Bijlage I Overzicht van alle aanbevelingen uit de ESC-richtlijn Cardiac pacing (level of evidence A & B)

Recommendation			
Non-invasive evaluation (chapter 4.3)	**Class**	**Level**	**Status**
Once carotid stenosis is ruled out, CSM is recommended in patients with syncope of unknown origin compatible with a reflex mechanism or with symptoms related to pressure/manipulation of the carotid sinus area.	I	B	Overgenomen
Exercise testing (chapter 4.3)	**Class**	**Level**	**Status**
In patients with suspected chronotropic incompetence, exercise testing should be considered to confirm the diagnosis.	IIa	B	Overgenomen
Tilt testing (Chapter 4.3.7)	**Class**	**Level**	**Status**
Tilt testing should be considered in patients with suspected recurrent reflex syncope.	IIa	B	Overgenomen
Implantable loop recorders (Chapter 4.4)	**Class**	**Level**	**Status**
In patients with infrequent (less than once a month) unexplained syncope or other symptoms suspected to be caused by bradycardia, in whom a comprehensive evaluation did not demonstrate a cause, long-term ambulatory monitoring with an ILR is recommended.	I	A	Overgenomen
Electrophysiology study (Chapter 4.5)	**Class**	**Level**	**Status**
In patients with syncope and bifascicular block, EPS should be considered when syncope remains unexplained after non-invasive evaluation or when an immediate decision about pacing is needed due to severity, unless empirical pacemaker implantation is preferred (especially in elderly and frail patients).	IIa	B	Overgenomen
In patients with syncope and sinus bradycardia, EPS may be considered when non-invasive tests have failed to show a correlation between syncope and bradycardia.	IIb	B	Overgenomen
Pacing in sinus node dysfunction (Chapter 5.1)	**Class**	**Level**	**Status**
In patients with SND and a DDD pacemaker, minimization of unnecessary ventricular pacing through programming is recommended.	I	A	Overgenomen
Pacing is indicated in SND when symptoms can clearly be attributed to bradyarrhythmias.	I	B	Overgenomen
Pacing is indicated in symptomatic patients with the bradycardia-tachycardia form of SND in order to correct bradyarrhythmias and enable pharmacological treatment, unless ablation of the tachyarrhythmia is preferred.	I	B	Overgenomen
In patients who present chronotropic incompetence and have clear symptoms during exercise, DDD with rate-responsive pacing should be considered.	IIa	B	Overgenomen
In patients with the bradycardia-tachycardia variant of SND, programming of atrial ATP may be considered	IIb	B	Overgenomen
Pacing for atrioventricular block (chapter 5.2)	**Class**	**Level**	**Status**
In patients with AVB, DDD should be preferred over single-chamber ventricular pacing to avoid pacemaker syndrome and to improve quality of life.	IIa	A	Overgenomen
Pacing in patients with bundle branch block (chapter 5.3)	**Class**	**Level**	**Status**
In patients with unexplained syncope and bifascicular block, a pacemaker is indicated in the presence of either a baseline HV of ≥70 ms, second- or third-degree intra- or infra-Hisian block during incremental atrial pacing, or an abnormal response to pharmacological challenge.	I	B	Overgenomen
Pacing may be considered in selected patients with unexplained syncope and bifascicular block without EPS (elderly, frail patients, high-risk and/or recurrent syncope).	IIb	B	Overgenomen
Pacing is not recommended for asymptomatic BBB or bifascicular block.	III	B	Overgenomen
Pacing for reflex syncope (chapter 5.4)	**Class**	**Level**	**Status**

Dual-chamber cardiac pacing is indicated to reduce recurrent syncope in patients aged >40 years, with severe, unpredictable, recurrent syncope who have: • spontaneous documented symptomatic asystolic pause(s) >3 s or asymptomatic pause(s) >6 s due to sinus arrest or AVB; or • cardioinhibitory carotid sinus syndrome; or • asystolic syncope during tilt testing	I	A	Overgenomen
Dual-chamber cardiac pacing may be considered to reduce syncope recurrences in patients with the clinical features of adenosine-sensitive syncope.	IIb	B	Overgenomen
Cardiac pacing is not indicated in the absence of a documented cardioinhibitory reflex.	III	B	Overgenomen
Pacing for suspected (undocumented) bradycardia (chapter 5.5)	**Class**	**Level**	**Status**
Pacing is not recommended in patients with unexplained falls in the absence of any other documented indication.	III	B	Overgenomen
Cardiac resynchronization therapy in patients in sinus rhythm (chapter 6.2)	**Class**	**Level**	**Status**
LBBB QRS morphology			
CRT is recommended for symptomatic patients with HF in SR with LVEF <_35%, QRS duration ≥150 ms, and LBBB QRS morphology despite OMT, in order to improve symptoms and reduce morbidity and mortality.	I	A	Overgenomen
CRT should be considered for symptomatic patients with HF in SR with LVEF ≤35%, QRS duration 130-149 ms, and LBBB QRS morphology despite OMT, in order to improve symptoms and reduce morbidity and mortality.	IIa	B	Overgenomen
Non-LBBB QRS morphology			
CRT should be considered for symptomatic patients with HF in SR with LVEF ≤35%, QRS duration ≥150 ms, and non-LBBB QRS morphology despite OMT, in order to improve symptoms and reduce morbidity.	IIa	B	Overgenomen
CRT may be considered for symptomatic patients with HF in SR with LVEF ≤35%, QRS duration 130-149 ms, and non-LBBB QRS morphology despite OMT, in order to improve symptoms and reduce morbidity.	IIb	B	Overgenomen
QRS duration			
CRT is not indicated in patients with HF and QRS duration <130 ms without an indication for RV pacing.	III	A	Overgenomen
Cardiac resynchronization therapy in patients with persistent or permanent atrial fibrillation (chapter 6.3)	**Class**	**Level**	**Status**
1) In patients with HF with permanent AF who are candidates for CRT:			
AVJ ablation should be added in the case of incomplete biventricular pacing (<90-95%) due to conducted AF	IIa	B	Overgenomen
2) In patients with symptomatic AF and an uncontrolled heart rate who are candidates for AVJ ablation (irrespective of QRS duration):			
CRT is recommended in patients with HFrEF.	I	B	Overgenomen
RV pacing should be considered in patients with HFpEF.	IIa	B	Overgenomen
Upgrade from right ventricular pacing to cardiac resynchronization therapy (chapter 6.4)	**Class**	**Level**	**Status**
Patients who have received a conventional pacemaker or an ICD and who subsequently develop symptomatic HF with LVEF ≤35% despite OMT, and who have a significant proportion of RV pacing, should be considered for upgrade to CRT.	IIa	B	Overgenomen (de aanbeveling is bevestigd door resultaten uit Budapest CRT-trial)
Patients with heart failure and atrioventricular block (chapter 6.5)	**Class**	**Level**	**Status**
CRT rather than RV pacing is recommended for patients with HFrEF (<40%) regardless of NYHA class who have an indication for ventricular pacing and high-degree AVB in order to reduce morbidity. This includes patients with AF.	I	A	Overgenomen
Adding a defibrillator with cardiac resynchronization therapy (chapter 6.6)	**Class**	**Level**	**Status**

In patients who are candidates for an ICD and who have CRT indication, implantation of a CRT-D is recommended.	I	A	Overgenomen
In patients who are candidates for CRT, implantation of a CRT-D should be considered after individual risk assessment and using shared decision-making. Hierbij dient de Indicatierichtlijn primaire preventie ICD plaatsing bij NICM te worden gevolgd.	IIa	B	Overgenomen; Een verwijzing naar de Nederlandse indicatierichtlijn is toegevoegd.
His bundle pacing (chapter 7.3)	**Class**	**Level**	**Status**
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.	IIa	B	Overgenomen
Using leadless pacing (leadless pacemaker) (chapter 7.4)	**Class**	**Level**	**Status**
Leadless pacemakers should be considered as an alternative to transvenous pacemakers when no upper extremity venous access exists or when risk of device pocket infection is particularly high, such as previous infection and patients on haemodialysis. De NHRA-richtlijn uit 2016 (Richtlijn Intracardiale pacemaker) bevat voorwaarden voor implanteurs en implantatiecentra, zoals een minimaal aantal procedures en de aanwezigheid van cardiothoracale chirurgische back-up op locatie. Deze voorwaarden moeten in acht worden genomen bij het opvolgen van deze aanbevelingen.	IIa	B	Overgenomen; Een verwijzing naar de Nederlandse richtlijn is toegevoegd.
Cardiac pacing after acute myocardial infarction (chapter 8.1)	**Class**	**Level**	**Status**
Pacing is not recommended if AVB resolves after revascularization or spontaneously.	III	B	Overgenomen
Cardiac pacing after transcatheter aortic valve implantation (chapter 8.3)	**Class**	**Level**	**Status**
Permanent pacing is recommended in patients with complete or high-degree AVB that persists for 24 - 48 h after TAVI.	I	B	Overgenomen
Early permanent pacing should be considered in patients with pre-existing RBBB who develop any further conduction disturbance during or after TAVI.	IIa	B	Overgenomen
Pacing in hypertrophic obstructive cardiomyopathy (chapter 8.5)	**Class**	**Level**	**Status**
AV sequential pacing with short AV delay may be considered in patients in SR who have other pacing or ICD indications if drug-refractory symptoms or baseline or provocable LV outflow tract gradients ≥50 mmHg are present.	IIb	B	Overgenomen
AV sequential pacing with short AV delay may be considered in selected adults with drug-refractory symptoms, ≥50 mmHg baseline or provocable LV outflow tract gradient, in SR, who are unsuitable for or unwilling to consider other invasive septal reduction therapies.	IIb	B	Overgenomen
Device implantations and peri-operative management (chapter 9)	**Class**	**Level**	**Status**
Administration of pre-operative antibiotic prophylaxis within 1 h of skin incision is recommended to reduce risk of CIED infection.	I	A	Overgenomen
Chlorhexidine-alcohol instead of povidoneiodine-alcohol should be considered for skin antisepsis.	IIa	B	Overgenomen
For venous access, the cephalic or axillary vein should be considered as first choice.	IIa	B	Overgenomen
In patients undergoing a reintervention CIED procedure, the use of an antibiotic-eluting envelope may be considered.	IIb	B	Overgenomen
Heparin bridging of anticoagulated patients is not recommended.	III	A	Overgenomen
Permanent pacemaker implantation is not recommended in patients with fever. Pacemaker implantation should be delayed until the patient has been afebrile for at least 24 h.	III	B	Overgenomen
Performing magnetic resonance imaging in pacemaker patients (chapter 11.1)	**Class**	**Level**	**Status**

Verwijzen naar de richtlijnmodule MRI bij een elektronisch cardiaal implantaat			Komt te vervallen, verwijzen naar een Nederlandse richtlijn
Pacemaker and cardiac resynchronization therapy-pacemaker follow-up (chapter 11.7)	**Class**	**Level**	**Status**
Remote device management is recommended to reduce the number of in-office follow-ups in patients with pacemakers who have difficulties to attend in-office visits (e.g. due to reduced mobility or other commitments, or according to patient preference).	I	A	Overgenomen
In-office routine follow-up of single- and dualchamber pacemakers may be spaced by up to 24 months in patients on remote device management.	IIa	A	Overgenomen
Remote device management of pacemakers should be considered in order to provide earlier detection of clinical problems (e.g. arrhythmias) or technical issues (e.g. lead failure or battery depletion).	IIa	B	Overgenomen