

Improvements in post-operative arrhythmia identification using Atriamp signals after cardiac surgery

BACKGROUND

- Greater than 20,000 pediatric patients with congenital heart defects undergo surgery each year
- Prevalence of atrial arrhythmias is as high as 60% and can lead to significant increase in the patient's length of hospital stay, morbidity, and mortality
- The American Heart Association recommends atrial electrogram be obtained to help interpret and diagnose atrial arrhythmias

METHODS

Study Aims:

- Pilot study to assess provider confidence in diagnosis using the Atriamp

Methods:

- Ongoing prospective observational study of children admitted to the PICU with atrial epicardial wires following congenital heart surgery
- Nine different types of arrhythmias collected were collected over the course of the first five months of the study
- A 20-question online survey created and given to critical care and cardiology providers (MD/NP/PA). Questions 1-10 were only with surface ECG. Questions 11-20 contained the surface ECG with Atriamp signal.
- Two electrophysiologists evaluated all ECGs and awarded points as follows:
- Correct answer 2 pts
- Possible answer 1 pt
- Incorrect answer 0 pt
- The survey was then evaluated for confidence and accuracy
- A one-sample t-test with cluster effect was used to calculate the sample size

Diane Brown¹, Awni Al-Subu¹, Xiao Zhang¹, Nick VonBergen¹ ¹University of Wisconsin – Madison School of Medicine and Public Health, Department of Pediatrics



RESULTS

- 29 of 40 providers (72%) completed the survey
- With the Atriamp, there was a statistically significant increase in provider confidence in diagnosis
- Overall, there was an increase in accuracy with the Atriamp, but it was not statistically significant
- However, there was a statistically significant increase in the ability to accurately diagnose the following rhythms







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	Without Atriamp	With Atriamp	P value
)	1.29 (0.92)	1.42 (0.82)	0.070
an (SD)	48.1 (35.9)	62.0 (36.3)	<0.001
wer	Without Atriamp	With Atriam	ο
	61%	63.5%	
9	6.9%	14.8%	
ct	32.1%	21.7%	

ECG	P value
JET	0.041
AET	0.012
VT	0.023



Limitations:

Conclusion:

- diagnosis

Next Steps:

- Evaluation of clinical effectiveness

- References
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CONCLUSIONS

- Lack of clarity without clinical vignettes - Smaller sample size

- The AtriAmp increased provider confidence in their

- The Atriamp increased provider ability to accurately diagnose JET, AET, VT

Revise survey to include vignette

Multicenter survey

ADDITIONAL KEY INFORMATION

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• Jacobs JP, Mayer JE, Jr., Mavroudis C, O'Brien SM, Austin EH, 3rd, Pasquali SK, Hill KD, Overman DM, St Louis JD, Karamlou T, Pizarro C, Hirsch-Romano JC, McDonald D, Han JM, Becker S, Tchervenkov CI, Lacour-Gayet F, BackerCL, Fraser CD, Tweddell JS, Elliott MJ, Walters H, 3rd, Jonas RA, Prager RL, Shahian DM, Jacobs ML. The Society of Thoracic Surgeons Congenital Heart Surgery Database: 2017 Update on Outcomes and Quality. Ann Thorac Surg. 2017;103(3):699-709

- Dr. Nick VonBergen is the inventor of the Atriamp.