

7. Boyce JM. Increasing prevalence of methicillin-resistant *Staphylococcus aureus* in the United States. *Infect Control Hosp Epidemiol* 1990;11:639-642.
8. Voss A, Milatovic D, Wallrauch-Schwarz C, Rosdahl VT, Braveny I. Methicillin-resistant *Staphylococcus aureus* in Europe. *Eur J Clin Microbiol Infect Dis* 1994;13:50-55.
9. Oguri T. The incidence and antimicrobial susceptibility of clinical isolates of MRSA from 1988 to 1990, from the results of 26 clinical laboratories in Tokyo and the surrounding area. *Jap J Clin Med* 1992;50:952-960.
10. Vincent JL, Bihari DJ, Suter PM, Bruining HA, White J, Nicolas-Chanoine MH, et al. The prevalence of nosocomial infection in intensive care units in Europe. Results of the European Prevalence of Infection in Intensive Care (EPIC) Study. EPIC International Advisory Committee. *JAMA* 1995;274:639-644.
11. Vandenbroucke-Grauls C. Management of methicillin-resistant *Staphylococcus aureus* in The Netherlands. *Rev Med Microbiol* 1998; 9:109-116.
12. Hanifah YA, Hiramatsu K, Yokota T. Characterization of methicillin-resistant *Staphylococcus aureus* associated with nosocomial infection in the University Hospital, Kuala Lumpur. *J Hosp Infect* 1992;21:15-28.
13. Gales AC, Jones RN, Pfaller MA, Gordon KA, Sader HS. Two-year assessment of the pathogen frequency and antimicrobial resistance patterns among organisms isolated from skin and soft tissue infections in Latin American hospitals: results from the SENTRY antimicrobial surveillance program, 1997-98. SENTRY Study Group. *International Journal of Infectious Diseases* 2000;4:75-84.
14. Geyid A, Lemeneh Y. The incidence of methicillin-resistant *Staphylococcus aureus* strains in clinical specimens in relation to their β -lactamase producing and multiple-drug resistance properties in Addis Ababa. *Ethiop Med J* 1991;29:149-161.
15. Hart CA, Kariuki S. Antimicrobial resistance in developing countries. *BMJ* 1998;317:647-650.
16. National Committee for Clinical Laboratory Standards. *Performance Standards for Antimicrobial Disk Susceptibility Tests*. Approved standard M2-A5. NCCLS: Villanova, PA; 1993.
17. National Committee for Clinical Laboratory Standards. *Methods for Dilution Antimicrobial Susceptibility Tests for Bacteria That Grow Aerobically*. Approved standard M7-A3. NCCLS; Villanova, PA: 1993.
18. Panlilio AL, Culver DH, Gaynes RP, Banerjee S, Henderson TS, Tolson JS, et al. Methicillin-resistant *Staphylococcus aureus* in US hospitals, 1975-1991. *Infect Control Hosp Epidemiol* 1992;13:582-586.
19. Lowy FD. *Staphylococcus aureus* infections. *N Engl J Med* 1998;339:520-532.
20. Speller DCE, Johnson AP, James D, Marples RR, Charlett A, George RC. Resistance to methicillin and other antibiotics in isolates of *Staphylococcus aureus* from blood and cerebrospinal fluid, England and Wales, 1989-95. *Lancet* 1997;350:323-325.
21. Mayor S. England sets standards to reduce hospital acquired infection. *BMJ* 1999;319:1392.
22. Linnemann CC, Moore P, Stanek JL, Pfaller MA. Reemergence of epidemic methicillin-resistant *Staphylococcus aureus* in a general hospital associated with changing staphylococcal strains. *Am J Med* 1991;91 (suppl 3B):238-344.
23. Nettleman MD, Trilla A, Fredrickson M, Pfaller MA. Assigning responsibility: using feedback to achieve sustained control of methicillin-resistant *Staphylococcus aureus*. *Am J Med* 1991;91 (suppl 3B):228-232.
24. Layton MC, Hierholzer WJ, Patterson JE. The evolving epidemiology of methicillin-resistant *Staphylococcus aureus* at a university hospital. *Infect Control Hosp Epidemiol* 1995;16:12-17.
25. Strausbaugh LJ, Jacobson C, Sewell DL, Potter S, Ward TT. Methicillin-resistant *Staphylococcus aureus* in extended-care facilities: experiences in a Veterans Affairs nursing home and a review of the literature. *Infect Control Hosp Epidemiol* 1991;12:36-45.
26. Coello R, Jimenez J, Garcia M, Arroyo P, Minguez D, Fernandez C, et al. Prospective study of infection, colonization and carriage of methicillin-resistant *Staphylococcus aureus* in an outbreak affecting 990 patients. *Eur J Clin Microbiol Infect Dis* 1994;13:74-81.
27. Longfield JN, Townsend TR, Cruess DF, Stephen M, Bishop C, Bolyard E, et al. Methicillin-resistant *Staphylococcus aureus* (MRSA): risk and outcome of colonized vs infected patients. *Infect Control* 1985;6:445-450.
28. Myers JP, Linnemann CC. Bacteraemia due to methicillin-resistant *Staphylococcus aureus*. *J Infect Dis* 1982;145:532-536.
29. French GL, Cheng AF, Ling JM, Mo P, Donnan S. Hong Kong strains of methicillin-resistant and methicillin-sensitive *Staphylococcus aureus* have similar virulence. *J Hosp Infect* 1990;15:117-125.
30. Harbarth S, Rutschmann O, Sudre P, Pittet D. Impact of methicillin resistance on the outcome of patients with bacteremia caused by *Staphylococcus aureus*. *Arch Intern Med* 1998;158:182-189.
31. Romero-Vivas J, Rubio M, Fernandez C, Picazo JJ. Mortality associated with nosocomial bacteremia due to methicillin-resistant *Staphylococcus aureus*. *Clin Infect Dis* 1995;21:1417-1423.
32. Contorno LO, Wey SB, Castelo A. Risk factors for mortality in *Staphylococcus aureus* bacteremia. *Infect Control Hosp Epidemiol* 1998;19:32-37.
33. Hiramatsu K, Hanaki H, Ino T, Yabuta K, Oguri T, Tenover FC. Methicillin-resistant *Staphylococcus aureus* clinical strain with reduced vancomycin susceptibility. *J Antimicrob Chemother* 1997;40:135-136.
34. Hiramatsu K, Aritaka N, Hanaki H, Kawasaki S, Hosoda Y, Hori S, et al. Dissemination in Japanese hospitals of strains of *Staphylococcus aureus* heterogeneously resistant to vancomycin. *Lancet* 1997; 350:1670-1673.
35. Smith TL, Pearson ML, Wilcox KR, Cruz C, Lancaster MV, Robinson-Dunn B, et al. Emergence of vancomycin resistance in *Staphylococcus aureus*. Glycopeptide-Intermediate *Staphylococcus aureus* Working Group. *N Engl J Med* 1999;340:493-501.
36. Tenover FC. Implications of vancomycin-resistant *Staphylococcus aureus*. *J Hosp Infect* 1999;43 (suppl):3-7.
37. Centers for Disease Control and Prevention. Interim guidelines for prevention and control of staphylococcal infection associated with reduced susceptibility to vancomycin. *MMWR* 1997;46:626-628.

New Agents Cause Nosocomial Fungemia

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The primary cause of nosocomial fungemia has been *Candida* species, but increasingly molds and other yeasts are being implicated in disease. *Exophiala jeanselmei* and members of the genus *Rhinocladiella* are dematiaceous molds, which have been associated infrequently with systemic infection and have not been described as causes of fungemia. Nucci and coinvestigators from Hospital Universitario Clementino Fraga Filho, Universidade Federal do Rio de Janeiro,

Brazil, recently reported the occurrence of 23 cases of fungemia due to these organisms over a 10-month period. They also describe the clinical characteristics of patients and outcomes.

The majority of patients were immunosuppressed; 21 (91%) of 23 had received blood products, and 78% had a central venous catheter. All patients had at least one manifestation of fever, but only 1 patient had signs or symptoms suggesting deep-seated infection. Antifungal therapy was given to 19 of the 23 patients; of those who did not receive therapy, 3 died prior to the culture result, and 1 had been discharged without therapy.

Antifungal susceptibility of the organisms showed activity of amphotericin B, itraconazole, and the new triazole antifungals voriconazole and posaconazole. *E. jeanselmei* and *Rhinocladiella* species are potential causes of nosocomial fungemia and may be associated with systemic infection.

FROM: Nucci M, Akiti T, Barreiros G, Silveira F, Revankar SG, Sutton DA, et al. Nosocomial fungemia due to *Exophiala jeanselmei* var. *jeanselmei* and a *Rhinocladiella* species: newly described causes of bloodstream infection. *J Clin Microbiol* 2001;39:514-518.