
Abstract:

OBJECTIVES: This study aims to determine the risk factors associated with the bacterial contamination of blood cultures among adults visiting the emergency department (ED).

METHODS: Clinical variables and medical records of adults with bacterial growth of blood cultures in the ED as well as the degree of ED crowding, between August 2007 and July 2008, were prospectively collected.

RESULTS: Of the 11,491 adults who underwent blood culture sampling, the medical records of 558 (4.86%) eligible patients with bacterial growth in their blood cultures were analyzed. Most patients (366, or 3.19%) had true bacteremia, whereas 192 (1.67%) were regarded as contaminated. In multivariate analyses, ED overcrowding (scoring was based on a National Emergency Department Overcrowding Study score ≥100 points) was independently associated with blood culture contamination (odds ratio [OR], 1.58; P = .04). In contrast, other medical comorbidities, such as liver cirrhosis (OR, 0.31; P = .02), thrombocytopenia (100 mg/L; OR, 0.24; P < .001), were negatively associated with blood culture contamination. On further analysis of the 5 crowding categories as stratified by NEDOCS scores, which included not busy and busy (0-60 points), extremely busy but not overcrowded (60-100),
overcrowded (100-140), severely overcrowded (140-180), and dangerously overcrowded (180-200), there was a strong correlation between blood culture contamination rates and the degrees of ED crowding ($\Gamma^3 = 0.99, P < .001$).

CONCLUSIONS: Emergency department overcrowding may have an adverse impact on the quality of clinical care, including increasing the risk of blood culture contamination.