Principles of Biomedical Science

Virtual Learning

9-12 / PLTW® PBS

April 20, 2020

Principles of Biomedical Science

9-12/PLTW® PBS
Lesson: April 20 2020

Objective/Learning Target:

Students will be able to: identify, draw, and explain the waves/points on an electrocardiogram. *(Reference: PLTW® 4.2.1 Heart Rate)*

Let's Get Started (Bell Ringer):

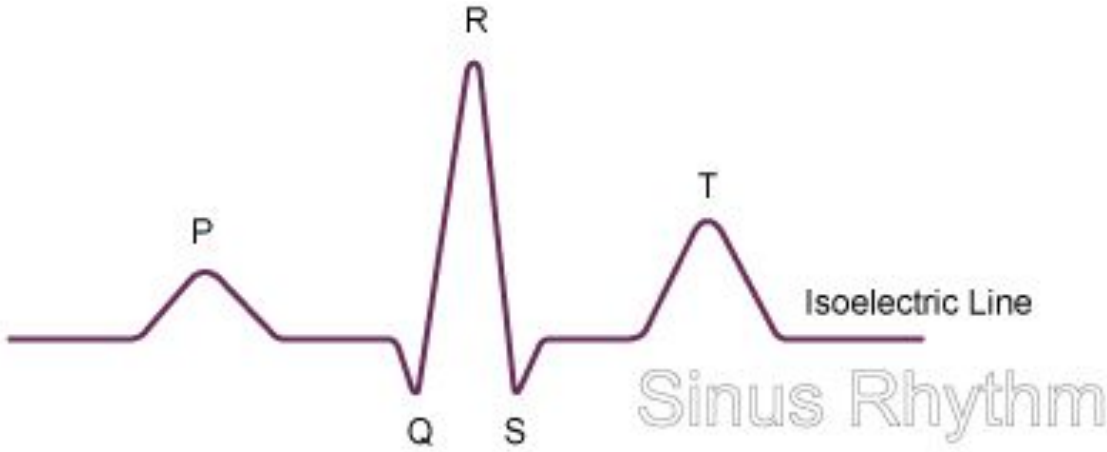
Read Article: Read the following article from nurse.org *How To Read An Electrocardiogram (EKG/ECG)* very informative on all the steps to take leading up to performing one and after the process is over.

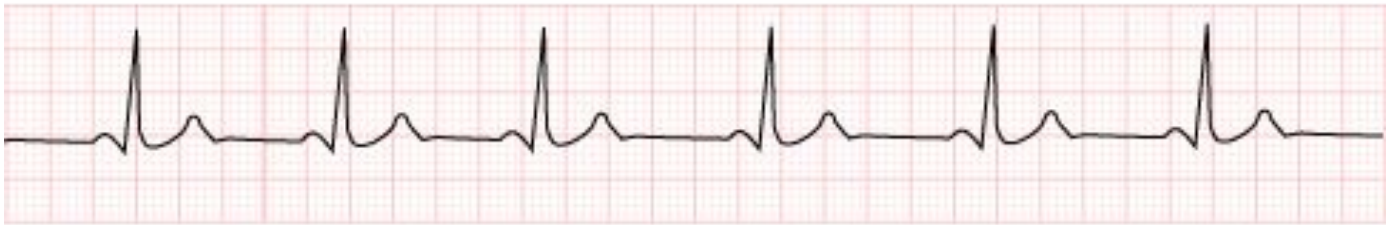
Watch Video: Watch video from Magic in Nursing Team *EKG/ECG INterpretation (Basic) : Easy and Simple!* Great review on Conduction system of heart and then onto how that ties to reading an EKG/ECG.

Lesson/Activity:

Start by… Getting out your notebook, or blank piece of paper. Draw a large “normal” sinus rhythm from P to T wave. If you are not sure what this looks like use you bell ringer resources or look for your own resource. Once you have drawn the wave label the P, Q, R, S, and T.

Answers:



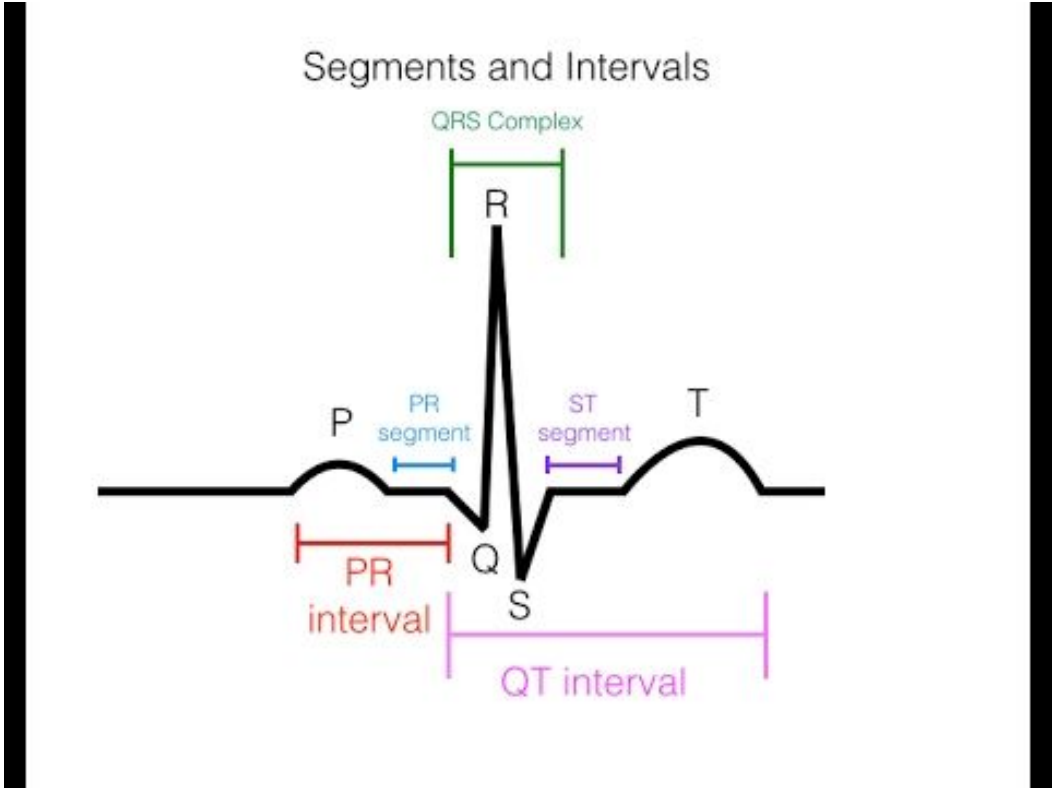


Lesson/Activity continued:

From your first drawing now label the following segments, intervals, and complex:

- PR interval
- PR segment
- QRS complex
- QT interval
- ST segment

Answers:

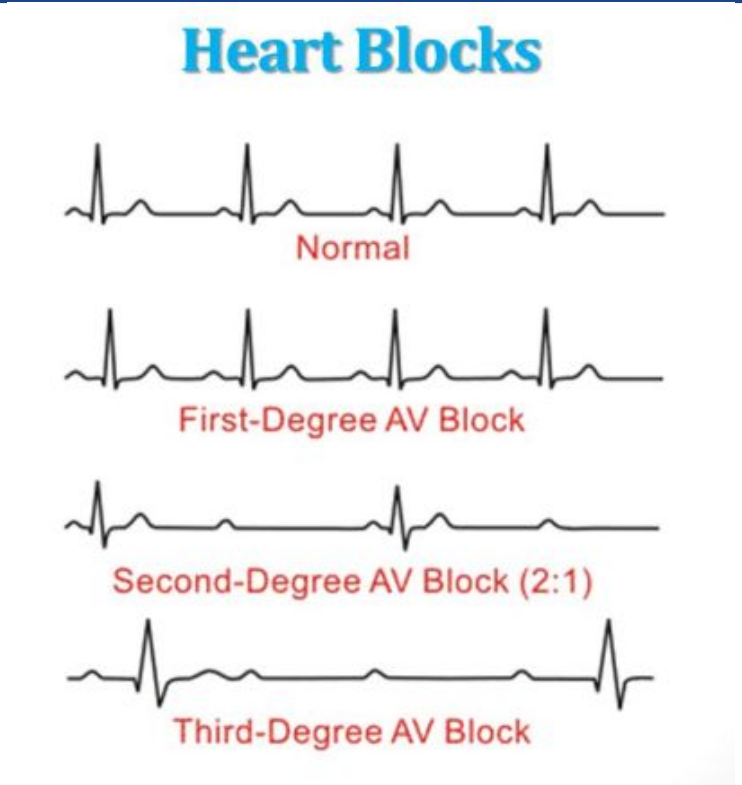

Segments and Intervals
QRS Complex
R
P
PR segment
ST segment
T
Q
S
PR interval
QT interval

Lesson/Activity:

Wave Problems: It's research time, listed below are a few examples of heart problems. It is your job to draw out what they would look like if you found them in an EKG/ECG strip.

1. Normal
2. First-Degree AV Block
3. Second-Degree AV Block
4. Third-Degree AV Block

Answers:


Heart Blocks
Normal
First-Degree AV Block
Second-Degree AV Block (2:1)
Third-Degree AV Block

Lesson/Activity:

Wave Problem: Use the chart below to determine if your patient is within normal ranges. Write your answer in you notebook or seperate piece of paper.

Standard Resting Electrocardiogram Internal Times	
P-R interval	0.12 to 0.20 s
QRS interval	Less than 0.12 s
Q-T interval	0.30 to 0.40 s

Bob comes in for his yearly physical his ECG comes back with the following information. P-R interval 0.162 QRS Interval 00.9 Q-T interval .367

Answers:

Bob is fine with his EKG nothing to worry about all numbers fall within normal range.

Practice:

1. Create your own set of vocabulary flashcards on notecards or cut up some blank white paper you should include the following terms:

P wave Q wave R wave S wave T wave

PR interval PR segment QRS complex QT interval

ST segment

Answers:

P wave: a small deflection wave that represents atrial depolarization.
Q wave: correspond to depolarization of the interventricular septum. Q waves can also relate to breathing and are generally small and thin. They can also signal an old myocardial infarction (in which case they are big and wide)
R wave: reflects depolarization of the main mass of the ventricles –hence it is the largest wave.
S wave: signifies the final depolarization of the ventricles, at the base of the heart
T wave: represent ventricular repolarization (atrial repolarization is obscured by the large QRS complex).
PR interval: the time between the first deflection of the P wave and the first deflection of the QRS complex.
PR segment:the time between the first deflection of the P wave and the first deflection of the QRS complex.
QRS complex:represent ventricular depolarization.
QT interval:the time from the beginning of the **QRS** complex, representing ventricular depolarization, to the end of the T **wave**, resulting from ventricular repolarization.
ST segment:the time between the end of the QRS complex and the start of the T wave. It reflects the period of zero potential between ventricular depolarization and repolarization.

Additional Practice:

Click on the link to the following website. RegisteredNurseRN.com there are 5 different quizzes you can take over EKG/ECG's take one or try them all. Test yourself on what you have learned about the parts of an EKG/ECG. Or click directly to the quiz below.

- QRS Complex Measurement Quiz
- PR Interval Measurement on EKG Quiz
- EKG Rhythm Quiz on Heart Blocks
- EKG Rhythm Quiz on Atrial Fibrillation & Atrial Flutter
- EKG Rhythm Strip on PQRST Quiz

Answers:

Answers are provided when quiz is completed

Additional Practice:

Click on the link to the following website.

Khan Academy *Normal sinus rhythm on an EKG*

This video does a great job of explaining the heart, and what is going on with an EKG at the same time.