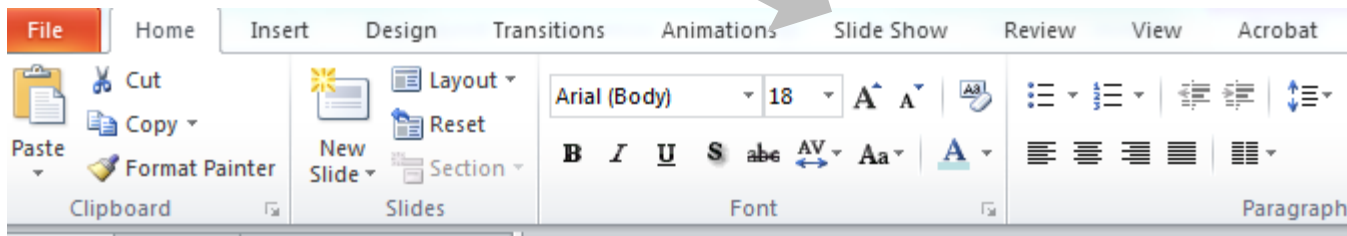

ECG Underwriting Puzzler

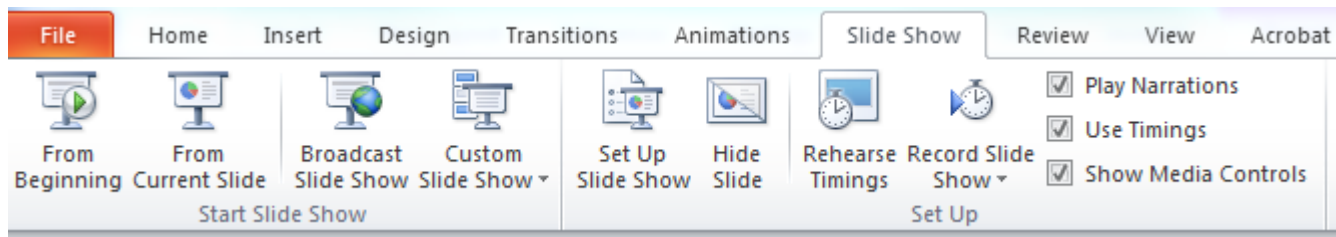
Presented by: Richard E. Braun, M.D.

Obtaining Best Results from this presentation

- For best results—please do the following:
- Select “Slide Show” from the menu option on top



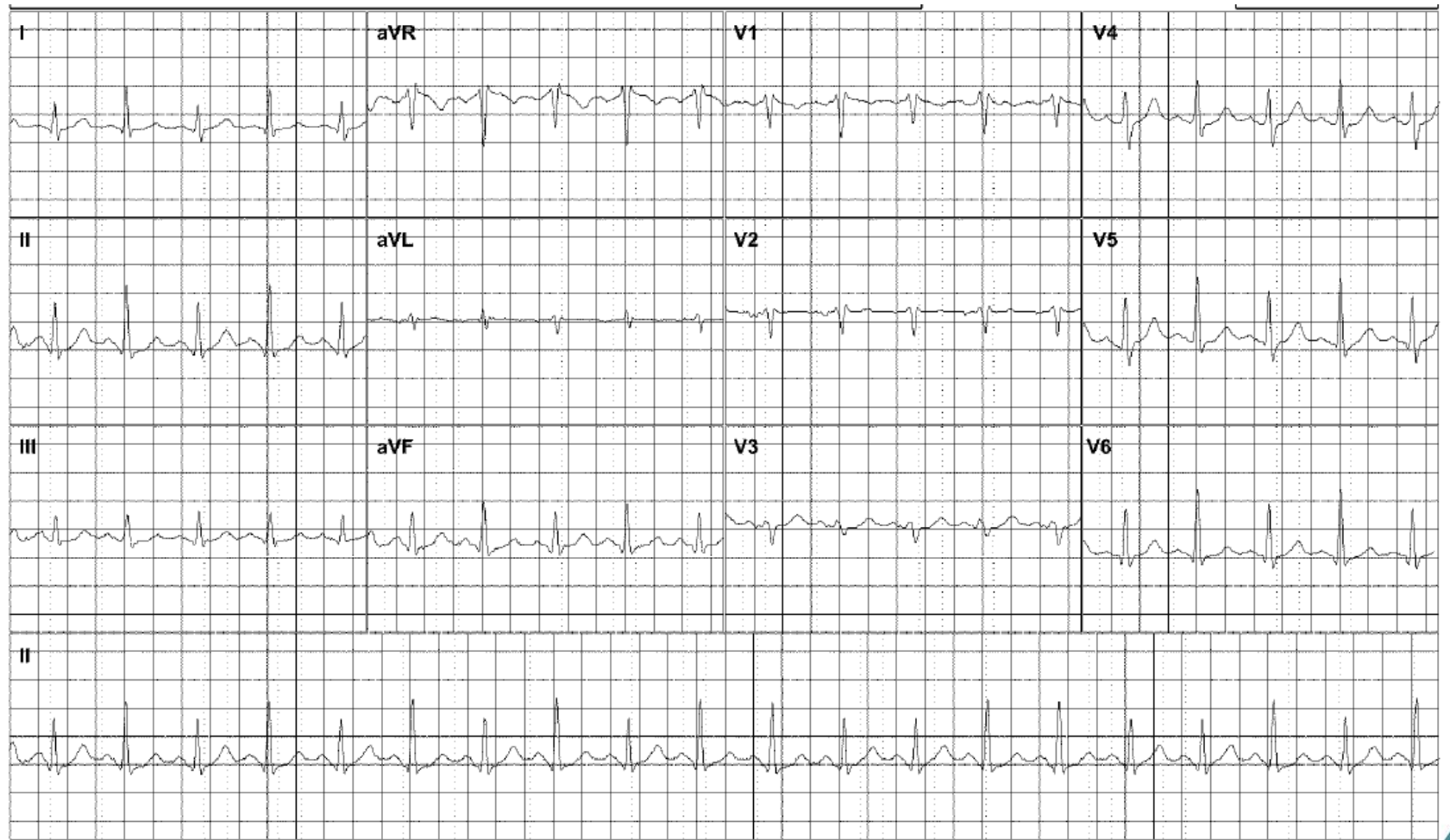
- Select “From the beginning”



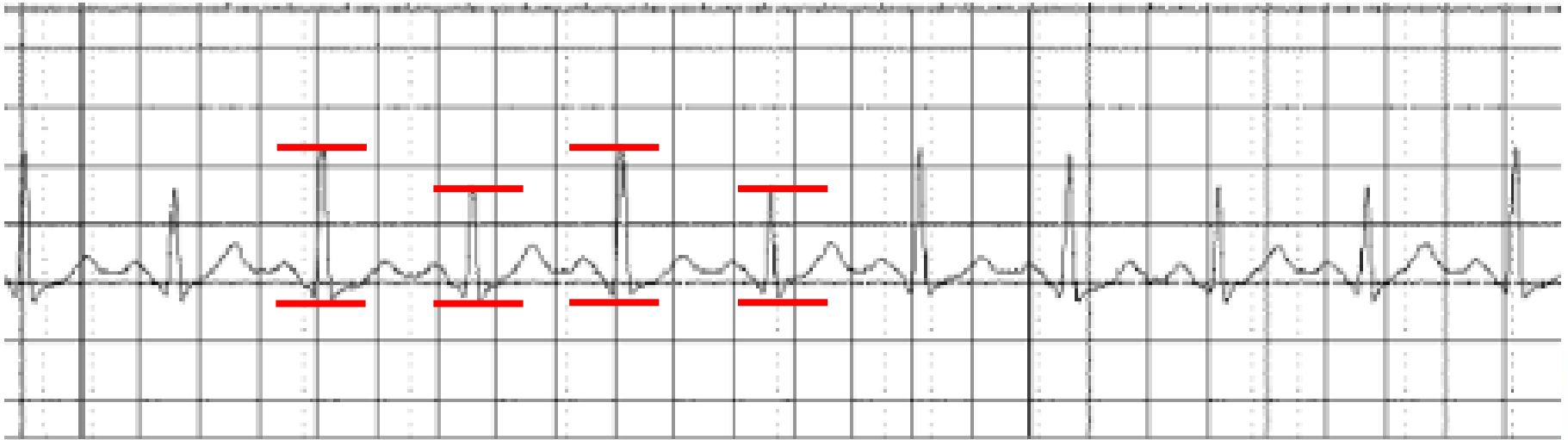
- Slowly click through the presentation
- Have fun!---Good luck

Puzzler

A 43 year-old man applied for life insurance. He admitted to smoking and chewing tobacco. He operated heavy construction equipment for a living. Positive findings on the insurance exam were a BMI of 41 and an elevated ALT – 57 U/L (normal: 0-45 U/L). His medical records were benign except for a mildly reduced Forced Expiratory Volume in 1 second (FEV1) of 86% of predicted. The following ECG was obtained for insurance.



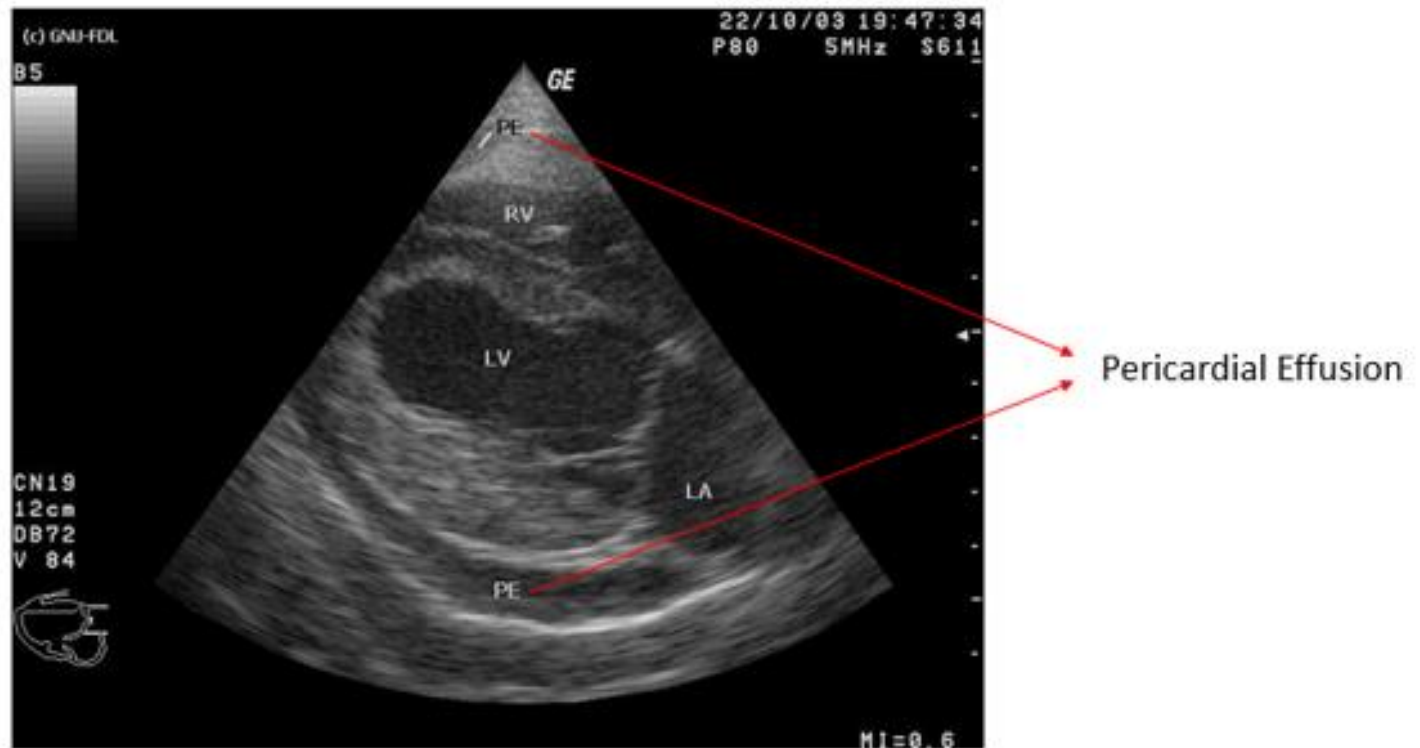
What is abnormal about this ECG?



The size of the QRS complex changes between beats. This is called **electrical alternans**. Note that the size of the T waves also vary between beats.

There is also sinus tachycardia and IRBBB

The most common cause of electrical alternans is pericardial effusion. Fluid collects between the fibrous and visceral layers of the pericardium and surrounds the heart. As the heart contracts and swings in the fluid-filled sac, the QRS complexes change size.



RV = Right Ventricle; LV = Left Ventricle; LA = Left Atrium

Electrical Alternans

- ❑ **Pericardial Effusion, most common cause**
- ❑ **Other, less common causes include:**
 - ❑ **Supraventricular Tachycardia**
 - ❑ **Severe cardiomegaly and Left Ventricular dysfunction**
 - ❑ **Aortic Regurgitation**
 - ❑ **Reentrant Tachycardia (WPW)**
 - ❑ **Hypertrophic Cardiomyopathy**
 - ❑ **Myocardial ischemia or contusion**
 - ❑ **Acute pulmonary embolism**
 - ❑ **Rheumatic heart disease**

Due to the underlying causes of electrical alternans, an Echocardiogram and cardiac consultation is required. It would be prudent to await those results.