Heart Failure – New hope for a potentially lethal disease

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Overview

- Epidemiology
- Definition & Classification
- Causes of Heart Failure
- Prevention and early detection
- Management/Treatment

Atherton et al NHFA and CSANZ Clinical Guidelines for Management of Heart Failure 2018
Ponikawaski, P et al ESC/AFA Guidelines for diagnosis management Heart Failure 2016

HF Epidemiology

- 38 Million people worldwide.
- 10% people >75yrs
- Lifetime risk at age 55yrs: 29% women 33% men.
- HFpEF (>50% HF cases) 4yr mortality rate 32%.
- HFrEF 4yr mortality rate 40%
- Increased prevalence (new & old cases) better diagnosis & treatment ?
- Age related incidence (new cases) stable or decreasing in esp in women, ? better prevention/treatment CAD

Definition/Classification

- Complex clinical syndrome with:
- Typical signs and symptoms
- Abnormal cardiac structure
- Impairing pumping LVEF < 50% = HFrEF
- Impaired filling LVEF >50% = HFpEF (diastolic HF).
- HFmEF (LVEF 40 – 50%) ESC guidelines but not CSANZ guidelines (therapeutic reasons).

Causes of Heart Failure

- Myocyte damage:
  IHD, inflammation, toxins, infiltration, metabolic, nutrition, genetic, pregnancy

- Abnormal loading:
  Hypertension, valvular, pericardial, high output state, volume overload.

- Arrhythmia: Atrial or ventricular tachycardia
  Sinus/AV node dysfunction bradycardia
  Right ventricular paced patients

Prevent/Detect Early

- Risk HF + signs/sx do CXR, ECG, BNP, echo referral
- IHD – CVRA 2018 earlier age Maori, Pacific, Sth Asian, severe mental illness. New clinical high risk groups, meds in all CVRA>15%. HIV treatment increased CV risk
- Infections: Treat sore throats (strep A). Promote flu vaccine
- Ask about 'P' , make stand against drinking culture
- Cancer treatments: cumulative dose, drugs & radiation
  age > 65yrs or <18 (long term childhood cancer survivors 15 x HF rate).
- Consider Cardiac Inherited Diseases family history

www.health.govt.nz/publication/cardiovascular-disease-risk-assessment-and-management-primary-care

Prevent/ Detect Early

- Atrial Fibrillation – risk factors, feel pulse, screen tools, WatchBP home a ABPM with AF detection. APPS AppleWatch Heartratefree, Cardiograph
- Treat OSA – but no Adaptive ServoVentilation if suspect or confirmed HFrEF – increased mortality.
- Exercise – a powerful medicine; prevention but in HF those who have exercised have far greater functional ability.

Manage Diabetes

- DPP-4 (dipeptidylpeptidase -4) inhibition: Vildagliptin powerful efficacy as add on to metformin extensive safety profile
- Sodium Glucose Co-Transporter 2 Inhibitors SGLT2 Strong evidence: Type 2 diabetes reduced CV events/BP/HF admissions. Forxiga/dapagliflozin 10mg.
- Pioglitazone (thiazolinedione) plus insulin increases heart failure insulin- monitor for HF & avoid use if have HF.
- Hypoglycaemia increases CV complications. Reduced insulin dose 10-20% if starting other agents
- Glucagon-Like Peptide-1 (GLP-1) inhibitors reduce CV events

Prevent/ Detect Early

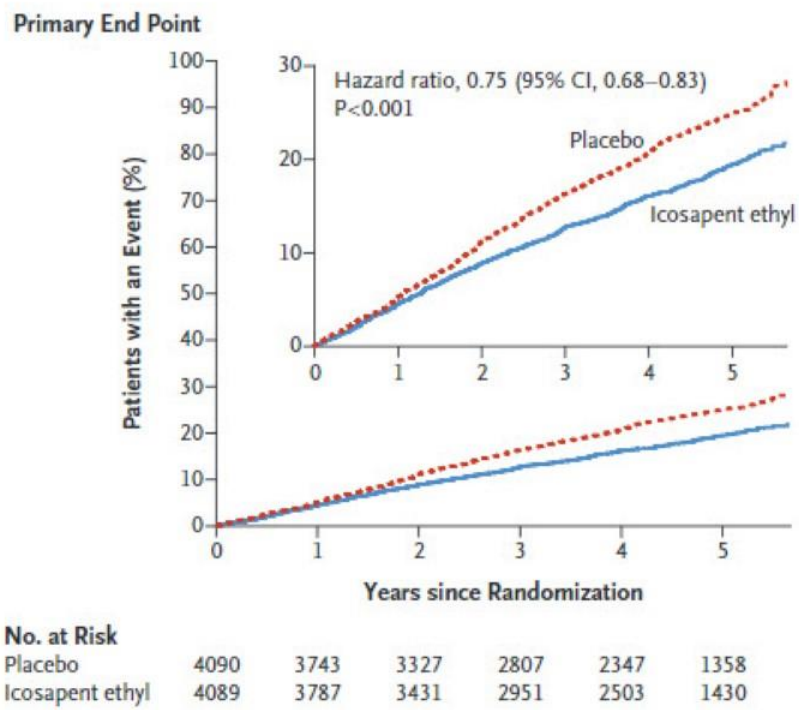
- Cardio-protective diet, obesity, diabetics:
  PUFA/MUFA,quality protein,wholegrains,vegetables, fruit
  Dairy
  Saturated fat<10% no excess carbohydrate/ETOH
  Avoid processed food, simple carbs, trans-staturate fat, excess salt.

- Omega 3 supplements reduce CV events also some effect HF admissions.
  REDUCE-IT: high dose omega-3 oil trial significant reduction in MACE

Clifton & Keogh (2017) Dietary fats and cardiovascular disease an Evidence Check rapid review for NHFAus

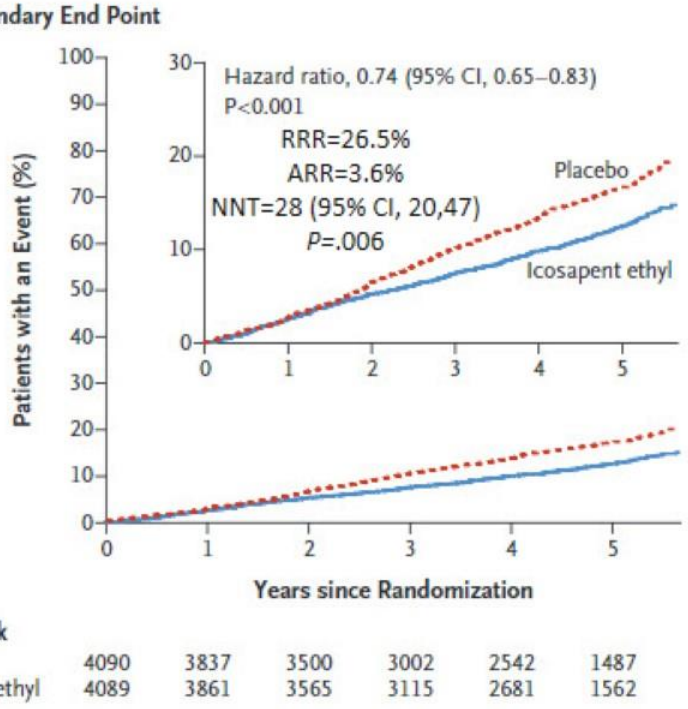
REDUCE-IT
Primary and Secondary Endpoint Results

Primary Endpoint:
CV Death, MI, Stroke, Coronary Revascularization, UA



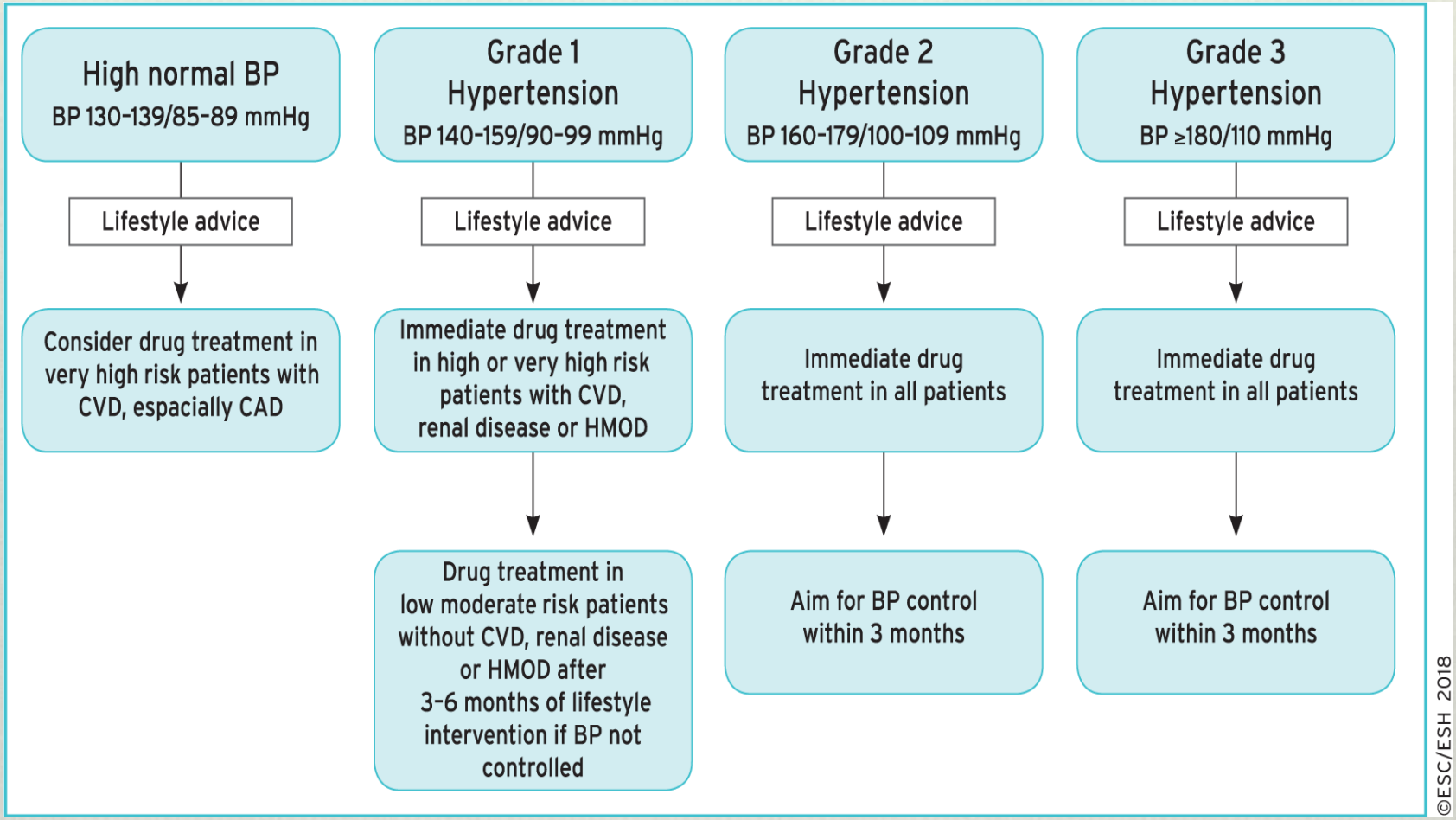
RRR = 24.8%
ARR = 4.8%
NNT = 21
(95% CI, 15,33)
***P* =.001**

Key Secondary Endpoint:
CV Death, MI, Stroke



Bhatt DL, et al. *N Engl J Med.* 2019;380:11-22.

Figure 3 Initiation of blood pressure-lowering treatment (lifestyle changes and medication) at different initial ...



European Heart Journal, Volume 39, Issue 33, 01 September 2018, Pages 3021–3104, https://doi.org/10.1093/eurheartj/ehy339

2018 ESC/EHA Guidelines for Management of Arterial hypertension

Treat Hypertension

- Most patients need more than one agent
- Combination of low dose drug treatment increases efficacy and reduced adverse effects
- Most classes drugs standard doses associated with substantially more adverse events compared to half standard dose.
- Combination drugs available NZ
  Accuretic 10mg/12.5mg or 20mg/12.5mg
  Hyzaar Losartan 50mg + hydrochlorothiazide12.5mg.

Law et al BMJ 2003. 2018 ESC/AHA Guidelines Atrial Hypertension. NHF Australia Guidelines of hypertension 2016

HF Management

Strong high quality evidence for:

- Multidisciplinary management program (decreased mortality and hospitalisation)
- Educating patients/carers on self-management (decreased mortality and hospitalisation).
- Nurse –led titration clinics HFrEF (decreased hospitalisation).
- Regular moderate intensity exercise – improved physical functioning, Quality of Life, decreased hospitalisation
  Higher intensity exercise beneficial/safe in some patients?

HF Treatment

- Cardiac revascularisation, structural heart disease surgery dysrhythmias (drugs, cardioversion, ablation, pacemaker) Treat thyroid dysfunction, endocrine, anaemia, infection Stop drugs/substances that worsen HF, A&D counselling
- HFpEF – diuretics and manage co-morbidities. Spironolactone may reduce hospitalisation.
- HFrEF 40-50% ACeEi/ARB, Betablocker, spironolactone may be considered but evidence weaker/lower BUT consider LVEF range 10% too narrow with current diagnostic accuracy to ascribe new category HF patients

Treatment HFrEF

- Combination of ACEi or ARB, beta-blockers and mineralocorticoid receptor antagonist can decrease mortality over 1-3 years by 50-60% (target RAAS/SNS)
- Double doses one at a time every 2 weeks as tolerated until max tolerated dose.
- Diuretics for symptomatic relief/manage congestion. If congestion ACEi/ARB then spironolactone/eplerenone (SA only) then beta-blocker. Metolazone – useful - Monitor!
- Clinic review to monitor BP, HR renal fx, electrolytes after initiation and each up-titration
- www.heartfoundation.org.au For professionals Fact sheet pharmacological Management (troubleshooting tips)

Treatment HFrEF

- Repeat echo after 3/12 if LVEF still <35% + sx then:
- AFTER 36 HRS REPLACE ACEi/ARB with ARNI Angiotensin Receptor Neprilysin Inhibitor (targets counter-regulatory, protective BNP system)
- Entresto (Losartan/sacubitril)
  20% reduction CV death/1st HF hospitalisation, all cause death 16%
- Consider Iron infusion to improve sx and QoL if ferritin<100ug/L or ferritin 100-300 & Tsats <20%.
- AF ablation decrease mortality and HF hospitalisation (strong mod)
- SR >70bpm Ivabradine reduced CV mortality & HF hospitalisation (strong, high evidence)

Paradigm-HF Mc Murray et al NEJM 2014, CASTLE-AF Marrouche et al NEJM 2018,

Device Therapy

Internal Cardiac Defibrillator (ICD) to decrease mortality

- Cardiomyopathy: ischaemic strong evidence 1mth post MI EF<30% Mod evidence EF<35% but non ischaemic DCM <35% weak evidence for.
- Strong high quality evidence for ICD if LVEF <40% post cardiac arrest, VT + syncope, sustained haemodynamic compromised VT.
- Cardiac Resynchronisation Therapy (CRT) in EF <35% to decrease mortality, hospital admission and symptoms
  SR & LBBB >150ms (strong), 130-149ms (moderate)
  AF LBBB < 130ms and approach BiV capture 92% (weak).
- CRT should be considered LVEF<50% plus AV block requiring pacing or pre-existing RV paced patients that develop EF<35% to reduce hospitalisations (weak for).

Treatment of HF

- Manage AF – reversible cause of heart failure. Rate or rhythm control

- Factors favouring rhythm control in AF :
  patient preference and age,
  highly symptomatic/physically active patients,
  difficult rate control,
  no severe enlarge LA,
  acute AF,
  early persistent AF or PAF,
  LV dysfunction (mortality benefit, reduced HF admissions)

- Refer cardiology for rhythm control in HF as need amiodarone, cardioversion and/or AF catheter ablation - use beta-blockers, digoxin (and/or diltiazem if HFpEF) and OAC if appropriate
  (**NB** Hypertrophic Cardiomyopathy and Grown-Up Congenital Heart, Mitral Stenosis all need OAC, the CHA2DS2-VA does NOT apply in these patients).

- Digoxin one tool rate control can be used in SR for symptom control, ensure levels < 1.2ng/L as increase mortality if higher

(CSANZ AF Guidelines 2018 & Heart Failure Guidelines 2018, CASTLE-AF Marrouche et al NEJM 2018)

I NEED HELP

I	IV inotropes
N	NYHA IIIb/IV persistent elevated BNP
E	End-organ dysfunction
E	Ejection fraction <35%
D	Defibrillator shocks
H	Hospitalisations >1
E	Edema despite escalating diuretics
L	Low BP-High Heart rate
P	Prognostic medication – progressive intolerance or down-titration

Baunwol J, "I need Hel" – a mnemonic to aid timely referral in advanced heart failureJ Heart Lung Transplant 2017

I NEED HELP

- Heart transplant (+/-Ventricular Assist Device)

Relative contraindications: >65yrs, frail, active infection, malignancy stratification, Pulmonary hypertension, severe cerebrovascular/PVD, substance abuse, adverse psychosocial factors limiting compliance, recent PE, Severe DM EOD, BMI >35/100kg, unhealed peptic ulcer.

- Palliative Care

- Advance Care Planning – "Plan for worst hope for best", What future treatments?
  Continue HF therapy (incl CRT) as tolerated for QoL, Consider deactivation ICD. Can turn of Defibrillator but keep CRT in CRT-D devices for symptom management

Don't call it a Dream Call it a Plan