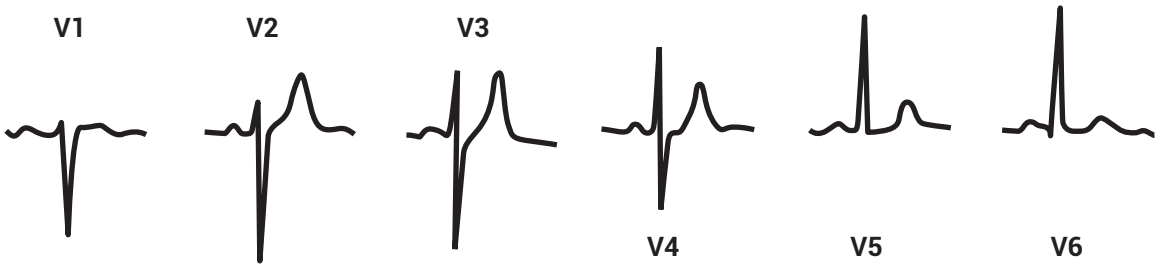
Level 5

The chest leads—100% confidence

In this chapter you'll learn how to recognize abnormal patterns in the chest leads.

A normal ECG

It's very important that you remember the normal appearance of the precordial (chest) leads. So take a look at this example of a normal ECG again:



In the right ventricle (V1 and V2), we can usually see small R waves and large S waves in normal individuals. In the left ventricle (V5 and V6), small Q waves and narrow and tall R waves are usually seen in normal individuals.

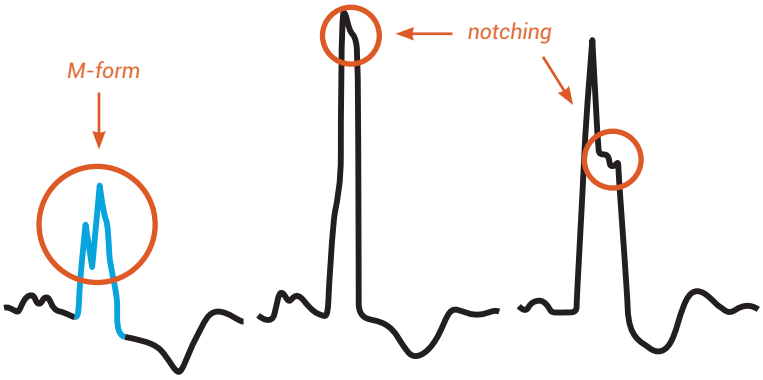
Patterns in abnormal ECGs

In abnormal QRS complexes, you'll see a pattern that may be referred to as notching, slurring, an M shape, or an RSR pattern:

abnormal patterns seen in V1 or V2

abnormal patterns seen in V5 or V6

Let's take a closer look:



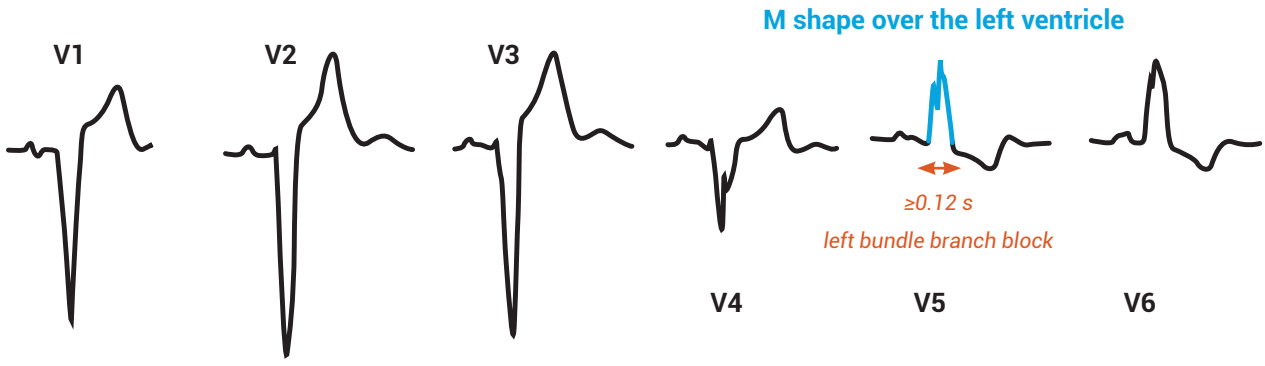
The M pattern is usually quite easy to see. When the delay in depolarization of the ventricles is less obvious, then that's called notching.

These changes in R-wave morphology indicate that depolarization of the ventricles is delayed.

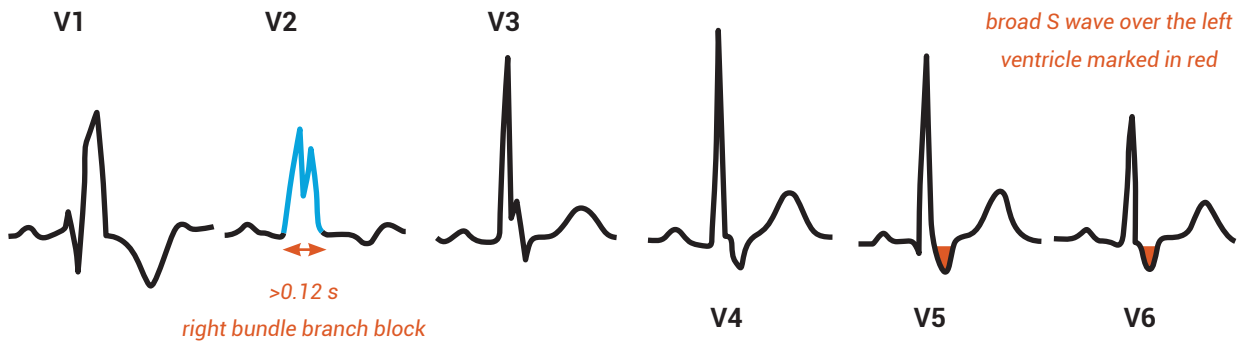
When the QRS duration is between 0.10 and 0.12 seconds, that's called **incomplete bundle branch block**, which causes notching of the QRS complex. Incomplete bundle branch block may be caused by dilatation of the ventricles. It's also referred to as **volume overload**.

In **complete bundle branch block**, conduction through the left or right bundle branch is completely blocked. Depolarization of the ventricles therefore takes longer than normal, and the QRS complex is lengthened to 0.12 seconds or longer.

To find out whether the left or the right bundle branch is affected, we need to look at the chest leads:



In complete left bundle branch block (LBBB), the QRS duration is ≥0.12 seconds and an M pattern (notching) is seen over the left ventricle (V5 or V6).

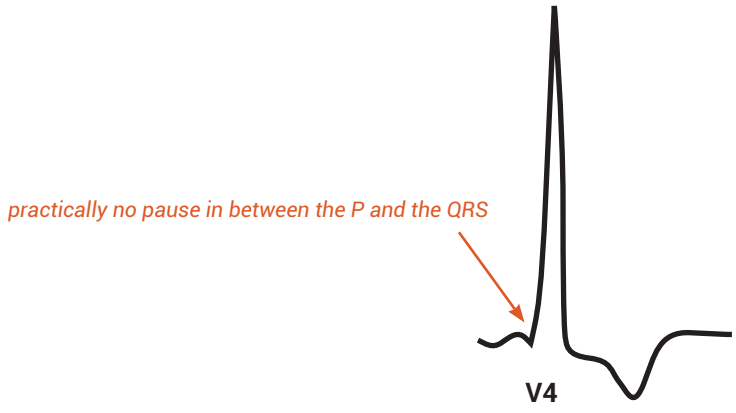


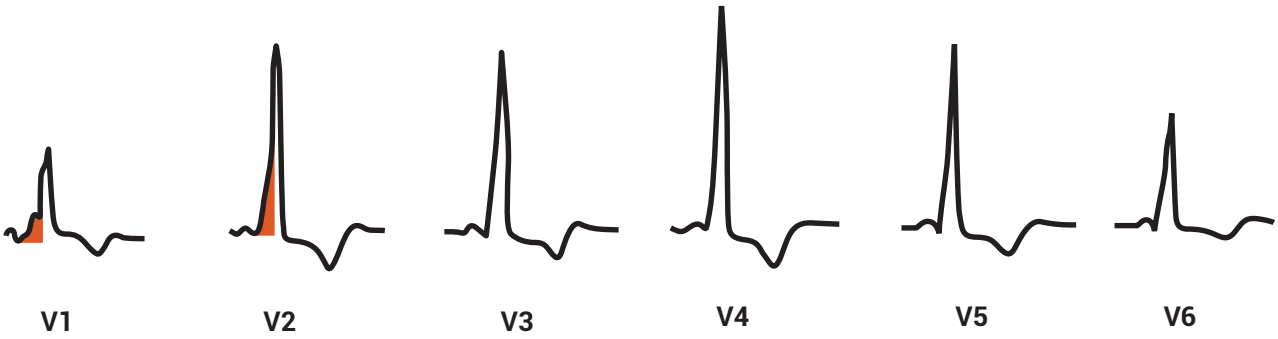
In complete right bundle branch block (RBBB), the QRS duration is ≥0.12 seconds and an M pattern (or notching) is seen over the right ventricle (V1 or V2).

There's one important pathologic condition that could be confused with bundle branch block because QRS duration is also lengthened. You have already learned about this disease in Level 3. Here's an example. Can you spot the problem?

In this example, the QRS duration is lengthened to ≥0.12 seconds and there's notching in lead V1. Is this a case of right bundle branch block?

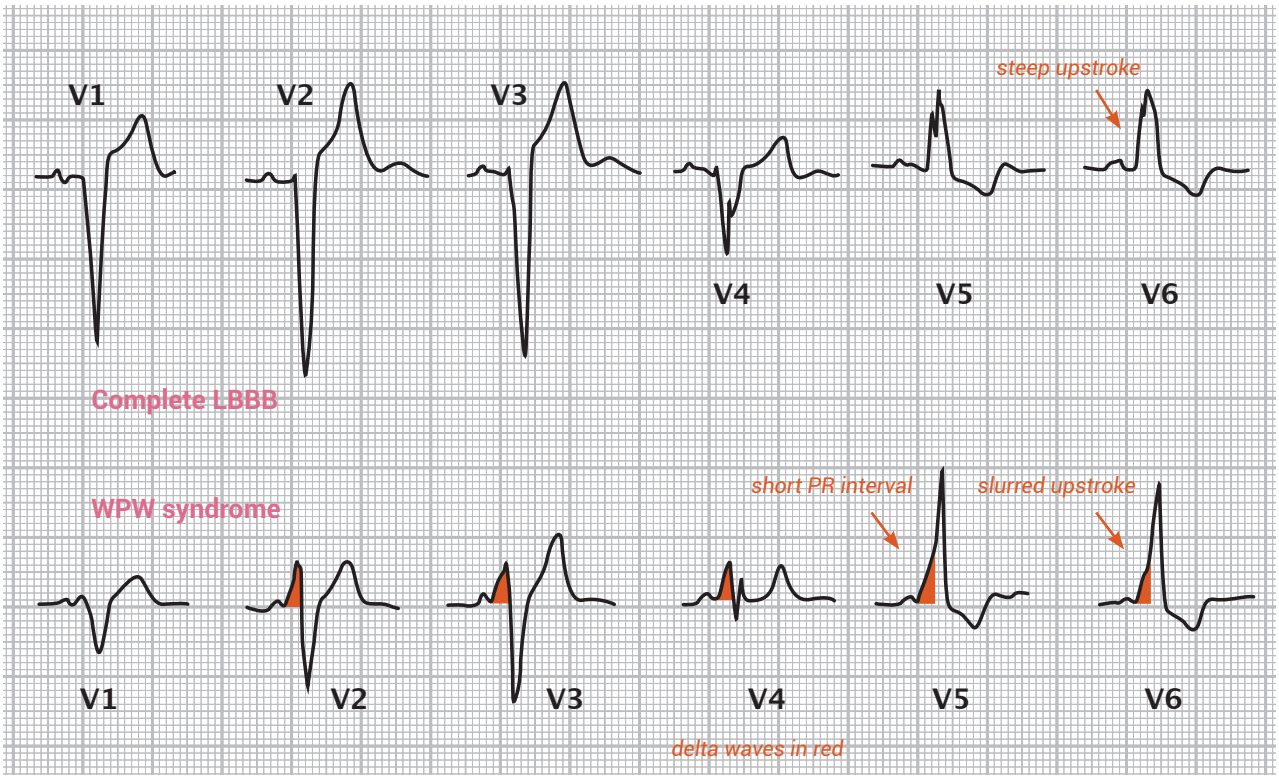
You might have already realized what's wrong with this ECG. There are a few problems: the QRS is lengthened, the PR interval is too short, AND the beginning of the QRS looks kind of funny.





This is a clear case of **WPW syndrome**: the QRS is lengthened, the PR interval is shortened, and a delta wave is present. You'll get the chance to see a lot more examples of this disease in the quizzes.

Sometimes WPW syndrome may look like LBBB with predominant R waves over the left ventricle and predominant S waves over the right ventricle:



In LBBB, the upstroke of the QRS is steeper than that in WPW syndrome. The short PR interval will also give you a clue into the direction of WPW.