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Optimizing the Value of Cardiac Resynchronization Therapy

In the current issue of the *Canadian Journal of General Internal Medicine* (CJGIM), McIntyre and Seifer have identified the clinical benefits of cardiac resynchronization therapy (CRT) for patients with heart failure and conduction abnormalities (QRS > 130 msec). These benefits include a reduction in mortality and hospitalization. They also point out that the individual probability of benefiting from a CRT is variable amongst patients. For example, the larger the QRS interval the greater the potential benefit.

The insertion of a CRT device into a patient will incur a significant cost for the device as well as an initial increase in health resource consumption. Over time, the health benefits will offset some of these costs. In order to achieve optimal cost-effectiveness (or cost-utility) careful selection of patients for this procedure is necessary. Economic analyses have shown that the incremental cost-utility for a CRT device will usually range between \$19,000 and \$30,000, but in some circumstances can even exceed \$100,000, per quality adjusted life year (QALY).¹ Thus, with such variability, it is absolutely essential that physicians choose the correct patients for this procedure.

While the use of a CRT device does not require defibrillator capability to be included, when this function is added there is an additional increase in the cost per QALY. Further, when CRT is compared to traditional pacemakers, CRT is more prone to lead breakage (2.5 increased risk). This problem occurs at a frequency of approximately 2% per year and fixing a lead break in a CRT device is considerably more expensive than for a traditional pacemaker.²

Therefore, a physician recommending CRT for her/his patient will need to carefully apply the clinical guidelines and to take into consideration their patient's values in order to obtain the best value for the resources being consumed.

Mitch Levine

1. Bernard ML, Gold MR. Economic Implications and Cost-effectiveness of Implantable Cardioverter Defibrillator and Cardiac Resynchronization Therapy. *Heart Fail Clin*. 2011 Apr;7(2):241-50, ix. doi: 10.1016/j.hfc.2010.12.007.
2. Nichols CI, Vose JG1, Mittal S. Incidence and Costs Related to Lead Damage Occurring Within the First Year After a Cardiac Implantable Electronic Device Replacement Procedure. *J Am Heart Assoc*. 2016 Feb 12;5(2). pii: e002813. doi: 10.1161/JAHA.115.002813.