

Anesthetic Implications for Patients with Implanted Cardiac Devices Undergoing Non-cardiac Surgery



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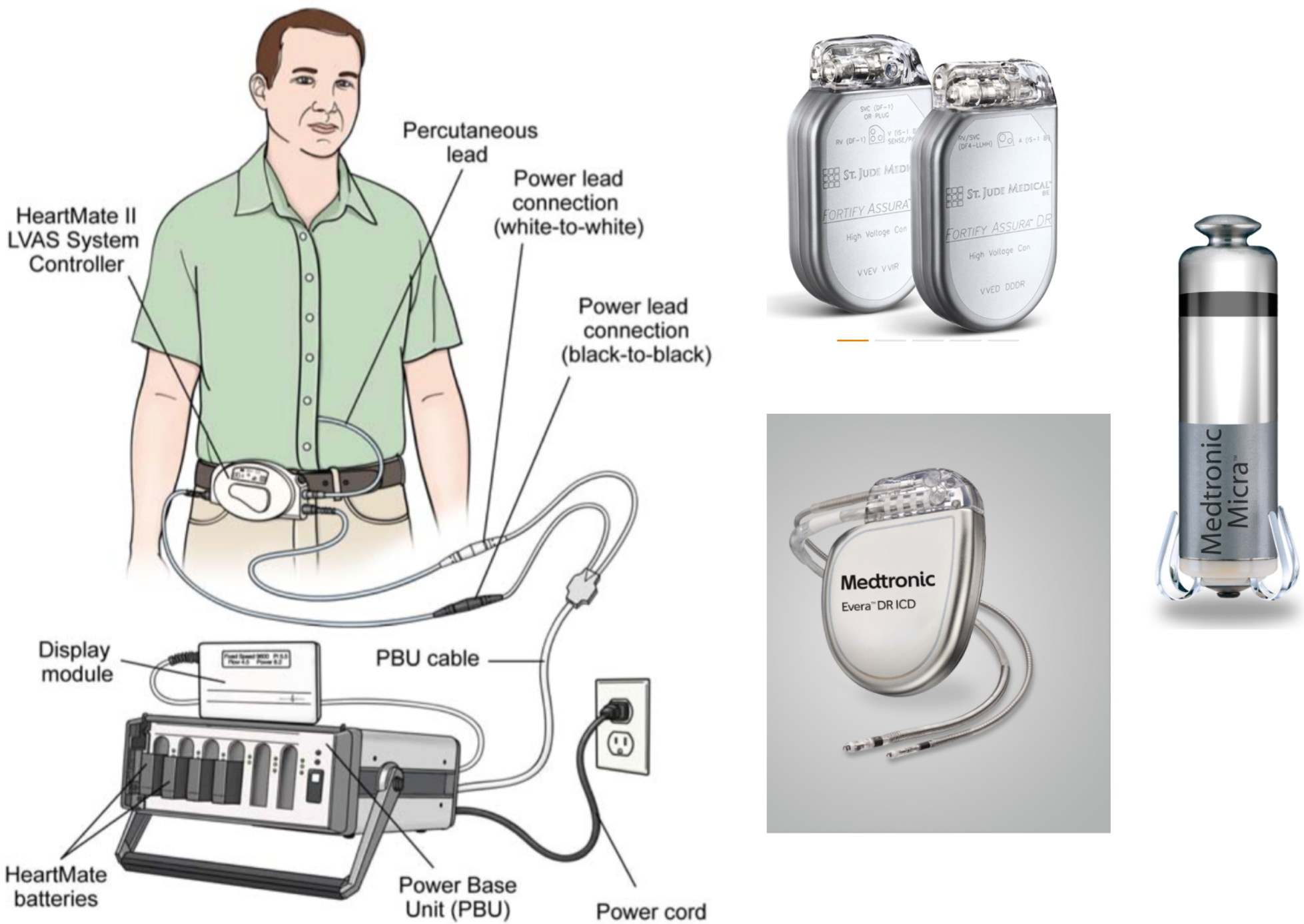


Problem

- Curriculum and clinical exposure to implanted cardiac devices, namely AICDs, pacemakers and VADs is minimal in Adventist University's Nurse Anesthesia Program. The researchers noticed they themselves and their peers were unsure how to administer the best anesthetic when faced with these patients in the clinical setting.
- To address this problem, a thorough literature review was conducted by the researchers
- It was the goal of the researchers to increase the knowledge base of ADU SRNAs as it pertains to implanted cardiac devices.

Literature Review

- A patient with a continuous flow VAD will not have a palpable pulse. Assess perfusion via capillary refill, ETCO2, and auscultation of the machine via stethoscope. Assess MAP with a doppler and manual BP cuff (Abernathy, et al., 2015).
- Right ventricular function and preload dependent: avoid increases in PVR and drops in preload. Avoid large increases in SVR that can impede pump outflow (Abernathy, et al., 2015)
- Common causes of pump failure: failure of driveline and power disconnect; will result in complete loss of pump function (Abernathy, et al., 2015).
- The American Heart Association recommends performing CPR in the event of VAD failure or cardiac arrest. Device dislodgment may occur if the device was recently placed (Abernathy, et al., 2015).
- A thorough preoperative evaluation, including interpreting the most recent device interrogation and determining if the patient is device dependent, is of utmost importance in caring for a patient with a permanent pacemaker (Rozner, 2013).
- Ensure a pacemaker dependent person is in an asynchronous mode during surgery above the umbilicus, or when using cautery (Rozner, 2013).
- A magnet does not guarantee inappropriate shock from an AICD; it only disables antitachycardia functions (Rozner, 2013).



Methods

- Quantitative design
- Informed consent was obtained from all participants
- A PowerPoint presentation was presented to a convenience sample of 50 SRNAs from two ADU NAP cohorts during the Clinical Conference course in Fall 2017.
- An anonymous 10 multiple choice question pre-test and post-test (same test) were administered to the SRNA participants immediately before and after the PowerPoint presentation was given for comparison of the mean test scores. This data was sent to ADU's statistician.
- A paired t-test was used to analyze the results.

Analysis/Conclusions

- As demonstrated by our statistical analysis, mean test scores improved from 34.18% on the pretest, to 76.83% on the post test. The obtained t-value was -12.15 ($p < .001$).
- This was a statistically significant finding ($p < .001$) and therefore, answers the researchers' question that the educational PowerPoint presentation given to the participants did increase the knowledge base on the topic.
- Limitations of this study include small convenience sample size of 50 participants. Another limitation is the short amount of time between the pretest and post test. Ideally, to prove retention, these tests should be administered up to one week after the educational presentation.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-Test	34.1880	50	18.05766	2.55374
	Post-Test	76.8340	50	20.92043	2.95860

Paired Samples Test

		Mean	Std. Deviation	Paired Differences		t	df	Sig. (2-tailed)
				Std. Error Mean	95% Confidence Interval of the Difference Lower Upper			
Pair 1	Pre-Test - Post-Test	42.64600	24.81877	3.50960	-49.86942	-12.150	49	.000

Findings

- The increase in knowledge base acquired during the presentation may serve the 50 participants well going forward to administer the safest, evidence-based anesthesia care in this patient population.

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