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Paramedic student accuracy at ECG interpretation

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Background

- It is critical for patients that paramedics to be able to correctly interpret and identify ECG rhythms
- Management and treatment of several heart-related conditions is dependent on the paramedics ability to recognize rhythms[2]
- Studies show that only 39% of paramedics are able to correctly identify a STEMI[1]
- Identification accuracy was shown to improve through further education[3]
- Students utilizing further ECG teaching methods scored higher compared to students taught normally[4]

Overview

Quantitative analysis study will be undertaken to examine students ECG interpretation abilities.

1. Primary goal is to determine accuracy of students ECG interpretation.
2. Students are being timed to assess which rhythms are more difficult
3. The participants confidence in their abilities will be measured via a Likert scale before and after

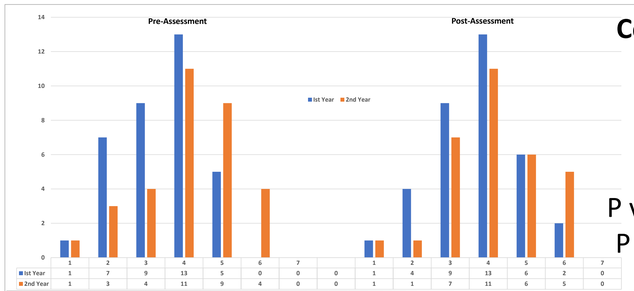
The rhythms listed below were selected for their importance in a prehospital setting:

Bigeminy PVC	Ventricular Fibrillation
Atrial Fibrillation	Sinus Bradycardia
Atrial Flutter	Sinus Tachycardia
Wolff-Parkinson-White Syndrome	Second Degree Heart Block Type II
Ventricular Tachycardia	Third Degree Heart Block

Methods

Primary Likert Confidence Scale	Participant is given an initial Likert confidence scale to fill out rating their confidence interpreting ECG rhythms
Rhythm Interpretation	Participants proceed to be shown the ten listed ECG rhythms and are repeated the time for each rhythm and asked to record each time
Final Likert Confidence Scale	Participant is asked to fill out a secondary Likert confidence scale rating their confidence interpreting ECG rhythms after having completed the 10 rhythms.

Results

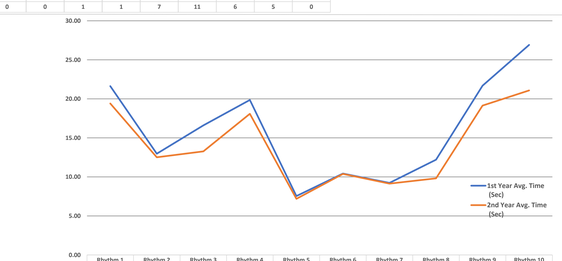


	1	2	3	4	5	6	7		1	2	3	4	5	6	7
1st Year	1	7	9	13	5	0	0	0	1	4	9	13	6	2	0
2nd Year	1	3	4	11	9	4	0	0	1	1	7	11	6	5	0

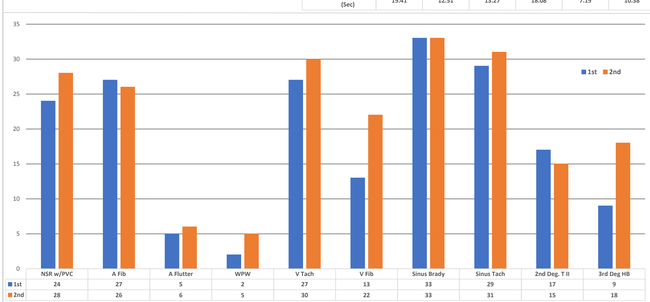
Confidence Scores
1st Yr. Prior: 3.40
2nd Yr. Prior: 4.23
1st Yr. Post: 3.71
2nd Yr. Post: 4.23
P value Prior: 0.003
P value Post = 0.68

Interpretation Time
1st Yr. Avg : 15.91
2nd Yr. Avg : 14.00
P value = 0.261

Shockable Time
1st Yr. Avg: 8.99
2nd Yr. Avg: 8.78
P value = 0.89



	Rhythm 1	Rhythm 2	Rhythm 3	Rhythm 4	Rhythm 5	Rhythm 6	Rhythm 7	Rhythm 8	Rhythm 9	Rhythm 10
1st Year Avg. Time (Sec)	21.63	12.97	16.60	19.86	7.54	10.43	9.23	12.20	21.69	26.91
2nd Year Avg. Time (Sec)	19.41	12.51	13.27	18.08	7.19	10.38	9.14	9.81	19.14	21.08



	NSR w/PVC	A Fib	A Flutter	WPW	V Tach	V Fib	Sinus Brady	Sinus Tach	2nd Deg. T II	3rd Deg HB
1st	24	27	5	2	27	13	33	29	17	9
2nd	28	26	6	5	30	22	33	31	15	18

Accuracy Scores
1st Yr. Acc. : 53%
≥70% : 31%
2nd Yr. Acc. : 58%
≥70% : 35%
P value: 0.63

Discussion

- No difference between 1st and 2nd year students except in "*Confidence before*" (p = 0.003)
- Certain rhythms (i.e. Sinus Tach, Brady, V-tach) were as expected with high accuracy rates and low mean interpretation times
- V-Fib had an accuracy score of 49% (35/72) contrary to our expectations
- 33% (24/72) of the population scored ≥70% which was considered a pass
- Limitations of this study were a relatively small sample size of 73

Conclusion

- ECG recognition starts in the classroom in the paramedic program, so a strong foundation must be built in this setting
- We suggest more time and different methods of teaching in order to improve accuracy as well as students to independently study more
- It is important that this is researched further

References

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