Contents list available at www.heartscience.ub.ac.id

Heart Science Journal

Journal Homepage : www.heartscience.ub.ac.id

Editorial

Cardiac Implantable Electronic Device (CIEDs) for Heart Failure in Indonesia: We Have to be More Selective

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ARTICLE INFO

Keywords:
Cardiac Implantable Electronic Device;
Heart Failure

ABSTRACT

Cardiac Implantable Electronic Device (CIEDs) had been recommended as an integral part of heart failure management. Despite clear benefits on CIEDs itself, the rate of therapy penetration in Indonesia is still very low. Many contributing factors had been identified, they are lack of physician awareness, lack of referral, and mismatch between national insurance reimbursement and the cost of therapy. We focussed on talking about selective patient selection as one of the most feasible solutions to this problem.

According to the European Society Cardiology Guidelines on Acute and Chronic Heart Failure in 2016, so far two CIEDs had been widely available in Indonesia. They are Cardiac Resynchronization Therapy (CRT) and Implantable Cardioverter Defibrillator (ICD).[1] CRT works to synchronize the right and left ventricles movement, especially in the patients with the dilated left ventricle, low ejection fraction and showed the Left Bundle Branch Block (LBBB) pattern in their surface ECG.[2] While ICD is clinically proven to reduce the risk of sudden cardiac death in heart failure patients with low ejection fraction.[3]

Despite the clear evidence of its benefit and the huge number of our net indicated prevalence, the annual treatment rate of those devices are still very low in Indonesia. Data from Asia Pacific Heart Rhythm Society (APHRS) White Book revealed that there were only 62 CRTs and 49 ICDs were implanted in all across Indonesia in 2018. Those numbers are very low compared to another growing country such as India, where in the same year they implanted almost 3.000 CRTs and 4.000 ICDs. Many factors had been identified to contribute to those conditions, lack of centers, lack of reimbursement, limited financial resources, lack of referral, lack of trained personnel, low awareness of guidelines and lack of operators. The magnitude of each problem is unknown, but according to APHRS White Book survey reimbursement and limited financial resources are the greatest obstacle for the physicians.

The prospective funding of our national insurance grouped all the CIEDs implantation procedure, whether it was single chamber pacemaker, dual-chamber pacemaker, ICD, and CRT into one group of procedures with the same amount of reimbursement. In the case of ICD and CRT-P implantation, the reimbursement is far below the device unit price. Therefore, many cardiologists and cardiac electrophysiologists in Indonesia had to cope with this situation. Patient selection is a must to prioritize the patients who will get the most benefit from the treatment.

Table 1. Total Number of CRT and ICD implanted in Indonesia

	2015	2016	2017	2018
Total CRT Implanted / year	67	81	63	62
Total ICD Implanted / year	24	38	45	49

Note, CRT= Cardiac Resynchronization Therapy ; ICD= Implantable Cardioverter Defibrillator

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https://doi.org/10.21776/ub.hsj.2020.001.02.1
Received 9 June 2020; Received in revised form 12 June 2020; Accepted 24 June 2020
Available online 18 July 2020

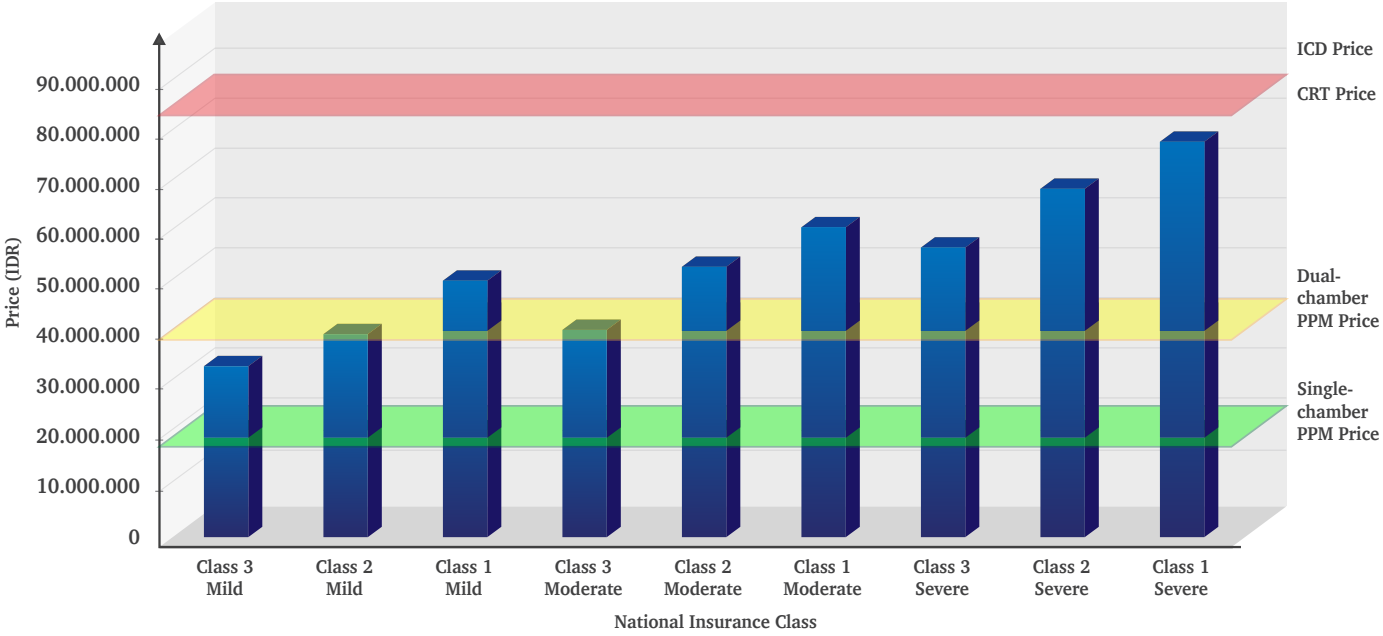

Figure 1. National Insurance Reimbursement compared to CIEDs price

In the case of CRT, we used to prioritize the patient who is predicted to be a responder to therapy. CRT responder described as an improvement in clinical and echocardiography parameters. A decrease in LV end Systolic Volume (LVESV) ≥ 15 % and Increase in LV Ejection Fraction (LVEF) > 5 %.[4] According to the guidelines, class 1 recommendation for CRT is heart failure patients with ejection fraction less than 35%, LBBB ECG pattern with QRS duration of more than 120 msec.[5] Other data told that there is a group of patients that were predicted to be more responsive to the therapy compared to another. Female compared to a male patient, non-ischemic cardiomyopathy compared to ischemic ones and Wider QRS compared to narrower QRS duration.[6]

While in the case of ICD, the physician also performed a careful and very selective patient selection. For example, in Brugada syndrome, primary prevention of sudden cardiac death (SCD) with ICD is only performed to those with high risk. According to the only Indonesian National Registry, SCD is more likely in a patient with type 1 Brugada pattern and history of syncope. Additional electrophysiology studies to assess the Right Ventricle Effective Refractory Periods (RV ERP) can be performed to get a better prediction.[7] Despite primary prevention, the physician seems to be more prioritizing ICD as a secondary prevention treatment. From all of the procedures in the last 4 years, 75% of the procedures are secondary prevention.[8]

Conflict of interest

There is no conflict of interest.

References

1. Ponikowski P, Voors AA, Anker SD, et al. 2016 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failureThe Task Force for the diagnosis and treatment of acute and chronic heart failure of the European Society of Cardiology (ESC)Developed with the special contribution of the Heart Failure Association (HFA) of the ESC. Eur Heart J. 2016 Jul 14;37(27):2129–200.

2. Jaffe LM, Morin DP. Cardiac Resynchronization Therapy: History, Present Status, and Future Directions. Ochsner J 2014;14(4):596 LP – 607.

3. Gama F, Ferreira J, Carmo J, et al. Implantable Cardioverter–Defibrillators in Trials of Drug Therapy for Heart Failure: A Systematic Review and Meta-Analysis. J Am Heart Assoc. 2020 Apr 21;9(8):e015177.

4. Park MY, Altman RK, Orencole M, et al. Characteristics of Responders to Cardiac Resynchronization Therapy: The Impact of Echocardiographic Left Ventricular Volume. Clin Cardiol. 2012 Aug 9;35(12):779–80.

5. Brignole M, Auricchio A, Baron-Esquivias G, et al. 2013 ESC Guidelines on cardiac pacing and cardiac resynchronization therapy: The Task Force on cardiac pacing and resynchronization therapy of the European Society of Cardiology (ESC). Developed in collaboration with the European Heart Rhythm Association (EHRA). Europace. 2013 Aug 1;15(8):1070–118.

6. Van Bommel RJ, Bax JJ, Abraham WT, et al. Characteristics of heart failure patients associated with good and poor response to cardiac resynchronization therapy: a PROSPECT (Predictors of Response to CRT) sub-analysis. Eur Heart J. 2009 Oct 1;30(20):2470–7.

7. Rizal A, Raharjo SB, Hanafy DA, et al.. Predictors of Appropriate Shocks and Ventricular Arrhythmia in Indonesian with Brugada Syndrome. Indones J Cardiol 2019;40(2).

8. Society APHR: The aphrs white book 2019. http://aphrsorg/publicationshtml (2019). 2019;0:0–0