

# Study examines icu outbreak of staph aureus with resistance to methicillin and linezolid

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An outbreak of infection due to linezolid and methicillin-resistant *Staphylococcus aureus* (LRSA) in 12 intensive care unit patients in Spain was associated with transmission within the hospital and extensive usage of the antibiotic linezolid, often used for the treatment of serious infections, with reductions in linezolid use and infection-control measures associated with resolution of the outbreak, according to a study in the June 9 issue of JAMA.

Methicillin-resistant *Staphylococcus aureus* (MRSA) is a major cause of health care-associated infection. Therapeutic options for severe MRSA infections are limited (e.g., only linezolid and glycopeptides [a class of peptides] are recommended to treat ventilator-associated pneumonia). Linezolid is widely used in critical care because of its antimicrobial spectrum, favorable short-term safety profile, pharmacokinetics/pharmacodynamics, and effectiveness, according to background information in the article. Linezolid resistance is extremely uncommon in *S aureus*.

Miguel Sanchez Garcia, M.D., Ph.D., of the Hospital Clinico San Carlos and Universidad Complutense, Madrid, Spain, and colleagues examined an outbreak of LRSA and the infection-control measures that were applied. The study included critically ill patients colonized and/or infected with LRSA at an intensive care department of a 1,000-bed tertiary care university teaching hospital in Madrid, Spain. Patients were placed under strict contact isolation. Daily updates of outbreak data and recommendations for the use of linezolid were issued. Extensive

environmental sampling and screening of the hands of health care workers were performed.

Between April 13 and June 26, 2008, 12 patients with LRSA were identified. In 6 patients, LRSA caused ventilator-associated pneumonia and in 3 patients it caused bacteremia. Linezolid resistance linked to the gene *cfr* was demonstrated in all isolates. "Potential hospital staff carriers and environmental samples were negative except for one. Six patients died, 5 of them in the [intensive care unit](#), with 1 death attributed to LRSA infection. Linezolid use decreased from 202 defined daily doses in April 2008 to 25 defined daily doses in July 2008. Between July 2008 and April 2010, no new cases have been identified in the weekly surveillance cultures or diagnostic samples," the authors write.

"The outbreak involving 12 patients in the ICU is the first, to our knowledge, with LRSA to be reported, and the first with *cfr* gene-mediated linezolid resistance," they write. "The apparent risk factor is prior administration of linezolid."

"In view of the current increase of community-acquired MRSA infections, our data have important implications for both hospitalized patients and outpatients. Combination therapy with [the antibiotics] rifampin and fusidic acid still needs to be evaluated in the clinical setting."

**More information:** *JAMA*. 2010;303[22]:2260-2264.

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