Rhythm Identification Learning Package

Aim of the Package

To provide the registered nurse with the opportunity to acquire the level of knowledge, through self-directed learning, on which to base the nursing skills necessary for safe practice.

Objectives of the Package

1. Understand the cellular basis for the cardiac rhythm.
2. Discuss the electric conductivity physiology in relation to rhythm interpretation.
3. Use a step-wise approach to achieve rhythm identification.
4. Identify abnormal cardiac rhythms and discuss their pathophysiology and treatment options

What to do with the Package

1. Attempt all questions
2. You will need to exceed 80% correct answers to pass the package, if this is not achieved you will need to repeat the package
3. Your package will reviewed by a CNE and then you will be provided with the package answers to allow further review

Useful Resources

- Textbooks are available in the CNE nook
- CIAP can be access on all the computers through the intranet site. Particularly for this package a useful link will be the Interactive ECG tutorials under the "Tool" tab

PART 1 QUESTIONS

1. List four (4) properties of myocardial cells giving a brief description of each.

2. What is an intercalated disc and what purpose do they serve?

3. Define cardiac rhythm.

4. Describe each phase of the action potential of a contractile cell.

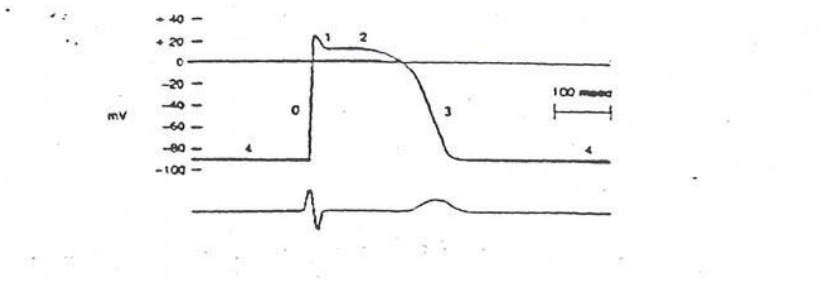


Figure 1.2: Cardiac Action Potential of contractile cell

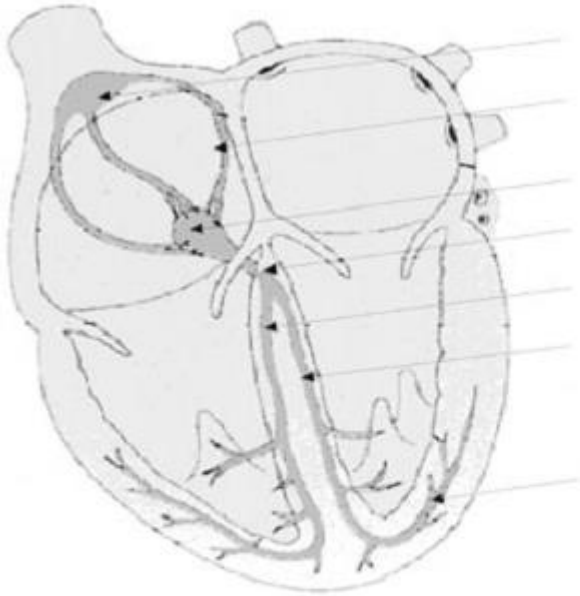
5. Describe the primary difference between a pacemaker cell and a contractile cell.

6. What is a cells resting membrane potential in mV?
   a) - 90 mV
   b) -30mV
   c) + 90mV
   d) +30mV

7. Define depolarisation and repolarisation.

8. What is the difference between the absolute refractory period and the relative refractory period?

9. Label the picture of the hearts conduction system



Source: Fuster V, Alexander RW, O'Rourke RA: *Hurst's The Heart*, 11th Edition: http://www.accessmedicine.com

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10. Why is sinus rhythm called "sinus"?

_____

_____

11. Describe what would probably happen if the SA node ceased producing action potentials.

_____

_____

_____

_____

12. Which component of the conduction system provides the only electrical connection between the atria and ventricles?
    a) septum b) SA node
    c) AV bundle d) none of the above

13. After normal conduction how long after the atria contract does it take for the ventricles to contract?
    a) 1 second b) 0.5 seconds c) 0.05 seconds d) 0.2 seconds

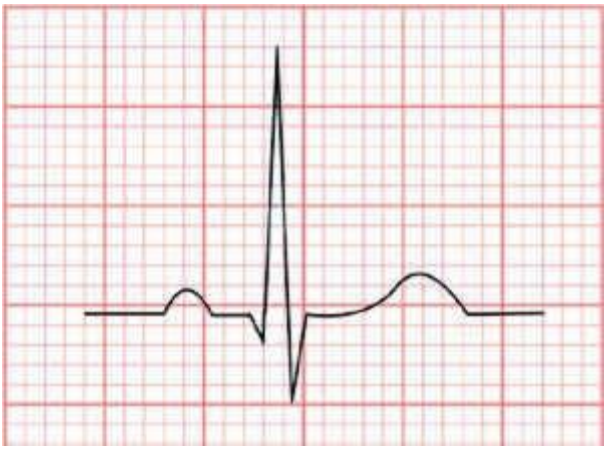
14. During a normal cardiac cycle the AV node has a slight conduction delay, this is normal, why is it important and how does it protect the heart?

_____
_____
_____
_____
_____
_____

15. Specify what each of these waves represents and the normal interval time (seconds)

Wave	Represents	Normal interval time (seconds)
P wave		
PR interval		
QRS complex		
ST segment		
T wave		
QT interval		
RR interval		

16. Label this ECG complex with the following; P wave, PR interval, QRS complex, T wave, ST segment and QT segment



17. a. Name the phase in which a contractile cell is unable to respond to an electrical impulse, no matter how powerful?

_____

_____

b. Name a medical procedure in which it is vital to avoid this phase?

_____

18. On a piece of ECG paper what time interval does one large square represent?

_____

19. Why do we monitor in lead II?

_____

_____

20. A narrow QRS complex indicates that the rhythm originated from where?

_____

21. List three causes of a wide QRS complex?

_____

_____

_____

22. A junctional rhythm may produce a retrograde P wave. Describe what this means, draw a diagram to illustrate this phenomena.

23. A 2nd degree Type II Heart Block is more serious than a Type I Heart Block.
Explain why?

24. A "Block" can occur anywhere in the heart's conducting system give an example of what can cause:

A permanent block

A temporary block

25. a. One wide bizarre QRS complex within a strip of sinus rhythm is called

b. Two consecutive wide bizarre QRS complexes are called

c. Three or more of these complexes are called

26. Are all arrhythmias life threatening? YES / NO List 4 non-life threatening arrhythmias

List 4 life threatening arrhythmias

27. Does a patient in sinus rhythm always have a good cardiac output? Explain your answer?

28. List 4 causes of arrhythmias that are reversible.

29. A 30 year old male has a heart rate of 35 and is asymptomatic. Would you treat the bradycardia and why? If so how and with what would you treat it?

30. What is a vagal/Valsalva manoeuvre and how does it work?

31. Define "fibrillation".

32. What is the difference between defibrillation and cardioversion?

_____
_____
_____
_____

33. a. Define "pacing rhythm"

_____
_____

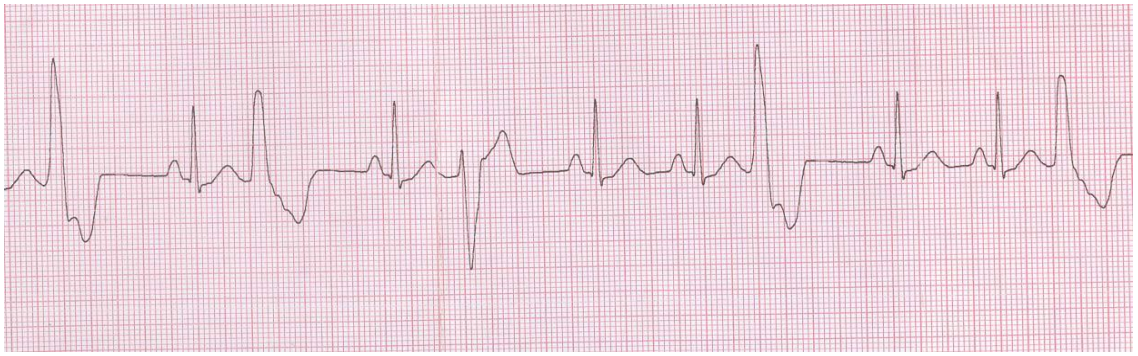
b. Give two indications for inserting a pacemaker?

_____
_____

PART 2 RHYTHM IDENTIFICATION

Evaluate the following rhythm strips.

EXAMPLE 1

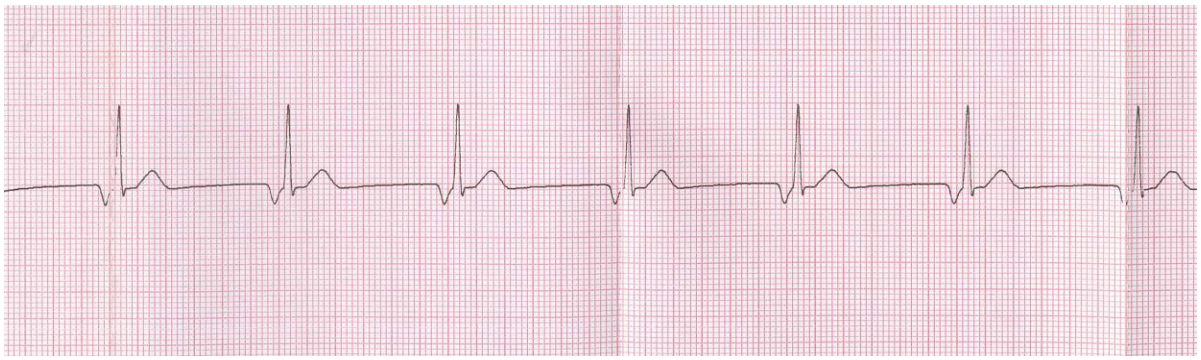


Rate:
P waves:
Regularity of P waves:
PR interval:
QRS width:
Regularity:
Rhythm Interpretation:
Causes:
Effects:
Life Threatening:
Tx:

EXAMPLE 2

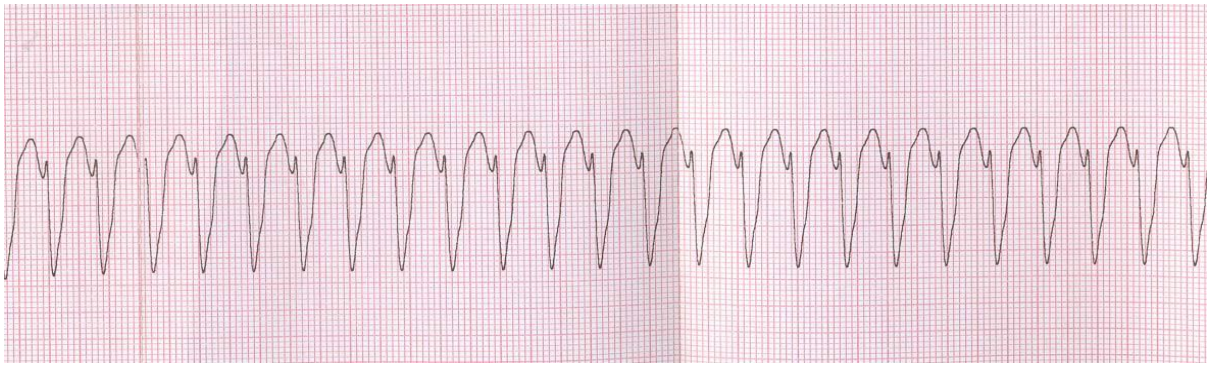
Rate:
P waves:
Regularity of P waves:
PR interval:
QRS width:
Regularity:
Rhythm Interpretation:
Causes:
Effects:
Life Threatening:
Tx:

EXAMPLE 3



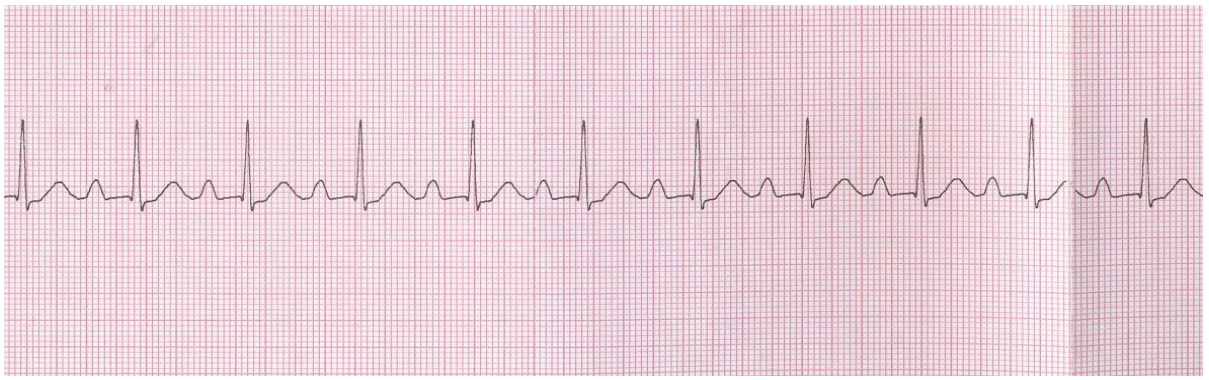
Rate:
P waves:
Regularity of P waves:
PR interval:
QRS width:
Regularity:
Rhythm Interpretation:
Causes:
Effects:
Life Threatening:
Tx:

EXAMPLE 4



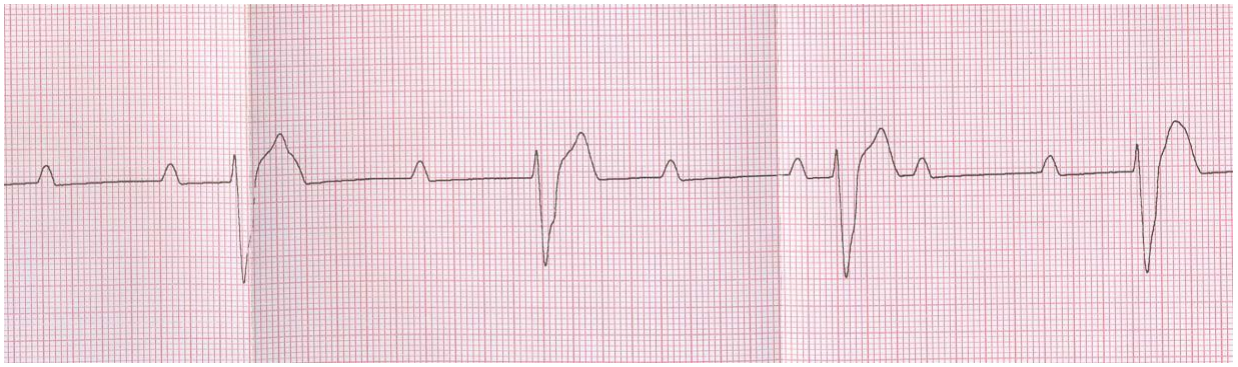
Rate:
P waves:
Regularity of P waves:
PR interval:
QRS width:
Regularity:
Rhythm Interpretation:
Causes:
Effects:
Life Threatening:
Tx:

EXAMPLE 5



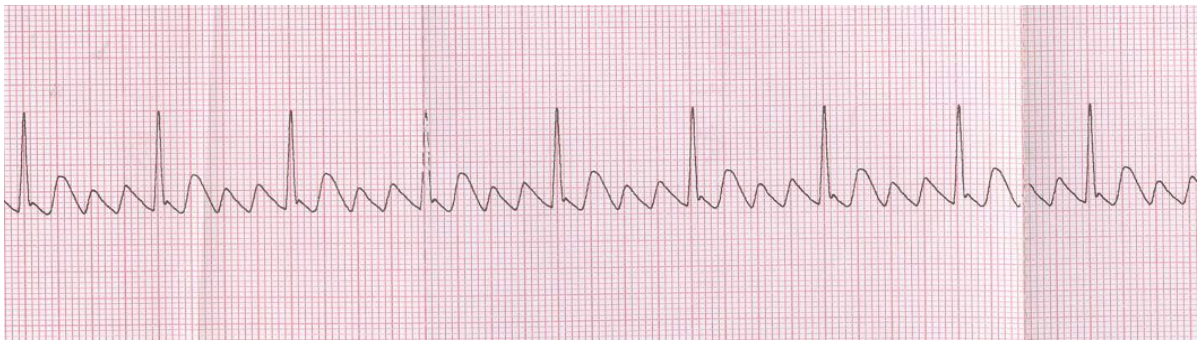
Rate:
P waves:
Regularity of P waves:
PR interval:
QRS width:
Regularity:
Rhythm Interpretation:
Causes:
Effects:
Life Threatening:
Tx:

EXAMPLE 6



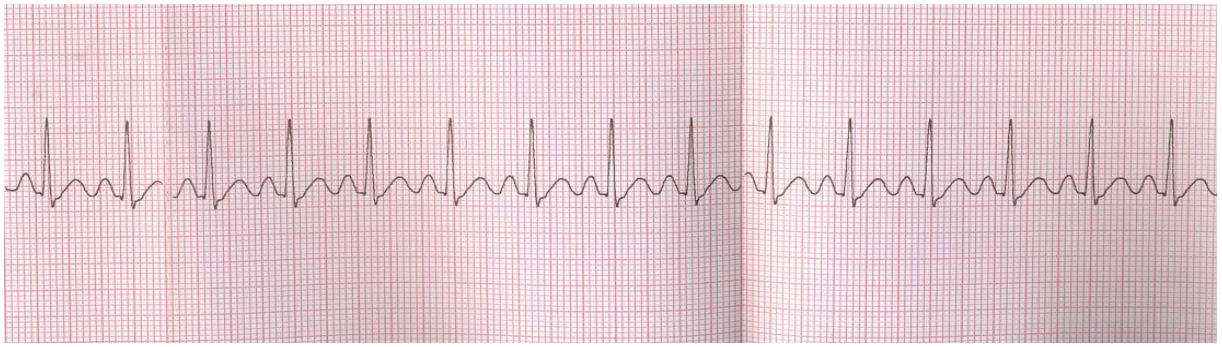
Rate:
P waves:
Regularity of P waves:
PR interval:
QRS width:
Regularity:
Rhythm Interpretation:
Causes:
Effects:
Life Threatening:
Tx:

EXAMPLE 7



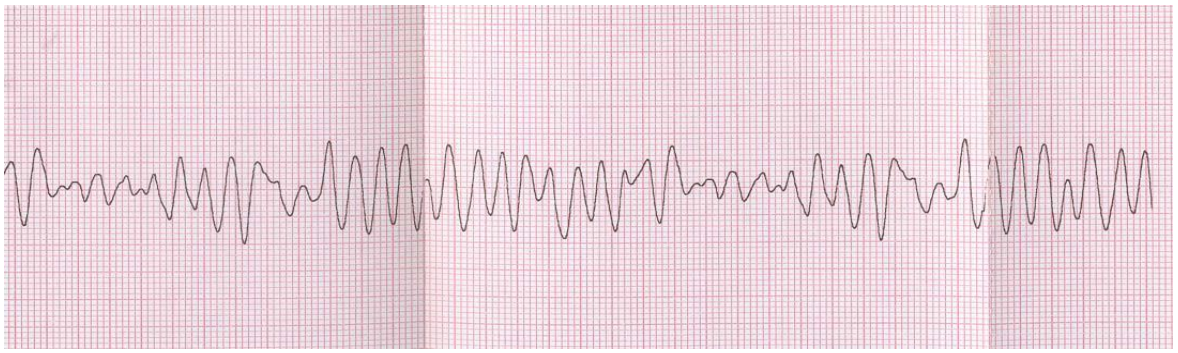
Rate:
P waves:
Regularity of P waves:
PR interval:
QRS width:
Regularity:
Rhythm Interpretation:
Causes:
Effects:
Life Threatening:
Tx:

EXAMPLE 8



Rate:
P waves:
Regularity of P waves:
PR interval:
QRS width:
Regularity:
Rhythm Interpretation:
Causes:
Effects:
Life Threatening:
Tx:

EXAMPLE 10



Rate:
P waves:
Regularity of P waves:
PR interval:
QRS width:
Regularity:
Rhythm Interpretation:
Causes:
Effects:
Life Threatening:
Tx: