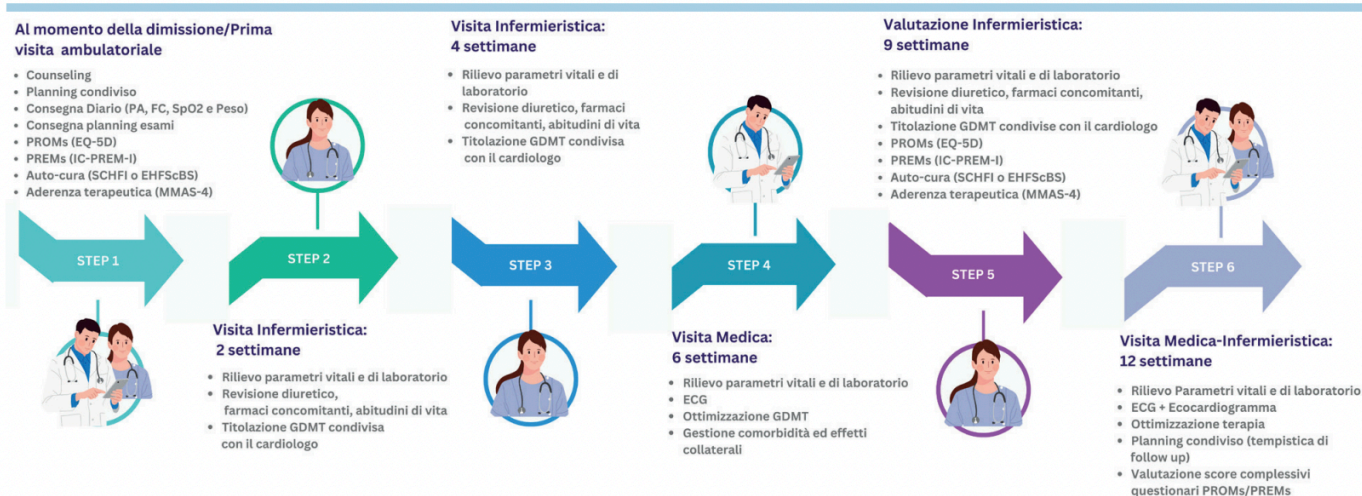
NUOVE STRATEGIE: RUOLO DELL'HF NURSE

Post-hospitalization or follow-up consultation by the HF-trained nurse



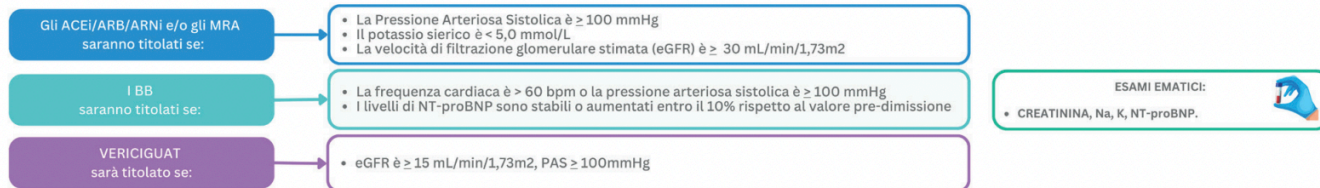
Call to delegate when deemed necessary

PROPOSTA MULTIPROFESSIONALE DI SCHEMA DI TITOLAZIONE GDMT



Ad ogni VALUTAZIONE MEDICA, il medico dovrà specificare chiaramente quali farmaci potranno essere poi titolati dall'infermiere HF:

MRA sì/no/già titolato ARNI/RASI sì/no/già titolato BETA BLOCCANTI sì/no/già titolato VERICIGUAT sì/no/già titolato



NUOVE STRATEGIE: TUTTI I WHF SONO DA RICOVERARE?

ACCESSO PERSONA ASSISTITA CON SEGNI/SINTOMI DI SCOMPENSO CARDIACO

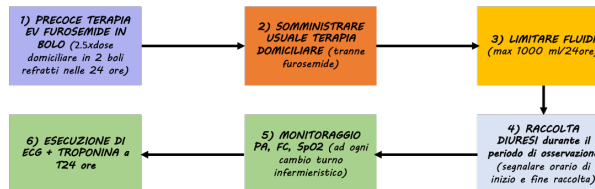
1

VERIFICA CRITERI DI ESCLUSIONE PER DH SCOMPENSO:

- BNP, troponina, emocromo, creatinina, elettroliti sierici, AST/ALT, PCR, PT, aPTT, ~~TNF SARS-CoV-2~~ non eseguiti a TO (in caso di troponina alterata seguire il protocollo specifico per sospetta SCA)
- Età < 18 aa
- Segni di ischemia miocardica/bassa portata
- Lattato > 2 mmol/l
- Grave compromissione dei parametri respiratori ($SpO_2 \geq 95\%$ essenziale per la dimissibilità)
- SC di nuovo riscontro
- Comorbidità significative o barriere sociali che impediscano la prosecuzione della terapia a domicilio e i successivi accessi in DH (in media 2 nel primo mese)
- Rischio alto calcolato mediante EHMRG calculator

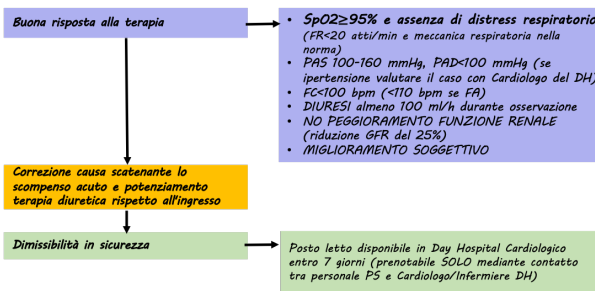
2

CICLO TERAPEUTICO DURANTE OSSERVAZIONE IN PS

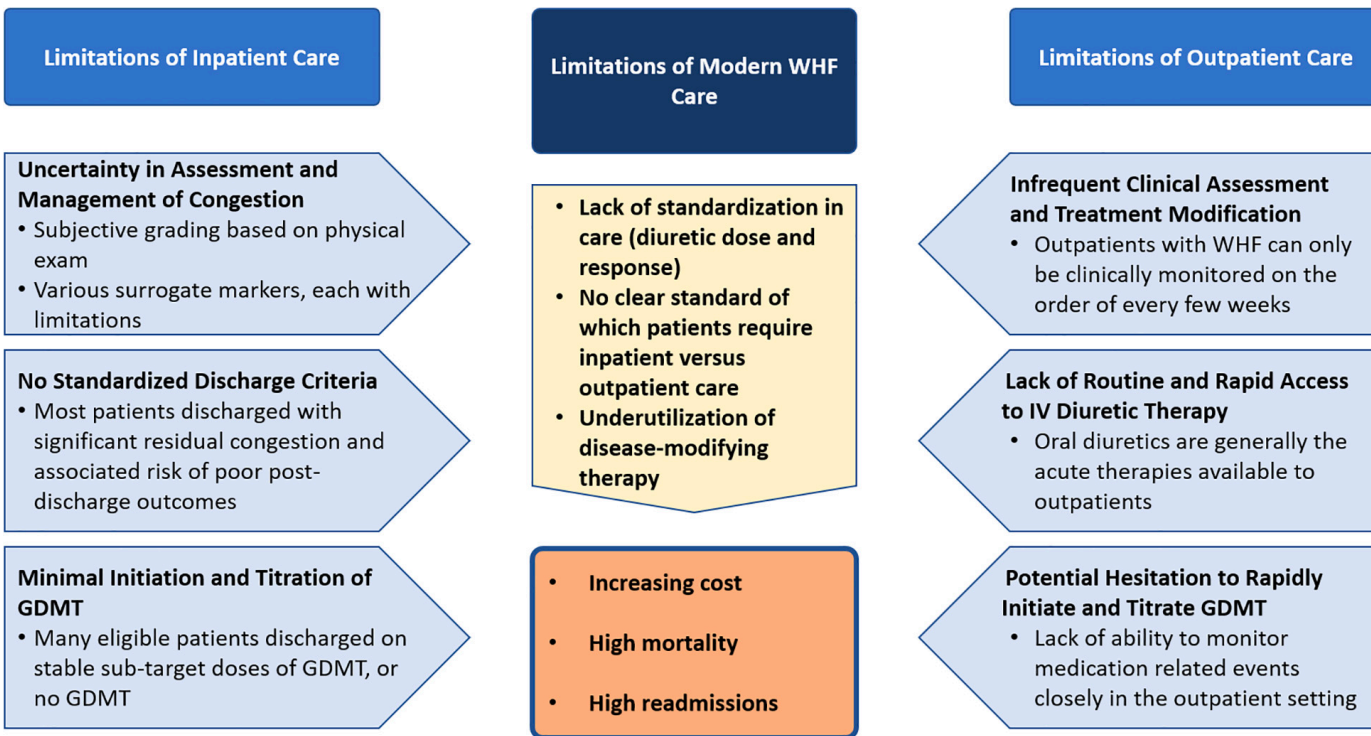


3

VERIFICA CONDIZIONI DOPO 24 ORE DI OSSERVAZIONE:

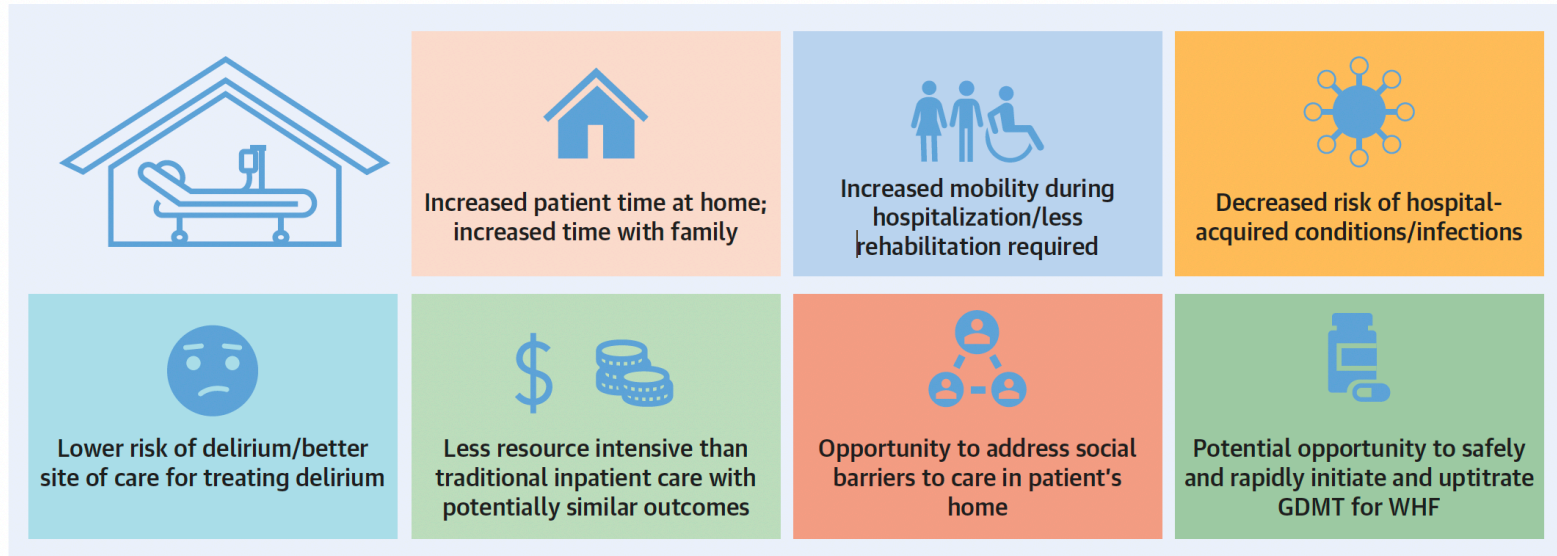


NUOVE STRATEGIE: LIMITI DI INPATIENT & OUTPATIENT CARE



MODELLI “HOSPITAL AT HOME”: potenziali vantaggi

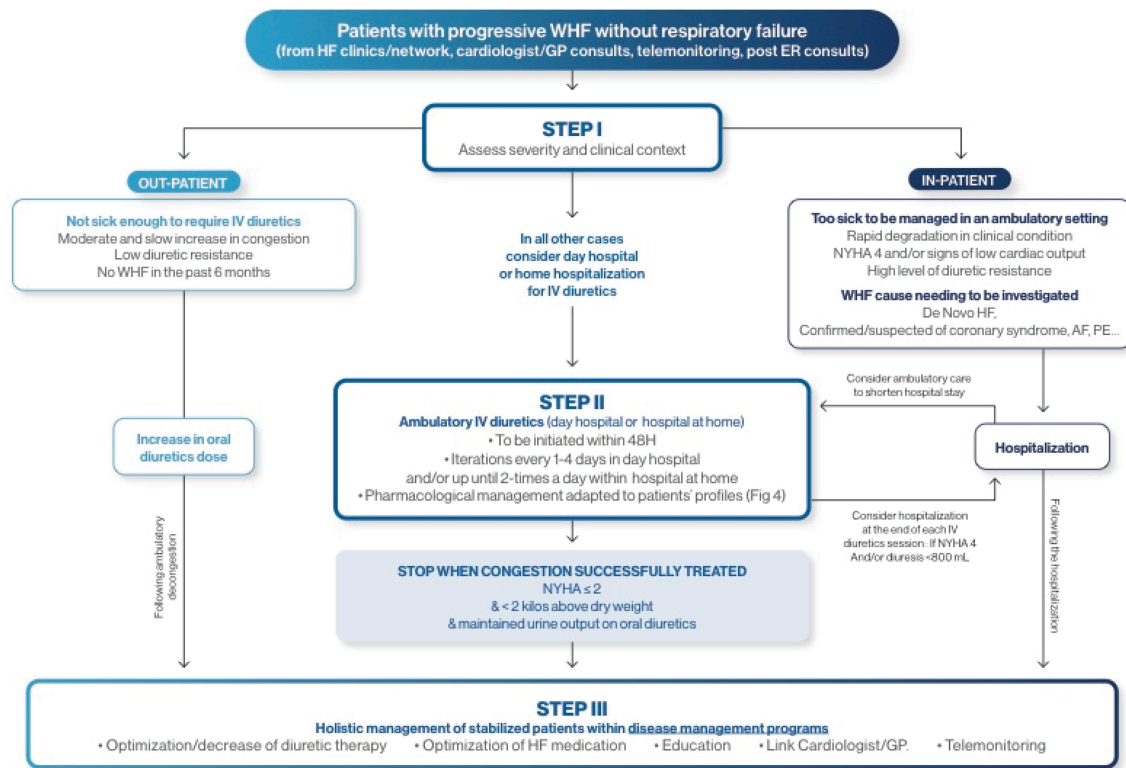
Advanced Hospital at Home programs deliver comprehensive clinical care in patients' residences through integrated technology and specialized protocols, yielding 23% reduction in 30-day readmissions for heart failure patients and 19% cost savings while maintaining equivalent clinical outcomes despite implementation complexities.



PROTOCOLLO STRUTTURATO DI OUTPATIENT MANAGEMENT

Table 2 Factors to be considered to select patients to be treated with intravenous diuretics in an ambulatory setting

	In favour	Against
Clinical scenarios	Progressive worsening HF ^{58,59} HR: 50–120 bpm ⁶¹ SBP >100 mmHg ⁶¹ SaO ₂ >92% ⁶¹ Alert from remote HF monitoring ⁶¹	First episode of HF ⁶⁰ Critical trigger ⁶¹ (rapid arrhythmias, acute coronary syndrome) NYHA class IV ⁶¹ Anasarca ^{58,59}
HF profiles	Cardiac amyloidosis ⁶²	Very high dose of oral diuretics (500 mg or more furosemide/day)
Comorbidities	Frailty ⁶³ Palliative care ⁶³ (especially for hospital at home)	Severely impaired eGFR (i.e. <25 ml/min/1.73 m ²) ⁶¹ Severe dysnatraemia, dyskalaemia or anaemia ⁶¹
Social criteria	Patient preference ⁶³ Adequate living support ⁶³	Difficult/unsanitary living conditions ⁶³ (for at home hospital)



APPROCCIO FUTURIBILE MULTIDISCIPLINARE ALLO SC



AI with Specialist Oversight

Cardiologists interpret complex hemodynamic data, stratify WHF risk using biomarker trends (NT-proBNP/troponin), and determine timing for advanced therapies such as inotropic support or mechanical circulatory assistance when diuretic resistance emerges



Nurse Coordination

Heart failure nurses implement structured 72-hour post-discharge follow-up protocols, conduct thorough congestion assessments using standardized tools, and coordinate diuretic titration (up to 2.5x maintenance dose) during early WHF recognition



1. ACE Inhibitors
2. Angiotensin II Antagonists
3. Angiotensin Receptor Nephilysin Inhibitor
4. Anticoagulants ("Blood Thinners")
5. Beta-Blockers
6. Calcium Channel Blockers

Pharmacist Involvement

Clinical pharmacists ensure GDMT optimization at target doses (ARNI/SGLT2i/MRA), monitor renal function during diuretic intensification, and mitigate polypharmacy risks by identifying nephrotoxic combinations that may precipitate WHF episodes

**POCHE RISORSE
DOVREMMO FARLO DI PIÙ**

**NON LO FACCIAMO
MA CI STIAMO ORGANIZZANDO**

SIAMO LONTANI...

Conclusioni



- Colmare il gap tra linee guida e realtà riconoscendo gli attuali unmet needs in termini di:
 - prescrizione/titolazione tp
 - educazione/formazione paziente
 - percorso tra territorio/ospedale
 - nuovi strumenti a supporto (digitale)
- Collaborazione nell'HF team
- Creare nuovi modelli "gestionali" (stratificazione del rischio, titolazione infermieristica GDMT, HaH, AI based) applicabili al mondo reale.



Mauro Gori, MD FESC

mgori@asst-pg23.it