IS BIOSCIENCE CRITICAL TO CRITICAL CARE NURSES?

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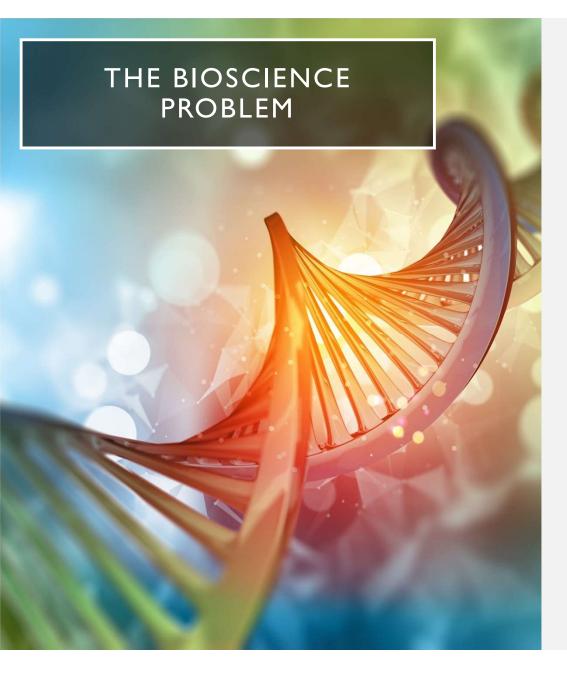
Your patient is complaining of chest pain and looks unwell. A cardiac rhythm strip reveals: absent P waves, rate of 170 -180, regular and broad QRS complexes.

What do you think this rhythm is?

IS BIOSCIENCE CRITICAL TO PRACTICE?

- Of course it is.

- The expertise of CCNs is central to quality patient care

- Sub-optimal bioscience knowledge of registered nurses has been consistently correlated with avoidable morbidity and mortality.

- Why, then has the bioscience problem in pre-registration nursing curriculum continued for decades?

THE BIOSCIENCE PROBLEM

- Bioscience encompasses a wide spectrum of subjects such as physiology, pathophysiology, pharmacology and microbiology.

- However, bioscience content has been declining in pre-registration curriculum.

- Challenge to achieve adequate quality and quantity in HEIs with high failure rates.

EVOLUTION OF THE BIOSCIENCE PROBLEM

- Nursing has moved from a medical model to social & behavioral sciences (1980s & 1990s).

- Survey of HEIs to determine taught biosciences ranged from 20-113 hours (4600 hours of course time).

- NMC pre-reg standards (2018).

WHERE DOES THIS LEAVE US?

Lack of underpinning physiology and pathology knowledge

Care is described as 'routine and automatic'

Low recognition of significant risk factors

Adherence to algorithms or protocols generates rule following behaviour

Poor pharmacology knowledge

Time spent revisiting or introducing key bioscience concepts to meet Step Competencies

A SMALL STUDY

- In critical care, there is limited empirical research on biological science knowledge.

- A quantitative study to investigate confidence levels and knowledge of physiology and pathology in critical care nurses.

- The findings and identification of preferred teaching methods have guided subsequent curriculum development.

RESEARCH QUESTION

- What is the measured knowledge, confidence levels and preferred teaching methods of bioscience in Critical Care Nurses (CCNs) working within the private health care sector in the UK?
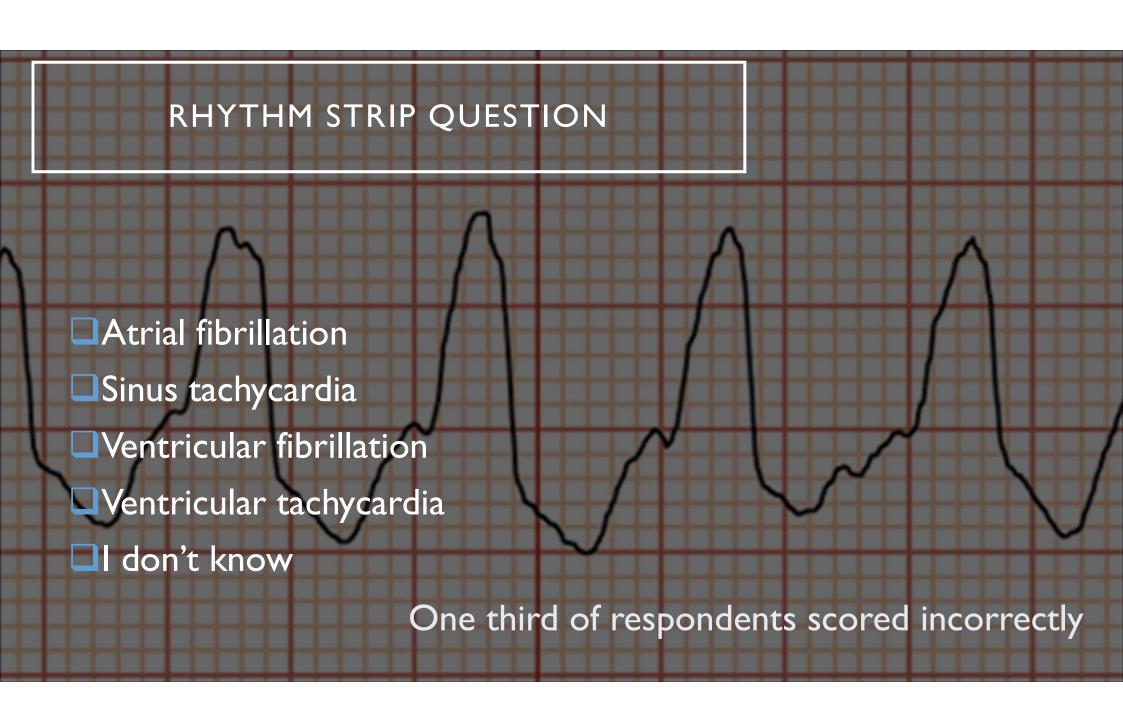
METHODOLOGY

- Online survey issued to convenience sample of ICU nursing workforce (n=188)
- Comprised of
  - Likert scale questions to capture self-rated knowledge and relevance to practice.
  - Eighteen MCQs assessed basic physiology and pathophysiology seen in critical care.

FINDINGS

- Response rate of 18%
- Respondents were:
  - Senior in ICU experience
  - Majority (81%) held post grad ICU qualification
  - Over half completed pre-reg qualification overseas

- Majority self-rated bioscience knowledge as good and above.
- Highly valued bioscience
- Requested more teaching

RHYTHM STRIP QUESTION

- ☐ Atrial fibrillation
- ☐ Sinus tachycardia
- ☐ Ventricular fibrillation
- ☐ Ventricular tachycardia
- ☐ I don't know

One third of respondents scored incorrectly

FINDINGS

- MCQs assessed basic physiology and pathophysiology seen in critical care

- Overall mean knowledge score of 55% (ranging from 33% to 83%)

- Participants scored poorly (<50%) across systems

Category	Topic	Correct N = 16	% correct
Physiology	Cell osmosis	11	69
	Neural control	10	62
	Blood type	10	62
	Respiratory system	9	56
	Blood pressure	8	50
	Immune system	3	19
Pathology	Arterial blood gas analysis	16	100
	Leukocytosis	14	87
	Myocardial infarction findings (ECG)	13	81
	Ventricular tachycardia rhythm strip	11	69
	Acid-base balance	11	69
	Seizure	10	62
	Shock	8	50
	Heart failure	7	44
	Liver failure	7	44
	Gastrointestinal pathology	6	37
	Intracranial pressure	6	37
	COPD & Asthma	1	6

WHAT IS NEEDED

- Explicit national professional guidance.

- An adaptable curricula that can meet scope of practice.

- Raise the profile of biosciences.

- Further investigation of the interplay between bioscience knowledge and delivery of care.

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G. Chaucer

The Parliament of Birds