

3er Curs
**D'ACTUALITZACIÓ EN
INSUFICIÈNCIA
CARDÍACA**

📍 Hotel Hilton Barcelona
Avda Diagonal 589-591. 08014 BCN
📅 12 de novembre de 2021



Noves Guies per a un nou temps, qué ens queda per saber?

Dr. Nicolás Manito

**Cap Clínic de la Unitat d'Insuficiència Cardíaca Avançada i Trasplantament Cardíac
Hospital Universitari de Bellvitge. L'Hospitalet del Llobregat – Barcelona**



Generalitat de Catalunya
Departament de Salut



Bellvitge
Hospital Universitari

 Institut Català
de la Salut

Conflictos de Interes

- *Conferencias y AB:*

Astra Zeneca, Boehringer Ingelheim, Bayer,
Novartis, Vifor

qué ens queda per saber.....
.....?

PHARMACOTHERAPY OF CHF

Order of adding DMT for HFrEF

Therapies for HFmrEF and HFpEF

HFrEF therapies in eGFR <30 mL/min/1.73m²

HF phenotypes: myocarditis, cardiotoxicity, inherited CMPs, PPCM, amyloidosis

Strategies for 'recovered LV' systolic function

Evidence on the effects of fluid restriction, dietary salt

DIAGNOSIS

Role of biomarkers

RCT for HF stage B

Diagnosis protocols for HFmrEF



DEFINITION AND EPIDEMIOLOGY

Research HFmrEF and HFpEF

Normal values/ranges of EF

'Recovered LV' systolic function

DISEASE MANAGEMENT

Remote monitoring in HF post COVID-19

Models for follow-up of stable HF patients

Specific options for palliative care

DEVICES AND INTERVENTIONS

ICDs HFrEF/HFmrEF/HFpEF

CRT efficacy in AF

Outcomes of AF ablation

Percutaneous treatment of valve heart dis.

CCM & baroreceptor stimulation in HFrEF

ADVANCED HF

Risk profiles according to INTERMACS

Outcomes of long-term MCS

Reduce the risk for LVAD of bleeding, Thromboembolic events, and infection

Medical treatment

AHF

Patient phenotypes

Imaging techniques and biomarkers

Impact on post-discharge outcomes

Strategies for congestión relief

Devices for short-term MCS

Therapeutic algorithms for cardiogenic shock

2021 ESC-HFA GUIDELINES

GAPS IN EVIDENCE

NON-CV COMORBIDITIES

Cachexia and/or sarcopenia and/or frailty

Medical therapies or devices in severe CKD and HF

Medical treatment of electrolyte abnormalities

Outcomes of treatment of CSA

Prevention and treatment of cardiotoxicity of cancer therapies

Treatment of infections and prevention of cardiac injury with infection

SPECIAL CONDITIONS

Treatment for PPCM

Phenotyping of CMPs through genetic testing, biomarkers and imaging modalities, and tailoring of therapy

Treatment of different types of myocarditis, including immunosuppressive therapies

Treatments of different forms of cardiac amyloid

Definition and treatment of LA myopathy

CV COMORBIDITIES

Strategies for the treatment of ventricular arrhythmias

Coronary revascularization procedures in different patient subsets

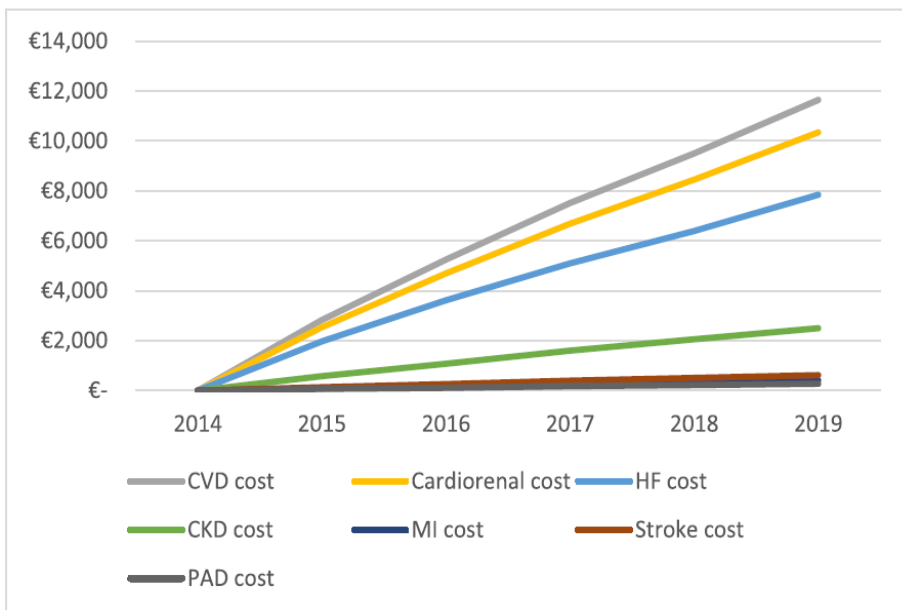
Patients' outcomes and/or QOL of percutaneous treatment of mitral or tricuspid valve disease

Costs and healthcare utilisation of patients with heart failure in Spain

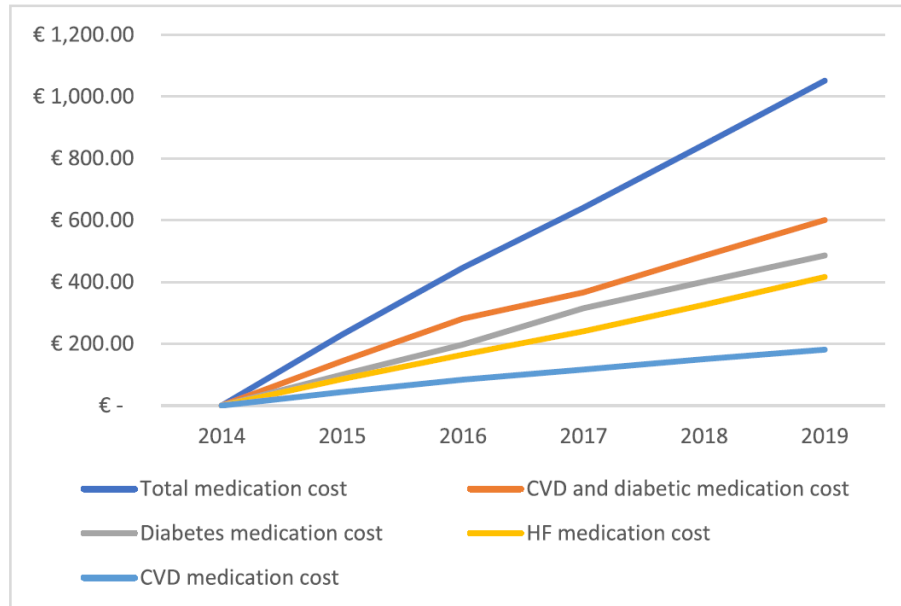


Carlos Escobar^{1*}, Luis Varela², Beatriz Palacios², Margarita Capel², Antoni Sicras³, Aram Sicras³, Antonio Hormigo⁴, Roberto Alcázar², Nicolás Manito⁵ and Manuel Botana⁷

Patient cumulative hospital mean cost



Patient cumulative medication mean cost

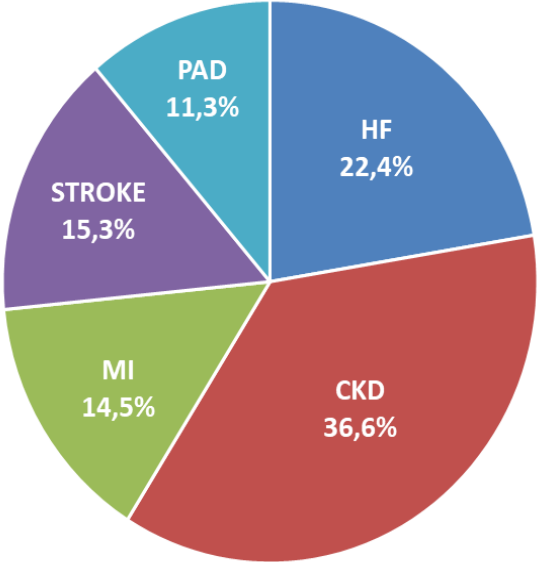


The great burden for this cost was due to cardiorenal (HF and/or chronic kidney disease) hospitalizations (88.8% of the total cost), particularly HF (**67.3% of the total cost**)

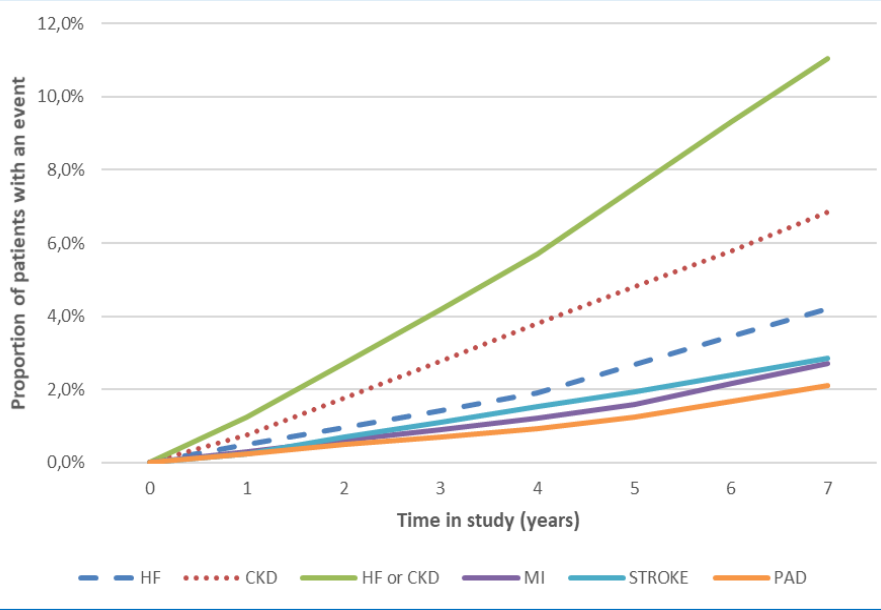
Epidemiology and resource use in Spanish type 2 diabetes patients without previous cardiorenal disease: CaReMe Spain study

First cardiovascular/renal manifestation during follow-up in type 2 diabetes patients (2013 –2019)

Percentage of events



Temporal evolution (first manifestation)



Universal definition and classification of heart failure: a report of the Heart Failure Society of America, Heart Failure Association of the European Society of Cardiology, Japanese Heart Failure Society and Writing Committee of the Universal Definition of Heart Failure

Endorsed by the Canadian Heart Failure Society, Heart Failure Association of India, Cardiac Society of Australia and New Zealand, and Chinese Heart Failure Association

New classification of HF according to LVEF

HF with reduced EF (HFrEF):

- HF with LVEF $\leq 40\%$

HF with mildly reduced EF (HFmrEF):

- HF with LVEF 41–49%

HF with preserved EF (HFpEF):

- HF with LVEF $\geq 50\%$

HF with improved EF (HFimpEF):

- HF with a baseline LVEF $\leq 40\%$, a ≥ 10 point increase from baseline LVEF, and a second measurement of LVEF $> 40\%$



ESC

European Society
of Cardiology

European Journal of Heart Failure (2021) 23, 381–383
doi:10.1002/ejhf.2129

EDITORIAL COMMENT

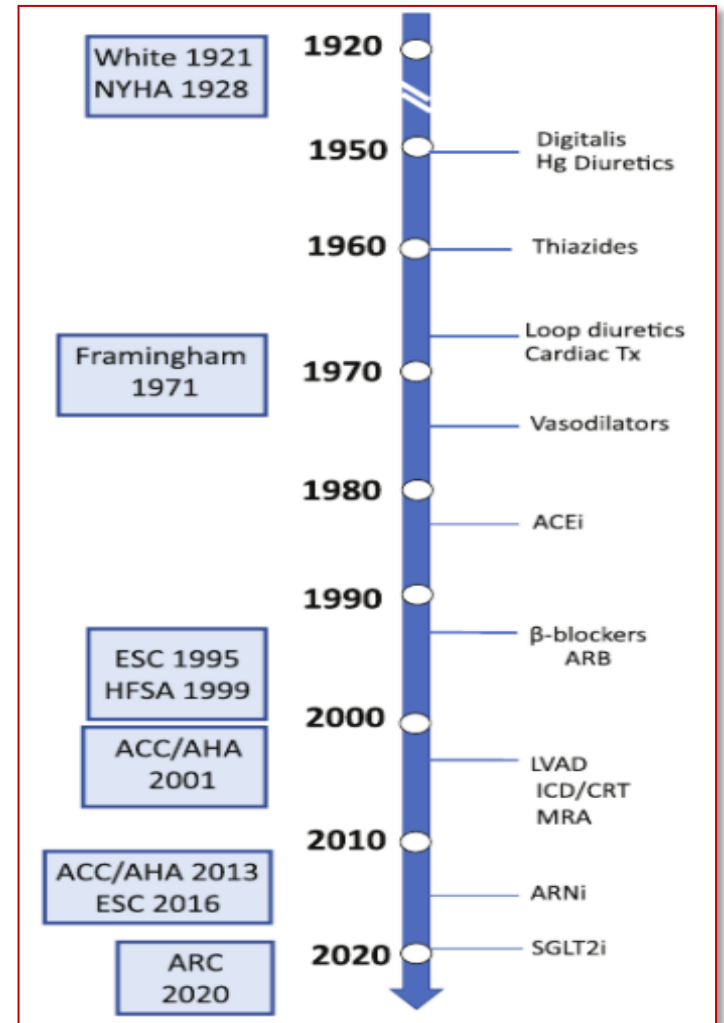
The path to universality

Eugene Braunwald* and Elliott M. Antman

TIMI Study Group, Division of Cardiovascular Medicine, Brigham and Women's Hospital, Department of Medicine, Harvard Medical School, Boston, MA, USA

Time-line for important treatments and definitions of heart failure between 1950 and 2020 (horizontal lines) and dates of heart failure definitions and/or practice guidelines (rectangles)

“An essential component of the trials that led to these recent advances was a clear definition of HF in the populations studied”



HFpEF trials : LVEF inclusión criteria

THE PRESENT AND FUTURE

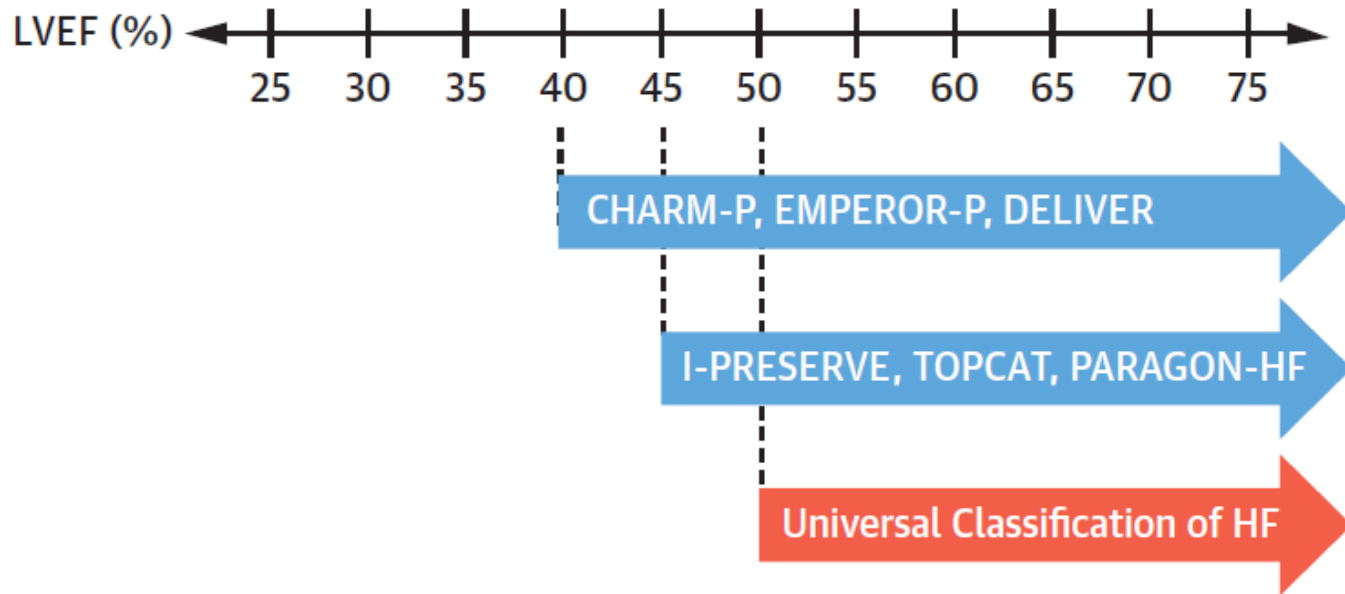
JACC REVIEW TOPIC OF THE WEEK

Classification of Heart Failure According to Ejection Fraction



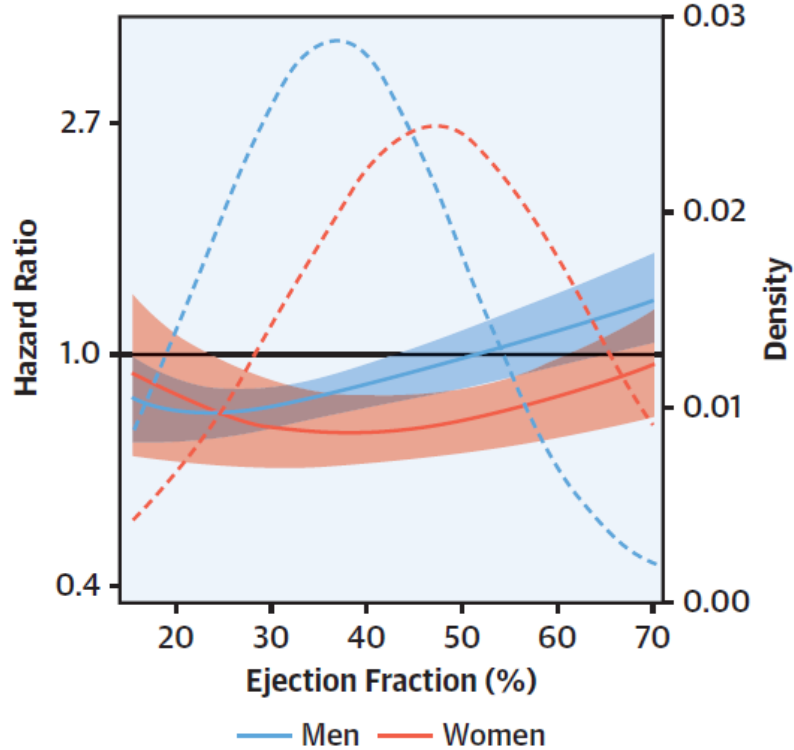
JACC Review Topic of the Week

Carolyn S.P. Lam, PhD, MBBS,^{a,b} Scott D. Solomon, MD^c

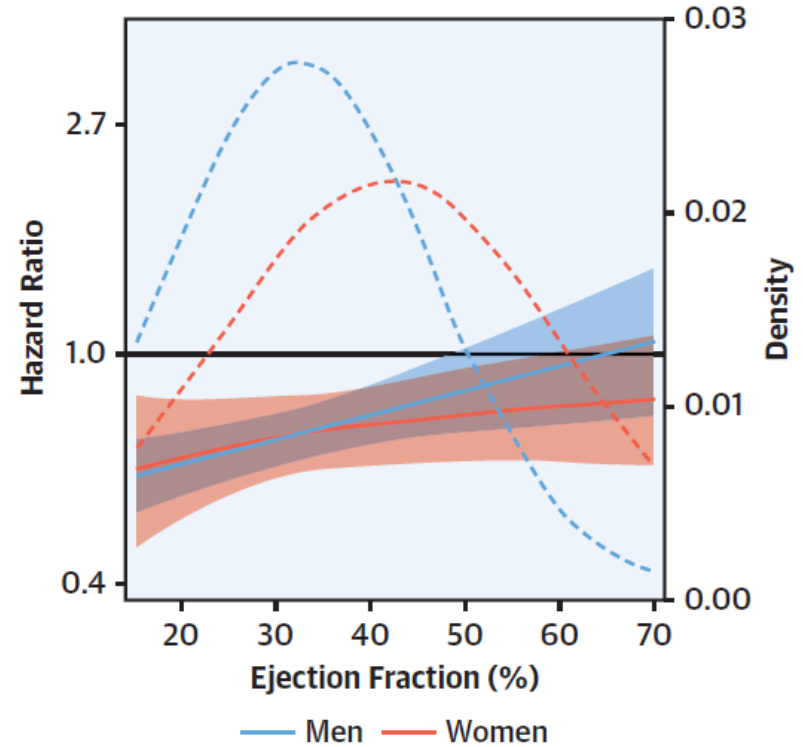


Interaction Between LVEF, Sex, and Neurohormonal Modulators in HF

Primary Outcome - Sacubitril/Valsartan



Primary Outcome - MRA



NEW PROPOSAL HEART FAILURE CLASSIFICATION

THE PRESENT AND FUTURE

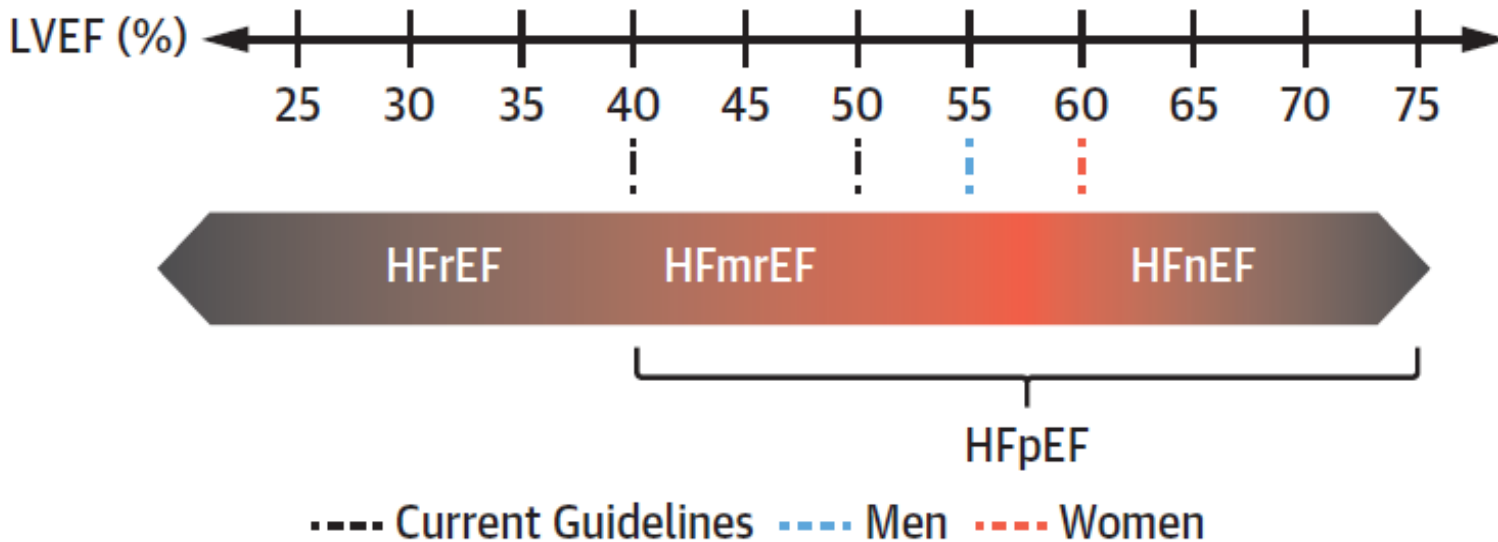
JACC REVIEW TOPIC OF THE WEEK

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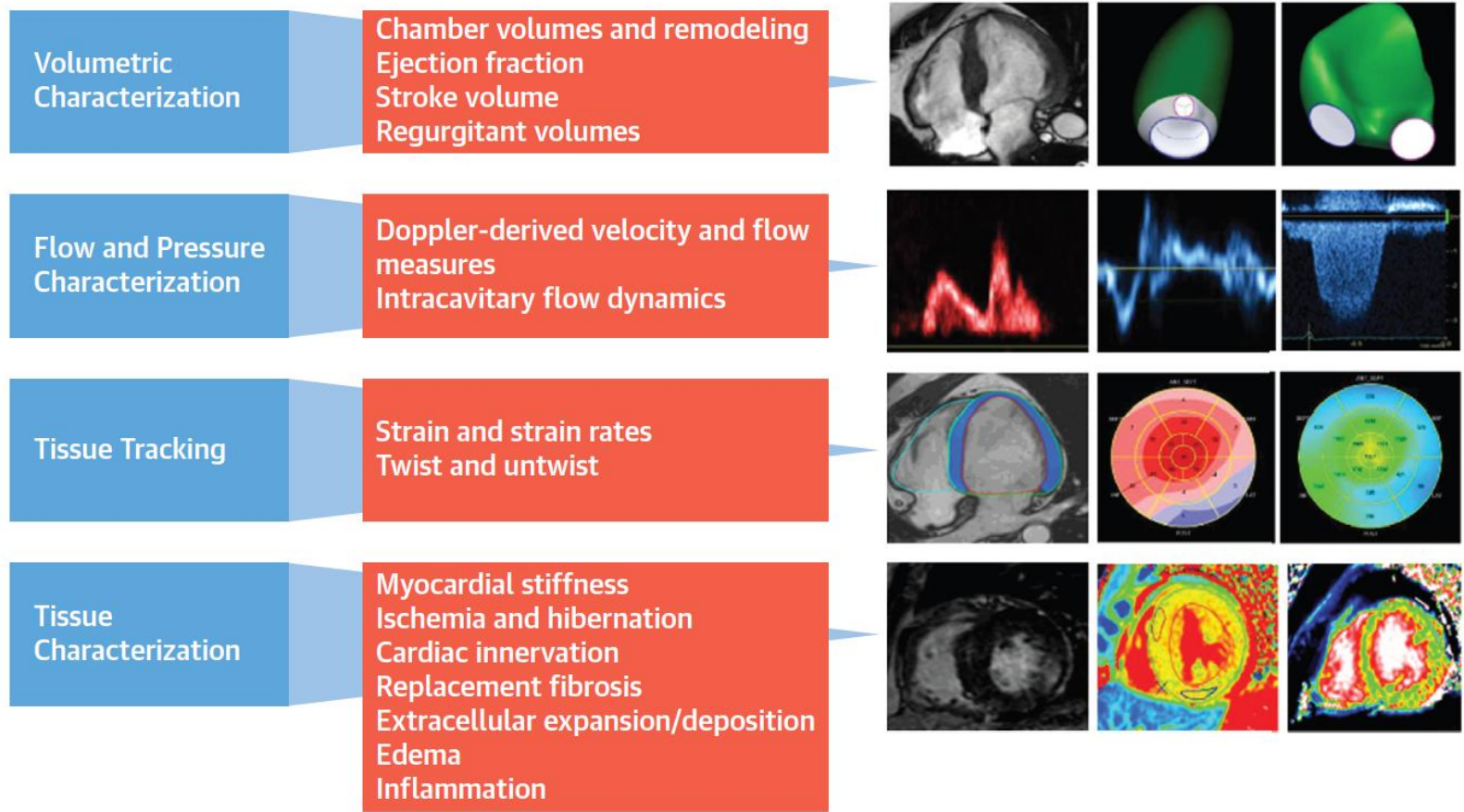


JACC Review Topic of the Week

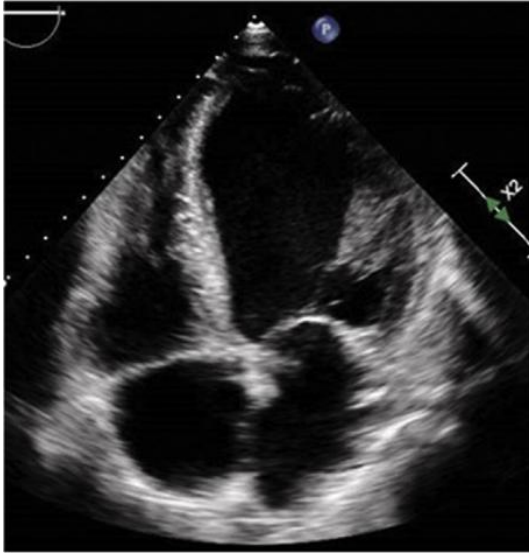
Carolyn S.P. Lam, PhD, MBBS,^{a,b} Scott D. Solomon, MD^c



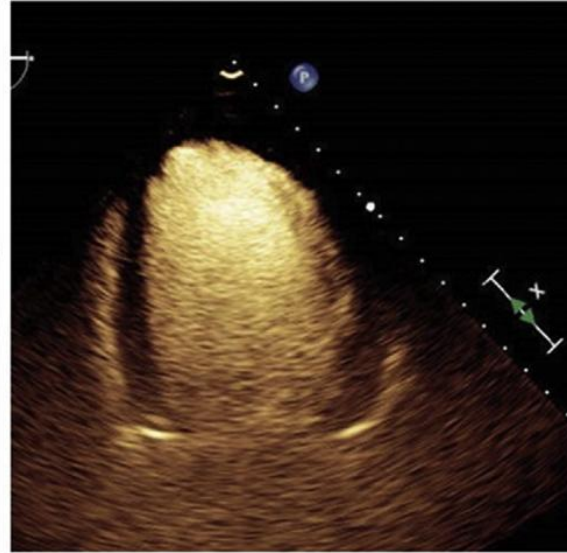
The New Framework for Application of Cardiac Imaging to Patients With Heart Failure



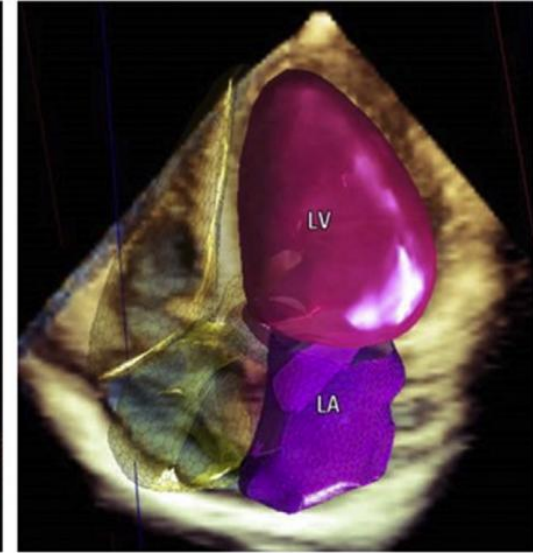
Application of Different Echocardiographic Methods for Volumetric Assessment



Unenhanced biplane planimetry
LVEDV 253 ml
LVEF 34%



Enhanced biplane planimetry
LVEDV 289 ml
LVEF 32%



Fully automated 3D volumes
LVEDV 323 ml
LVEF 30%

- In the same patients during the same study, unenhanced, contrast-enhanced, and fully automated 3-dimensional (3D) echocardiographic assessment yielded differing results. The differences are most prominent for left ventricular end-diastolic volume (LVEDV).

- Fully automated 3D echocardiographic assessment is more likely to provide volumes comparable with those provided by cardiac magnetic resonance. LA= left atrium; LV = left ventricle; LVEF = left ventricular ejection fraction.

Longitudinal Systolic Function and Extracellular Volume Represent Distinct Domains of Myocardial Vulnerability

Contractile domain of myocardial disease **Interstitial domain of myocardial disease**

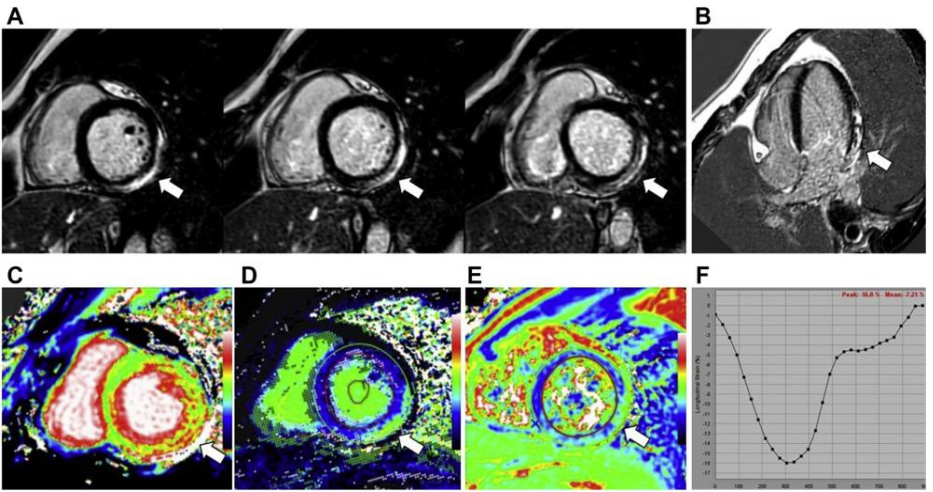
Minimal Correlation

Impaired contractility quantified by Global Longitudinal Strain

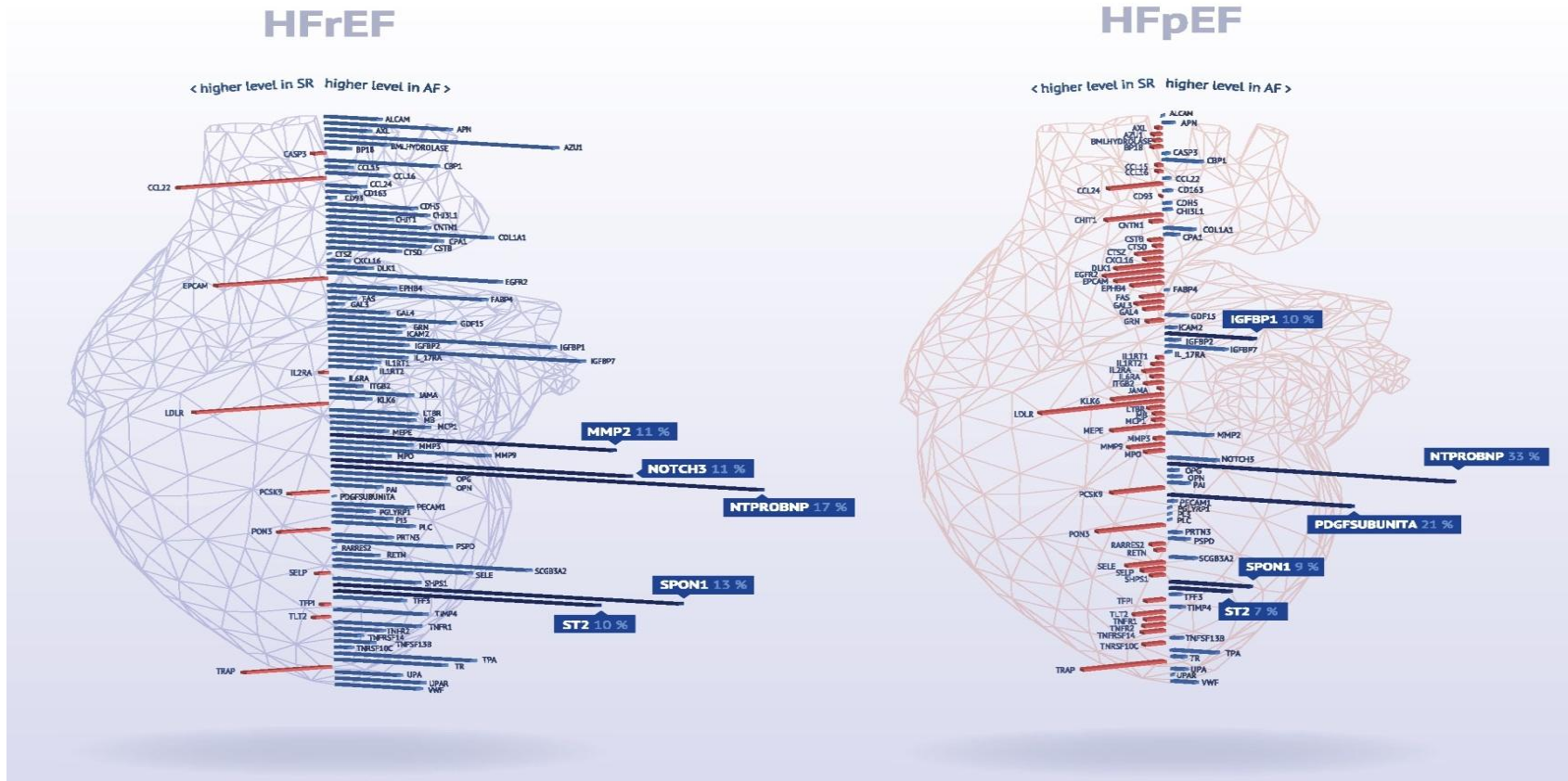
Interstitial expansion quantified by Extracellular Volume



Vulnerability to adverse outcomes (death, hospitalization for heart failure)

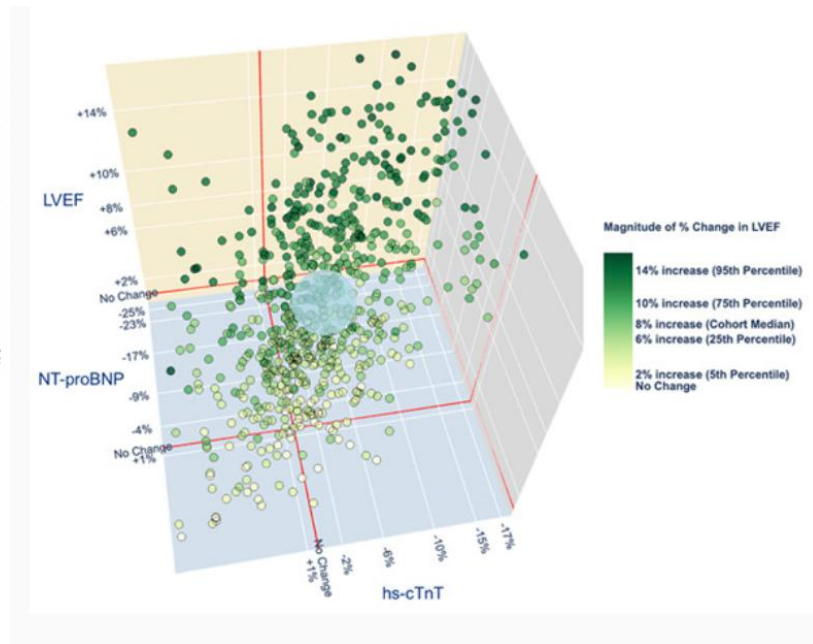
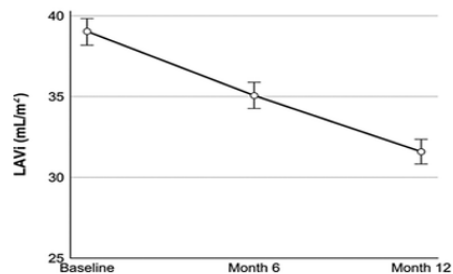
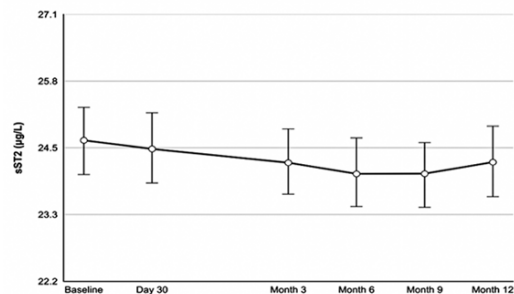
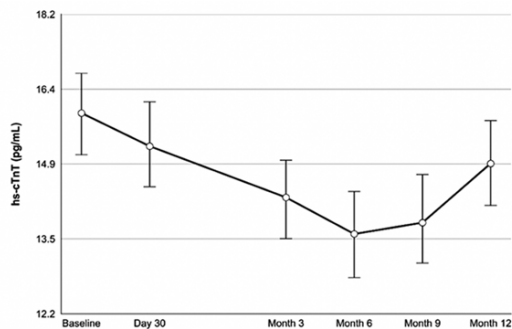
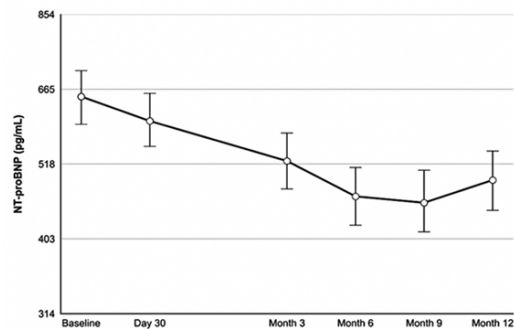


Comparing biomarker profiles of patients with heart failure: atrial fibrillation vs. sinus rhythm and reduced vs. preserved ejection fraction



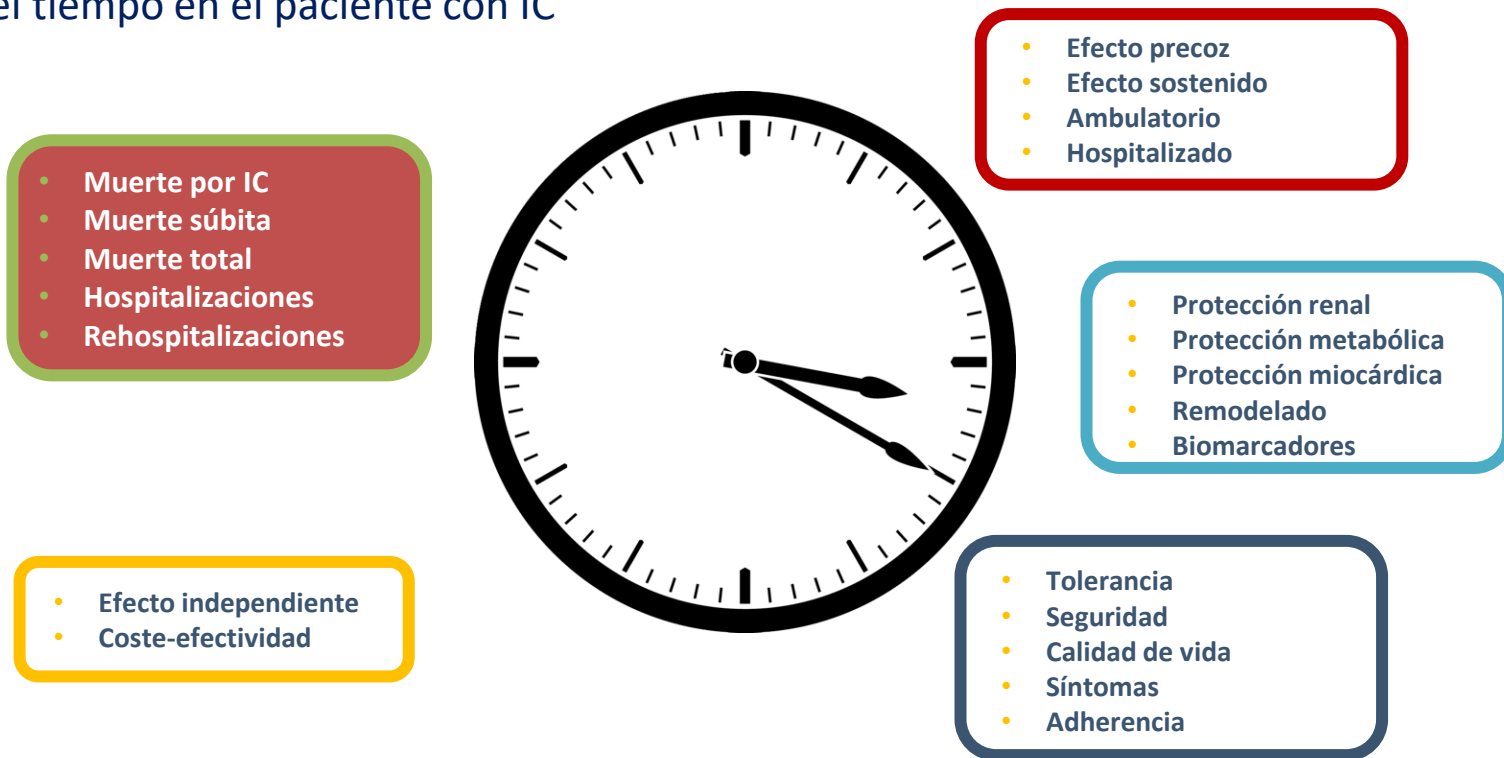
Association Between Angiotensin Receptor-Neprilysin Inhibition, Cardiovascular Biomarkers, and Cardiac Remodeling in Heart Failure with Reduced Ejection Fraction

Reduction in NT-proBNP and hs-cTnT following initiation of sacubitril/valsartan may be a helpful indicator of reverse cardiac remodeling in the absence of repeat imaging shortly after initiating treatment with sacubitril/valsartan

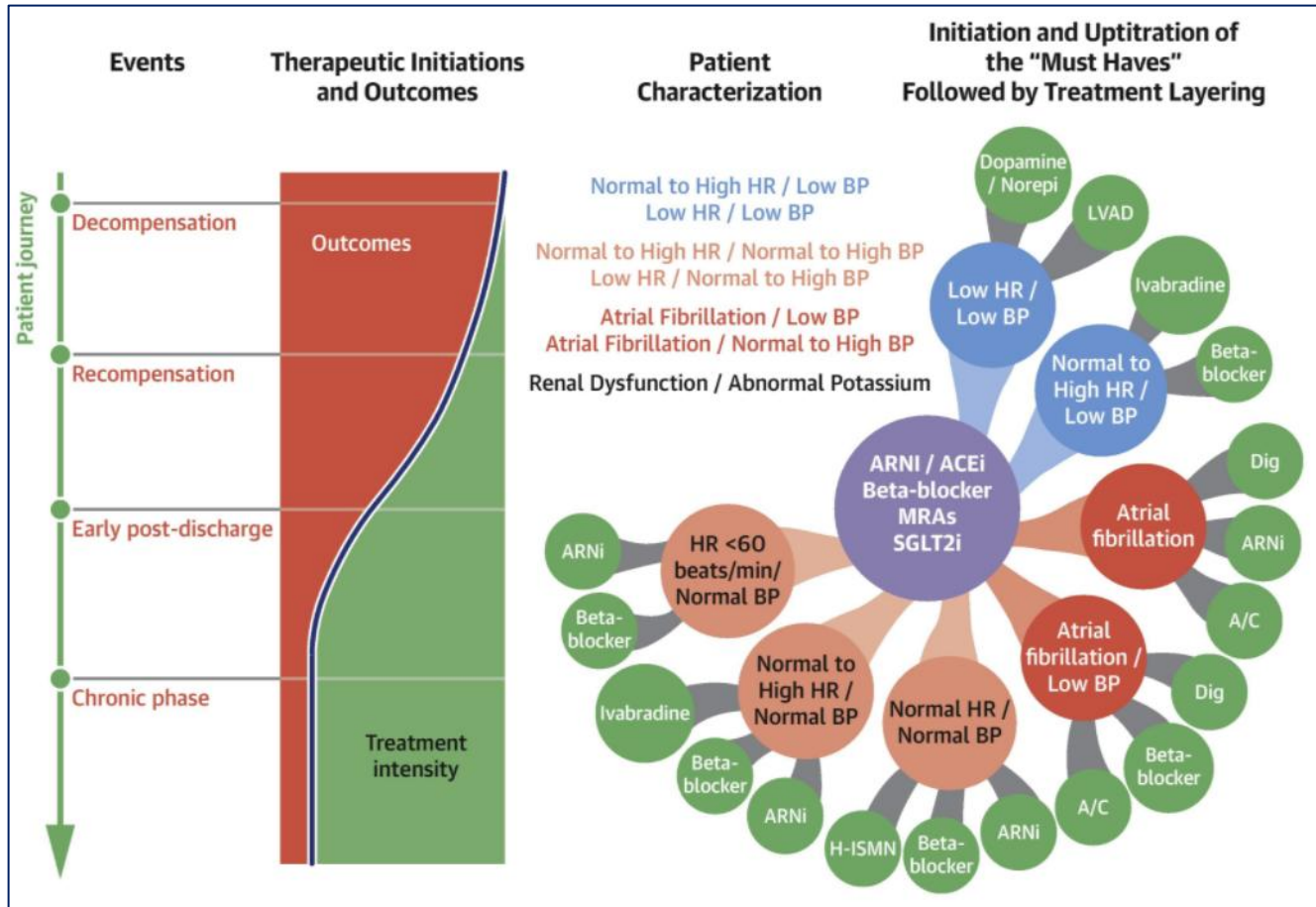


El fármaco ideal debería tener una evidencia científica sólida

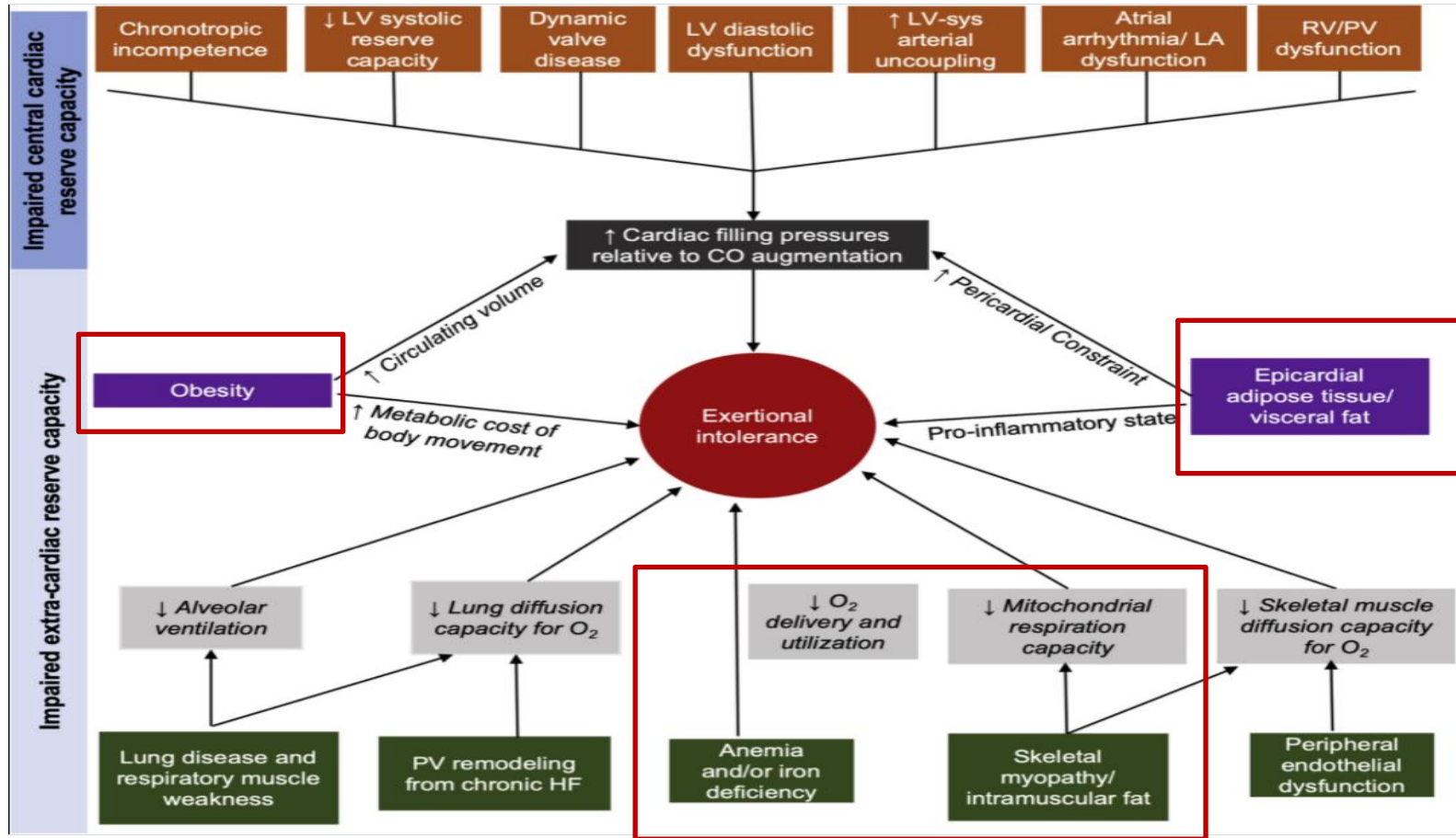
- Capaz de dar marcha atrás y detener el paso del tiempo en el paciente con IC



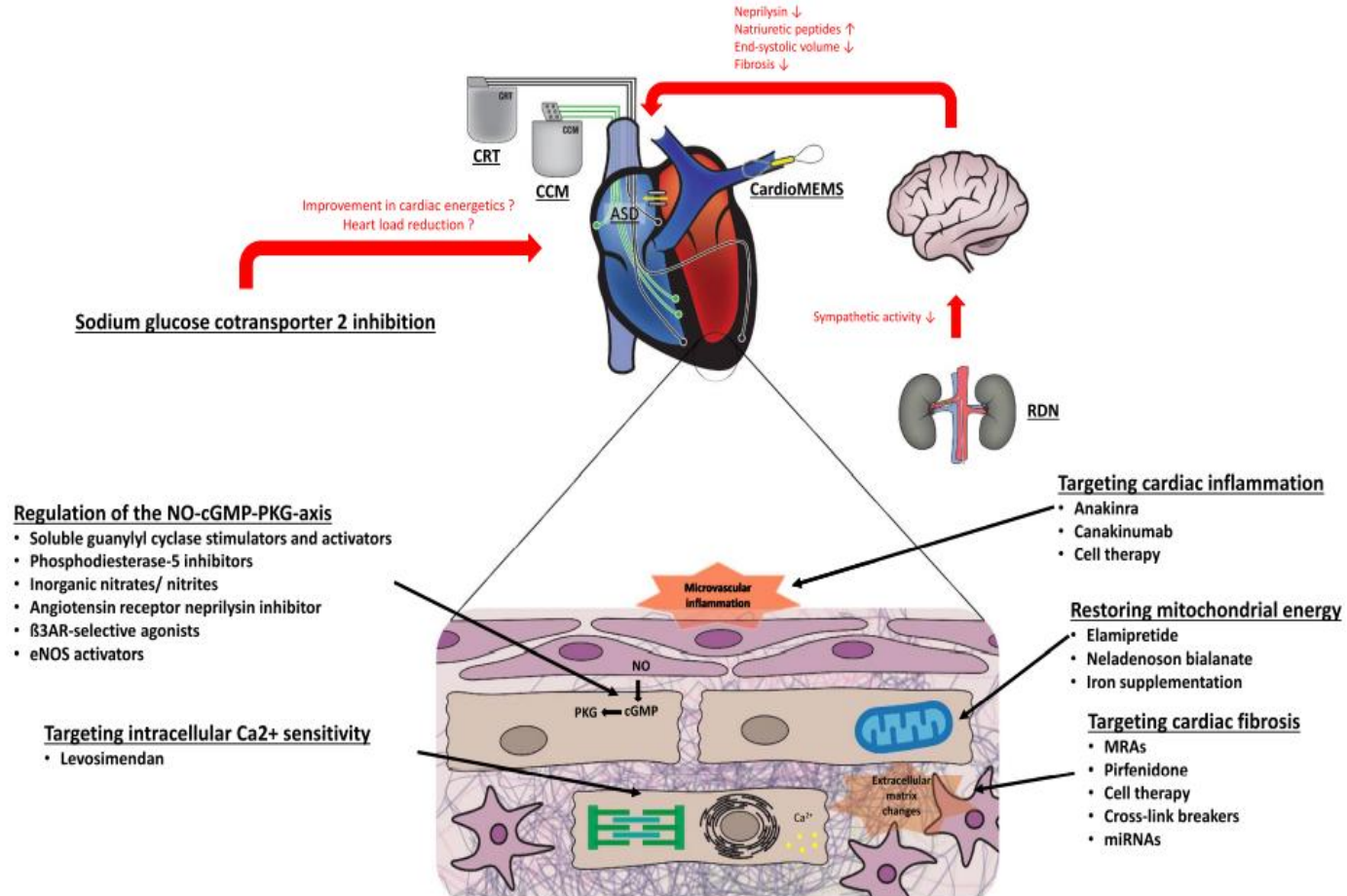
Fenotipos clínicos para el inicio del tratamiento en IC



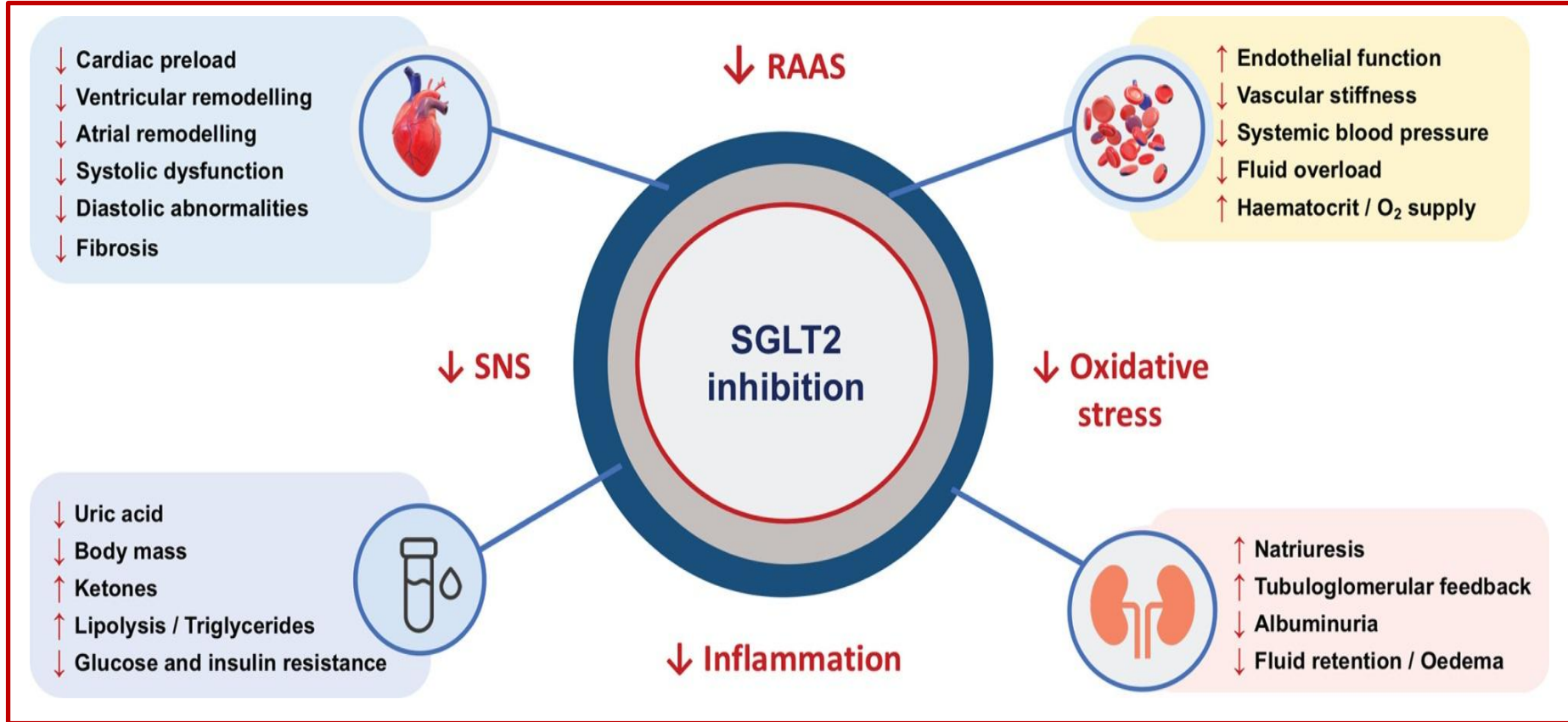
Pathophysiological Contributors to Exercise Intolerance in HFpEF



Main approaches regarding device and pharmacological therapy in HFpEF



Possible mechanisms detailing why SGLT2 inhibitors *may* work in HFpEF



Empagliflozin Reduces Epicardial and Subcutaneous Adipose Tissue in Nondiabetic Patients With Heart Failure With Reduced Ejection Fraction

JACC: HEART FAILURE
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EDITORIAL COMMENT

Empagliflozin-Induced Changes in Epicardial Fat

The Centerpiece for Myocardial Protection?*

Wilfried Mullens, MD, PhD, Pieter Martens, MD, PhD

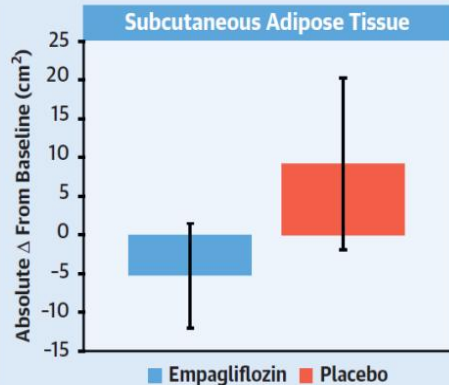
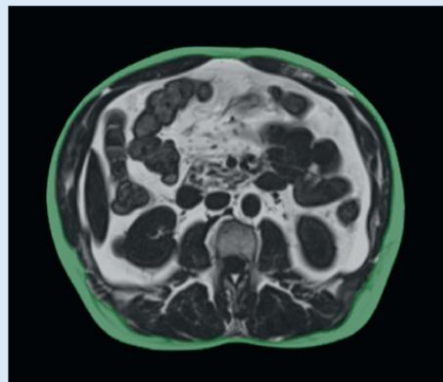
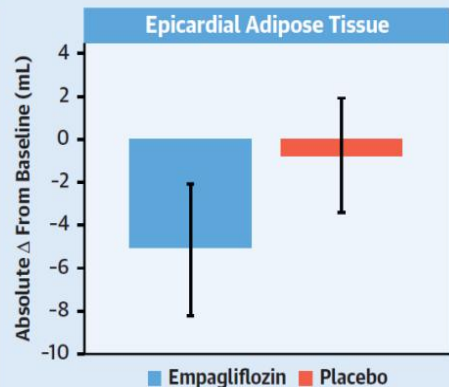
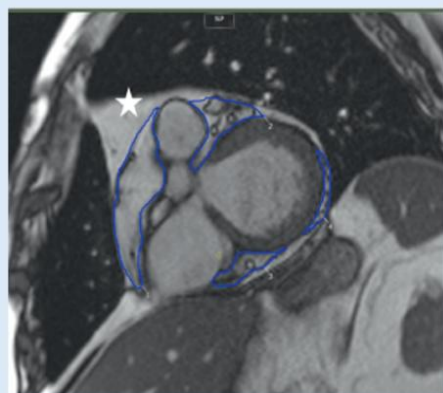
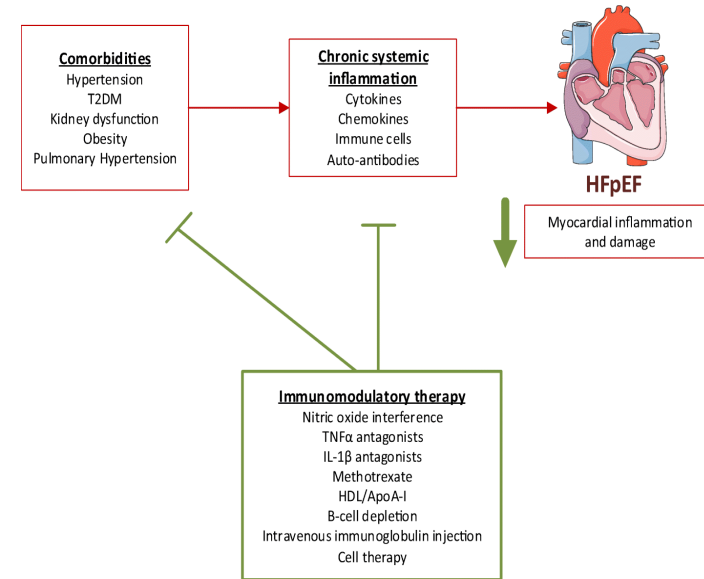


TABLE 3 Effect of Empagliflozin on Systemic Biomarkers

	Major Function	Nominal P Value	BH P Value	Log ₂ Fold Change
TNFRSF10C	Inflammation; apoptosis	0.000049	0.004536	-0.084331
SELE	Inflammation	0.000289	0.013422	-0.046008
CH13L1	Angiogenesis; inflammatory response	0.024798	0.193865	-0.144620
PAI	Inflammation; fibrinolysis	0.033353	0.193865	-0.090616
CCL16	Inflammation	0.030766	0.193865	0.093097
MPO	Inflammation; plaque formation and rupture	0.026782	0.193865	-0.089846
IL-1RT2	Inflammation	0.025677	0.193865	-0.039961
TR-AP	Binding inflammation receptor	0.025842	0.193865	-0.057800
GRN	Cell development, wound healing, tumorigenesis	0.001924	0.059630	-0.045100
PDGF subunit A	Cell proliferation, migration, chemotaxis	0.004022	0.093501	-0.213026
ICAM-2	Antigen-specific immune response, lymphocyte recirculation	0.007904	0.147009	-0.046557
PECAM-1	Cell adhesion and leukocyte migration	0.011300	0.175144	-0.060474
DLK-1	Inhibition of adipogenesis	0.023593	0.193865	0.068419
SHPS-1	Synaptic function, cell adhesion, phagocytosis, mast cell, and dendritic cell activation	0.028962	0.193865	-0.067255
MMP-9	Angiogenesis and wound repair	0.029667	0.193865	-0.096804
BLM hydrolase	Protection against bleomycin toxicity	0.031878	0.193865	-0.111773
CTSD	Angiogenesis	0.037319	0.204155	-0.101077

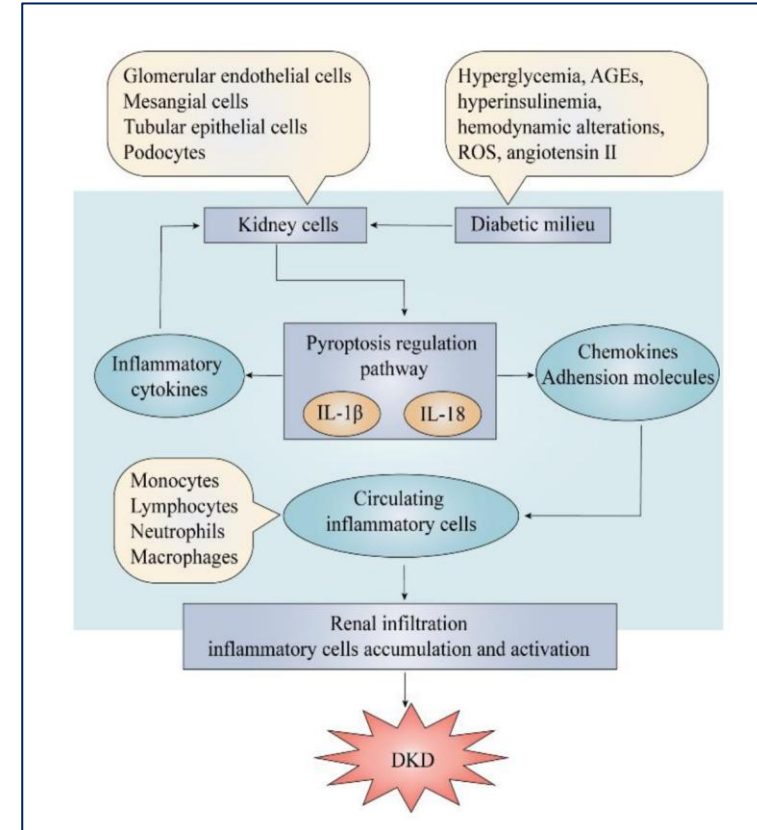
Immunomodulation in Heart Failure with Preserved Ejection Fraction: Current State and Future Perspectives

1. **Pathophysiological mechanisms** of heart failure with preserved ejection fraction (HFpEF) as targets for therapy.
2. **Comorbidities**, such as hypertension, type 2 diabetes mellitus (T2DM), and obesity, lead to chronic systemic inflammation and subsequently HFpEF, associated with myocardial inflammation and damage (red)
3. **Immunomodulation targeting** either comorbidities or underlying disease mechanisms (green) can decrease myocardial inflammation and damage and are currently under evaluation



PYROPTOSIS : New concepts

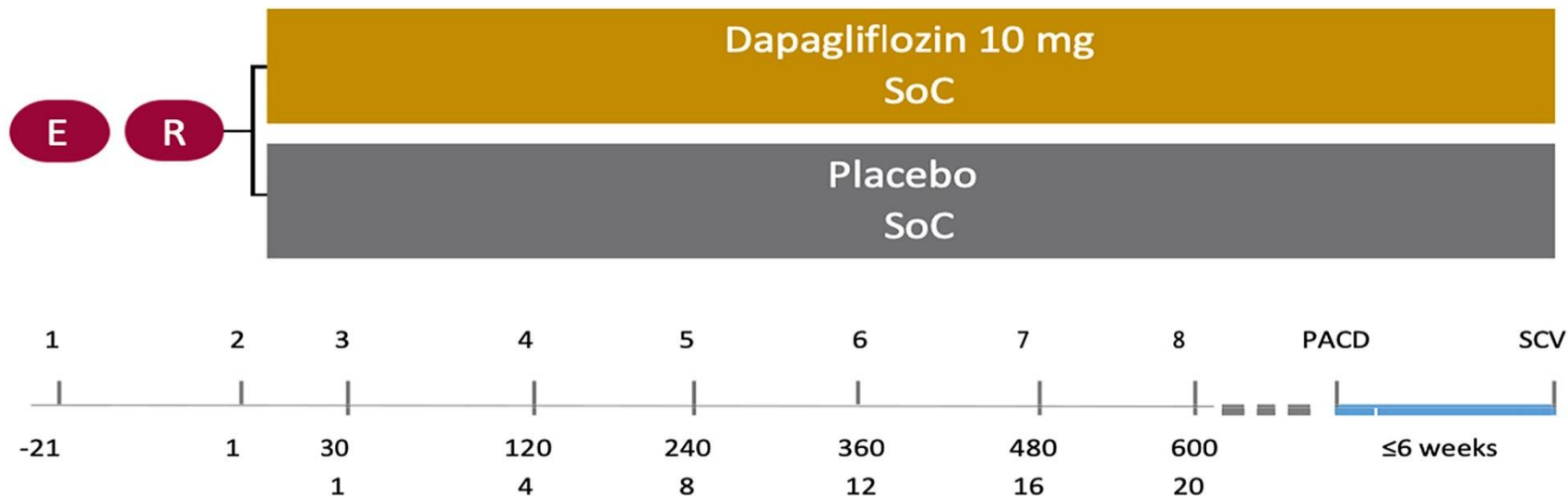
- Pyroptosis, a kind of **programmed cell death**, is induced through an executor protein of cysteine-aspartic proteases1 (**caspase-1**) by some immunoactivity cells stimulated by pathogens and danger signals
- The typical manifestations of pyroptosis are increased by expression of intracellular **NLRP3 inflammasome** and activated **caspase-1**.
- Podocyte loss in glomerulus is one of the early triggers of DKD. Pyroptosis has been reported as being correlated with the mechanism of podocyte loss
- Tubular epithelial cell pyroptosis is a risk factor to tubular injury in DKD. As mentioned earlier there is a ROS/TXNIP/NLRP3 inflammasome signalling pathway in tubular epithelial cells which leads to cell pyroptosis.
- SGLT2 inhibition target pyroptosis activity through **NLRP3 inflammasome** reduced expression in diabetic and non-diabetic milieu



SGLT2 inhibitors are anti-inflammatory drugs

Dapagliflozin in heart failure with preserved and mildly reduced ejection fraction: rationale and design of the DELIVER trial

Symptomatic HF (NYHA class II–IV). LVEF >40% and evidence of structural heart disease
NT-proBNP ≥ 300 pg/mL at Visit 1 for patients without ongoing atrial fibrillation/flutter.
If ongoing atrial fibrillation/flutter at Visit 1, NT-proBNP must be ≥ 600 pg/mL.



In person visits after 30 days; 4 months; thereafter every 4 months after randomization.

ONGOING TRIALS FOR HFpEF PATIENTS TREATED WITH IRON IV

1. Effect of IV Iron in Patients With Heart Failure With Preserved Ejection Fraction (FAIR-HFpEF)

Primary Outcome Measures: Exercise capacity [Time Frame: 52 weeks]The difference of 6-minute walking distance in meters from baseline to end of study in symptomatic patients with HFpEF with documented ID compared to the control group.

2. Effects of Iron Therapy in Heart Failure With Preserved Ejection Fraction and Iron Deficiency (PREFER-HF)

Primary Outcome Measures: Six minute walking test distance [Time Frame: 24 weeks] Change in meters traveled in six minute walking test from baseline to week 24. An increase in distance is related to an improvement in functional capacity.

1. NCT03074591

2. NCT03833336

HEART FAILURE COMPENDIUM

From Systemic Inflammation to Myocardial Fibrosis

The Heart Failure With Preserved Ejection Fraction Paradigm Revisited

Walter J. Paulus, Michael R. Zile

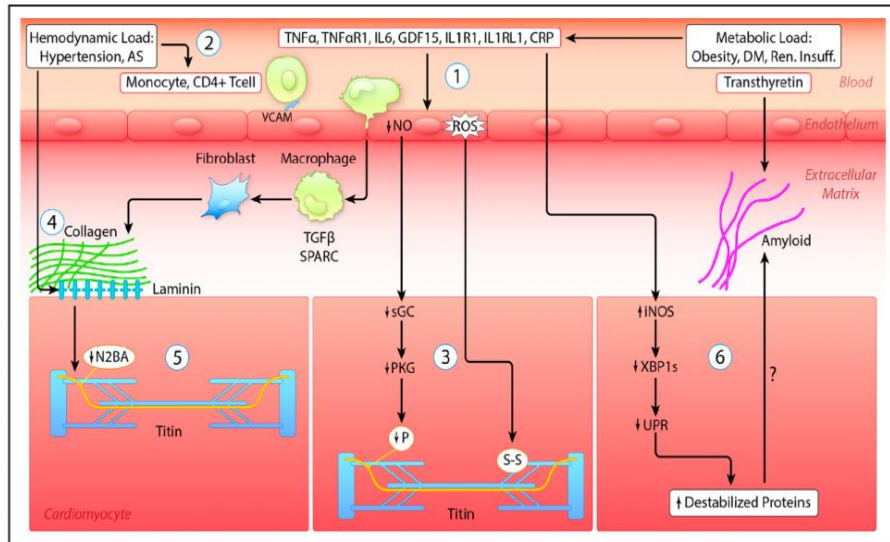
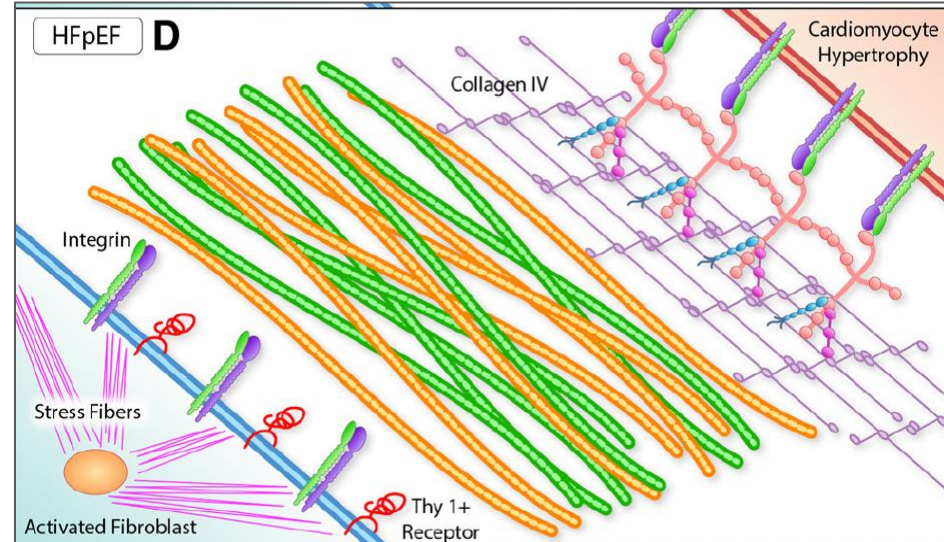


Figure 1. Pathophysiological mechanisms linking systemic inflammation to myocardial stiffness.



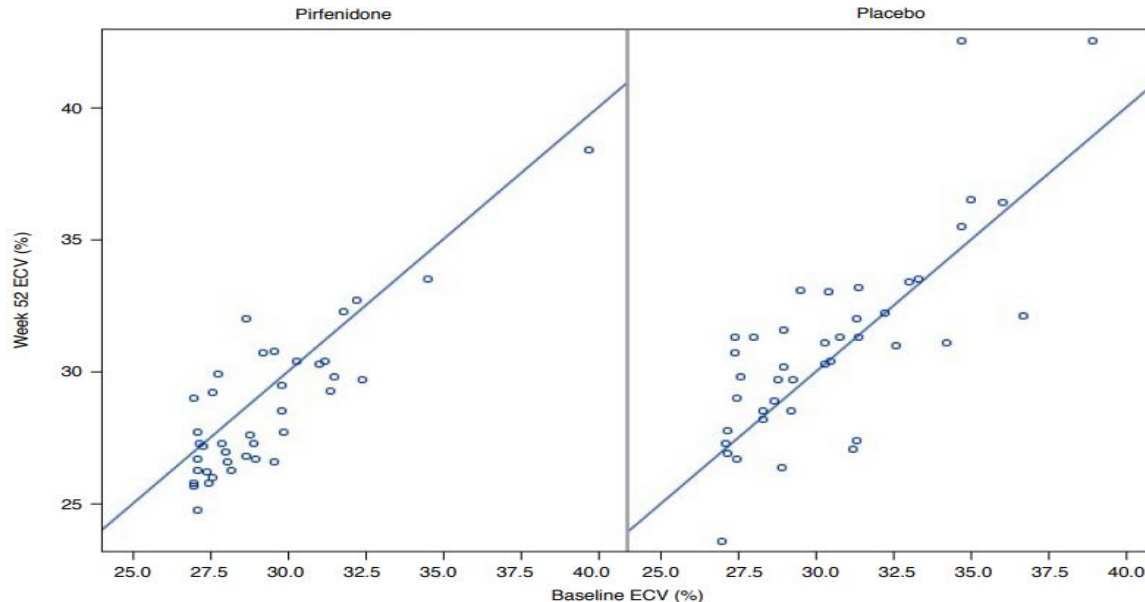
PIROUETTE trial. **Pirfenidone in HFpEF: a randomized phase 2 trial**

Myocardial fibrosis, defined as a myocardial extracellular volume of 27% or greater

Table 2 | Primary outcome

	Pirfenidone			Placebo			Between-group difference (95% CI) ^a	P value
	Baseline (n = 47)	52 weeks (n = 39)	Δ from baseline to 52 weeks	Baseline (n = 47)	52 weeks (n = 41)	Δ from baseline to 52 weeks		
Myocardial ECV (%)	29.5 ± 2.5	28.6 ± 2.7	-0.7 ± 1.4	30.7 ± 2.9	31.1 ± 3.8	0.5 ± 2.4	-1.21 (-2.12 to -0.31)	0.009

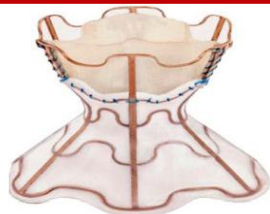
Data are mean ± s.d. ^aAnalysis of covariance (ANCOVA), two-sided, adjusted for baseline myocardial ECV, sex and treatment group; $F = 7.11$, $P = 0.009$.



NCT02932566

Lewis GA, et al. Nature Med. 2021;27:1477-1482

Technologies for Treating Left Atrial Decompression in Heart Failure



V-Wave device⁵



Interatrial Shunt Device^{6, 7}



Atrial Flow Regulator⁸



Levoatrial-Coronary Sinus Shunt⁹

Total number patients treated

38

HFpEF / HFrEF

8 / 30

PAP (mmHg)



PCWP at rest (mmHg)



PCWP at exercise (mmHg)



6MWT-distance (m)



NYHA functional class



NT-pro BNP (pg/ml)

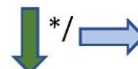


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86 / 0



20 / 16



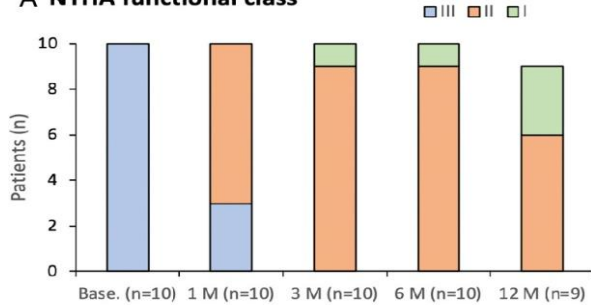
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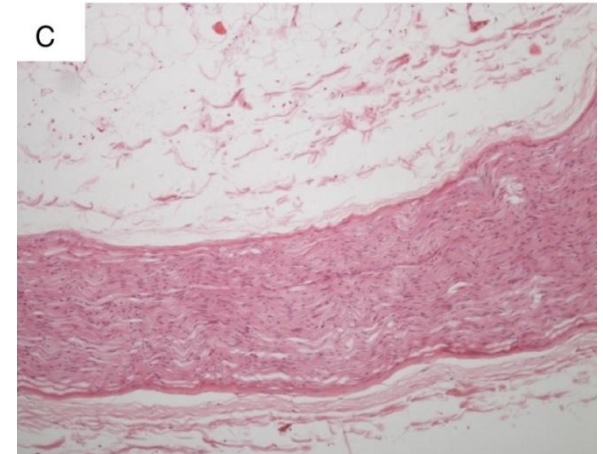
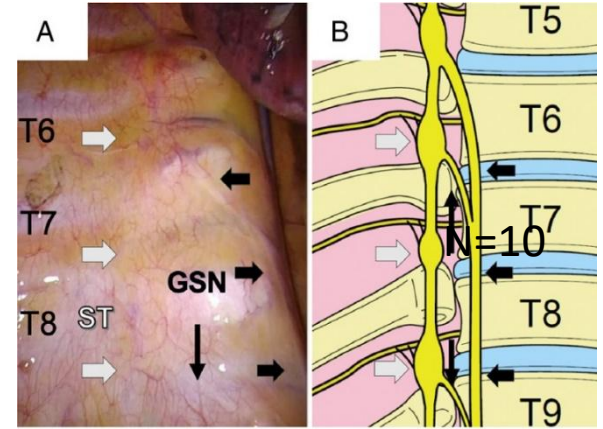
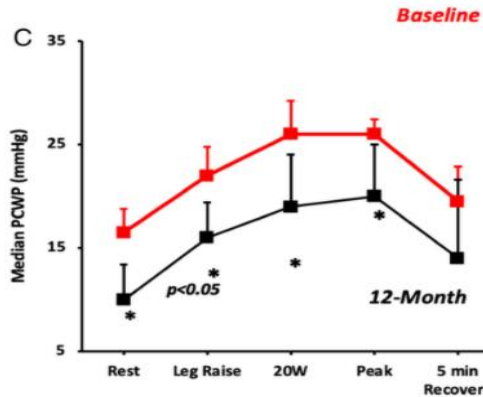
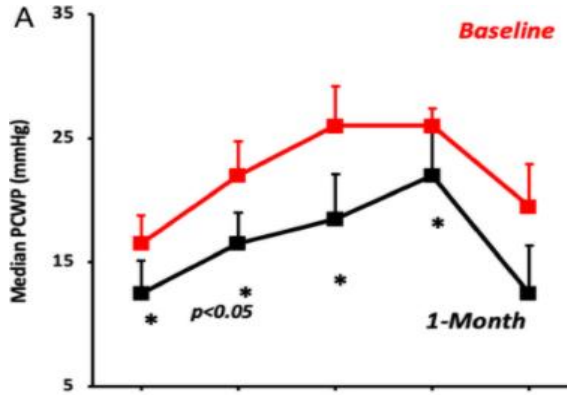
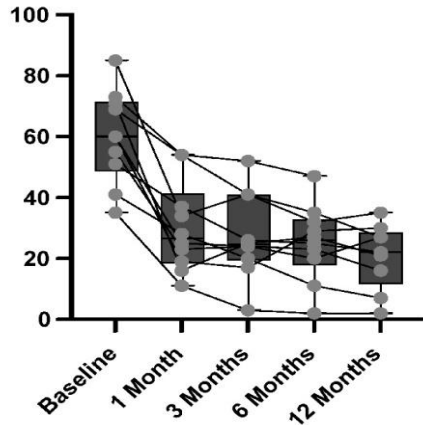
PRELOAD MODULATION

Surgical ablation of the right greater splanchnic nerve for the treatment of HFpEF: first-in-human clinical trial

A NYHA functional class

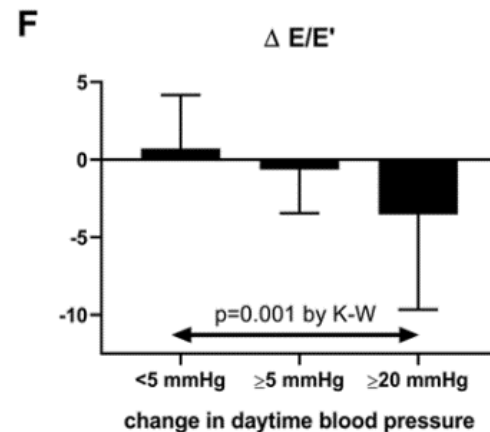
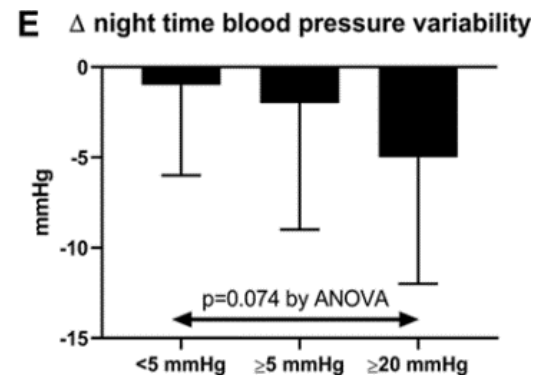
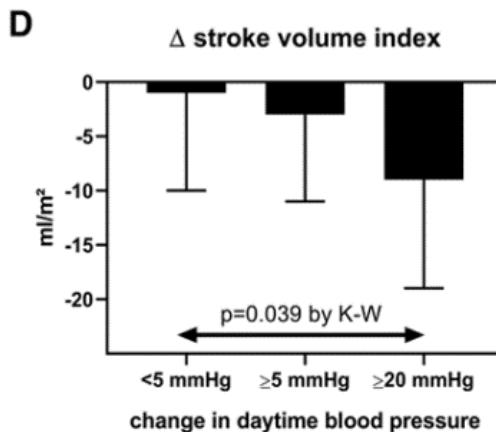
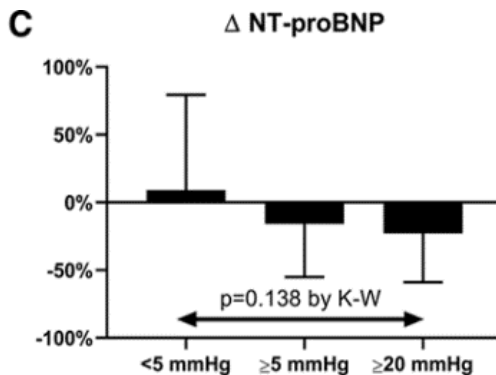
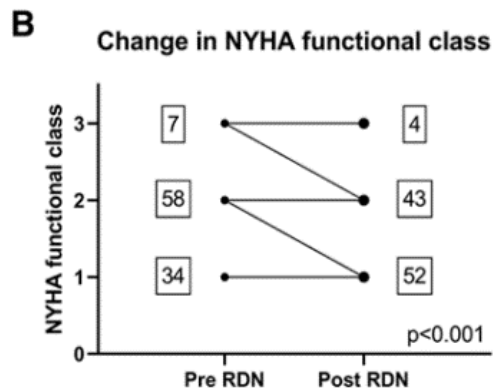
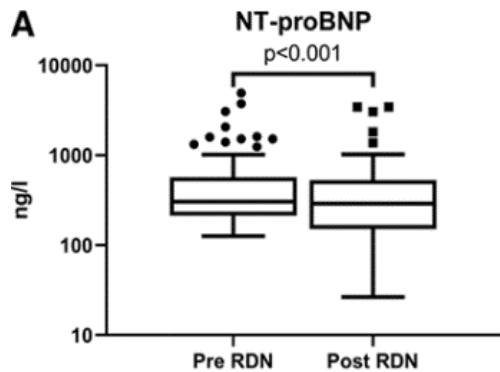


B MLWHFQ Score



Renal Sympathetic Denervation in Patients With Heart Failure With Preserved Ejection Fraction

N=99



Proposed High-Priority Extracardiac Areas for Future Research in HFpEF

Discovery



Identify geroscience targets for treatment:

- Senescent cellular pathways
- Epigenetic pathways
- Adipose biology
- Skeletal muscle microvascular and mitochondrial dysfunction

Translation



Comprehensive phenotypic characterization:

- Human biospecimens
- Biomarkers

Proof of concept intervention trials to modify the geroscience targets

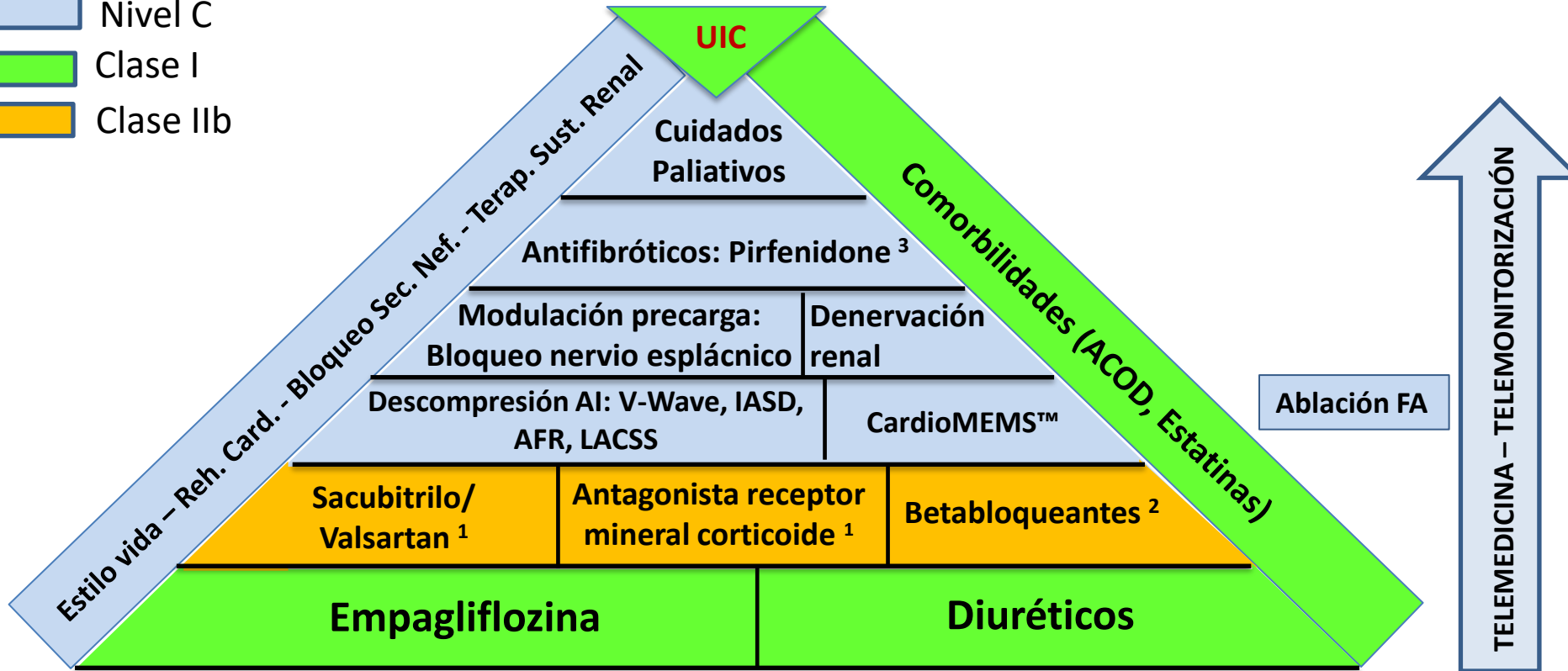
Implementation



- Evaluate multimorbidity management approaches
- Test promising geroscience interventions
- Improve adherence to effective lifestyle interventions
- Disseminate successful strategies into community practice

Alternativas terapéuticas para el paciente con ICfEp

-  Nivel C
-  Clase I
-  Clase IIb



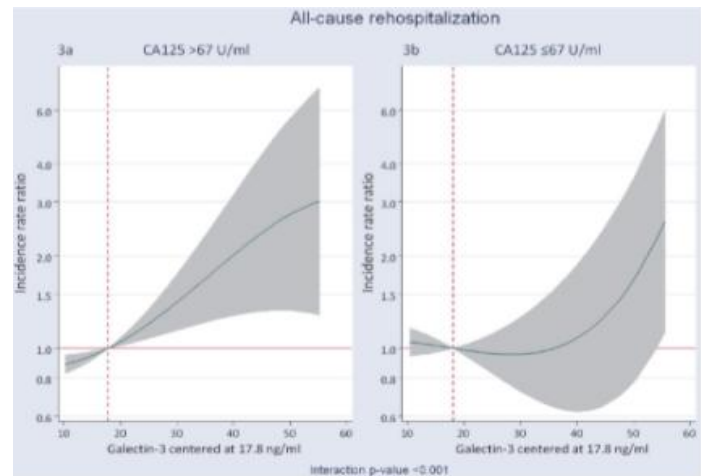
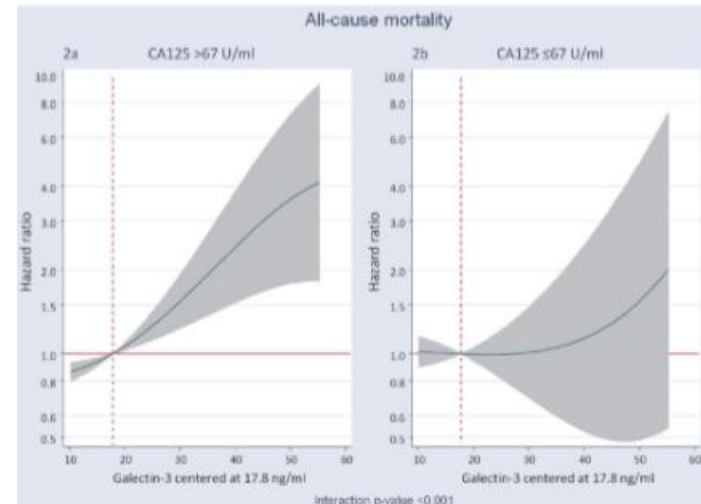
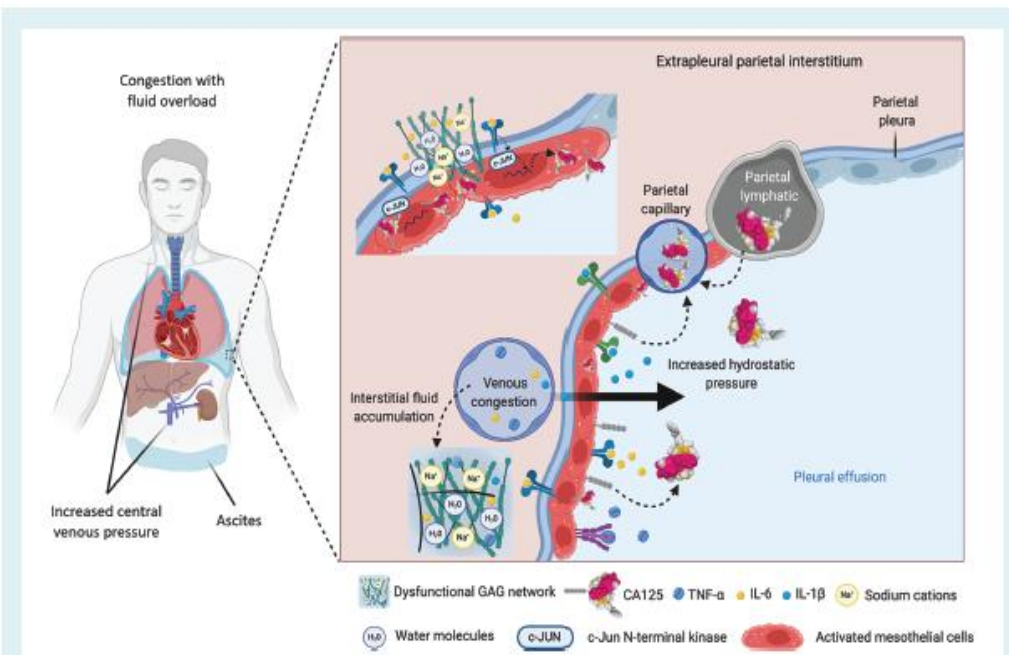
1. FDA recomendación. 2. Si HTA y/o EAC y/o frecuencia cardiaca (RSR) elevada y en ausencia de incompetencia cronotrópica. 3. Estudios Fase II.

AI: aurícula izquierda; EAC: Enfermedad arterial coronaria; FA: fibrilación auricular; ACOD; anticoagulante acción directa IASD: Interatrial shunt device Corvia®; AFR: Atrial Flow regulator; LACSS: Levo-atrial coronary sinus shunt

Antigen carbohydrate 125 as a biomarker in heart failure: a narrative review

Julio Núñez^{1,2,3}, Rafael de la Espriella^{1,2}, Gema Miñana^{1,2,3}, Enrique Santas^{1,2}, Pau Llácer⁴, Eduardo Núñez¹, Patricia Palau², Vicent Bodí^{1,2,3}, Francisco J. Chorro^{1,2,3}, Juan Sanchis^{1,2,3}, Josep Lupón^{3,5,6,7}, and Antoni Bayés-Genis^{3,5,6,7*}

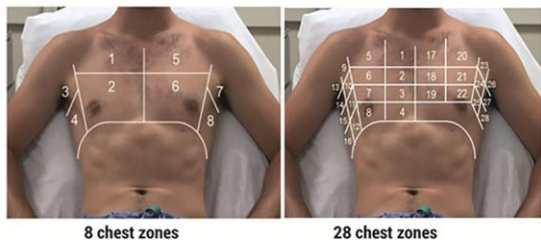
Pathophysiology of carbohydrate antigen 125 (CA125) in heart failure



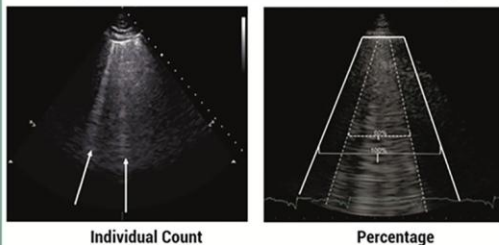
Ultrasound imaging of congestion in heart failure: examinations beyond the heart

Pierpaolo Pellicori^{1*†}, Elke Platz^{2†}, Jeroen Dauw^{3,4†}, Jozine M. ter Maaten^{3,5}, Pieter Martens^{3,4}, Emanuele Pivetta⁶, John G.F. Cleland¹, John J.V. McMurray⁷, Wilfried Mullens^{3,8}, Scott D. Solomon², Faiez Zannad^{9,10}, Luna Gargani^{11‡}, and Nicolas Girerd^{9,10‡}

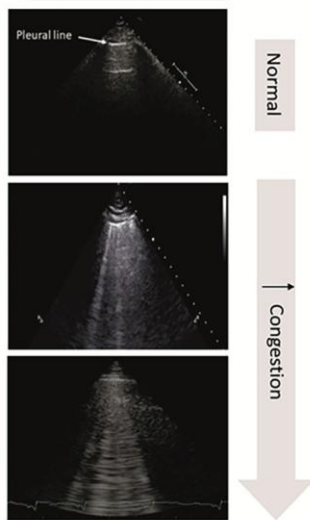
LUNG ULTRASOUND



Quantification

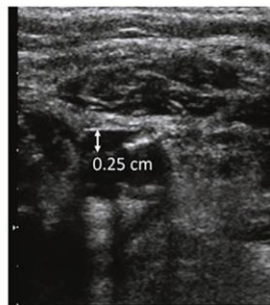


B-LINES PATTERNS

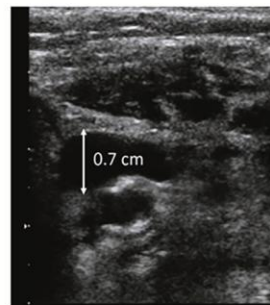


JVD ULTRASOUND

JVD AT REST

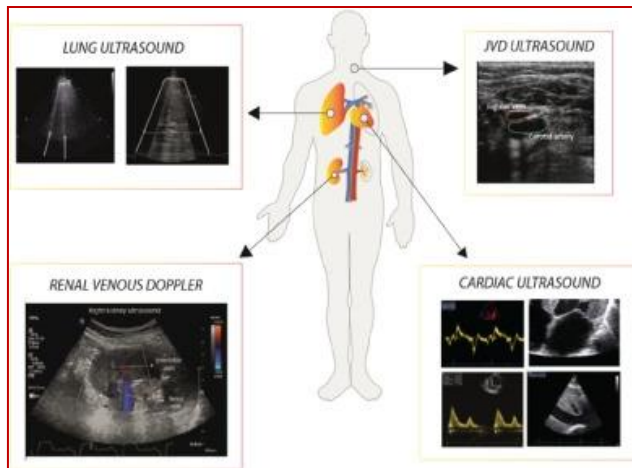
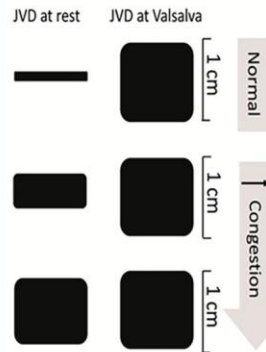


JVD AT VALSALVA



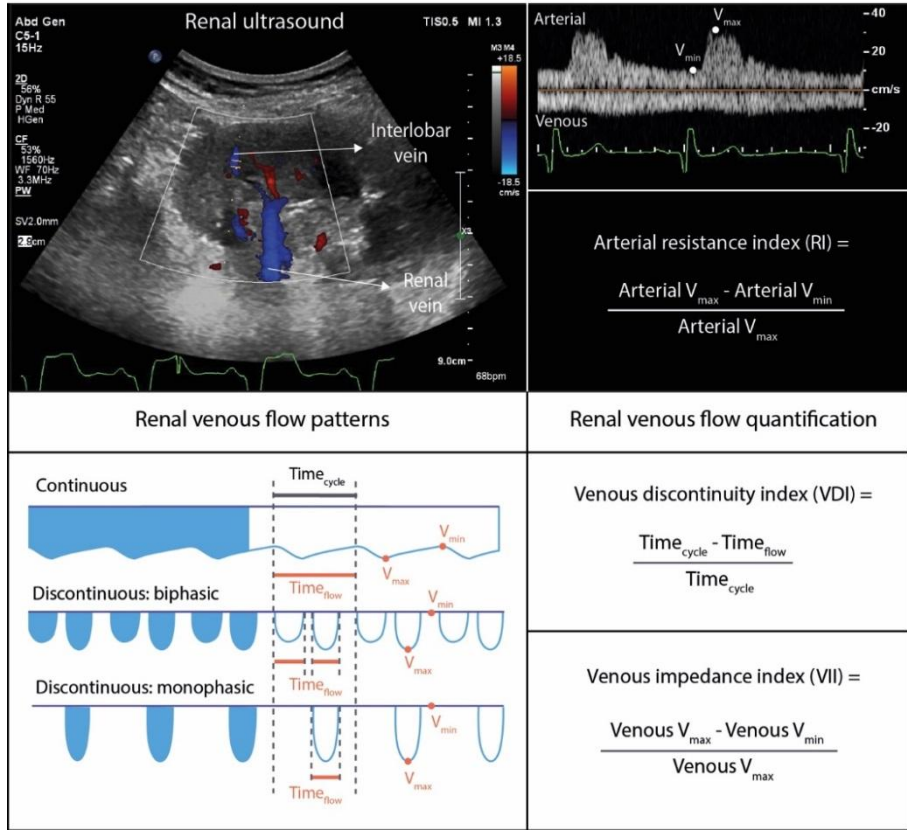
THE JVD RATIO (VALSALVA/REST) IS 2.8

INTERNAL JUGULAR VEIN PATTERNS

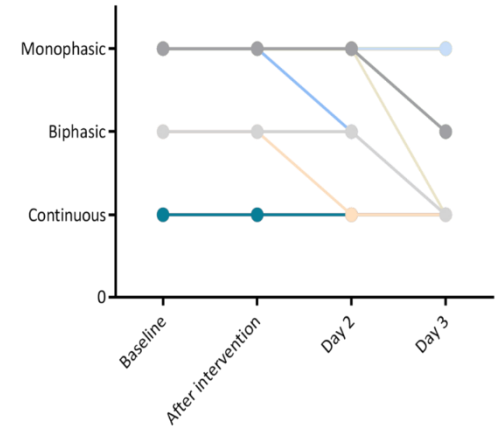


The Effect of Decongestion on Intrarenal Venous Flow Patterns in Patients With Acute Heart Failure

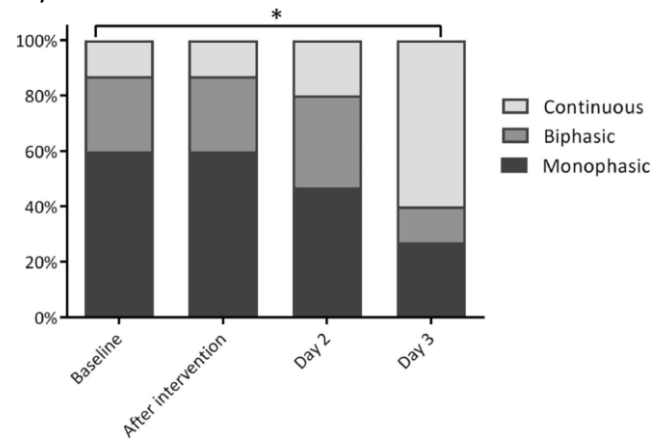
Assessment and calculation of renal ultrasound parameters



Venous flow patterns during hospitalization for AHF

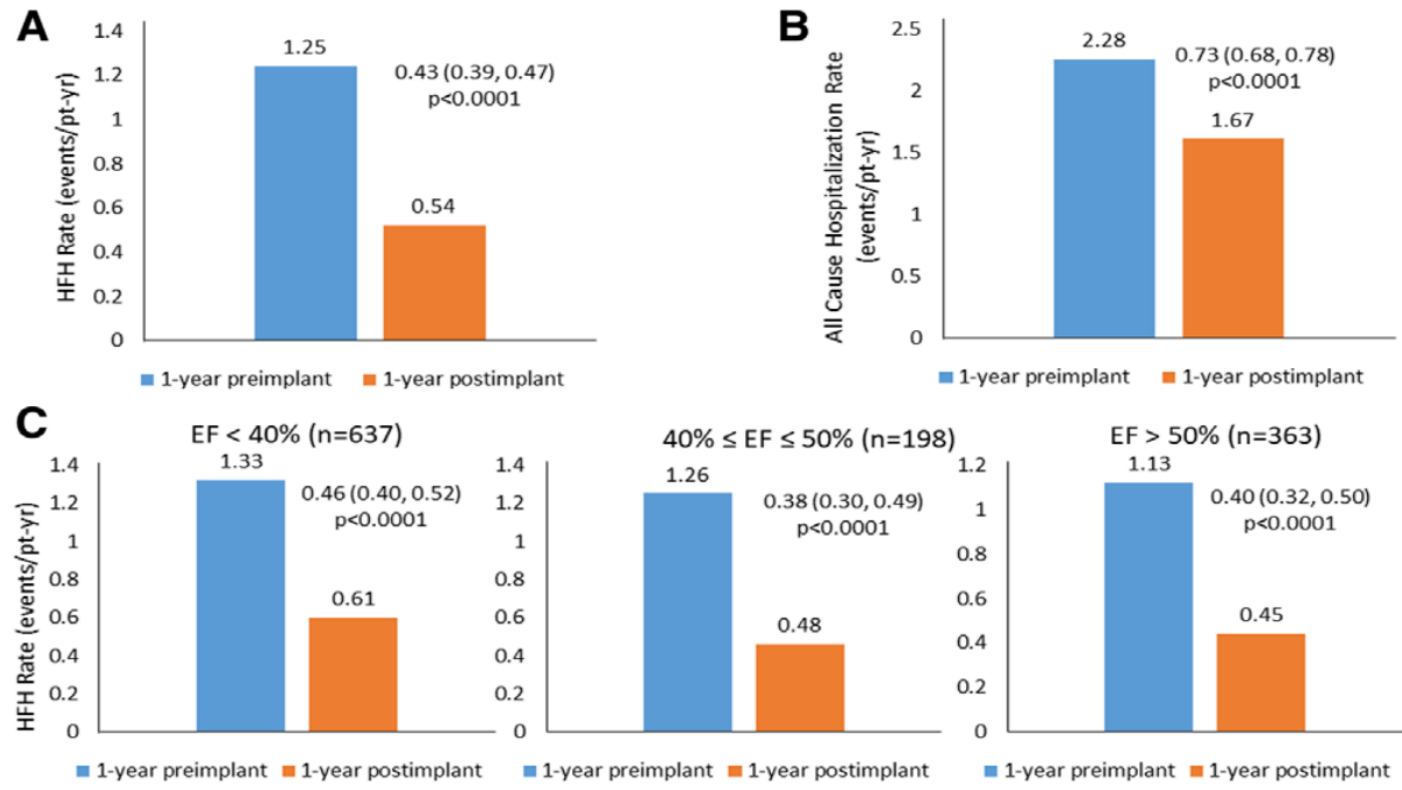


Changes in percentages of continuous venous flow following hemodynamic alterations. **P* < .05.



CardioMEMS Post-Approval Study Investigators

N = 1200 patients



Haemodynamic-guided management of heart failure (GUIDE-HF): a randomised controlled trial



JoAnn Lindenfeld, Michael R Zile, Akshay S Desai, Kunjan Bhatt, Anique Ducharme, Douglas Horstmannshof, Selim R Krim, Alan Maisel, Mandeep R Mehra, Sara Paul, Samuel F Sears, Andrew J Sauer, Frank Smart, Marcel Zughaib, Paige Castaneda, Jean Kelly, Nessa Johnson, Poornima Sood, Greg Ginn, John Henderson, Philip B Adamson, Maria Rosa Costanzo

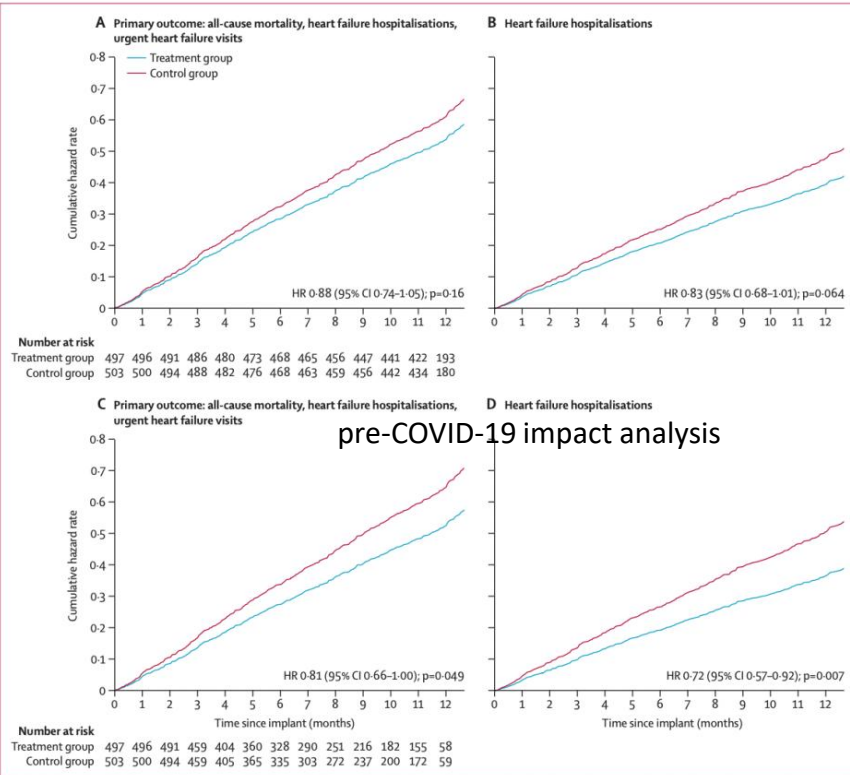


Figure 2: Cumulative hazard rate curves and 95% CIs for the primary composite endpoint and heart failure hospitalisations

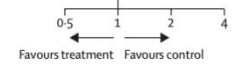
Lindenfeld J, et al. Lancet. 2021;398:991-1001

GUIDE-HF trial

1000 patients with implantable pulmonary artery pressure monitor



	n	Treatment events (rate)	Control events (rate)		Hazard ratio (95% CI)	Subgroup p value	P _{interaction}
Overall	1000	253 (0.563)	289 (0.640)		0.88 (0.74-1.05)	0.16	
NYHA class							
II*	296	53 (0.401)	75 (0.554)		0.72 (0.50-1.05)	0.086	0.095
III	650	171 (0.589)	198 (0.677)		0.87 (0.70-1.08)	0.21	
IV*	54	29 (1.527)	16 (0.910)		1.68 (0.88-3.20)	0.12	
II and III*	946	224 (0.525)	273 (0.633)		0.83 (0.69-1.00)	0.050	0.046†
Qualification							
Heart failure hospitalisation in past year*	557	181 (0.757)	212 (0.820)		0.92 (0.74-1.14)	0.47	0.71
Elevated BNP/NT-proBNP only*	442	72 (0.350)	77 (0.409)		0.86 (0.62-1.19)	0.36	
Ejection fraction							
HFpEF (ejection fraction >40%)	469	90 (0.442)	114 (0.518)		0.85 (0.64-1.14)	0.28	0.90
HFrfEF (ejection fraction ≤40%)	531	163 (0.677)	175 (0.773)		0.88 (0.70-1.10)	0.26	
Ejection fraction (additional)							
HFpEF (ejection fraction ≥50%)*	492	154 (0.693)	168 (0.810)		0.86 (0.68-1.08)	0.20	0.75
HFmrfEF (≤40% ejection fraction <50%)*	110	26 (0.540)	25 (0.513)		1.05 (0.60-1.86)	0.86	
HFrfEF (ejection fraction <40%)*	398	73 (0.420)	96 (0.505)		0.83 (0.61-1.14)	0.25	
Age (years)							
Below median (<71)	492	156 (0.730)	173 (0.758)		0.96 (0.76-1.22)	0.75	0.30
Median and above (≥71)	508	97 (0.420)	116 (0.529)		0.79 (0.60-1.05)	0.11	
Sex							
Male	625	178 (0.656)	171 (0.625)		1.05 (0.84-1.31)	0.67	0.010
Female	375	75 (0.434)	118 (0.681)		0.64 (0.47-0.87)	0.004	
Race							
White	807	189 (0.516)	194 (0.531)		0.97 (0.79-1.20)	0.78	0.095
Black	179	60 (0.811)	94 (1.184)		0.68 (0.48-0.97)	0.035	
Ethnicity							
Hispanic	33	18 (1.257)	21 (1.383)		0.91 (0.45-1.83)	0.79	0.95
Non-Hispanic	960	232 (0.544)	264 (0.615)		0.88 (0.73-1.07)	0.20	
Ischaemic cardiomyopathy							
Ischaemic	397	99 (0.545)	112 (0.670)		0.81 (0.61-1.08)	0.16	0.40
Non-ischaemic	560	142 (0.578)	160 (0.607)		0.95 (0.75-1.21)	0.69	
Device implant							
With CRT-D/CRT-P/ICD	562	162 (0.633)	188 (0.759)		0.83 (0.67-1.04)	0.11	0.48
Without CRT-D/CRT-P/ICD	438	91 (0.482)	101 (0.508)		0.95 (0.71-1.28)	0.73	



THE PRESENT AND FUTURE

JACC REVIEW TOPIC OF THE WEEK: POINT

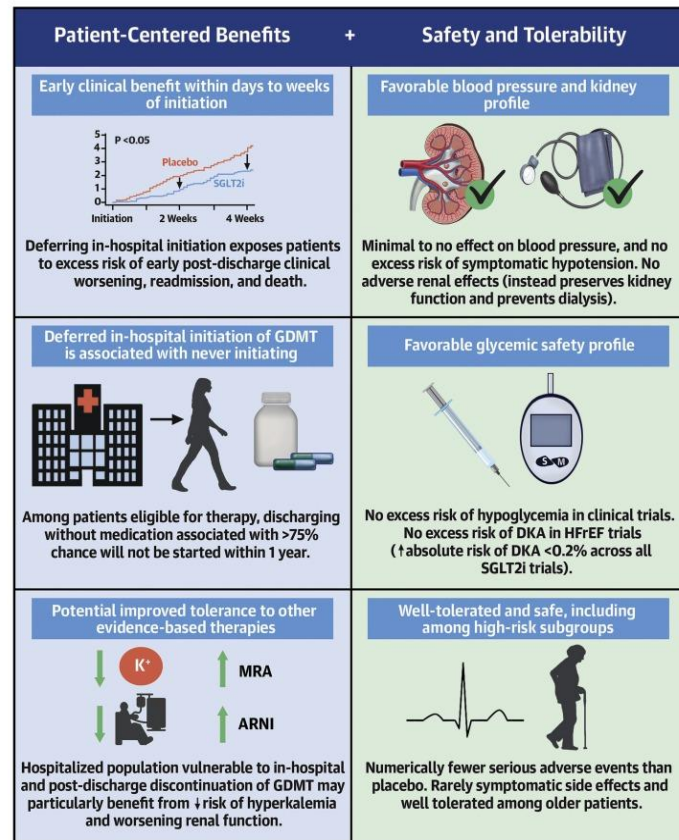
In-Hospital Initiation of Sodium-Glucose Cotransporter-2 Inhibitors for Heart Failure With Reduced Ejection Fraction



EMPULSE (NCT04157751) Randomized, double-blind study; 530 patients hospitalized for HF on day 2-5 randomized 1:1 to empagliflozin 10 mg or placebo. Patients must be stabilized with SBP >100 mm Hg, no IV vasodilators or increase in IV loop diuretics in 6 hours and no IV inotropes in 24 hours. Includes patients with **HFpEF and HFrEF. eGFR ≥ 20 mL/min per 1.73 m².**

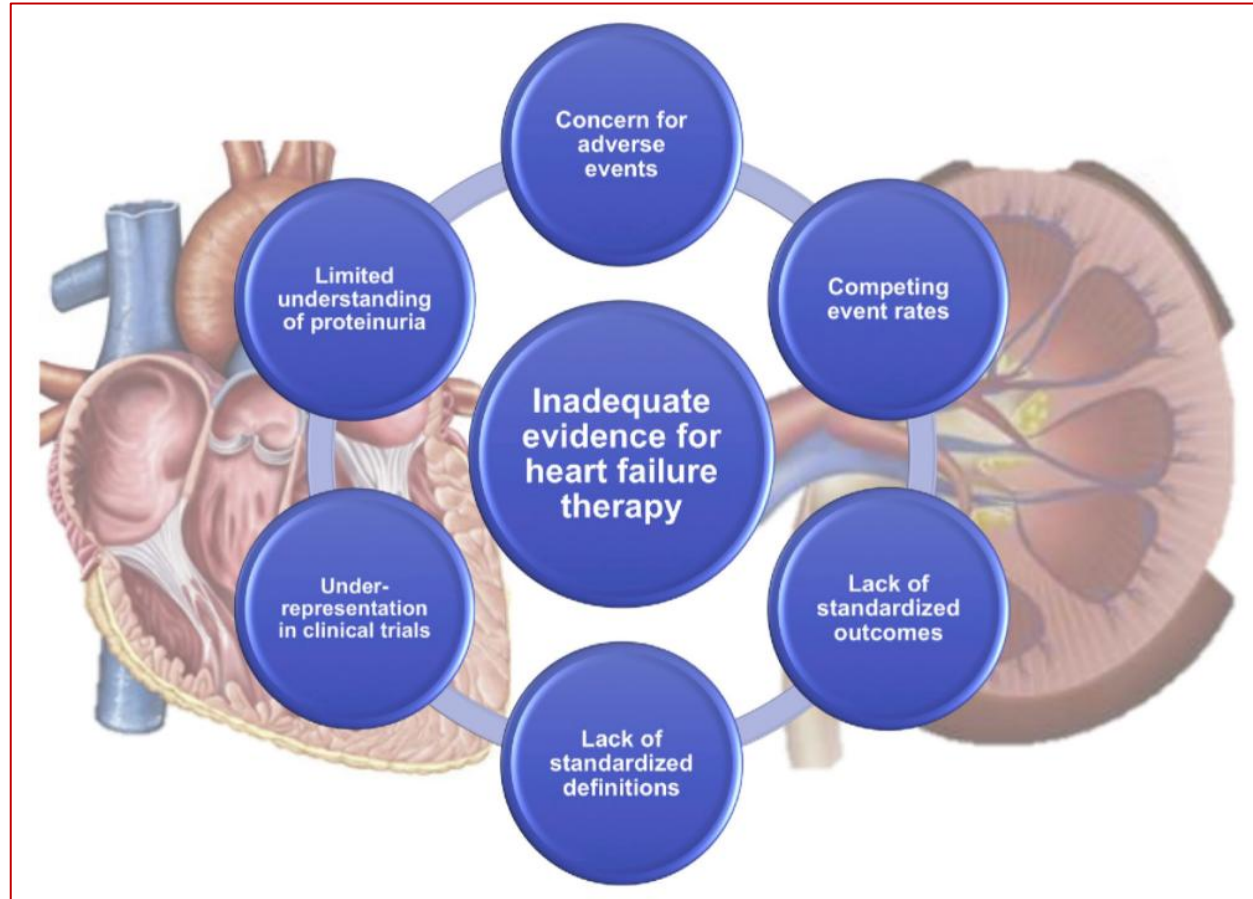
Primary endpoint is composite of death, number of heart failure events, time to first heart failure event, and ≥ 5 point KCCQ-TSS score change at 90 days using a “win-ratio” approach.

CENTRAL ILLUSTRATION: Rationale for Routine In-Hospital Initiation of Sodium-Glucose Cotransporter-2 Inhibitors for Heart Failure With Reduced Ejection Fraction



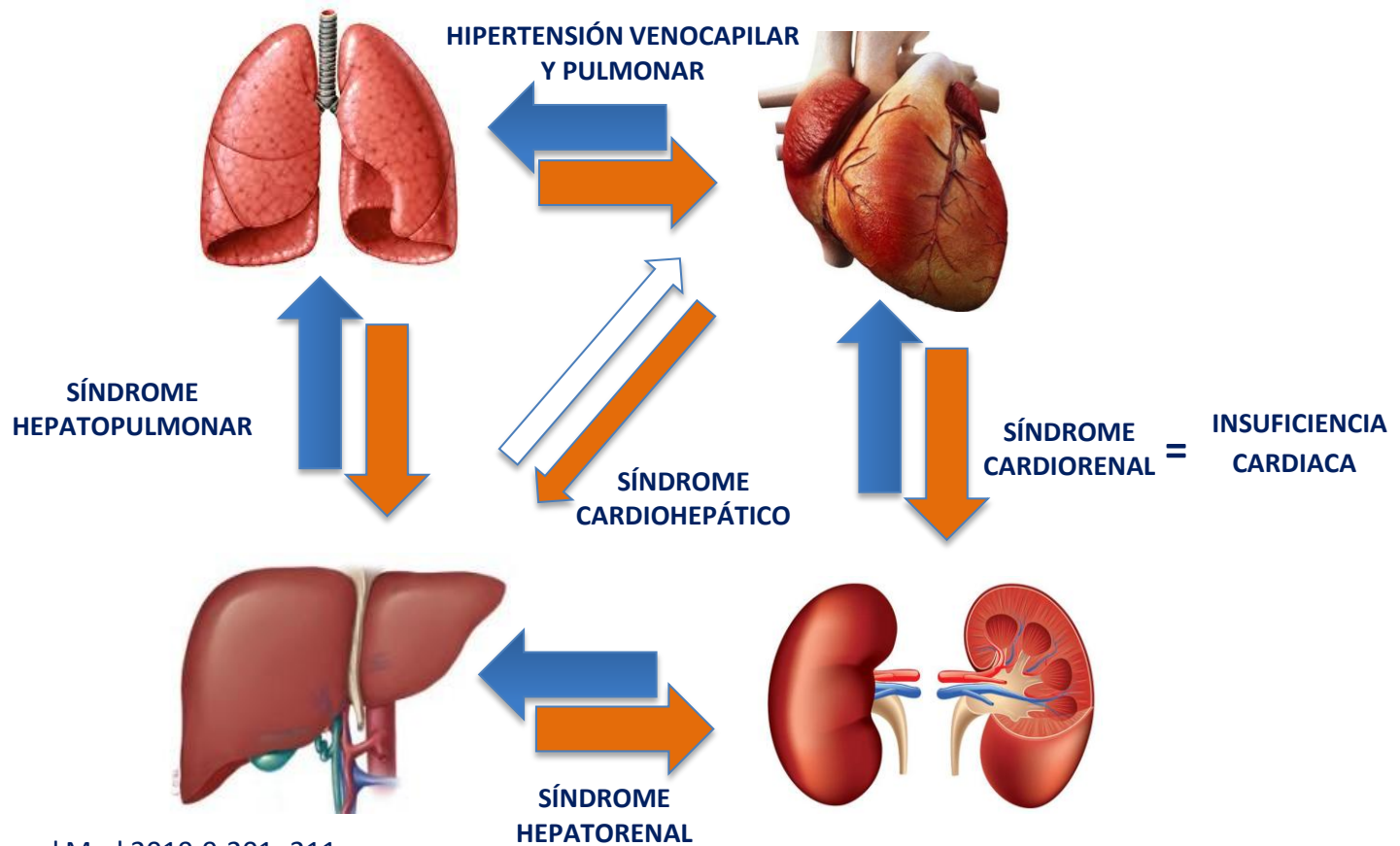
Rao, V.N. et al. J Am Coll Cardiol. 2021;78(20):2004-2012.

Limitations in the Evidence for Patients With HFrEF and Advanced CKD



INTERRELACIÓN MULTIORGÁNICA EN LA INSUFICIENCIA CARDIACA

The “**organ crosstalk**” is the complex biological communication between different body systems, mediated via cellular, subcellular, molecular, neural, endocrine and paracrine factors through numerous feedback ¹



Multi-Omics Approach: New Potential Key Mechanisms Implicated in Cardiorenal Syndromes

Multimic Data: genome, epigenome, metabolome, transcriptome and proteome

New mechanisms
implicated in CRS
crosstalk

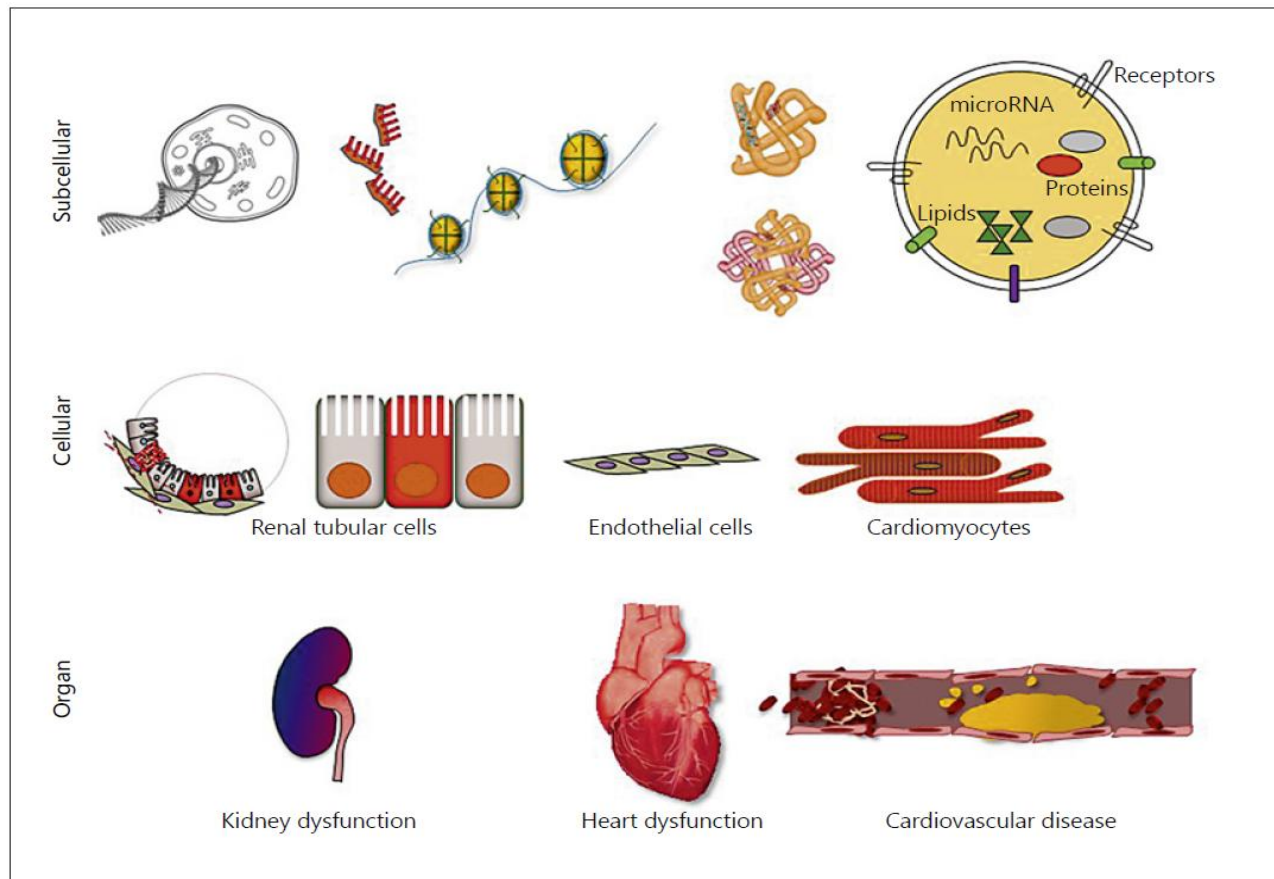
Gene expression

Epigenetic Mechanisms

Prenatal programming

Small non-coding RNA

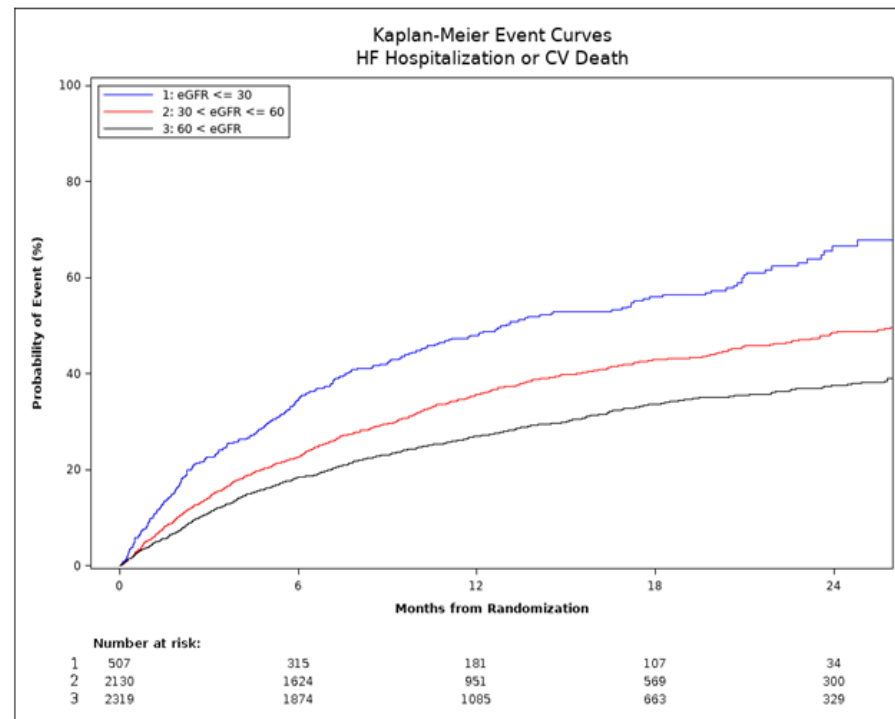
Extracellular vesicles



Vericiguat Global Study in Subjects with HFrEF

Baseline Clinical Characteristics in VICTORIA¹

Key baseline features of VICTORIA (N=5050)	
EF at screening, mean (SD), %	28.9 (8.3)
NYHA class at baseline, No. (%)	
n	5046
II	2975/ 5046 (59.0%)
III	2003 (39.7%)
IV	66 (1.3%)
eGFR category at randomisation (ml/min/1.73m ²)	
n	4959
≤30	506 (10.2%)
>30 to ≤60	2118 (42.7%)
>60	2335 (47.1%)
Mean (SD)	61.5 (27.2)



Renal function and the effects of vericiguat in patients with worsening heart failure with reduced ejection fraction: insights from the VICTORIA (Vericiguat Global Study in Subjects with HFrEF) trial

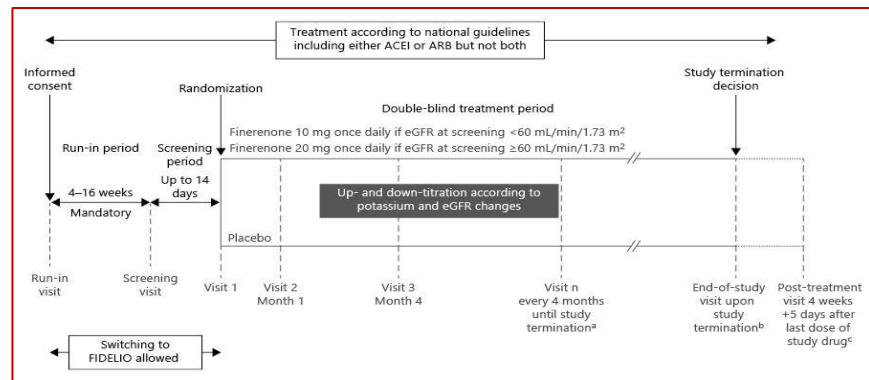
Clinical Outcome	eGFR \leq 30				eGFR $>$ 30		Interaction P-value
	Vericiguat Rate* (Events)	Placebo		Vericiguat Rate (Events)	Placebo		
		Rate (Events)	HR (95% CI)		Rate (Events)	Rate (Events)	
HF hospitalization or CV death	64.9% (144)	61.3% (127)	1.06 (0.84 - 1.35)	30.8% (737)	35.5% (826)	0.88 (0.79 - 0.97)	0.143
HF hospitalization or All-cause death	70.4% (156)	70.0% (145)	1.01 (0.80 - 1.26)	32.7% (783)	37.2% (867)	0.89 (0.80 - 0.98)	0.306
CV death	21.3% (67)	23.7% (67)	0.90 (0.64 - 1.26)	11.9% (336)	12.9% (365)	0.92 (0.80 - 1.07)	0.882

ORIGINAL ARTICLE

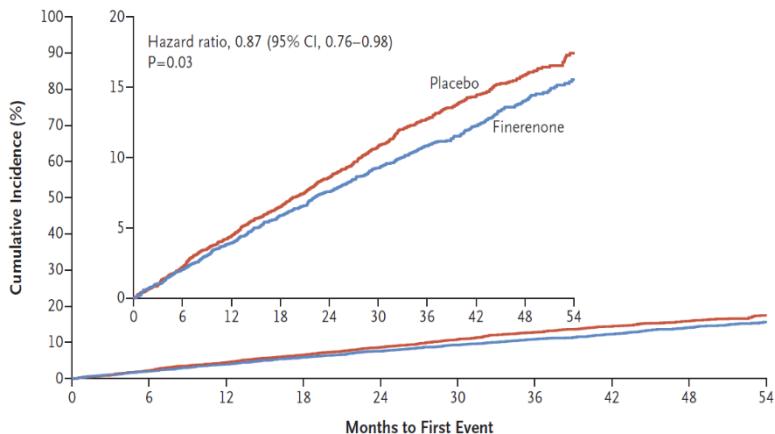
Cardiovascular Events with Finerenone in Kidney Disease and Type 2 Diabetes

B. Pitt, G. Filippatos, R. Agarwal, S.D. Anker, G.L. Bakris, P. Rossing, A. Joseph, P. Kolkhof, C. Nowack, P. Schloemer, and L.M. Ruilope, for the FIGARO-DKD Investigators*

7437 patients DM+CKD: urinary albumin-to-creatinine ratio of 30 to less than 300 and an eGFR of 25 to 90 ml/min/1.73 m² (stage 2 to 4 CKD) or a urinary albumin-to-creatinine ratio of 300 to 5000 and an eGFR of at least 60 ml/min/1.73 m² (stage 1 or 2 CKD)

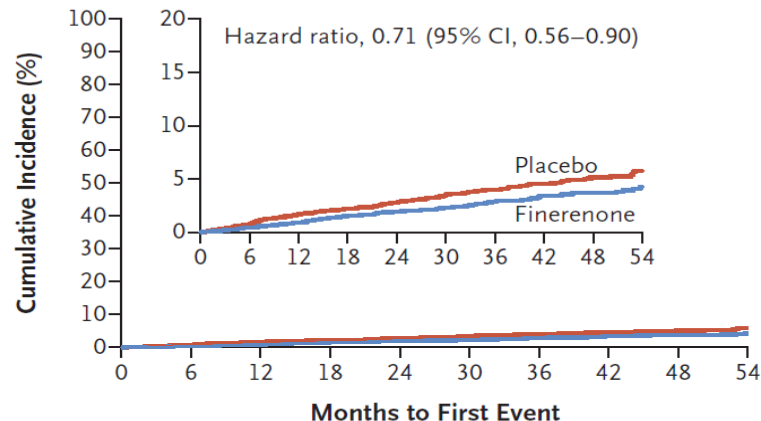


A Primary Composite Outcome



No. at Risk	0	6	12	18	24	30	36	42	48	54
Placebo	3666	3577	3479	3389	3267	2730	2125	1657	1076	585
Finerenone	3686	3600	3517	3427	3320	2781	2184	1712	1093	598

E Hospitalization for Heart Failure



No. at Risk	0	6	12	18	24	30	36	42	48	54
Placebo	3666	3610	3538	3471	3376	2849	2239	1751	1134	619
Finerenone	3686	3640	3581	3515	3429	2887	2284	1790	1142	629



nefrología

Revista de la Sociedad Española de Nefrología

www.revistanefrologia.com



Review

Developing the subspecialty of cardio-nephrology: The time has come. A position paper from the coordinating committee from the Working Group for Cardiorenal Medicine of the Spanish Society of Nephrology

Javier Díez^{a,b,*}, Juan F. Navarro-González^{c,d}, Alberto Ortiz^{d,e}, Rafael Santamaría^{d,f,g}, Patricia de Sequera^h

UNIDADES CARDIORRENALES

CARDIO-NEFROLOGIA

REC: CardioClinics

www.reccardioclinics.org

Artículo especial

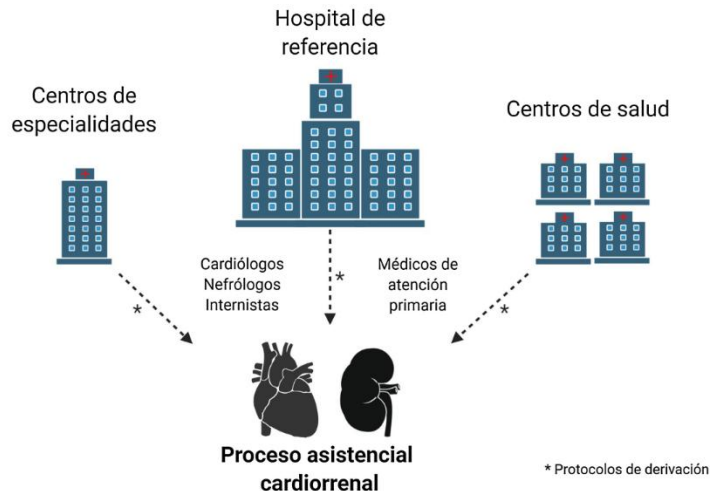
Bases para la creación de las unidades clínicas cardiorrenales. Documento de consenso de los grupos de trabajo cardiorrenal de la SEC y la SEN

Rafael de la Espriella^a, Miguel González^b, José Luis Górriz^{b,c,d}, María José Soler^{c,e}, Javier Díez^{f,g}, Patricia de Sequera^h, Alberto Ortiz Arduan^{c,i}, Juan F. Navarro-González^{c,j}, Rafael Santamaría^{c,k}, Marta Cobo^{g,l} y Julio Núñez^{a,d,g,*}

Artículo especial

Bases para la creación de las unidades clínicas cardiorrenales. Documento de consenso de los grupos de trabajo cardiorrenal de la SEC y la SEN

Rafael de la Espriella^a, Miguel González^b, José Luis Górriz^{b,c,d}, María José Soler^{c,e}, Javier Díez^{f,g}, Patricia de Sequera^h, Alberto Ortiz Arduan^{c,i}, Juan F. Navarro-González^{c,j}, Rafael Santamaría^{c,k}, Marta Cobo^{g,l} y Julio Núñez^{a,d,g,*}



Organización del plan de cuidados

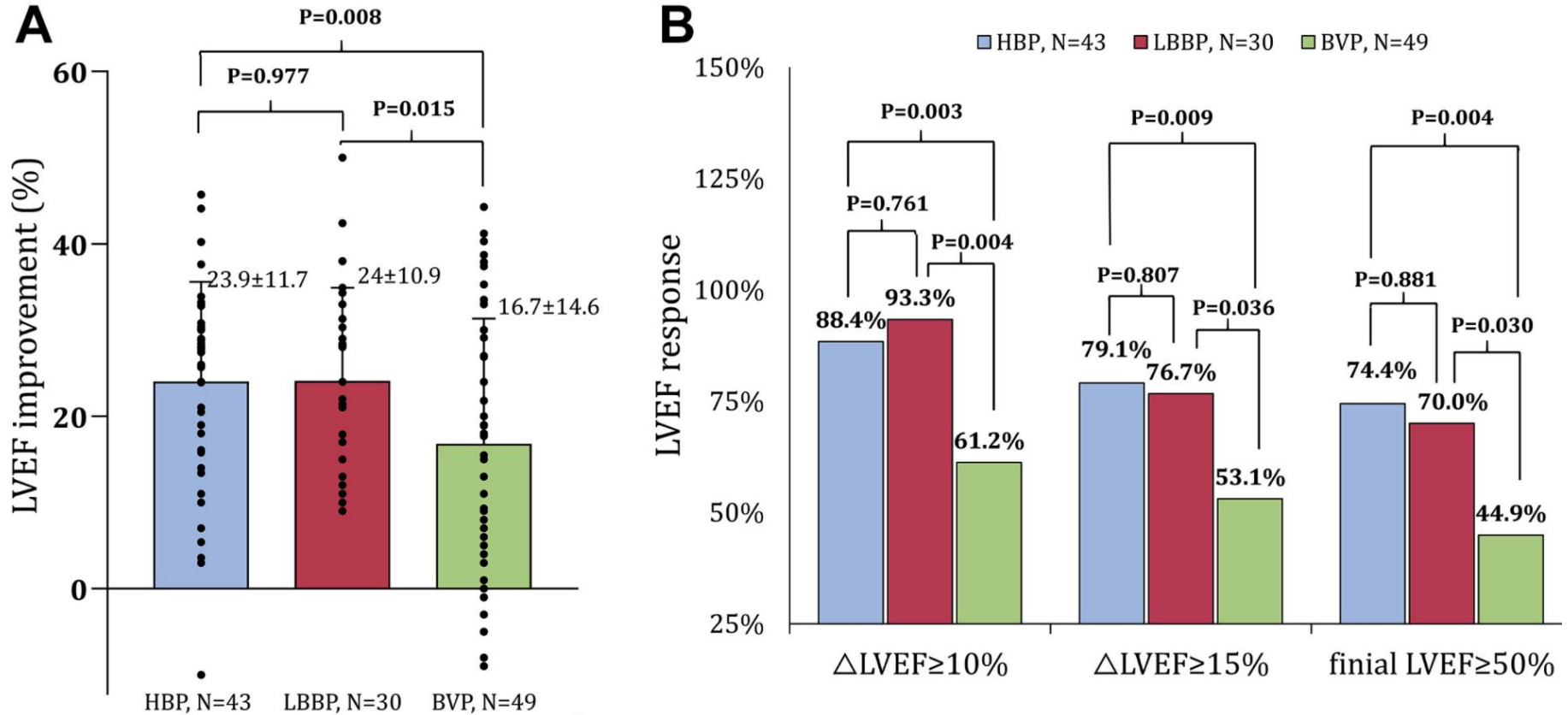
- Inicio de terapia renal sustitutiva
- Inicio de asistencia ventricular
- Protocolos de actuación en pacientes en fase terminal

Equipo multidisciplinar

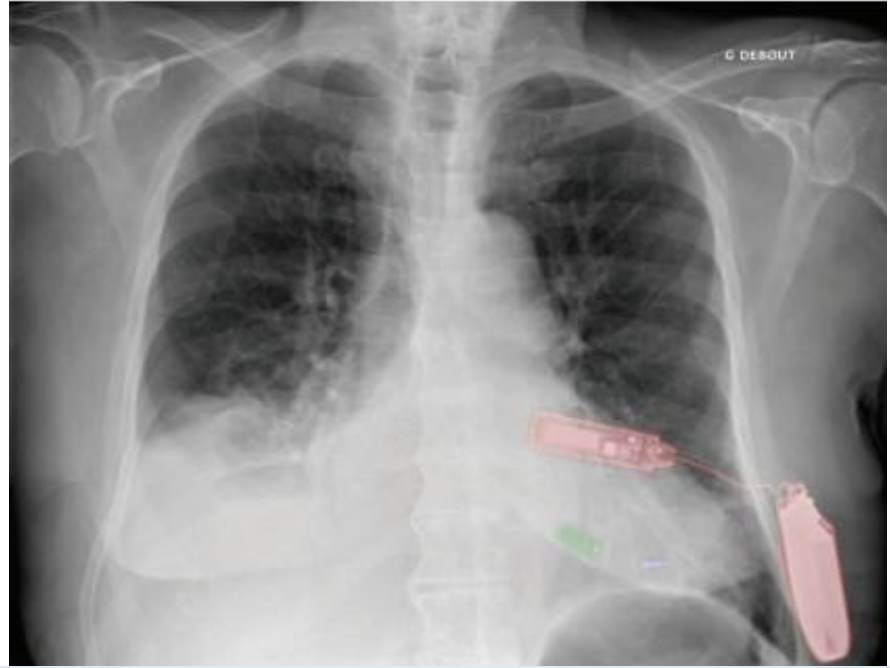
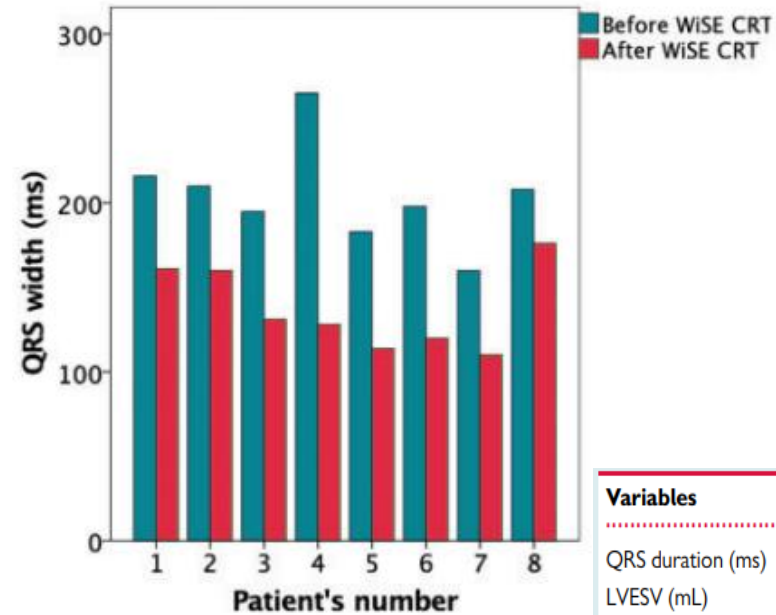
Selección de pacientes candidatos a DPCA

- Manejo de la congestión refractaria
- Como modalidad de terapia renal sustitutiva

Echocardiographic outcomes in patients with HBP, LBBP, and BVP



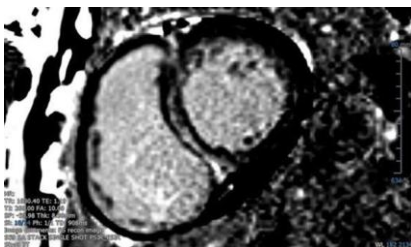
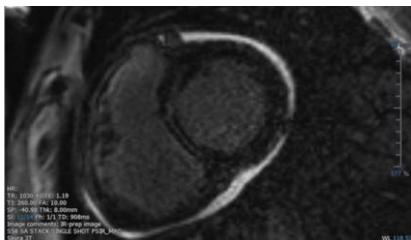
European experience with a first totally leadless cardiac resynchronization therapy pacemaker system



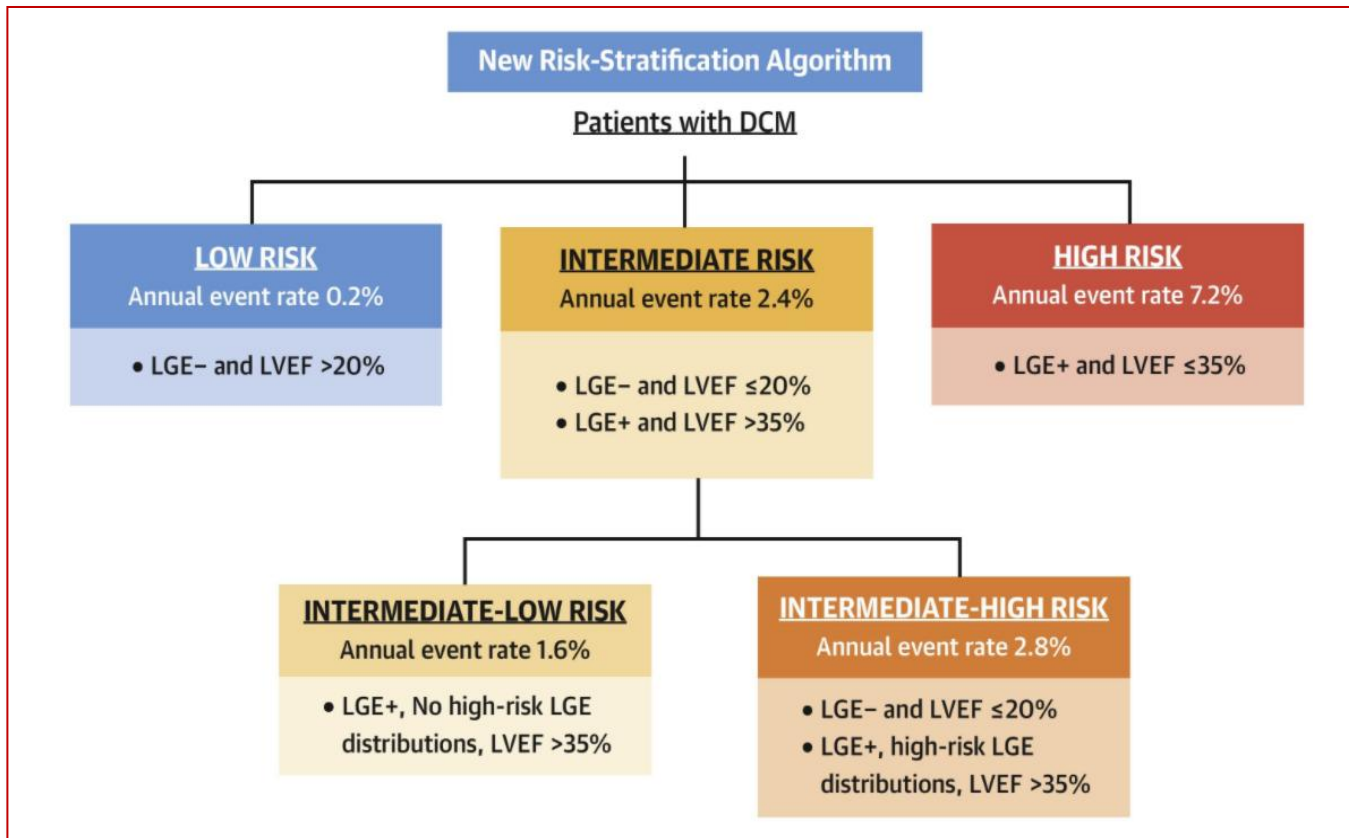
Variables	Before WiSE-CRT implantation	After WiSE-CRT implantation	Change	P-value
QRS duration (ms)	204.37 ± 30.26	137.50 ± 24.75	-66.88 ± 31.58	0.012
LVESV (mL)	117.33 ± 35.61	91.86 ± 48.43	-23 ± 27.77	0.24
LVEDV (mL)	160 ± 22.69	129.4 ± 40.70	-30.60 ± 29.30	0.22
LVEF (%)	28.43 ± 8.01	39.71 ± 11.89	+11.29 ± 8.46	0.018
NYHA	2.63 ± 0.51	2.29 ± 0.95		0.18

Improved Risk Stratification for Ventricular Arrhythmias and Sudden Death in Patients With Nonischemic Dilated Cardiomyopathy

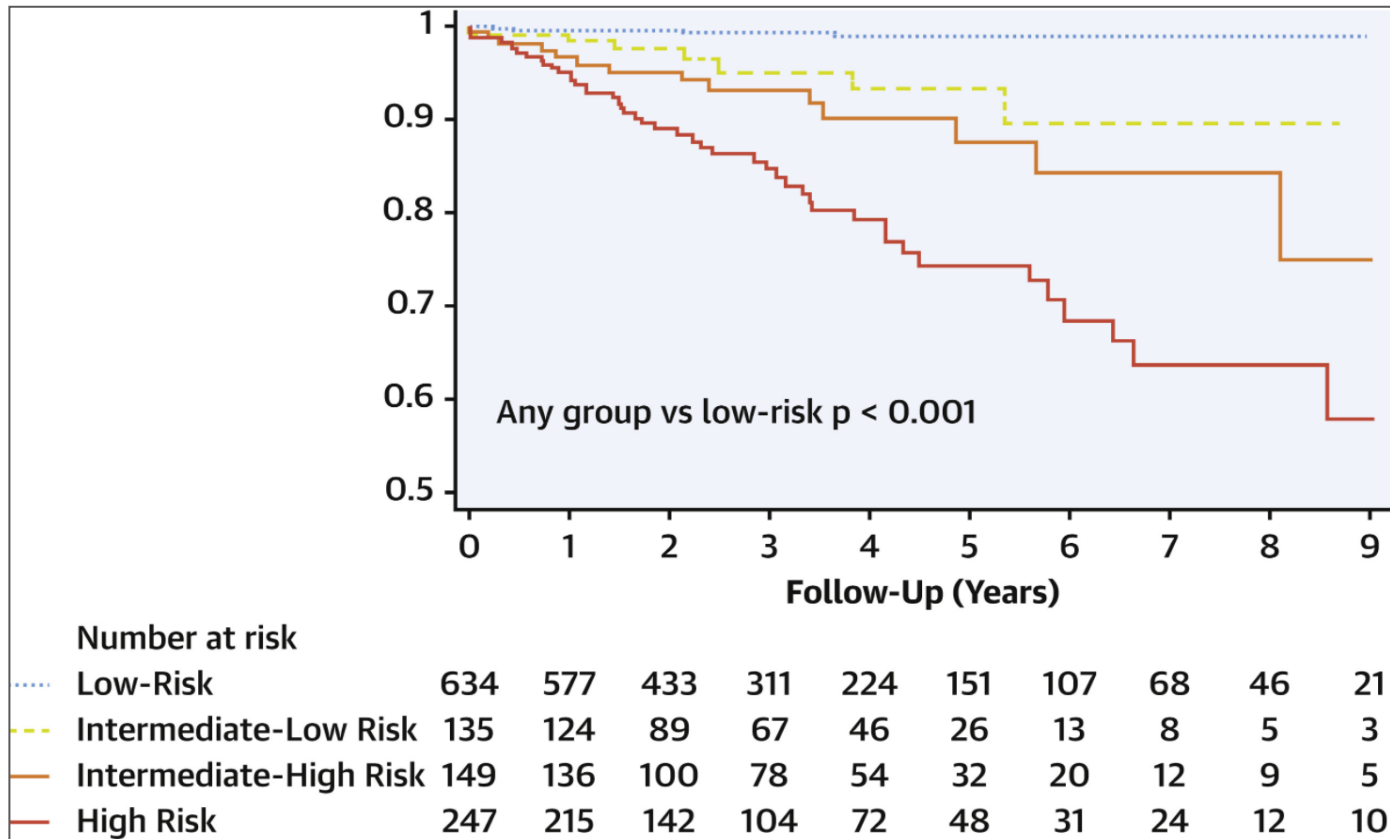
Schematic Representation of the Proposed New Algorithm



high-risk LGE: epicardial LGE, transmural LGE, or combined septal and free-wall LGE



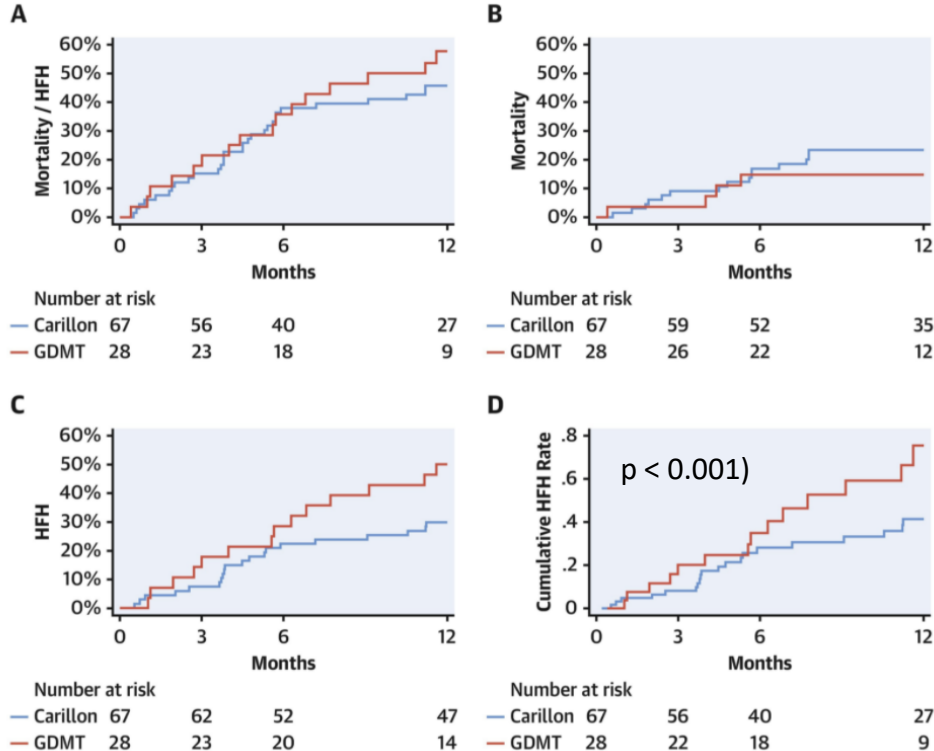
Survival Free From the Combined Arrhythmic Endpoint



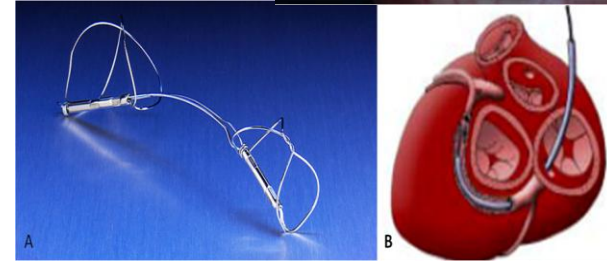
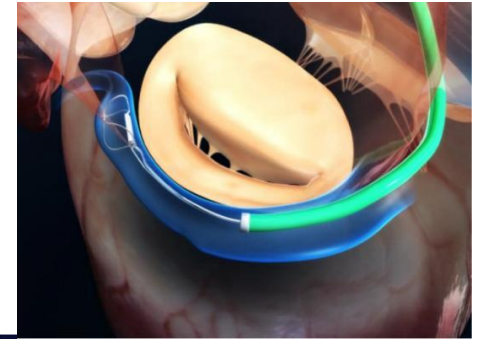
LGE was found to be a significant, consistent, and strong predictor of sustained VA and sudden death

Percutaneous Mitral Valve Annuloplasty in Patients With Secondary Mitral Regurgitation and Severe Left Ventricular Enlargement (LVEDD >6.5 cm)

Clinical Outcomes With the Carillon Device

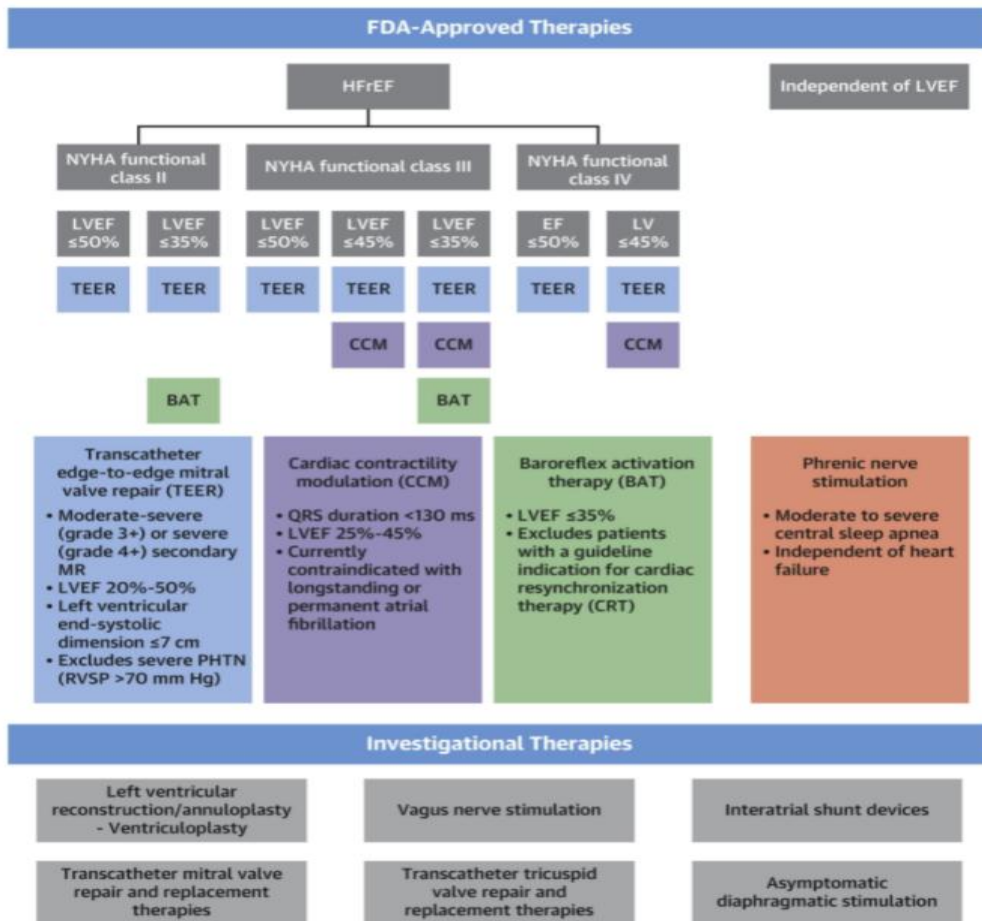


Carillon device
versus GDMT
alone

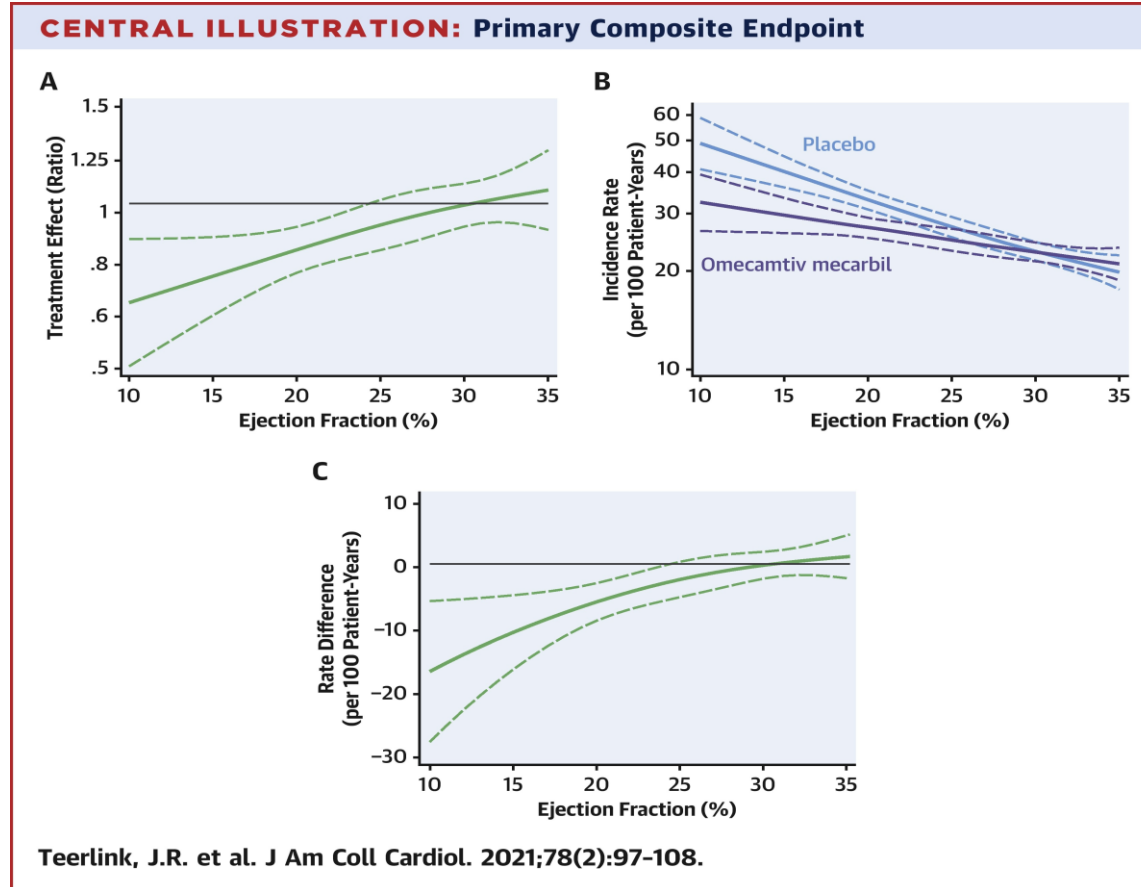


Regurgitant volume decreased by 12 ml ($p < 0.001$), MR grade decreased by 0.6 U ($p < 0.001$), LV end-diastolic volume decreased by 25 cm³ ($p = 0.005$), and LV end-systolic volume decreased by 21 cm³ ($p = 0.01$)

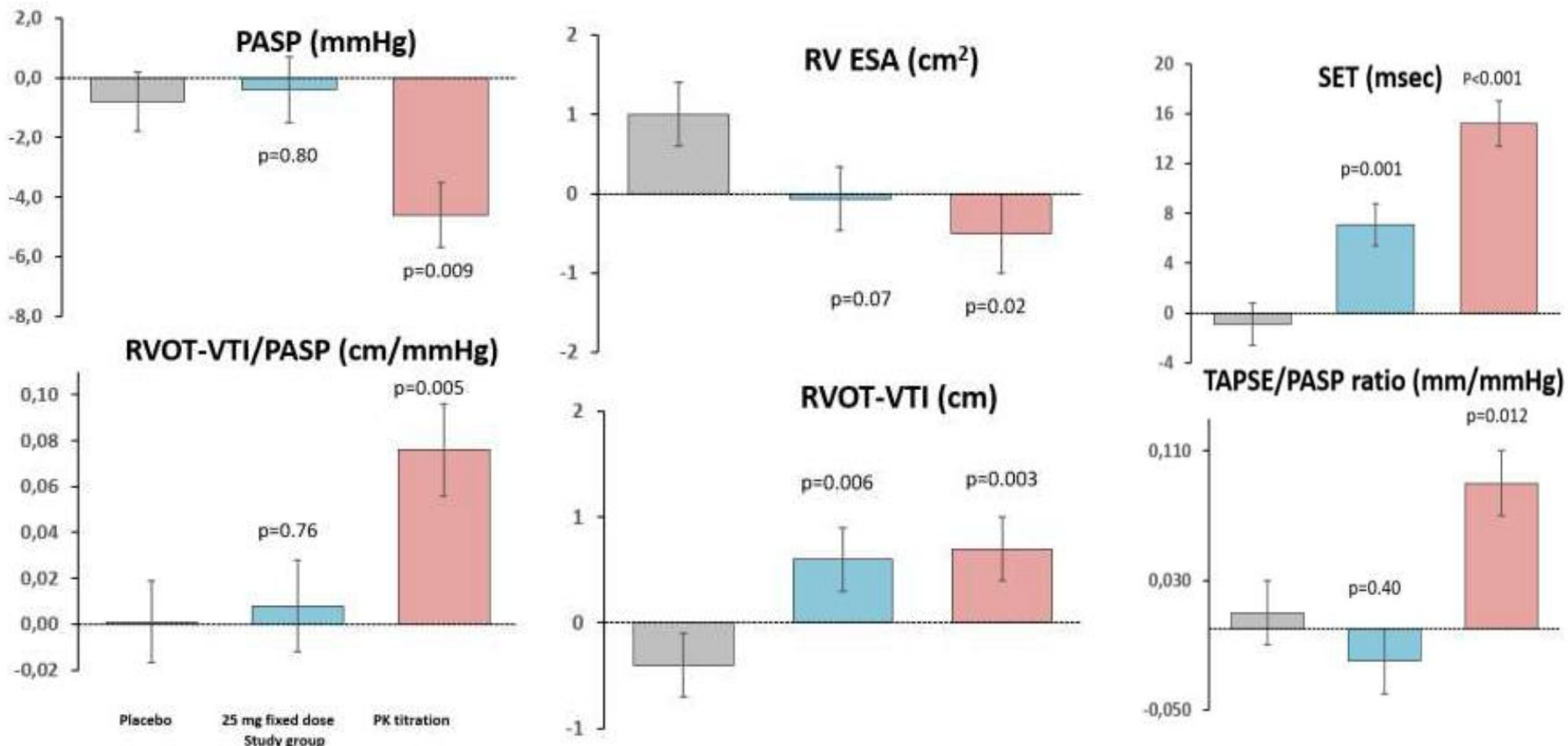
U.S. Food and Drug Administration—Approved and Breakthrough Designated Device Therapies



Effect of Ejection Fraction on Clinical Outcomes in Patients treated with Omecamtiv Mecarbil in GALACTIC-HF



Effect of the Cardiac Myosin Activator, Omecamtiv Mecarbil, on Right Ventricular Structure and Function in Chronic Systolic Heart Failure (COSMIC -HF)



STS-INTERMACS 2020 ANNUAL REPORT

Recent Trends

↑ Implant volumes
(2019 highest annual)

↑ African-American
(27% in 2015-2019 era)

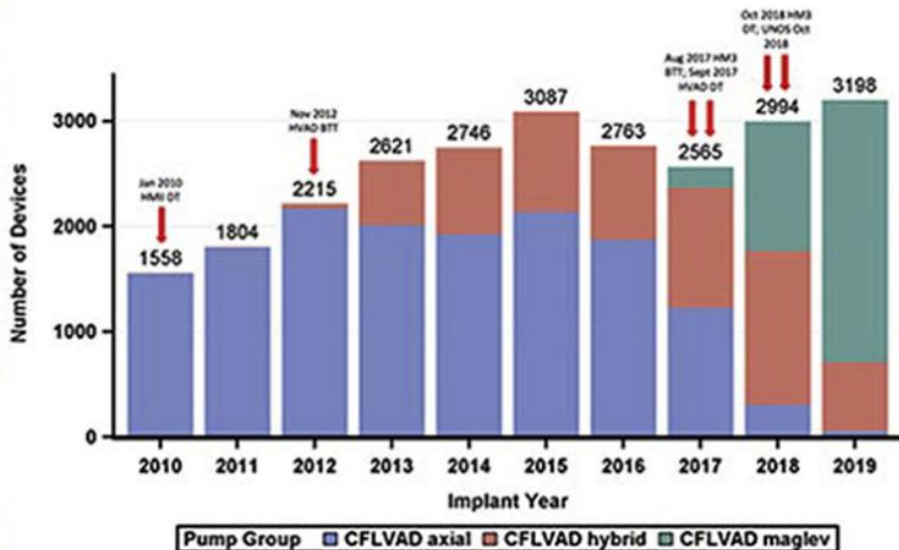
↑ temporary MCS
(36.8% in 2015-2019 era)

↑ INTERMACS Profiles 1-2
(50% in 2019)

↑ Destination Therapy
(73% in 2019)

↑ MagLev Technology
(77% in 2019)

25,551 patients undergoing primary isolated CF-LVAD
implantation between 2010-2019



Contemporary Outcomes

Improved 1- and 2-year
survival: 82.3% and 73.1%

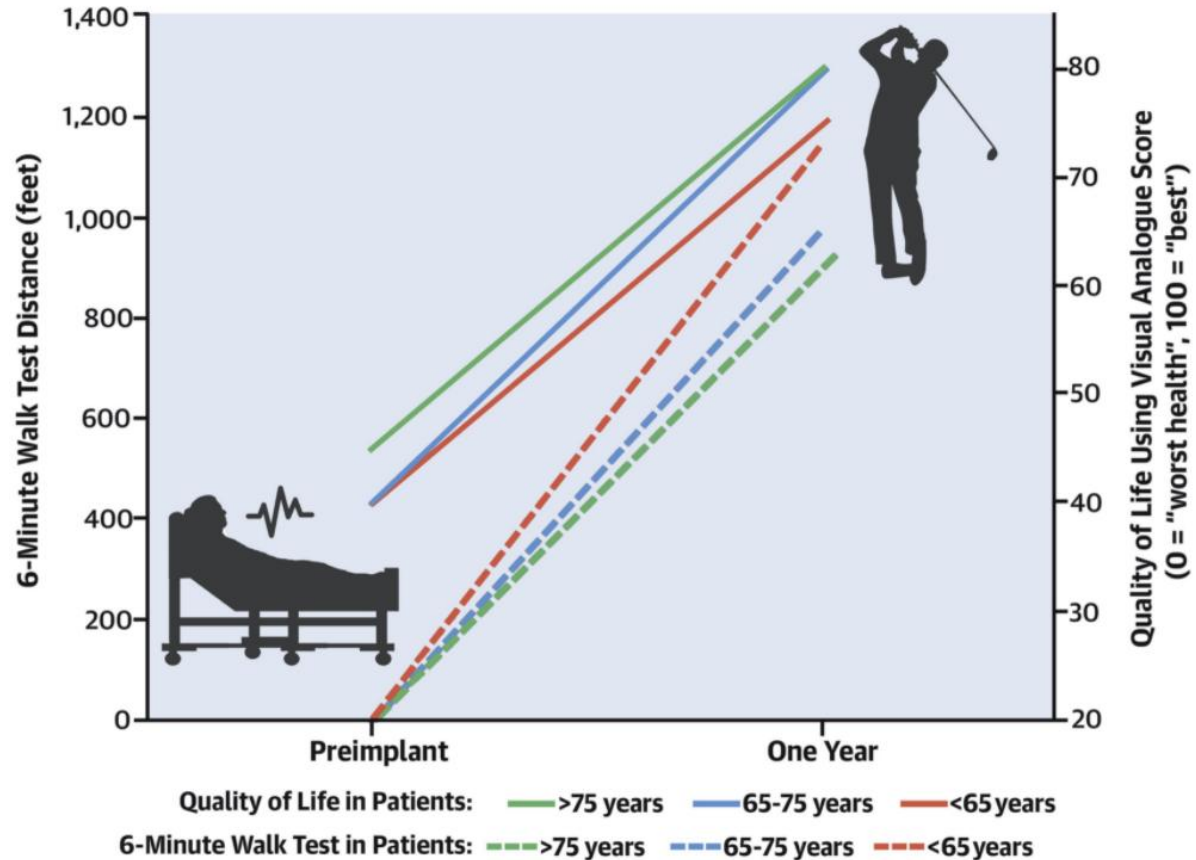
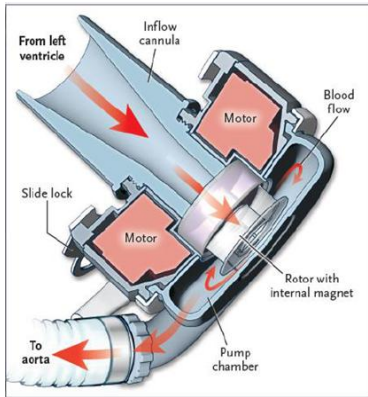
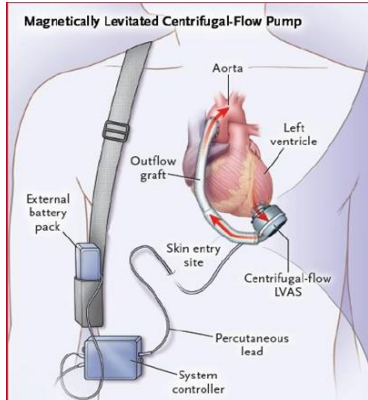
Major bleeding and
infection are the leading
adverse events

Incident stroke ↓ to
12.7% at 1-year

Readmission rates remain
high: 38.6% at 90 days and
72.2% at 12 months

Withdrawal of care
represents a rising
cause of death

Quality of Life and Functional Capacity Before and After Left Ventricular Assist Device



Trasplante cardíaco de donantes en asistolia tipo III

CITY EAST

Central Sydney

World-first dead heart transplant at Sydney's St Vincent's Hospital a game changer

ROBBIE PATTERSON WENTWORTH COURIER OCTOBER 24, 2014 10:01AM



Adult heart transplantation with distant procurement and ex-vivo preservation of donor hearts after circulatory death: a case series



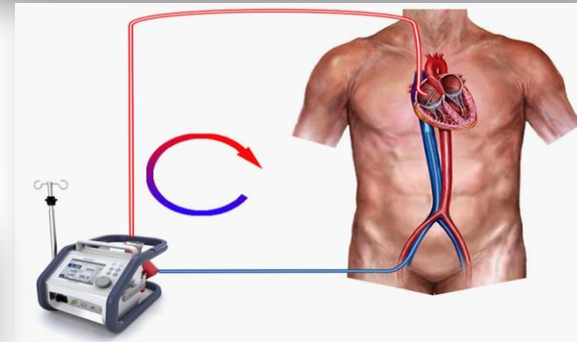
Kumud K Dhital, Arjun Iyer, Mark Connellan, Hong C Chew, Ling Gao, Aoife Doyle, Mark Hicks, Gayathri Kumarasinghe, Claude Soto, Andrew Dinale, Bruce Cartwright, Priya Nair, Emily Granger, Paul Jansz, Andrew Jabbour, Eugene Kotlyar, Anne Keogh, Christopher Hayward, Robert Graham, Phillip Spratt, Peter Macdonald

www.thelancet.com Vol 385 June 27, 2015

Success of new innovative heart transplant technique celebrated at Papworth Hospital

By **CambridgeNews** | Posted: December 30, 2015

By Freya Leng



Trasplante cardíaco de donantes en asistolia tipo III

LA VANGUARDIA

Sociedad

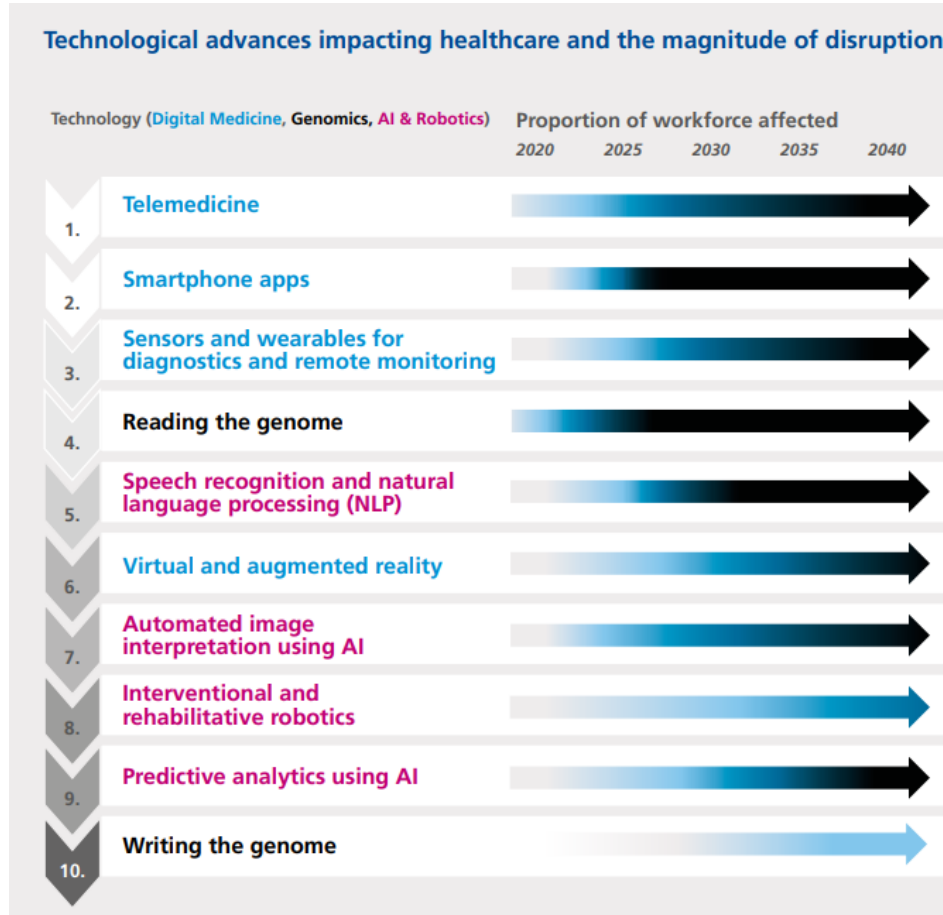
9 de junio 2021

El Hospital de Bellvitge hace el primer trasplante cardíaco con corazón parado en Catalunya

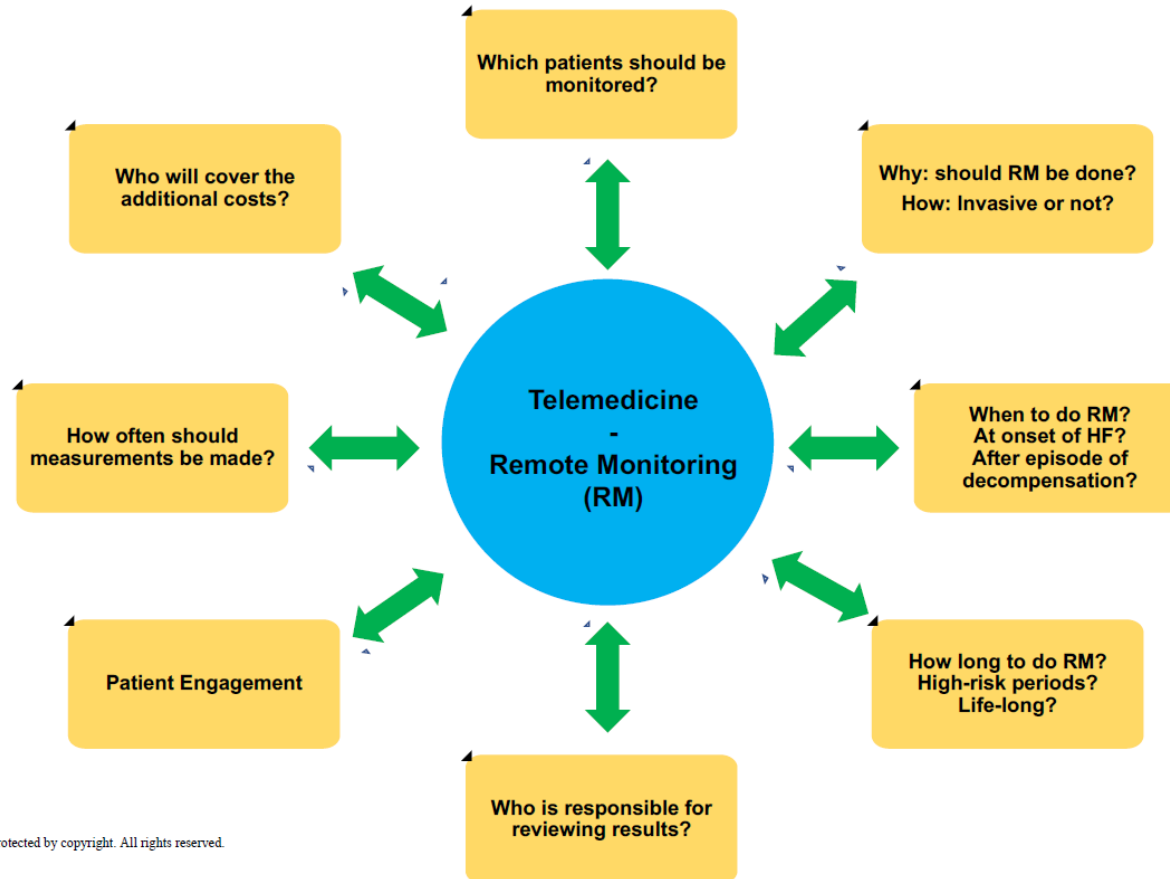
- Es la octava intervención que se realiza en España con este procedimiento



Top 10 digital healthcare technologies and their projected impact on the NHS workforce from 2020 to 2040



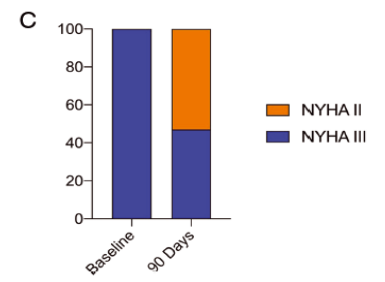
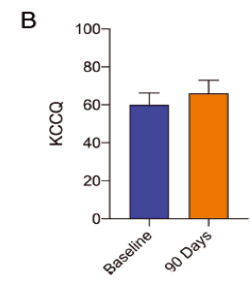
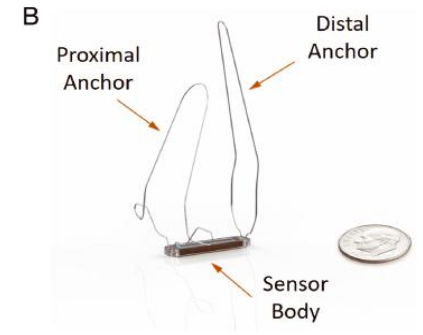
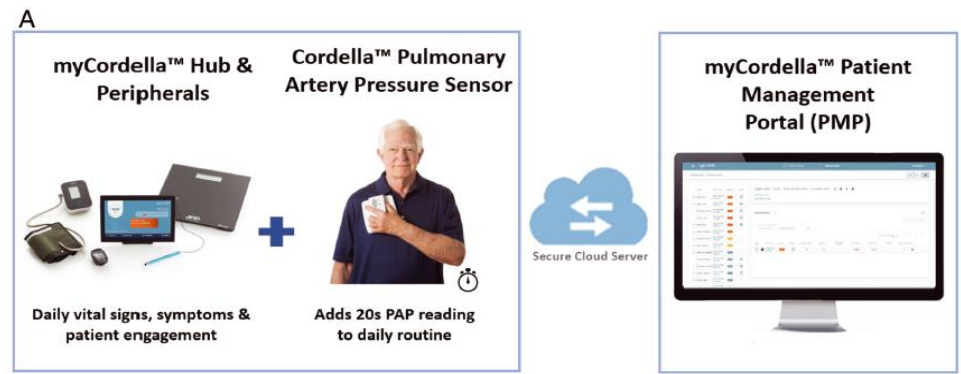
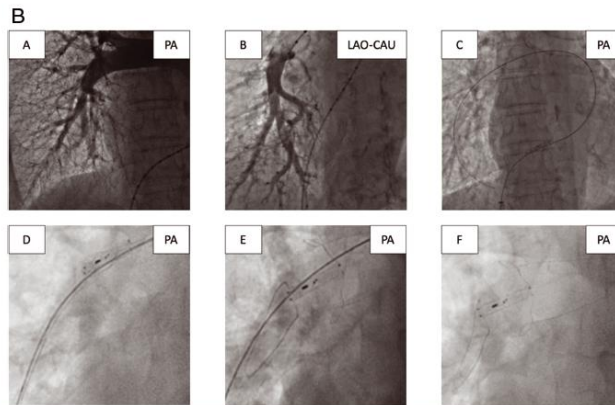
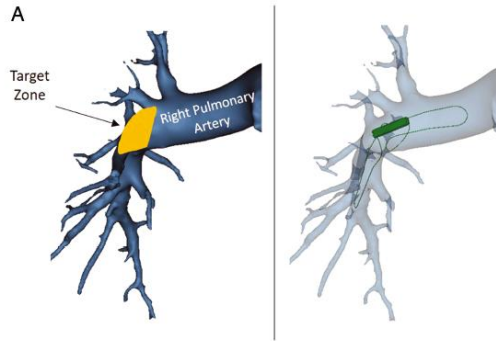
A Current and Future Outlook on Upcoming Technologies in the Remote Monitoring of Patients with Heart Failure



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Digital health care solution for proactive heart failure management with the Cordella Heart Failure System: results of the SIRONA first-in-human study

Wilfried Mullens^{1,2*}, Faisal Sharif^{3†}, Matthias Dupont², Alexander M.K. Rothman⁴, and William Wijns⁵



EPIC-HF: HYPOTHESIS

Patients who have been "activated" prior to a clinic appointment will be more likely to engage their provider around their HFrEF medication plan, which in turn will prompt greater optimization of HFrEF medications.

3-minute video (URL link)



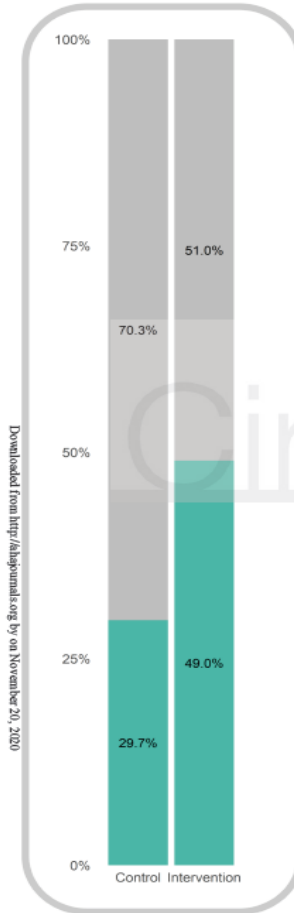
1-page checklist (PDF)



- 290 patients with heart failure with HFrEF randomized to receive UC vs additional patient engagement and education tools: A three-minute video and a one-page medication checklist delivered electronically one week, three days and 24 hours prior to a visit at a cardiology clinic.

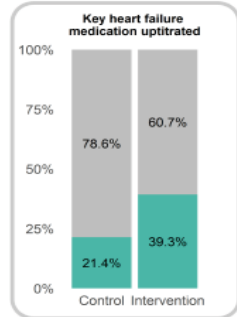
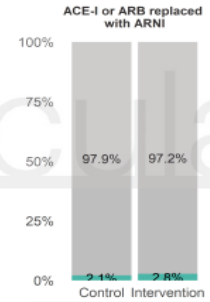
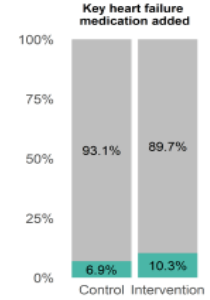
- The median age was 65 years, 29% were female, and the median LVEF was 32%.

Primary outcome:
Initiation or intensification
of GDMT



p=0.001

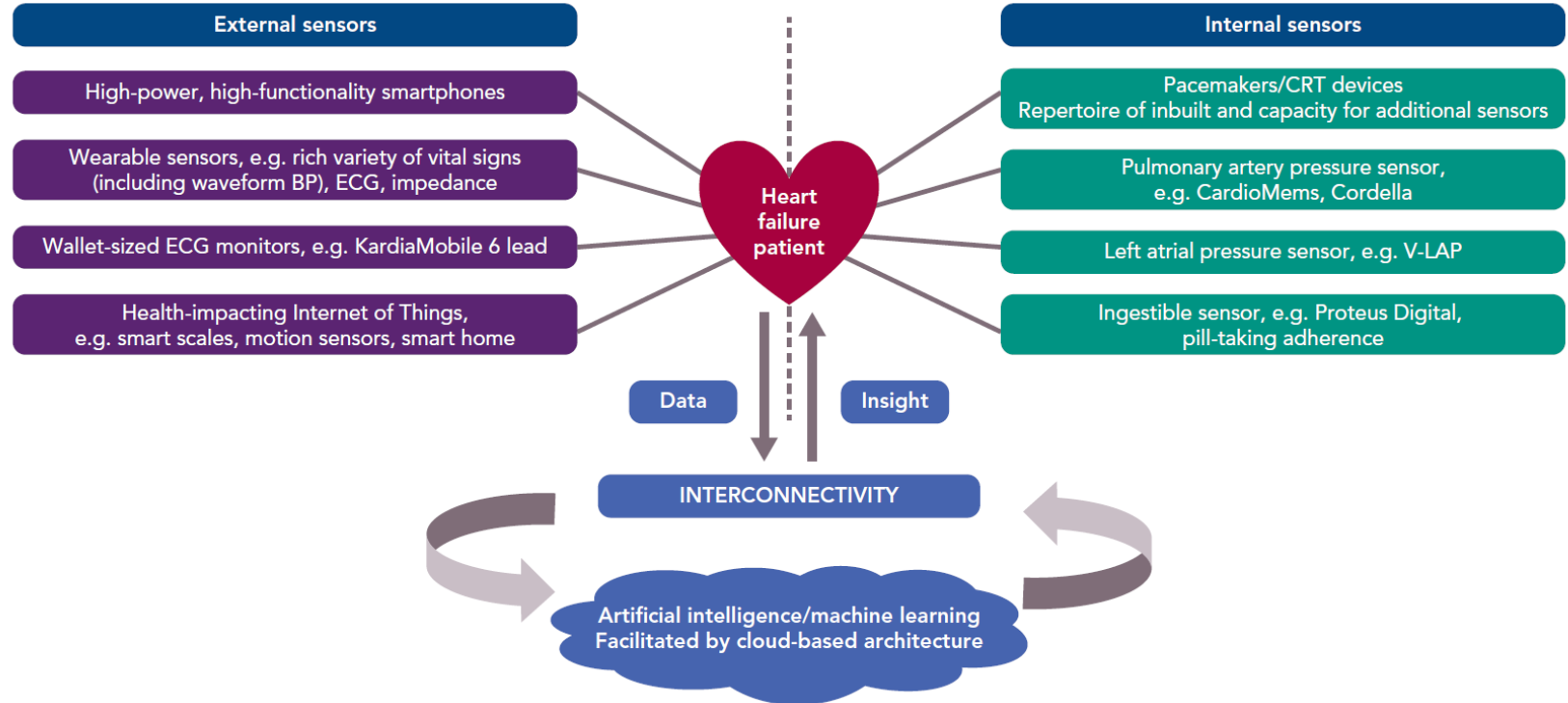
Initiation/ intensification
categories

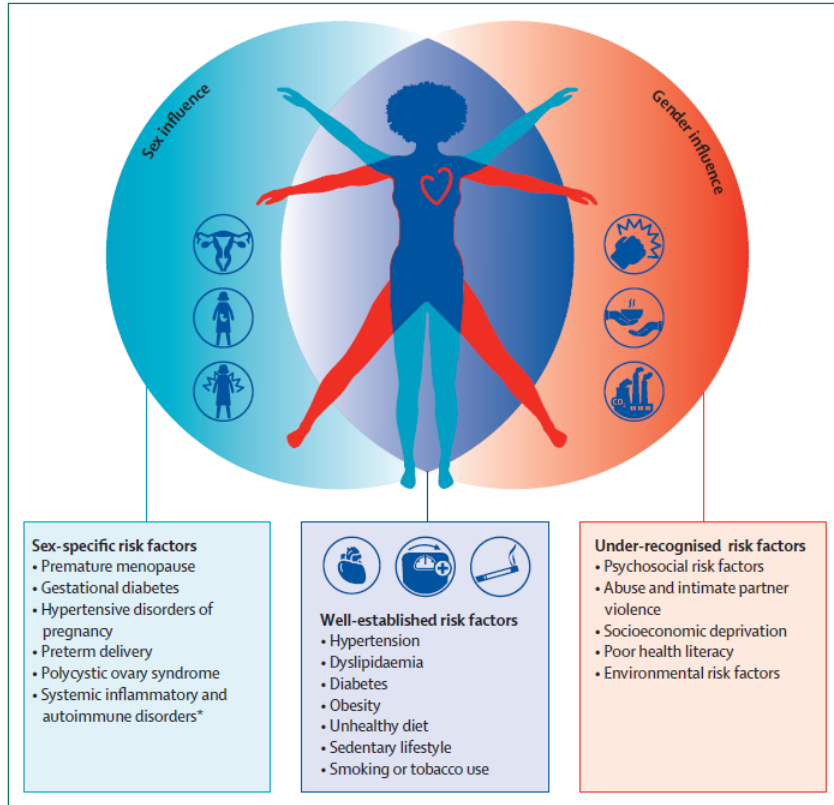


Downloaded from <http://ahajournals.org> by on November 20, 2020

Artificial Intelligence, Data Sensors and Interconnectivity: Future Opportunities for Heart Failure

Overview of External and Internal Sensors Relevant to Heart Failure Patients





The *Lancet* women and cardiovascular disease Commission: reducing the global burden by 2030

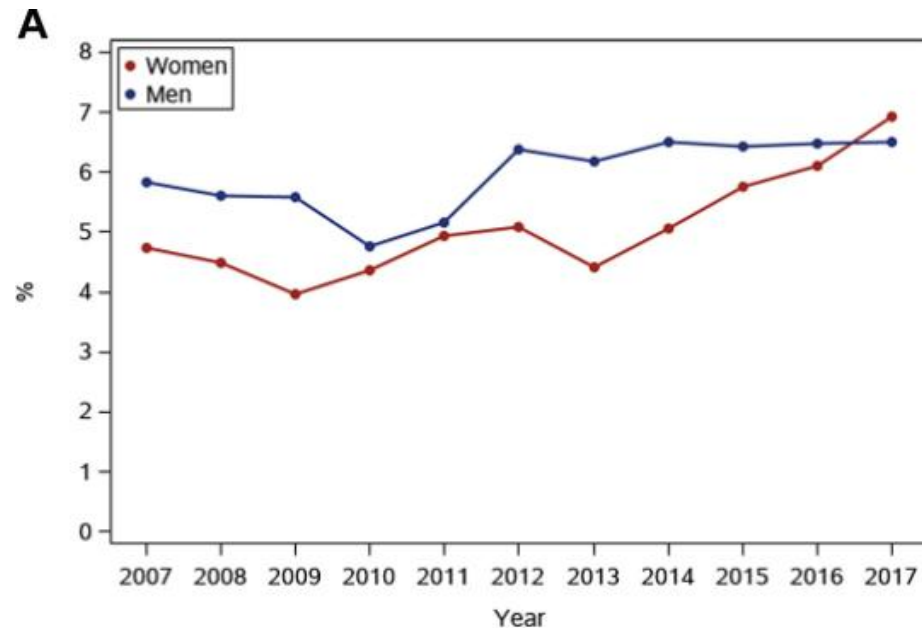


Heart failure

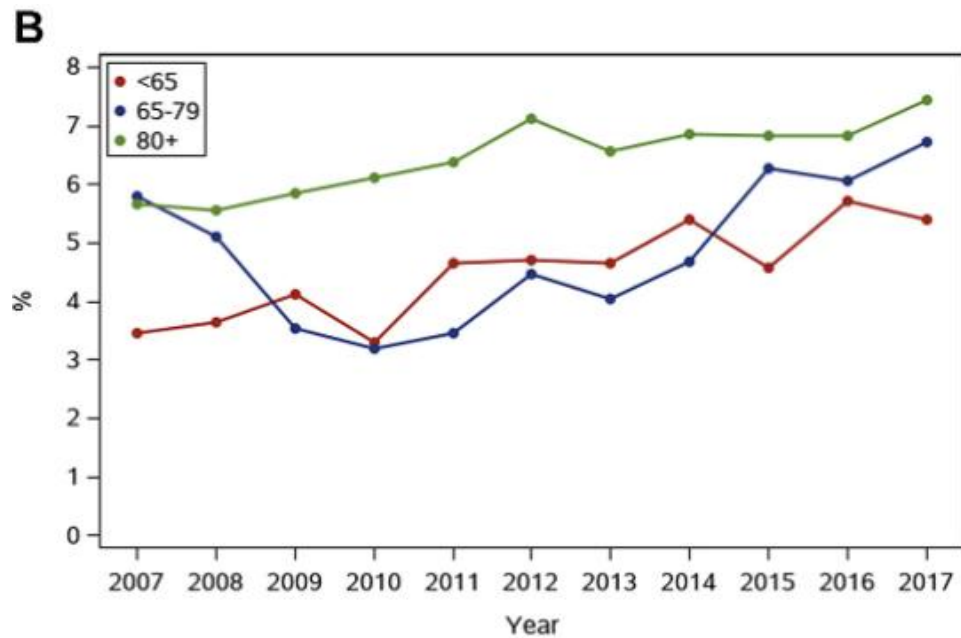
- The overwhelming increase in the **incidence of heart failure with preserved ejection fraction in women** with few therapeutic options underlines the importance of further research in this area
- Evidence points towards sex-specific **target doses in heart failure therapies** and should be validated in prospective, sex-specific, dose-finding studies
- **Cardiac resynchronisation therapy** should be offered to women with a clinical indication
- Women are more susceptible than men to **cardiogenic shock after myocardial infarction**; further research is urgently needed to investigate the underlying mechanisms
- Further research is needed to better understand the observed **sex differences in the transplantation field**

Advanced Heart Failure Epidemiology and Outcomes: A Population-Based Study

Prevalence of Advanced HF in Patients With HF



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total HF patients											
Women	1139	1206	1264	1327	1354	1395	1496	1583	1634	1640	1658
Men	1028	1068	1126	1195	1277	1380	1521	1646	1712	1713	1766



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total HF patients											
<65	433	465	484	516	558	617	688	761	811	787	796
65-79	726	765	793	844	868	893	990	1068	1116	1173	1219
80+	1008	1044	1113	1162	1205	1265	1339	1400	1419	1393	1409



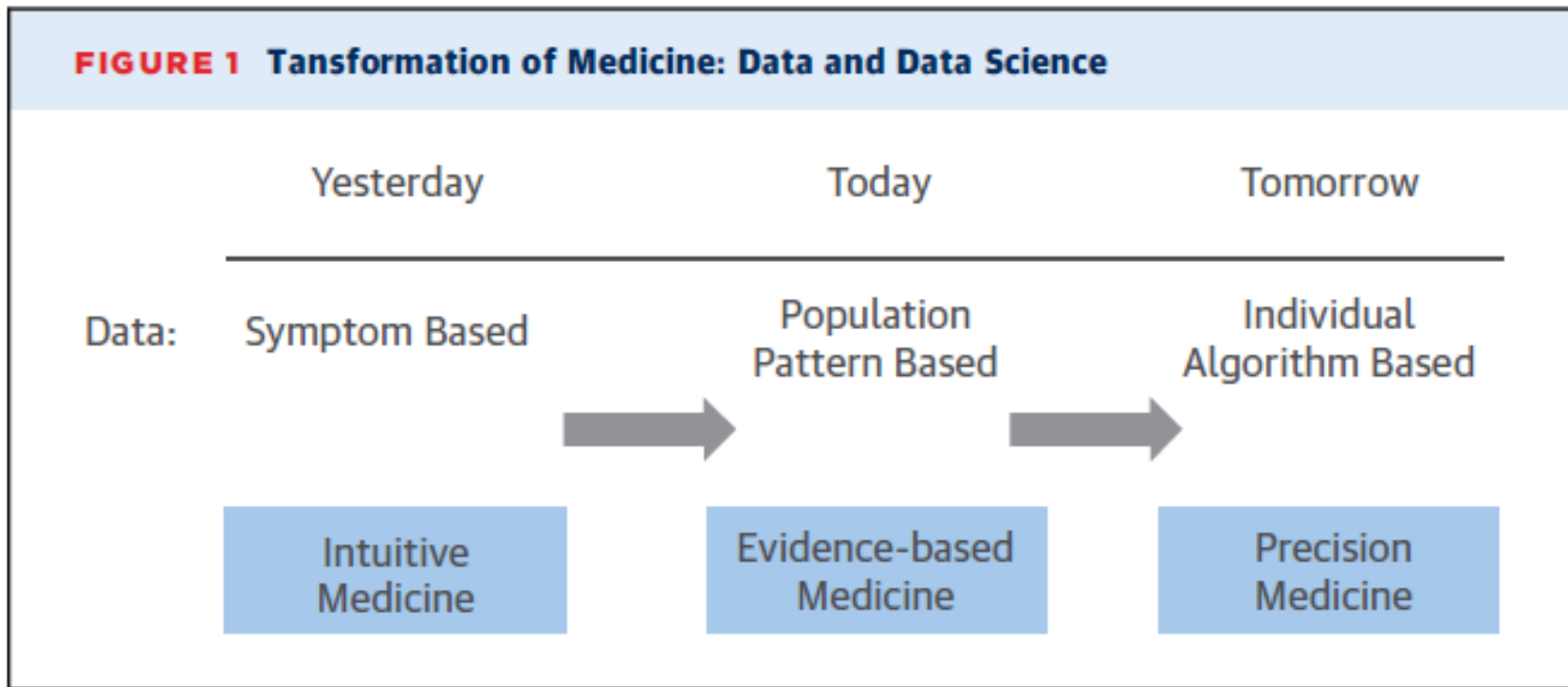
Reading the Tea Leaves

Where Will Cardiology Be in 2050?

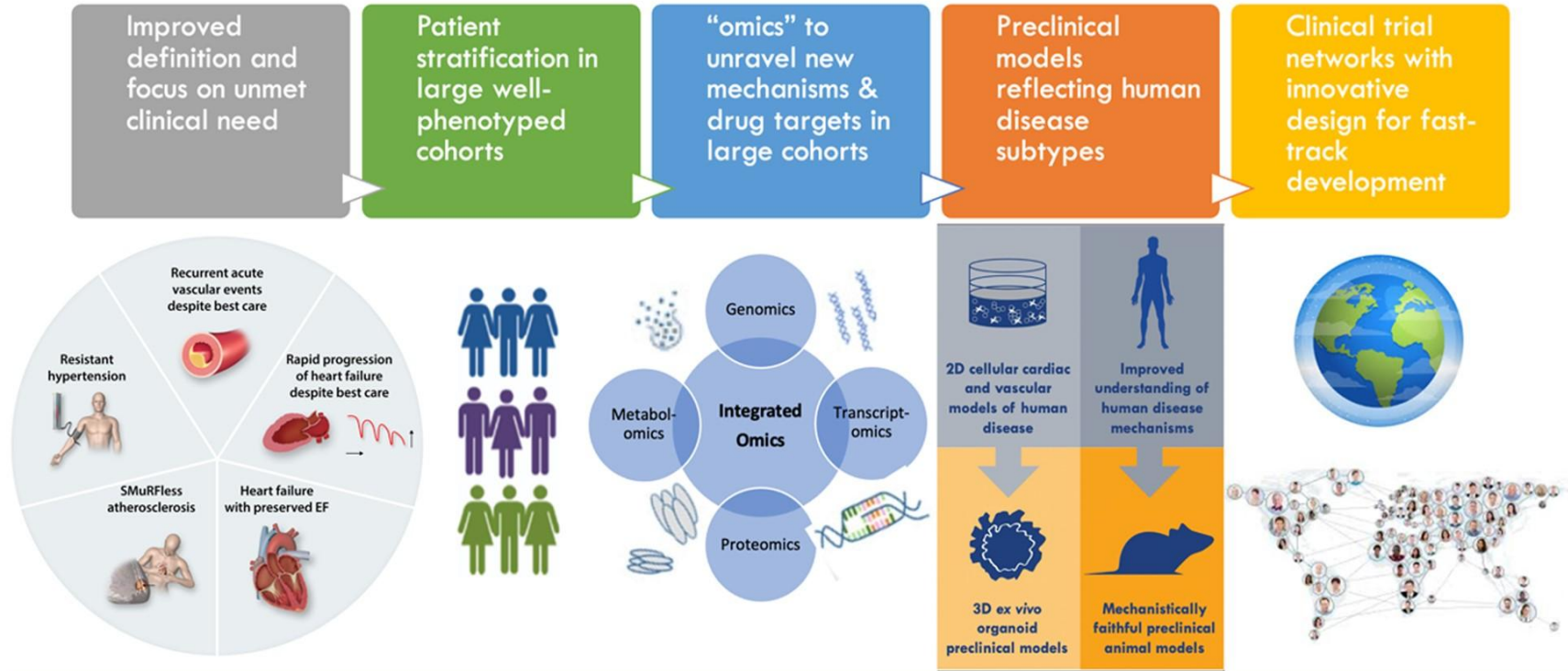
Richard A. Chazal, MD, FACC, ACC President



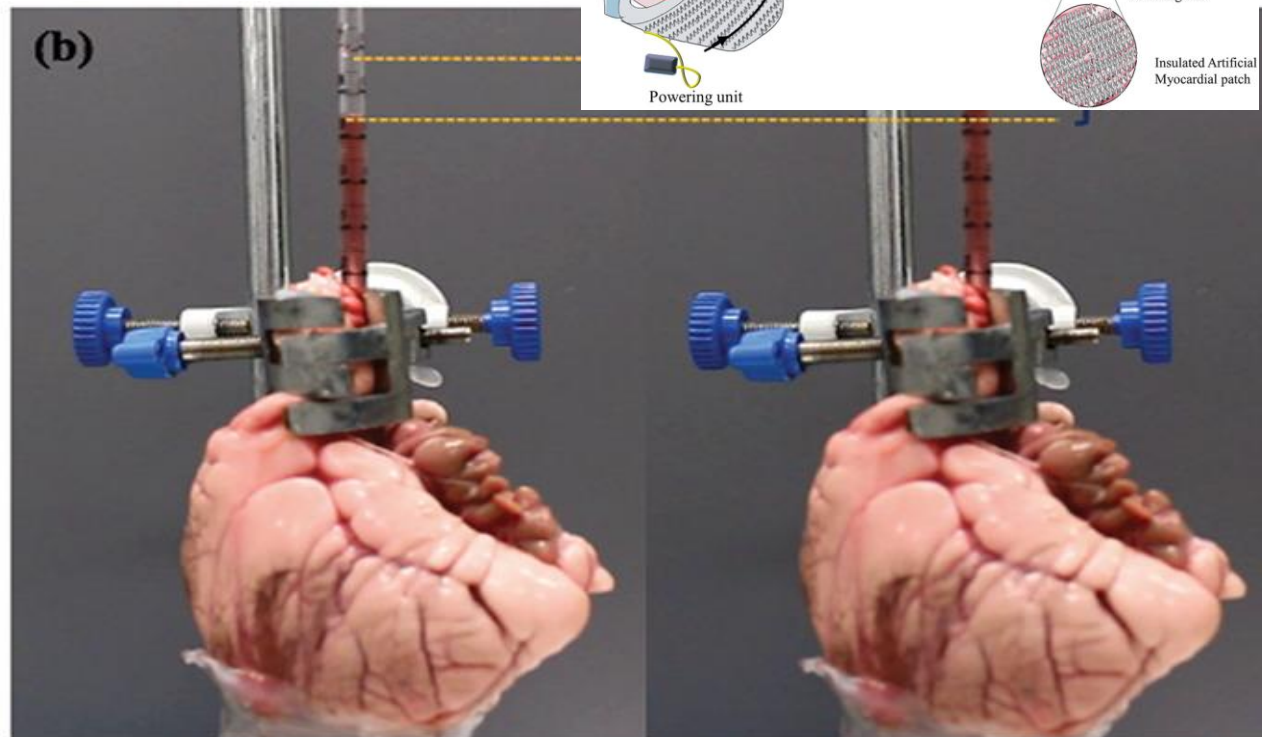
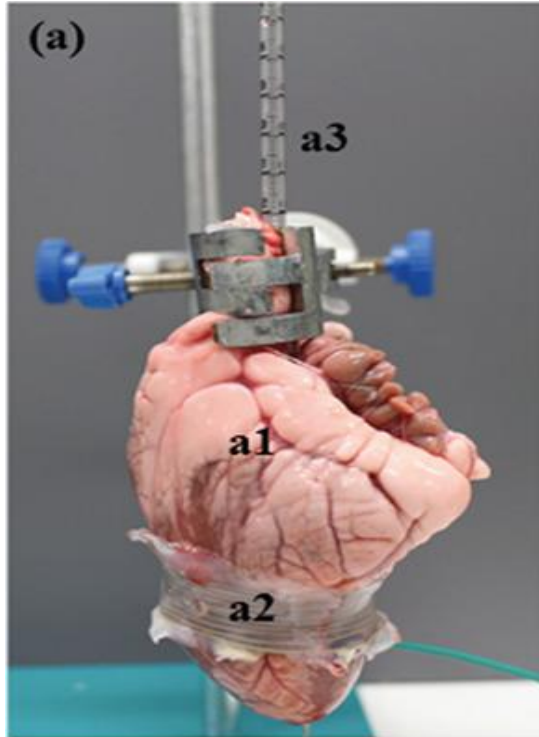
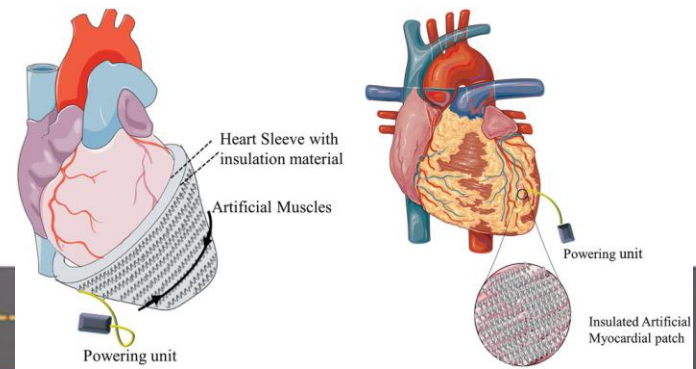
FIGURE 1 Transformation of Medicine: Data and Data Science

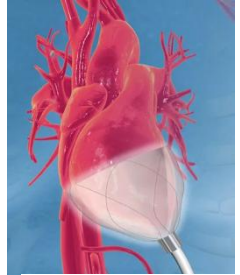


A Call to Action for New Global Approaches to Cardiovascular Disease Drug Solutions



High Performance Artificial Muscles to Engineer a Ventricular Cardiac Assist Device and Future Perspectives of a Cardiac Sleeve



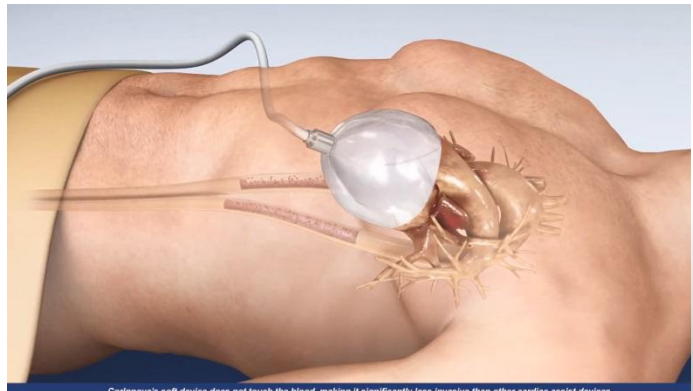
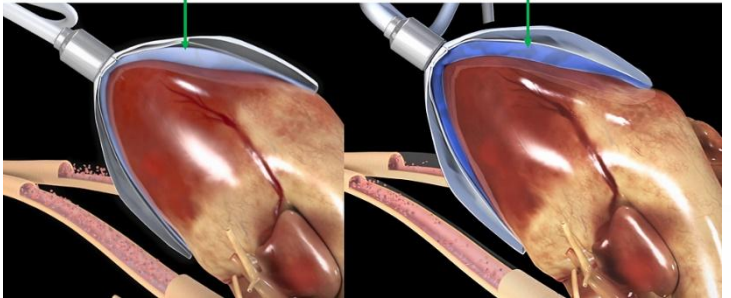


CORINNOVA

Presented November 5th at TCT
2021 session "Emerging
Technological Trends III:
Interventional Heart Failure and
Neuromodulation Therapies"

Saline filled passive chamber conforms to surface of heart

Pneumatically active chambers gently compress heart in synchrony with the heartbeat



CorInnova's soft device does not touch the blood, making it significantly less invasive than other cardiac assist devices.



Moltes Gracies!!



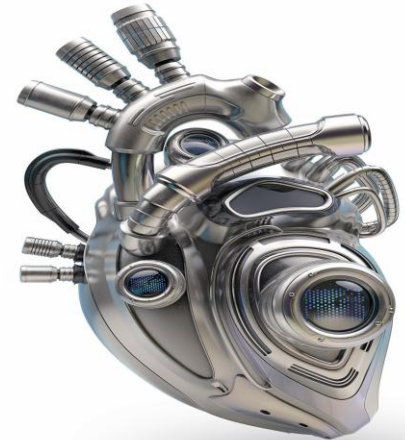
3er Curs D'ACTUALITZACIÓ EN INSUFICIÈNCIA CARDÍACA

📍 Hotel Hilton Barcelona
Avda Diagonal 589-591. 08014 BCN
📅 12 de novembre de 2021



Amb la col.laboració de:
 **NOVARTIS**

I ens veiem en el 4 Curs D'ACTUALITZACIÓ EN INSUFICIÈNCIA'CARDÍACA



@Dr_Manito