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## Secular trends in nosocomial bloodstream infections: antibiotic-resistant bacteria increase the total burden of infection.

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### Author information

### Abstract

**BACKGROUND:** It is unknown whether rising incidence rates of nosocomial bloodstream infections (BSIs) caused by antibiotic-resistant bacteria (ARB) replace antibiotic-susceptible bacteria (ASB), leaving the total BSI rate unaffected.

**METHODS:** We investigated temporal trends in annual incidence densities (events per 100 000 patient-days) of nosocomial BSIs caused by methicillin-resistant *Staphylococcus aureus* (MRSA), ARB other than MRSA, and ASB in 7 ARB-endemic and 7 ARB-nonendemic hospitals between 1998 and 2007.

**RESULTS:** 33 130 nosocomial BSIs (14% caused by ARB) yielded 36 679 microorganisms. From 1998 to 2007, the MRSA incidence density increased from 0.2 to 0.7 (annual increase, 22%) in ARB-nonendemic hospitals, and from 3.1 to 11.7 (annual increase, 10%) in ARB-endemic hospitals ( $P = .2$ ), increasing the incidence density difference between ARB-endemic and ARB-nonendemic hospitals from 2.9 to 11.0. The non-MRSA ARB incidence density increased from 2.8 to 4.1 (annual increase, 5%) in ARB-nonendemic hospitals, and from 1.5 to 17.4 (annual increase, 22%) in ARB-endemic hospitals ( $P < .001$ ), changing the incidence density difference from -1.3 to 13.3. Trends in ASB incidence densities were similar in both groups ( $P = .7$ ). With annual increases of 3.8% and 5.4% of all nosocomial BSIs in ARB-nonendemic and ARB-endemic hospitals, respectively ( $P < .001$ ), the overall incidence density difference of 3.8 increased to 24.4.

**CONCLUSIONS:** Increased nosocomial BSI rates due to ARB occur in addition to infections caused by ASB, increasing the total burden of disease. Hospitals with high ARB infection rates in 2005 had an excess burden of BSI of 20.6 per 100 000 patient-days in a 10-year period, mainly caused by infections with ARB.

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