A 54-year-old man with methicillin-resistant Staphylococcus aureus (MRSA) sternal osteomyelitis is receiving ongoing treatment with vancomycin. Shortly after administration of his vancomycin dose, he develops diffuse erythema and hypotension.

The most likely cause is:
A. hypersensitivity to vancomycin.
B. rapid intravenous infusion of vancomycin.
C. endotoxin release.
D. impurities in the infused vancomycin preparation.
E. bacterial contamination of the vancomycin preparation.

Answer B. rapid intravenous infusion of vancomycin

RED MAN SYNDROME — The most common adverse reaction to vancomycin is RMS, which also may be called “red neck syndrome”. It is described as an infusion-related histamine-like reaction, characterized by flushing (upper body more predominant than lower body), pruritus, chest pain, muscle spasms, and occasionally hypotension. RMS can rarely manifest with severe and profound cardiovascular toxicity; several case reports note profound hypotension and even cardiac arrest. The reported frequency of the syndrome varies widely from as low as 10 percent to as high as 70 to 90 percent.

The majority of the studies suggest that there is an association between elevated plasma histamine levels and RMS, especially with severe episodes. However, at least one study found no close association between plasma histamine concentrations and vancomycin-related RMS, suggesting that there may also be other mediators of the observed clinical manifestations.

RMS is usually not life-threatening. The syndrome may be effectively prevented by pretreatment with antihistamines, and slower infusion rates of vancomycin may reduce the frequency and severity of the reactions. One study in 10 normal volunteers analyzing histamine levels, occurrence and severity of RMS, and vancomycin infusion time found a higher incidence of RMS and increased severity when vancomycin was infused over one hour compared to when the same volunteers received the drug over two hours; peak plasma histamine levels and the total release of histamine were greater during the one-hour infusion.