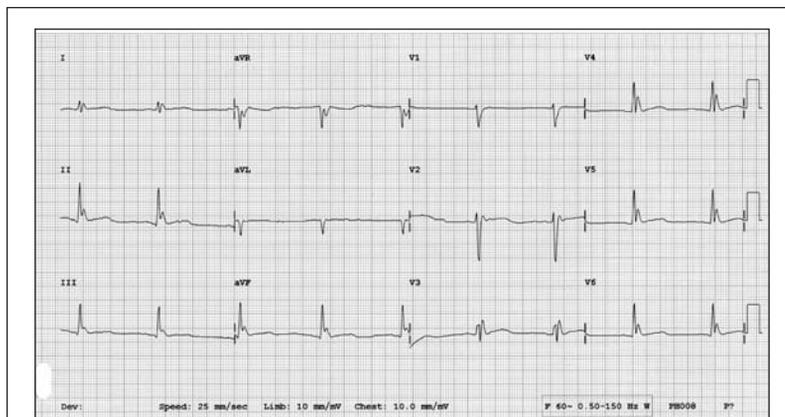


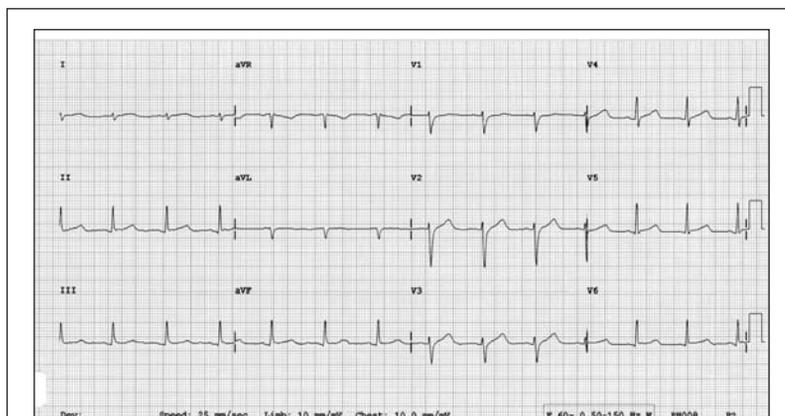
# ECG Diagnosis: Hypothermia

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**Figure 1. 12-lead ECG from a man, age 38 years, with somnolence, altered mental status and core body temperature of 86°F (30°C)**

Demonstrates sinus bradycardia with a ventricular rate of 52 beats/minute, with Osborn (J) waves at the terminal junction of the QRS complexes, consistent with severe hypothermia.



**Figure 2. 12-lead ECG from same patient following rewarming to a core body temperature of 92°F (33.3°C)**

Demonstrates a normal sinus rhythm with a ventricular rate of 75 beats/minute, with resolution of the Osborn waves.

An Osborn wave (also referred to as the J wave) is a characteristic ECG finding for hypothermia consisting of an extra deflection on the ECG at the terminal junction of the QRS complex and the beginning of the ST-segment takeoff.<sup>1</sup> Osborn waves usually occur when the core body temperature falls below 90°F (32°C), and are believed to result from an exaggerated outward potassium current leading to repolarization abnormality.<sup>2</sup> They can also be found in other conditions such as hypercalcemia.<sup>3</sup> Other ECG findings in patients with hypothermia can include prolongation of the PR, QRS and QT intervals, T wave inversions, and various dysrhythmias including atrial fibrillation, sinus bradycardia, atrioventricular block, and ventricular fibrillation. Fatal ventricular fibrillation or asystole can occur in hypothermic patients when core body temperature falls below 82.4°F (28°C).<sup>1</sup> ❖

## References

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