



## Editorial

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

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### 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).<sup>1</sup> 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.<sup>2</sup> While ICD is clinically proven to reduce the risk of sudden cardiac death in heart failure patients with low ejection fraction.<sup>3</sup>

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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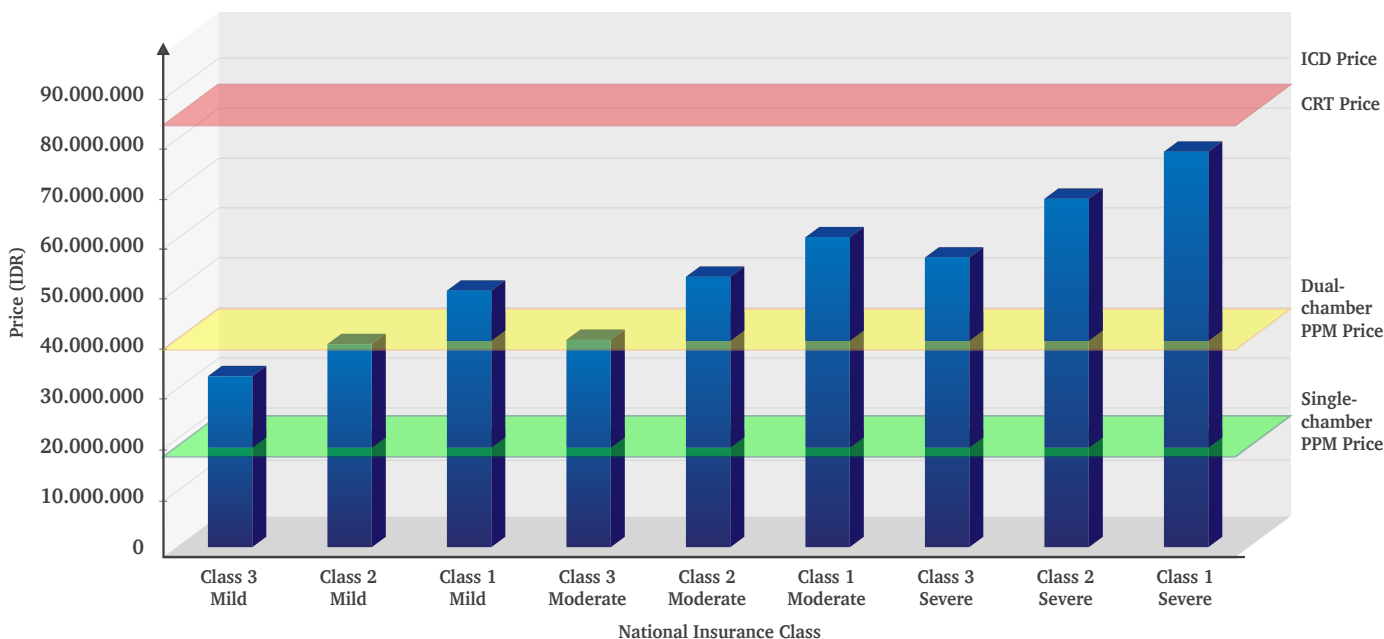


Figure 1. National Insurance Reimbursement compared to CIEDs price

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)  $\geq 15\%$  and Increase in LV Ejection Fraction (LVEF)  $> 5\%$ .<sup>4</sup> 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.<sup>5</sup> 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.<sup>6</sup>

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.<sup>7</sup> 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.<sup>8</sup>

**Conflict of interest**

There is no conflict of interest.

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