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Heart Failure-Best of Times?

Professor Theresa A McDonagh
Clinical Lead for Heart Failure
King's College Hospital
London. UK

XI Reunión. Estado del Arte en
INSUFICIENCIA CARDIACA
PRÁCTICA CLÍNICA Y MODELOS ORGANIZATIVOS

A Coruña Heart Failure Academy

King's

KING'S College LONDON

KING'S HEALTH PARTNERS

An Academic Health Sciences Centre for London

Pioneering better health for all

A Coruna-Key Note Lecture 2024

Henry Dargie

John McMurray

John Cleland

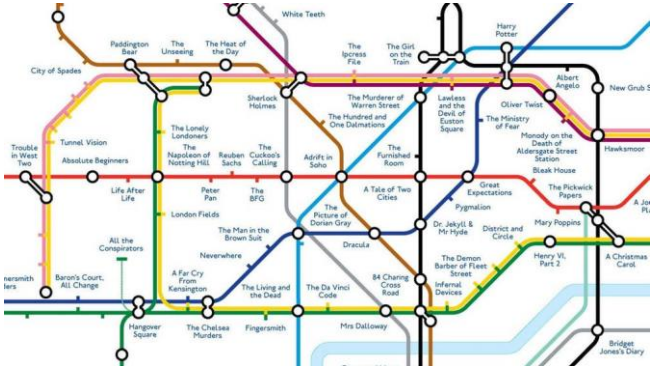
Edinburgh

Philip Poole-Wilson
Royal Brompton Hospital (Imperial)

"Heart Failure Cardiologist", not an academic, clinical trialist, crack basic scientist

Interested in ways of improving HF care, HF service delivery, audit and guidelines.

King’s College Hospital ?




Welcome to Brixton
alamy
Image ID: ADXWE8
www.alamy.com

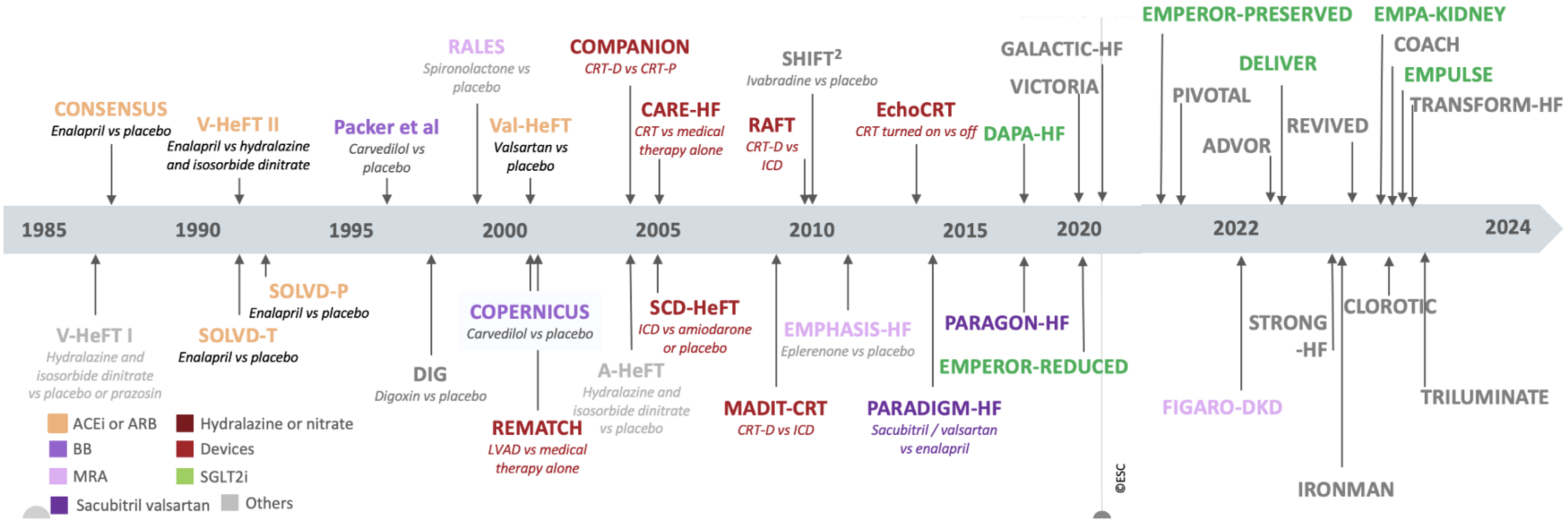
Heart Failure-best of times?

- Translating the evidence-base into practice
  - Delivering HF care

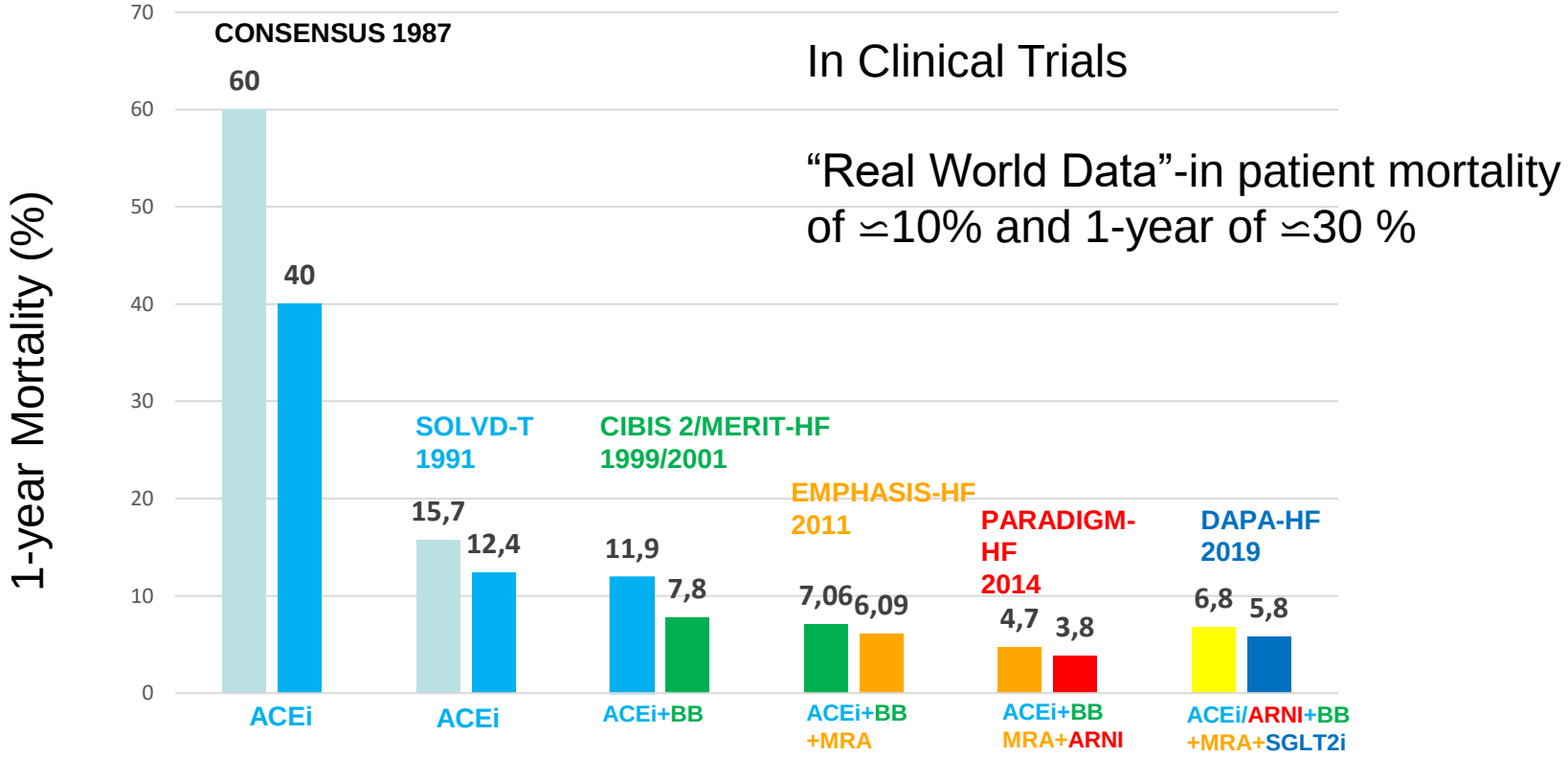
- Where are we?
  - Data from the UK National HF Audit 2023/24
  - Using audit for quality improvement

- How can we improve things from here?
  - Will recent guidelines help (ESC 2021/2023)?
  - New treatments of HFpEF
  - New models of care?
  - Trials?
  - Await prevention?

Best of Times –Huge Evidence Base



All Cause Mortality in Chronic HFrEF



Delivery of Heart Failure Care

- Number of patients large and increasing
- Mean age at diagnosis 76 — complex “cardio-geriatric syndrome”, not just HFrEF, multiple comorbidities
- Therapy complex-drugs/devices/surgery/CTX/VADs
  - numerous side effects
- Patients asked to make lifestyle changes
- Patient has frequent visits to hospital clinics — multitude of doctors, nurses
- Enormous confusion, poor adherence to therapy
- Delivery of care as important as the elements
  - Emergence of Multidisciplinary HF Programmes

Standards for Delivering Heart Failure Care

ACCF/AHA/AMA-PCPI 2011 Performance Measures for Adults With Heart Failure

A Report of the American College of Cardiology Foundation/
American Heart Association Task Force on Performance Measures and the
American Medical Association–Physician Consortium for Performance Improvement

Developed in Collaboration With the American Academy of Family Physicians, American Academy of Hospice and Palliative Medicine, American Nurses Association, American Society of Health-System Pharmacists, Heart Rhythm Society, and Society of Hospital Medicine

Endorsed by the Heart Failure Society of America

WRITING COMMITTEE MEMBERS

Robert O. Bonow, MD, MACC, FAHA, MACP,* Co-Chair; Theodore G. Ganiats, MD, Co-Chair;

European Journal of Heart Failure (2011) **13**, 235–241
doi:10.1093/eurjhf/hfq221

POSITION STATEMENT

European Society of Cardiology Heart Failure Association Standards for delivering heart failure care

Theresa A. McDonagh[1]*, Lynda Blue[2], Andrew L. Clark[3], Ulf Dahlström[4], Inger Ekman[5], Mitja Lainscak[6], Kenneth McDonald[7], Mary Ryder[7], Anna Strömberg[8], and Tiny Jaarsma[9] on behalf of Heart Failure Association Committee on Patient Care

ESC-HFA Standards of Delivering HF Care

- HF care should be delivered in a multi-professional manner
- Goal -*to provide a 'seamless' system of care across primary and hospital care so that the management of every patient is optimal, no matter where they begin or continue their healthcare journey*
- Essential ingredients
  - Specialist HF cardiologists
  - Specialist HF nurses
  - HF out-patient clinics
  - An ability to function across sectors of care
  - Adherence to common guidelines (for diagnosis and treatment)
  - Incorporate audit

McDonagh TA et al Eur J Heart Fail. 2011;13(3):235–241

Delivering Heart Failure Care: ESC Guideline 2016

It is recommended that patients with HF are enrolled in a multidisciplinary care management programme to reduce the risk of HF hospitalization and mortality.	I	A	622–625

Ponikowski P et al. Eur Heart J. 2016;37(27):2129-200

Multidisciplinary Strategies for HF

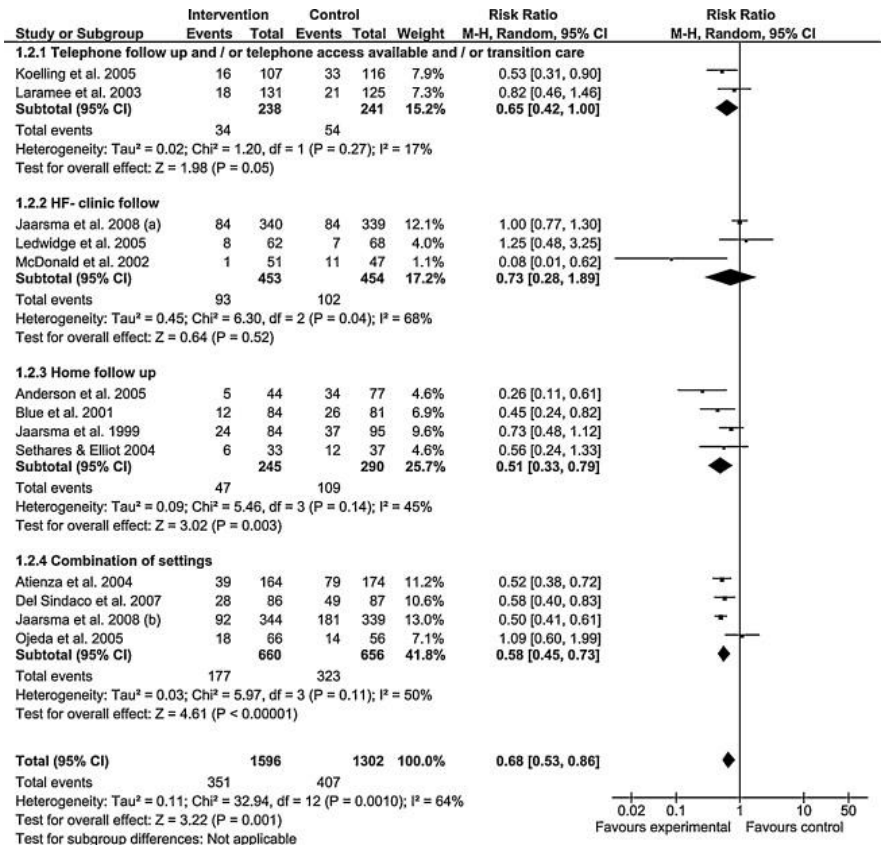
Systematic Review of Randomised Trials

29 trials (5039 patients)

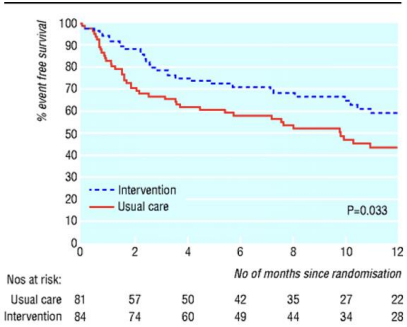
- Specialised multidisciplinary team (clinic or non clinic setting): ↓mortality by 25%, HF hospitalisations by 26%, all cause hospitalisations by 19%
- Enhancing patient self care: ↓ HF hospitalisations by 34% and all cause hospitalisations by 27%
- Telephone contact, refer to GP for further help, ↓HF hospitalisations by 25%
- 6/10 reported medication use, showed higher prescribing and dosing
- 5/6 : ↑adherence rates

McAlister FA et al. J Am Coll Cardiol. 2004;44(4):810-9

What works?



HF Clinics
Specialist HF nurses



Randomised controlled trial of specialist nurse intervention in heart failure

Lynda Blue, Elanor Lang, John J V McMurray, Andrew P Davie, Theresa A McDonagh, David R Murdoch, Mark C Petrie, Eugene Connolly, John Norrie, Caroline E Round, Ian Ford, Caroline E Morriso **BMJ** VOLUME 323 29 SEPTEMBER 2001

Lambrinou E at al, Int J Nurs Stud. 2012 May;49(5):610-24

Heart Failure Nurses

UK, Scandinavia from late 1990s

European Journal of Heart Failure (2016)
doi:10.1002/ejhf.568

Heart Failure Association of the European Society of Cardiology heart failure nurse curriculum

Jillian P. Riley[1]*, Felicity Astin[2], Marisa G. Crespo-Leiro[3], Christi M. Deaton[4], Jens Kienhorst[5], Ekaterini Lambrinou[6], Theresa A. McDonagh[7], Claire A. Rushton[8], Anna Stromberg[9], Gerasimos Filippatos[10], and Stefan D. Anker[11]

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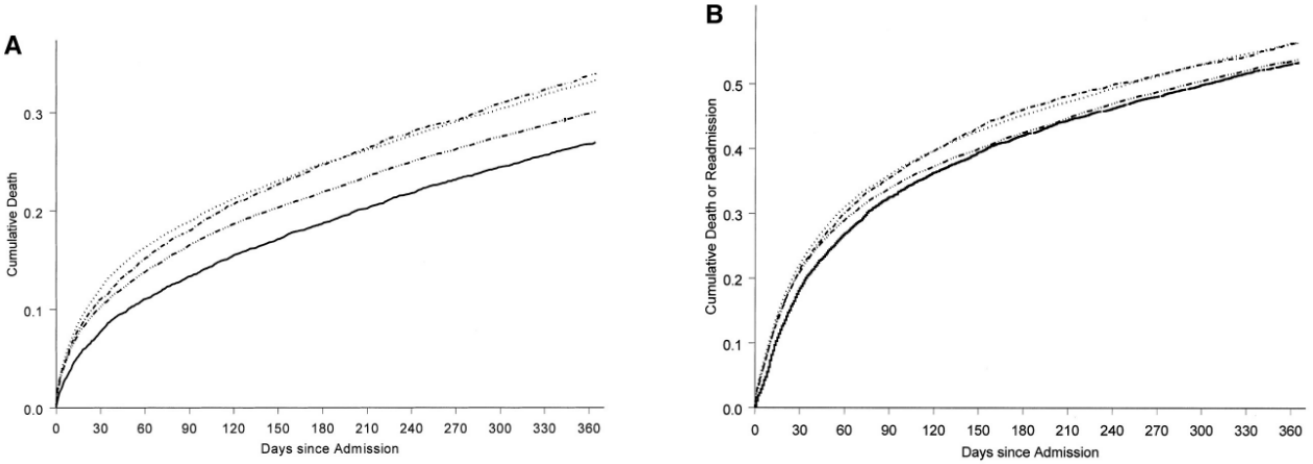
Received 8 April 2015; revised 7 July 2015; accepted 19 April 2016

HF Cardiologists?
US — Better Outcomes with Specialist Care



Reduced death and re-admissions

Jong P et al. Circulation 2003;108(2):184-91

Heart Failure Cardiologists

UK-Specialist Heart Failure Curriculum 2008

Differs from US-Advanced Heart Failure and Transplant

European Journal of Heart Failure (2014) **16**, 151–162
doi:10.1002/ejhf.41

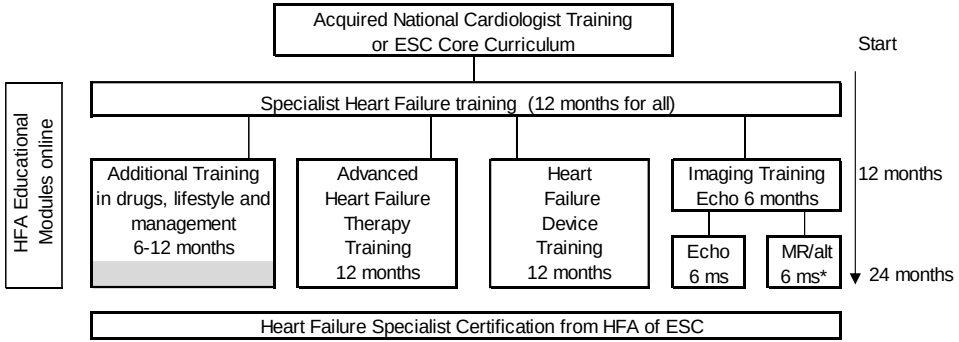
CURRICULUM

Heart Failure Association of the European Society of Cardiology Specialist Heart Failure Curriculum†

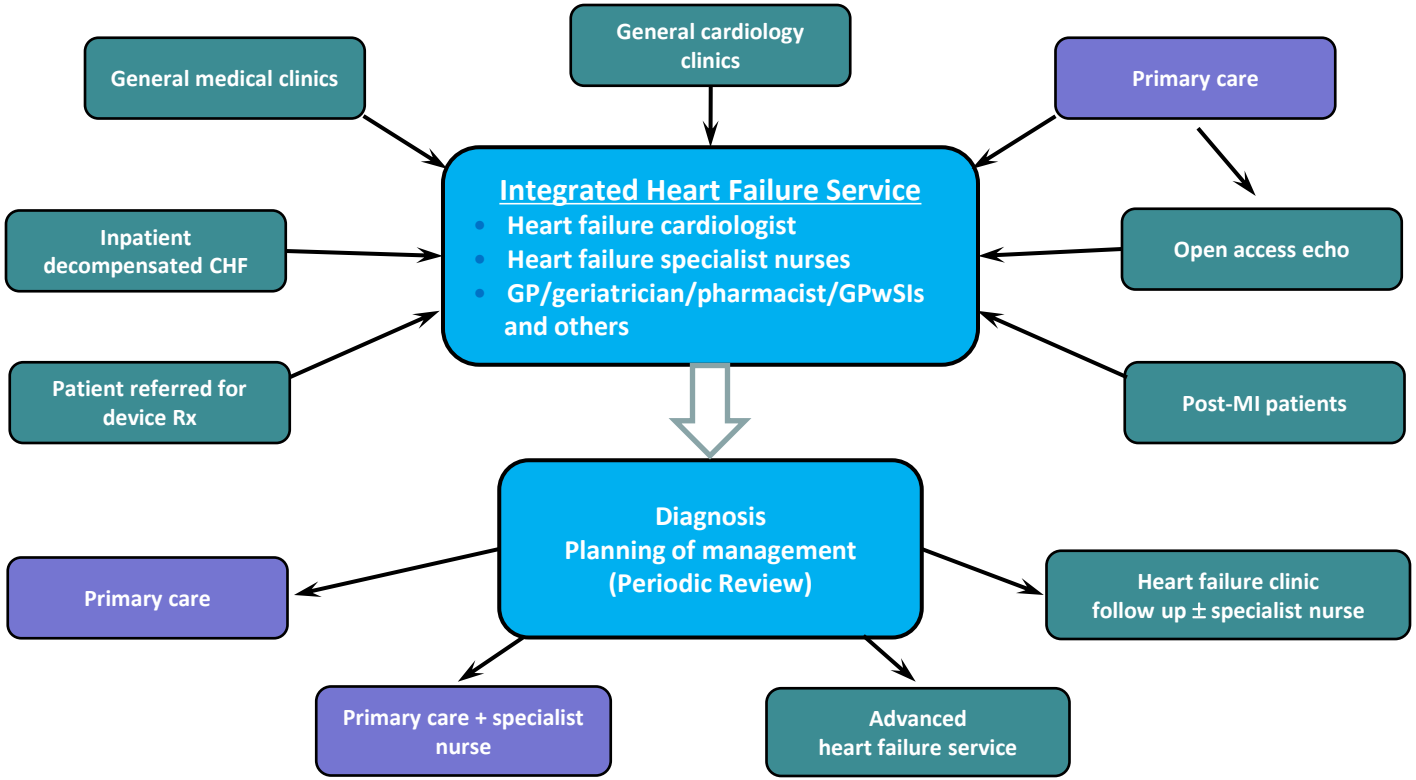
Theresa A. McDonagh[1], Roy S. Gardner[2]*, Mitja Lainscak[3], Olav W. Nielsen[4], John Parissis[5], Gerasimos Filippatos[6], and Stefan D. Anker[7]

[1]King's College Hospital, London, UK; [2]Golden Jubilee National Hospital, Clydebank, UK; [3]University Clinic Golnik, Golnik, Slovenia; [4]Copenhagen University Hospital Bispebjerg, Copenhagen, Denmark; [5]University of Athens Medical School, Attikon University Hospital, Athens, Greece; [6]2nd Department of Cardiology, Athens University Hospital Attikon, Athens, Greece; and [7]Charité - Universitätsmedizin, Berlin, Germany

Received 3 September 2013; revised 00 0000; accepted 9 September 2013; online publish-ahead-of-print 8 January 2014



Elements of an Integrated Heart Failure Service

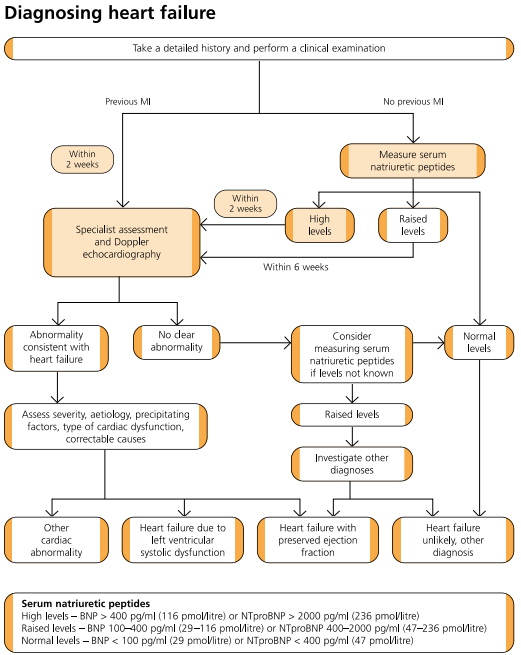


McDonagh TA et al Eur J Heart Fail. 2011;13(3):235–241

Some positives about HF Care in the UK

Key Ingredients for HF care assembled by 2010

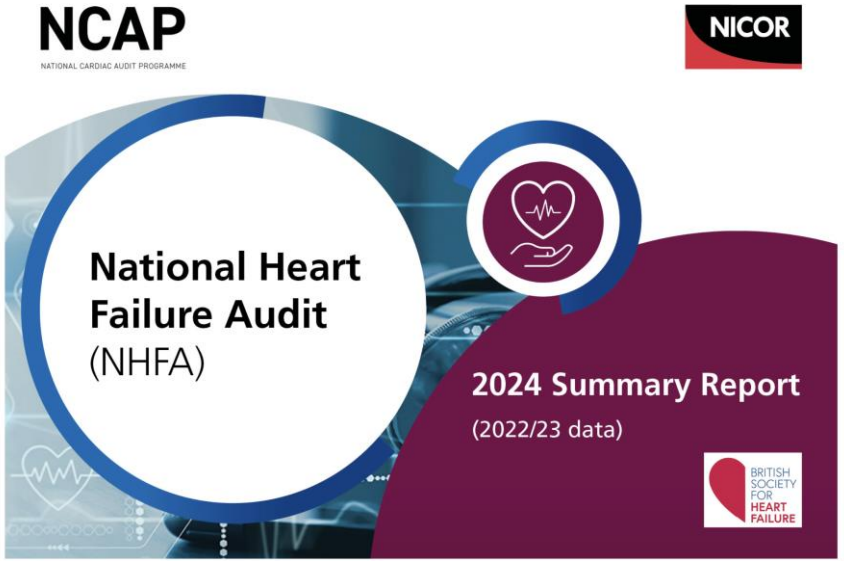
- HF-Cardiology sub-specialty training 2005
  - Most hospitals having HF Cardiologists leading HF services
- Good provision of HF Specialist Nurses-2005
- Diagnostic pathways based on BNP (NICE)-2010
  - Patients seen by a HF-specialist (2-6 weeks)
- NICE Quality Standards for CHF and AHF-2014
- National Heart Failure Audit (NHFA)-2007
  - Outcomes /bench-marking to improve quality of care
- Carrots and sticks!
  - Monetary incentives to GPs (QOF) for HF diagnosis and treatment
  - CQC-HF care part of hospital inspections
  - Hospitals remunerated-70% NHFA enrollment and achieving 60% specialist care



National Heart Failure Audit

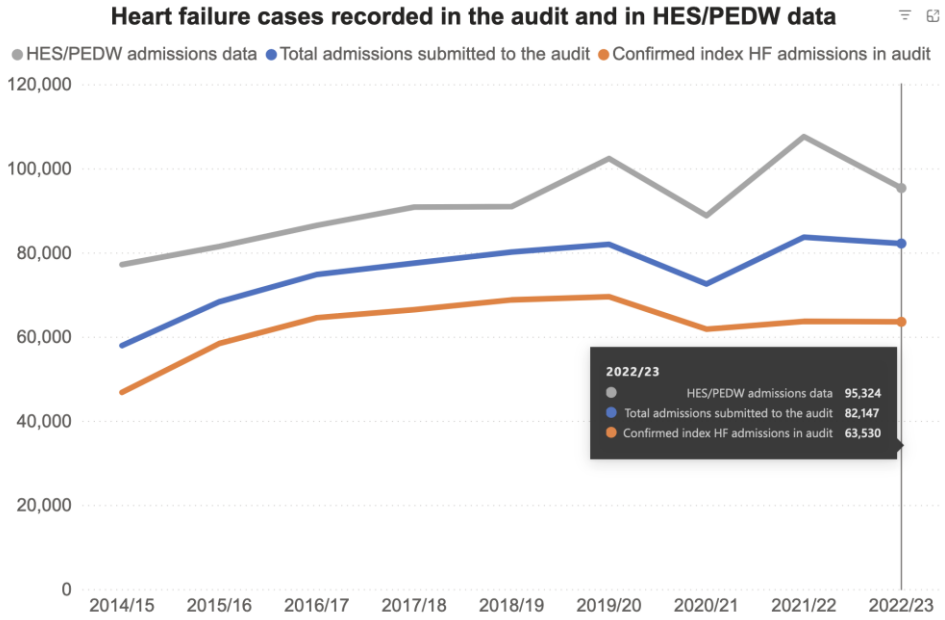
Latest Report Card

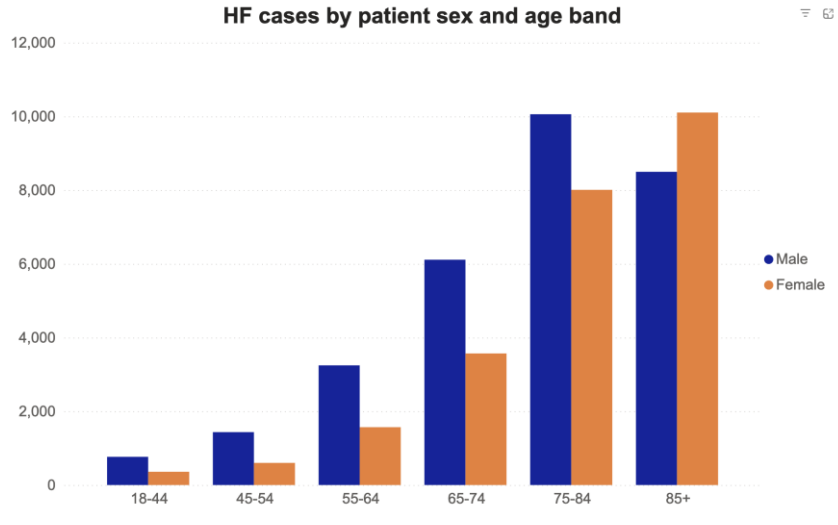
- NHFA -hospitals admitting acute HF patients have to submit 70% of their HF admissions in the 1st diagnostic position (HES)
- Minimum dataset-demographics, QI indicators for diagnosis and treatment
- Records mortality: in-hospital, 30-day and 1-year (linkage to ONS)
- Reports annually on a fiscal year basis
- Present aggregate data for mortality and hospital-level QI data
- Entire NHFA database since 2007≈1 million patient episodes



NHFA Report 2022/23 www.nicor.org.uk

NHFA-HF Hospitalisations 2022/23





Mean age-78 (76 for men and 80 for women)

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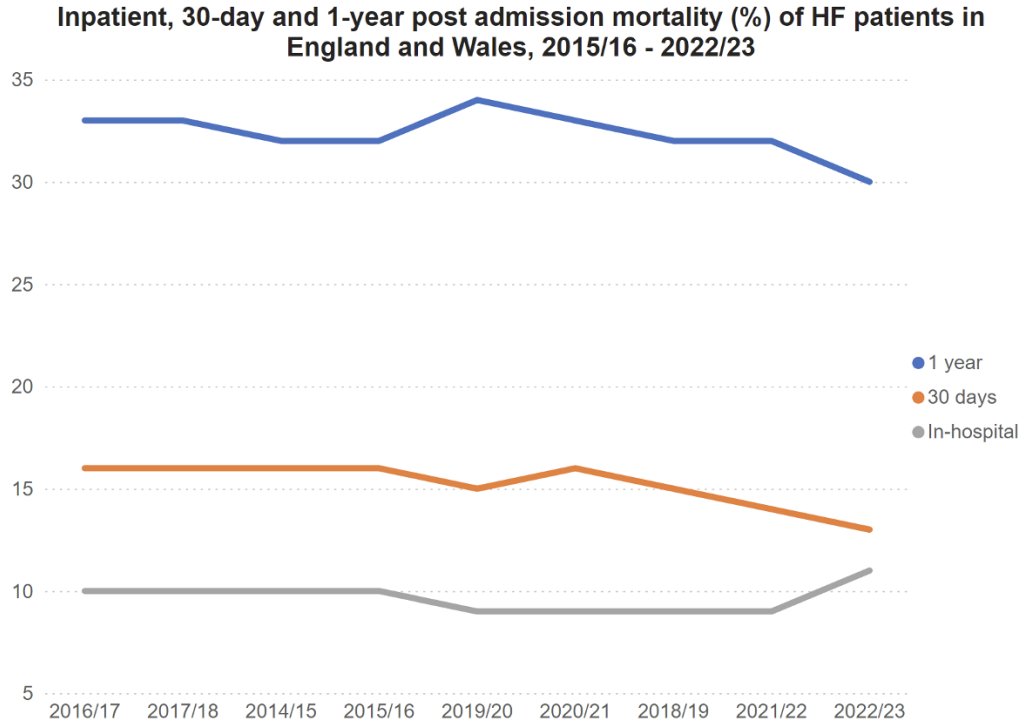
In-hospital mortality ≃9-11%



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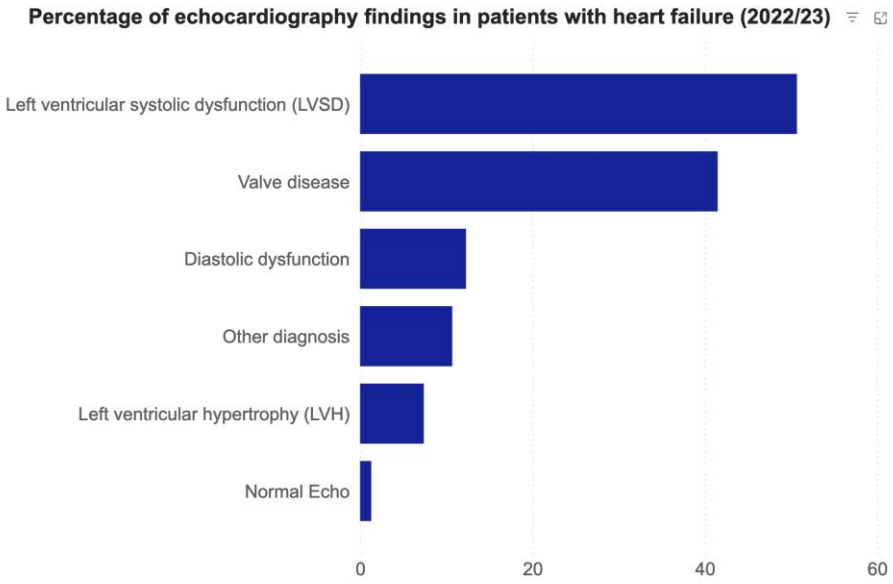
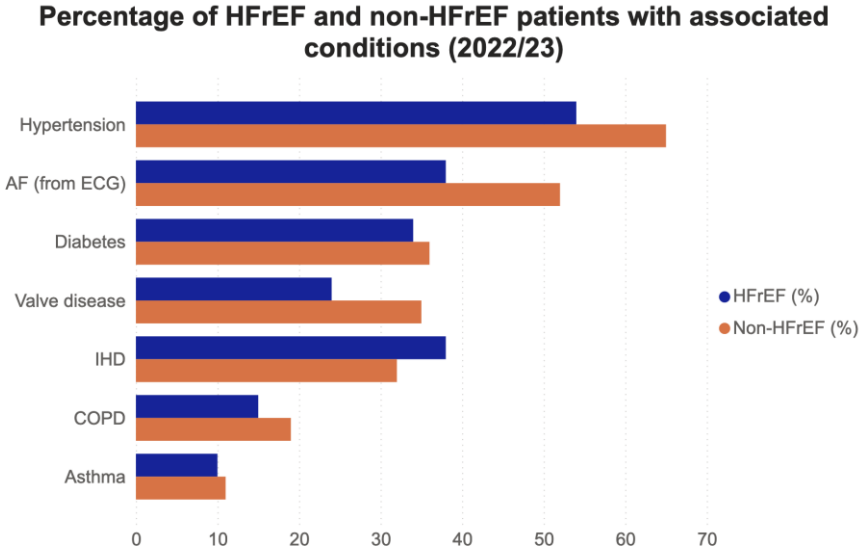
Proportion of LVSD is falling-51% this year





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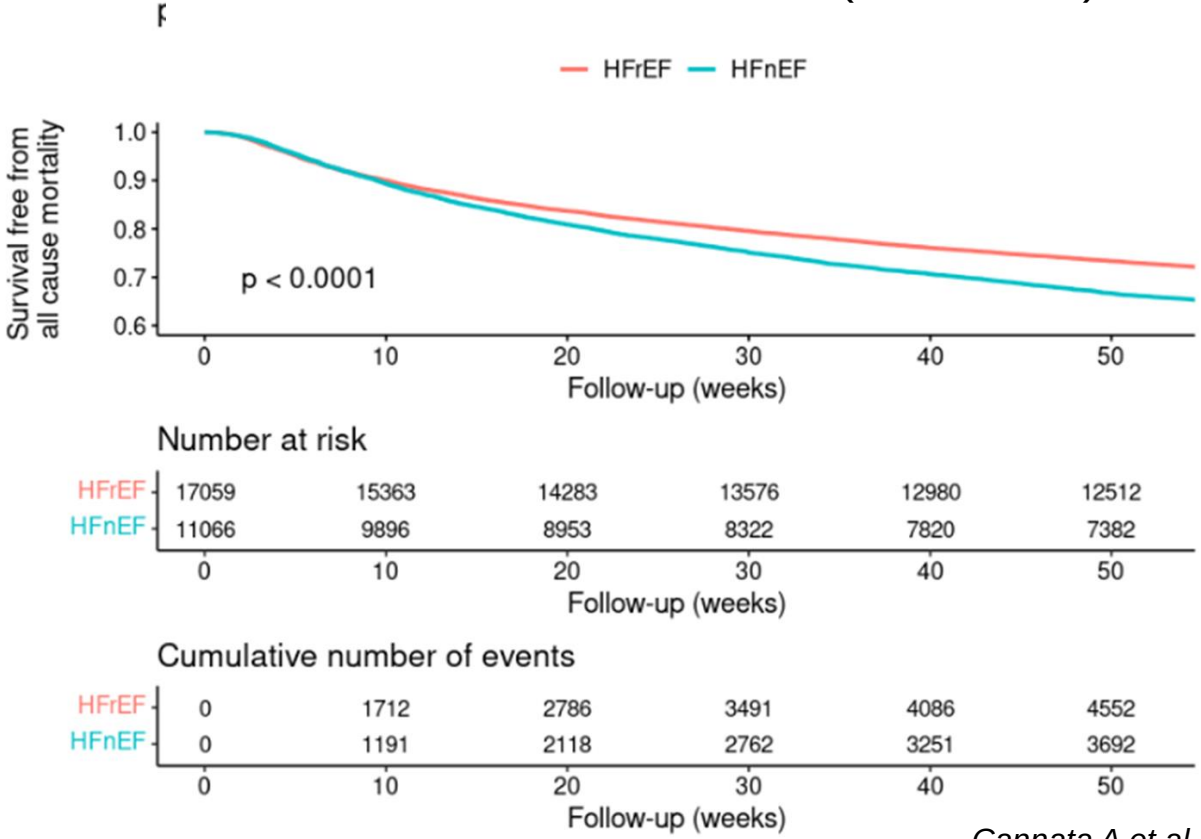
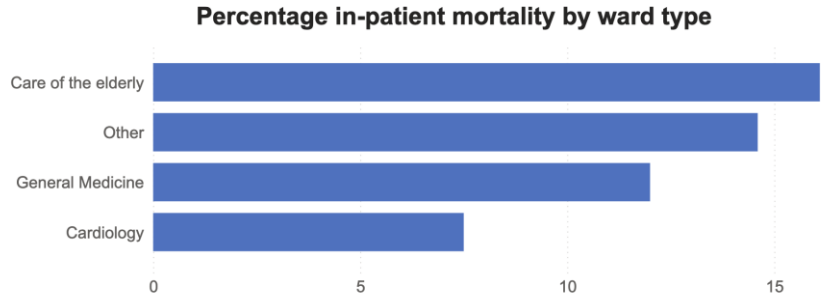
HFrEF and “non HFrEF”

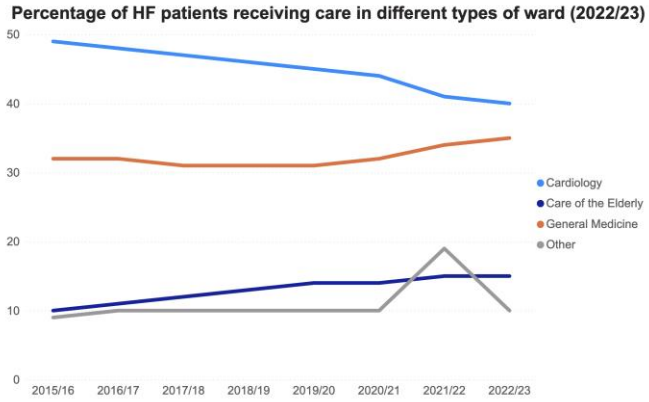
Analysis of 227,170 HF Admissions to the NHFA (2018-2022)

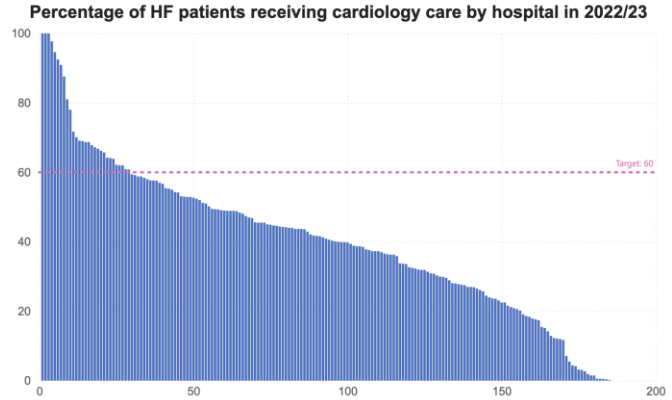


Cannata A et al, In Press EJHF 2024

Key Performance Indicators: Place of Care







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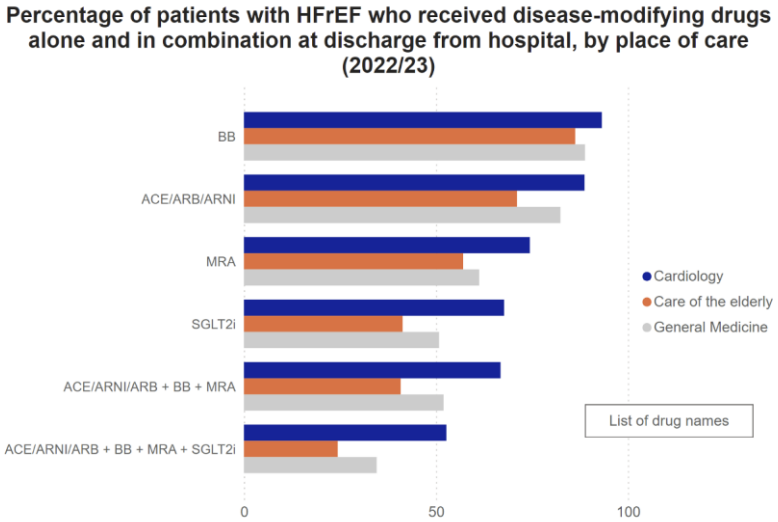
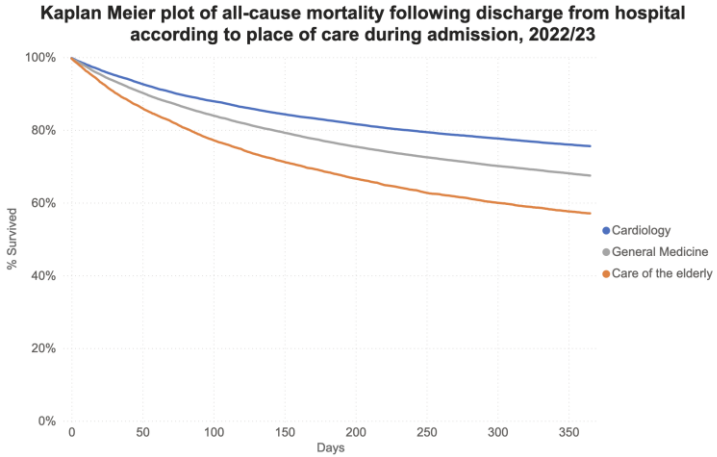
15% of hospitals meet the target of 60% in cardiology wards

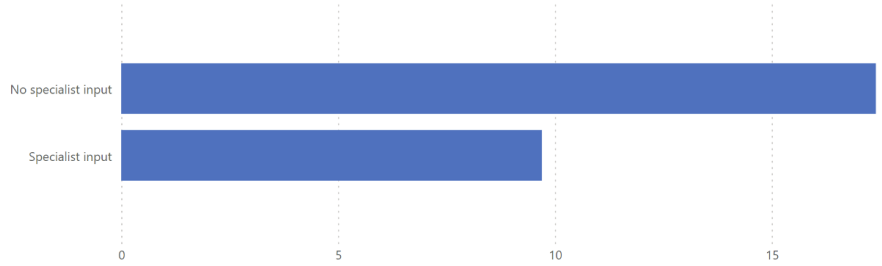
Place of Care





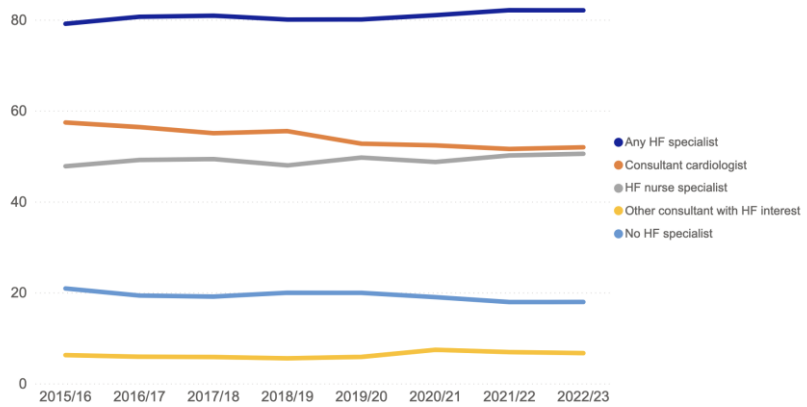
KPI: Specialist Care

Percentage in-patient mortality by specialist input

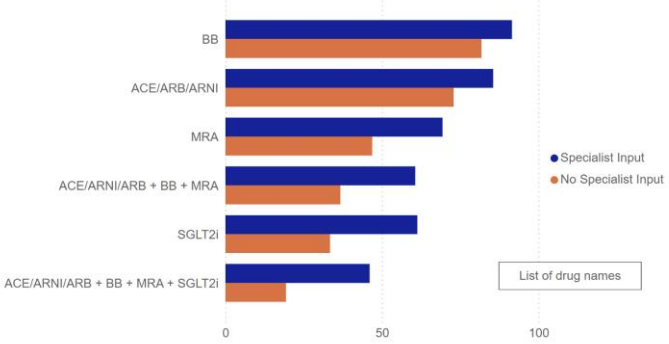


82% seen by a ”HF specialist”

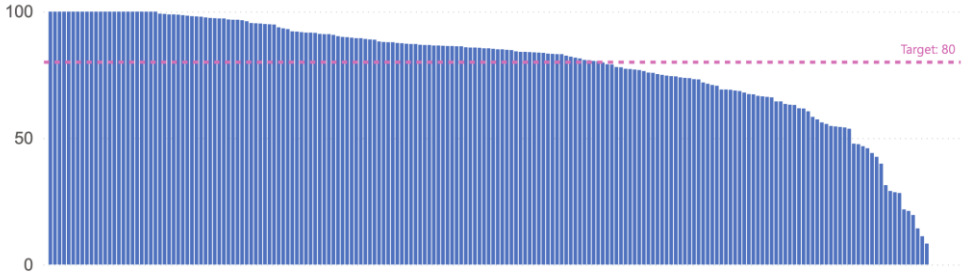
Percentage of patients seen by a specialist HF team in England and Wales



Percentage of patients with HFrEF who received disease-modifying drugs alone and in combination, at discharge from hospital (2022/23)



Percentage of patients seen by a specialist HF team by hospital in 2022/23



62% of hospitals meet the target of 80% seen by a specialist

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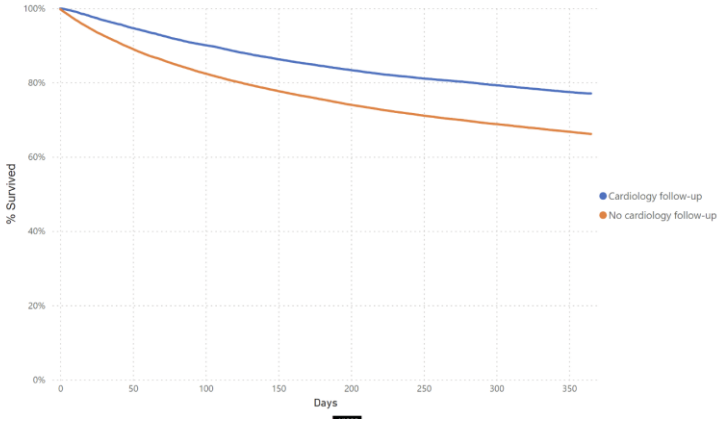
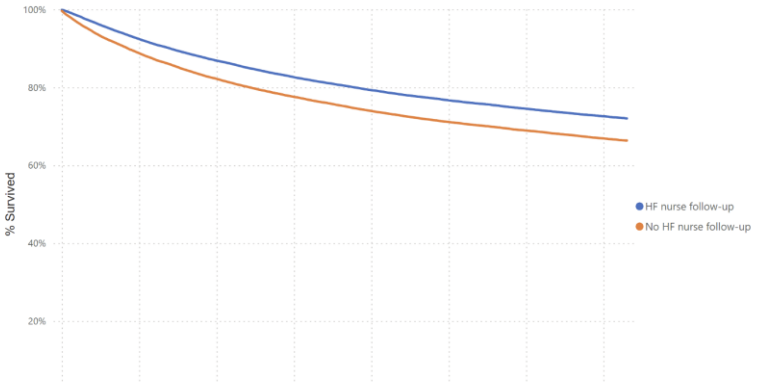
1-year discharge mortality and specialist follow-up

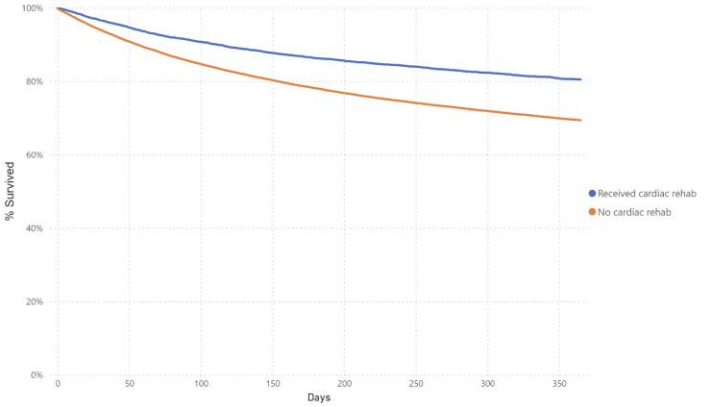
Kaplan Meier plot of all-cause mortality following discharge from hospital according to cardiology follow-up, 2022/23



Kaplan Meier plot of all-cause mortality following discharge from hospital according to HF nurse follow-up, 2022/23



Kaplan Meier plot of all-cause mortality following discharge from hospital according to cardiac rehab, 2022/23



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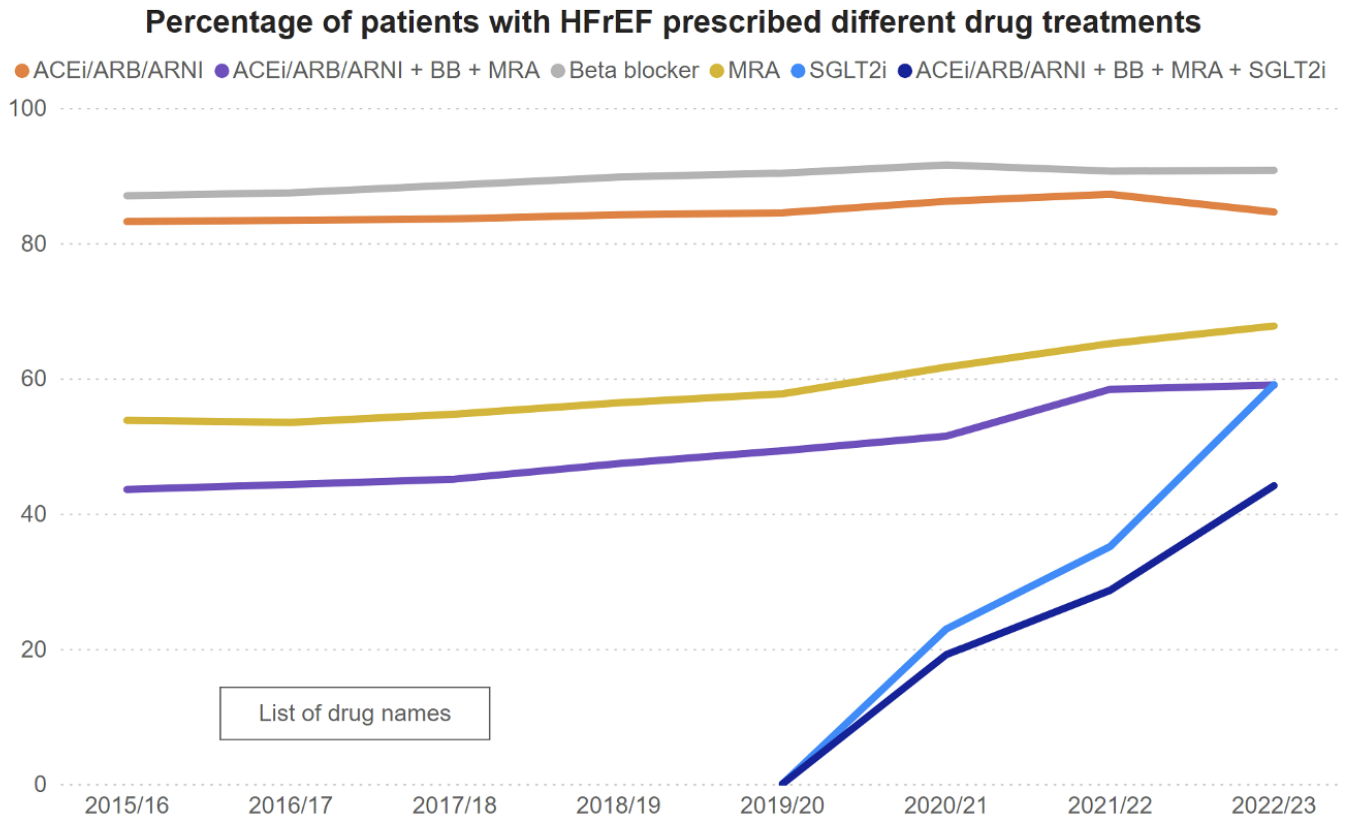
Disease-Modifying Drugs for HFrEF



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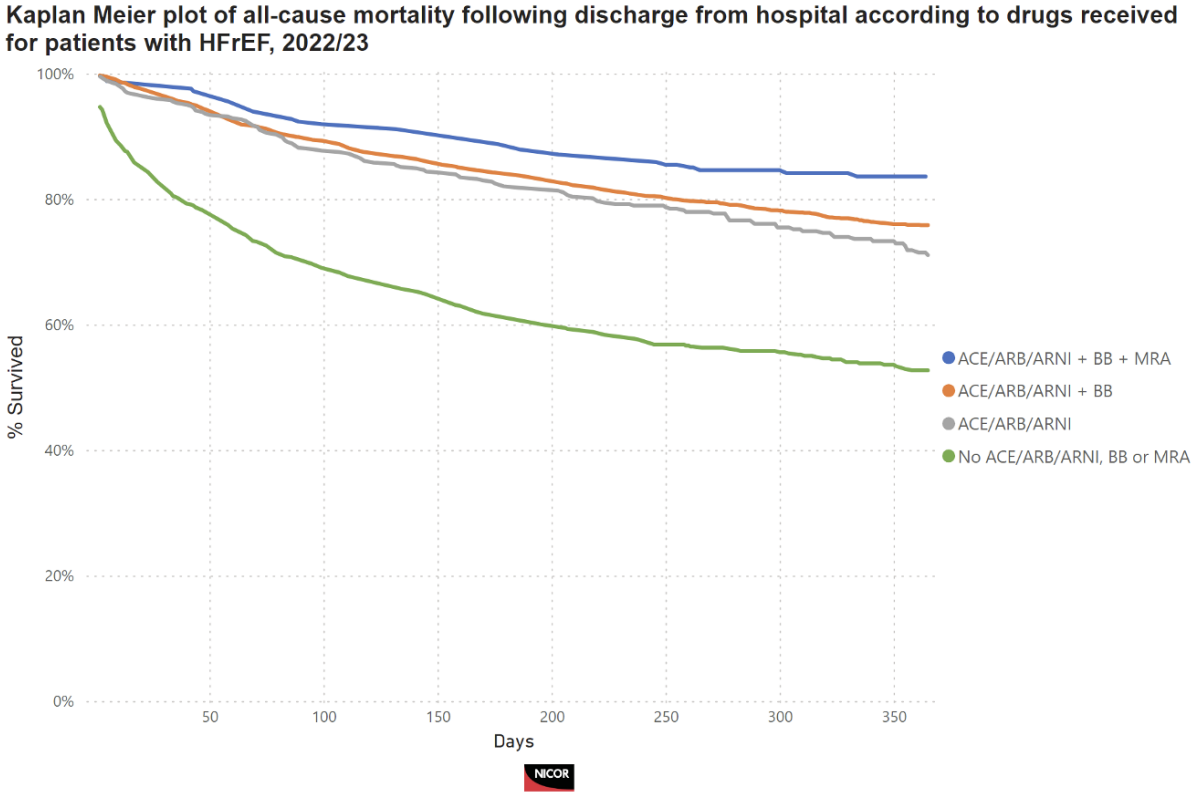
Drugs for HFrEF and 1-year mortality



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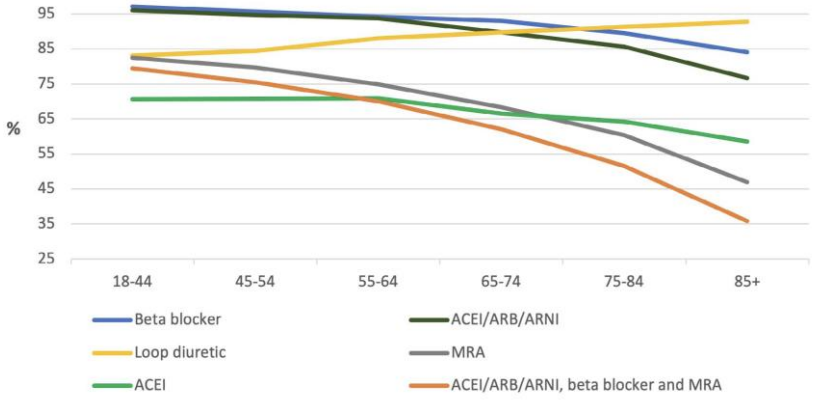
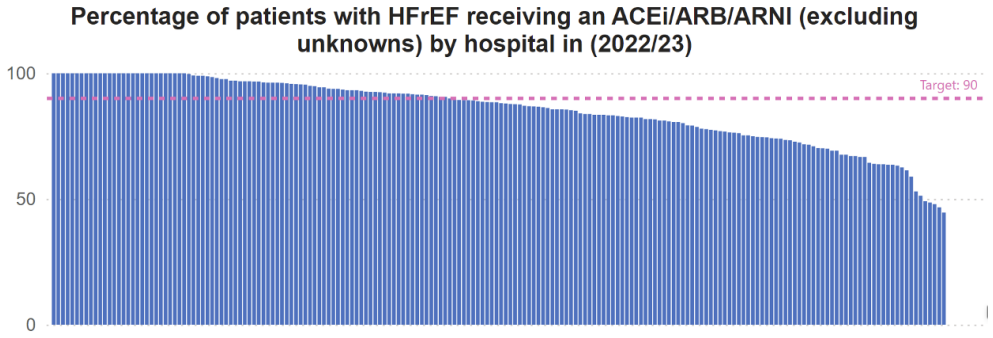
Cox Proportional Hazards Model for 1-Year Mortality

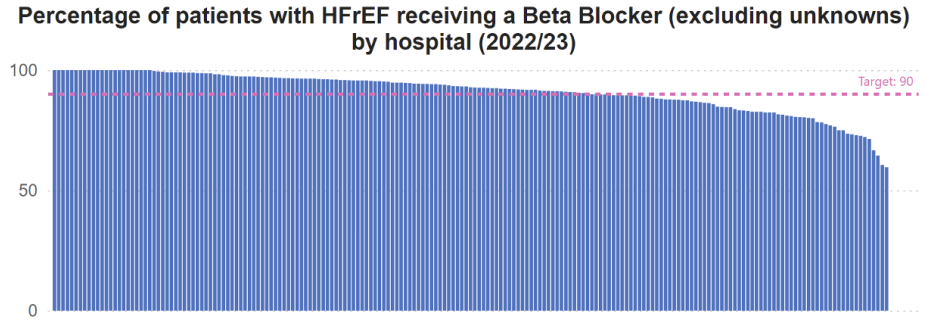
	Hazard Ratio	Lower CI	Upper CI	p-value
Age > 75	1.94	1.82	2.08	<0.001
COPD	1.38	1.30	1.48	<0.001
Creatinine (10umol/L increase)	1.00	1.00	1.00	<0.001
Heart Rate (5bpm increase)	1.01	1.01	1.01	<0.001
Ischaemic Heart Disease	1.26	1.20	1.34	<0.001
Length of stay >= 16 days	1.90	1.75	2.05	<0.001
Length of stay 0-4 days	1.00			
Length of stay 5-8 days	1.12	1.04	1.22	0.005
Length of stay 9-15 days	1.38	1.28	1.50	<0.001
Male	1.01	1.01	1.01	0.038
No ACEI/ARB/ARNI	1.41	1.33	1.49	<0.001
No beta blocker	1.18	1.10	1.26	<0.001
No cardiology follow-up	1.27	1.20	1.35	<0.001
No Echocardiography	1.04	0.99	1.11	0.125
Not cardiology in-patient	1.42	1.34	1.51	<0.001
NYHSA III/IV	1.07	1.00	1.14	0.052
Potassium <3.5 mmol/L	1.31	1.21	1.42	<0.001
Potassium >5.3 mmol/L	0.96	0.74	1.26	0.793
Potassium 3.5-5.3 mmol/L	1.00			
Sodium Electrolytes < 135 mmol/L	1.29	1.22	1.36	<0.001
Sodium Electrolytes > 145 mmol/L	1.78	1.55	2.03	<0.001
Sodium Electrolytes 135 - 145 mmol/L	1.00			
Systolic blood pressure (100mmHg decrease)	1.01	1.01	1.01	<0.001
Urea (5mEq/dl increase)	1.01	1.01	1.01	<0.001
Valve disease	1.28	1.21	1.36	<0.001

But…





47% meet 90% target



65% meet 90% target

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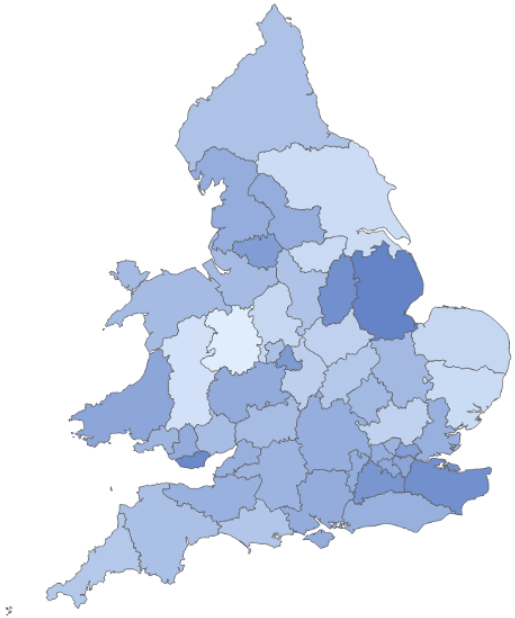
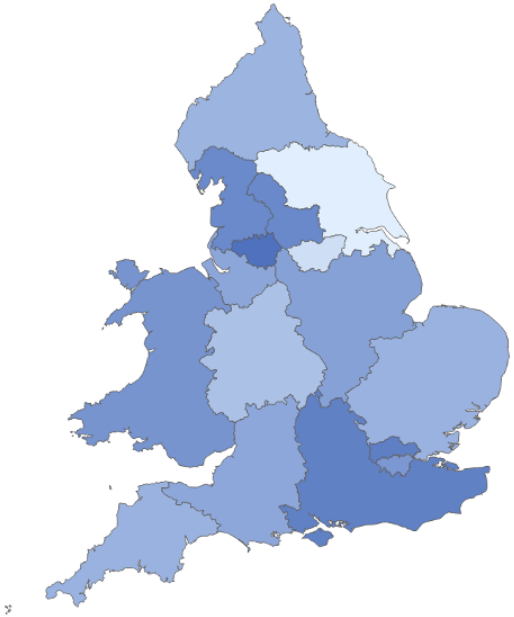
Huge Geographical Variation

ACEI/ARB/ARNI + BB + MRA prescribing rates at discharge based on patient home location by ICB/HB (2022/23)



ACEI/ARB/ARNI + BB + MRA prescribing rates at discharge based on hospital location by Cardiac Network (2022/23)



Not making the most of the “best of times”

- Should recent guideline updates help?
  - Treatment of HFrEF
  - Treatment of HFpEF
  - Comorbidities

ESC European Society of Cardiology

European Heart Journal (2021) 42, 3599–3726 doi:10.1093/eurheartj/ehab368

ESC GUIDELINES

2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure

Developed by the Task Force for the diagnosis and treatment of acute and chronic heart failure of the European Society of Cardiology (ESC)

With the special contribution of the Heart Failure Association (HFA) of the ESC

Authors/Task Force Members: Theresa A. McDonagh* (Chairperson) (United Kingdom), Marco Metra * (Chairperson) (Italy), Marianna Adamo (Task Force Coordinator) (Italy), Roy S. Gardner (Task Force Coordinator) (United Kingdom), Andreas Baumbach (United Kingdom), Michael Böhm (Germany), Haran Burri (Switzerland), Javed Butler (United States of America), Jelena Čelutkienė (Lithuania), Ovidiu Chioncel (Romania), John G.F. Cleland (United Kingdom), Andrew J.S. Coats (United Kingdom), Maria G. Crespo-Leiro (Spain), Dimitrios Farmakis (Greece), Martine Gilard (France), Stephane Heymans

ESC European Society of Cardiology

European Heart Journal (2023) 44, 3627–3639 https://doi.org/10.1093/eurheartj/ehad195

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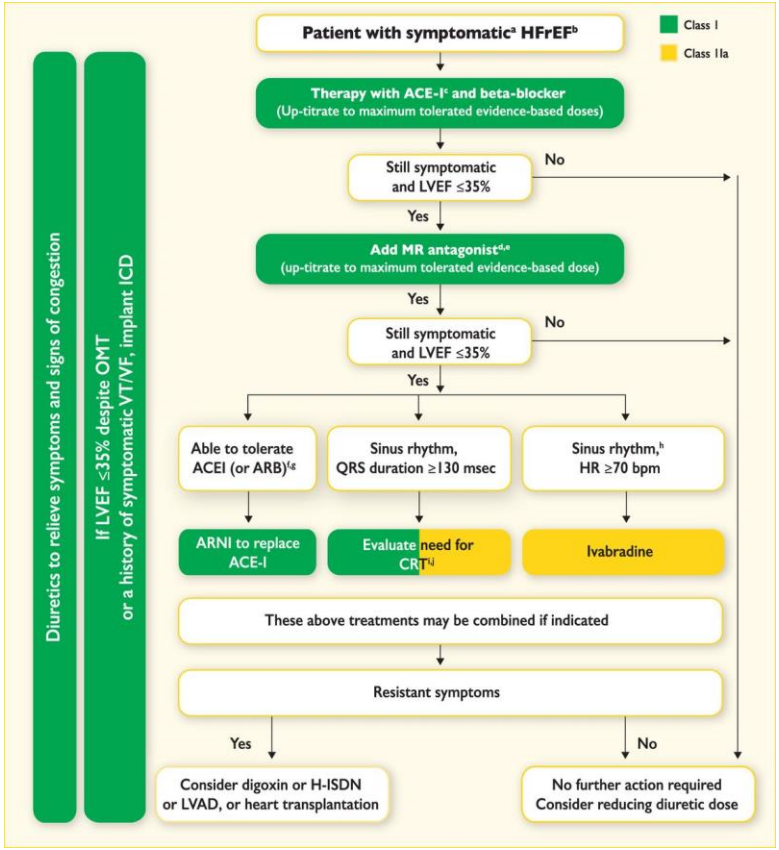
Guidelines

"Rules are made for the guidance of wise men and the obedience of fools…"

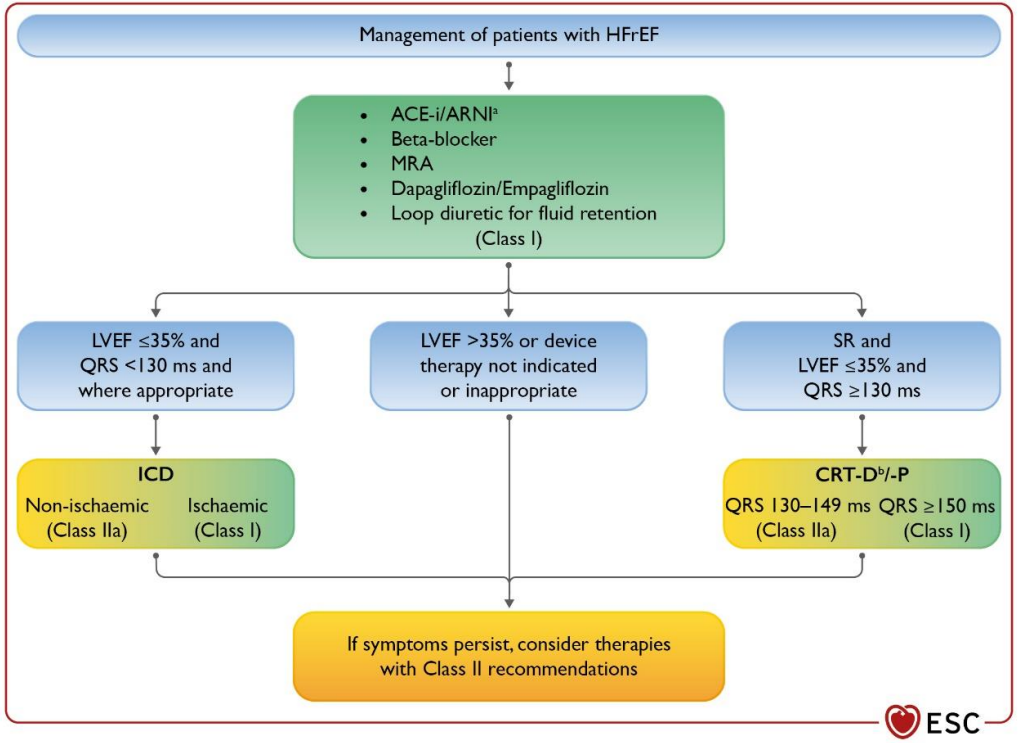
Douglas Bader 1944

Parachutes reduce the risk of injury after gravitational challenge, but their effectiveness has not been proved with randomised controlled trials

Change in the Therapeutic Algorithm for HFrEF

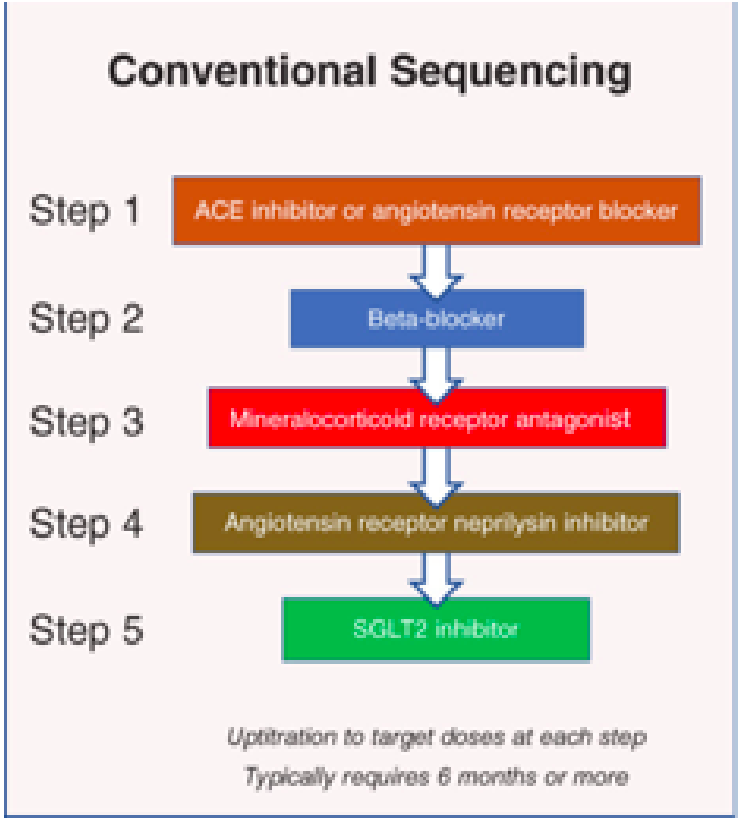


Ponikowski P et al EHJ 2016;37:2129-2200



McDonagh TA , Metra M et al. EHJ 2021;42(36):3599-3726

Sequencing of Class I Disease-Modifying Drugs

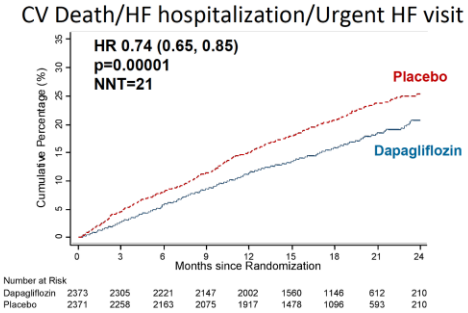


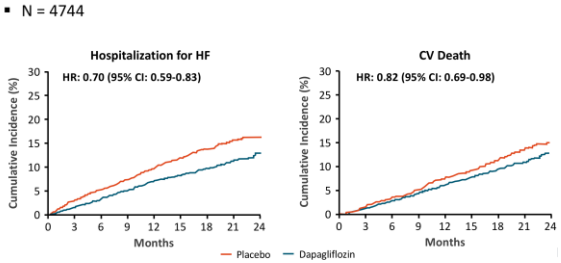
- Drug efficacy is independent of the other drugs
  - Act via distinct pharmacological mechanisms
  - Benefits are additive
  - Side effects are not
  - Any drug can be started first
- Effects of the key drugs are evident within weeks, at low dose
  - Early initiation of all 4 drugs will save lives

McMurray J and Packer M, EHJF (2021)23, 882–894

Speed matters-very early benefit with SGLT2i

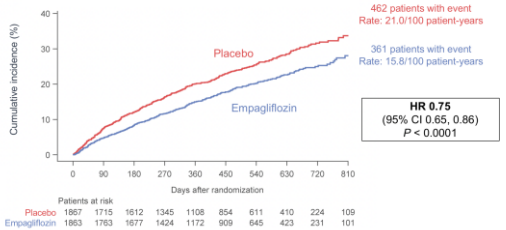
DAPA-HF Dapagliflozin

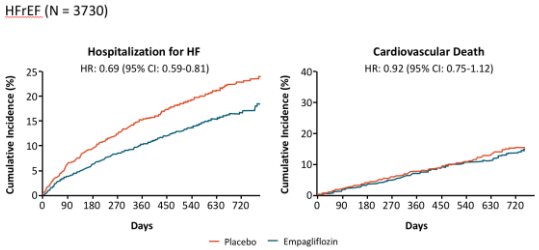




McMurray J et al, NEJM. 2019;381:1995

Emperor-Reduced Empagliflozin

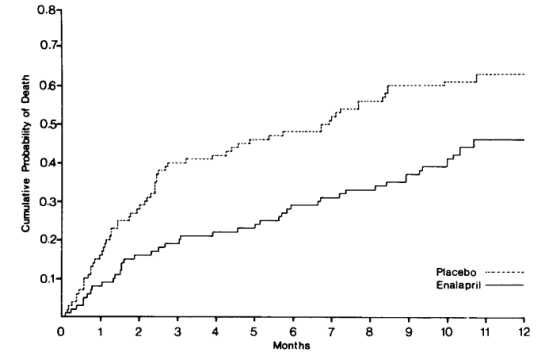




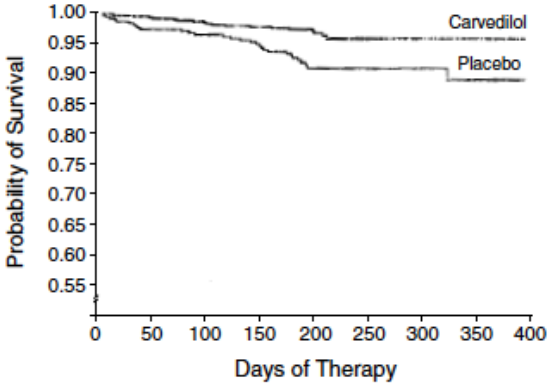
Packer M et al . NEJM 2020;383:1413

Also the case for RAAS blockade and BBs

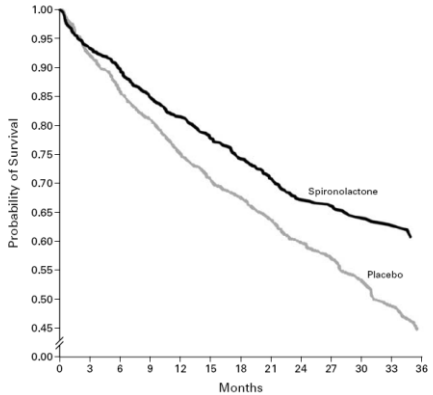
CONSENSUS



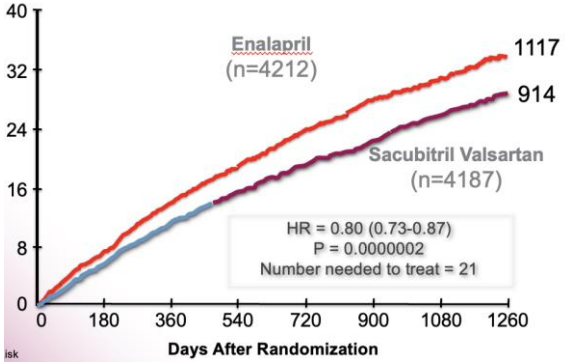
US-CARVEDILOL



RALES



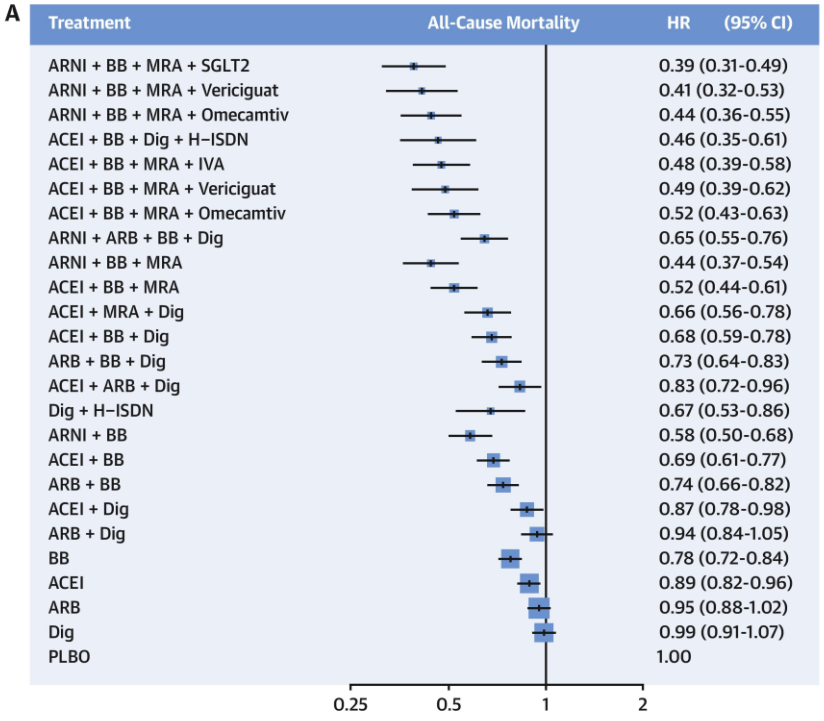
PARADIGM-HF



1. Consensus Trial Study Group N Engl J Med. 1987 Jun 4;316(23):1429-35. ; 2. Packer M, et al. N Engl J Med. 1996 May 23;334(21):1349-55. ; 3. Pitt B, et al. N Engl J Med. 1999 Sep 2;341(10):709-17. ; 4. McMurray JJV, et al. N Engl J Med. 2014 Sep 11;371(11):993-1004.

HFrEF Treatment-Network Meta-analysis

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

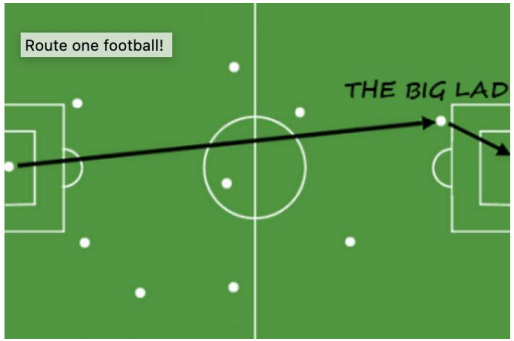


Tromp, J. et al. J Am Coll Cardiol HF. 2022;10(2):73–84.

Age 70; 5 years of life gained vs no therapy

Goal is the same, the tactics have changed

- Initiation of each therapy has priority, as quickly as possible, over the up-titration of the dose of any individual therapy.
- Attempting to titrate to the target dose is still essential, but is now considered a secondary goal.
- Starting the four “pillars” at least at low doses, is the primary objective.



How?

- Pharmacological synergies[1]
  - BB + SGLT2i then ACEi/ARNI, then MRA -1 month, then up-titrate
- Mathematical modelling of HF RCTs[2,3]
  - Accelerating the introduction and up-titration of therapy -23 fewer patients /1000 had a HF hospitalization or CV death and 7 fewer all cause deaths
  - Optimal sequences of treatment always included SGLT2i and an MRA as the first two therapies.
  - Others have supported an “SGLT2 inhibitor first” strategy
- Clinical Pragmatism
  - If CKD or hyperkalemia is an issue, prioritise BB/SGLT2i then add ACEI/ARNI/MRA
  - If low SBP is a problem, prioritise SGLTi/BB/MRA then ACEi/ARNI
  - If HR<60bpm, prioritise ACEI/ARNI/MRA/SGLT2i then BB
  - Stop unnecessary drugs that lower bp/cause CKD to help
- **Do it as quickly as possible and use a hospitalisation wisely!**

[1]McMurray J EJHF (2021)23, 882–894 [2]Demro C et al, EHJ. 2022;14:872867 [3]Tomasoni D et al, EJHF. 2022;24: 431-441.

Acute Heart Failure Pre-discharge management: STRONG-HF

Patients

- 1078 patients hospitalized for acute HF
- not already on full doses of GRMT
- Haemodynamically stable
- NT-proBNP >2500 pg/mL at screening, >10% decrease screening to randomization

Randomization

- high-intensity care vs usual care

High intensity care

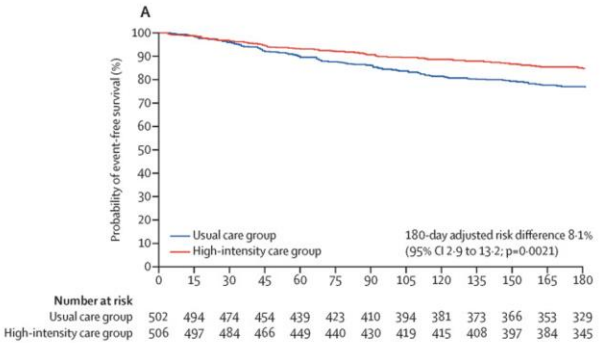
- Early (2 days before discharge) and rapid intensification of oral HF treatment with ACE-I/ARB/ARNI, beta-blockers and MRA

Mebazaa A et al Lancet. 2022 Dec 3;400(10367):1938-1952.

Results

Full doses of oral therapies. HIC vs UC

- ACEi/ARB/ARNI 55% vs. 2%,
- beta-blockers 49% vs. 4%
- MRA 84% vs. 46%



Recommendations	Class	Level
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.	I	B

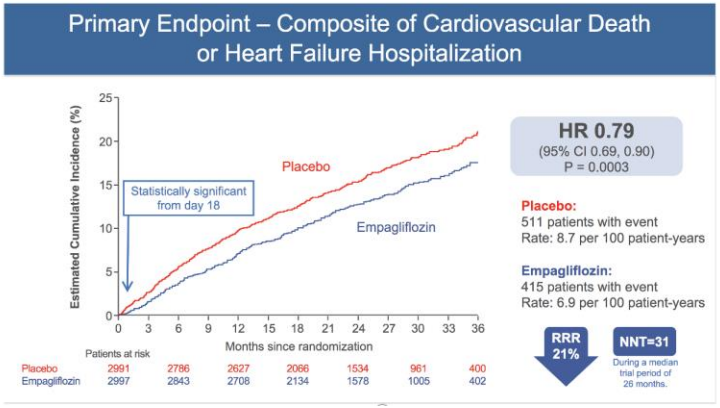
McDonagh TA, Metra M et al Eur Heart J. 2023 Aug 25:ehad195. doi: 10.1093/eurheartj/ehad195..

CHF: EMPEROR-Preserved and DELIVER
SGLT2i Empagliflozin and Dapagliflozin HFpEF and HFmrEF

EMPEROR-Preserved

5988 patients with HF and LVEF>40% ± T2DM at baseline

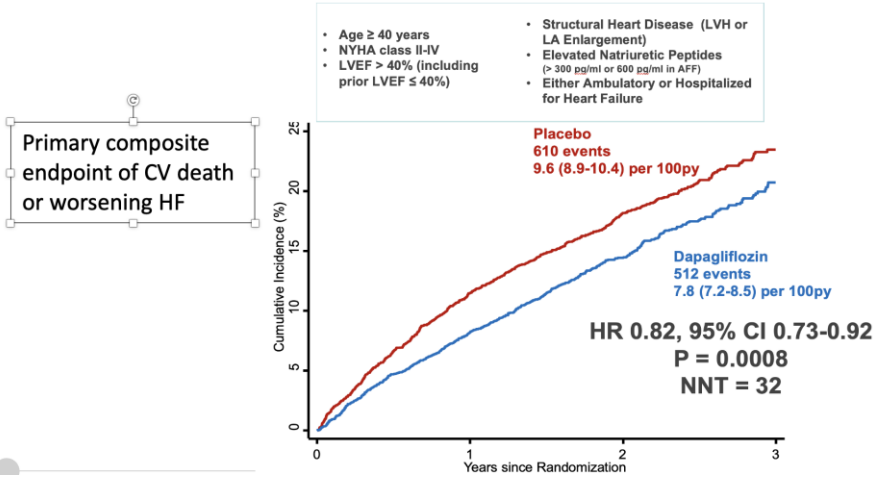
LVEF>40%, NT-proBNP>300pg/ml or 900pm/ml in AF



Anker SD et al. NEJM 2021;385(16):1451-1461

DELIVER

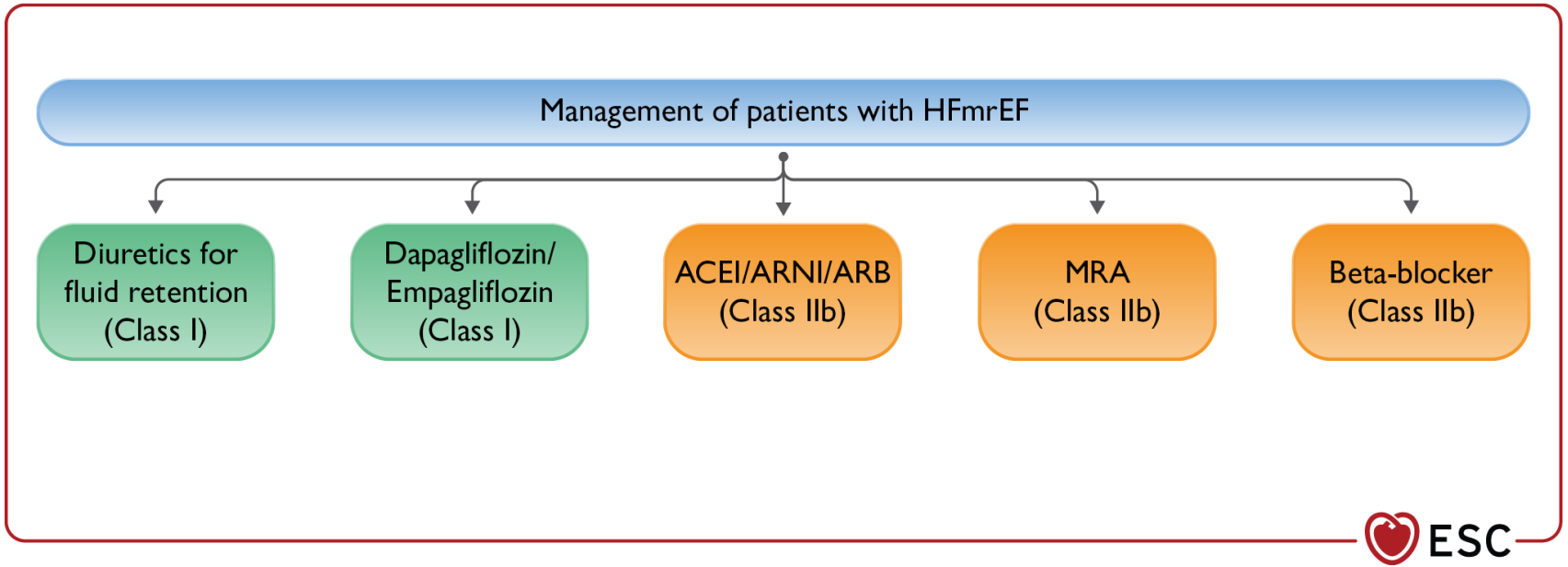
Primary composite endpoint of CV death or worsening HF



Solomon SD et al NEJM 2022;387:1089-1098

Treatment of patients with symptomatic HFmrEF

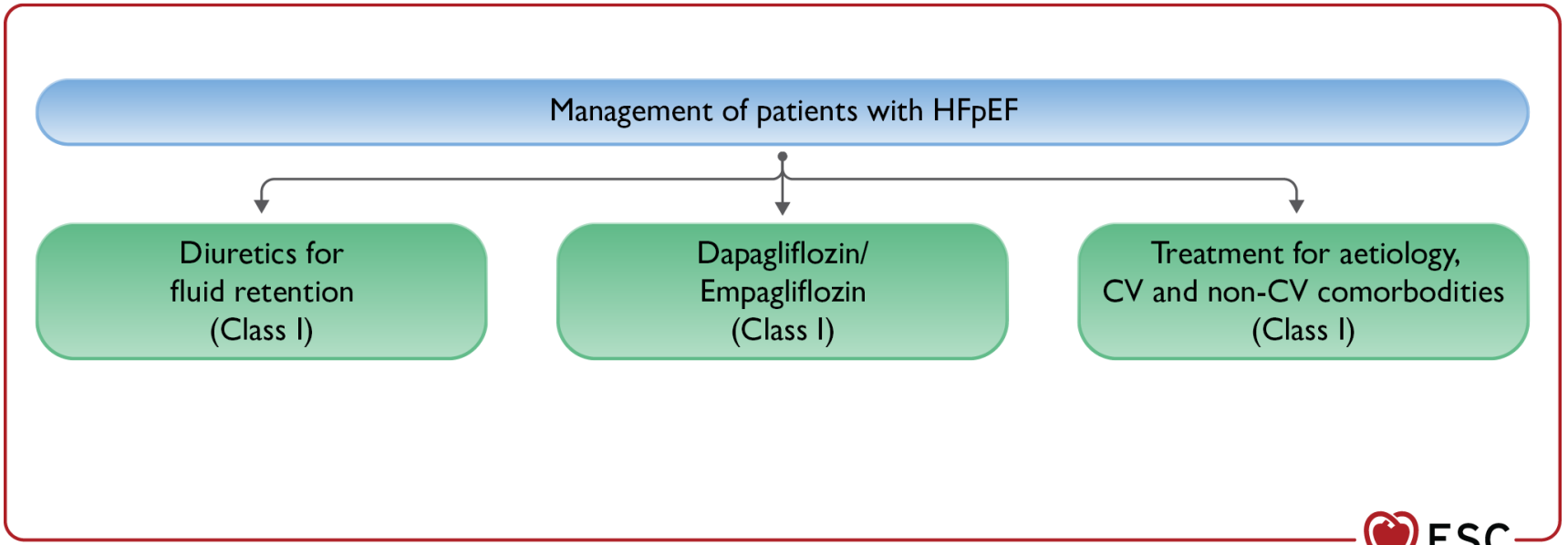
Recommendations	Class	Level
An SGLT2 inhibitor (dapagliflozin or empagliflozin) is recommended in patients with HFmrEF to reduce the risk of HF hospitalization or CV death.	I	A



McDonagh TA, Metra M et al Eur Heart J. 2023 Aug 25:ehad195. doi: 10.1093/eurheartj/ehad195..

Treatment of patients with symptomatic HFpEF

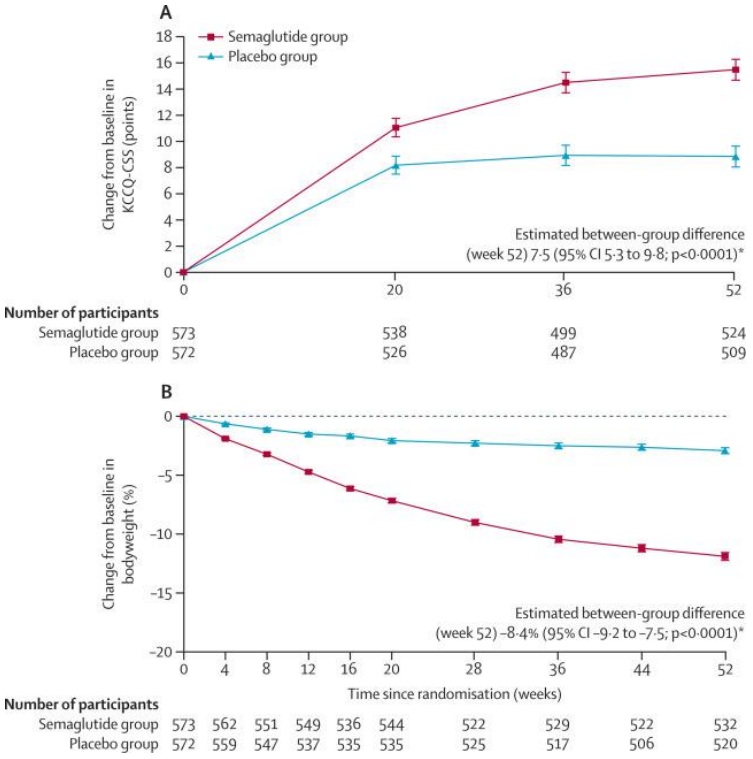
Recommendations	Class	Level
An SGLT2 inhibitor (dapagliflozin or empagliflozin) is recommended in patients with HFpEF to reduce the risk of HF hospitalization or CV death.	I	A

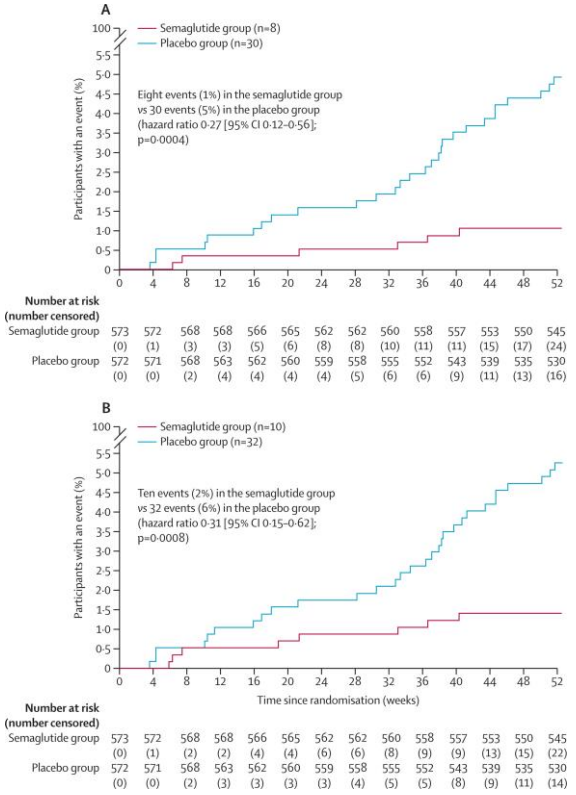


McDonagh TA, Metra M et al Eur Heart J. 2023 Aug 25:ehad195. doi: 10.1093/eurheartj/ehad195..

HFpEF:GLP-1A, Semaglutide

Pooled Meta-analysis of STEP-HFpEF and STEP-HFpEF DM





Butler J et al, Lancet 2024,https://doi.org/10.1016/s0140-6736(24)00469-0

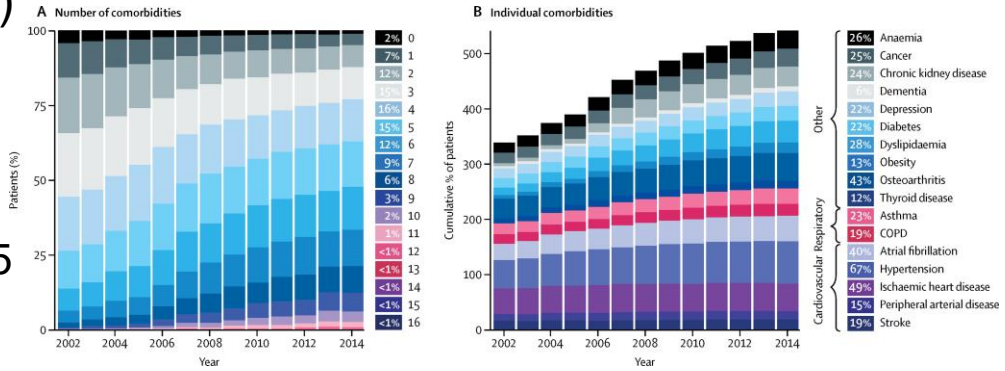
Major Issue for HF

UK 2002-14

Prevalent HF ⬆⬆ 23% to 920 616 (1.4%)

- Crude incidence rate of 1.2/100,000 per year
- Mean age at 1st presentation=77 from 76.5
- Mean number of comorbidities now 5.4 from 3.4

Estimated HF population in 2020= 1,000,000



Conrad N et al Lancet 2018;391;572

IPD Meta-analysis for FCM

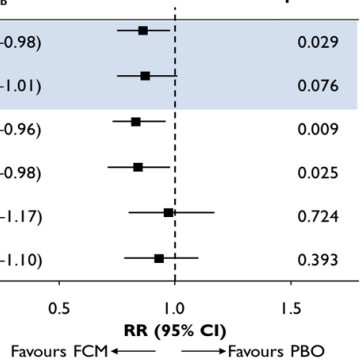
Patients: AFFIRM-AHF | CONFIRM-AHF | HEART-FID

4,475 patients
- 2,241 received ferric carboxymaltose (FCM)
- 2,234 received placebo (PBO)

Selected inclusion criteria:
Adult patients with heart failure and iron deficiency (ferritin <100 ng/mL **or** ferritin 100–300 ng/mL with TSAT <20%) treated with ferric carboxymaltose or placebo for 52 weeks.

Results:[a]

	Outcome	FCM N=2237	PBO N=2233	Rate/Hazard ratio (95% CI)[b]	p value[b]
Primary endpoints	Total CV hospitalizations and CV death	27.6%	30.5%	RR 0.86 (0.75–0.98)	0.029
	Total HF hospitalizations and CV death	22.5%	25.2%	RR 0.87 (0.75–1.01)	0.076
	Total CV hospitalizations	22.9%	26.4%	RR 0.83 (0.73–0.96)	0.009
	Total HF hospitalizations	17.0%	20.2%	RR 0.84 (0.71–0.98)	0.025
	Time to CV death	9.2%	9.8%	HR 0.97 (0.80–1.17)	0.724
	Time to all-cause death	11.5%	12.7%	HR 0.93 (0.78–1.10)	0.393



Conclusion: FCM significantly reduced the rate of CV and HF hospitalization, but did not reduce mortality rates

Ponikowski P et al 2023. Eur Heart J, ehad586, https://doi.org/10.1093/eurheartj/ehad586

Recommendations	Class	Level
Intravenous iron supplementation is recommended in symptomatic patients with HFrEF and HFmrEF and iron deficiency, to alleviate HF symptoms and improve quality of life.	I	A
Intravenous iron supplementation with ferric carboxymaltose or ferric derisomaltose should be considered in symptomatic patients with HFrEF and HFmrEF and iron deficiency to reduce the risk of HF hospitalization.	IIa	A

Heart Failure Trials ?

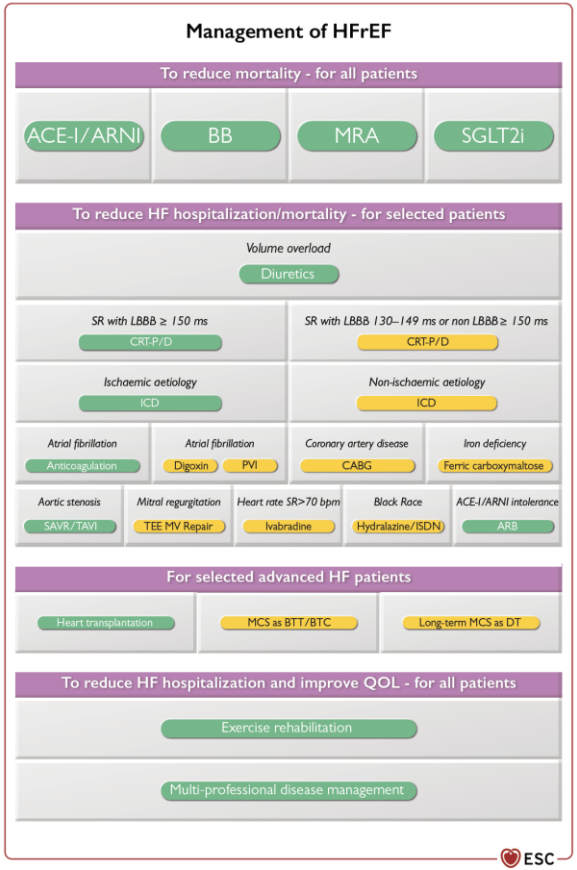
- Do they have to change?
  - Registry-based RCTs
    - Maybe easier with injectables
  - Withdrawal (N1) trials
    - ? in non responders, allow trial of new therapies
- HFpEF Trials
  - Should there be a change of definition to HFnEF?
    - Data from trials and echo registries-50% is too low
      - Increased mortality risk and benefits of neurohormonal blockade benefit: 55%-60%
  - What cut-point?
    - Convenience->55% defines normal in the ASE/EACVI Echo GLs
    - Sex differences, >55% men, >60% women
  - Focus new trials on “HFnEF” and not those with HFmrEF

A deeper phenotypic approach to HF

? 2030s the arrival of precision medicine for HF

diagnostics: biomarkers, proteomics, metabolomics, non-coding RNAs, genetic signatures to target newer therapies-immunological, miRNAs??

At the start with amyloid (tafamadis patisiran, inclisiran) and HCM (mavacantem, aficantem)



McDonagh T, Metra M et al . Eur Heart J 2021;42(36):3599-3726

Better Prevention-Screening BNP and Asymptomatic LVSD

North Glasgow MONICA
1252 aged 25-74,randomly sampled from N. Glasgow.

Echocardiography
Gold Standard for LVSD
LVEF (Simpson's Rule Method)

Prevalence of LVSD : 3.1% (39)
Symptomatic : 49% (18)
Asymptomatic : 51% (19)

BNP : standard RIA (Peninsula)

Predominantly IHD

NPV=99.1

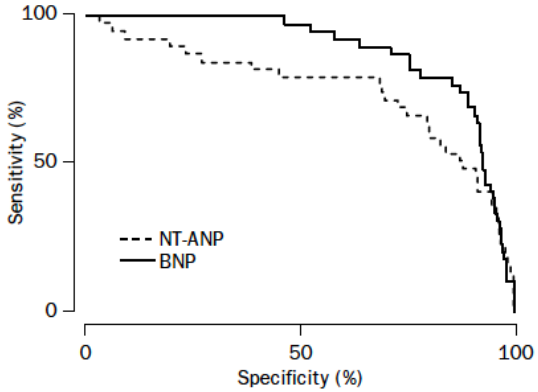
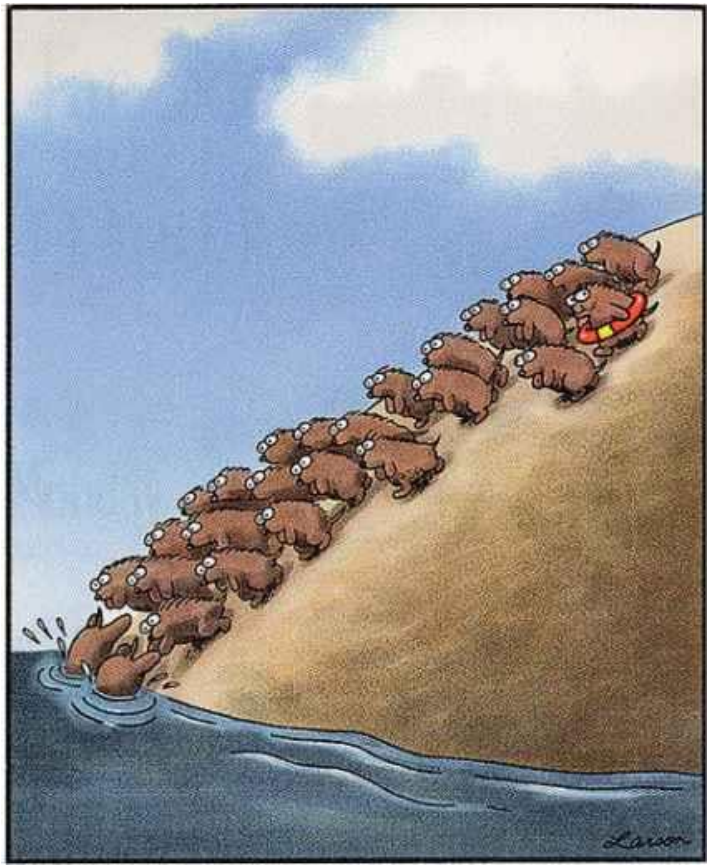


Figure 2: **Receiver-operating-characteristic curves for ability of BNP and NT-ANP to detect left-ventricular systolic dysfunction in whole study population ages 25–74**

SOLVD-Prevention-1992!

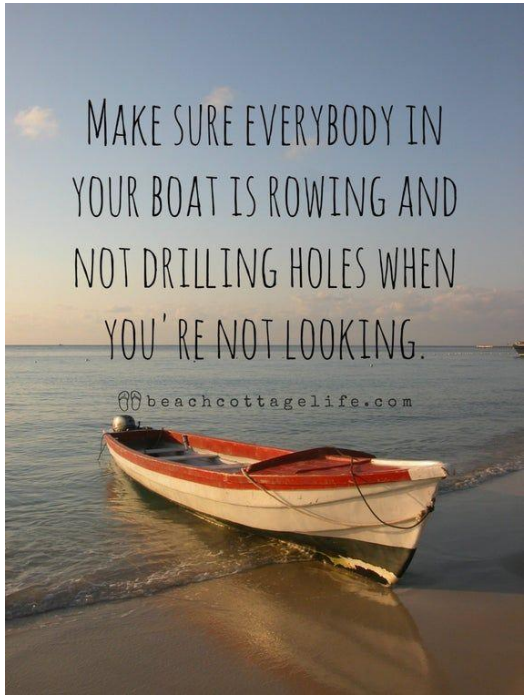
McDonagh TA et al. Lancet 1993;351:9-13

Best of times?



Please may see a cardiologist and a HF nurse!

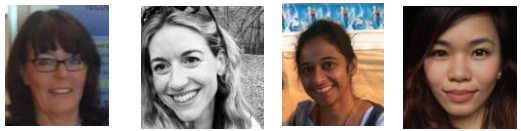
Choose your team carefully…



George Amin-Youssef,Dr Dan Sado, Sue Piper ,Dan Bromage, Adam Nabeebacccus, Obi Okonko, Rosita Zakeri

Registrars and Fellows 2023/24

Antonio Cannata, Clare Bannister, Matt Sadler, Dan Hammersley, Owais Musani, Chris Knott, Jeremy Fleri-Soler, Aamir Shasmi, Antonio Jordan



Heart Failure Nurses

Julia DeCourcey, Denise Leufer, Ludcy Lukose, Hannah Simmonds, Louise Noval

And 8 nurses in the community in Lambeth and Southwark