THE HONG KONG POLYTECHNIC UNIVERSITY
香港理工大學

BACCN Conference 2023
11 & 12 September
Nottingham

Registered Nurses' Knowledge and Interpretation of ECG Rhythms: A Cross-sectional Study

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INTRODUCTION

Monitoring and assessing ECG morphology provides important details about cardio-electroconductive stability especially with fluctuations in serum electrolyte levels seen in critical illness or trauma. For this, critical nurses must improve their proficiency through education/training or internal quality improvement activities in detecting abnormalities associated with ECG changes beyond those most easily recognisable rhythms such as atrial fibrillation or ventricular tachycardia.

METHODS

The aim of this study was to investigate registered nurses knowledge in being able to identify and interpret select electrocardiographic rhythms;
A convenience sample of 105 registered nurses (Critical Care n= 39 & General Ward n=66) currently enrolled in a 2-year Masters programme leading to critical care specialism and advanced practice nurse award were recruited;
A 20-item multiple choice questionnaire that provided examples of electrocardiogram rhythm (n=14) abnormalities and rhythm abnormalities caused by electrolyte disturbances (n=6).

KEY MESSAGES

- **ECG rhythm identification and interpretation is crucial to alert nurses to serious arrhythmias that may occur as a result of critical illness;**
- **Serum electrolyte balance plays a significant role in maintaining cardiac membrane potential;**

RESULTS

- Only 55% of questions answered correctly.
- Coronary care nurses scored the highest in identifying electrocardiogram rhythms (12/20 ± 1.58; p<0.00 I). When electrocardiogram abnormalities associated with electrolyte imbalances were analysed, both groups were unable to identify the effects of hypokalaemia and hypomagnesaemia effectively (p=.748).
- Length of time as a registered nurse (r= -0.304, p= 0.002) and length of time in current work environment were weakly correlated (r= -0.328, p=0.00I).
- Having a critical care background showed a positive relationship with nursing knowledge of ECG rhythm identification (r= 0.614, p<0.00I).

	Atrial Flutter	Sinus Tachycardia	Asystole	SVT with RBBB	Atrial Fibrillation	Ventricular Tachycardia	Complete Heart Block	Sinus Rhythm	Paced Rhythm	Non-sustained VT	Wenckebach	Ventricular Fibrillation	Sinus Bradycardia	Junctional Rhythm
Critical Care Nurses (n=39)	95%	59%	97%	84%	77%	94%	59%	61%	79%	61%	59%	87%	75%	71%
Non-Critical Care Nurses (n=66)	74%	40%	97%	48%	35%	71%	44%	40%	58%	30%	23%	70%	55%	37%

	Peaked/Tall T Wave	T wave inversion with prolonged QT interval	Shortened QT Interval	Prolonged QT interval	T wave Inversion	Prolonged QT interval
	Hyperkalaemia	**Hypokalaemia**	**Hypercalcaemia**	**Hypocalcaemia**	**Hypokalaemia**	**Hypomagnesaemia**
Critical Care Nurses (n=39)	90%	31%	18%	36%	62%	23%
Non-Critical Care Nurses (n=66)	83%	42%	21%	44%	41%	15%

CONCLUSION

- The first study of its kind to evaluate nurses knowledge of ECG arrhythmias associated with serum electrolyte imbalance;
- Overall nurses were able to identify the most commonly encountered ECG arrhythmias;
- Nurses were unable to correctly identify the effects of ECG arrhythmias associated with electrolyte imbalance