IHEFCARD 2026 · HEART FAILURE · DEVICE THERAPY

The 6th Indonesian Symposium on Heart Failure and Cardiometabolic Disease

Advanced Heart Failure Management Pathway

When is the right time for CRT and ICD?

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2021 ESC | 2023 HRS / APHRS / LAHRS | 2025 ACC/AHA/HRS AUC | 2025 EHRA Consensus on CSP

Disclosure

The presenter has no conflicts of interest to disclose

AI-assisted tools were used to support outline structuring;
all content has beenreviewed and validated by the presenter

Premier League

2025-2026

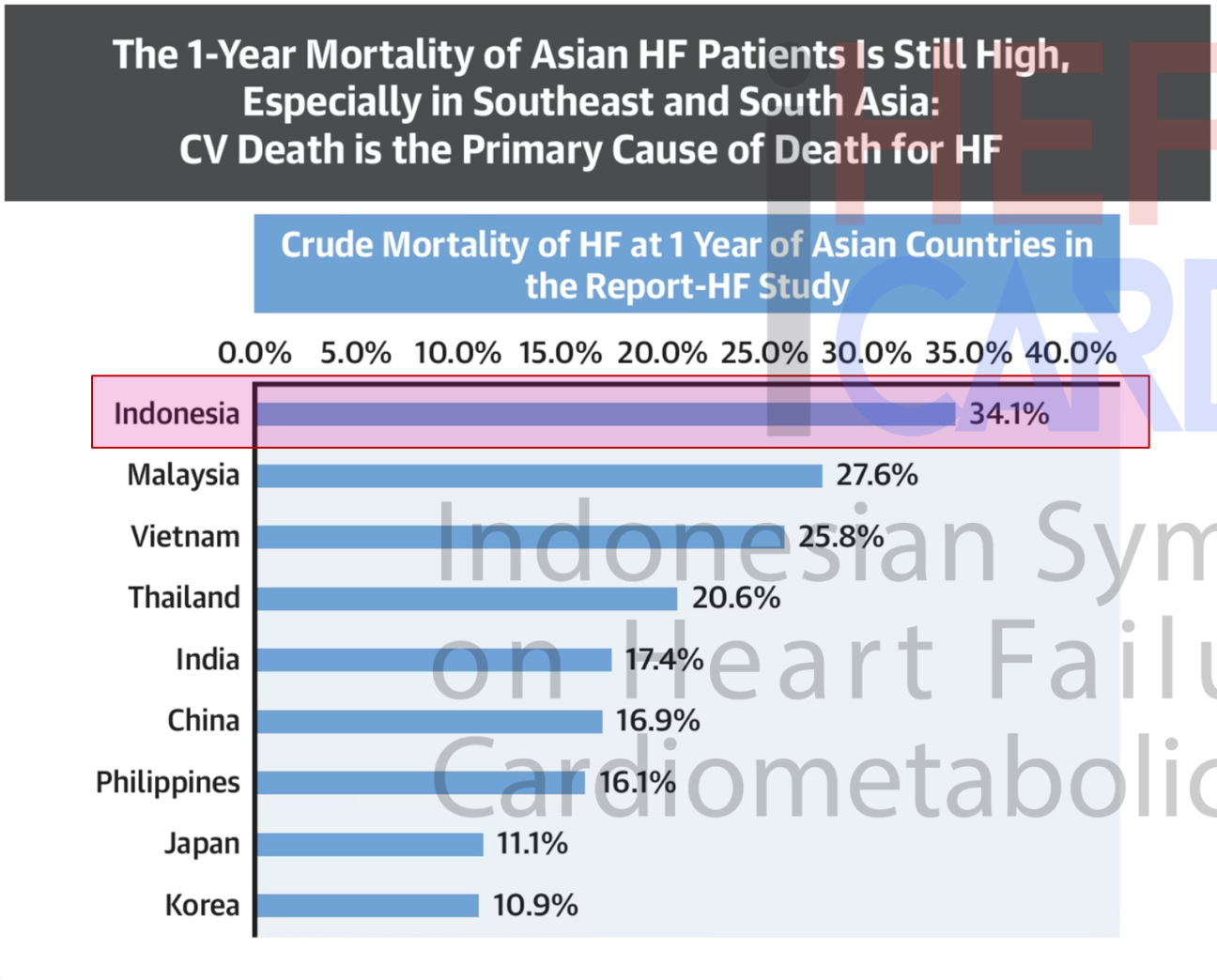
Overview | Matches | Table | Stats

Table

Season: **2025–26**

	Club	MP	W	D	L	GF	GA	GD	Pts	Last 5
1	Arsenal	38	26	7	5	71	27	44	**85**	W W W W W
2	Man City	38	23	9	6	77	35	42	**78**	D W W D L
3	Man United	38	20	11	7	69	50	19	**71**	W W D W W
4	Aston Villa	38	19	8	11	56	49	7	**65**	L L D W W
5	Liverpool	38	17	9	12	63	53	10	**60**	W L D L D
6	Bournemouth	38	13	18	7	58	54	4	**57**	D W W D D
7	Sunderland	38	14	12	12	42	48	-6	**54**	L D D W W
8	Brighton	38	14	11	13	52	46	6	**53**	W L W L L
9	Brentford	38	14	11	13	55	52	3	**53**	L W L D D
10	Chelsea	38	14	10	14	58	52	6	**52**	L L D W L
11	Fulham	38	15	7	16	47	51	-4	**52**	W L L D W
12	Newcastle	38	14	7	17	53	55	-2	**49**	L W D W L
13	Everton	38	13	10	15	47	50	-3	**49**	L D D L L

1-Year Mortality in Asian HF Patients Remains Alarmingly High



Southeast Asia Bears the Highest Risk

Data from the Report-HF Study reveal that crude 1-year mortality for heart failure patients varies dramatically across Asia.

Indonesia leads all nations at 34.1% — more than three times higher than Korea (10.9%) or Japan (11.1%).

Cardiovascular (CV) death is the primary cause of mortality in HF patients across all countries studied. Southeast and South Asian nations consistently show the worst outcomes, underscoring urgent gaps in diagnosis, treatment access, and device therapy utilization.

ID Indonesia

34.1% 1-year mortality

JP Japan

11.1% 1-year mortality

Source: Feng J, et al. *JACC: Asia.* 2024;4(4):249–264.

Four Pillars of HF Management

ARNI / ACEi

Sacubitril-valsartan
preferred

β-Blocker

Carvedilol, bisoprolol
metoprolol, nebivolol

MRA

Spironolactone
or eplerenone

SGLT2 inhibitor

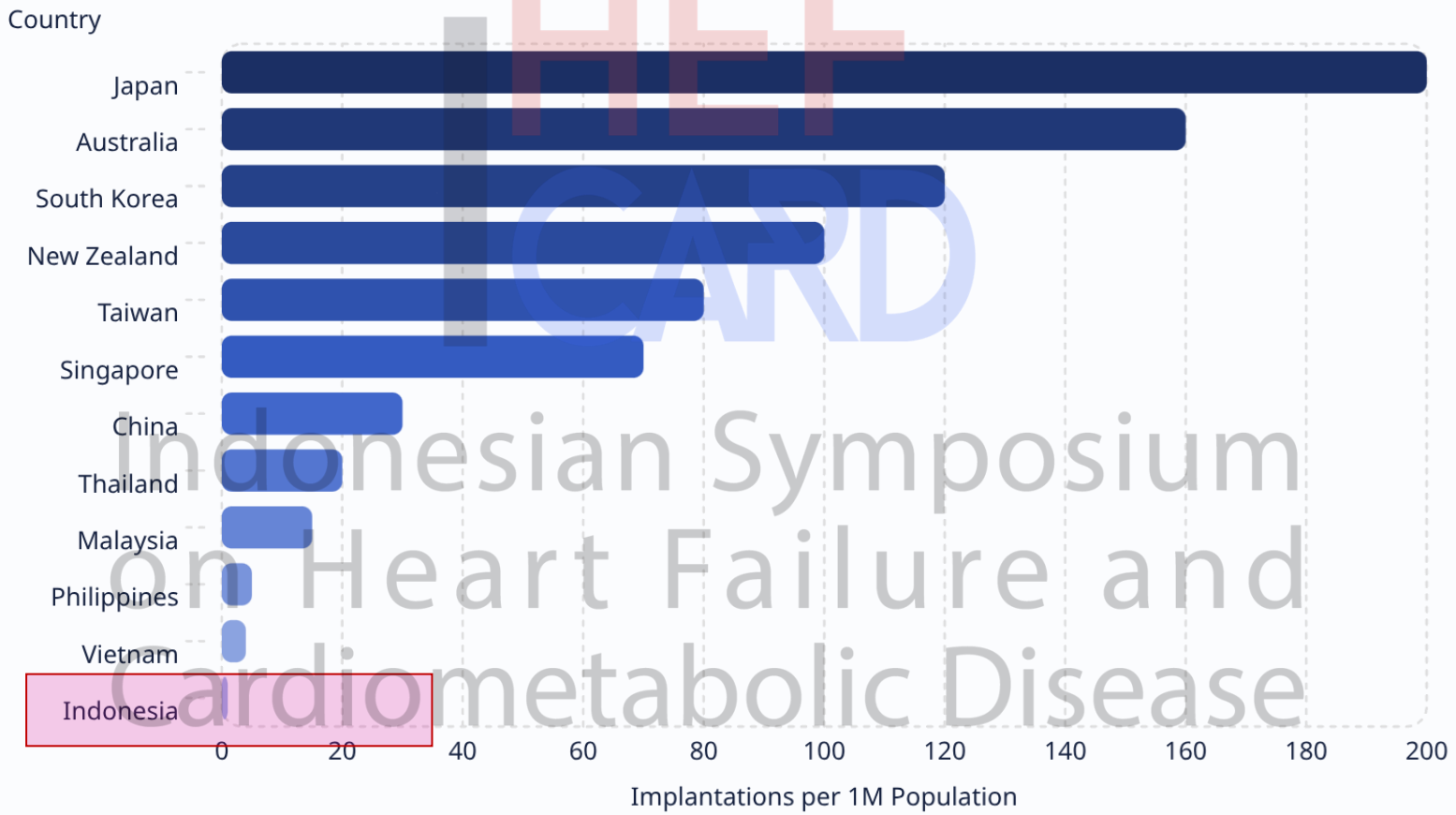
Dapagliflozin
or empagliflozin

The 5th Pillar?

Rx	β	MRA	SGLT2	5th pillar?
ARNI / ACEi	**β-Blocker**	**MRA**	**SGLT2 inhibitor**	**DEVICE THERAPY**
Sacubitril-valsartan preferred	Carvedilol, bisoprolol metoprolol, nebivolol	Spironolactone or eplerenone	Dapagliflozin or empagliflozin	ICD · CRT · CSP (the emerging 5th pillar)

CRT Implantation Rate per 1 Million Population — Asia Pacific, 2022

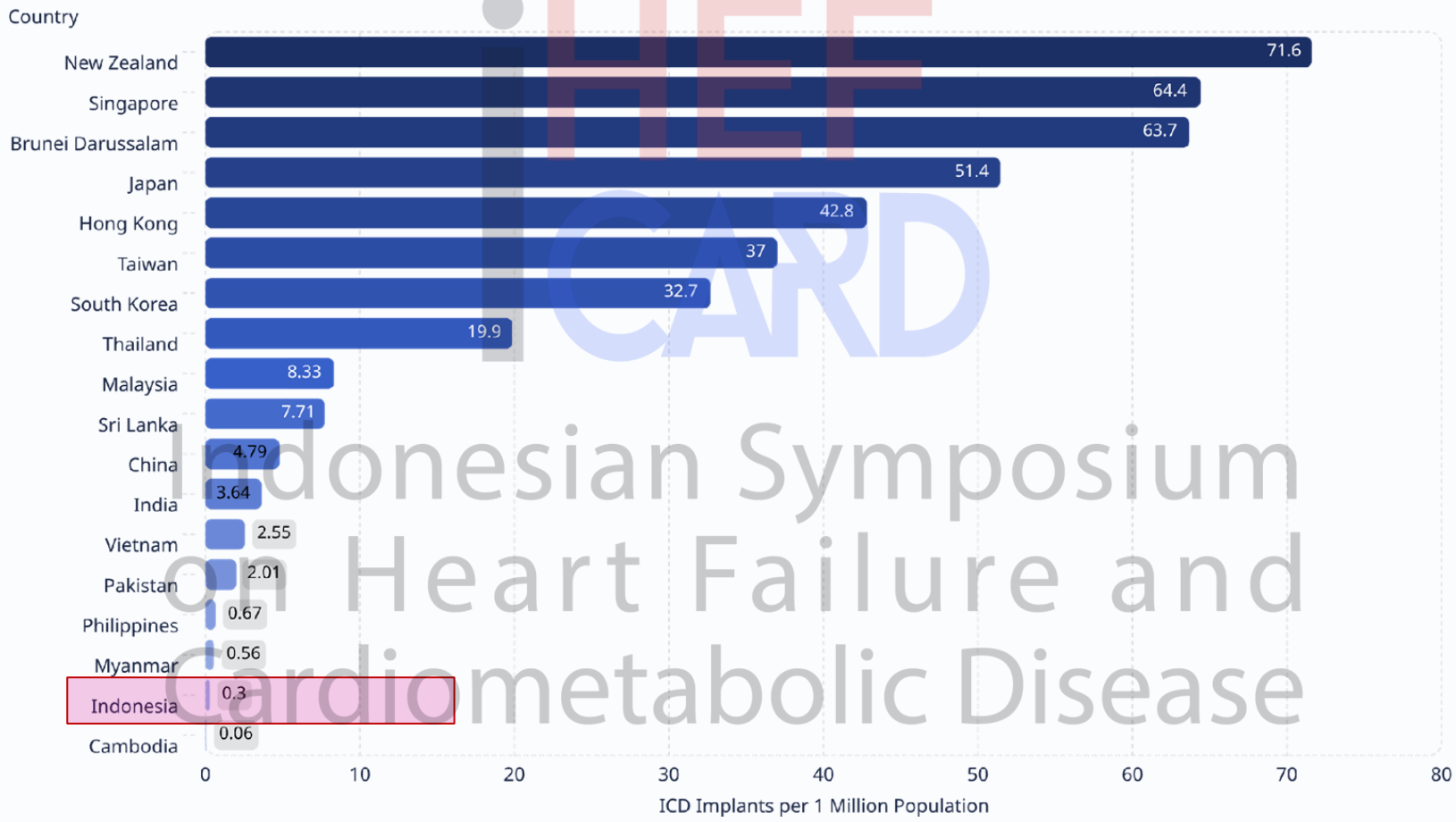
Indonesia's CRT implantation rate is **200× lower** than Japan — a stark gap in cardiac device therapy access across the region.



This 200-fold gap underscores an urgent unmet clinical need among Indonesia's heart failure patients. **Source: APHRS White Book, 2023**

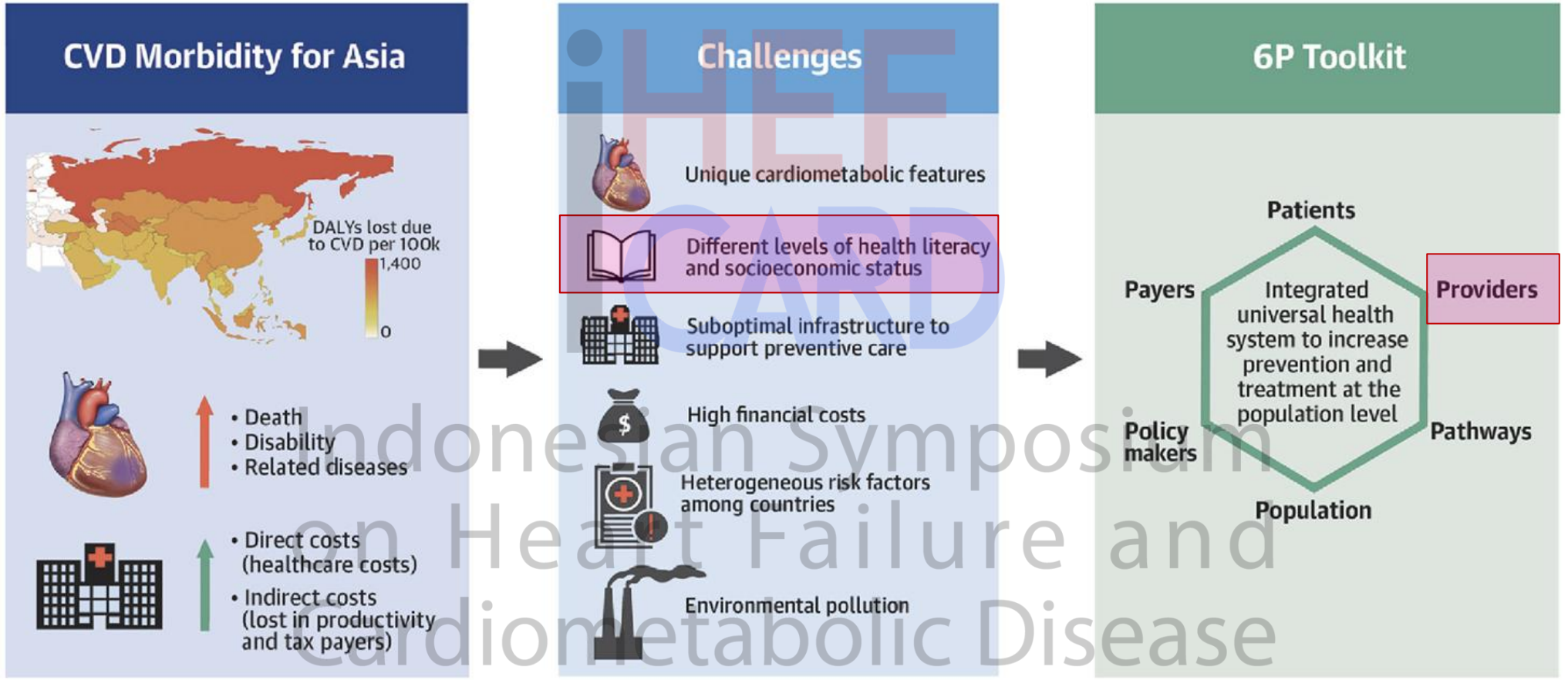
ICD Implantation Rate per 1 Million Population — Asia-Pacific 2022

Indonesia's implantation rate is **239× lower** than New Zealand



⚠ Indonesia ranks among the lowest in the Asia-Pacific region for ICD implantation access. **Source: APHRS White Book, 2023**

CENTRAL ILLUSTRATION: Challenges in Cardiovascular Disease in Asia



Dalakoti M, et al. JACC Adv. 2025;4(4):101676.

Symposium 08:30 - 09:45

Building the Advanced Heart Failure Care Continuum: From Device Therapy to Transplant Program Development

EVENT RUNDOWN

Moderator: Anggia Chairuddin Lubis, MD

PIC: Vebiona Kartini Prima, MD

08.30 - 08.50	TOPIC 1: Advanced Heart Failure Management Pathway: When is the Right Time for CRT and ICD? *Speaker: Sunu Budhi Raharjo, MD, PhD*
08.50 - 09.10	TOPIC 2: Developing Heart Transplant Programs: Scaling Capacity Through Training, Technology, and Cross-Border Collaboration *Speaker: Supanee Sinphurmsukskul, MD*

Learning Objectives

- Recognize when GDMT alone is no longer sufficient.
- Apply ESC 2021, HRS 2023, and EHRA 2025 criteria for ICD and CRT.
- Identify candidates by LVEF, QRS morphology, NYHA, etiology, rhythm.
- Understand the role of Conduction System Pacing (HBP / LBBAP).
- Choose between CRT-P, CRT-D, and ICD-only.

THE CENTRAL QUESTION

When does device therapy change the natural history — and which device is right for this patient?

Burden of Advanced Heart Failure

1 – 2%

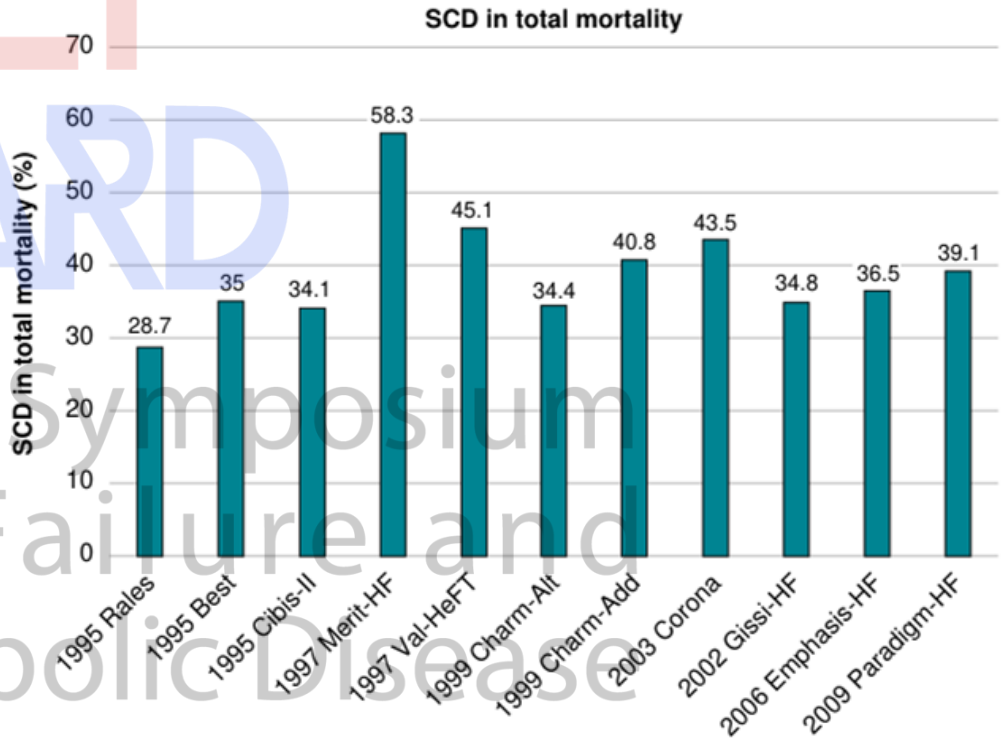
of adults have HF in developed countries

~ 50%

of deaths in HFrEF are sudden cardiac death

~ 1/3

of HFrEF have wide QRS / LBBB



Annualized SCD risk across HF trials. Ellenbogen et al., Europace 2023;25:euad168.

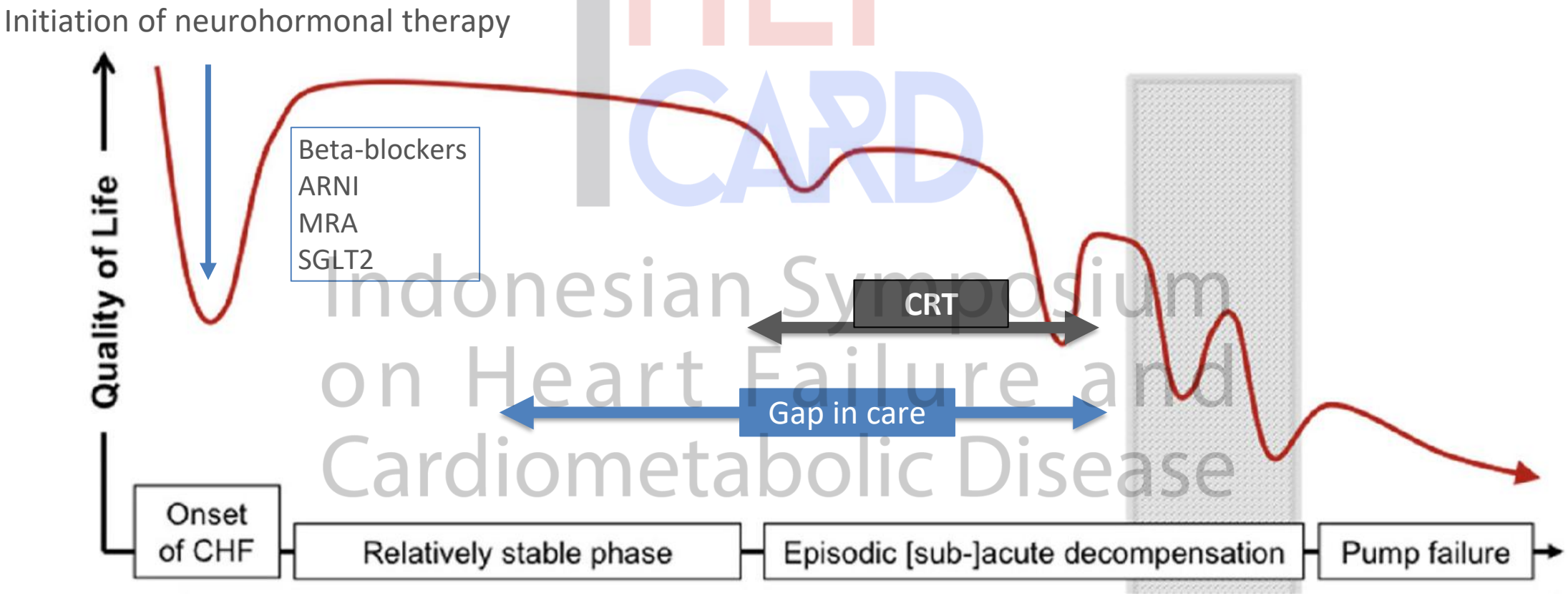
Optimize Medical Therapy First

≥ 3 months of titrated 4-pillar HFrEF therapy + device therapy as the 5th pillar

Rx	β	MRA	SGLT2	5th pillar?
ARNI / ACEi	**β-Blocker**	**MRA**	**SGLT2 inhibitor**	**DEVICE THERAPY**
Sacubitril-valsartan preferred	Carvedilol, bisoprolol metoprolol, nebivolol	Spironolactone or eplerenone	Dapagliflozin or empagliflozin	ICD · CRT · CSP (the emerging 5th pillar)

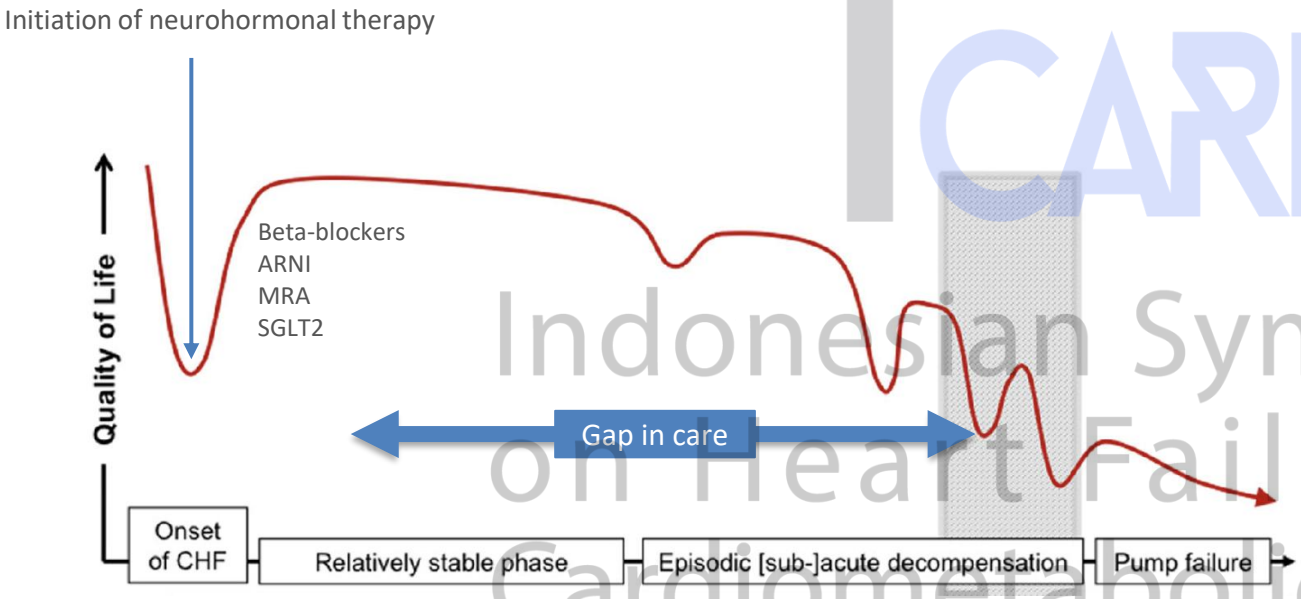
Reassess LVEF & symptoms at 3 months — many patients improve and no longer meet device thresholds.

Heart Failure: Typical Patient Journey



Greenhalgh et al. BMC Cardiovascular Disorders (2017) 17:15

Interplay between drugs and devices



Greenhalgh et al. BMC Cardiovascular Disorders (2017) 17:156 DOI 10.1186/s12872-017-0594-2

- Devices may allow up-titration of medical therapy
- Durability of benefit of drugs and devices
- Should devices only be used after optimal medical therapy?

Why Timing Matters

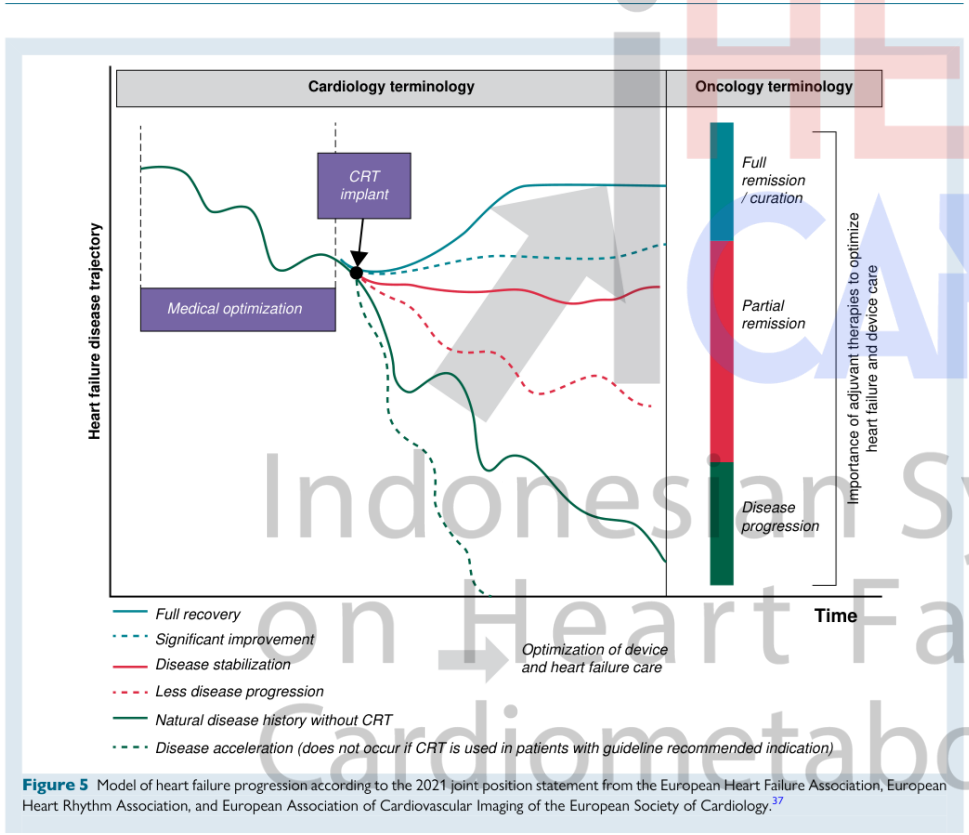


Figure 5 Model of heart failure progression according to the 2021 joint position statement from the European Heart Failure Association, European Heart Rhythm Association, and European Association of Cardiovascular Imaging of the European Society of Cardiology.[37]

HF disease trajectory schematic. Ellenbogen et al., Europace 2023.

Too early

- Misses patients who'd recover on GDMT alone.

Too late

- Remodeling and scar burden render therapy futile.

The sweet spot

- Persistent LVEF ≤ 35% + NYHA II–III after ≥ 3 mo GDMT, expected survival > 1 yr.

Primary Prevention — Class I

All require survival > 1 year with good functional capacity.

Ischemic CMP

LVEF ≤ 35%

NYHA II–III

≥ 40 d post-MI
≥ 3 mo GDMT

Class I

Ischemic CMP

LVEF ≤ 30%

NYHA I

≥ 40 d post-MI

Class I

Non-ischemic CMP

LVEF ≤ 35%

NYHA II–III

≥ 3 mo GDMT

Class I

Secondary Prevention — Class I

- Survivors of VF or hemodynamically unstable sustained VT, no reversible cause.
- Structural heart disease + spontaneous sustained VT.
- Unexplained syncope + inducible sustained VT/VF at EP study.

Exclude reversible causes

- Acute ischemia / MI < 48 h
- Electrolyte disturbance
- QT-prolonging drugs

Why ICD here?

- Recurrence of VF/VT 15–25% within 2 years
- Largest absolute benefit in this group

Landmark Evidence

MADIT-II	SCD-HeFT	DEFINITE	DANISH
2002	2005	2004	2016
Post-MI · LVEF ≤ 30%	LVEF ≤ 35% · NYHA II–III	Non-ischemic · LVEF ≤ 35%	Non-ischemic · LVEF ≤ 35%
↓ 31% mortality	↓ 23% mortality ↓ 60% SCD	↓ arrhythmic death	No overall mortality benefit Benefit attenuates ≥ 68 y

Bottom line: benefit greatest in ischemic CMP and younger patients.

When NOT to Implant

Contraindications

- Life expectancy < 1 year
- NYHA IV refractory, not a CRT/LVAD/transplant candidate
- Incessant VT/VF
- Reversible / treatable arrhythmic cause

Wait first

- < 40 days post-MI (primary prevention)
- < 90 days post-revascularization
- < 3 months of new HFrEF diagnosis
- HFpEF — no proven benefit

ICD — Who, Why, Expected Benefit

ICD prevents SUDDEN CARDIAC DEATH — it does NOT improve symptoms or LV function.

WHO — Patient criteria

- LVEF ≤ 35% + NYHA II–III
- OR LVEF ≤ 30% + NYHA I (ischemic)
- ≥ 40 days post-MI
- ≥ 90 days post-revascularization
- ≥ 3 months optimized GDMT
- Life expectancy > 1 year

WHY — Mechanism / goal

- Terminates VT / VF
- Anti-tachycardia pacing + shock
- Targets ARRHYTHMIC death only
- NO effect on pump function
- NO symptomatic / NYHA benefit

EXPECTED BENEFIT

- ↓ all-cause mortality ~ 23–31%
- ↓ SCD ~ 60% (SCD-HeFT)
- Strongest in ischemic CMP
- NNT ≈ 14 over 5 yrs (SCD-HeFT)
- Benefit attenuates in elderly, non-ischemic CMP (DANISH)

2021 ESC Recommendations · Sinus Rhythm

LVEF ≤ 35% · NYHA II–IV · ≥ 3 months optimized therapy · expected survival > 1 yr

QRS duration	Morphology	Recommendation	Class
≥ 150 ms	LBBB	Recommended	I
130 – 149 ms	LBBB	Should be considered	IIa
≥ 150 ms	Non-LBBB	Should be considered	IIa
130 – 149 ms	Non-LBBB	May be considered	IIb
< 130 ms	Any	NOT indicated	III

EchoCRT (2013): QRS < 130 ms → no benefit, possible harm.

Special Populations

Atrial Fibrillation

HFrEF + AF + QRS ≥ 130 ms
→ CRT (Class IIa)
Need > 90% BiV capture
± AVN ablation

Pacemaker / ICD Upgrade

LVEF ≤ 35% + high RV pacing %
+ NYHA III–IV
→ upgrade to CRT (IIa)

AV Block + HFrEF

LVEF ≤ 40% + AV block
+ pacing indication
→ CRT preferred over RV pacing (I)

Pacing-Induced Cardiomyopathy (PICM)

LVEF falls < 40–50% (or ≥10% drop) from chronic RV pacing → upgrade to CRT or CSP.

CRT-D or CRT-P?

Decision is driven by SCD risk vs competing non-SCD mortality risk.

Favors CRT-D

- Younger age, longer life expectancy
- Ischemic cardiomyopathy
- LGE / fibrosis on CMR
- Favorable comorbidity profile
- Shared decision: patient accepts shocks

Favors CRT-P

- Older age, limited life expectancy
- Non-ischemic cardiomyopathy (DANISH)
- Significant comorbidities, frailty
- Competing non-cardiac mortality
- Patient preference to avoid shocks

DANISH (2016): no all-cause mortality benefit of adding ICD to CRT in non-ischemic CMP.

25 Years of Landmark Evidence

2002	**MIRACLE**	First double-blind RCT — ↓ HF hospitalizations, reverse remodeling
2004	**COMPANION**	CRT-P and CRT-D ↓ death + hospitalization composite
2005	**CARE-HF**	CRT-P alone ↓ all-cause mortality ~36%
2009	**MADIT-CRT**	Benefit in mild HF (NYHA I–II) with LVEF < 30%, QRS > 130 ms
2013	**EchoCRT**	No benefit, possible harm if QRS < 130 ms
2016	**DANISH**	Questioned ICD-on-top benefit in non-ischemic CMP

Adapted from Ellenbogen et al., Europace 2023.

CRT — Who, Why, Expected Benefit

CRT IMPROVES symptoms, LV function, and survival in dyssynchronous HFrEF.

WHO — Patient criteria

- LVEF ≤ 35%
- NYHA II–IV on ≥ 3 mo GDMT
- Sinus rhythm (or controlled AF)
- QRS ≥ 130 ms
- LBBB morphology preferred
- Best benefit if QRS ≥ 150 ms + LBBB

WHY — Mechanism / goal

- Restores ventricular synchrony
- Biventricular pacing (or CSP)
- Reverse LV remodeling
- Targets PUMP failure (not SCD)
- Add ICD (→ CRT-D) for SCD risk

EXPECTED BENEFIT

- ↓ all-cause mortality ~ 24–36%
- ↓ HF hospitalization ~ 35%
- ↑ LVEF ~ 6–10 points (1 yr)
- ↑ NYHA class in ~ 60–70%
- ↑ 6-min walk + QoL

Conduction System Pacing

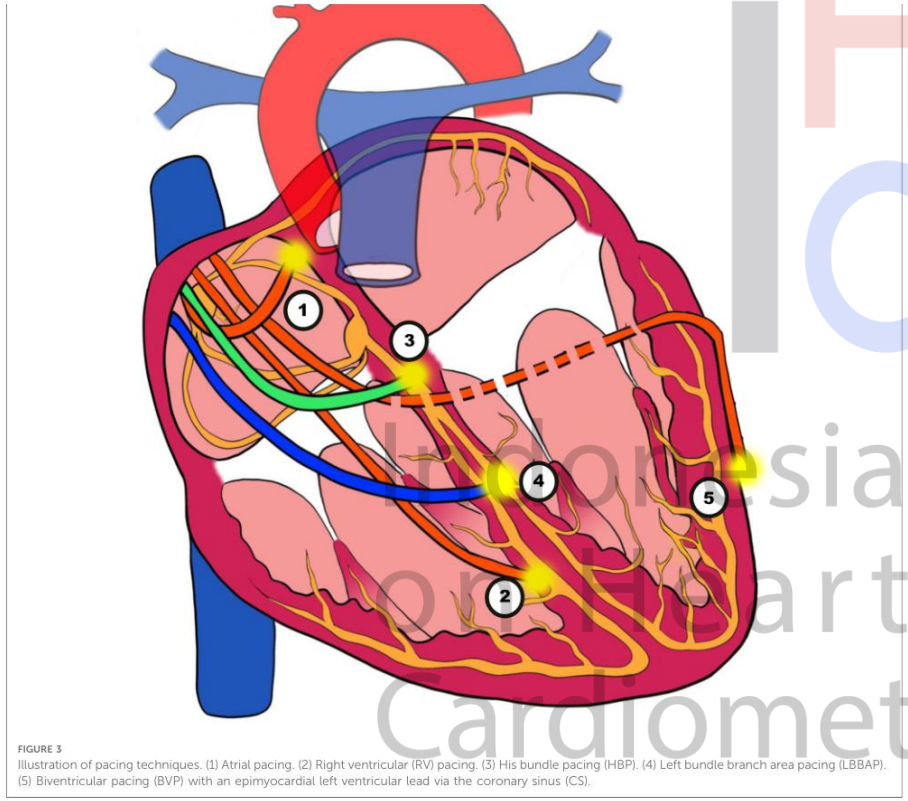


FIGURE 3
Illustration of pacing techniques. (1) Atrial pacing. (2) Right ventricular (RV) pacing. (3) His bundle pacing (HBP). (4) Left bundle branch area pacing (LBBAP). (5) Biventricular pacing (BVP) with an epimyocardial left ventricular lead via the coronary sinus (CS).

Frontiers in Cardiovascular Medicine 04 frontiersin.org

Pacing lead sites. Moustafa et al., Front Cardiovasc Med 2023.

HBP — His Bundle Pacing

- Most physiological
- Implant success 50–70%
- Higher / rising thresholds

LBBAP — Left Bundle Branch Area

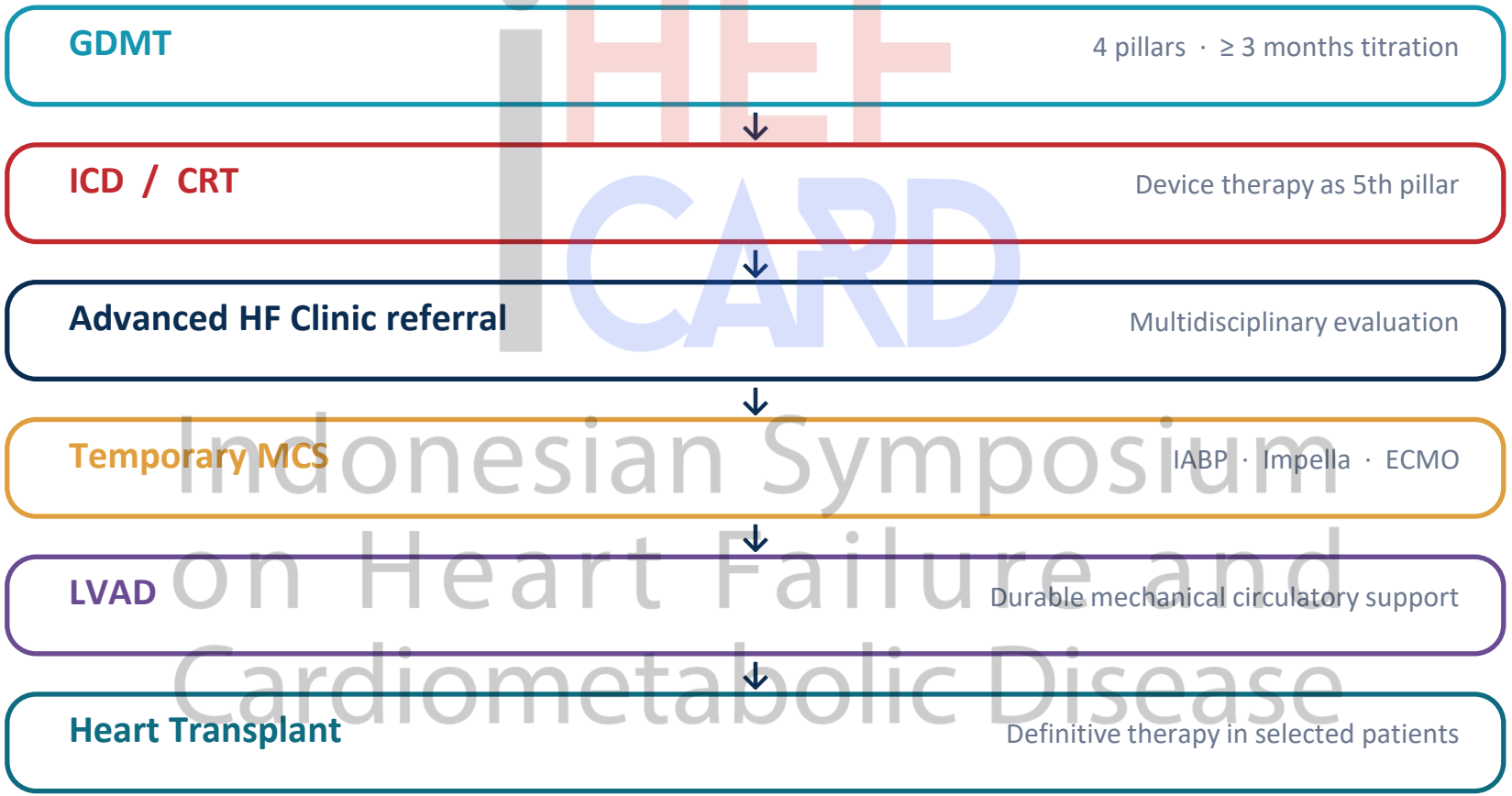
- Pacing deep in septum
- Implant success 80–95%
- Lower stable thresholds

When to Choose CSP over BiV-CRT

- Rescue when coronary-sinus lead implant fails
- Pacing-induced cardiomyopathy (PICM)
- AV-node ablation + LVEF ≤ 40%
- CRT non-responders with intact His-Purkinje
- LBBB + QRS ≥ 130 ms + LVEF ≤ 35% (alternative to BiVP)
- Anticipated RV pacing > 20% + LVEF ≤ 40%

Open question: CSP in non-LBBB CRT candidates — awaiting dedicated RCTs.

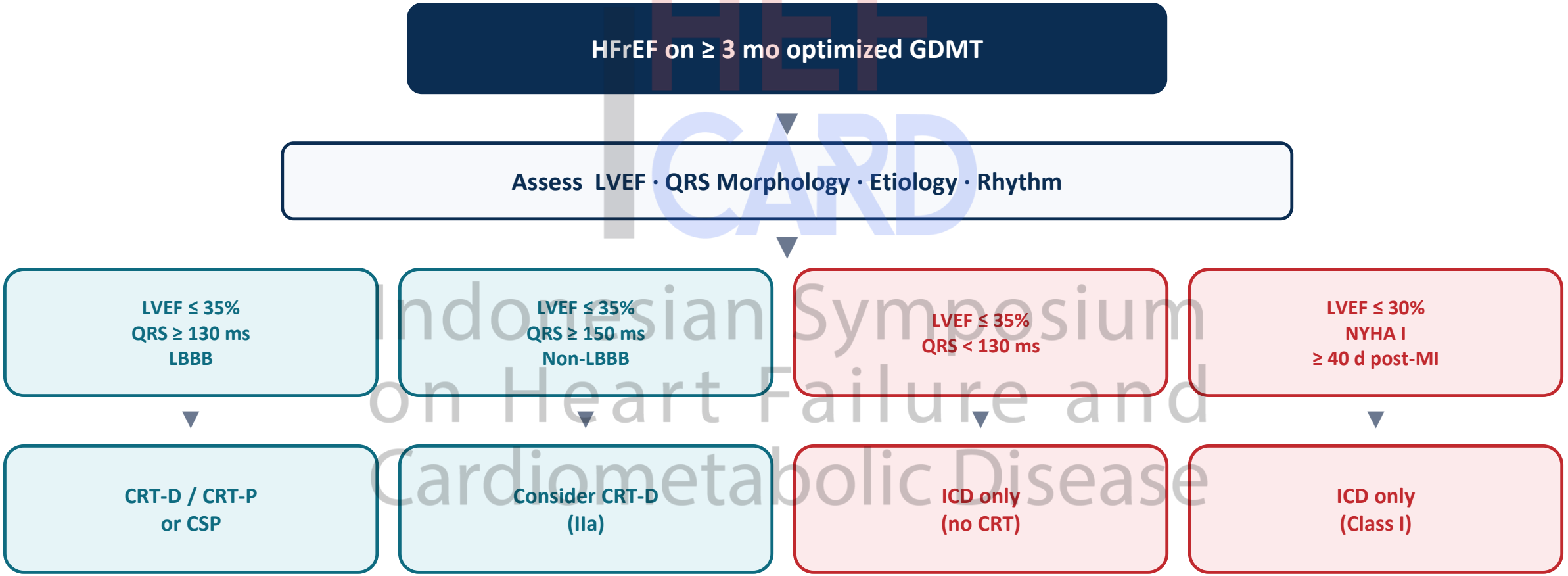
Advanced Heart Failure Continuum



Advanced therapies should be considered BEFORE irreversible organ dysfunction develops.

Adapted from ESC Advanced HF Review.

Putting It Together



Secondary prevention (cardiac arrest / sustained VT) → ICD, Class I.

Right Patient · Right Device · Right Time

1

Optimize

≥ 3 mo titrated
4-pillar GDMT

2

Characterize

LVEF · QRS morphology
etiology · CMR scar

3

Stratify

Ischemic > non-ischemic
LGE adds info

4

Personalize

Shared decision
comorbidities · choice

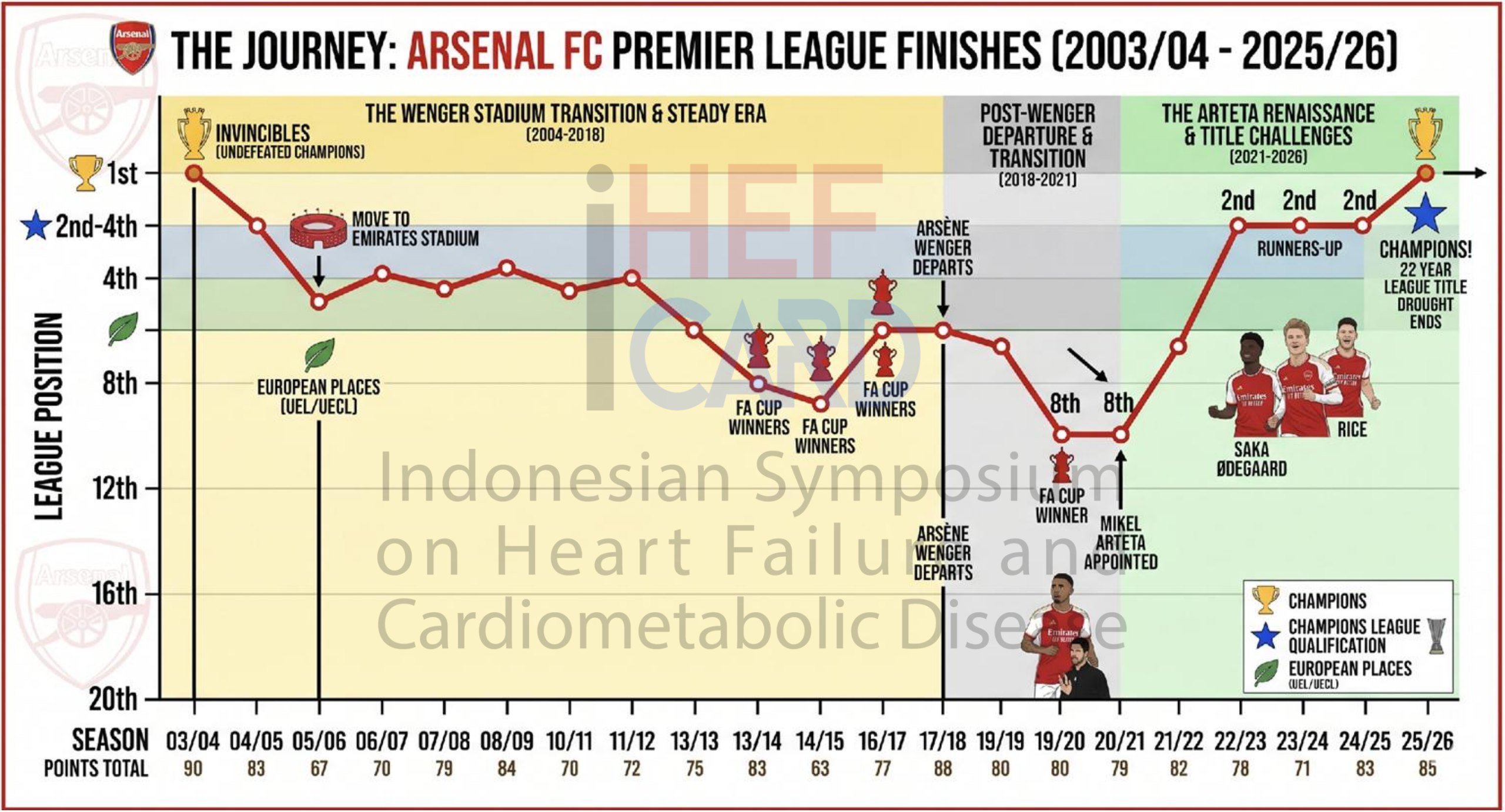
TIMING > DEVICE

Identify the moment medical therapy is no longer enough.

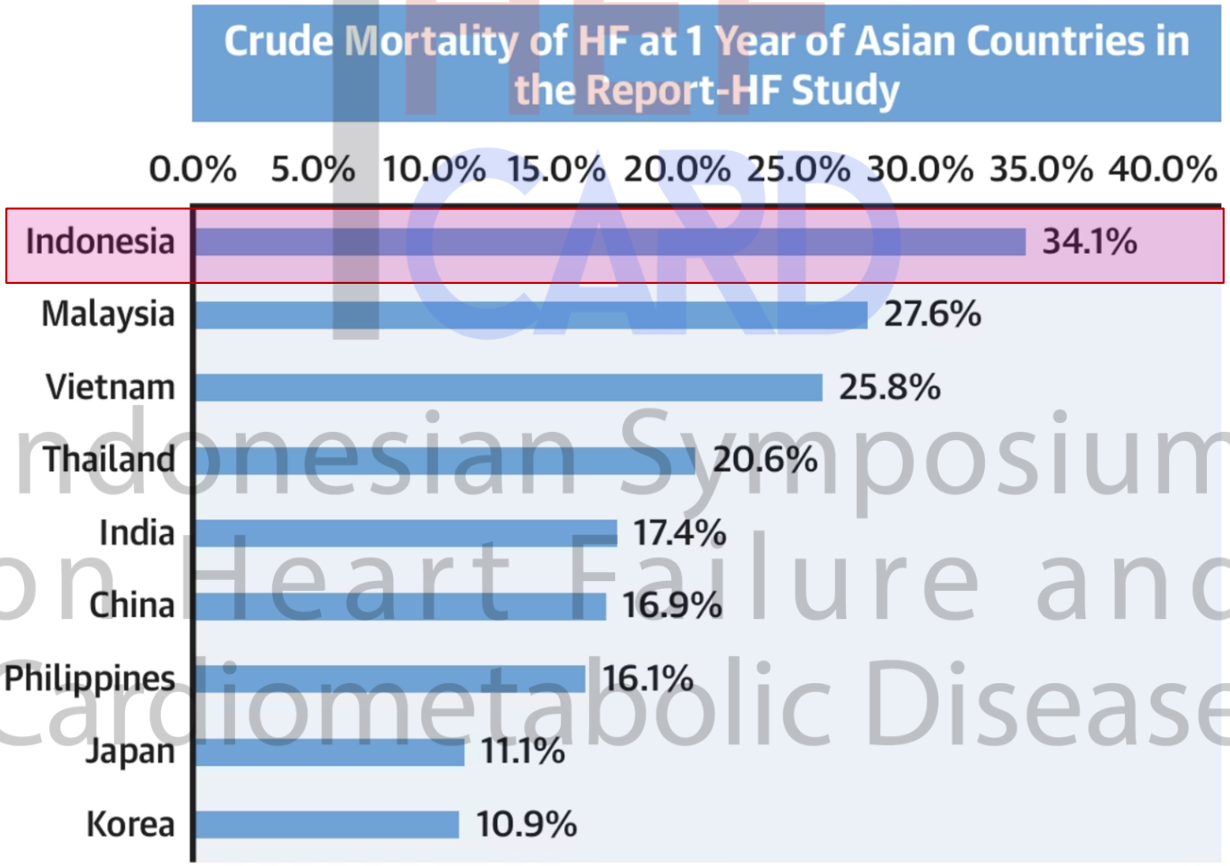
Take-Home Messages

1. CRT for HFrEF + wide QRS — especially LBBB ≥ 150 ms — after optimal GDMT.
2. ICD prevents sudden death in HFrEF with LVEF ≤ 35%.
3. CRT-D vs CRT-P depends on age, etiology, scar burden.
4. CSP (HBP / LBBAP) is reshaping the field.
5. Timing > Device. Neither too early, nor too late.

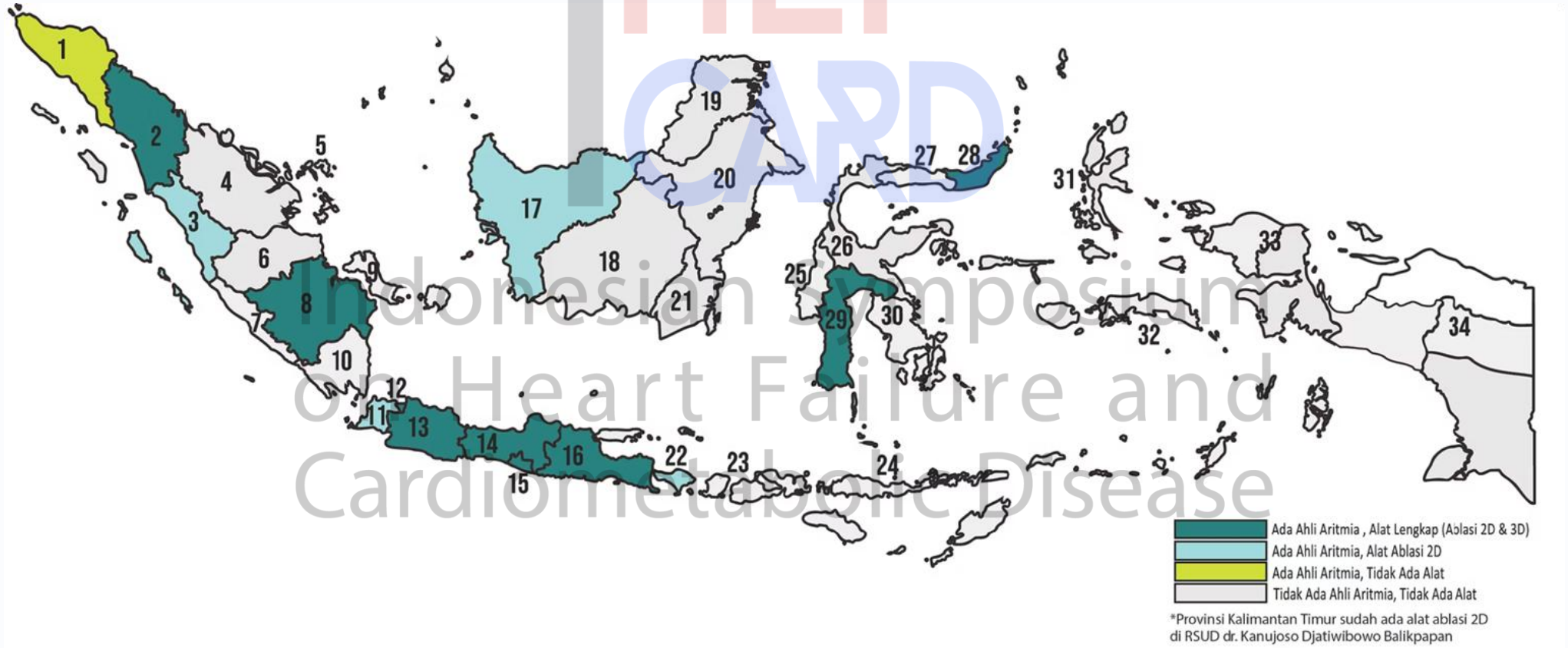
THE JOURNEY: ARSENAL FC PREMIER LEAGUE FINISHES (2003/04 - 2025/26)



The 1-Year Mortality of Asian HF Patients Is Still High, Especially in Southeast and South Asia: CV Death is the Primary Cause of Death for HF



Distribution of Kemenkes Hospitals with Arrhythmia Services in 2026



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Thank you for your attention

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