Wat is nieuw in cardiologie in 2022?

Dr. M. Coeman
Jan Yperman Ziekenhuis

What’s new in cardiology anno 2022?

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Clinical Practice Guidelines

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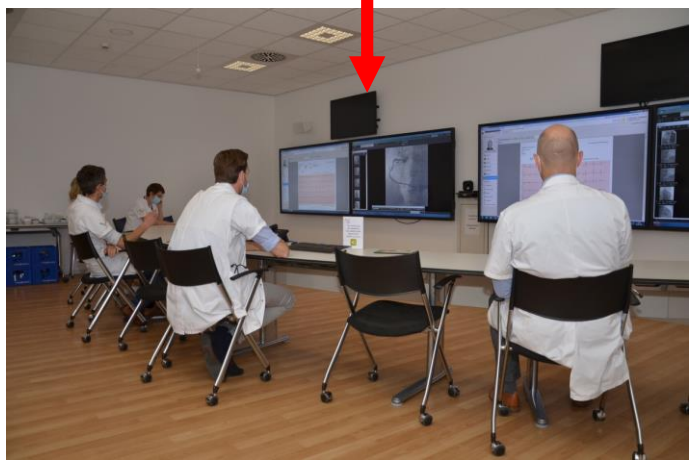
2021	CVD Prevention	2021	Cardiac Pacing & CRT
2021	Valvular Heart Disease	2021	Heart Failure

2020

2020	Sports Cardiology and Exercise in Patients with CVD	2020	Adult Congenital Heart Disease
2020	Atrial Fibrillation	2020	Acute Coronary Syndromes (ACS) in Patients Presenting without Persistent ST-Segment Elevation

2019



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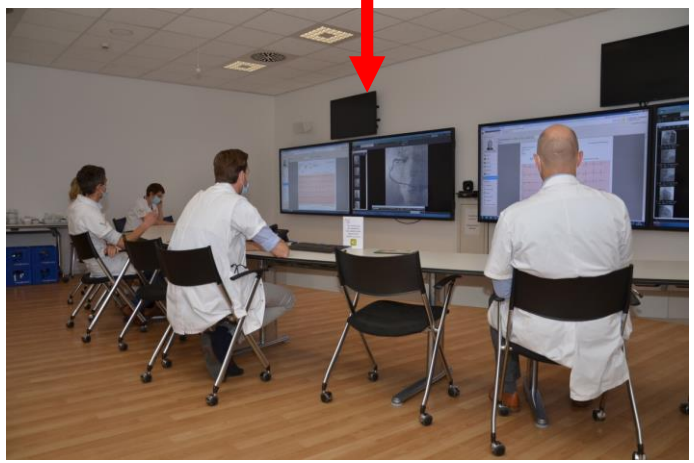


THE PREVENTION
APPARENTLY THEY'RE BETTER THAN THE CURE

Preventie

Doodsoorzaken

Actueel | Cijfers | Documentatie

Tumoren zijn de belangrijkste doodsoorzaak in België in 2019

BEVOLKING 29 maart 2022

Statbel, het Belgische statistiekbureau, publiceert vandaag de doodsoorzaken voor 2019.

In 2019 vormden tumoren[1] (kwaadaardig, goedaardig of onzeker) met 25,5% van de gevallen de eerste doodsoorzaak in België, vóór hart-en vaatziekten (25,1%). Ziekten van het ademhalingsstelsel vormen de derde doodsoorzaak (11,2%).

Er zijn echter regionale verschillen. Terwijl het Vlaamse Gewest de nationale rangschikking volgt, geldt dat niet voor de andere twee gewesten. In Brussel-Hoofdstad zijn de eerste twee plaatsen identiek, maar wordt de derde plaats ingenomen door de ruime groep "andere natuurlijke sterfgevallen" (die onder meer bloedziekten, oogziekten, oorziekten, osteo-articulaire aandoeningen, huidziekten, zwangerschapsgerelateerde gevallen en niet elders ingedeelde gevallen omvat). In Wallonië is de situatie ongewijzigd ten opzichte van 2018: hart- en vaatziekten staan nog steeds op de eerste plaats, vóór tumoren en ziekten van het ademhalingsstelsel.

Mannen volgen de nationale ranglijst sterker: de belangrijkste doodsoorzaak is in 28,6% van de gevallen een tumor en in 23,4% van de gevallen een hart-en vaatziekte. Bij vrouwen is de volgorde omgekeerd. De belangrijkste doodsoorzaak wordt dus toegeschreven aan een hart-en vaatziekte (26,7%), tumoren vormen de tweede oorzaak (22,6%). We vinden dezelfde tendensen per geslacht terug in de drie gewesten van het land.

Hart-en vaatziekten
25,2% doodsoorzaak
Mannen 2e oorzaak
Vrouwen 1e oorzaak

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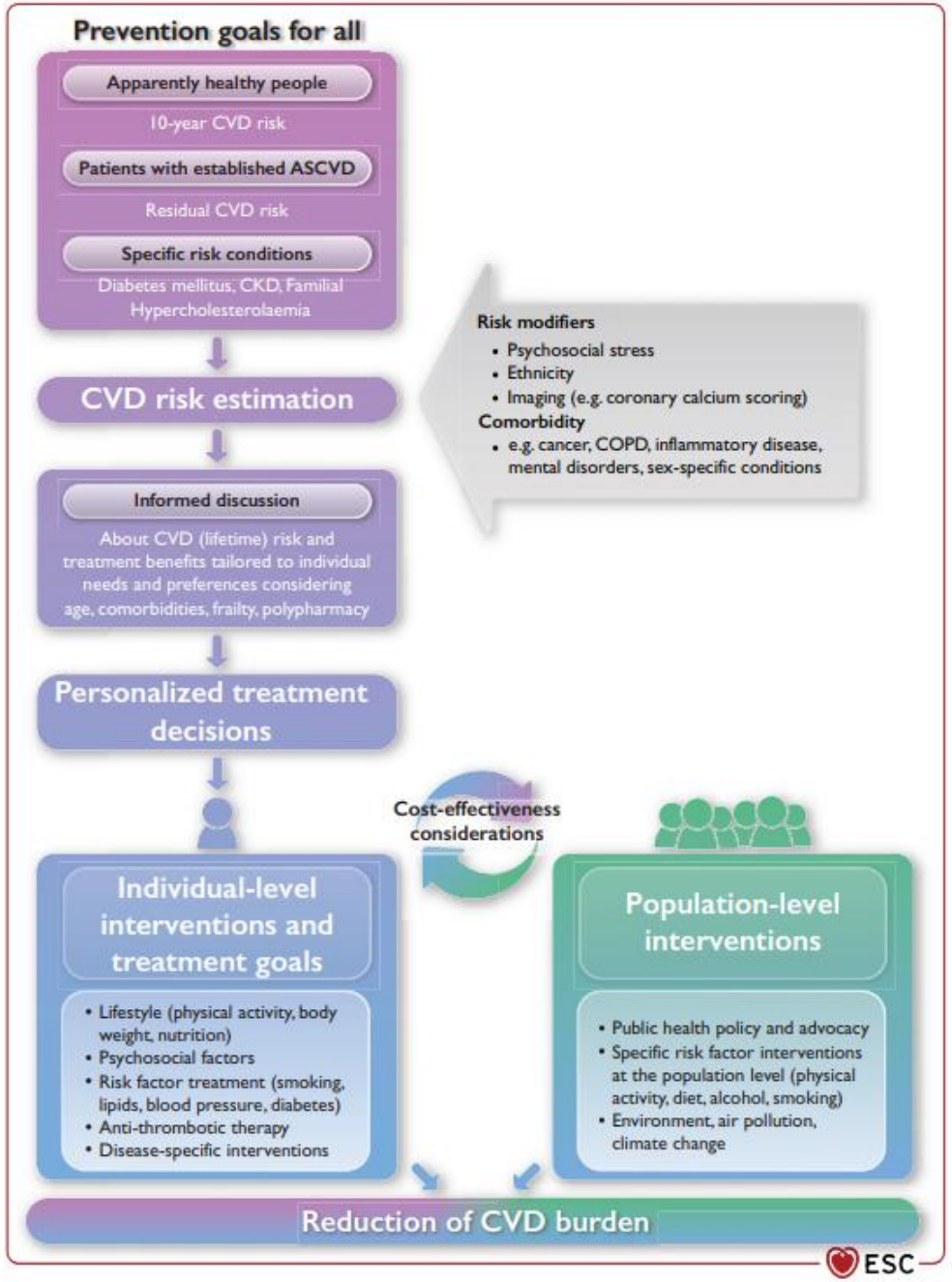
European Heart Journal (2021) **42**, 3227–3337
doi:10.1093/eurheartj/ehab484

ESC GUIDELINES

2021 ESC Guidelines on cardiovascular disease prevention in clinical practice



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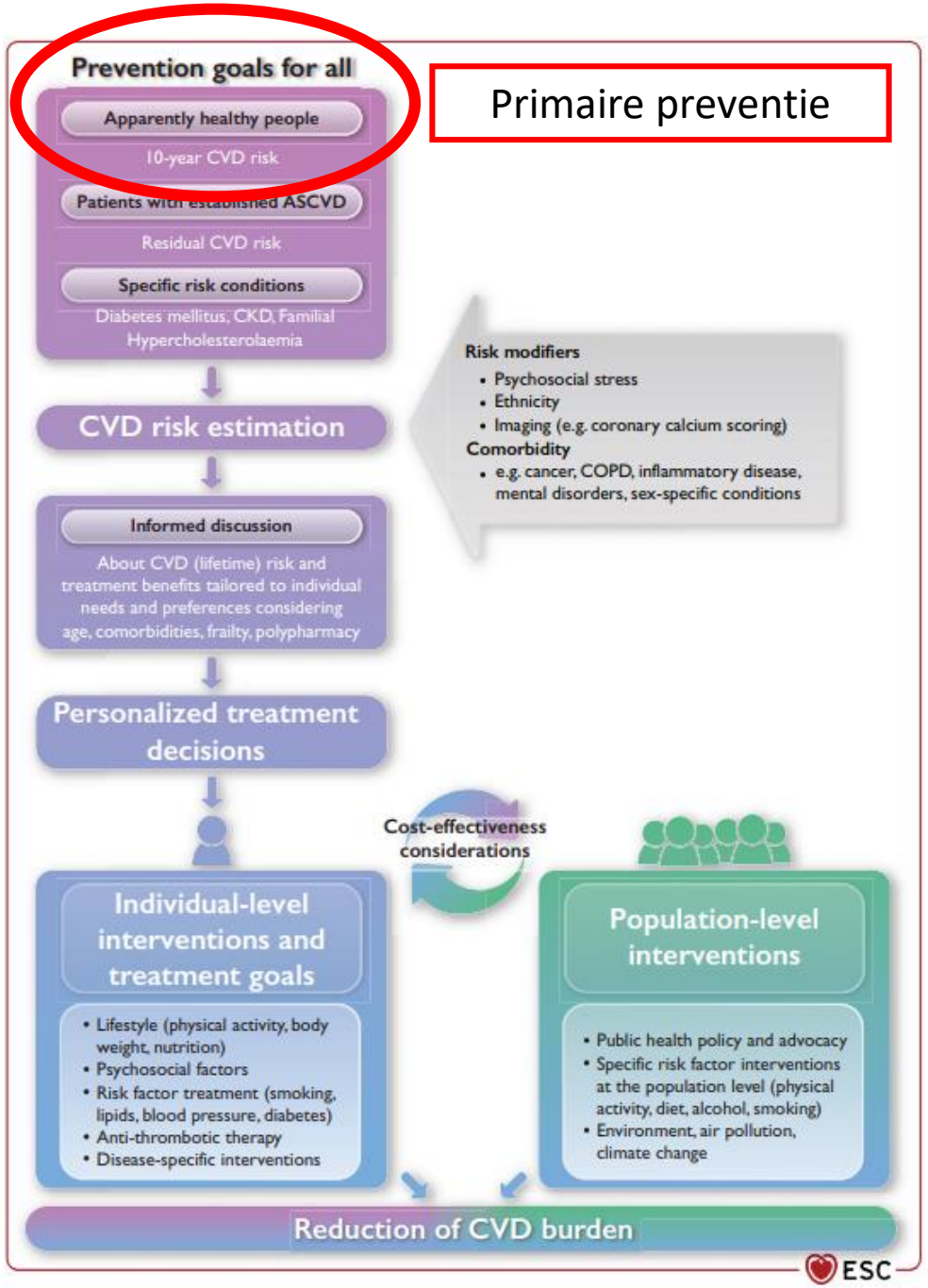
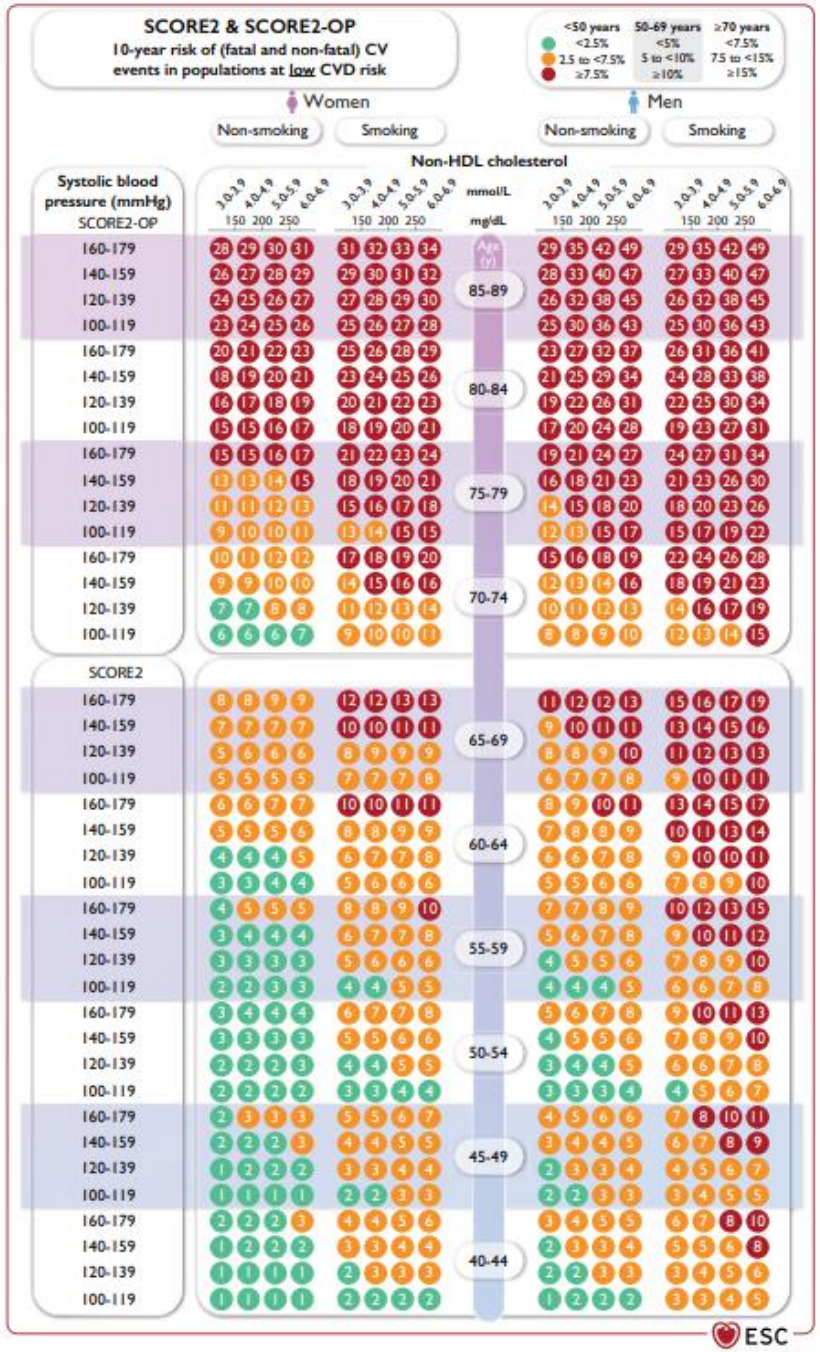
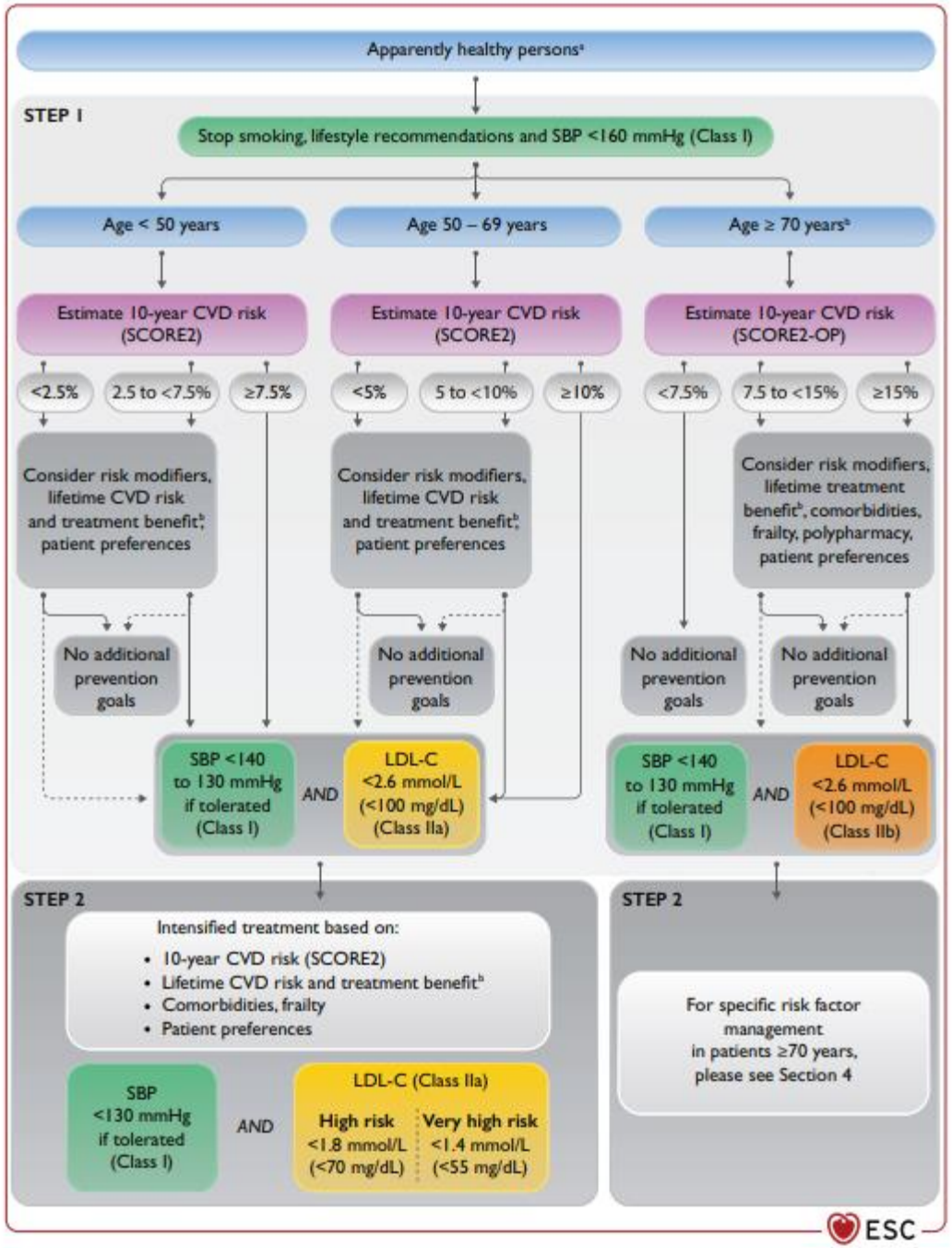


SCORE

SCORE-2
SCORE-2 OP

www.u-prevent.com





Preventie Hartfalen Pacing Kleplijden Sport JYZ

U-prevent.com

Man, 45j
Roker, BMI 29
145/90mmHg
Tot chol 245mg/dl
LDL chol 145mg/dl
Vader AMI 59j

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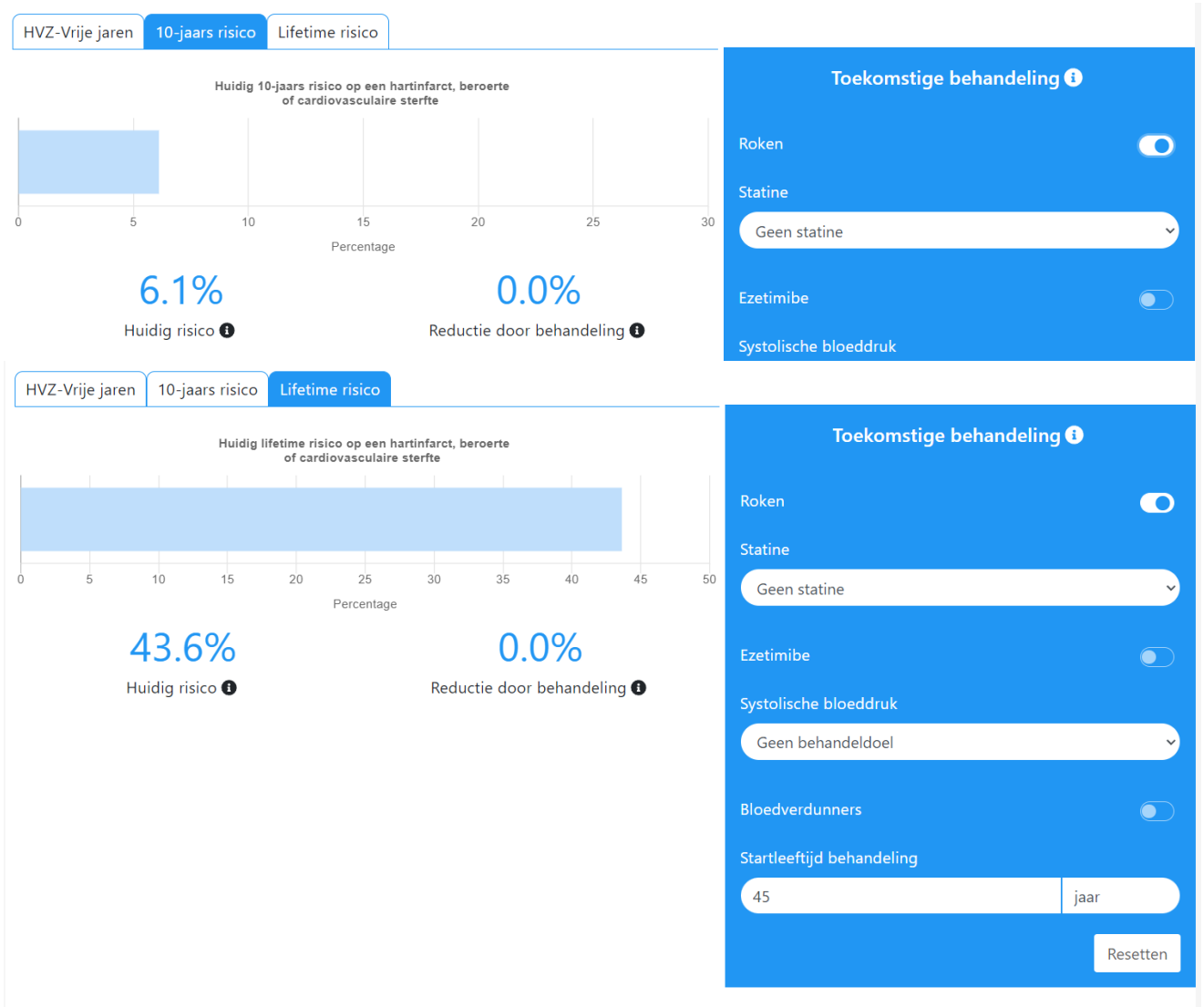

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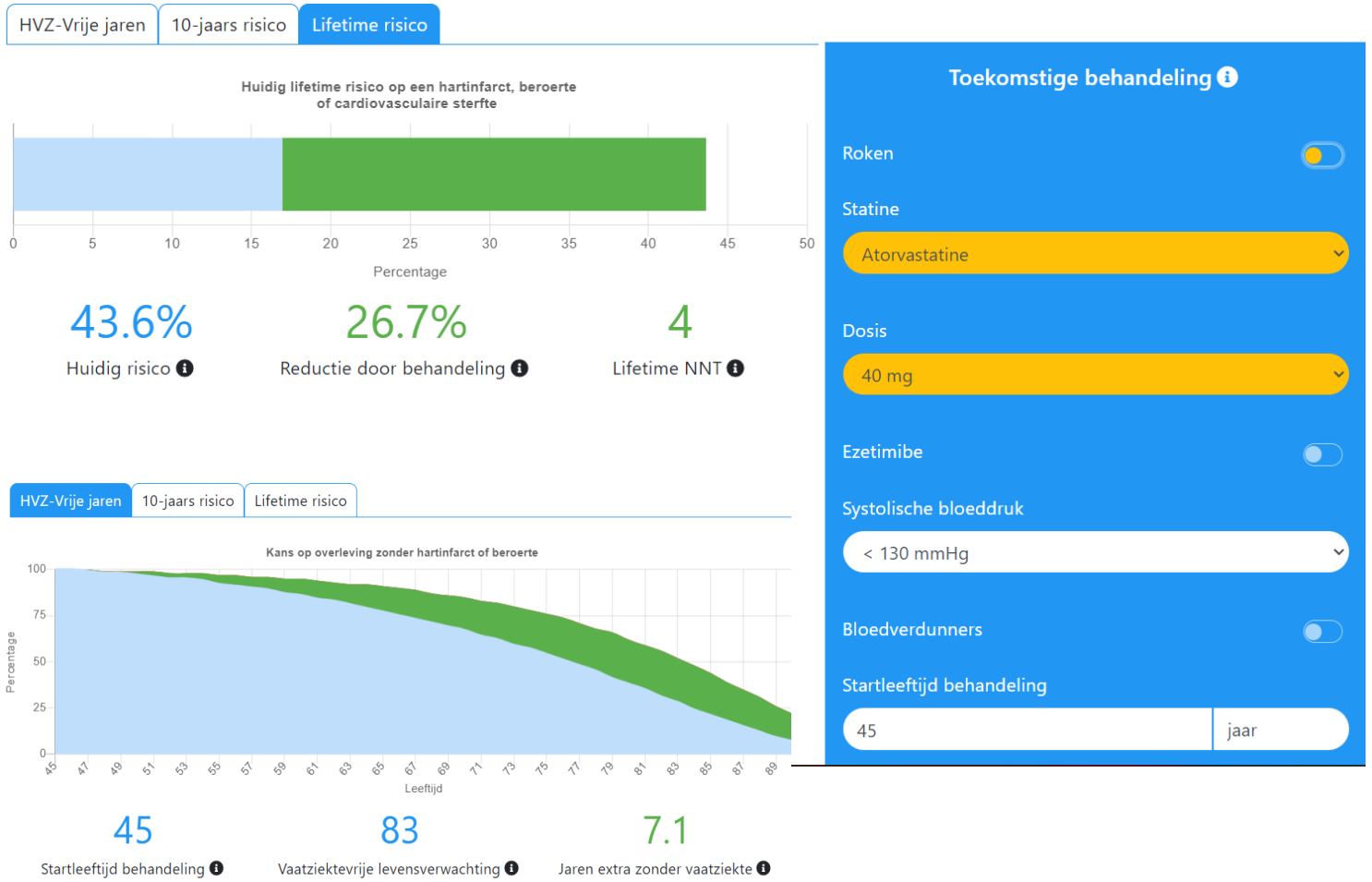

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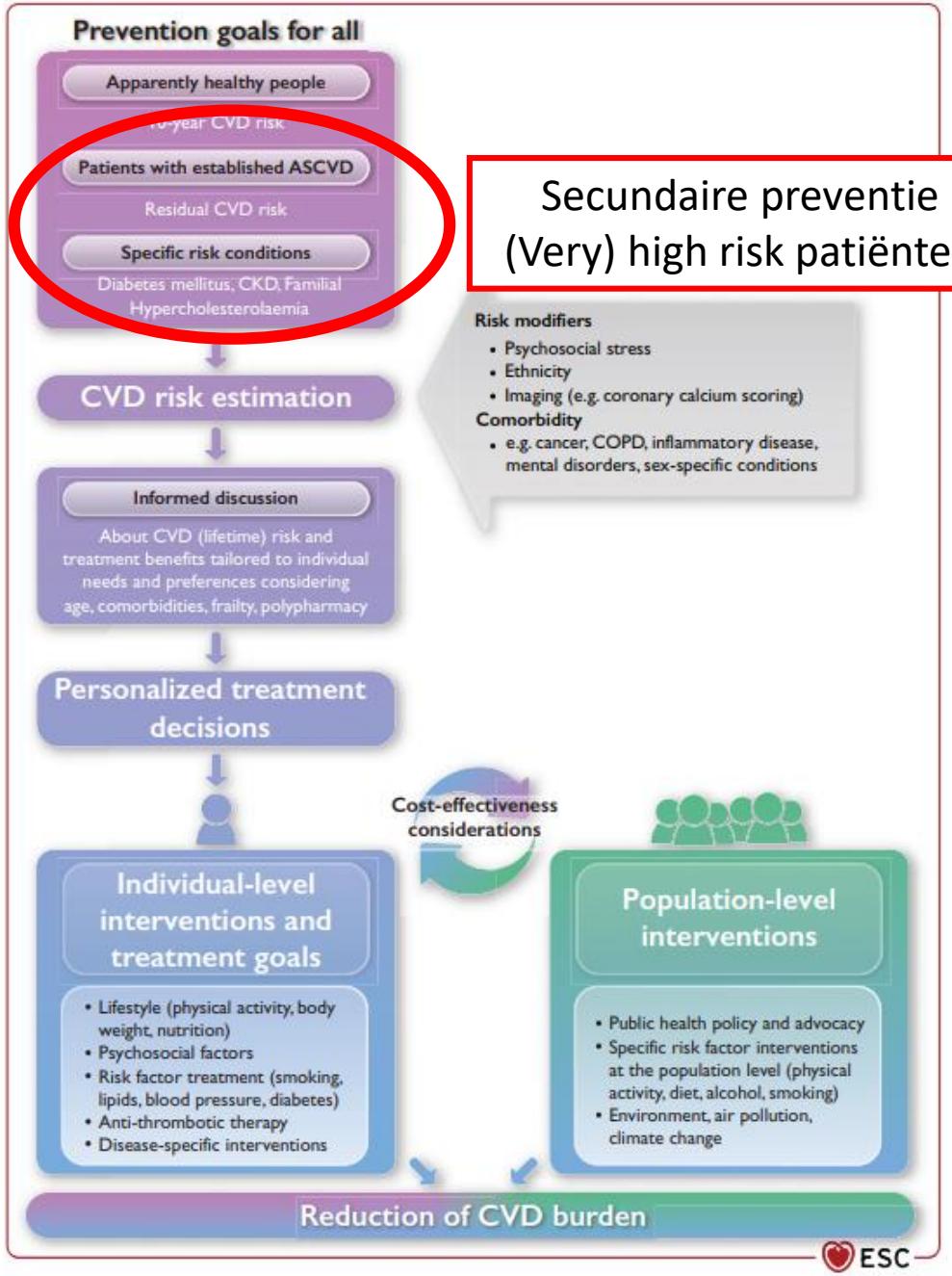
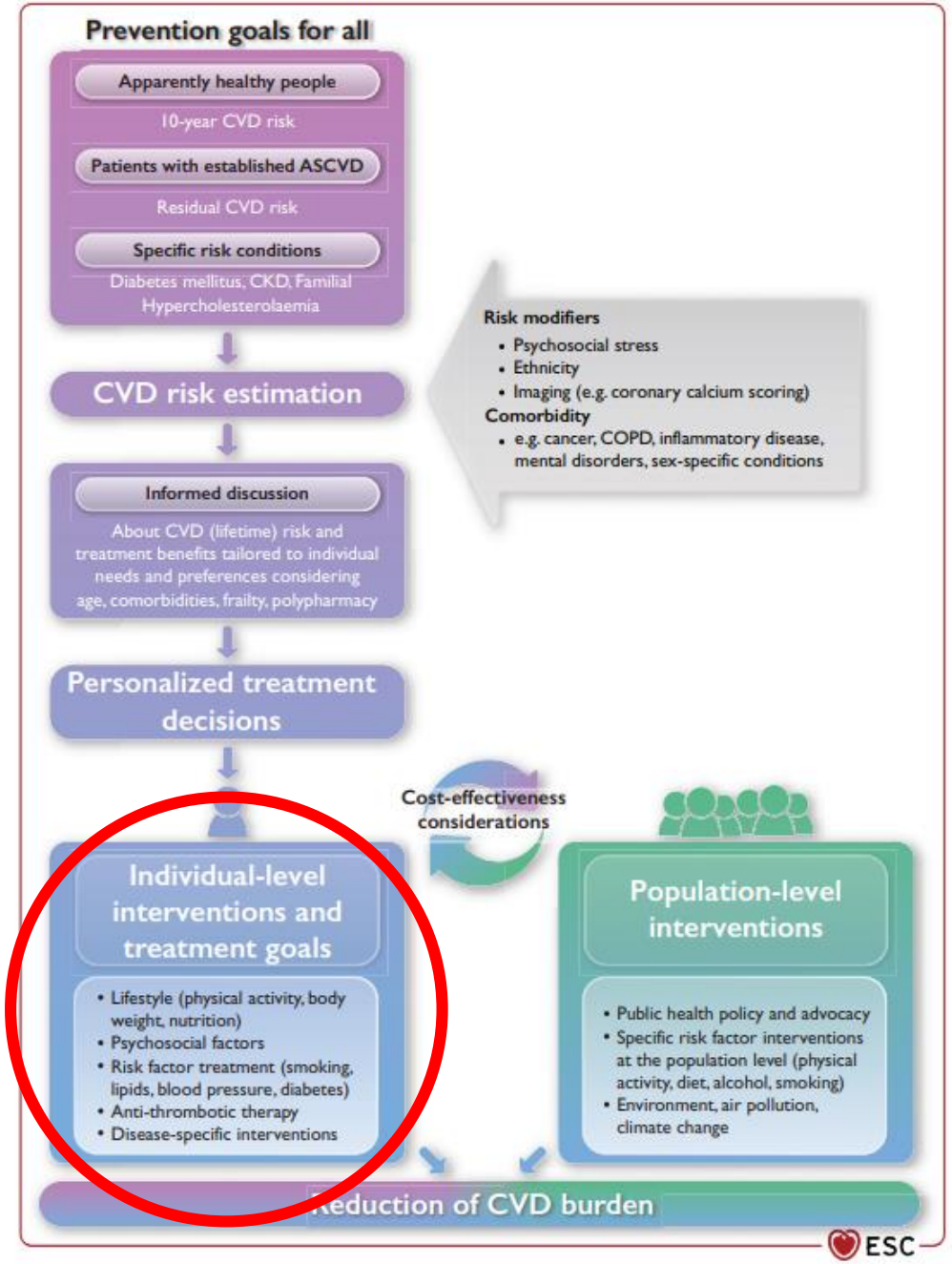


Fysieke activiteit: liefst minstens matige inspanning (en dus meer dan wandelen of elektrisch fietsen)

Evenwichtig dieet, **BMI 20-25**

Rookstop



Bloeddrukcontrole

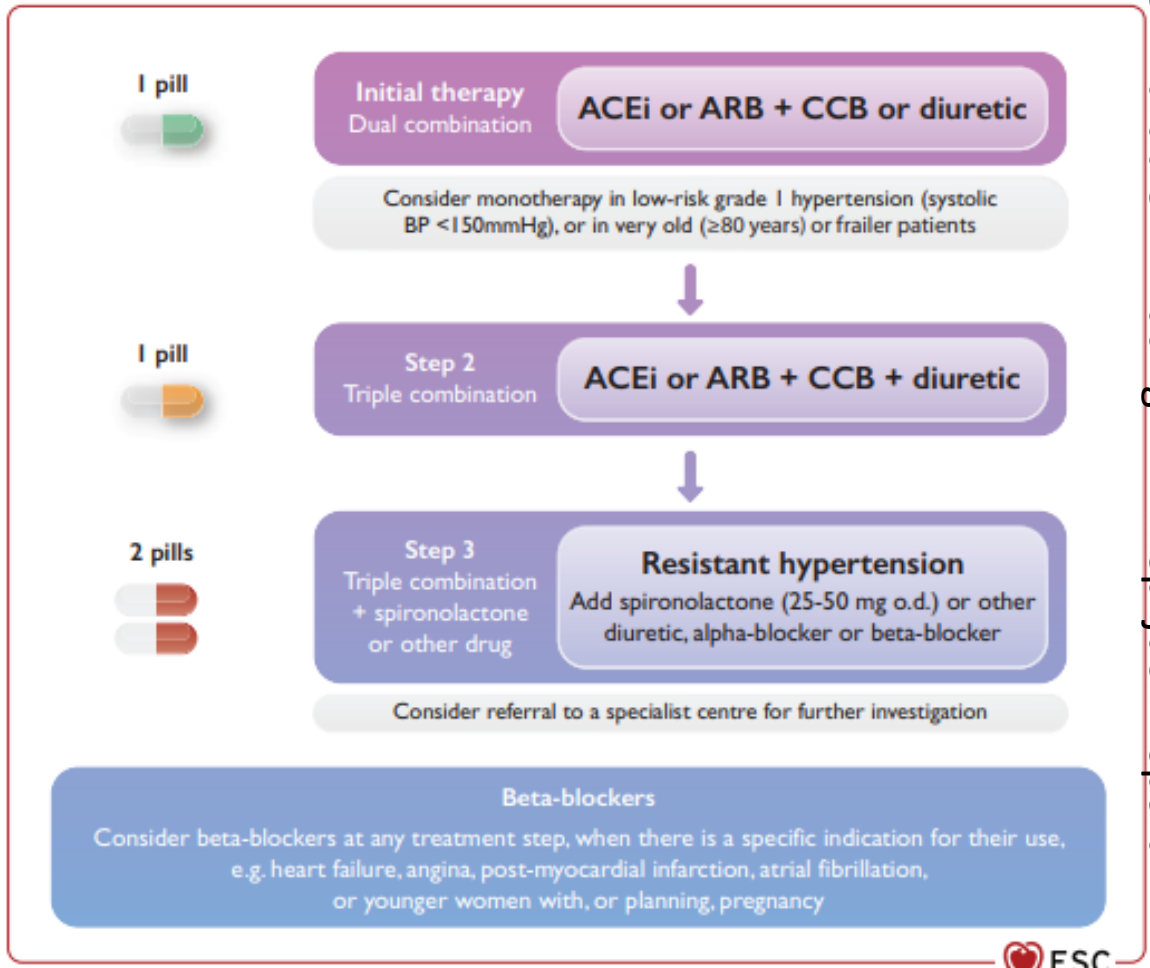
Table 18 Recommended office blood pressure target ranges. The first step in all groups is a reduction to systolic blood pressure <140 mmHg. The subsequent optimal goals are listed below.

Age group	Office SBP treatment target ranges (mmHg)				
	Hypertension	+ DM	+ CKD	+ CAD	+ Stroke/TIA
18 – 69 years	120–130	120–130	<140–130	120–130	120–130
	Lower SBP acceptable if tolerated				
≥70 years	**<140 mmHg, down to 130 mmHg if tolerated**				
	Lower SBP acceptable if tolerated				
DBP treatment target (mmHg)	<80 for all treated patients				

Start met SBP < 140mmHg

Maar lager is beter

Zeker bij hoog risico en secundaire preventie!



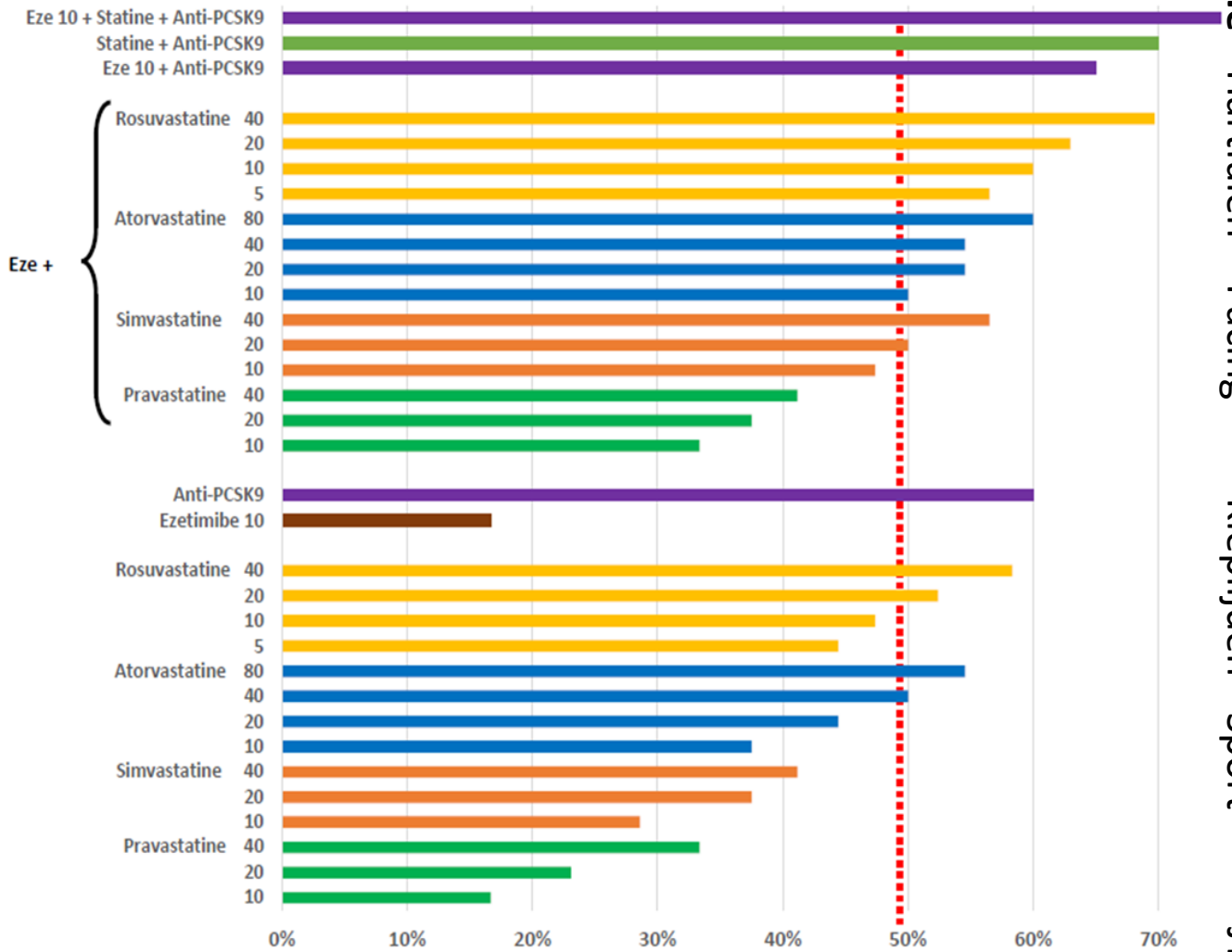
Lipidencontrole

Primaire preventie LDL< 100mg/dl

Hoog en zeer hoog risico minstens LDL< 70mg/dl
(en liefst < 55mg/dl)

Secundaire preventie LDL< 55mg/dl of 50% daling

Evtl
+ Bempedoïnezuur
+ Inclisiran
+ PCSK-9 (familiale hypercholesterolemie DLCN score)



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+ Bempedoïnezuur
+ Inclisiran?
+ PCSK-9 (familiale hypercholesterolemie DLCN score)

Bempedoïnezuur (Nilemdo®) en + ezetimibe (Nustendi®)
Inhibitie cholesterolsynthese via ATP-citraat lyase, daardoor meer cholesterolreceptoren op de hepatocyt
LDL reductie 17.4 tot 28.5% vs placebo
LDL reductie 38% vs placebo (bij Nustendi)
Cave jicht (bij gestegen urinezuur en voorgeschiedenis jicht)
Cave simvastatine meer dan 20mg (verdubbelt concentratie), niet bij andere statines
Terugbetaling onvoldoende daling of statine intolerantie
€245/€266 voor 3 maanden

Inclisiran (Leqvio®)
Small interfering RNA, minder PCSK9-mRNA en dus minder PCSK9 met minder afbraak van LDL receptoren op de hepatocyt
LDL reductie tot 50-60%
Terugbetaling bij ASCVD en LDL>100mg/dl ondanks max statine en ezetimibe
2x/jr, 2200€ per injectie

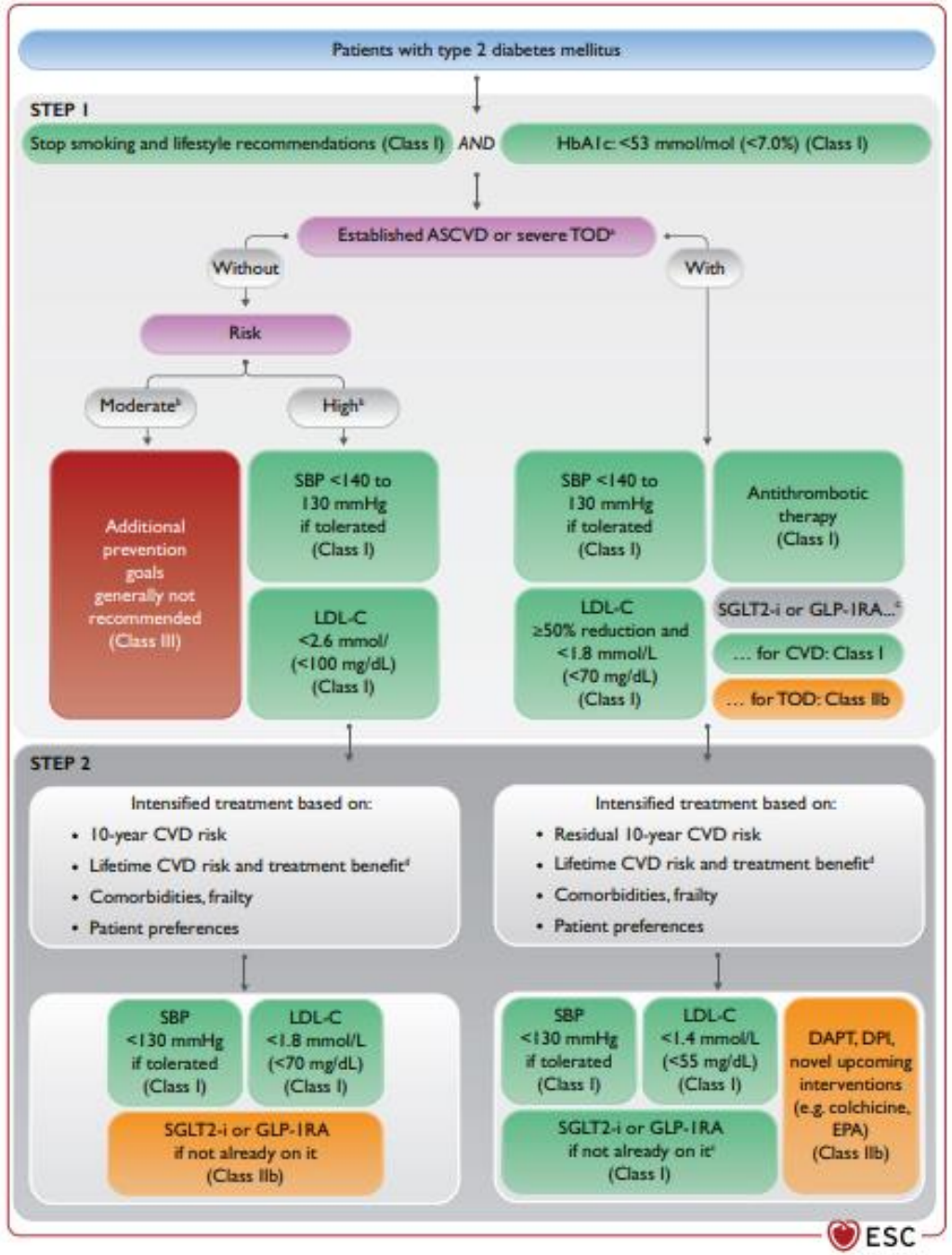
Diabetes

HbA1c < 7,0%

HbA1c < 6,5% bij jongere patiënten

Metformine
+
SGLT-2-inhibitor
en/of
GLP-1 RA

Metformin is recommended as first-line therapy, following evaluation of renal function, in the majority of patients without previous ASCVD, CKD, or HF.[589]	I	B
In persons with type 2 DM with ASCVD, metformin should be considered, unless contraindications are present.[5,590–592]	IIa	B
Avoidance of hypoglycaemia and excessive weight gain should be considered.[559,588,593]	IIa	B
In persons with type 2 DM and ASCVD, the use of a GLP-1RA or SGLT2 inhibitor with proven outcome benefits is recommended to reduce CV and/or cardiorenal outcomes.[590–592]	I	A
In patients with type 2 DM and TOD,[c] the use of an SGLT2 inhibitor or GLP-1RA with proven outcome benefits may be considered to reduce future CV and total mortality.[594–597]	IIb	B
In patients with type 2 DM and CKD, the use of an SGLT2 inhibitor is recommended to improve ASCVD and/or cardiorenal outcomes.[598,599]	I	A
In patients with type 2 DM and HFrEF, use of an SGLT2 inhibitor with proven outcome benefits is recommended to lessen HF hospitalizations and CV death.[600,601]	I	A
In patients with type 2 DM but without ASCVD, HF, or CKD, use of an SGLT2 inhibitor or GLP-1RA should be considered based on estimated future risks (e.g. with the ADVANCE risk score or DIAL model) for adverse CVD or cardiorenal outcomes from risk factor profiles.[602]	IIa	B



Aspirine?

Aspirin 75 - 100 mg daily is recommended for patients with a previous myocardial infarction or revascularization.[619]	I	A
Aspirin 75 - 100 mg daily may be considered in patients without a history of myocardial infarction or revascularization, but with definitive evidence of CAD on imaging.[622]	IIb	C

Antiplatelet therapy is not recommended in individuals with low/moderate CV risk due to the increased risk of major bleeding.	III	A

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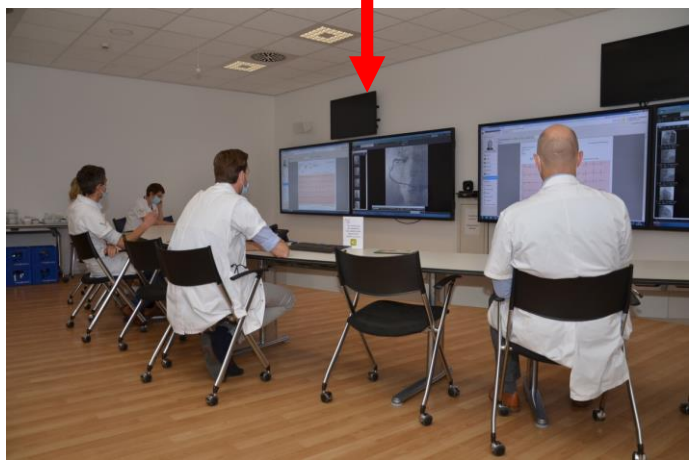
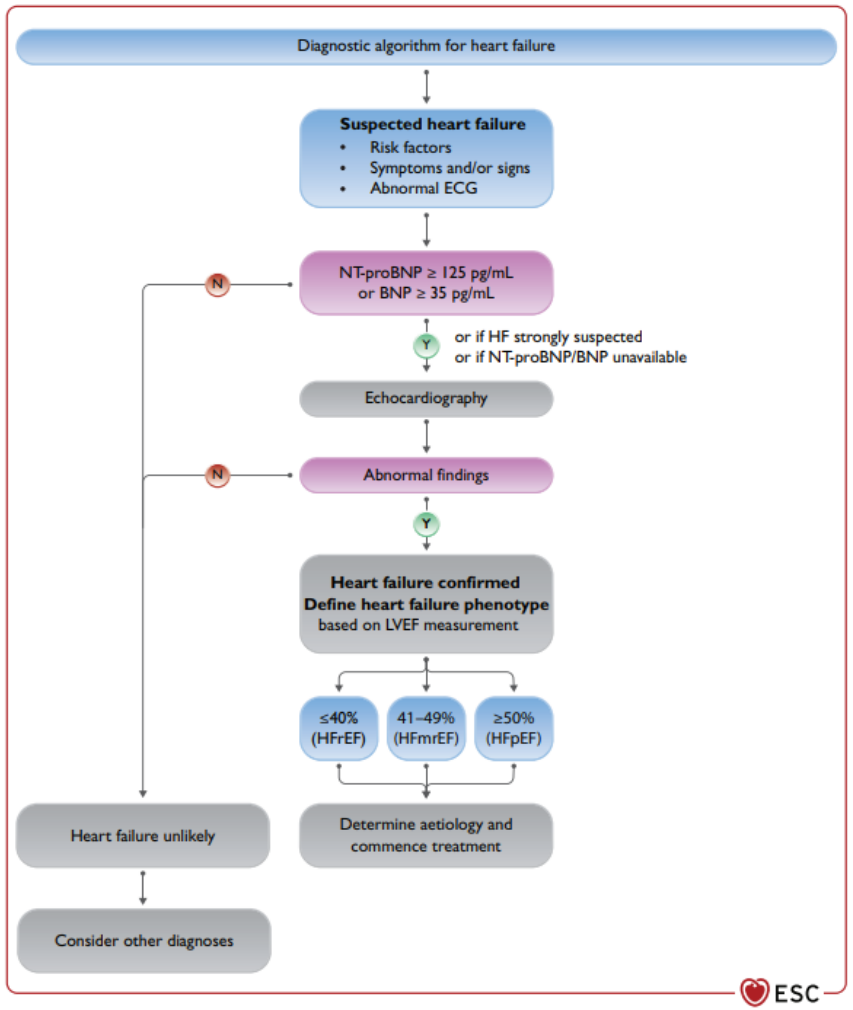


Hartfalen



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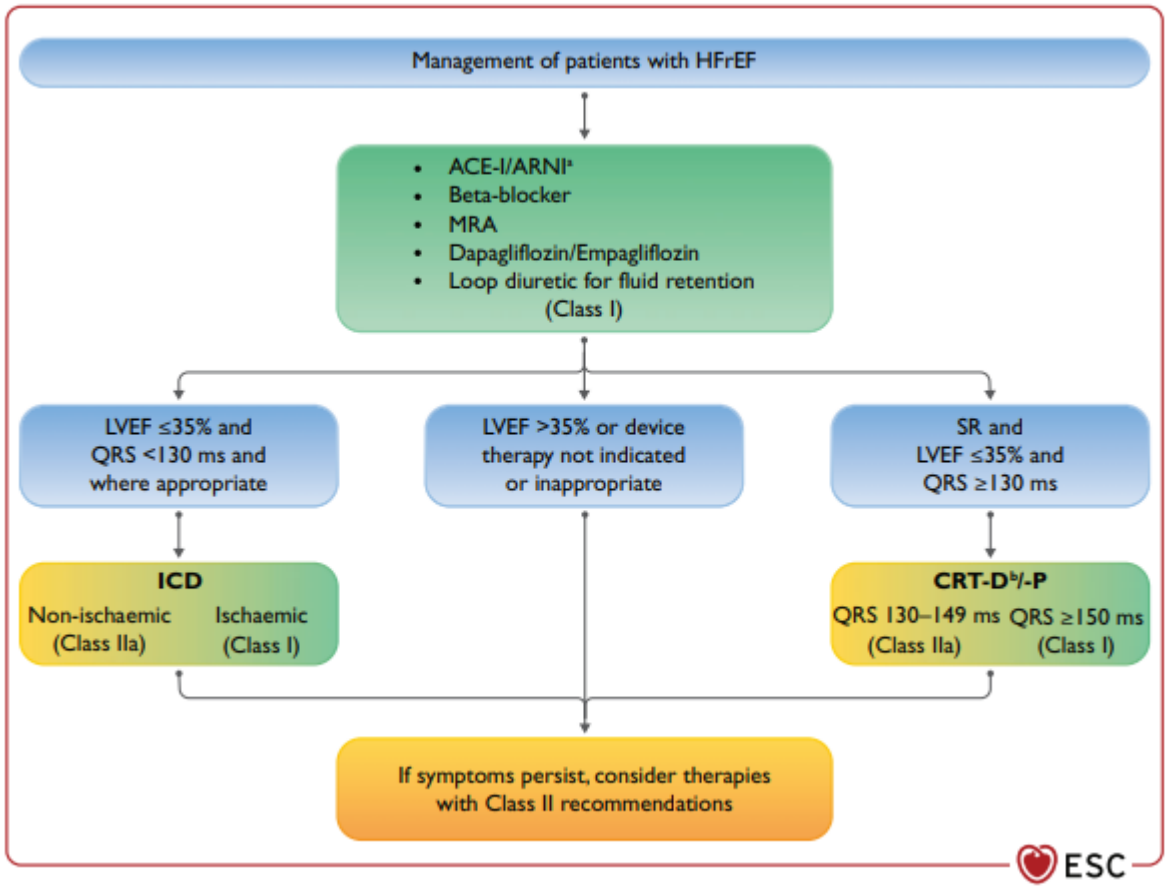
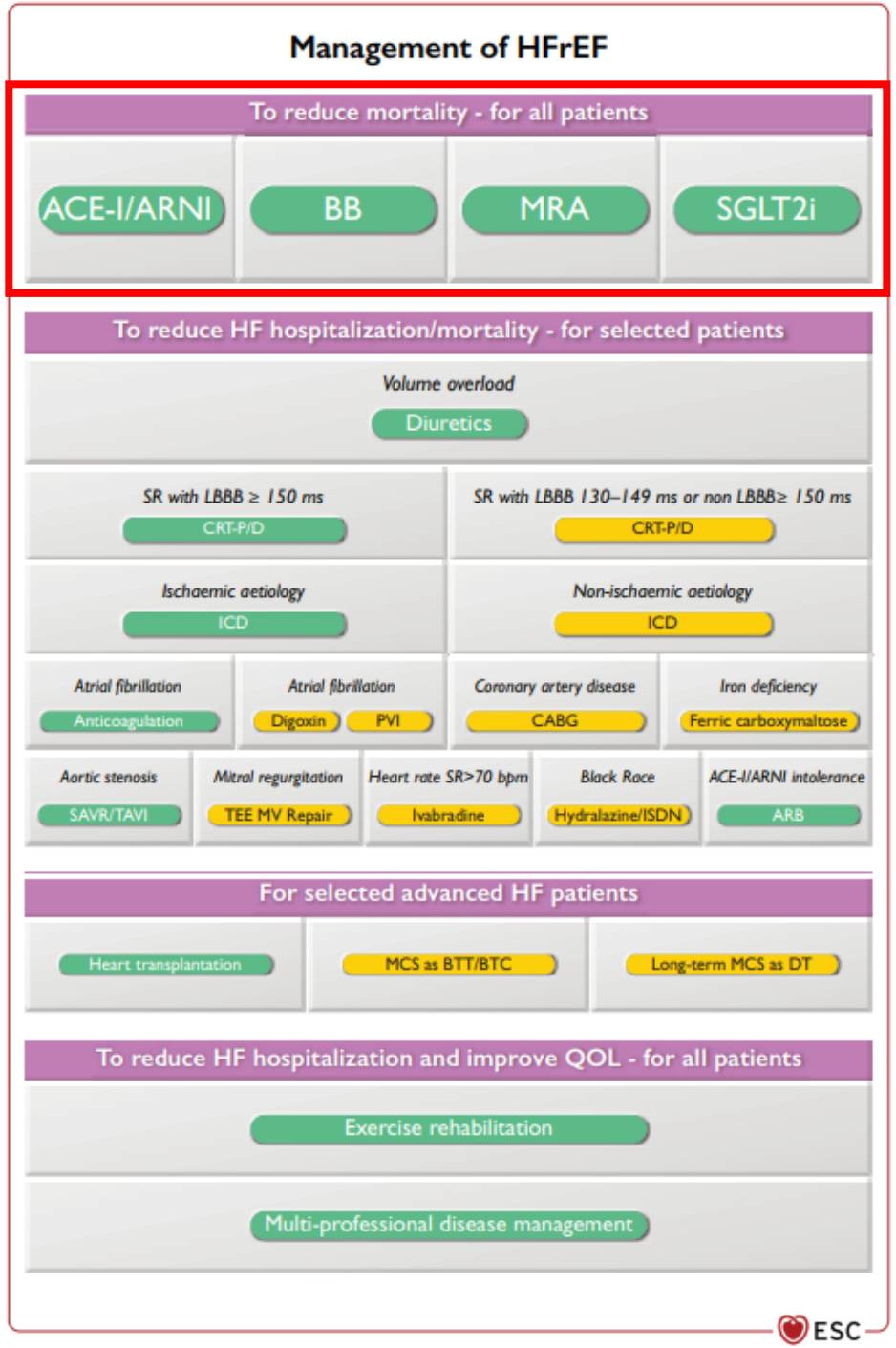
DIAGNOSE = KLINIEK + TTE + (pro)BNP

HFrEF

THE FANTASTIC FOUR



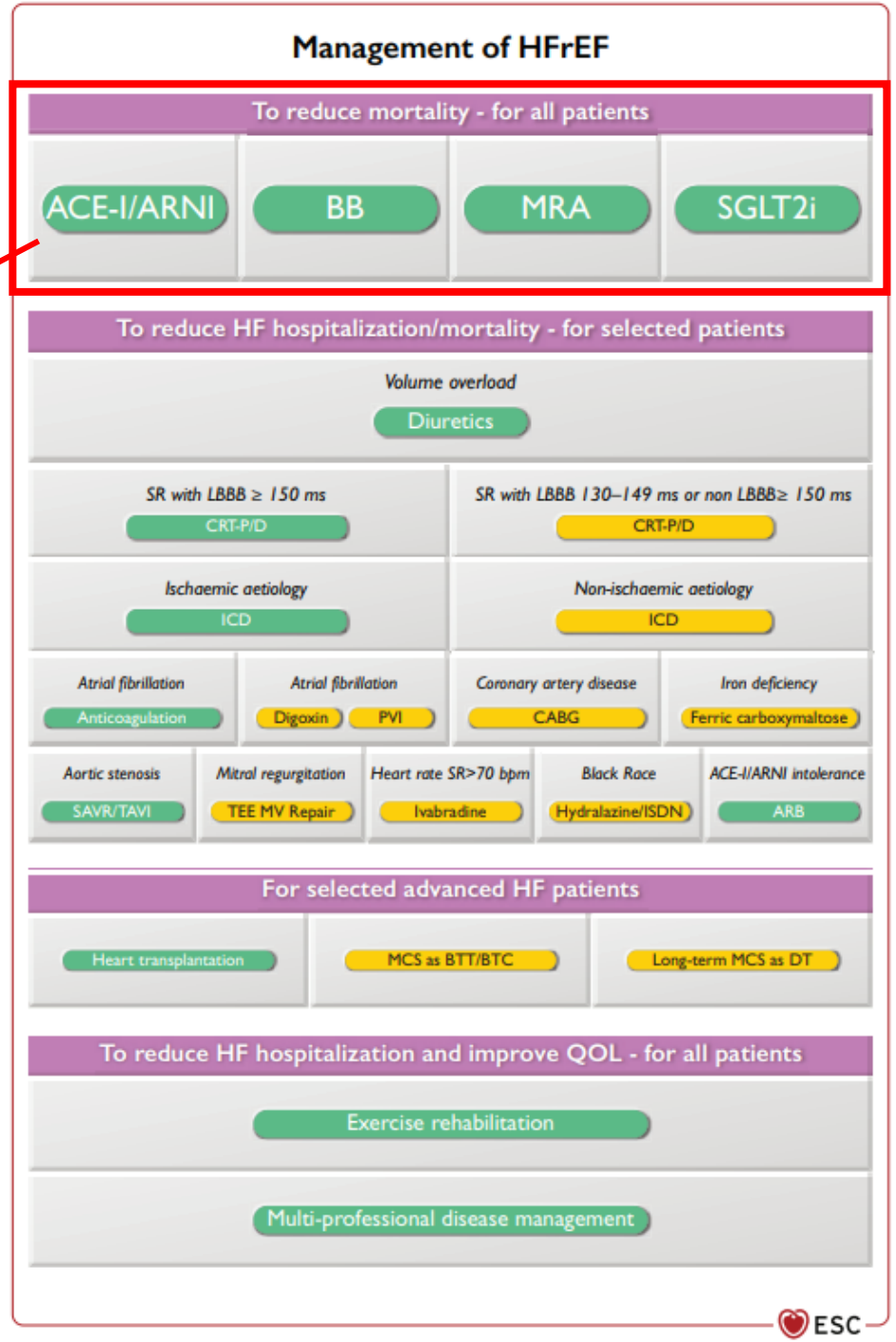


HFrEF

THE FANTASTIC FOUR

ARNI		
Sacubitril/valsartan	49/51 mg *b.i.d.*[c]	97/103 mg *b.i.d.*

- ACE-I 36u op voorhand stoppen
- Optitreren
- Cave hypotensie; SBD > 90mmHg nastreven
- Terugbetaling: NYHA II / III / IV + LVEF < 35% + Vooraf R/ ACE-i of ARB • 1e aanvraag door cardioloog



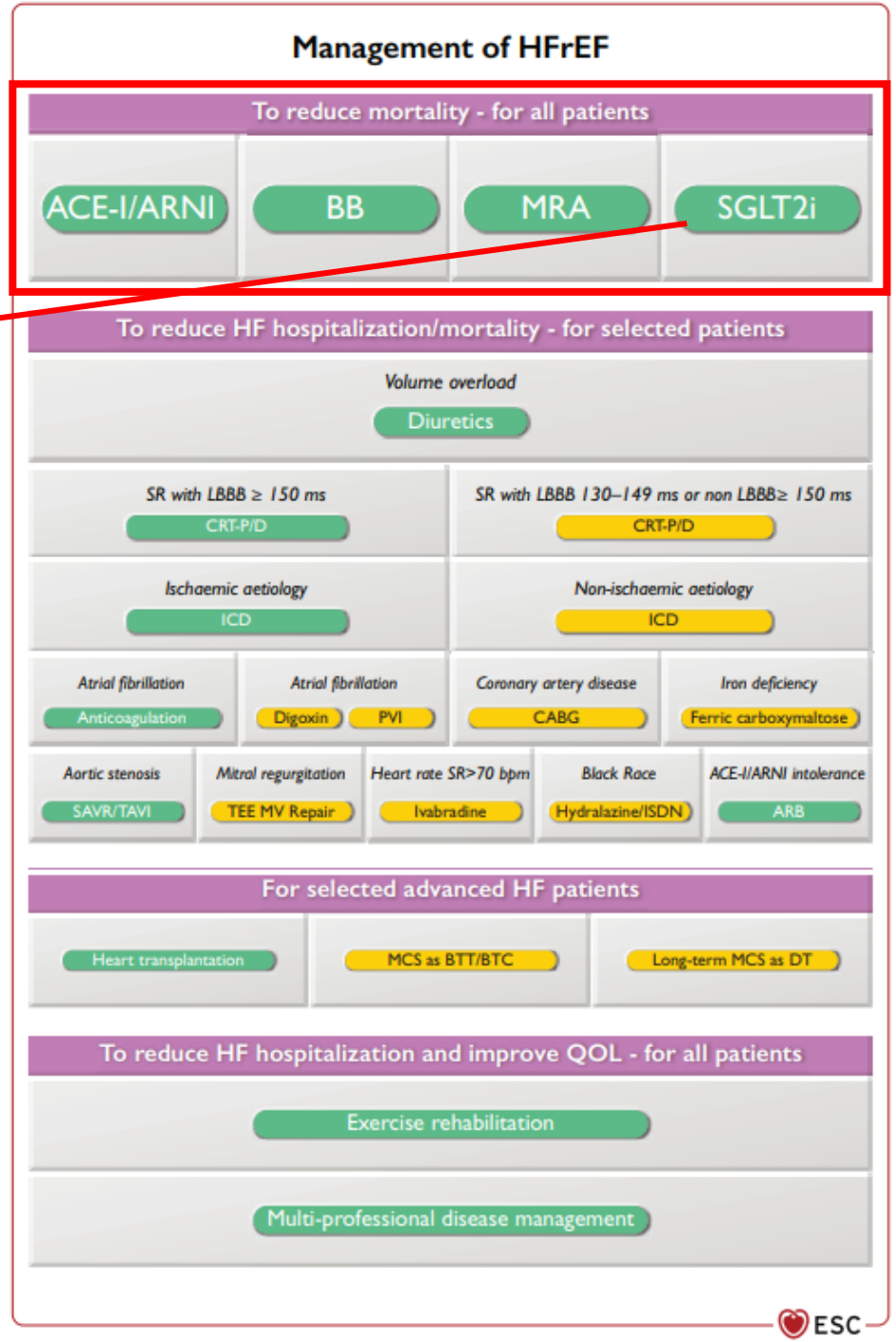
HFrEF

- Natriurese
- Nefroprotectief (dip in Creat maar nadien stabiel!)
- Keto-oxygenatie en zo cardiometabool gunstig
- Anti-inflammatoir
- Reverse cardiac remodeling

- Geen optitratie, goed verdragen op bloeddruk
- Tot eGFR > 20ml/min/1,73m²

- Cave
  - Urogenitale infecties
  - Hypoglycemie bij diabetespt, keto-acidose
  - Evtl diuretica stoppen

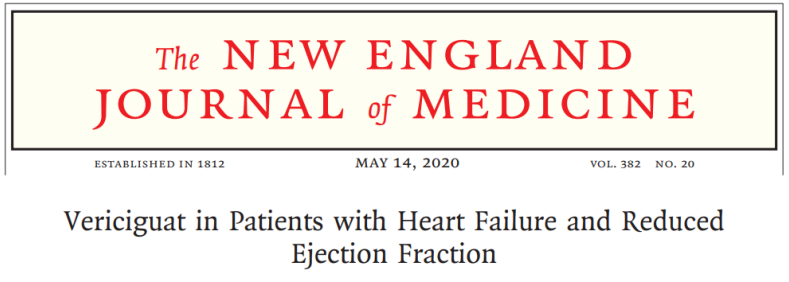
THE FANTASTIC FOUR



HFrEF

Evtl + VERICIGUAT

VERICIGUAT

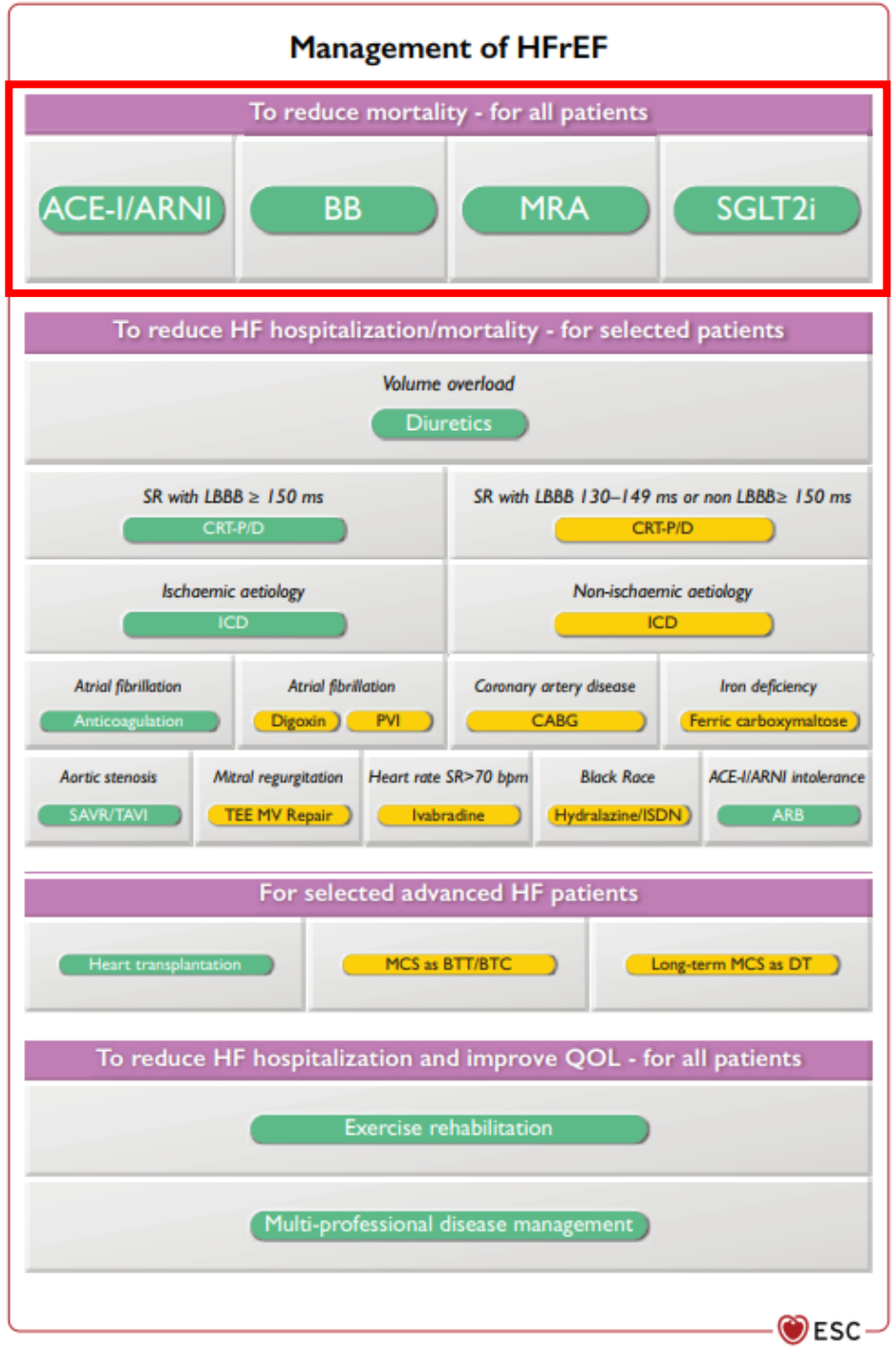

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 MAY 14, 2020 VOL. 382 NO. 20

Vericiguat in Patients with Heart Failure and Reduced Ejection Fraction

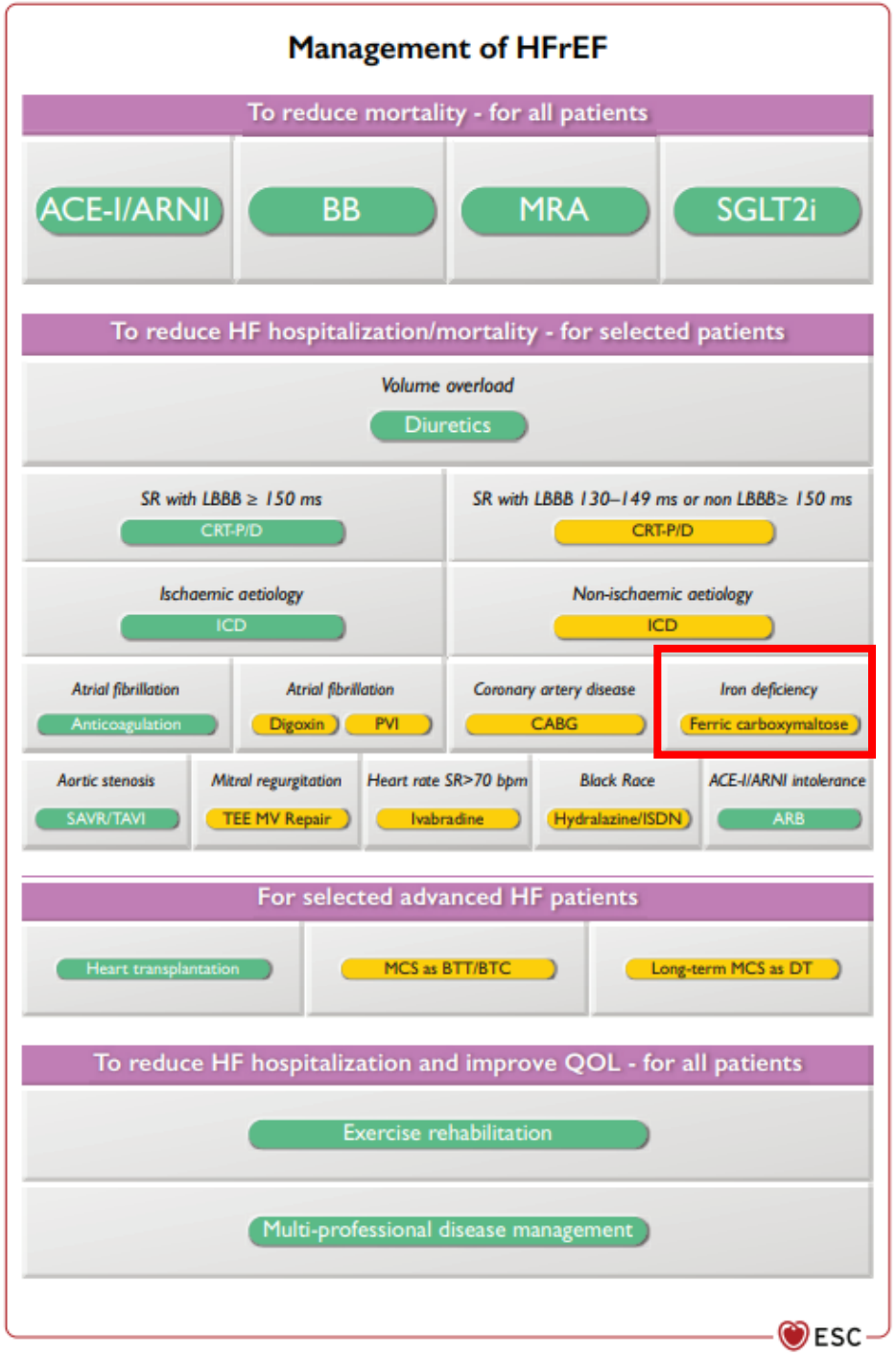
- Guanylaat cyclase stimulator – PO
- Additioneel aan hartfalentherapie
- Cardiovasculaire dood en hartfalen hospitalisatie ↓

- Voorlopig nog compassionate use (Bayer)
  - NYHA II-IV
  - HFrEF
  - Recente decompensatie met hospitalisatie of IV diuretica
  - NT-pro-BNP > 1000pg/ml of > 1600pg/ml bij VKF
  - eGFR ≥ 15 mL/min/1,73m²
  - Aantal exclusiecriteria zoals SBD < 100mHg, recente interventie, …



HFrEF

- Fe = essentiële cofactor
  - voor O2 transport en opslag
  - mitochondriaal metabolisme
- Absolute/functionele Fe deficiëntie los van anemie!
  - Ferritine < 100 µg/l (ipv < 30)
  - Ferritine 100 – 300 én transferrine saturatie < 20%
- IV ferric carboxymaltose
  - QOL stijgt en HF hospitalisaties dalen
  - Dagziekenhuis, dosis op basis van gewicht
  - Terugbetaling bij HFrEF
- Waarom niet per oraal?
  - Slechte GI absorptie
  - Trage correctie
  - Studies negatief



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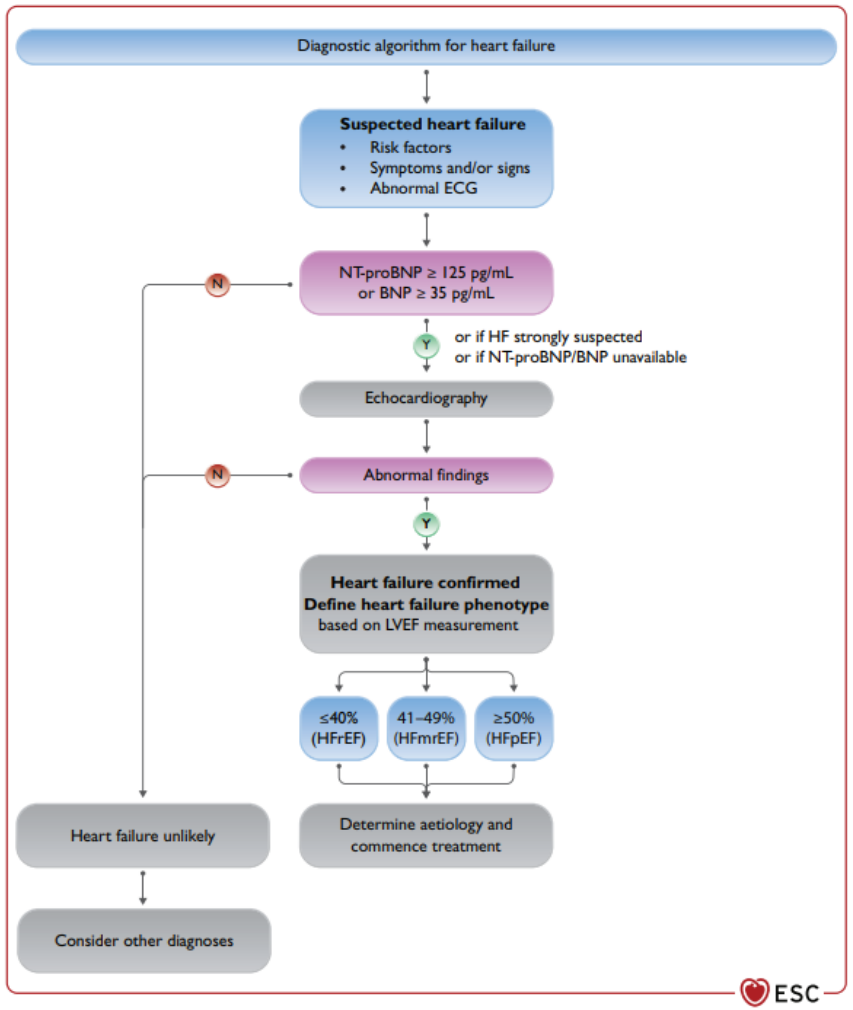

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DIAGNOSE = KLINIEK + TTE + (pro)BNP

HFmrEF

- Diuretica voor congestie
- Weinig studies, klassieke hartfalenmedicatie “should be considered”

HFpEF

- Diuretica voor congestie
- Jardiance (Emperor-preserved studie)
  - 21% daling CV mortaliteit en hospitalisatie

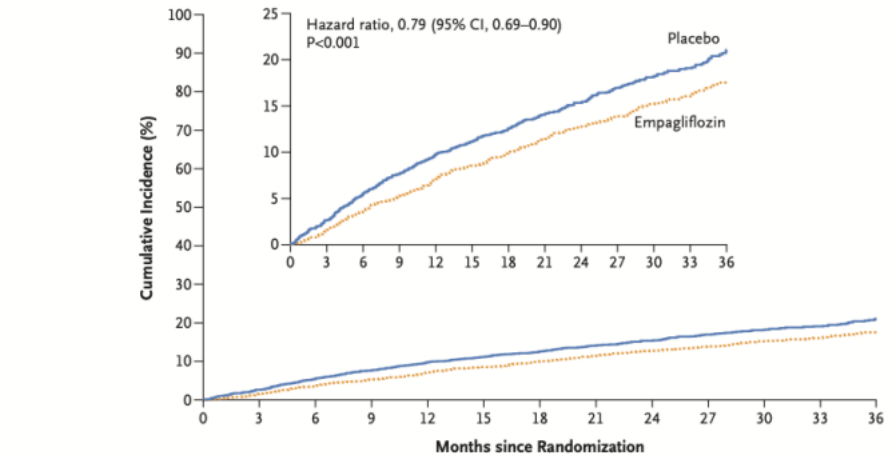
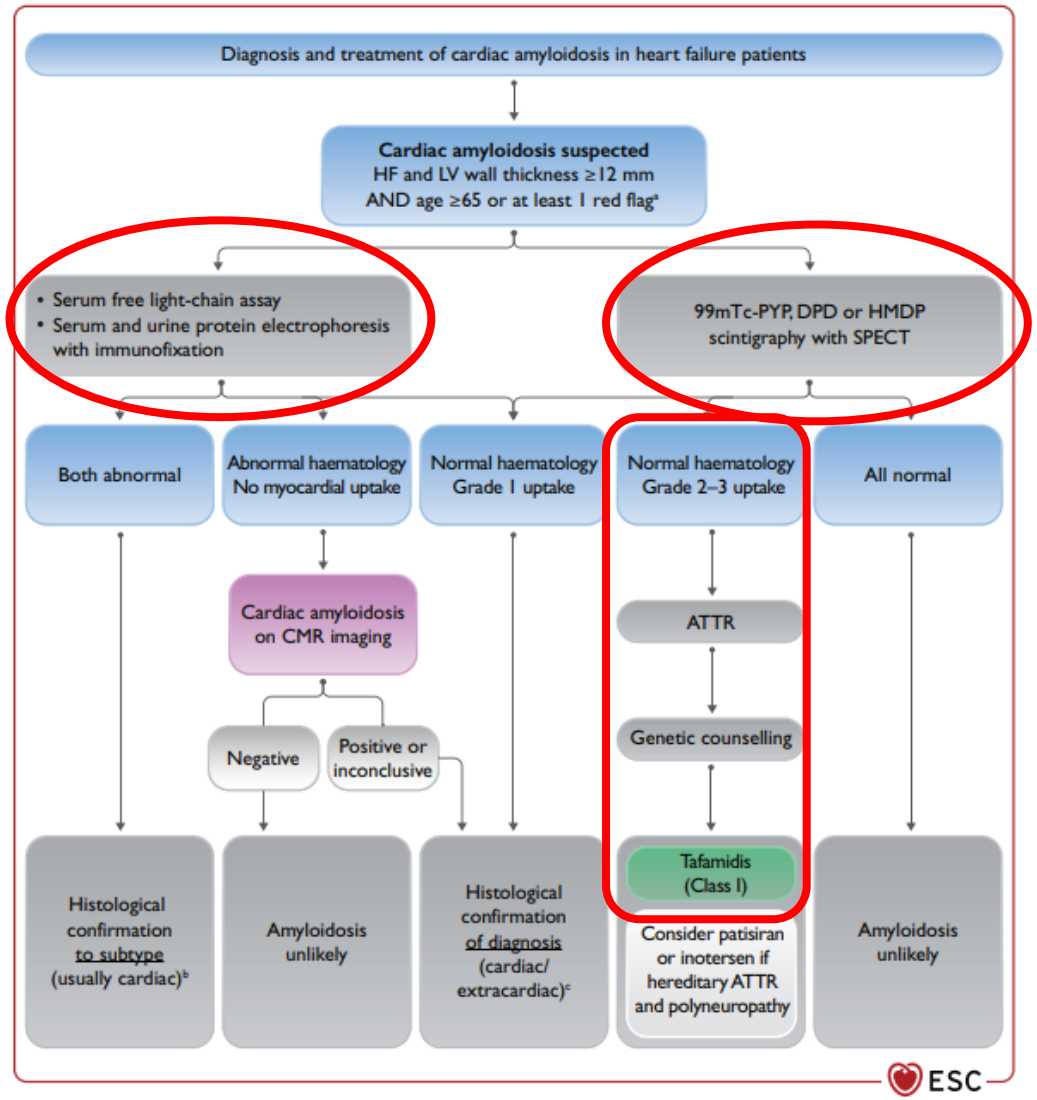


Figure 1. Primary Outcome, a Composite of Cardiovascular Death or Hospitalization for Heart Failure.

Cardiale amyloïdose



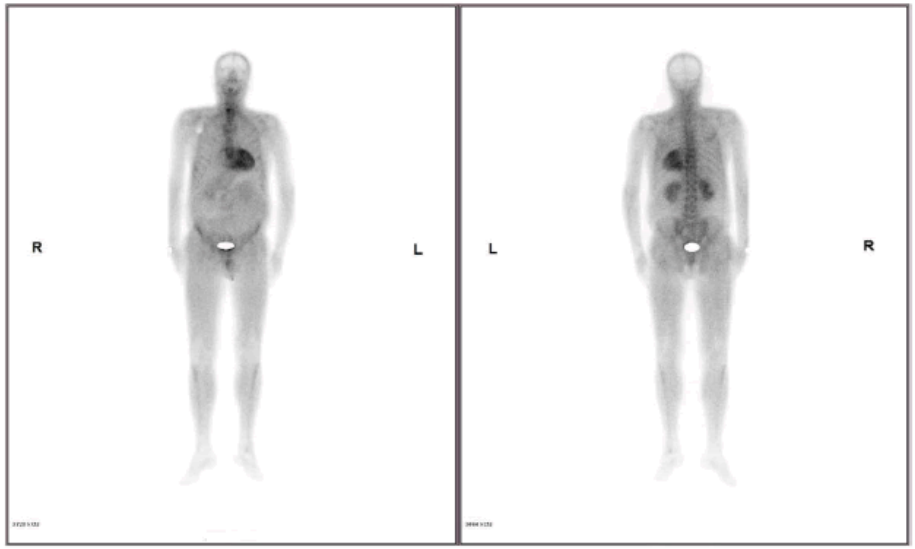


Figure 1. Planar whole-body bone scintigraphy showing intense cardiac uptake corresponding to a grade 3 (intense cardiac uptake with attenuated bone uptake).

Recommendations for the treatment of transthyretin amyloidosis-cardiac amyloidosis

Recommendations	Class[a]	Level[b]
Tafamidis is recommended in patients with genetic testing proven hTTR-CA and NYHA class I or II symptoms to reduce symptoms, CV hospitalization and mortality.[979]	I	B
Tafamidis is recommended in patients with wtTTR-CA and NYHA class I or II symptoms to reduce symptoms, CV hospitalization and mortality.[979]	I	B

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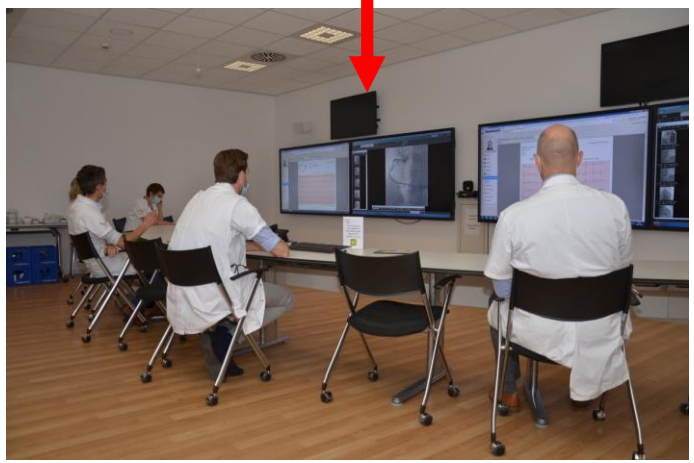
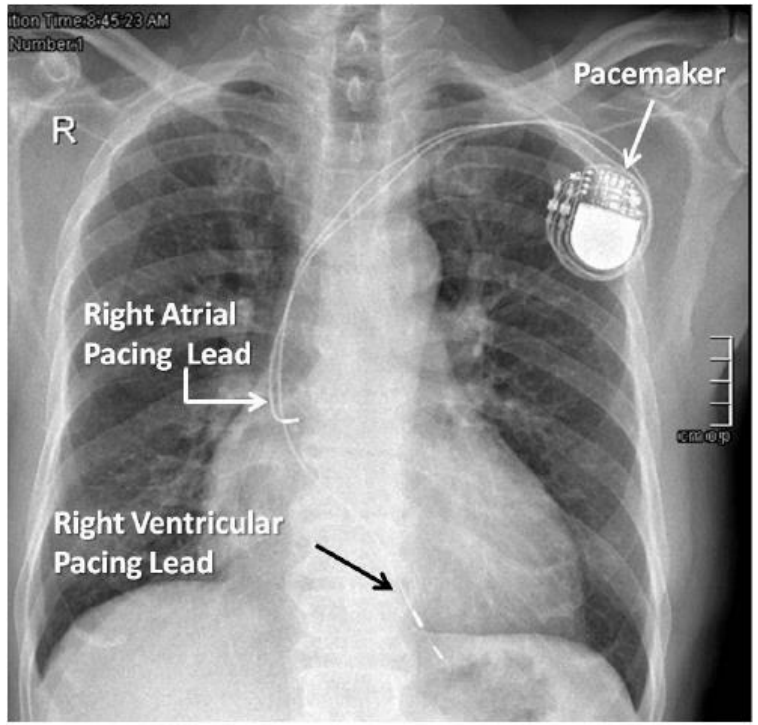
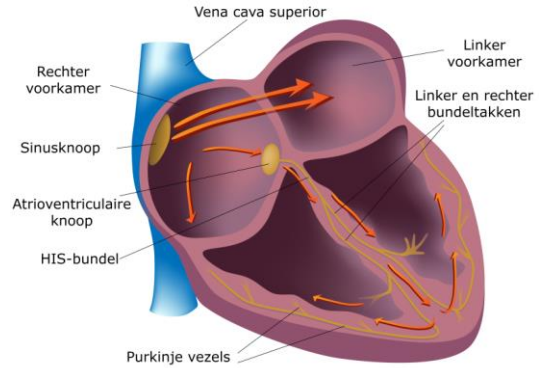


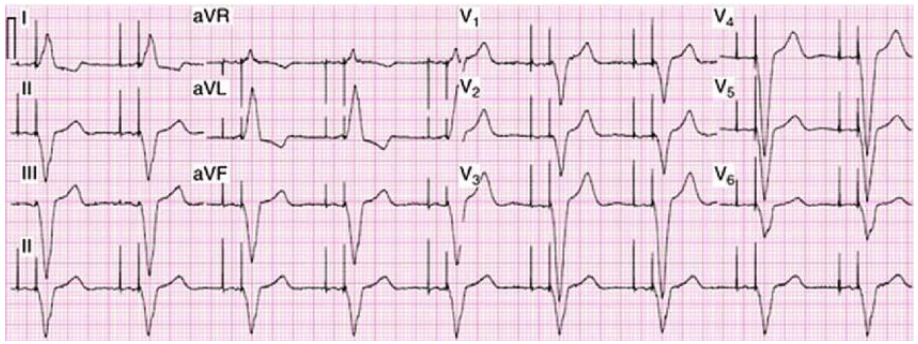
Linkerbundeltak-pacing

- Pacing: Sinusknoopziekte en/of AV-geleidingsstoornissen
- Klassieke situatie:



Het cardiale elektrische geleidingssysteem





Maar…

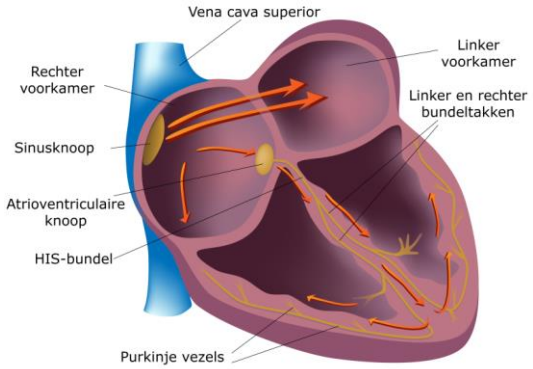
- Geen natuurlijke situatie
- Ventriculaire dyssynchronie
- Kan leiden tot verminderde functie en hartfalen; vooral bij RV-pacing > 20% van de tijd

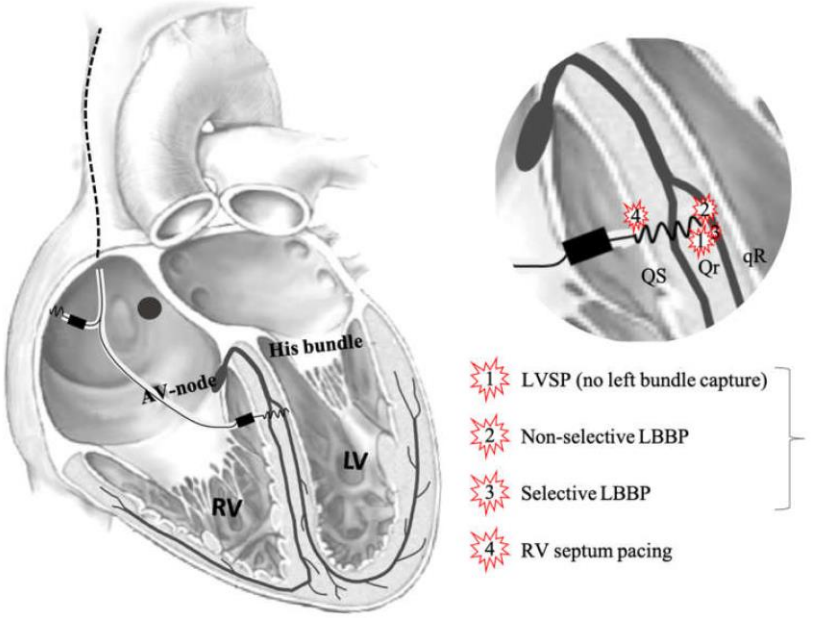
Linkerbundeltak-pacing

- Nieuwe technieken
  - His-bundel pacing
    - Maar vrij veel problemen met sensing/drempels/leercurve…
  - Linkerbundeltak(area)-pacing
    - Betere sensing
    - Drempels lager en stabieler
    - Eenvoudiger
    - Snelle activatie van het eigen geleidingssysteem
    - Zo vermijden van pacing-cardiomyopathie
    - Cave septale perforatie/intramuraal hematoom/…

Gerandomiseerde studies zijn bezig

Het cardiale elektrische geleidingssysteem





J. Clin. Med. 2021, 10(4), 822; https://doi.org/10.3390/jcm10040822

Linkerbundeltak-pacing

ESC European Society of Cardiology

European Heart Journal (2021) **42**, 3427–3520
doi:10.1093/eurheartj/ehab364

ESC GUIDELINES

2021 ESC Guidelines on cardiac pacing and cardiac resynchronization therapy

Developed by the Task Force on cardiac pacing and cardiac resynchronization therapy of the European Society of Cardiology (ESC)

In CRT candidates in whom coronary sinus lead implantation is unsuccessful, HBP should be considered as a treatment option along with other techniques such as surgical epicardial lead.[318,424,440,443]	IIa	B
HBP may be considered as an alternative to RV pacing in patients with AVB and LVEF >40%, who are anticipated to have >20% ventricular pacing.[42,433]	IIb	C

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2021 Valvular Heart Disease

2021 Cardiac Pacing & CRT

2021 Heart Failure

2020

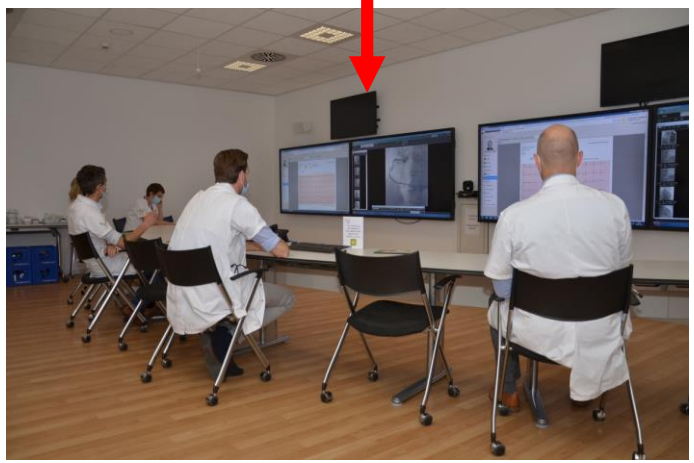
2020 Sports Cardiology and Exercise in Patients with CVD

2020 Atrial Fibrillation

2020 Adult Congenital Heart Disease

2020 Acute Coronary Syndromes (ACS) in Patients Presenting without Persistent ST-Segment Elevation

2019



Kleplijden

Sluiting linker hartoortje?

LAA occlusion should be considered to reduce the thrombo- embolic risk in patients, with AF and a CHA_2DS_2VASc score ≥2 undergoing valve surgery.	IIa

NOACS en kleplijden?

For stroke prevention in AF patients who are eligible for OAC, NOACs are recommended in preference to VKAs in patients with aortic stenosis, aortic and mitral regurgitation.	I

Niet bij mitraalstenose!
Niet bij metalen kunstkleppen!

Asymptomatische ernstige aortaklepstenose?

Intervention should be considered in asympto- matic patients with severe aortic stenosis and sys- tolic LV dysfunction (LVEF <55%) without another cause.	IIa
Intervention should be considered in asympto- matic patients with LVEF >55% and a normal exer- cise test if the procedural risk is low and one of the following parameters is present: • Very severe aortic stenosis (mean gradient ≥60 mmHg or V_{max} ≥5 m/s). • Severe valve calcification (ideally assessed by CCT) and V_{max} progression ≥0.3 m/s/year. • Markedly elevated BNP levels (>3× age- and sex-corrected normal range) confirmed by repeated measurements and without other explanation.	IIa

Transcatheter technieken in mitralis en tricuspiedklep?

In geselecteerde patiënten, anatomische criteria, niet operabel, …
evoluerend domein

TAVR vs SAVR?

The choice between surgical and transcatheter intervention must be based upon careful evaluation of clinical, anatomical and procedural factors by the Heart Team, weighing the risks and benefits of each approach for an individual patient. The Heart Team recommendation should be discussed with the patient who can then make an informed treat- ment choice.	I
SAVR is recommended in younger patients who are low risk for surgery (<75 years and STS-PROM/ EuroSCORE II <4%) or in patients who are operable and unsuitable for transfemoral TAVI.	I
TAVI is recommended in older patients (>75 years), or in those who are high-risk (STS-PROM/ EuroSCORE II >8%) or unsuitable for surgery.	I
OAC is recommended lifelong for TAVI patients who have other indications for OAC.	I
Lifelong SAPT is recommended after TAVI in patients with no baseline indication for OAC.	I
Routine use of OAC is not recommended after TAVI in patients with no baseline indication for OAC.	III

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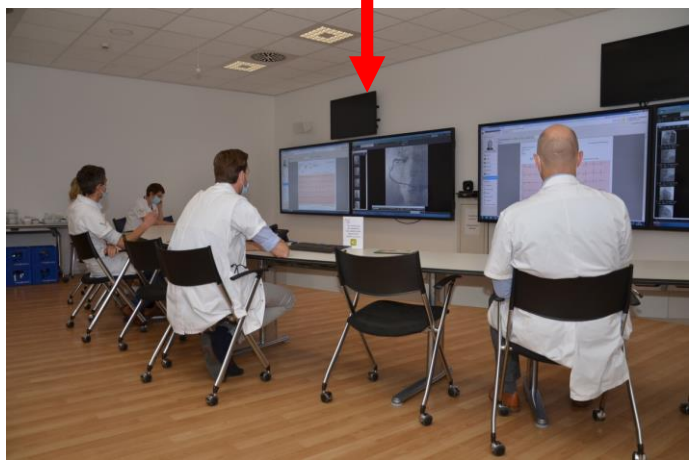
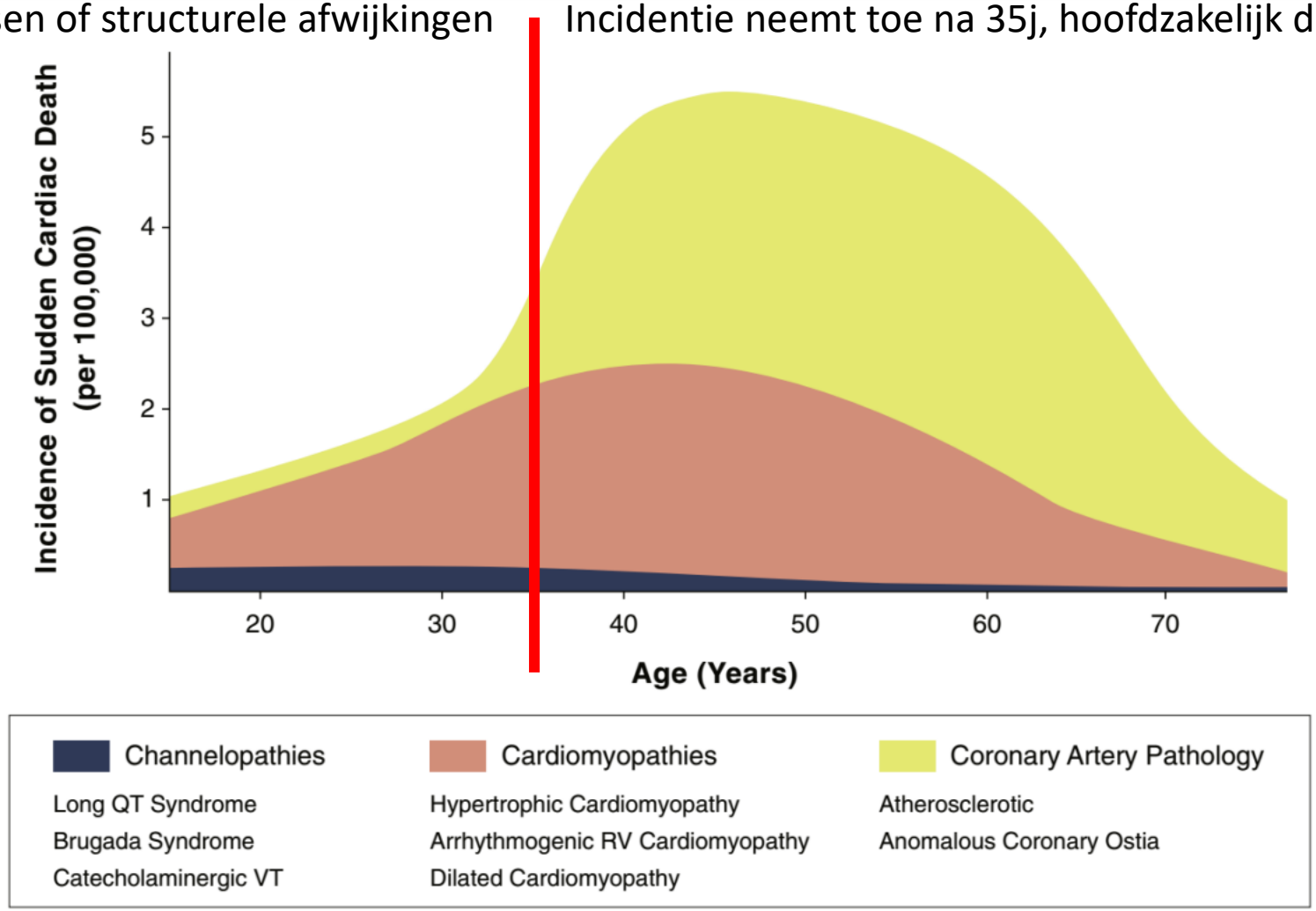


Plotse dood bij sporters

Erfelijke ritmestoornissen of structurele afwijkingen

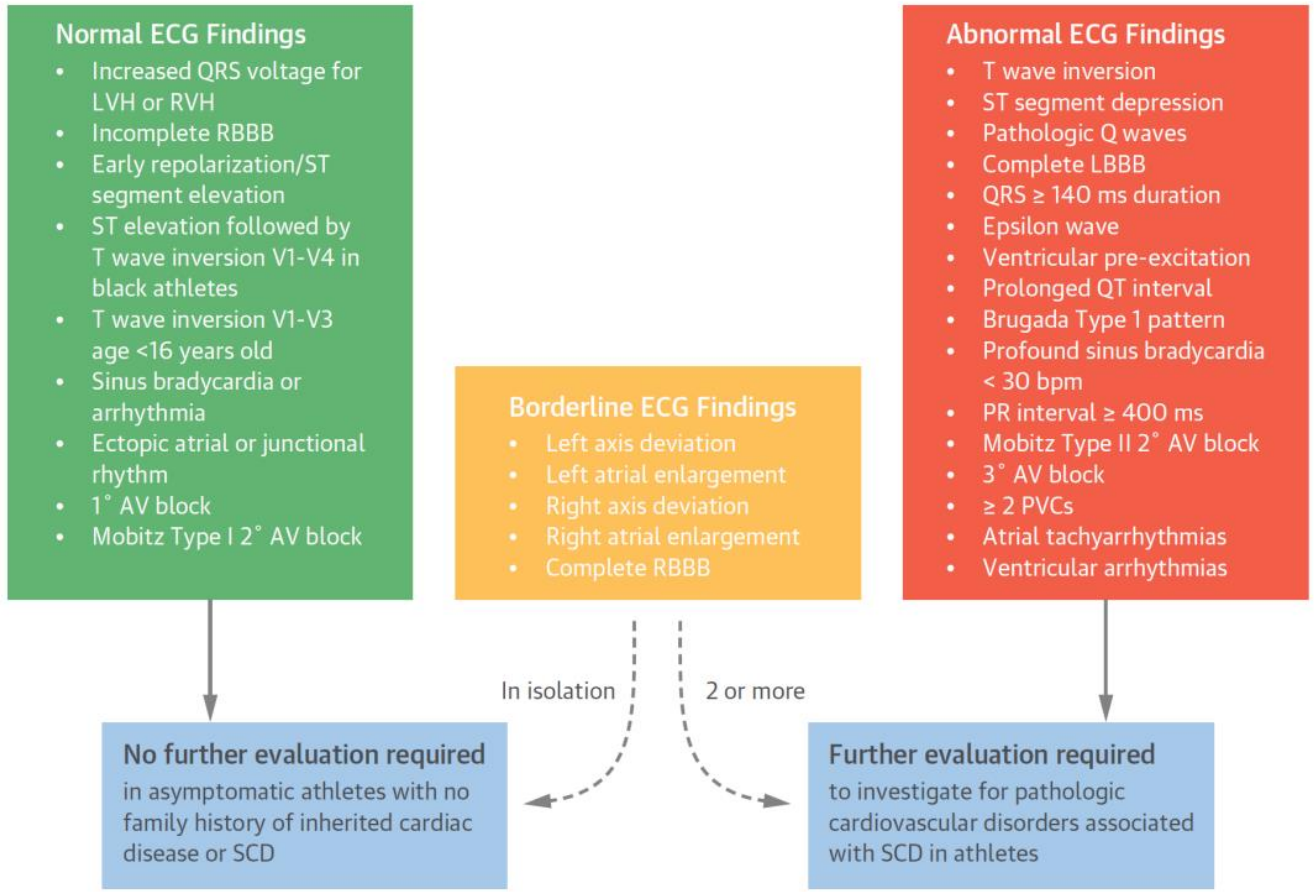
Incidentie neemt toe na 35j, hoofdzakelijk door coronair lijden!

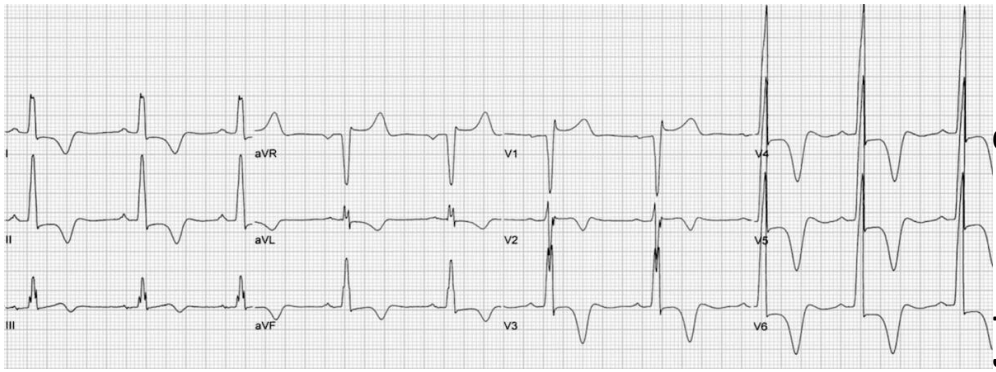


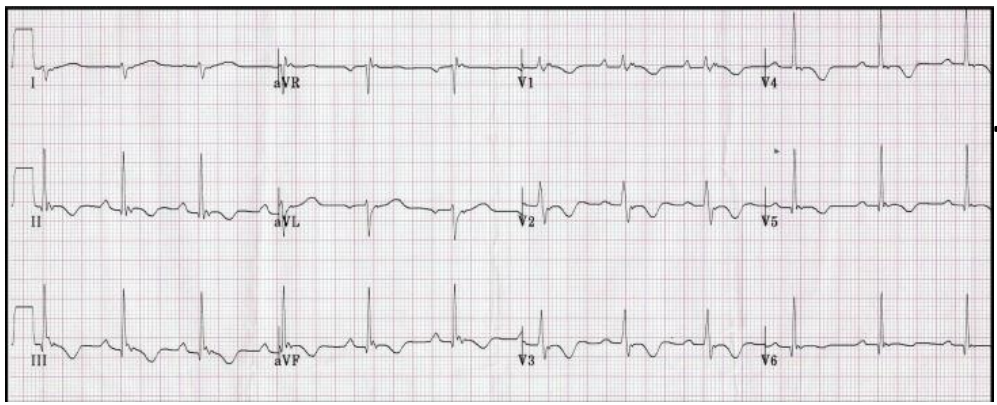
La Gerche et al. JACC CVI 2013

Jonge sporters < 35j

- Anamnese (persoonlijk en familiaal), KO, ECG



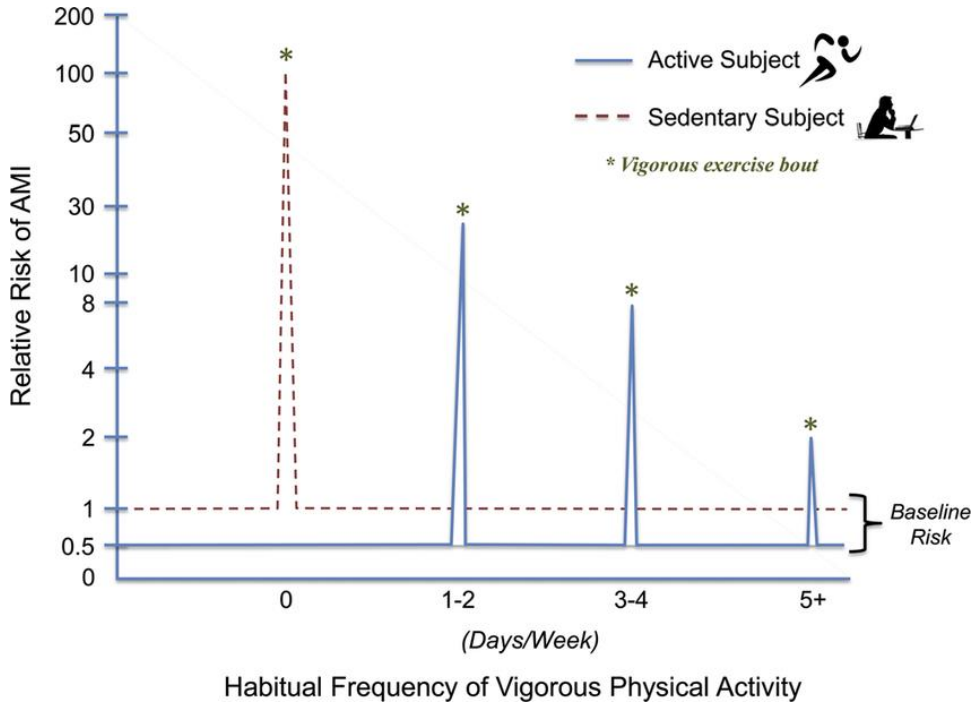




Sharma et al. JACC 2017

Sport en het hart

- Sporten is gezond!
- Niet sporten is een risicofactor voor vroegtijdig overlijden



Wielertoerist (73) wordt onwel en valt in kanaal: slachtoffer overleden

GEEL Een 73 een fietstoch man werd v

Wielertoerist zakt in elkaar en overlijdt: "We begrijpen het niet, Andr

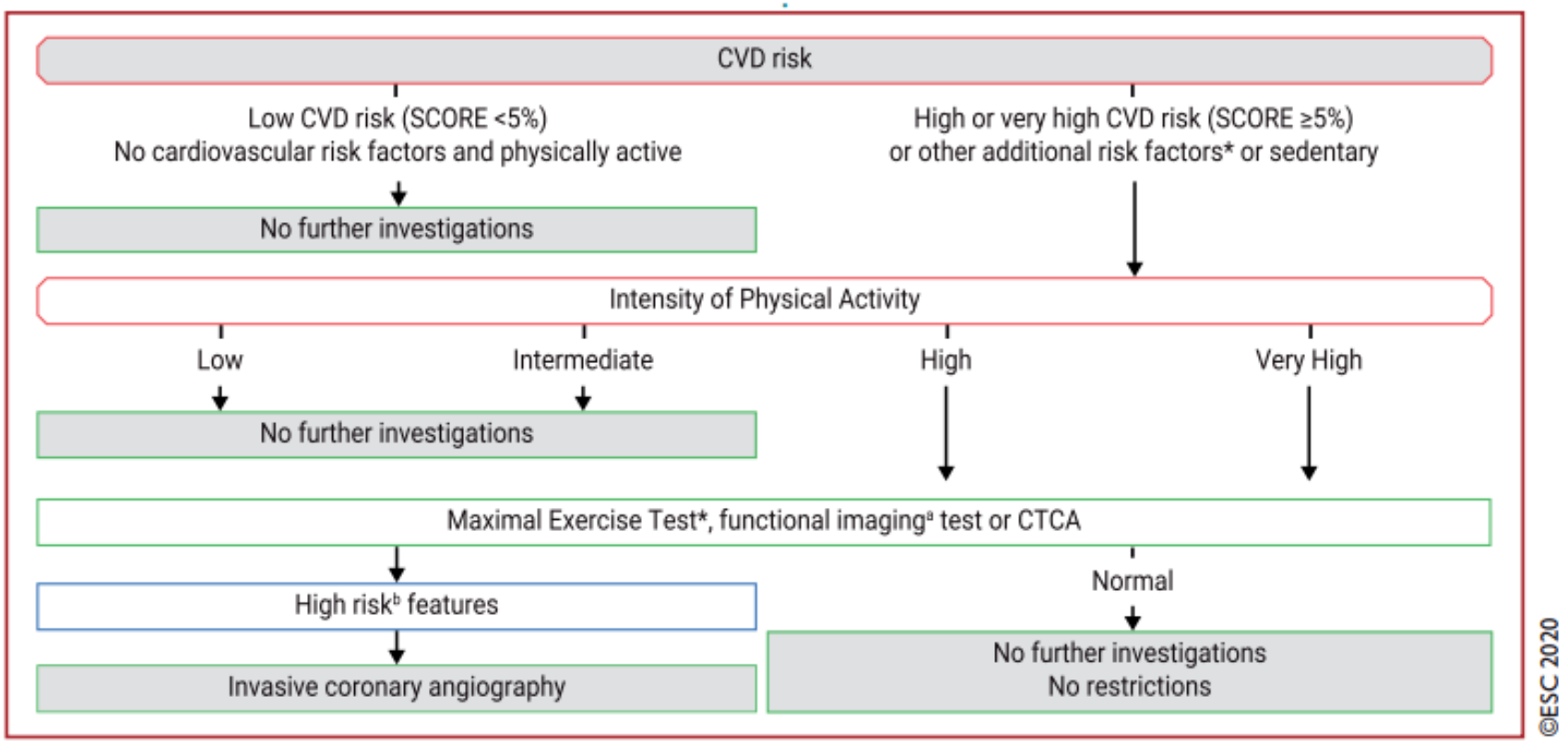
Belgische wielertoerist (60) sterft tijdens beklimming Mont

Wielertoerist sterft op fiets na hartaderbreuk

Franklin BA. Circulation. 2014.

Sporters > 35j

- Risicofactoren en risicoprofiel!!

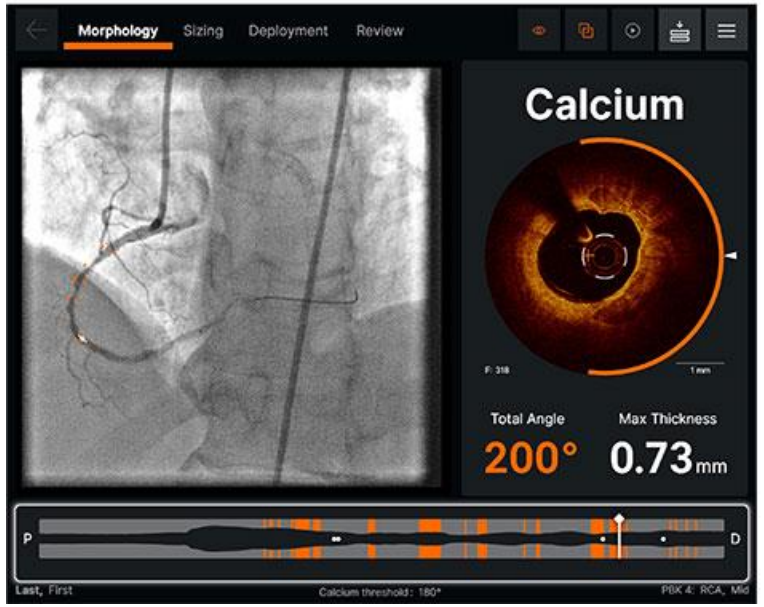


Wat is nieuw in het cathlab in het JYZ?

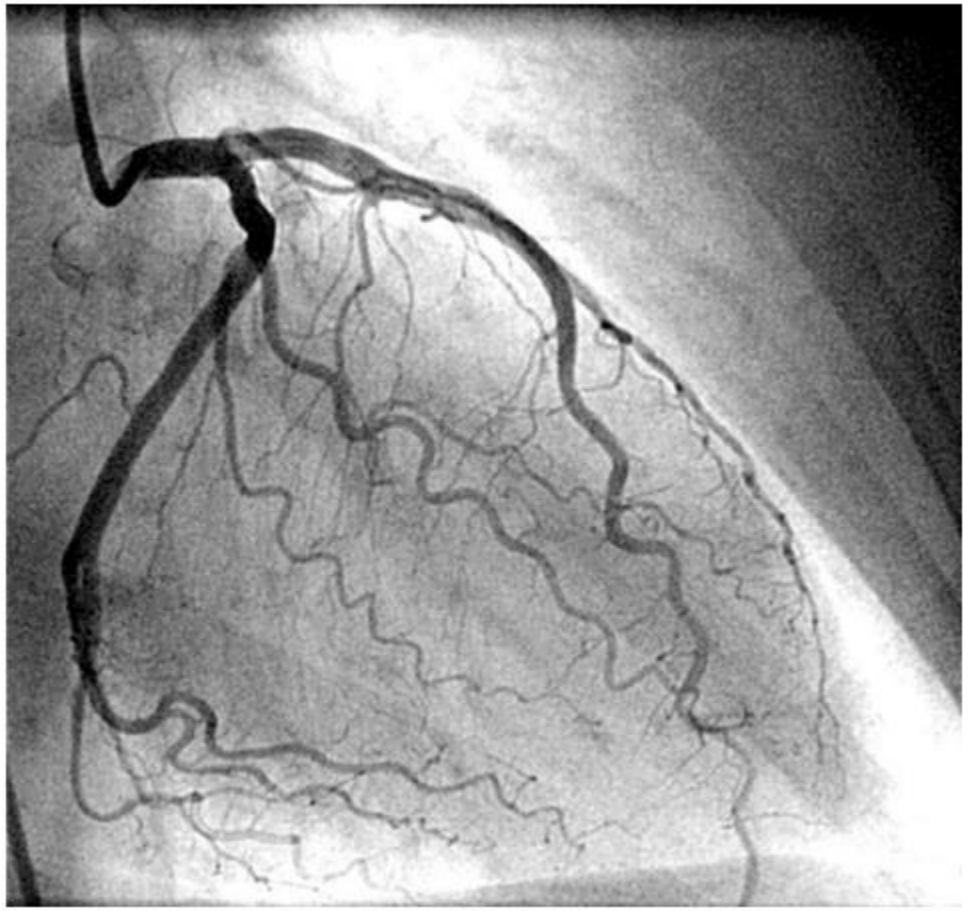
- OCT Ultreon systeem
- Microcirculatie Coroventis systeem

Wat is nieuw in het cathlab in het JYZ?

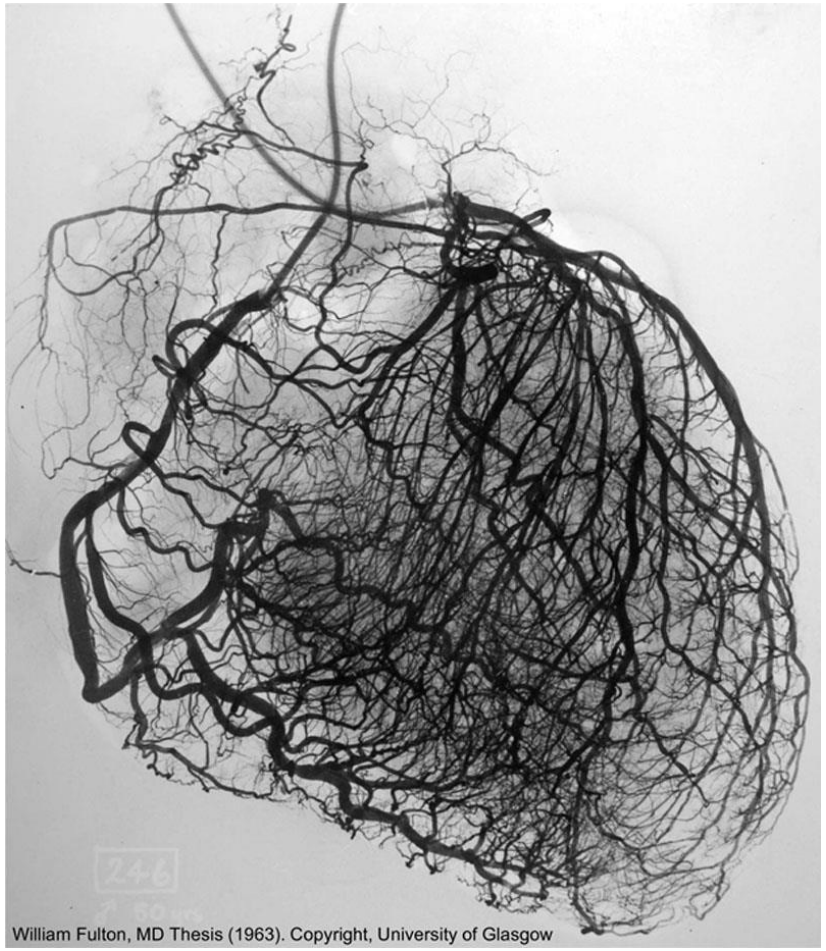
- OCT



Coronaire microcirculatie



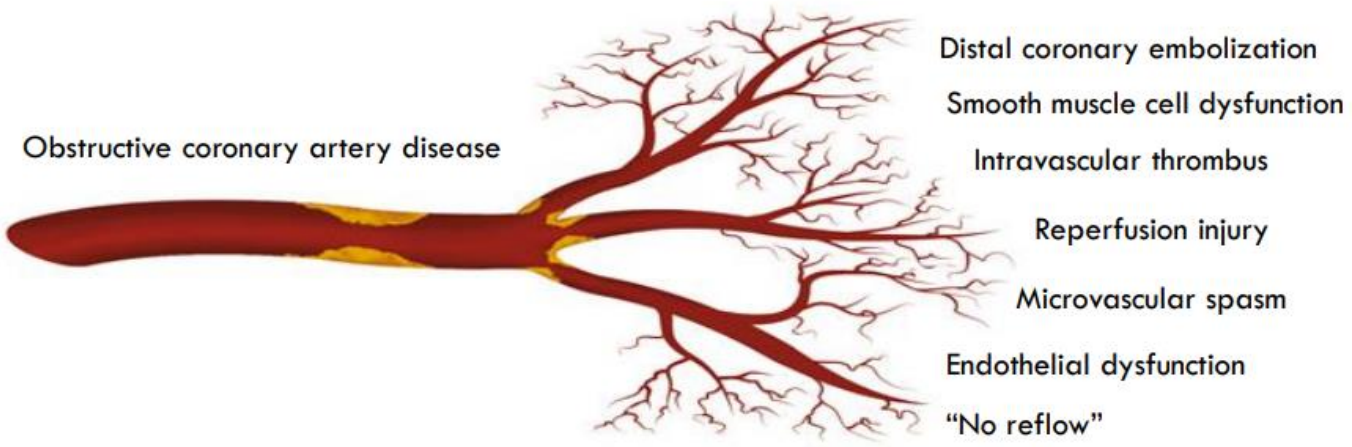
vs



< 1% op coronaire circulatie zichtbaar op klassieke angiografie

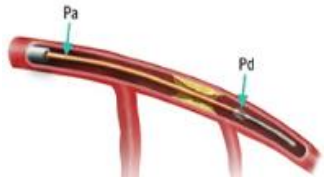
Belang van coronaire microcirculatie?

- 20 tot 30% van de patiënten met angor heeft geen obstructief coronair lijden op angiografie (1)
- Tot 30% van de patiënten blijft angor houden na een succesvolle PCI (2)
- OMT na een volledige diagnose van de microcirculatie verbetert de outcome (3)



1. Panza JA. Myocardial ischemia and the pains of the heart. N Engl J Med. 2002;346:1934–1935. doi: 10.1056/NEJMp020047.
2. Arnold SV, Jang JS, Tang F, Graham G, Cohen DJ, Spertus JA. Prediction of residual angina after percutaneous coronary intervention. Eur Heart J Qual Care Clin Outcomes. 2015;1:23–30.
3. Ford et al, Stratified Medical Therapy Using Invasive Coronary Function Testing In Angina: CorMicA Trial, JACC (2018), doi: https://doi.org/10.1016/j.jacc.2018.09.006.

Coronaire microcirculatie



IMR = Resistance (au)

Micro-circulation only

FFR/RFR

Epicardial disease only

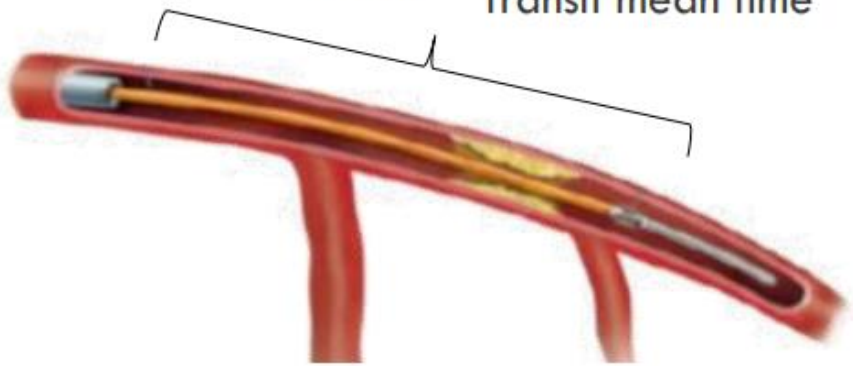
Absolute Flow & Resistance (I

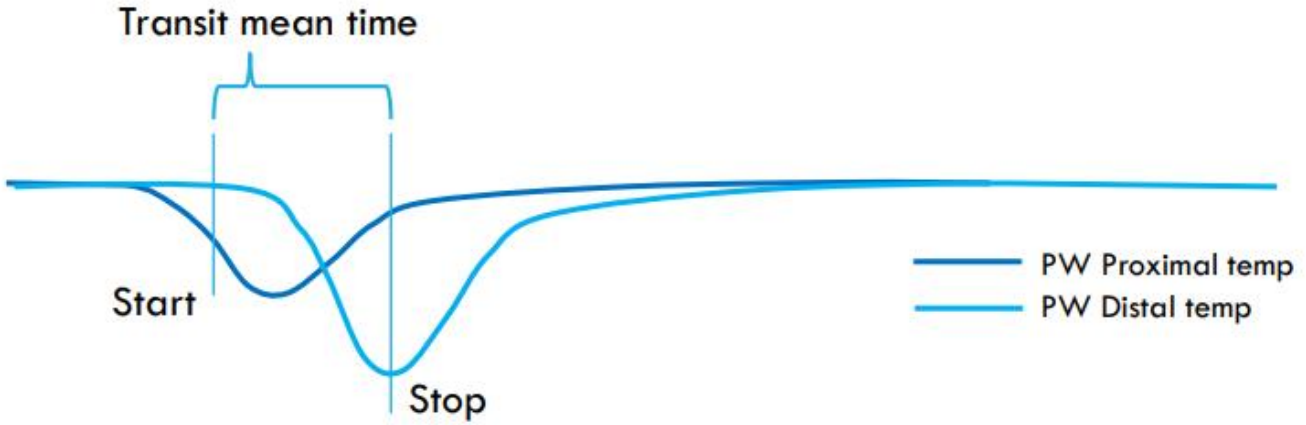
CFR = Flow at rest vs Flow at Hyperemia (au)

Affected by epicardial AND micro-circulatory disease

Coronaire microcirculatie

$$\text{Flow} \approx \frac{1}{\text{Transit mean time}}$$



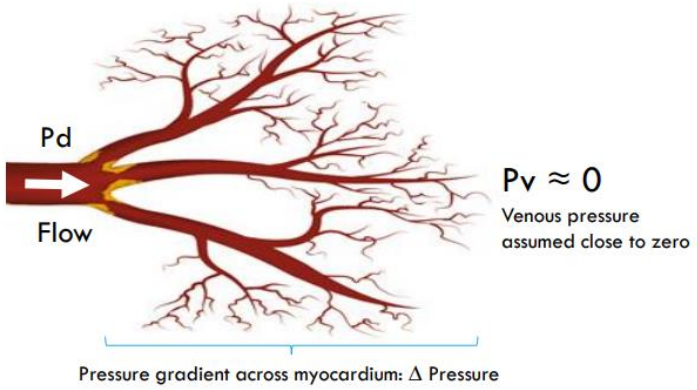


$$\text{IMR} = \frac{\Delta \text{ Pressure}}{\text{Flow}} = \frac{\text{Pd - Pv}}{1/\text{Tmn}} \approx \text{Pd x Tmn}$$

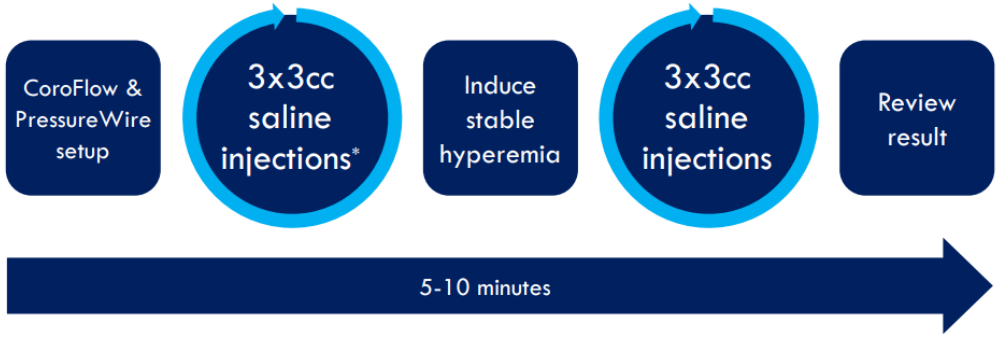
(Index of microcirculatory resistance) (at max hyperemia)

$$\text{CFR} = \frac{\text{Hyperemic flow}}{\text{Resting Flow}} = \frac{1/\text{Tmn\_Hyp}}{1/\text{Tmn\_Rest}} = \frac{\text{Tmn\_Rest}}{\text{Tmn\_Hyp}}$$

(Coronary Flow Reserve)

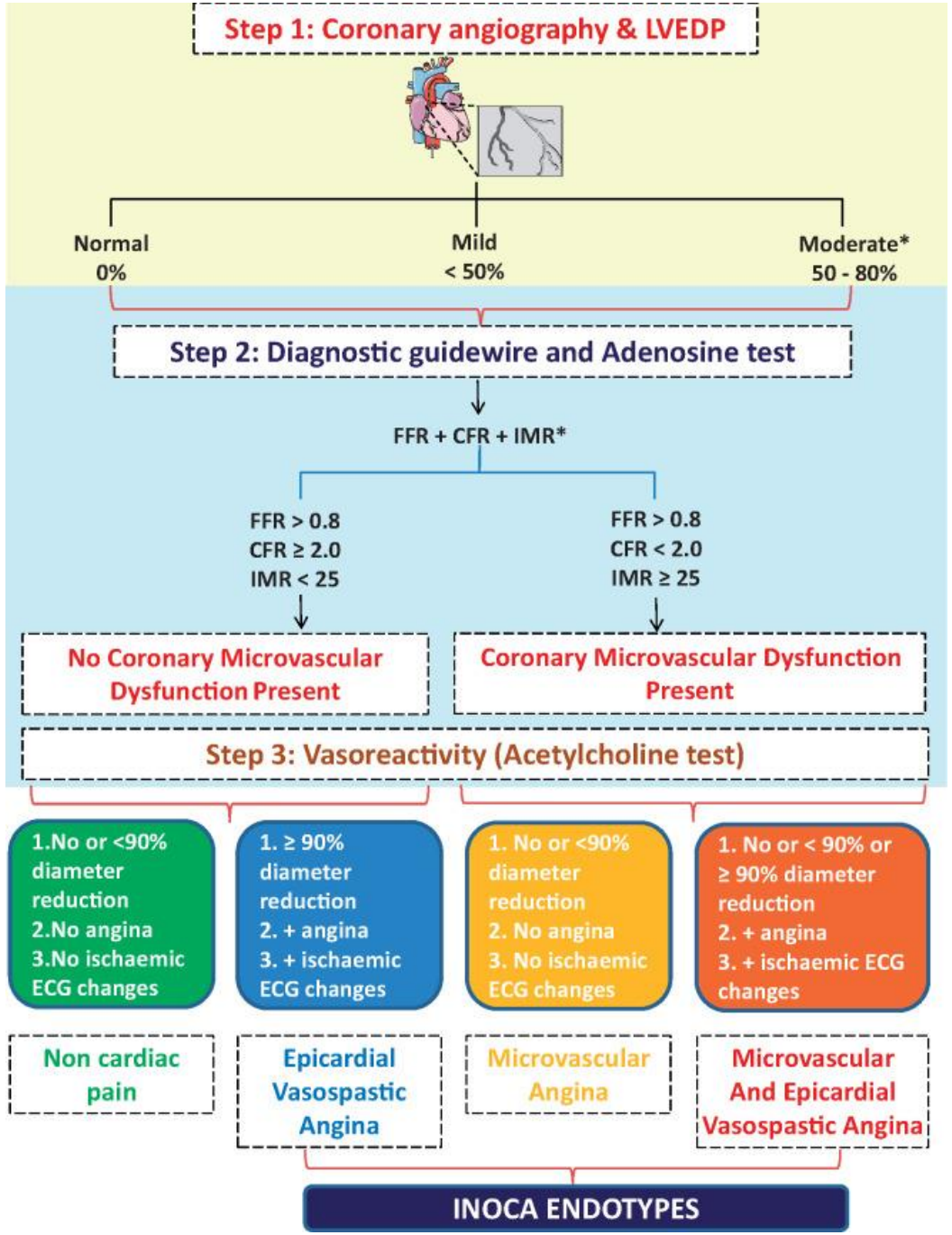


Evaluatie coronaire microcirculatie



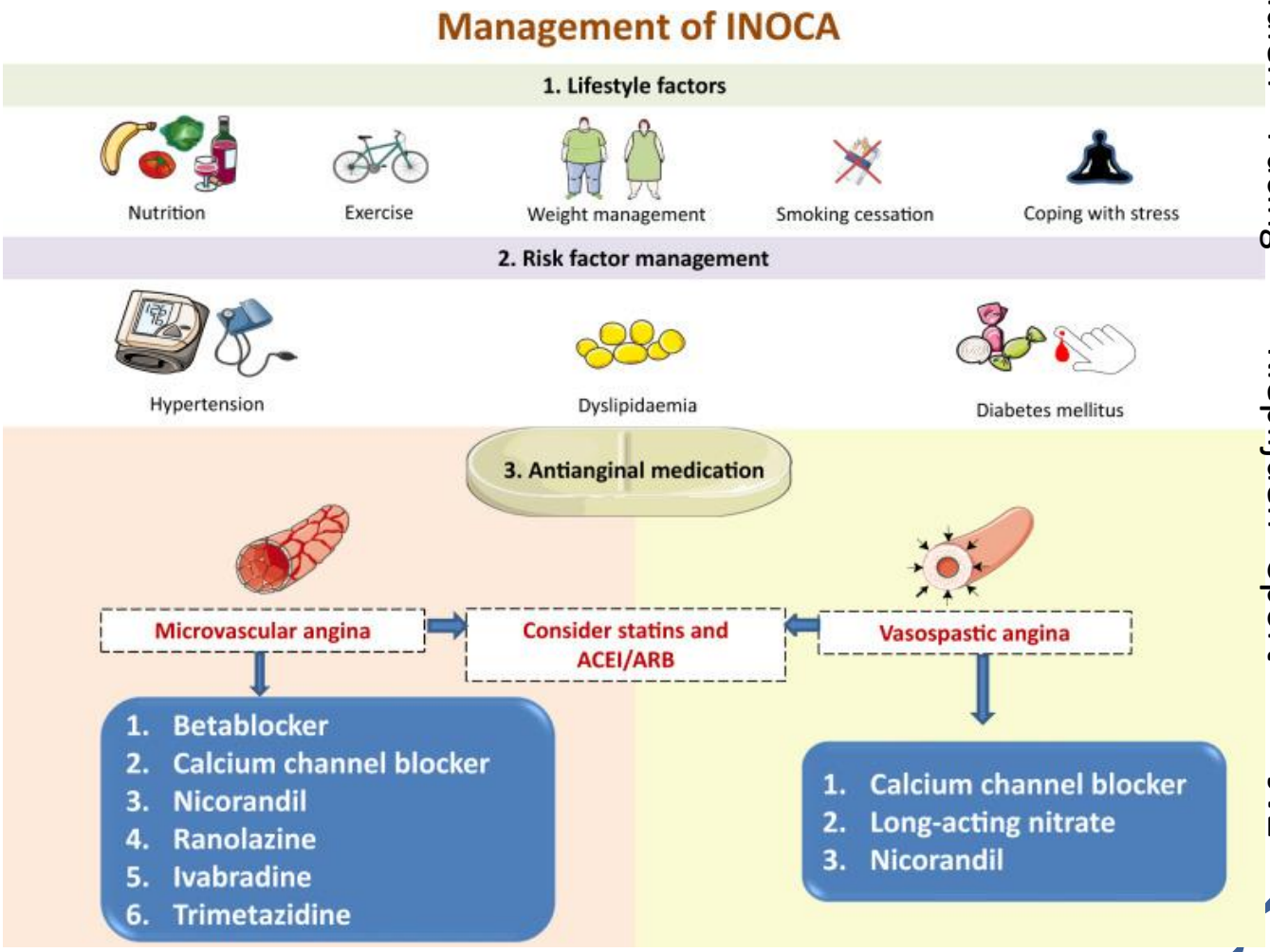
IMR ≤ 25

CFR > 2



Eur Heart J. 2020 Oct 1; 41(37): 3504–3520.
Published online 2020 Jul 6. doi: 10.1093/eurheartj/ehaa503
PMCID: PMC7577516
PMID: 32626906

An EAPCI Expert Consensus Document on Ischaemia with Non-Obstructive Coronary Arteries in Collaboration with European Society of Cardiology Working Group on Coronary Pathophysiology & Microcirculation Endorsed by Coronary Vasomotor Disorders International Study Group



Dank voor uw aandacht!!

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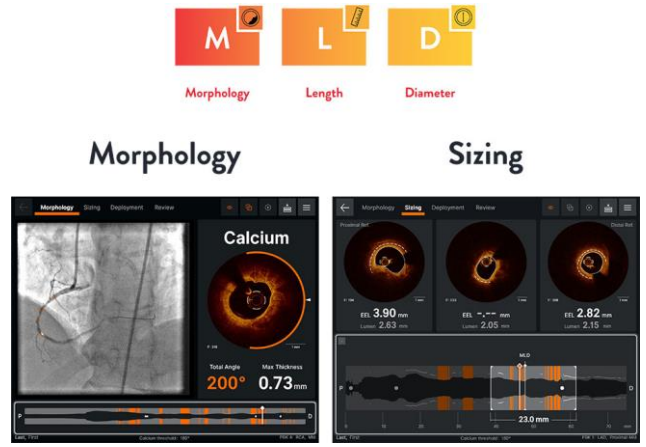
2021 Cardiac Pacing & CRT
2021 Heart Failure

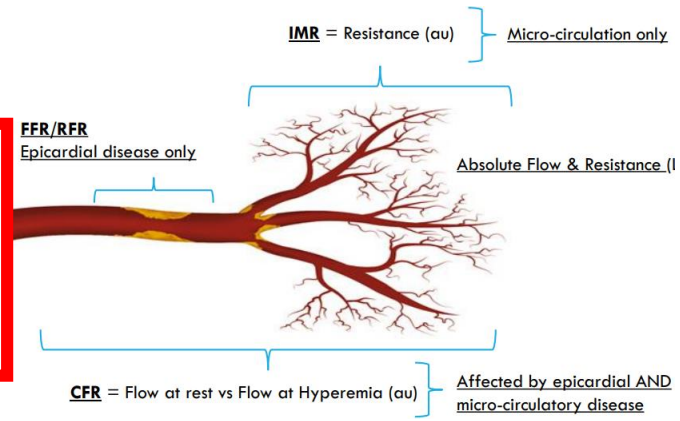
2020

2020 Sports Cardiology and Exercise in Patients with CVD
2020 Atrial Fibrillation
2020 Adult C
2020 Acute C Persist

2019

Vragen?



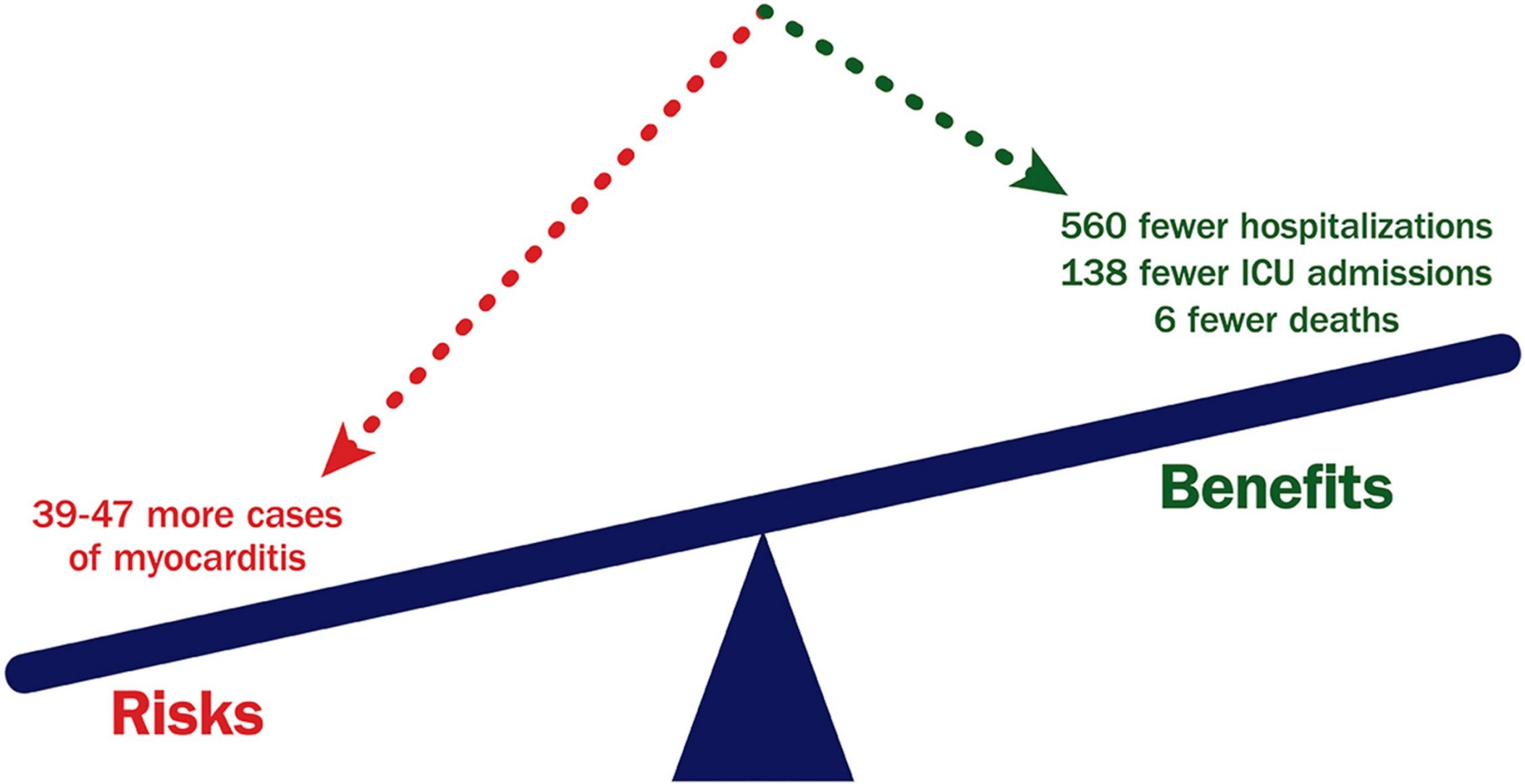


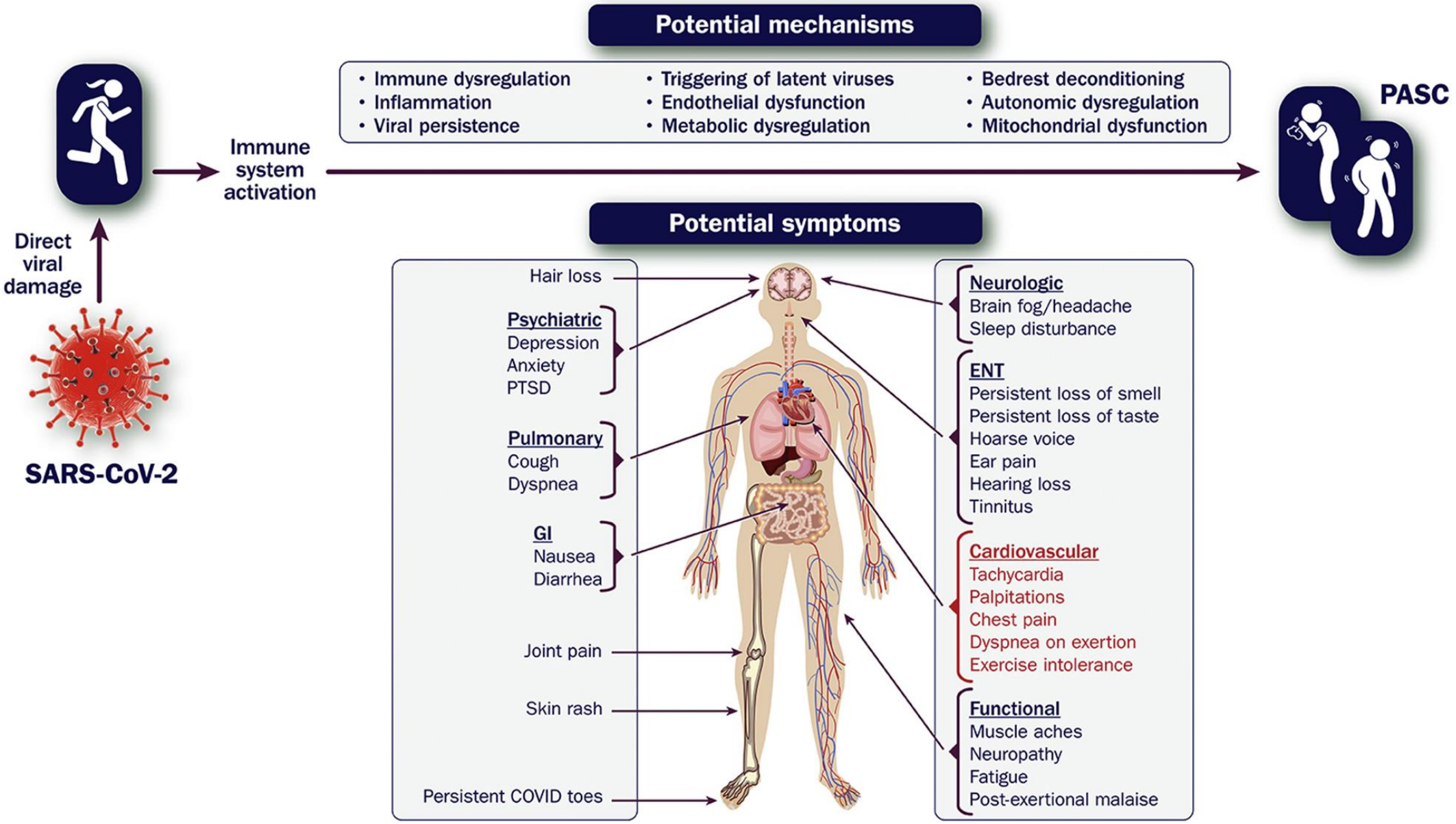
Slides op www.hartcentrumieper.be

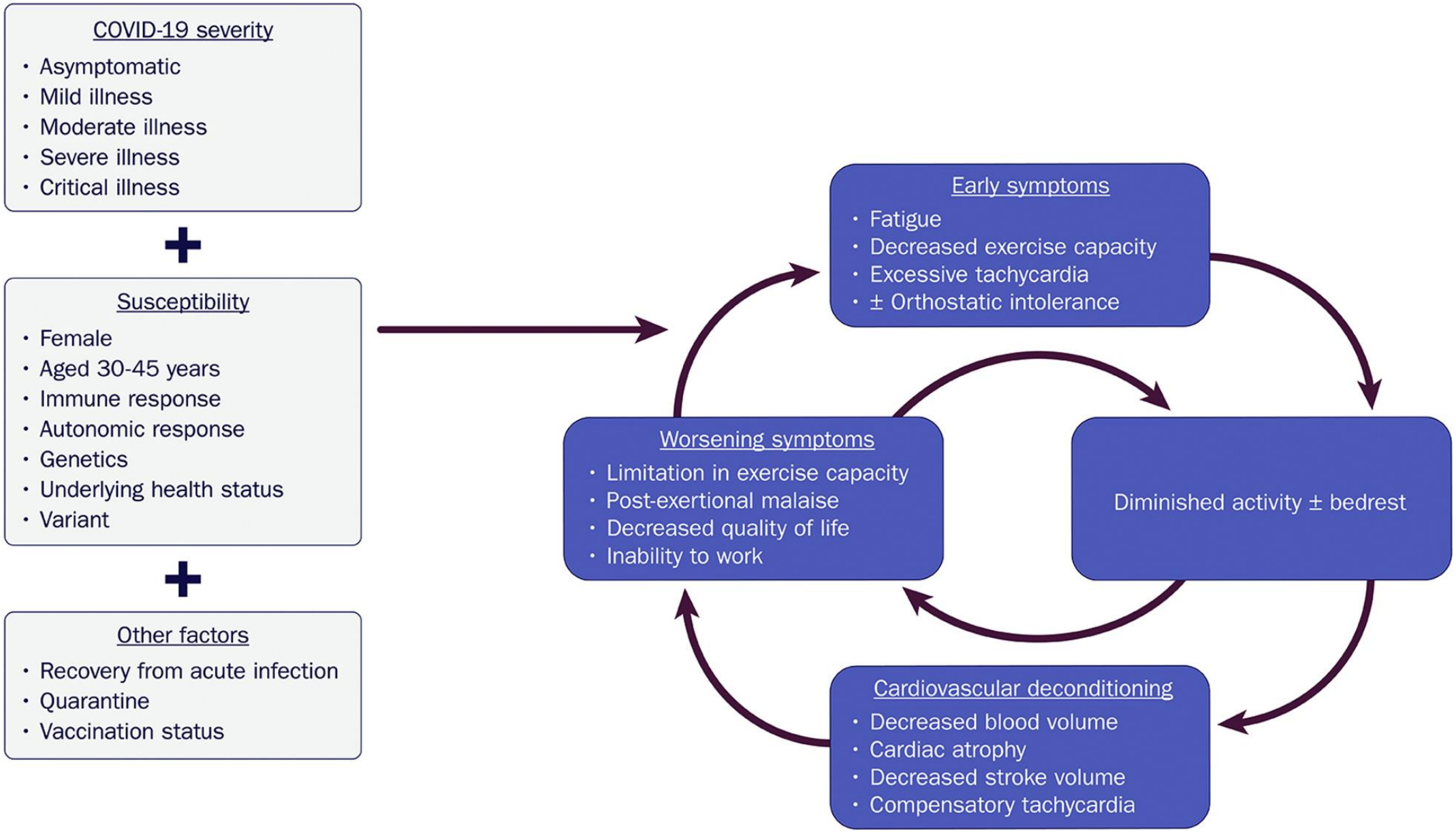
1,000,000 male individuals 12-29 years of age

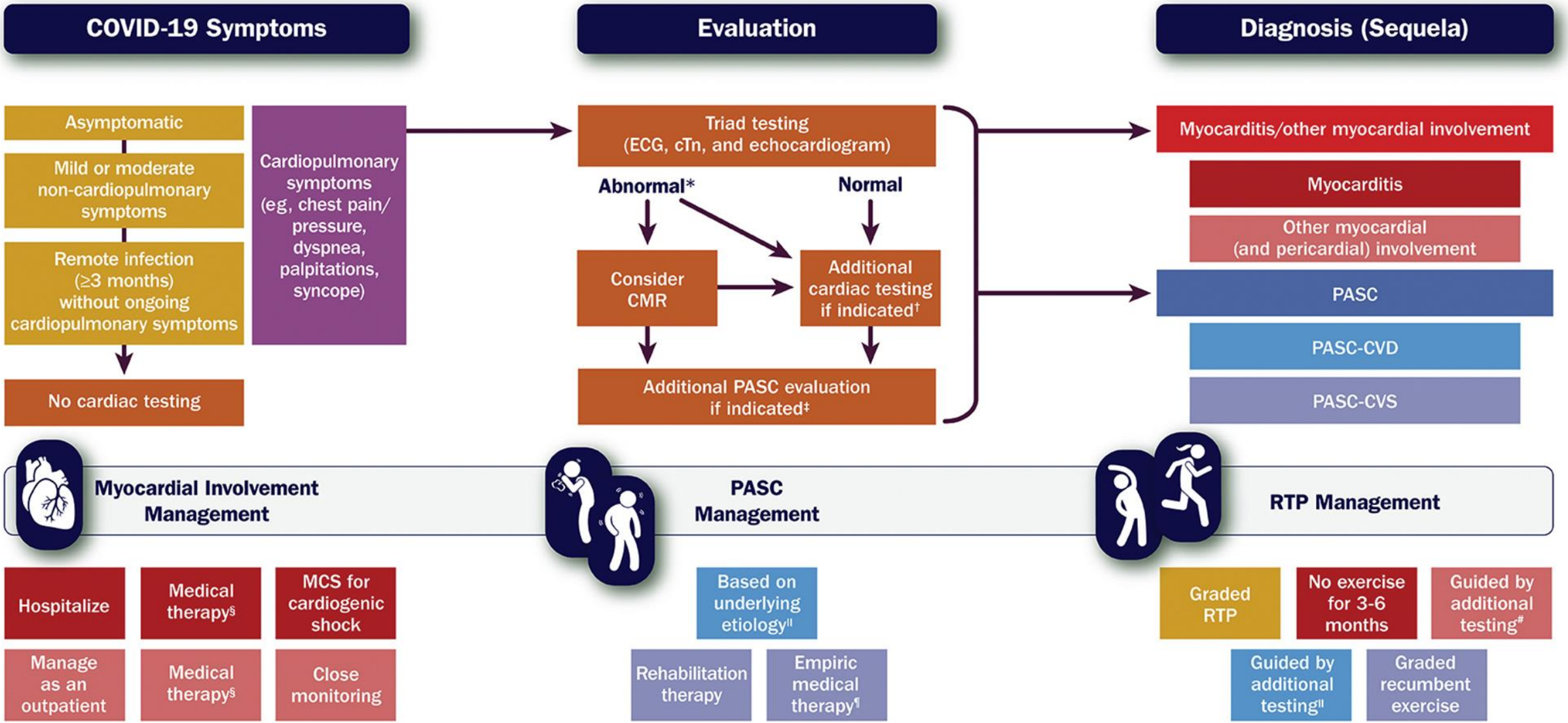
receiving a second dose of the COVID-19 mRNA vaccine

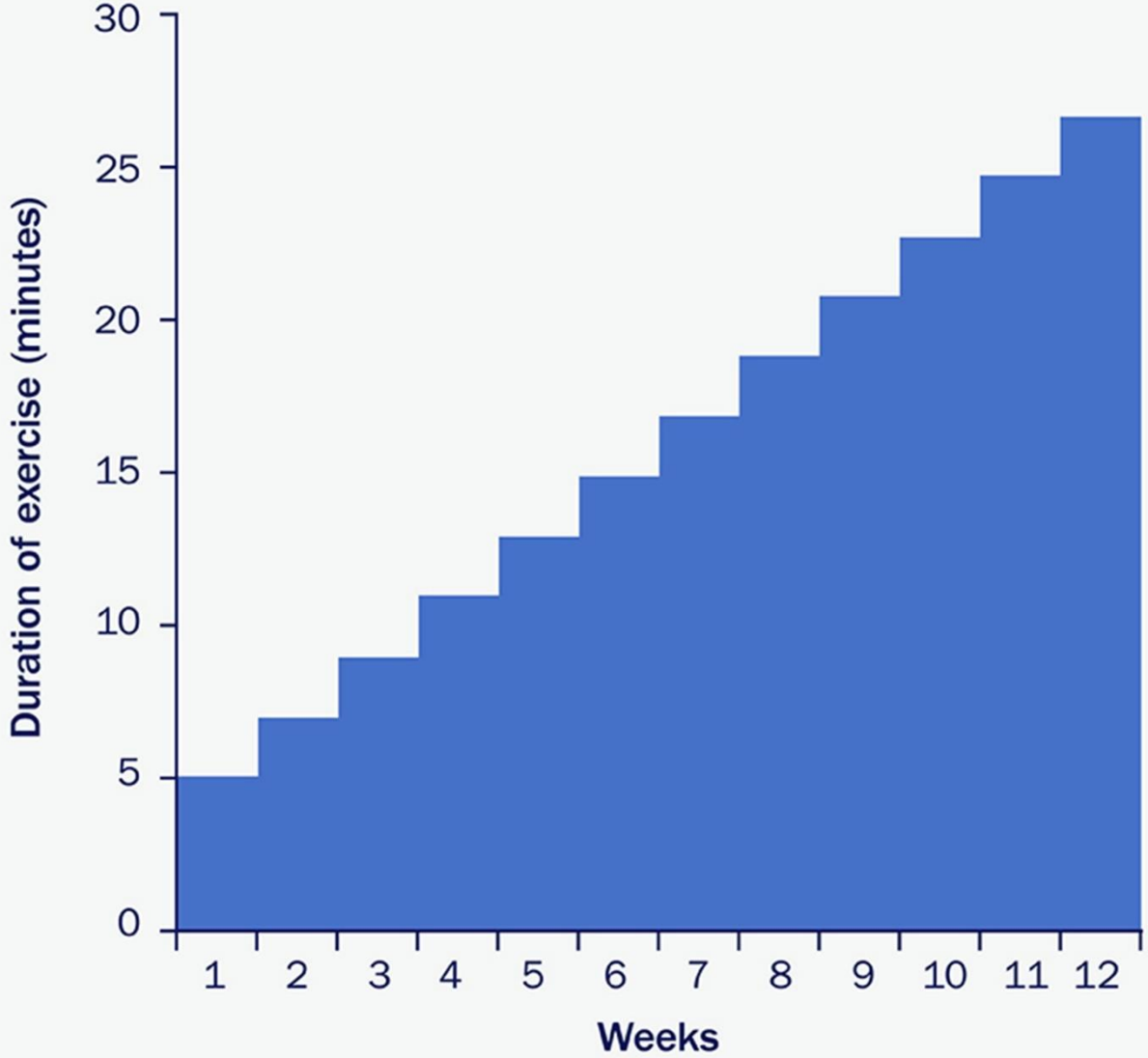
(estimates as of the week of May 22, 2021*)




Potential mechanisms
• Immune dysregulation
• Inflammation
• Viral persistence
• Triggering of latent viruses
• Endothelial dysfunction
• Metabolic dysregulation
• Bedrest deconditioning
• Autonomic dysregulation
• Mitochondrial dysfunction
Immune system activation
PASC
Direct viral damage
SARS-CoV-2
Potential symptoms
Hair loss
Psychiatric
Depression
Anxiety
PTSD
Pulmonary
Cough
Dyspnea
GI
Nausea
Diarrhea
Joint pain
Skin rash
Persistent COVID toes
Neurologic
Brain fog/headache
Sleep disturbance
ENT
Persistent loss of smell
Persistent loss of taste
Hoarse voice
Ear pain
Hearing loss
Tinnitus
Cardiovascular
Tachycardia
Palpitations
Chest pain
Dyspnea on exertion
Exercise intolerance
Functional
Muscle aches
Neuropathy
Fatigue
Post-exertional malaise


COVID-19 severity
• Asymptomatic
• Mild illness
• Moderate illness
• Severe illness
• Critical illness
+
Susceptibility
• Female
• Aged 30-45 years
• Immune response
• Autonomic response
• Genetics
• Underlying health status
• Variant
+
Other factors
• Recovery from acute infection
• Quarantine
• Vaccination status
Early symptoms
• Fatigue
• Decreased exercise capacity
• Excessive tachycardia
• ± Orthostatic intolerance
Diminished activity ± bedrest
Cardiovascular deconditioning
• Decreased blood volume
• Cardiac atrophy
• Decreased stroke volume
• Compensatory tachycardia
Worsening symptoms
• Limitation in exercise capacity
• Post-exertional malaise
• Decreased quality of life
• Inability to work


COVID-19 Symptoms
Evaluation
Diagnosis (Sequela)
Asymptomatic
Mild or moderate non-cardiopulmonary symptoms
Remote infection (≥3 months) without ongoing cardiopulmonary symptoms
No cardiac testing
Cardiopulmonary symptoms (eg, chest pain/ pressure, dyspnea, palpitations, syncope)
Triad testing (ECG, cTn, and echocardiogram)
Abnormal*
Normal
Consider CMR
Additional cardiac testing if indicated†
Additional PASC evaluation if indicated‡
Myocarditis/other myocardial involvement
Myocarditis
Other myocardial (and pericardial) involvement
PASC
PASC-CVD
PASC-CVS
Myocardial Involvement Management
Hospitalize
Medical therapy§
MCS for cardiogenic shock
Manage as an outpatient
Medical therapy§
Close monitoring
PASC Management
Based on underlying etiology‖
Rehabilitation therapy
Empiric medical therapy¶
RTP Management
Graded RTP
No exercise for 3-6 months
Guided by additional testing#
Guided by additional testing‖
Graded recumbent exercise



Start with daily recumbent/semi-recumbent exercise for only ~5-10 minutes per day at a level that allows one to speak in full sentences.

Gradually increase exercise duration thereafter (eg, 2 additional minutes of exercise per day each week)*.

Recumbent/Semi-recumbent Exercise

Cycling

Rowing