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**Literature search results**

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**Search details**

- MRSA (2011 onwards)

**Resources searched**

- NHS Evidence; TRIP Database; Cochrane Library; CINAHL; EMBASE; MEDLINE

**Database search terms:** MRSA, “methicillin-resistant staphylococcus aureus”

**Evidence search string(s):** MRSA OR “methicillin-resistant staphylococcus aureus”

**Guidelines and Policy**

**Great Ormond Street Hospital**
- Methicillin-resistant Staphylococcus aureus (MRSA): policy for the control of, 2013
- Microbiological screening of patients on admission (including MRSA), 2013

**Health Protection Agency**
- UK Standards for Microbiology Investigations: Investigation of Specimens for Screening for MRSA, 2014

**Journal of Hospital Infection**

**NICE**
Evidence-based reviews

Centre for Reviews and Dissemination
Screening for Methicillin-Resistant Staphylococcus Aureus (MRSA), 2013
There is low strength of evidence that universal screening of hospital patients decreases MRSA infection. However, there is insufficient evidence on other outcomes of universal MRSA screening, including morbidity, mortality, harms, and resource utilization. There is also insufficient evidence to support or refute the effectiveness of MRSA screening on any outcomes in other settings. The available literature consisted mainly of observational studies with insufficient controls for secular trends and confounding to support causal inference, particularly because other interventions were inconsistently bundled together with MRSA screening. Future research on MRSA screening should use design features and analytic strategies addressing secular trends and confounding. Designs should also permit assessment of effects of specific bundles of screening and infection control interventions and address outcomes, including morbidity, mortality, harms, and resource utilization.

Clinical effectiveness of rapid tests for methicillin resistant Staphylococcus aureus (MRSA) in hospitalized patients: a systematic review, 2012
There were small differences in the MRSA colonisation, infection and transmission rates between screening using PCR and screening using chromogenic agar, but screening using PCR reduced turnaround time and number of isolation days. The mixed quality and small number of studies meant that the evidence remained insufficient.

Impact of methicillin-resistant Staphylococcus aureus prevalence among S. aureus isolates on surgical site infection risk after coronary artery bypass surgery, 2012
The authors concluded that glycopeptide prophylaxis minimised the risk of a surgical site infection and the cost when the prevalence of MRSA exceeded 3%.

Diagnostic accuracy of culture-based and PCR-based detection tests for methicillin-resistant Staphylococcus aureus: a meta-analysis, 2011
Meta-analysis showed statistically significant differences in diagnostic accuracy between several tests evaluated. A reduction of the incubation time on chromogenic media from 48 hours to 18 to 24 hours increased specificity and reduced sensitivity. Inclusion of non-nasal samples slightly (non-significantly) reduced sensitivity and did not change specificity.

Modelling the costs and effects of selective and universal hospital admission screening for methicillin-resistant Staphylococcus aureus, 2011
The authors concluded that MRSA screening could be cost saving if the financial benefits from averted infections were taken into account.

The costs and benefits of hospital MRSA screening, 2011
The authors concluded that rapid screening reduced the hospital-acquired MRSA bacteraemia cases and annual glycopeptide costs. The benefits and savings justified the costs of testing.

Cochrane Database of Systematic Reviews
Antibiotic prophylaxis for the prevention of methicillin-resistant Staphylococcus aureus (MRSA) related complications in surgical patients, 2013
Prophylaxis with co-amoxiclav decreases the proportion of people developing MRSA infections compared with placebo in people without malignant disease undergoing percutaneous endoscopic gastrostomy insertion, although this may be due to decreasing overall infection thereby preventing wounds from becoming secondarily infected with MRSA. There is currently no other evidence to suggest
that using a combination of multiple prophylactic antibiotics or administering prophylactic antibiotics for an increased duration is of benefit to people undergoing surgery in terms of reducing MRSA infections. Well designed RCTs assessing the clinical effectiveness of different antibiotic regimens are necessary on this topic.

**Antibiotic therapy for the treatment of methicillin-resistant Staphylococcus aureus (MRSA) in non surgical wounds, 2013**

We found no trials comparing the use of antibiotics with no antibiotic for treating MRSA-colonised non-surgical wounds and therefore can draw no conclusions for this population. In the trials that compared different antibiotics for treating MRSA-infected non surgical wounds, there was no evidence that any one antibiotic was better than the others. Further well-designed RCTs are necessary.

**Antibiotic therapy for the treatment of methicillin-resistant Staphylococcus aureus (MRSA) infections in surgical wounds, 2013**

There is currently no evidence to recommend any specific antibiotic in the treatment of MRSA SSIs. Linezolid is superior to vancomycin in the eradication of MRSA SSIs on the basis of evidence from one small trial that was at high risk of bias, but the overall clinical implications of using linezolid instead of vancomycin are not known. Further well-designed randomised clinical trials are necessary in this area.

**Infection control strategies for preventing the transmission of meticillin-resistant Staphylococcus aureus (MRSA) in nursing homes for older people, 2013**

There is a lack of research evaluating the effects on MRSA transmission of infection prevention and control strategies in nursing homes. Rigorous studies should be conducted in nursing homes, involving residents and staff to test interventions that have been specifically designed for this unique environment.

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**Published research – Databases**

**MRSA Colonization and Risk of Infection in the Neonatal and Pediatric ICU: A Meta-analysis.**

Author(s) Zervou FN, Zacharioudakis IM, Ziakas PD, Mylonakis E

Citation: Pediatrics, April 2014, vol./is. 133/4(e1015-23), 0031-4005;1098-4275 (2014 Apr)

Publication Date: April 2014

Abstract: BACKGROUND AND OBJECTIVE: Methicillin-resistant Staphylococcus aureus (MRSA) is a significant cause of morbidity and mortality in NICUs and PICUs. Our objective was to assess the burden of MRSA colonization on admission, study the time trends, and examine the significance of MRSA colonization in this population.METHODS: PubMed and Embase databases were consulted. Studies that reported prevalence of MRSA colonization on ICU admission were selected. Two authors independently extracted data on MRSA colonization and infection.RESULTS: We identified 18 suitable articles and found an overall prevalence of MRSA colonization of 1.9% (95% confidence interval [CI] 1.3%-2.6%) on admission to the NICU or PICU, with a stable trend over the past 12 years. Interestingly, 5.8% (95% CI 1.9%-11.4%) of outborn neonates were colonized with MRSA on admission to NICU, compared with just 0.2% (95% CI 0.0%-0.9%) of inborn neonates (P = .01). The pooled acquisition rate of MRSA colonization was 4.1% (95% CI 1.2%-8.6%) during the NICU and PICU stay and was as high as 6.1% (95% CI 2.8%-10.6%) when the NICU population was studied alone. There was a relative risk of 24.2 (95% CI 8.9-66.0) for colonized patients to...
develop a MRSA infection during hospitalization. CONCLUSIONS: In the NICU and PICU, there are carriers of MRSA on admission, and MRSA colonization in the NICU is almost exclusively associated with outborn neonates. Importantly, despite infection control measures, the acquisition rate is high, and patients colonized with MRSA on admission are more likely to suffer a MRSA infection during hospitalization.

Source: Medline
Available in fulltext from Pediatrics at Free Access Content
Available in fulltext from Pediatrics at American Academy of Pediatrics

Preventing transmission of MRSA: A qualitative study of health care workers' attitudes and suggestions.
Author(s) Seibert DJ, Speroni KG, Oh KM, Devoe MC, Jacobsen KH
Citation: American Journal of Infection Control, April 2014, vol./is. 42/4(405-11), 0196-6553;1527-3296 (2014 Apr)
Publication Date: April 2014
Abstract: BACKGROUND: Health care workers' (HCWs) perceptions and attitudes affect implementation of precautions to prevent transmission of drug-resistant pathogens such as methicillin-resistant Staphylococcus aureus (MRSA). Identification of challenges and barriers to recommended practices is a critical component of promoting a safe clinical environment of care. METHODS: Semistructured interviews addressed how MRSA affects HCWs, prevention of transmission, and challenges and barriers HCWs experience when entering a MRSA isolation room and performing appropriate hand hygiene. RESULTS: The purposive sample of 26 acute care HCWs (16 registered nurses; 1 physician; 6 allied health professionals; and 3 support staff) self-selected from 276 responding to a questionnaire on MRSA. Analysis identified 18 themes across seven categories. Most participants reported feeling responsible for preventing transmission, and having the knowledge and desire to do so. However, many also reported challenges to following consistent hand hygiene and use of contact precautions. Barriers included patient care demands, equipment and environmental issues such as availability of sinks, time pressures, the practices of other HCWs, and the need for additional signs indicating which patients require contact precautions. CONCLUSIONS: The HCWs reported a need for improved clarity of isolation protocols throughout patients' hospital journey, additional rooms and staff for isolation patients, improved education and communication (including timely and appropriate signage), and an emphasis on involving all HCWs in reducing contamination. Copyright 2014 Association for Professionals in Infection Control and Epidemiology, Inc. Published by Mosby, Inc. All rights reserved.
Source: Medline

Management of skin abscesses in the era of methicillin-resistant Staphylococcus aureus.
Author(s) Singer AJ, Talan DA
Citation: New England Journal of Medicine, March 2014, vol./is. 370/11(1039-47), 0028-4793;1533-4406 (2014 Mar 13)
Publication Date: March 2014
Source: Medline
Available in fulltext from New England Journal of Medicine at the ULHT Library and Knowledge Services' eJournal collection

Knowledge, perceptions, and practices of methicillin-resistant Staphylococcus aureus transmission prevention among health care workers in acute-care settings.
Author(s) Seibert DJ, Speroni KG, Oh KM, DeVoe MC, Jacobsen KH
Citation: American Journal of Infection Control, March 2014, vol./is. 42/3(254-9), 0196-6553:1527-3296 (2014 Mar)
Publication Date: March 2014
Abstract: BACKGROUND: Health care workers (HCWs) play a critical role in prevention of health care-associated infections such as methicillin-resistant Staphylococcus aureus (MRSA), but glove and gown contact precautions and hand hygiene may not be consistently used with vulnerable patients.METHODS: A cross-sectional survey of MRSA knowledge, attitudes/perceptions, and practices among 276 medical, nursing, allied health, and support services staff at an acute-care hospital in the eastern United States was completed in 2012. Additionally, blinded observations of hand hygiene behaviors of 104 HCWs were conducted.RESULTS: HCWs strongly agreed that preventive behaviors reduce the spread of MRSA. The vast majority reported that they almost always engage in preventive practices, but observations of hand hygiene found lower rates of adherence among nearly all HCW groups. HCWs who reported greater comfort with telling others to take action to prevent MRSA transmission were significantly more likely to self-report adherence to recommended practices.CONCLUSIONS: It is important to reduce barriers to adherence with preventive behaviors and to help all HCWs, including support staff who do not have direct patient care responsibilities, to translate knowledge about MRSA transmission prevention methods into consistent adherence of themselves and their coworkers to prevention guidelines. Copyright 2014 Association for Professionals in Infection Control and Epidemiology, Inc. Published by Mosby, Inc. All rights reserved.
Source: Medline

The prevalence and significance of methicillin-resistant Staphylococcus aureus colonization at admission in the general ICU Setting: a meta-analysis of published studies.

Author(s) Ziakas PD, Anagnostou T, Mylonakis E
Citation: Critical Care Medicine, February 2014, vol./is. 42/2(433-44), 0090-3493;1530-0293 (2014 Feb)
Publication Date: February 2014
Abstract: OBJECTIVE: To estimate the prevalence and significance of nasal methicillin-resistant Staphylococcus aureus colonization in the ICU and its predictive value for development of methicillin-resistant S. aureus infection.DATA SOURCES: MEDLINE and EMBASE and reference lists of all eligible articles.STUDY SELECTION: Studies providing raw data on nasal methicillin-resistant S. aureus colonization at ICU admission, published up to February 2013. Analyses were restricted in the general ICU setting. Medical, surgical, and interdisciplinary ICUs were eligible. ICU studies referring solely on highly specialized ICUs populations and reports on methicillin-resistant S. aureus outbreaks were excluded.DATA EXTRACTION: Two authors independently assessed study eligibility and extrapolated data in a blinded fashion. The two outcomes of interest were the prevalence estimate of methicillin-resistant S. aureus nasal colonization at admission in the ICU and the sensitivity/specificity of colonization in predicting methicillin-resistant S. aureus-associated infections.DATA SYNTHESIS: Meta-analysis, using a random-effect model, and meta-regression were performed. Pooled data extracted from 63,740 evaluable ICU patients provided an estimated prevalence of methicillin-resistant S. aureus nasal colonization at admission of 7.0% (95% CI, 5.8-8.3). Prevalence was higher for North American studies (8.9%; 95% CI, 7.1-10.7) and for patients screened using polymerase chain reaction (14.0%; 95% CI, 9.6-19). A significant per year increase
in methicillin-resistant S. aureus colonization was also noted. In 17,738 evaluable patients, methicillin-resistant S. aureus infections (4.1%; 95% CI, 2.0-6.8) developed in 589 patients. The relative risk for colonized patients was 8.33 (95% CI, 3.61-19.20). Methicillin-resistant S. aureus nasal carriage had a high specificity (0.96; 95% CI, 0.90-0.98) but low sensitivity (0.32; 95% CI, 0.20-0.48) to predict methicillin-resistant S. aureus-associated infections, with corresponding positive and negative predictive values at 0.25 (95% CI, 0.11-0.39) and 0.97 (95% CI, 0.83-1.00), respectively.

**CONCLUSIONS:** Among ICU patients, 5.8-8.3% of patients are colonized by methicillin-resistant S. aureus at admission, with a significant upward trend. Methicillin-resistant S. aureus colonization is associated with a more than eight-fold increase in the risk of associated infections during ICU stay, and methicillin-resistant S. aureus infection develops in one fourth of patients who are colonized with methicillin-resistant S. aureus at admission to the ICU.

**Source:** Medline

Available in full text from *Critical Care Medicine* at the ULHT Library and Knowledge Services' eJournal collection

**Screening for methicillin-resistant Staphylococcus aureus: a comparative effectiveness review.**

**Author(s)** Glick SB, Samson DJ, Huang ES, Vats V, Aronson N, Weber SG

**Citation:** American Journal of Infection Control, February 2014, vol./is. 42/2(148-55), 0196-6553;1527-3296 (2014 Feb)

**Publication Date:** February 2014

**Abstract:** BACKGROUND: Methicillin-resistant Staphylococcus aureus (MRSA) is an important cause of health care-associated infections. Although the evidence in support of MRSA screening has been promising, a number of questions remain about the effectiveness of active surveillance.

**METHODS:** We searched the literature for studies that examined MRSA acquisition, MRSA infection, morbidity, mortality, harms of screening, and resource utilization when screening for MRSA carriage was compared with no screening or with targeted screening. Because of heterogeneity of the data and weaknesses in study design, meta-analysis was not performed. Strength of evidence (SOE) was determined using the system developed by the Grading of Recommendations Assessment, Development and Evaluation Working Group.

**RESULTS:** One randomized controlled trial and 47 quasi-experimental studies met our inclusion criteria. We focused on the 14 studies that addressed health care-associated outcomes and that attempted to control for confounding and/or secular trends, because those studies had the potential to support causal inferences. With universal screening for MRSA carriage compared with no screening, 2 large quasi-experimental studies found reductions in health care-associated MRSA infection. The SOE for this finding is low. For each of the other screening strategies evaluated, this review found insufficient evidence to determine the comparative effectiveness of screening.

**CONCLUSIONS:** Although there is low SOE that universal screening of hospital patients decreases MRSA infection, there is insufficient evidence to determine the consequences of universal screening or the effectiveness of other screening strategies. Copyright 2014 Association for Professionals in Infection Control and Epidemiology, Inc. All rights reserved.

**Source:** Medline

**Which antibiotic for hospital acquired pneumonia caused by MRSA?**

**Author(s)** Muscedere J

**Citation:** BMJ, 2014, vol./is. 348/(g1469), 0959-535X;1756-1833 (2014)

**Publication Date:** 2014
The ZEPHyR study: a randomized comparison of linezolid and vancomycin for MRSA pneumonia.

Author(s) Chavanet P
Citation: Medecine et Maladies Infectieuses, December 2013, vol./is. 43/11-12(451-5), 0399-077X;1769-6690 (2013 Dec)
Publication Date: December 2013
Abstract: BACKGROUND: Methicillin-resistant Staphylococcus aureus (MRSA) accounts for 10-40% of hospital-acquired pneumonia, and even more in intensive care units. The current guidelines for the treatment of MRSA nosocomial pneumonia include vancomycin and linezolid. The authors of 2 prospective randomized trials comparing vancomycin and linezolid in nosocomial pneumonia had concluded to the non-inferiority of linezolid. A slight superiority of linezolid was observed in the MRSA pneumonia subgroup, in terms of clinical success and survival, but no definite conclusion could be drawn.METHODS: A prospective randomized study was made to compare a fixed linezolid dose to dose-optimized vancomycin for the treatment of bacteriologically proven MRSA nosocomial pneumonia (ZEPHyR Study).RESULTS: Among the 165 patients treated by linezolid (57.6%) in the PP population, 95 were clinically cured at the end of the study, compared to 81 of the 174 patients treated by vancomycin (46.6%) (IC 95% of the difference 0.5%-21.6%, P=0.042). Nephrotoxicity in the mITT population reached 8.4% in the linezolid group compared to 18.2% in the vancomycin group.CONCLUSION: LNZ was superior to vancomycin for the treatment of MRSA nosocomial pneumonia. Copyright 2013 Elsevier Masson SAS. All rights reserved.
Source: Medline

Impact of intensive infection control team activities on the acquisition of methicillin-resistant Staphylococcus aureus, drug-resistant Pseudomonas aeruginosa and the incidence of Clostridium difficile-associated disease.

Author(s) Suzuki H, Senda J, Yamashita K, Tokuda Y, Kanesaka Y, Kotaki N, Ishihara H, Ishikawa H
Citation: Journal of Infection & Chemotherapy, December 2013, vol./is. 19/6(1047-52), 1341-321X;1437-7780 (2013 Dec)
Publication Date: December 2013
Abstract: The transmission of multidrug-resistant organisms (MDROs) is an emerging problem in acute healthcare facilities. To reduce this transmission, we introduced intensive infection control team (ICT) activities and investigated the impact of their introduction. This study was conducted at a single teaching hospital from 1 April 2010 to 31 March 2012. During the intervention period, all carbapenem use was monitored by the ICT, and doctors using carbapenems inappropriately were individually instructed. Information related to patients with newly identified MDROs was provided daily to the ICT and instructions on the appropriate infection control measures for MDROs were given immediately with continuous monitoring. The medical records of newly hospitalized patients were reviewed daily to check previous microbiological results and infection control intervention by the ICT was also performed for patients with a previous history of MDROs. Compared with the pre-intervention period, the antimicrobial usage
density of carbapenems decreased significantly (28.5 vs. 17.8 defined daily doses/1000 inpatient days; p < 0.001) and the frequency of use of sanitary items, especially the use of aprons, increased significantly (710 vs 1854 pieces/1000 inpatient days; p < 0.001). The number of cases with hospital-acquired MRSA (0.66 vs. 0.29 cases/1000 inpatient days; p < 0.001), hospital-acquired drug-resistant Pseudomonas aeruginosa (0.23 vs. 0.06 cases/1000 inpatient days; p = 0.006) and nosocomial Clostridium difficile-associated disease (0.47 vs. 0.11 cases/1000 inpatient days; p < 0.001) decreased significantly during the intervention period. Our study showed that proactive and continuous ICT interventions were effective for reduction of MDRO transmission.

Source: Medline

Cost-benefit of infection control interventions targeting methicillin-resistant Staphylococcus aureus in hospitals; systematic review.

Author(s) Farbman L, Avni T, Rubinovitch B, Leibovici L, Paul M

Citation: Clinical Microbiology & Infection, December 2013, vol./is. 19/12(E582-93), 1198-743X;1469-0691 (2013 Dec)

Publication Date: December 2013

Abstract: Infections caused by methicillin-resistant Staphylococcus aureus (MRSA) incur significant costs. We aimed to examine the cost and cost-benefit of infection control interventions against MRSA and to examine factors affecting economic estimates. We performed a systematic review of studies assessing infection control interventions aimed at preventing spread of MRSA in hospitals and reporting intervention costs, savings, cost-benefit or cost-effectiveness. We searched PubMed and references of included studies with no language restrictions up to January 2012. We used the Quality of Health Economic Studies tool to assess study quality. We report cost and savings per month in 2011 US$. We calculated the median save/cost ratio and the save-cost difference with interquartile range (IQR) range. We examined the effects of MRSA endemicity, intervention duration and hospital size on results. Thirty-six studies published between 1987 and 2011 fulfilled inclusion criteria. Fifteen of the 18 studies reporting both costs and savings reported a save/cost ratio >1. The median save/cost ratio across all 18 studies was 7.16 (IQR 1.37-16). The median cost across all studies reporting intervention costs (n = 31) was 8648 (IQR 2025-19 170) US$ per month; median savings were 38 751 (IQR 14 206-75 842) US$ per month (23 studies). Higher save/cost ratios were observed in the intermediate to high endemicity setting compared with the low endemicity setting, in hospitals with <500-beds and with interventions of >6 months. Infection control intervention to reduce spread of MRSA in acute-care hospitals showed a favourable cost/benefit ratio. This was true also for high MRSA endemicity settings. Unresolved economic issues include rapid screening using molecular techniques and universal versus targeted screening. 2013 The Authors Clinical Microbiology and Infection 2013 European Society of Clinical Microbiology and Infectious Diseases.

Source: Medline

A systematic literature review and meta-analysis of factors associated with methicillin-resistant Staphylococcus aureus colonization at time of hospital or intensive care unit admission.

Author(s) McKinnell JA, Miller LG, Eells SJ, Cui E, Huang SS

Citation: Infection Control & Hospital Epidemiology, October 2013, vol./is. 34/10(1077-86), 0899-823X;1559-6834 (2013 Oct)

Publication Date: October 2013

Abstract: OBJECTIVE: Screening for methicillin-resistant Staphylococcus aureus
MRSA in high-risk patients is a legislative mandate in 9 US states and has been adopted by many hospitals. Definitions of high risk differ among hospitals and state laws. A systematic evaluation of factors associated with colonization is lacking. We performed a systematic review of the literature to assess factors associated with MRSA colonization at hospital admission.

**DESIGN:** We searched MEDLINE from 1966 to 2012 for articles comparing MRSA colonized and noncolonized patients on hospital or intensive care unit (ICU) admission. Data were extracted using a standardized instrument. Meta-analyses were performed to identify factors associated with MRSA colonization.

**RESULTS:** We reviewed 4,381 abstracts; 29 articles met inclusion criteria (n = 76,913 patients). MRSA colonization at hospital admission was associated with recent prior hospitalization (odds ratio [OR], 2.4 [95% confidence interval (CI), 1.3-4.7]; P < .01), nursing home exposure (OR, 3.8 [95% CI, 2.3-6.3]; P < .01), and history of exposure to healthcare-associated pathogens (MRSA carriage: OR, 8.0 [95% CI, 4.2-15.1]; Clostridium difficile infection: OR, 3.4 [95% CI, 2.2-5.3]; vancomycin-resistant Enterococci carriage: OR, 3.1 [95% CI, 2.5-4.0]; P < .01 for all). Select comorbidities were associated with MRSA colonization (congestive heart failure, diabetes, pulmonary disease, immunosuppression, and renal failure; P < .01 for all), while others were not (human immunodeficiency virus, cirrhosis, and malignancy). ICU admission was not associated with an increased risk of MRSA colonization (OR, 1.1 [95% CI, 0.6-1.8]; P = .87). CONCLUSIONS: MRSA colonization on hospital admission was associated with healthcare contact, previous healthcare-associated pathogens, and select comorbid conditions. ICU admission was not associated with MRSA colonization, although this is commonly used in state mandates for MRSA screening. Infection prevention programs utilizing targeted MRSA screening may consider our results to define patients likely to have MRSA colonization.

**Source:** Medline

**Emerging drugs on methicillin-resistant Staphylococcus aureus.**

**Author(s)** Liapikou A, Torres A

**Citation:** Expert Opinion on Emerging Drugs, September 2013, vol./is. 18/3(291-305), 1472-8214;1744-7623 (2013 Sep)

**Publication Date:** September 2013

**Abstract:** INTRODUCTION: Methicillin-resistant Staphylococcus aureus (MRSA) has proven to be a prominent pathogen in hospitals and in the community, which is capable of causing a variety of severe infections. Until now, there has been a limited antimicrobial armamentarium for use against MRSA, of which glycopeptides and linezolid are the main agents used. AREAS COVERED: This review assesses current treatment and the agents being developed for MRSA infections. A search was conducted in PubMed for English-language references published from 2000 to 2013, using combinations of the following terms: 'MRSA', 'MRSA therapy', 'gram (+) infections therapy', 'new antibiotics', 'vancomycin', 'staphylococcus resistance', 'oritavancin', 'ceftaroline', 'linezolid' and 'tigecycline'. The ClinicalTrials website was also searched with keywords regarding the new antibiotic agents against MRSA infections. EXPERT OPINION: There are a number of new agents, the place of which in therapeutic regimens is yet to emerge. New glycopeptides, such as dalbavancin and oritavancin, with long half-lives, enabling once-weekly dosing, and oral agents, such as iclaprim, may provide a treatment approach for outpatient therapy. A decision must be made regarding the most suitable agent for an individual patient, the site of infection and the place of therapy.

**Source:** Medline
Advances in MRSA drug discovery: where are we and where do we need to be?

**Author(s):** Kurosu M, Siricilla S, Mitachi K

**Citation:** Expert Opinion on Drug Discovery, September 2013, vol./is. 8/9(1095-116), 1746-0441;1746-045X (2013 Sep)

**Publication Date:** September 2013

**Abstract:** INTRODUCTION: Methicillin-resistant Staphylococcus aureus (MRSA) have been on the increase during the past decade, due to the steady growth of the elderly and immunocompromised patients, and the emergence of multidrug-resistant (MDR) bacterial strains. Although there are a limited number of anti-MRSA drugs available, a number of different combination antimicrobial drug regimens have been used to treat serious MRSA infections. Thus, the addition of several new antistaphylococcal drugs into clinical practice should broaden clinician's therapeutic options. As MRSA is one of the most common and problematic bacteria associated with increasing antimicrobial resistance, continuous efforts for the discovery of lead compounds as well as development of alternative therapies and faster diagnostics are required.

**AREAS COVERED:** This article summarizes the FDA-approved drugs to treat MRSA infections, the drugs in clinical trials, and the drug leads for MRSA and related Gram-positive bacterial infections. In addition, the article discusses the mode of action of antistaphylococcal molecules and the resistant mechanisms of some molecules.

**EXPERT OPINION:** The number of pipeline drugs presently undergoing clinical trials is not particularly encouraging. There are limited and rather expensive therapeutic options for MRSA infections in the critically ill. Further research efforts are required for effective phage therapy on MRSA infections in clinical use, which seem to be attractive therapeutic options for the future.

**Source:** Medline

Effects of daily bathing with chlorhexidine and acquired infection of methicillin-resistant Staphylococcus aureus and vancomycin-resistant Enterococcus: a meta-analysis.

**Author(s):** Chen W, Li S, Li L, Wu X, Zhang W

**Citation:** Journal of Thoracic Disease, August 2013, vol./is. 5/4(518-24), 2072-1439;2072-1439 (2013 Aug)

**Publication Date:** August 2013

**Abstract:** OBJECTIVE: Chlorhexidine gluconate (CHG) is a common and safe antimicrobial agent and has been used widely in hand hygiene and skin disinfection; however, whether daily bathing with CHG results in the reduced acquired infection of methicillin-resistant Staphylococcus aureus (MRSA) and vancomycin-resistant Enterococcus (VRE) remains inconclusive. METHODS: We did a meta-analysis searching PubMed, Embase and the Cochrane Central Register database for available studies. Primary outcomes were acquired infection of MRSA, VRE. RESULTS: In all, twelve articles were available in this review. We found that daily application of chlorhexidine bathing would significantly lower the acquired colonization of MRSA [incidence rate ratio (IRR) =0.58, 95% confidence interval (CI): 0.41-0.82] or VRE (IRR =0.51, 95% CI: 0.36-0.73). Remarkably, the using of CHG bathing would significantly reduce the MRSA infection (IRR =0.56, 95% CI: 0.37-0.85), MRSA ventilator associated pneumonia (VAP) (IRR =0.22, 95% CI: 0.07-0.64) and VRE infection (IRR =0.57, 95% CI: 0.33-0.97). No significant publication bias was found in this meta-analysis. CONCLUSIONS: The application of CHG bathing would significantly decrease acquired infection of MRSA or VRE, which may be an important complementary intervention to barrier precautions.

**Source:** Medline

Available in fulltext from Journal of Thoracic Disease at National Library of
Addition of rifampin to vancomycin for methicillin-resistant Staphylococcus aureus infections: what is the evidence?

**Author(s)** Tremblay S, Lau TT, Ensom MH

**Citation**: Annals of Pharmacotherapy, July 2013, vol./is. 47/7-8(1045-54), 1060-0280;1542-6270 (2013 Jul-Aug)

**Publication Date**: July 2013

**Abstract**: OBJECTIVE: To evaluate evidence supporting efficacy and safety of the combination of vancomycin and rifampin for treatment of methicillin-resistant Staphylococcus aureus (MRSA) infections. DATA SOURCES: MEDLINE (1946-February 2013), EMBASE (1974-February 2013) and Cochrane Database of Systematic Reviews were searched. STUDY SELECTION: All human prospective trials and retrospective studies evaluating clinical outcomes of vancomycin-rifampin combinations were included. Case reports, case series, and in vitro or animal data were excluded. DATA EXTRACTION: Full-text articles were included and abstracts excluded; 43 of 421 references were reviewed. Five articles met inclusion and were evaluated. DATA SYNTHESIS: A nonrandomized prospective trial reported complete clearance of MRSA bacteremia at 24 hours in all 14 burn patients receiving vancomycin-rifampin therapy. In a case-control study of 42 patients with MRSA endocarditis, adding rifampin prolonged bacteremia (5.2 vs 2.1 days, \(p < 0.001\)), decreased survival rates (79% vs 95%, \(p = 0.048\)), resulted in drug interactions (52% of cases), and increased hepatic transaminases (21% vs 2%, \(p = 0.014\)). In a retrospective analysis of 28 patients with persistent MRSA bacteremia requiring salvage therapy, switching from vancomycin-based to linezolid-based treatment was associated with better salvage success than adding rifampin (88% vs 0%, \(p < 0.001\)). In a randomized open-label trial of 42 patients with MRSA endocarditis, addition of rifampin to vancomycin did not affect cure rates (90% combination vs 82% monotherapy, \(p > 0.20\)), but increased duration of bacteremia (9 vs 7 days, \(p > 0.20\)) compared with vancomycin monotherapy. Another randomized open-label trial of combination versus monotherapy for MRSA pneumonia in 93 intensive care unit patients reported higher clinical successes (53.7% vs 31.0%, \(p = 0.047\)), similar 30-day mortality rates, and more adverse events with combination therapy (11 vs 6). CONCLUSIONS: Limited evidence exists to support the adjunctive use of rifampin to treat MRSA infections. The combination may increase drug interactions, adverse effects, and rifampin resistance. Further studies are needed to define the role of rifampin adjunct therapy.

Source: Medline

Impact of preoperative MRSA screening and decolonization on hospital-acquired MRSA burden.

**Author(s)** Mehta S, Hadley S, Hutzler L, Slover J, Phillips M, Bosco JA 3rd

**Citation**: Clinical Orthopaedics & Related Research, July 2013, vol./is. 471/7(2367-71), 0009-921X;1528-1132 (2013 Jul)

**Publication Date**: July 2013

**Abstract**: BACKGROUND: Hospital-acquired infections caused by methicillin-resistant Staphylococcus aureus (MRSA) are a source of morbidity and mortality. S. aureus is the most common pathogen in prosthetic joint infections and the incidence of MRSA is increasing. QUESTIONS/PURPOSES: The purposes of this study were (1) to determine the MRSA prevalence density rate at a specialty orthopaedic hospital before and after the implementation of a screening and decolonization protocol, (2) to compare our prevalence density to that of an affiliated university hospital, to control for changes in MRSA prevalence density that might have been
independent of the decolonization protocol, and (3) to measure the admission prevalence density rate of MRSA in an elective orthopaedic surgery population and the compliance rate of 26 patients with the protocol [corrected].

**METHODS:** In October 2008, we implemented a MRSA screening and decolonization protocol for patients undergoing elective orthopaedic surgery. Nasal swabs were used for screening and mupirocin nasal ointment and chlorhexidine skin antisepsis where prescribed for decolonization to all patients. At the surgical visit, compliance was measured and the patients who were MRSA positive received vancomycin for antibiotic prophylaxis. Institution wide surveillance for multidrug-resistant organisms, including MRSA provided a comparison of the change in MRSA burden at the orthopaedic hospital versus the university hospital.

**RESULTS:** Before implementation of the preoperative staphylococcal decolonization protocol there were 79 MRSA-positive cultures in 64,327 patient-days for a prevalence density rate of 1.23 per 1000 patient-days. After protocol implementation, 53 MRSA-positive cultures were identified in 63,860 patient-days for a rate of 0.83 per 1000 patient-days. Before the protocol, the MRSA prevalence density at the specialty hospital was similar to that of the university hospital; after implementation of the protocol, the prevalence density at the specialty hospital was 33% lower than that of the university hospital. The MRSA admission prevalence was 3.02%. The compliance rate was greater than 95%.

**CONCLUSIONS:** Implementation of a staphylococcal decolonization protocol at a single specialty orthopaedic hospital decreased the prevalence density of MRSA.

**Source:** Medline

**New drugs for methicillin-resistant Staphylococcus aureus: an update.**

**Author(s)** Kumar K, Chopra S

**Citation:** Journal of Antimicrobial Chemotherapy, July 2013, vol./is. 68/7(1465-70), 0305-7453;1460-2091 (2013 Jul)

**Publication Date:** July 2013

**Abstract:** Methicillin-resistant Staphylococcus aureus (MRSA) remains a leading cause of bacterial infections worldwide, with a dwindling repertoire of effective antimicrobials active against it. This review aims to provide an update on novel anti-MRSA molecules currently under pre-clinical and clinical development, with emphasis on their mechanism of action. This review is limited to molecules that target the pathogen directly and does not detail immunomodulatory anti-infectives.

**Source:** Medline

Available in fulltext from Journal of Antimicrobial Chemotherapy at Free Access Content

**Treatment of bacteraemia: meticillin-resistant Staphylococcus aureus (MRSA) to vancomycin-resistant S. aureus (VRSA).**

**Author(s)** Gould IM

**Citation:** International Journal of Antimicrobial Agents, June 2013, vol./is. 42 Suppl/(S17-21), 0924-8579;1872-7913 (2013 Jun)

**Publication Date:** June 2013

**Abstract:** Around the world, Staphylococcus aureus remains a dominant cause of bacteraemia. Whilst meticillin resistance remains the major phenotype of concern, various levels of reduced glycopeptide susceptibility are emerging with increasing frequency. The most common MRSA phenotypes now have raised vancomycin MICs within the susceptible range (MICs of 1-2mg/L). This phenomenon, known as MIC creep, is hotly contested and often denied. Key to detecting MIC creep may be to examine isolates fresh, as freezing can allow reversion to wild-type MIC, presumably by loss of mutations. Treatment failure is common with vancomycin
and it is uncertain whether higher doses are beneficial. At the other extreme, when
enough mutations have accumulated, full VISA status is achieved, although this can
also be unstable on storage. Heteroresistant and VISA strains can be considered the
inevitable end result of continued MIC creep and are even more likely to fail
glycopeptide treatment. Currently full vancomycin resistance is uncommon, with
only approximately 20 strains described and confirmed worldwide. Empirical
treatment for patients with undefined Gram-positive sepsis can undoubtedly be
improved by knowledge of MRSA status, so this is a potential advantage of hospital
admission screening. If a patient is risk-assessed or screen-positive for MRSA, and
infection is not serious, then vancomycin or teicoplanin is appropriate empirical
therapy, providing loading doses are given to achieve therapeutic concentrations
immediately (trough 15 mg/L). For life-threatening infections, the glycopeptides are
inadequate unless the isolate is likely to be fully susceptible (Etest<1.5mg/L). If
not, daptomycin (8-10mg/L) can be used as monotherapy but the MIC should be
measured as soon as possible. Copyright 2013 Elsevier B.V. and the International
Society of Chemotherapy. All rights reserved.

Source: Medline

**MRSA infection in the neonatal intensive care unit.**

**Author(s)** Giuffre M, Bonura C, Cipolla D, Mammina C

**Citation:** Expert Review of Antiinfective Therapy, May 2013, vol./is. 11/5(499-509), 1478-7210;1744-8336 (2013 May)

**Publication Date:** May 2013

**Abstract:** Methicillin-resistant Staphylococcus aureus (MRSA) is well known as
one of the most frequent etiological agents of healthcare-associated infections. The
epidemiology of MRSA is evolving with emergence of community-associated
MRSA, the clonal spread of some successful clones, their spillover into healthcare
settings and acquisition of antibacterial drug resistances. Neonatal intensive care
unit (NICU) patients are at an especially high risk of acquiring colonization and
infection by MRSA. Epidemiology of MRSA in NICU can be very complex
because outbreaks can overlap endemic circulation and make it difficult to trace
transmission routes. Moreover, increasing prevalence of community-associated
MRSA can jeopardize epidemiological investigation, screening and effectiveness of
control policies. Surveillance, prevention and control strategies and clinical
management have been widely studied and are still the subject of scientific debate.
More data are needed to determine the most cost-effective approach to MRSA
control in NICU in light of the local epidemiology.

Source: Medline

**Alternative agents to vancomycin for the treatment of methicillin-resistant Staphylococcus aureus infections.**

**Author(s)** Culos KA, Cannon JP, Grim SA

**Citation:** American Journal of Therapeutics, March 2013, vol./is. 20/2(200-12),
1075-2765;1536-3686 (2013 Mar-Apr)

**Publication Date:** March 2013

**Abstract:** Resistant gram-positive infections, specifically methicillin-resistant
Staphylococcus aureus (MRSA), carry an increased risk for morbidity and
mortality. Historically, MRSA has been a cause of nosocomial infections, although
recent reports have noted an increased prevalence in community-acquired MRSA
infections. Vancomycin is the preferred agent to treat MRSA. However, cases of S.
aureus with reduced susceptibility to vancomycin have been reported, prompting
the need for alternative treatment options. In this review, we discuss the currently
available agents with MRSA activity and those in development. Linezolid and
quinupristin/dalfopristin have been demonstrated as effective although potential toxicities must be taken into consideration before their use. Daptomycin, tigecycline, telavancin, and ceftaroline are well tolerated but lack the clinical data to support a superior place in treatment over vancomycin. Several new agents in various stages of development have also demonstrated MRSA activity. Currently, vancomycin remains the gold-standard treatment option for MRSA infections. In situations that limit its use, consideration of patient-specific parameters, cost, and relevant clinical data demonstrating drug safety and efficacy should be employed for the selection of the appropriate alternative agent.

Source: Medline

**Methicillin-resistant Staphylococcus aureus in obstetrics.**

**Author(s)** Sheffield JS

**Citation:** American Journal of Perinatology, February 2013, vol./is. 30/2(125-9), 0735-1631;1098-8785 (2013 Feb)

**Publication Date:** February 2013

**Abstract:** Methicillin-resistant Staphylococcus aureus (MRSA) remains one of the major multiple antibiotic-resistant bacterial pathogens causing serious community-associated and health care-associated infections. It is now pervasive in the obstetric population associated with skin and soft tissue infections, mastitis, episiotomy, and cesarean wound infections and urinary tract infections. This review addresses the epidemiology, definitions, microbiology, and pathogenesis as well as common clinical presentations. A discussion of the 2011 Infectious Diseases Society of America MRSA treatment guidelines details available antibiotics, invasive and noninvasive MRSA management, and specific factors related to obstetrics. Finally, prevention strategies including decolonization are discussed. Thieme Medical Publishers 333 Seventh Avenue, New York, NY 10001, USA.

Source: Medline

**High vancomycin minimum inhibitory concentration and clinical outcomes in adults with methicillin-resistant Staphylococcus aureus infections: a meta-analysis.**

**Author(s)** Jacob JT, DiazGranados CA

**Citation:** International Journal of Infectious Diseases, February 2013, vol./is. 17/2(e93-e100), 1201-9712;1878-3511 (2013 Feb)

**Publication Date:** February 2013

**Abstract:** BACKGROUND: Patients with methicillin-resistant Staphylococcus aureus (MRSA) infections caused by isolates with a high but 'susceptible' minimum inhibitory concentration (MIC) to vancomycin may suffer poor outcomes. The aim of this study was to determine the association of high compared to low vancomycin MICs and clinical outcomes (treatment failure and mortality) in patients with MRSA infections.METHODS: PubMed, the Cochrane Library, and electronic abstracts from meetings were queried from January 2000 to July 2010. Two reviewers independently screened titles and abstracts of studies evaluating outcomes of patients with MRSA infections, using broth microdilution (BMD) or the Etest to determine MIC, for full-text review. Patients participating in included studies were classified into two mutually exclusive groups: high MIC or low MIC. High MIC was defined as MIC >1mg/l by BMD or >1.5mg/l by Etest. Study-defined failure and mortality were assessed in each group.RESULTS: Fourteen publications and six electronic abstracts met the inclusion criteria, with 2439 patients (1492 high MIC and 947 low MIC). There was no evidence of publication bias or heterogeneity. An increased risk of failure was observed in the high MIC group compared to the low MIC group (summary risk ratio (RR) 1.40, 95% confidence interval (CI) 1.15-1.71). The overall mortality risk was greater in the
high MIC group than in the low MIC group (summary RR 1.42, 95% CI 1.08-1.87). Sensitivity analyses showed similar findings for failure (summary RR 1.37, 95% CI 1.09-1.73) and mortality (summary RR 1.46, 95% CI 1.06-2.01) for patients with bacteremia. The study quality was poor-to-moderate, and study-defined endpoints were variable. CONCLUSIONS: A susceptible but high MIC to vancomycin is associated with increased mortality and treatment failure among patients with MRSA infections. Copyright 2012 International Society for Infectious Diseases. Published by Elsevier Ltd. All rights reserved.

Source: Medline
Available in fulltext from International Journal of Infectious Diseases at Free Access Content

Rapid testing for methicillin-resistant Staphylococcus aureus: implications for antimicrobial stewardship.
Author(s) Geiger K, Brown J
Citation: American Journal of Health-System Pharmacy, February 2013, vol./is. 70/4(335-42), 1079-2082:1535-2900 (2013 Feb 15)
Publication Date: February 2013
Abstract: PURPOSE: Assays for the rapid identification of methicillin-resistant Staphylococcus aureus (MRSA) infection are reviewed, with a discussion of their potential role in antimicrobial stewardship programs. SUMMARY: Relative to standard culture and susceptibility testing methods, rapid MRSA assays developed during the last decade can dramatically shorten laboratory turnaround times (1-5 hours versus 48-96 hours), enabling clinicians to more quickly confirm or rule out MRSA infection and optimize antistaphylococcal therapy. Some rapid MRSA assays are based on polymerase chain reaction techniques while others use bacteriophage technology; four companies offer products approved by the Food and Drug Administration (FDA) for testing certain clinical specimens. In general, the currently available rapid MRSA tests have been demonstrated to have good sensitivity (91-100%) and specificity (95-100%), but one test product with marginally acceptable sensitivity (75%) was withdrawn from the U.S. market after reports of unacceptably high rates of false-positive and false-negative results. There is limited published evidence on the impact of any rapid MRSA assay on patient-level outcome and cost-effectiveness measures. Hospitals evaluating rapid MRSA tests should weigh factors such as their relative costs, reliability, and sample-processing times, as well as the need for policies and processes to ensure the prompt communication of test results to clinicians. CONCLUSION: Currently available rapid MRSA assays differ in specificity, sensitivity, cost, FDA-approved applications, and laboratory turnaround time, and published data on their comparative merits in terms of patient care and economic outcomes are limited. The optimal role of such tests in antimicrobial stewardship programs remains to be defined.
Source: Medline
Available in fulltext from American Journal of Health-System Pharmacy at EBSCOhost

Methicillin-resistant Staphylococcus aureus (MRSA): colonisation and pre-operative screening.
Author(s) Goyal N, Miller A, Tripathi M, Parvizi J
Citation: Bone & Joint Journal, January 2013, vol./is. 95-B/1(4-9), 2049-4408 (2013 Jan)
Publication Date: January 2013
Abstract: Staphylococcus aureus is one of the leading causes of surgical site
infection (SSI). Over the past decade there has been an increase in methicillin-resistant S. aureus (MRSA). This is a subpopulation of the bacterium with unique resistance and virulence characteristics. Nasal colonisation with either S. aureus or MRSA has been demonstrated to be an important independent risk factor associated with the increasing incidence and severity of SSI after orthopaedic surgery. Furthermore, there is an economic burden related to SSI following orthopaedic surgery, with MRSA-associated SSI leading to longer hospital stays and increased hospital costs. Although there is some controversy about the effectiveness of screening and eradication programmes, the literature suggests that patients should be screened and MRSA-positive patients treated before surgical admission in order to reduce the risk of SSI.

**Source:** Medline

**Universal rapid screening for methicillin-resistant Staphylococcus aureus in the intensive care units in a large community hospital.**

**Author(s)** Kjonegaard R, Fields W, Peddecord KM

**Citation:** American Journal of Infection Control, January 2013, vol./is. 41/1(45-50), 0196-6553;1527-3296 (2013 Jan)

**Publication Date:** January 2013

**Abstract:** **BACKGROUND:** Health care-associated methicillin-resistant Staphylococcus aureus (HA-MRSA) infections constitute a significant risk for hospitalized patients. This study evaluates the costs and effects of comprehensive and state-mandated MRSA screening for intensive care unit (ICU) patients and subsequent contact precautions on the rate of HA-MRSA. **METHODS:** A pre- and postimplementation study was conducted in a 24-bed medical intensive care unit (MICU) and a 15-bed surgical intensive care unit (SICU) at an acute care 536-bed community hospital. This study used computerized records for all patients admitted to ICUs. Costs were estimated from financial records. **RESULTS:** HA-MRSA infection rates did not decline after implementation of ICU screening. Regression analysis demonstrated that patients admitted from skilled nursing facilities, assisted living, and similar facilities were 12 times more likely to screen positive for MRSA as compared with patients admitted from home. The costs to identify each MRSA positive patient were $1,650 and $953 for comprehensive and state-mandated periods, respectively. **CONCLUSION:** In low prevalence hospitals without MRSA outbreaks, it is recommended that MRSA screening be conducted on patients admitted from skilled nursing and similar facilities because they are most likely to be colonized with MRSA. Results do not support mandates to conduct screening on all patients admitted to critical care units. Copyright 2013 Association for Professionals in Infection Control and Epidemiology, Inc. Published by Mosby, Inc. All rights reserved.

**Source:** Medline

**Antimicrobial photodynamic therapy for methicillin-resistant Staphylococcus aureus infection.**

**Author(s)** Fu XJ, Fang Y, Yao M

**Citation:** BioMed Research International, 2013, vol./is. 2013/(159157), 2314-6141 (2013)

**Publication Date:** 2013

**Abstract:** Nowadays methicillin-resistant Staphylococcus aureus (MRSA) is one of the most common multidrug resistant bacteria both in hospitals and in the community. In the last two decades, there has been growing concern about the increasing resistance to MRSA of the most potent antibiotic glycopeptides. MRSA infection poses a serious problem for physicians and their patients. Photosensitizer-
mediated antimicrobial photodynamic therapy (PDT) appears to be a promising and innovative approach for treating multidrug resistant infection. In spite of encouraging reports of the use of antimicrobial PDT to inactivate MRSA in large in vitro studies, there are only few in vivo studies. Therefore, applying PDT in the clinic for MRSA infection is still a long way off.

Source: Medline
Available in fulltext from BioMed Research International at Directory of Open Access Journals

Pharmacodynamics of vancomycin in elderly patients aged 75 years or older with methicillin-resistant Staphylococcus aureus hospital-acquired pneumonia.

Author(s) Mizokami F, Shibasaki M, Yoshizue Y, Noro T, Mizuno T, Furuta K
Citation: Clinical Interventions In Aging, 2013, vol./is. 8/(1015-21), 1176-9092;1178-1998 (2013)
Publication Date: 2013
Abstract: BACKGROUND: Methicillin-resistant Staphylococcus aureus (MRSA) infections are associated with significant mortality and health care costs. To improve treatment outcomes for MRSA, a better understanding of the pharmacokinetic/pharmacodynamic parameters of vancomycin is required to develop optimal dosing strategies, particularly in elderly patients (>75 years of age) with limited renal function. The purpose of this study was to determine whether pharmacokinetic indices for vancomycin are associated with mortality from MRSA hospital-acquired pneumonia in elderly patients.

METHODS: We conducted a retrospective observational study with 28-day mortality as the primary outcome for 94 patients with MRSA hospital-acquired pneumonia who had been treated with vancomycin from January 2006 through December 2012. Our most recent sampling of MRSA isolates had a minimum inhibitory concentration (MIC) for vancomycin of 1 μg/mL (86%), indicating that the area under the curve (AUC) was equal to the AUC/MIC in these isolates. The primary data from 28-day survivors and nonsurvivors were compared.

RESULTS: Among 94 elderly patients, the mean age was 82 (75-99) years. Multivariate analyses revealed that, among the factors examined, only the nonoptimal AUC (<250, >450 μg*h/mL) was an independent predictor of 28-day mortality in elderly patients (odds ratio 23.156, 95% confidence interval 6.814-78.687, P < 0.001). We detected a significant difference for increasing nephrotoxicity in nonsurvivors (nine of 32 patients [28%]) compared with survivors (three of 62 patients [4.8%], P = 0.003).

CONCLUSION: This finding indicates that patients with potentially poor renal function are likely to have increased AUC values and a poor prognosis. Consideration of the pharmacokinetics/pharmacodynamics of vancomycin and targeting an AUC/MIC value of 250-450 μg*h/mL may result in improved treatment outcomes for elderly patients with MRSA hospital-acquired pneumonia.

Source: Medline
Available in fulltext from Clinical Interventions in Aging at Directory of Open Access Journals

Successful reduction of hospital-acquired methicillin-resistant Staphylococcus aureus in a urology ward: a 10-year study.

Citation: BMC Urology, 2013, vol./is. 13/(35), 1471-2490:1471-2490 (2013)
Publication Date: 2013
Abstract: BACKGROUND: To eradicate hospital-acquired methicillin-resistant Staphylococcus aureus (MRSA) using a stepwise infection control strategy that
includes an avoidance of antimicrobial prophylaxis (AMP) based on surgical wound classification and an improvement in operative procedures in gasless single-port urologic surgery.

METHODS: The study was conducted at an 801-bed university hospital. Since 2001, in the urology ward, we have introduced the stepwise infection control strategy. In 2007, surveillance cultures for MRSA in all urological patients were commenced. The annual incidence of MRSA was calculated as a total number of newly identified MRSA cases per 1,000 patient days. Trend analysis was performed using a Poisson regression.

RESULTS: Over the study period, 139,866 patients, including 10,201 urology patients, were admitted to our hospital. Of these patients, 3,719 patients, including 134 ones in the urology ward, were diagnosed with MRSA throughout the entire hospital. Although the incidence of MRSA increased throughout the entire hospital (p = 0.002), it decreased significantly in the urology ward (p < 0.0001). Of the 134 cases, 45 (33.6%) were classified as "imported," and 89 (66.4%) as "acquired." In the urology ward, the incidence of acquired MRSA decreased significantly over time (p < 0.0001), whereas the incidence of imported MRSA did not change over time (p = 0.66). A significant decrease (p < 0.0001) in the incidence of clinically significant MRSA infection over time was found.

CONCLUSIONS: Stepwise infection control strategy that includes a reduction or avoidance of antimicrobial prophylaxis in minimally invasive surgery can contribute to a reduction in hospital-acquired MRSA.

TRIAL REGISTRATION: Current study has approved by the institutional ethical review board (No.1141).

Source: Medline
Available in fulltext at BMC Urology; Collection notes: On first login to a ProQuest journal you will need to select 'Athens (OpenAthens Federation)' from Select Region, and then 'NHS England' from Choose your Library.

Available in fulltext from BMC Urology at Free Access Content

Cost-effectiveness of linezolid in methicillin-resistant Staphylococcus aureus skin and skin structure infections.

Author(s) Bounthavong M, Hsu DI
Citation: Expert Review of Pharmacoeconomics & Outcomes Research, December 2012, vol./is. 12/6(683-98), 1473-7167;1744-8379 (2012 Dec)
Publication Date: December 2012
Abstract: Linezolid is a novel oxazolidinone antibacterial agent with a broad clinical application, especially in methicillin-resistant Staphylococcus aureus skin and soft-tissue infections and skin and skin-structure infections. Pharmacoeconomic advantages include decreased hospital duration, reduction in intravenous antibiotic use and early discharge opportunities that contribute to an overall reduction in healthcare resources. Linezolid's oral formulation has a pharmacokinetic profile that is similar to its intravenous formulation, which creates opportunities for early discharge not available to comparators like vancomycin and daptomycin. Both vancomycin and daptomycin require intravenous therapy, which compounds the resources required in treating methicillin-resistant S. aureus skin and soft tissue/skin and skin structure infections. Pharmacoeconomic studies have demonstrated an overall reduction in total direct costs to the payer in favor of linezolid over its comparators. Its overall reduction in healthcare utilization makes it an appropriate alternative to the standard therapy, vancomycin.

Source: Medline
Available in fulltext at Expert Review of Pharmacoeconomics and Outcomes Research; Collection notes: On first login to a ProQuest journal you will need to select 'Athens (OpenAthens Federation)' from Select Region, and then 'NHS England' from Choose your Library.
Methicillin-resistant Staphylococcus aureus in the neonatal intensive care unit.

**Author(s)** Nelson MU, Gallagher PG

**Citation:** Seminars in Perinatology, December 2012, vol./is. 36/6(424-30), 0146-0005;1558-075X (2012 Dec)

**Publication Date:** December 2012

**Abstract:** Methicillin-resistant Staphylococcus aureus (MRSA) is a frequent source of infections affecting premature and critically ill infants in neonatal intensive care units (NICUs). Neonates are particularly vulnerable to colonization and infection with MRSA, and many studies have attempted to identify risk factors that predispose certain infants to its acquisition to discover potential areas for clinical intervention. In addition, epidemiologic assessment of transmission patterns and molecular analysis of changes in the characteristics of MRSA strains over time have helped clarify additional factors affecting MRSA infections in the NICU. Numerous strategies for prevention and eradication have been used with variable rates of success. Despite these interventions, MRSA remains a significant source of morbidity in the NICU population. Copyright 2012 Elsevier Inc. All rights reserved.

**Source:** Medline

Temporal effects of infection control practices and the use of antibiotics on the incidence of MRSA.

**Author(s)** Bertrand X, Lopez-Lozano JM, Slekovec C, Thouverez M, Hocquet D, Talon D

**Citation:** Journal of Hospital Infection, November 2012, vol./is. 82/3(164-9), 0195-6701;1532-2939 (2012 Nov)

**Publication Date:** November 2012

**Abstract:** BACKGROUND: Meticillin-resistant Staphylococcus aureus (MRSA) has spread throughout the world and has become highly endemic worldwide. The need for implementing MRSA control strategies is no longer a matter of debate. AIM: To determine the temporal association between various infection control practices, the use of antibiotics and the incidence of MRSA in a 1200-bed French university hospital. METHODS: A multi-variate time-series analysis, based on monthly data from a nine-year period (January 2000-December 2008), was performed in a 1200-bed French university hospital to determine the temporal association between different variables and the incidence of MRSA. MRSA colonization pressure, infection control practices and use of antibiotics were considered in the analysis. FINDINGS: Time-series analysis showed a positive significant relationship between the incidence of hospital-acquired MRSA (HA-MRSA) and MRSA colonization pressure, the use of antibiotics (fluoroquinolones, macrolides and aminoglycosides) and the use of gloves. Conversely, a global negative correlation was observed between the incidence of HA-MRSA and the use of alcohol-based hand rub. Overall, the model explained 40.5% of the variance in the monthly incidence of MRSA. CONCLUSION: This study showed that admission of patients with MRSA, the use of antibiotics and infection control practices contributed to the incidence of HA-MRSA. This suggests that efforts should be focused on high compliance with hand disinfection. These results also raise concerns about the use of gloves when caring for patients with MRSA. Copyright 2012 The Healthcare Infection Society. Published by Elsevier Ltd. All rights reserved.

**Source:** Medline

Available in full text from Journal of Hospital Infection at the ULHT Library and Knowledge Services' eJournal collection
Impacts of a long-term programme of active surveillance and chlorhexidine baths on the clinical and molecular epidemiology of meticillin-resistant Staphylococcus aureus (MRSA) in an Intensive Care Unit in Scotland.

Author(s) Sangal V, Girvan EK, Jadhav S, Lawes T, Robb A, Vali L, Edwards GF, Yu J, Gould IM

Citation: International Journal of Antimicrobial Agents, October 2012, vol./is. 40/4(323-31), 0924-8579;1872-7913 (2012 Oct)

Publication Date: October 2012

Abstract: Evidence is accumulating that active surveillance, when combined with appropriate infection control, is a successful measure for controlling hospital-acquired meticillin-resistant Staphylococcus aureus (MRSA). In this study, the impacts of a long-term control strategy of this type, including the use of chlorhexidine baths, on the clinical and molecular epidemiology of MRSA in the Intensive Care Unit of Aberdeen Royal Infirmary were investigated. Characterisation of 85 sequential index MRSA isolates was performed using phenotypic methods (biotyping), antibiotic susceptibility testing and three genotypic methods (pulsed-field gel electrophoresis, spa typing and multilocus sequence typing) over a 4-year period. There was no evidence of loss in effectiveness of the control strategy over the study period. Compliance with screening remained high (>85%) throughout and there was no significant increase in the prevalence of MRSA detected in surveillance (P=0.43 for trend) or clinical cultures (P=0.79). There were no significant trends in rates of other index surveillance organisms (P>0.5). Results of the three typing methods were in general agreement with three prevalent MRSA clones [clonal complex 22 (CC22), CC30 and CC45]. CC22 emerged as the dominant clonal complex alongside a significant decline in CC30 (P=0.002). CC45 was significantly more likely to be positive in glycopeptide resistance screens (P<0.001). There was no increase in antibiotic or chlorhexidine resistance. Long-term chlorhexidine bathing was not associated with any detectable loss of efficacy or increase in resistance in MRSA or with any increase in infection with other organisms. Changing clonal epidemiology occurred with no overall change in the prevalence of MRSA. Copyright 2012 Elsevier B.V. and the International Society of Chemotherapy. All rights reserved.

Source: Medline

A perspective on the evidence regarding meticillin-resistant Staphylococcus aureus surveillance.

Author(s) Kavanagh K, Abusalem S, Saman DM

Citation: Journal of patient safety, September 2012, vol./is. 8/3(140-3), 1549-8417;1549-8425 (2012 Sep)

Publication Date: September 2012

Abstract: Two prominent studies have been used by policy makers to prevent the enactment of standards of care regarding active surveillance of patients with meticillin-resistant Staphylococcus aureus in hospital settings. In this brief review and perspective of those studies, we contend that both studies have serious limitations (i.e., the intervention group was not given optimal intervention) that may not have been scrutinized by many policy makers, health officials, and other researchers. These studies seem to have had a disproportionate impact on health-care policy despite their limitations. Furthermore, health-care policy and treatment standards need to reflect the preponderance of evidence with appropriate weight given to research studies based on their strengths and limitations. Only then can treatment standards that are effective against meticillin-resistant Staphylococcus aureus be adopted or refuted.

Source: Medline
Routine screening for methicillin-resistant Staphylococcus aureus.

**Author(s)** Parks NA, Croce MA

**Citation:** Surgical Infections, August 2012, vol./is. 13/4(223-7), 1096-2964;1557-8674 (2012 Aug)

**Publication Date:** August 2012

**Abstract:** BACKGROUND: The prevalence of asymptomatic carriers of methicillin-resistant Staphylococcus aureus (MRSA) in the general population is increasing and now is estimated to be 5%-10%. Although the overall prevalence of MRSA infections in hospitals may be decreasing, it remains important, as asymptomatic carriers are at risk for infections of the skin and soft tissues, including surgical site infections (SSIs). Given the morbidity and cost of such infections, it has been hypothesized that identification of the carrier state, and subsequent eradication, will decrease the risk of MRSA infection.

**METHODS:** Review of pertinent English-language literature.

**RESULTS:** Asymptomatic MRSA carriers are at approximately 30-fold greater risk of SSI. However, the literature is conflicting as to whether identification of the MRSA carrier state, with targeted intervention thereafter, reduces the incidence of subsequent MRSA infection. Screening with polymerase chain reaction-based methodology is rapid and more accurate than conventional swab cultures (usually of the nares) but also more expensive.

**CONCLUSION:** Screening programs for MRSA colonization are expensive and of dubious utility. Universal screening of large populations is not cost-effective, whereas targeted screening of high-risk populations may deserve additional study. Standard infection control practices, diligent hand hygiene, and careful antimicrobial stewardship remain the tenets of prevention of MRSA infections.

Source: Medline

Contact precautions for methicillin-resistant Staphylococcus aureus colonization: costly and unnecessary?

**Author(s)** Spence MR, Dammel T, Courser S

**Citation:** American Journal of Infection Control, August 2012, vol./is. 40/6(535-8), 0196-6553;1527-3296 (2012 Aug)

**Publication Date:** August 2012

**Abstract:** BACKGROUND: Methicillin-resistant Staphylococcus aureus (MRSA) is frequently encountered in health care facilities. Many hospitals have established screening programs to identify individuals harboring the organism. Patients identified as carrying MRSA are frequently placed in Contact Precautions at time of admission.

**METHODS:** Between January 1, 2007, and December 31, 2010, we screened a select group of patients for MRSA employing polymerase chain reaction testing. We recorded our screening results and also recorded the MRSA hospital-acquired infection (HAI) rate. In January 2010, we discontinued placing individuals, asymptomatically colonized with MRSA, in Contact Precautions.

**RESULTS:** Between January 1, 2007, and December 31, 2010, we screened 6,712 asymptomatic patients for MRSA and found 633 (9.4%) to be positive. During this same time period, we encountered 7 MRSA HAI. There was 1 MRSA HAI in the first year and 2 in each of the last 3 years of the study period. The costs incurred for Contact Precautions for the MRSA study population averaged $8,055 per year for each of the first 3 years and $0 for 2010.

**CONCLUSION:** Placing patients who are asymptomatically harboring MRSA in Contact Precautions did not decrease the rate of HAI caused by this organism and was relatively expensive. Copyright 2012 Association for Professionals in Infection Control and Epidemiology, Inc. Published by Mosby, Inc. All rights reserved.
Acute expansion of a hospital-acquired methicillin-resistant Staphylococcus aureus-infected abdominal aortic aneurysm.

Author(s) Reslan OM, Ebaugh JL, Gupta N, Brecher SM, Itani KM, Raffetto JD

Citation: Annals of Vascular Surgery, July 2012, vol./is. 26/5(732.e1-6), 0890-5096;1615-5947 (2012 Jul)

Publication Date: July 2012

Abstract: Infected aortic aneurysms (IAAs) are rare but can have devastating outcomes, particularly if diagnosis and treatment are delayed. The incidence of IAA is between 0.65% and 2% of all aortic aneurysms. The disease has a poor prognosis because these aneurysms have an increased tendency to grow rapidly and to rupture, and patients often have severe comorbidities and coexisting sepsis. Typical microorganisms associated with IAA are Salmonella, Streptococci, and Staphylococcus aureus. Methicillin-resistant Staphylococcus aureus (MRSA) continues to emerge as a cause of serious infections, but its association with IAA is extremely rare. We present a rare case of infected abdominal aortic aneurysm caused by hospital-acquired (HA) MRSA. This case adds another presentation to the clinical spectrum of HA MRSA infections, and it highlights the problems encountered in the choice of the therapy of serious HA or health care-acquired infections in an era of increasing MRSA infections. We will discuss the clinical spectrum of HA MRSA infections as well as the problems encountered in the management of IAA, and will review the relevant literature. Published by Elsevier Inc.

Linezolid and vancomycin in treatment of lower-extremity complicated skin and skin structure infections caused by methicillin-resistant Staphylococcus aureus in patients with and without vascular disease.

Author(s) Duane TM, Weigelt JA, Puzniak LA, Huang DB

Citation: Surgical Infections, June 2012, vol./is. 13/3(147-53), 1096-2964;1557-8674 (2012 Jun)

Publication Date: June 2012

Abstract: BACKGROUND: We evaluated drug efficacy and safety among patients with and without vascular disease who were treated with linezolid or vancomycin for a lower-extremity complicated skin and skin structure infection (cSSSI) caused by methicillin-resistant Staphylococcus aureus (MRSA).METHODS: We pooled data from two randomized clinical trials evaluating the efficacy and safety of linezolid 600 mg intravenously (IV) or orally every 12 h and vancomycin 15 mg/kg or 1 g IV every 12 h for the treatment of cSSSI caused by culture-proved MRSA.RESULTS: There were 477 patients for analysis. Among patients with vascular disease (linezolid n=139, vancomycin n=135), the clinical success rate was 80.4% and 66.7% (p=0.02) for patients treated with linezolid and vancomycin, respectively. Among patients without vascular disease (linezolid n=91, vancomycin n=112), the clinical success rate was 94.5% and 89.4%, respectively (p=0.24). Linezolid-treated patients had fewer IV catheter-site complications and less kidney impairment but more frequent thrombocytopenia than those who received vancomycin, regardless of the presence or absence of vascular disease.CONCLUSION: Linezolid is an effective treatment for patients with and without vascular disease who have a lower-extremity cSSSI caused by MRSA. The safety data were consistent with the known safety profiles of linezolid and vancomycin given for this indication.

Source: Medline
Analysis of pathogen and host factors related to clinical outcomes in patients with hospital-acquired pneumonia due to methicillin-resistant Staphylococcus aureus.


Citation: Journal of Clinical Microbiology, May 2012, vol./is. 50/5(1640-4), 0095-1137:1098-660X (2012 May)

Publication Date: May 2012

Abstract: Methicillin-resistant Staphylococcus aureus (MRSA) is a major cause of nosocomial pneumonia. To characterize pathogen-derived and host-related factors in intensive care unit (ICU) patients with MRSA pneumonia, we evaluated the Improving Medicine through Pathway Assessment of Critical Therapy in Hospital-Acquired Pneumonia (IMPACT-HAP) database. We performed multivariate regression analyses of 28-day mortality and clinical response using univariate analysis variables at a P level of <0.25. In isolates from 251 patients, the most common molecular characteristics were USA100 (55.0%) and USA300 (23.9%), SCCmec types II (64.1%) and IV (33.1%), and agr I (36.7%) and II (61.8%). Panton-Valentine leukocidin (PVL) was present in 21.9%, and vancomycin heteroresistance was present in 15.9%. Mortality occurred in 37.1% of patients; factors in the univariate analysis were age, APACHE II score, AIDS, cardiac disease, vascular disease, diabetes, SCCmec type II, PVL negativity, and higher vancomycin MIC (all P values were <0.05). In multivariate analysis, independent predictors were APACHE II score (odds ratio [OR], 1.090; 95% confidence interval [CI], 1.041 to 1.141; P < 0.001) and age (OR, 1.024; 95% CI, 1.003 to 1.046; P = 0.02). Clinical failure occurred in 36.8% of 201 evaluable patients; the only independent predictor was APACHE II score (OR, 1.082; 95% CI, 1.031 to 1.136; P = 0.002). In summary, APACHE II score (mortality, clinical failure) and age (mortality) were the only independent predictors, which is consistent with severity of illness in ICU patients with MRSA pneumonia. Interestingly, our univariate findings suggest that both pathogen and host factors influence outcomes. As the epidemiology of MRSA pneumonia continues to evolve, both pathogen- and host-related factors should be considered when describing epidemiological trends and outcomes of therapeutic interventions.

Source: Medline
Available in fulltext from Journal of Clinical Microbiology at National Library of Medicine

Cost-effectiveness analysis of active surveillance screening for methicillin-resistant Staphylococcus aureus in an academic hospital setting.

Author(s) Kang J, Mandsager P, Biddle AK, Weber DJ

Citation: Infection Control & Hospital Epidemiology, May 2012, vol./is. 33/5(477-86), 0899-823X;1559-6834 (2012 May)

Publication Date: May 2012

Abstract: OBJECTIVE: To evaluate the cost-effectiveness of 3 alternative active screening strategies for methicillin-resistant Staphylococcus aureus (MRSA): universal surveillance screening for all hospital admissions, targeted surveillance screening for intensive care unit admissions, and no surveillance screening.DESIGN: Cost-effectiveness analysis using decision modeling.METHODS: Cost-effectiveness was evaluated from the perspective of an 800-bed academic hospital with 40,000 annual admissions over the time horizon of a hospitalization. All input probabilities, costs, and outcome data were obtained through a comprehensive literature review. Effectiveness outcome was MRSA healthcare-associated infections (HAIs). One-way and probabilistic sensitivity
analyses were conducted. RESULTS: In the base case, targeted surveillance screening was a dominant strategy (ie, was associated with lower costs and resulted in better outcomes) for preventing MRSA HAI. Universal surveillance screening was associated with an incremental cost-effectiveness ratio of $14,955 per MRSA HAI. In one-way sensitivity analysis, targeted surveillance screening was a dominant strategy across most parameter ranges. Probabilistic sensitivity analysis also demonstrated that targeted surveillance screening was the most cost-effective strategy when willingness to pay to prevent a case of MRSA HAI was less than $71,300. CONCLUSION: Targeted active surveillance screening for MRSA is the most cost-effective screening strategy in an academic hospital setting. Additional studies that are based on actual hospital data are needed to validate this model. However, the model supports current recommendations to use active surveillance to detect MRSA.

Source: Medline

Mandatory surveillance of methicillin-resistant Staphylococcus aureus (MRSA) bacteraemia in England: the first 10 years.

Author(s) Johnson AP, Davies J, Guy R, Abernethy J, Sheridan E, Pearson A, Duckworth G

Citation: Journal of Antimicrobial Chemotherapy, April 2012, vol./is. 67/4(802-9), 0305-7453;1460-2091 (2012 Apr)

Publication Date: April 2012

Abstract: Since 2001 it has been mandatory for acute hospital Trusts (groups of hospitals under the same management) in England to report all cases of bacteraemia due to Staphylococcus aureus together with information on their susceptibility or resistance to methicillin. This allowed the incidence of methicillin-resistant S. aureus (MRSA) bacteraemia (expressed as the number of cases per 1000 occupied bed days) to be determined for each Trust. In late 2005, the scheme was enhanced to collect demographic, clinical and epidemiological information on each case using a web-based data collection system. Analysis of this mandatory dataset has provided important information on the trends in MRSA bacteraemia in England and has documented a year-on-year decrease in incidence since 2006, following a government initiative in which Trusts were tasked with halving their MRSA bacteraemia rates over a 3 year period. In addition, the enhanced mandatory surveillance scheme has captured a wealth of data that have helped to further define the epidemiology of MRSA bacteraemia. It is to be hoped that based on the English experience of mandatory surveillance, other countries will consider the implementation of similar schemes, not only for MRSA but for other pathogens of public health importance.

Source: Medline

Available in fulltext from Journal of Antimicrobial Chemotherapy at Oxford University Press

New therapy options for MRSA with respiratory infection/pneumonia.

Author(s) Ramirez P, Fernandez-Barat L, Torres A

Citation: Current Opinion in Infectious Diseases, April 2012, vol./is. 25/2(159-65), 0951-7375;1473-6527 (2012 Apr)

Publication Date: April 2012

Abstract: PURPOSE OF REVIEW: Methicillin-resistant Staphylococcus aureus (MRSA) is a frequent causative agent of nosocomial pneumonia. Because of important clinical consequences of inappropriate treatment, a current review of the potential modifications undergone by S. aureus and adaptation to new treatment options is necessary.RECENT FINDINGS: Vancomycin has been considered the
treatment of choice for pneumonia due to MRSA. However, detection of a progressive increase in the minimum inhibitory concentration for this antibiotic, its limited access to the lung parenchyma, and its considerable adverse effects have called into question its position. Linezolid has been shown to have a better pharmacokinetic and safety profiles. The prior uncertainty regarding the clinical superiority of linezolid appears to have been resolved with the publication of a recent trial. Linezolid achieved a higher clinical and microbiological response rate (the latter was not statistically significant), together with a lower incidence of all types of renal adverse effects in patients with nosocomial pneumonia, compared with vancomycin. Tigecycline, teicoplanin and quinupristin/dalfopristin were inferior to the compared drug in their respective clinical trials. The clinical efficacy of telavancin was similar to that of vancomycin. The renal adverse effects of telavancin have to be clarified. Other drugs are efficacious against MRSA but their profile should be evaluated in nosocomial pneumonia.

**SUMMARY:** Current therapeutic alternatives for nosocomial pneumonia due to MRSA appear to be limited to vancomycin and linezolid. However, vancomycin pitfalls, together with the apparent clinical superiority of linezolid, appear to restrict its indication. Telavancin could be a good alternative in patients without basal renal failure.

**Source:** Medline
Available in fulltext from *Current Opinion in Infectious Diseases* at the ULHT Library and Knowledge Services' eJournal collection

**Patient sharing and population genetic structure of methicillin-resistant Staphylococcus aureus.**

**Author(s)** Ke W, Huang SS, Hudson LO, Elkins KR, Nguyen CC, Spratt BG, Murphy CR, Avery TR, Lipsitch M

**Citation:** Proceedings of the National Academy of Sciences of the United States of America, April 2012, vol./is. 109/17(6763-8), 0027-8424;1091-6490 (2012 Apr 24)

**Publication Date:** April 2012

**Abstract:** Rates of hospital-acquired infections, specifically methicillin-resistant Staphylococcus aureus (MRSA), are increasingly being used as indicators for quality of hospital hygiene. There has been much effort on understanding the transmission process at the hospital level; however, interhospital population-based transmission remains poorly defined. We evaluated whether the proportion of shared patients between hospitals was correlated with genetic similarity of MRSA strains from those hospitals. Using data collected from 30 of 32 hospitals in Orange County, California, multivariate linear regression showed that for each twofold increase in the proportion of patients shared between 2 hospitals, there was a 7.7% reduction in genetic heterogeneity between the hospitals' MRSA populations (permutation P value = 0.0356). Pairs of hospitals that both served adults had more similar MRSA populations than pairs including a pediatric hospital. These findings suggest that concerted efforts among hospitals that share large numbers of patients may be synergistic to prevent MRSA transmission.

**Source:** Medline
Available in fulltext from *Proceedings of the National Academy of Sciences of the United States of America* at Highwire Press

**Usefulness of linezolid in the treatment of hospital-acquired pneumonia caused by MRSA: a prospective observational study.**


**Citation:** Journal of Infection & Chemotherapy, April 2012, vol./is. 18/2(160-8), 1341-321X;1437-7780 (2012 Apr)
**Publication Date:** April 2012

**Abstract:** Clinical results for linezolid (LZD) treatment of hospital-acquired pneumonia (HAP) caused by methicillin-resistant Staphylococcus aureus (MRSA), particularly microbiologically evaluable or severe cases, are limited in Japan. A prospective observational study was conducted in order to assess the usefulness of LZD in Japanese patients with MRSA pneumonia. The study tracked fifteen participants treated with LZD for pneumonia who met the criteria of the HAP guidelines and were confirmed to have pneumonia caused by MRSA. Of these, six were severe and 13 had received antibiotic treatment before treatment with LZD. Of the 13 participants assessed for their clinical responses, seven were rated as cures, three were rated as failures, and three were indeterminate. The overall cure rate (cure/cure + failure) was 70.0% (7/10), and the cure rate by severity was 33.3% (1/3) for severe cases and 85.5% (6/7) for moderate cases. The one severe case with a clinical response rating of cure had failed to respond to vancomycin. Among the seven participants with a clinical response rating of cure, the microbiological response was eradication in three, presumed eradication in three, and indeterminate in one. Three serious adverse events occurred in two of the 15 participants, but none were considered to be causally related to LZD. The results suggest that LZD has high potential for severe and multidrug-resistant cases. A higher cure rate was achieved in moderate cases. In cases of pneumonia that are most likely MRSA infections with poor prognosis, it was suggested to be important for patient outcome to implement the most effective therapy before the patient's condition becomes serious.

**Source:** Medline
Available in fulltext from *Journal of Infection & Chemotherapy* at [EBSCOhost](http://www.ebscohost.com).

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**Stethoscopes as a source of hospital-acquired methicillin-resistant Staphylococcus aureus.**

**Author(s)** Russell A, Secrest J, Schreeder C

**Citation:** Journal of PeriAnesthesia Nursing, April 2012, vol./is. 27/2(82-7), 1089-9472;1532-8473 (2012 Apr)

**Publication Date:** April 2012

**Abstract:** Stethoscopes are potential vectors of methicillin-resistant Staphylococcus aureus (MRSA). The purpose of this project was to determine the presence of MRSA on the diaphragms of personal and unit stethoscopes within a hospital setting before and after cleaning with alcohol prep pads. The sample consisted of 141 personal and unit stethoscopes in adult medical-surgical and intensive care units of a large university hospital in the Southeast. Each stethoscope was cultured once before cleaning and once after cleaning. Cultures were obtained using sterile swabs and inoculated on a selective medium for MRSA. Bacterial growth was noted in the precleaning group, but no MRSA colonies were detected. The postcleaning group had no bacterial growth. There was not enough data to statistically support that isopropyl alcohol is effective in decreasing bacterial counts; however, these findings suggest that current disinfection guidelines are effective in preventing MRSA colonization on stethoscopes in this setting.

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**Source:** Medline

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**MRSA contaminated venepuncture tourniquets in clinical practice.**

**Author(s)** Elhassan HA, Dixon T

**Citation:** Postgraduate Medical Journal, April 2012, vol./is. 88/1038(194-7), 0032-5473;1469-0756 (2012 Apr)
Publication Date: April 2012

Abstract: INTRODUCTION: Meticillin-resistant Staphylococcus aureus (MRSA) hospital-acquired infection is associated with increased patient mortality. National guidelines state that shared patient equipment must be cleaned after use. The authors sought to identify MRSA contamination in a sample of non-disposable venepuncture tourniquets and audit cleaning habits between patient contacts.

MATERIALS AND METHODS: Fifty tourniquets were collected from junior doctors, nursing staff and wards from two district general hospitals in Essex, UK in 2007. A questionnaire was completed at the time of collection for each tourniquet. The tourniquets were cultured using standard microbiology techniques.

FINDINGS: 18/50 (36%) tourniquets were positive for S. aureus and of these 6/50 (12%) were MRSA positive. 33/43 (77%) healthcare professionals using non-disposable tourniquets for venepuncture made no attempts at cleaning their tourniquets. 10/43 (23%) staff admitted to cleaning their tourniquets. The tourniquets were used for an average of 14 weeks on approximately three different patients per day. 30/50 (60%) tourniquets were visibly soiled and of these 13 were blood stained and 20/50 (40%) appeared 'clean'. Worn tourniquets when compared with the 'clean' tourniquets were more likely to be contaminated with S. aureus, 15/30 (50%) vs 3/20 (15%), and MRSA 5/30 (17%) vs 1/20 (5%).

CONCLUSION: Non-disposable venepuncture tourniquets are contaminated with MRSA and pose a risk to patients. The majority of clinical staff do not clean them between patient contacts as recommended by guidelines. The use of non-disposable venepuncture tourniquets should be abandoned. The introduction of disposable tourniquets to clinical practice should be an adjunct to current measures for MRSA prevention.

Source: Medline
Available in fulltext from Postgraduate Medical Journal at Free Access Content

MRSA eradication in dermatologic outpatients - theory and practice.

Author(s) Meyer V, Kerk N, Mellmann A, Friedrich A, Luger TA, Goerge T

Citation: Journal der Deutschen Dermatologischen Gesellschaft, March 2012, vol./is. 10/3(186-96), 1610-0379;1610-0387 (2012 Mar)

Publication Date: March 2012

Abstract: BACKGROUND: The dissemination of methicillin resistant staphylococcus aureus (MRSA) is an increasing challenge in medical care. Apart from hospital acquired MRSA, there has also been an increase in community acquired and livestock associated MRSA. While the risks of MRSA (e.g. wound infections) and consequences (e.g. rejection of patients) are well known, there are little data on the effectiveness of eradication procedures.

PATIENTS AND METHODS: 32 patients with proven MRSA colonization were monitored during eradication for the following aspects: (1) localization of MRSA (swabs from hairline, anterior nares, throat, axillae, groins, perineum, and wounds, if present), (2) presence of eradication-impairing factors, (3) length of time needed for eradication, (4) cost of eradication, (5) molecular fingerprint and risk assessment (spa-types).

RESULTS: We describe the successful eradication of MRSA in all 32 patients. Most positive nasal swabs were obtained from the anterior nares and the throat and only rarely from the hairline or axillae. The greater the number of positive swabs, the more time was needed for eradication. In most patients (37.5%), eradication with topical antiseptics was successful. The average time for eradication was 12.97 (+ 7.6) days. Twelve patients required systemic antibiotic therapy. Treatment costs associated with the use of systemic antibiotics were significantly higher. The most frequent spa types were t032 and t003.

CONCLUSIONS: We report successful MRSA eradication in outpatients. Systemic antibiotics are unnecessary in the majority of patients. A combined anti-MRSA strategy for

Author(s) Watkins RR, Lemonovich TL, File TM Jr
Citation: Core Evidence, 2012, vol./is. 7/(131-43), 1555-1741;1555-175X (2012)
Publication Date: 2012
Abstract: Methicillin-resistant Staphylococcus aureus (MRSA), including community-associated and hospital-associated strains, is a major cause of human morbidity and mortality. Treatment options have become limited due to the emergence of MRSA strains with decreased sensitivity to vancomycin, which has long been the first-line therapy for serious infections. This has prompted the search for novel antibiotics that are efficacious against MRSA. Linezolid, an oxazolidinone class of antibiotic, was approved by the Food and Drug Administration in 2000 for treatment of MRSA infections. Since then, there have been a multitude of clinical trials and research studies evaluating the effectiveness of linezolid against serious infections, including pneumonia (both community- and hospital-acquired), skin and soft-tissue infections such as diabetic foot ulcers, endocarditis, osteomyelitis, prosthetic devices, and others. The primary aim of this review is to provide an up-to-date evaluation of the clinical evidence for using linezolid to treat MRSA infections, with a focus on recently published studies, including those on nosocomial pneumonia. Other objectives are to analyze the cost-effectiveness of linezolid compared to other agents, and to review the pharmacokinetics and pharmacodynamics of linezolid, emphasizing the most current concepts.
Source: Medline
Available in fulltext from Core Evidence at Directory of Open Access Journals
OBJECTIVES AND METHODS: We implemented a multifaceted hospital-wide prevention program and measured the effects on HA-MRSA colonization and bacteremia rates between 2000 and 2009. From 2000 to 2003, active screening and decontamination of ICU patients, hospital wide alcohol based hand rubs (ABHR) use, control of specific classes of antibiotics, compliance audits, and feed-backs to the care providers were successively implemented. The efficacy of the program was assessed by HA-MRSA colonized and bacteremic patient rates per 1000 patient-days in patients hospitalized for more than twenty-four hours.

RESULTS: Compliance with the isolation practices increased between 2000 and 2009. Consumption of ABHR increased from 6.8L to 27.5L per 1000 patient-days. The use of antibiotic Defined Daily Doses (DDD) per 1000 patient-days decreased by 31%. HA-MRSA colonization decreased by 84% from 1.09 to 0.17 per 1000 patient-days and HA-MRSA bacteremia by 93%, from 0.15 to 0.01 per 1000 patient-days (p<10^-7 for each rate).

CONCLUSIONS: In an area highly endemic for MRSA, a multifaceted prevention program allows for sustainable reduction in HA-MRSA bacteremia rates.

Source: Medline
Available in fulltext from Antimicrobial Resistance and Infection Control at National Library of Medicine

Individual units rather than entire hospital as the basis for improvement: the example of two Methicillin resistant Staphylococcus aureus cohort studies.

Author(s) Gastmeier P, Schwab F, Chaberny I, Geffers C
Citation: Antimicrobial Resistance & Infection Control, 2012, vol./is. 1/1(8), 2047-2994;2047-2994 (2012)
Publication Date: 2012
Abstract: UNLABELLED:BACKGROUND: Two MRSA surveillance components exist within the German national nosocomial infection surveillance system KISS: one for the whole hospital (i.e. only hospital based data and no rates for individual units) and one for ICU-based data (rates for each individual ICU). The objective of this study was to analyze which surveillance system (a hospital based or a unit based) leads to a greater decrease in incidence density of nosocomial MRSA
METHODS: Two cohort studies of surveillance data were used: Data from a total of 224 hospitals and 359 ICUs in the period from 2004 to 2009. Development over time was described first for both surveillance systems. In a second step only data were analyzed from those hospitals/ICUs with continuous participation for at least four years. Incidence rate ratios (IRR) with 95% confidence intervals were calculated to compare incidence densities between different time intervals.
RESULTS: In the baseline year the mean MRSA incidence density of hospital acquired MRSA cases was 0.25 and the mean incidence density of ICU-acquired MRSA was 1.25 per 1000 patient days. No decrease in hospital-acquired MRSA rates was found in a total of 111 hospitals with continuous participation in the hospital-based system. However, in 159 ICUs with continuous participation in the unit-based system, a significant decrease of 29% in ICU-acquired MRSA was identified.
CONCLUSIONS: A unit-based approach of surveillance and feedback seems to be more successful in decreasing nosocomial MRSA rates, compared to a hospital-based approach. Therefore each surveillance system should provide unit-based data to stimulate activities on the unit level.
Source: Medline
Available in fulltext from Antimicrobial Resistance and Infection Control at National Library of Medicine

Methicillin-resistant Staphylococcus aureus laryngitis: a report of two cases with reduce HA-MRSA rates.
different clinical presentations.

**Author(s)** Antunes MB, Ransom ER, Leahy KP

**Citation:** Orl; Journal of Oto-Rhino-Laryngology & its Related Specialties, 2012, vol./is. 74/3(146-8), 0301-1569;1423-0275 (2012)

**Publication Date:** 2012

**Abstract:** BACKGROUND: Methicillin-resistant Staphylococcus aureus (MRSA) infection has been described in multiple areas of the head and neck. Recently, otolaryngologists have recognized MRSA infection in the glottis. We describe 2 cases of MRSA laryngitis with divergent clinical presentations: acute airway obstruction and recalcitrant hoarseness.

**METHODS:** Report of 2 cases and review of the literature.

**RESULTS:** In the first case, a 44-year-old woman presented with near aphonia despite maximal medical therapy. Examination showed diffuse erythema and edema of the endolarynx with yellowish plaques lining the glottis and supraglottis. Complete resolution was achieved with long-term trimethoprim-sulfamethoxazole. In the second case, a 54-year-old woman presented with recent-onset hoarseness with rapid progression to respiratory distress and biphasic stridor. Endoscopy revealed exuberant granulation tissue in the glottis with a narrowed airway. Treatment required prolonged courses of antibiotics and steroids. Diagnosis in both cases was confirmed with biopsies taken during direct laryngoscopy.

**CONCLUSIONS:** MRSA treatment is a growing part of otolaryngologic practice and should be included in the differential diagnosis of hoarseness and stridor. Copyright 2012 S. Karger AG, Basel.

**Source:** Medline

Available in fulltext at ORL: Journal for Oto-Rhino-Laryngology and Its Related Specialties; Collection notes: On first login to a ProQuest journal you will need to select 'Athens (OpenAthens Federation)' from Select Region, and then 'NHS England' from Choose your Library.

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**Anti-infectious agents against MRSA.**

**Author(s)** Koyama N, Inokoshi J, Tomoda H

**Citation:** Molecules, 2012, vol./is. 18/1(204-24), 1420-3049;1420-3049 (2012)

**Publication Date:** 2012

**Abstract:** Clinically useful antibiotics, beta-lactams and vancomycin, are known to inhibit bacterial cell wall peptidoglycan synthesis. Methicillin-resistant Staphylococcus aureus (MRSA) has a unique cell wall structure consisting of peptidoglycan and wall teichoic acid. In recent years, new anti-infectious agents (spirohexaline, tripropeptin C, DMPI, CDFI, cystalabdan, 1835F03, and BPH-652) targeting MRSA cell wall biosynthesis have been discovered using unique screening methods. These agents were found to inhibit important enzymes involved in cell wall biosynthesis such as undecaprenyl pyrophosphate (UPP) synthase, FemA, flippase, or UPP phosphatase. In this review, the discovery, the mechanism of action, and the future of these anti-infectious agents are described.

**Source:** Medline

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**Pharmacological agents for soft tissue and bone infected with MRSA: which agent and for how long?.**

**Author(s)** Thompson S, Townsend R

**Citation:** Injury, December 2011, vol./is. 42 Suppl 5/(S7-10), 0020-1383;1879-0267 (2011 Dec)

**Publication Date:** December 2011

**Abstract:** Methicillin-resistant Staphylococcus aureus (MRSA) infections cause an important number of soft tissue and bone infections, although exact rates vary
across different countries and institutions. The length of antibiotic treatment required depends upon the severity of infection and pre-existing co-morbidities. Monitoring response to treatment is important to ensure cure of infection whilst preventing excessive antibiotic use. Debridement and drainage, in addition to prosthesis removal, may be necessary. Numerous antibiotics are effective at treating soft tissue and bone infected with MRSA. Oral antibiotics, such as clindamycin, doxycycline and linezolid, generally offer good bioavailability and tissue penetration. They are separated largely by side effect profile and drug interactions, which should be considered carefully prior to use. There are also several agents only available in the intravenous (IV) form, for example glycopeptides, daptomycin and tigecycline. These are normally reserved for the treatment of severe infections. Whilst tissue penetration is variable within this group, it is the adverse events linked with each antibiotic that are most effective in determining the preferred agent.

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Available in fulltext from Injury - International Journal for the Care of the Injured at the ULHT Library and Knowledge Services' eJournal collection

MRSA new treatments on the horizon: current status.
Author(s) Wilcox MH
Citation: Injury, December 2011, vol./is. 42 Suppl 5/(S42-4), 0020-1383;1879-0267 (2011 Dec)
Publication Date: December 2011
Abstract: There is a choice of anti-MRSA antibiotic available with proven efficacy in the treatment of complicated skin and skin structure infection (cSSSI). Additional anti-MRSA antibiotics are in development, which have the potential to influence how such infections are managed. The emergence of resistance to current anti-MRSA agents, toxicity, and general lack of oral agents with proven efficacy for deep seated infection justify the development of new agents. However, there is a relative dearth of information specific to patients with orthopaedic-related infection. Combination therapy is often used in these patients, although there is a paucity of controlled trial data to support particular antibiotic combinations. As the choice of anti-MRSA agents increases, so does the need to identify which are best for the large variety of infections included in the group of cSSSIs. This is particular true for infections occurring in orthopaedic patients where poorly vascularised tissue, trauma or implanted prosthetic material, pose specific challenges. Copyright 2011 Elsevier Ltd. All rights reserved.
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MRSA prevention strategies and current guidelines.
Author(s) Byrne FM, Wilcox MH
Citation: Injury, December 2011, vol./is. 42 Suppl 5/(S3-6), 0020-1383;1879-0267 (2011 Dec)
Publication Date: December 2011
Abstract: We review prevention strategies to minimise the risk of MRSA soft tissue and bone infections, which can be devastating for the patient and costly for the healthcare provider. Department of Health (England) policy is that screening for emergency admissions will be mandatory from 2011, in addition to existent elective admission screening. Rapid screening technology has not been shown to be cost-effective, meaning that there will be a lag time between admission and the patient's MRSA status being known. Thus, standard infection control policies regarding
isolation of high-risk patients will remain, with a continuing focus on MRSA decolonisation, aimed at minimising the risks of auto-infection and transmission to other patients. Antimicrobial prescribing policies should be designed to take into account the local burden of resistant organisms, but also minimise unnecessary antibiotic use. There is an increasing realisation that reducing the use of fluoroquinolones and third-generation cephalosporins (which have been associated with increased carriage of MRSA) in patient populations where MRSA is prevalent can be a useful control measure. Prevention of orthopaedic infections clearly involves general operating theatre protocols, such as suitable antiseptic skin preparation, and additional measures including the use of laminar airflow. Antibiotic prophylaxis is adjusted in patients known to have MRSA to include a glycopeptide, and local guidelines may adopt such regimens for all patients due to the burden of MRSA in the local patient population. A future development that may have an effect on practice is the development of a Staphylococcus aureus vaccine, which has been shown to be cost-effective in a computer-modelled evaluation.

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Source: Medline
Available in fulltext from Injury - International Journal for the Care of the Injured at the ULHT Library and Knowledge Services' eJournal collection

**Treatment of MRSA soft tissue infections: an overview.**

**Author(s)** Morgan M

**Citation:** Injury, December 2011, vol./is. 42 Suppl 5/(S11-7), 0020-1383;1879-0267 (2011 Dec)

**Publication Date:** December 2011

**Abstract:** MRSA is becoming increasingly common worldwide. With the emergence of new highly spreadable strains (community associated or CA-MRSA) novel presentation skin and soft tissue infections (SSTI) are being seen. Recurrent SSTI, including folliculitis, furunculosis and abscesses account for an increasing proportion of SSTI seen in the emergency department. Empirical antimicrobial management choices can be difficult, but clues to the nature of the MRSA may be gleaned from the history and clinical presentation. More severe SSTI due to necrotising fasciitis and purpura fulminans are emerging and warrant the broadest possible empirical Gram-positive cover, ideally with antimicrobials that stop exotoxin production, and sometimes intravenous immunoglobulin to neutralise exotoxins already produced. Copyright 2011 Elsevier Ltd. All rights reserved.

**Source:** Medline
Available in fulltext from Injury - International Journal for the Care of the Injured at the ULHT Library and Knowledge Services' eJournal collection

**Factors associated with post-operative conversion to methicillin-resistant Staphylococcus aureus positivity or infection in initially MRSA-negative patients.**

**Author(s)** Abi-Haidar Y, Gupta K, Strymish J, Williams SA, Itani KM

**Citation:** Surgical Infections, December 2011, vol./is. 12/6(435-42), 1096-2964;1557-8674 (2011 Dec)

**Publication Date:** December 2011

**Abstract:** BACKGROUND: Hospital-acquired methicillin-resistant Staphylococcus aureus (MRSA) is associated with morbid, invasive infections and has been implicated in nearly every type of nosocomial infection. Our aim was to identify the risk factors for patient conversion from MRSA negativity pre-operatively to MRSA positivity post-operatively.METHODS: We retrospectively reviewed all patients at the Veterans Affairs-Boston Health Care System who underwent clean or clean-contaminated surgical procedures during the years 2008
and 2009 and had documented pre-operative nasal polymerase chain reaction (PCR) testing for MRSA. We abstracted post-operative MRSA microbiologic testing results, MRSA infections, surgical site infections (SSIs), surgical prophylaxis data, and SSI risk index, as calculated using the Veterans Affairs Surgical Quality Improvement Project (VASQIP) database variables. All patients who had a negative nasal MRSA PCR result in the 31-day pre-operative period and did not have any positive MRSA clinical swab or culture in the 1-year pre-operative period were defined as MRSA-negative. These patients were classified as converters to MRSA positivity if they had at least one documented positive nasal MRSA PCR swab, culture, nosocomial infection, or SSI within 31 days post-operatively.

RESULTS: Among 4,238 eligible patients, 3,890 (92%) qualified as MRSA-negative pre-operatively. A total of 1,432 (37%) of these patients were assessed in the VASQIP database, of whom 34 (2%) converted to MRSA positivity post-operatively. On multivariable logistic regression analysis of the VASQIP sample, age (odds ratio [OR] 1.049; 95% confidence interval [CI] 1.016, 1.083), SSI risk index (OR 2.863; 95% CI 1.251-6.554), and vancomycin prophylaxis alone or in combination (OR 3.223; 95% CI 1.174-8.845) were significantly associated with conversion to MRSA positivity.

CONCLUSION: In pre-operatively MRSA-negative patients, age, SSI risk index, and vancomycin prophylaxis were significant factors for conversion to MRSA positivity post-operatively. Alternatives to vancomycin prophylaxis in non-colonized patients and optimization of patients' SSI risk factors should be considered before elective surgery.

Source: Medline

**Challenges of treating MRSA in long-term care.**

Author(s) Martin CM

Citation: Consultant Pharmacist, November 2011, vol./is. 26/11(800-2, 807-9), 0888-5109,0888-5109 (2011 Nov)

Publication Date: November 2011

Abstract: Methicillin-resistant Staphylococcus aureus (MRSA) infections are an ongoing problem in long-term care facilities. Frail elderly patients in long-term care settings are at increased risk for developing MRSA infections, and treatment of these infections often involves use of costly antibiotics with significant side effects and drug interactions. Pharmacists need to be knowledgeable in the use and monitoring of these antibiotics so they can assist the facility in managing patients with MRSA infections.

Source: Medline

**Transcriptional analysis of antibiotic resistance and virulence genes in multiresistant hospital-acquired MRSA.**

Author(s) Pruneau M, Mitchell G, Moisan H, Dumont-Blanchette E, Jacob CL, Malouin F

Citation: FEMS Immunology & Medical Microbiology, October 2011, vol./is. 63/1(54-64), 0928-8244;1574-695X (2011 Oct)

Publication Date: October 2011

Abstract: The staphylococcal chromosome cassette mec cannot solely explain the multiresistance phenotype or the relatively mild virulence profile of hospital-acquired methicillin-resistant Staphylococcus aureus (HA-MRSA). This study reports that several multiresistant HA-MRSA strains differently expressed genes that may support antibiotic resistance, modify the bacterial surface and influence the pathogenic process. Genes encoding efflux pumps (norA, arsB, emrB) and the macrolide resistance gene ermA were found to be commonly expressed by HA-MRSA strains, but not in the archetypal MRSA strain COL. At equivalent cell
density, the agr system was considerably less activated in all MRSA strains (including COL) in comparison with a prototypic antibiotic-susceptible strain. These results are in contrast to those observed in recent community-acquired MRSA isolates and may partly explain how multiresistant HA-MRSA persist in the hospital setting. 2011 Federation of European Microbiological Societies. Published by Blackwell Publishing Ltd. All rights reserved.

Source: Medline
Available in fulltext from FEMS Immunology & Medical Microbiology at EBSCOhost

The prevalence of methicillin-resistant Staphylococcus aureus on inanimate objects in an Urban Emergency Department.

Author(s): Kei J, Richards JR
Citation: Journal of Emergency Medicine, August 2011, vol./is. 41/2(124-7), 0736-4679;0736-4679 (2011 Aug)
Publication Date: August 2011
Abstract: BACKGROUND: There is a rising prevalence of both hospital-acquired and community-associated strains of methicillin-resistant Staphylococcus aureus (MRSA) infections. Both strains are found in patients presenting to emergency departments (EDs). OBJECTIVE: The purpose of this study was to identify objects in the ED that might contribute to the spread of MRSA. METHODS: This was a cross-sectional prevalence study in which culture swabs were taken from 20 different objects in a large urban ED between May and August 2006. The objects were identified a priori, and included common items found in an ED. Items ranging from computers to telephones, desktop surfaces, security door keypads, and ultrasound probes were included in the study. Each item was cultured twice, on separate days, for a total of 40 samples. The samples were screened for the presence of MRSA, and positive samples underwent additional susceptibility analysis. Results: Only one sample of 40, from the ambulance bay security door keypad, was positive for MRSA. Thus, the prevalence of MRSA was 2.5%. The single strain isolated was resistant to clindamycin, erythromycin, oxacillin, and penicillin. CONCLUSION: MRSA does not seem to thrive on inanimate objects found in the ED. Routine cleaning measures in an urban ED must include all areas of medical personnel use, including areas outside of the department utilized by non-ED workers. Copyright 2011 Elsevier Inc. All rights reserved.

Source: Medline

Clinical effectiveness and cost benefit of universal versus targeted methicillin-resistant Staphylococcus aureus screening upon admission in hospitals.

Author(s): Leonhardt KK, Yakusheva O, Phelan D, Reeths A, Hosterman T, Bonin D, Costello M
Citation: Infection Control & Hospital Epidemiology, August 2011, vol./is. 32/8(797-803), 0899-823X;1559-6834 (2011 Aug)
Publication Date: August 2011
Abstract: OBJECTIVE: To conduct an exploratory study to evaluate the clinical effectiveness and cost benefit of universal versus targeted screening for methicillin-resistant Staphylococcus aureus (MRSA) to prevent hospital-acquired MRSA infections. DESIGN: Prospective, interventional study, using a case-control design, difference-in-differences, and cost-benefit analyses. SETTING: Two community hospitals in Wisconsin. PATIENTS: Consecutive sample of 15,049 adult admissions from April 2009 to July 2010. INTERVENTIONS: MRSA surveillance performed by polymerase chain reaction (PCR) on samples collected from all adult patients (aged over 18 years) within 30 days before or upon an admission to the hospital.
During a 9-month baseline period, targeted screening was conducted at both hospitals. During the 5-month intervention period, all patients admitted to the intervention hospital were screened for MRSA. Infection control measures were consistent at both hospitals.

**RESULTS:** Universal screening was associated with an increase in admission screening of 43.58 percentage points (P < .01), an increase in MRSA detection of 2.95 percentage points (P < .01), and a small, nonsignificant decline in hospital-acquired MRSA infections of 0.12 percentage points (P < .01). The benefit-to-cost ratio was 0.50, indicating that for every dollar spent on universal versus targeted screening, only $0.50 is recovered in avoided costs of hospital-acquired MRSA infection.

**CONCLUSION:** Compared with targeted screening, universal screening increased the rate of detection of MRSA upon hospital admission but did not significantly reduce the rate of hospital-acquired MRSA infection. Universal screening was associated with higher costs of care and was not cost beneficial.

**Source:** Medline
Available in fulltext from *Infection Control and Hospital Epidemiology* at [Free Access Content](#).

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**Active surveillance culturing impacts methicillin-resistant Staphylococcus aureus acquisition in a pediatric intensive care unit.**

**Author(s):** Holzmann-Pazgal G, Monney C, Davis K, Wanger A, Strobel N, Zhong F

**Citation:** Pediatric Critical Care Medicine, July 2011, vol./is. 12/4(e171-5), 1529-7535;1529-7535 (2011 Jul)

**Publication Date:** July 2011

**Abstract:** OBJECTIVE: To determine whether active surveillance culturing for methicillin-resistant Staphylococcus aureus (MRSA) decreases nosocomial MRSA acquisition in the pediatric intensive care unit. DESIGN: Before and after observational study. SETTING: A tertiary care, 20-bed, pediatric intensive care unit. PATIENTS: All patients admitted to the pediatric intensive care unit. INTERVENTIONS: Anterior nares cultures for MRSA were obtained on admission and weekly in the pediatric intensive care unit from January 2007 to December 2009 as part of a hospital quality improvement project. MEASUREMENTS AND MAIN RESULTS: MRSA admission prevalence and nosocomial incidence density were determined retrospectively for 2006 and prospectively for 2007-2009. Nosocomial MRSA incidence density during the intervention period was determined monthly and analyzed by trend analysis by using a general linear model. The correlation of active surveillance culturing compliance with nosocomial acquisition of MRSA was analyzed. Possible confounding by healthcare worker hand hygiene compliance observed during the intervention period was also analyzed by multivariate linear regression analysis. The yearly MRSA incidence density significantly decreased from 2006 to 2009 (6.88 per 1,000 patient days to 1.45 per 1,000 patient days, p < .001) and from 2007 to 2009 (7.32 per 1,000 patient days to 1.45 per 1,000 patient days, p < .001). Trend analysis demonstrated a significant decline in MRSA acquisition over time following the introduction of active surveillance culturing (p < .001). Surveillance culturing was significantly associated with the decline in MRSA acquisition observed in the pediatric intensive care unit by multivariate regression analysis when controlling for hand hygiene (p = .01). CONCLUSIONS: Active surveillance culturing resulted in significantly decreased nosocomial acquisition of MRSA in a pediatric intensive care unit setting. Admission and weekly active surveillance culturing appears to be an effective tool to decrease the spread of MRSA in the pediatric intensive care unit, independent of improvement in hand hygiene.
compliance. The impact on hospital-acquired MRSA infections and the cost benefit of active surveillance culturing require further study.

**Source:** Medline

**Cost-effectiveness analysis of linezolid, daptomycin, and vancomycin in methicillin-resistant Staphylococcus aureus: complicated skin and skin structure infection using Bayesian methods for evidence synthesis.**

**Author(s):** Bounthavong M, Zargarzadeh A, Hsu DI, Vanness DJ

**Citation:** Value in Health, July 2011, vol./is. 14/5(631-9), 1098-3015;1524-4733 (2011 Jul-Aug)

**Publication Date:** July 2011

**Abstract:** BACKGROUND: Methicillin-resistant Staphylococcus aureus (MRSA) complicated skin and skin structure infection (cSSSI) is a prominent infection encountered in hospital and outpatient settings that is associated with high resource use for the health-care system. OBJECTIVE: A decision analytic (DA) model was developed to evaluate the cost-effectiveness analysis (CEA) of linezolid, daptomycin, and vancomycin in MRSA cSSSI. METHODS: Bayesian methods for evidence synthesis were used to generate efficacy and safety parameters for a DA model using published clinical trials. CEA was done from the US health-care perspective. Efficacy was defined as a successfully treated patient at the test of cure without any adverse reaction. Primary outcome was the incremental cost-effectiveness ratio between linezolid and vancomycin, daptomycin and vancomycin, and linezolid and daptomycin in MRSA cSSSI. Univariate and probabilistic sensitivity analyses were performed to test the robustness of the model. RESULTS: The total direct costs of linezolid, daptomycin, and vancomycin were $18,057, $20,698, and $23,671, respectively. The cost-effectiveness ratios for linezolid, daptomycin, and vancomycin were $37,604, $44,086, and $52,663 per successfully treated patient, respectively. Linezolid and daptomycin were dominant strategies compared to vancomycin. However, linezolid was dominant when compared to daptomycin. The model was sensitive to the duration of daptomycin and linezolid treatment. CONCLUSION: Linezolid and daptomycin are potentially cost-effective based on the assumptions of the DA model; however, linezolid appears to be more cost-effective compared to daptomycin and vancomycin for MRSA cSSSI. Copyright 2011 International Society for Pharmacoeconomics and Outcomes Research (ISPOR). Published by Elsevier Inc. All rights reserved.

**Source:** Medline

Available in fulltext from *Value In Health* at [Wiley](http://www.wiley.com)

**MRSA infections in children.**

**Author(s):** Sanders RC Jr, Diokno RM, Romero J

**Citation:** Journal of the Arkansas Medical Society, June 2011, vol./is. 107/13(288-90), 0004-1858;0004-1858 (2011 Jun)

**Publication Date:** June 2011

**Abstract:** MRSA infections continue to be a serious and formidable challenge to health care providers and their prevalence is increasing exponentially. In the past, MRSA infections were observed only in hospitalized patients whereas now they are encountered in the outpatient setting. Understanding the pattern of the widespread distribution of MRSA as well as the factors associated with its spread are paramount to its recognition and eradication. The current state of MRSA transmission, control and management is reviewed.

**Source:** Medline

**Skin and soft tissue infections due to methicillin-resistant Staphylococcus aureus:**
Linezolid vs glycopeptide antibiotics for the treatment of suspected methicillin-resistant Staphylococcus aureus nosocomial pneumonia: a meta-analysis of randomized controlled trials.

**Author(s)** Walkey AJ, O'Donnell MR, Wiener RS

**Citation:** Chest, May 2011, vol./is. 139/5(1148-55), 0012-3692;1931-3543 (2011 May)

**Publication Date:** May 2011

**Abstract:** BACKGROUND: Methicillin-resistant Staphylococcus aureus (MRSA) is an important cause of nosocomial pneumonia. Societal guidelines suggest linezolid may be the preferred treatment of MRSA nosocomial pneumonia. We investigated the efficacy of linezolid compared with glycopeptide antibiotics (vancomycin or teicoplanin) for nosocomial pneumonia. METHODS: This was a systematic review and meta-analysis of English language, randomized, controlled trials comparing linezolid to glycopeptide antibiotics for suspected MRSA pneumonia in subjects > 12 years of age. A highly sensitive search of PubMed MEDLINE and Cochrane Central Register of Controlled Trials databases identified relevant studies. RESULTS: Eight trials encompassing 1,641 subjects met entry criteria. Linezolid was not superior to glycopeptide antibiotics for end points of clinical success (relative risk [RR] linezolid vs glycopeptide, 1.04; 95% CI, 0.97-1.11; P = .28), microbiologic success (RR, 1.13; 95% CI, 0.97-1.31; P = .12), or mortality (RR, 0.91; 95% CI, 0.69-1.18; P = .47). In addition, clinical success in the subgroup of subjects with MRSA-positive respiratory tract culture (RR, 1.23; 95% CI, 0.97-1.57; P = .09) was not significantly different from those without MRSA (RR, 0.95; 95% CI, 0.83-1.09; P = .48), P for interaction, 0.07. The risk for adverse events was not different between the two antibiotic classes (RR, 0.96; 95% CI, 0.86-1.07; P = .48). CONCLUSION: Randomized controlled trials do not support superiority of linezolid over glycopeptide antibiotics for the treatment of nosocomial pneumonia. We recommend that decisions between linezolid or glycopeptide antibiotics for empirical or MRSA-directed therapy of nosocomial pneumonia depend on local availability, antibiotic resistance patterns, preferred routes of delivery, and cost, rather than presumed differences in efficacy.

**Source:** Medline

Available in fulltext from Chest at [Free Access Content]

Notes: Username: ULHTKIS/Password: Library
determine risk factors for the development of hospital-acquired MRSA (HA-MRSA). All patients admitted to the burn service from January 2007 to June 2009 were screened by nasal swab culture on admission and weekly thereafter. Other sites were cultured based on clinical suspicion. Patients with MRSA were immediately placed on isolation precautions. Community-acquired MRSA (CA-MRSA) and HA-MRSA were defined as identification of the organism <72 hours from admission (CA-MRSA) or >72 hours after admission (HA-MRSA). Charts were retrospectively analyzed to identify risk factors for development of HA. Screening compliance was 100%. Seventy MRSA cases were identified in 752 admissions (9% incidence), including 30 cases of CA-MRSA and 40 cases of HA-MRSA. Over the 30-month study period, HA-MRSA incidence decreased according to a significant linear trend. Independent risk factors for the development of HA-MRSA on multivariate analysis included length of stay >7 days (odds ratio [OR] 12.0, 95% confidence interval [CI] 1.6-91), TBSA affected >10% (OR 6.1, CI 2.6-14.2), age >30 years (OR 4.9, CI 2.0-12.0), and inhalation injury (OR 3.5, CI 1.0-11.7). Surveillance cultures with isolation precautions are practical and effective for preventing HA-MRSA among burn patients. Older patients with prolonged hospital stays, large wounds, and inhalation injury are at greatest risk.

Source: Medline

Impact of methicillin-resistant Staphylococcus aureus prevalence among S. aureus isolates on surgical site infection risk after coronary artery bypass surgery.

Author(s) Miller LG, McKinnell JA, Vollmer ME, Spellberg B

Citation: Infection Control & Hospital Epidemiology, April 2011, vol./is. 32/4(342-50), 0899-823X;1559-6834 (2011 Apr)

Publication Date: April 2011

Abstract: OBJECTIVE: Cephalosporins are recommended for antibiotic prophylaxis to prevent cardiothoracic surgical site infections (SSIs) except in patients with beta-lactam allergy or in settings with a "high" prevalence of methicillin-resistant Staphylococcus aureus (MRSA) among S. aureus isolates (hereafter, "MRSA prevalence"); however, "high" remains undefined. We sought to identify the MRSA prevalence at which glycopeptide prophylaxis would minimize SSIs relative to beta-lactam prophylaxis.METHODS: We developed a decision analysis model to estimate SSI likelihood when either glycopeptides or beta-lactams were used for prophylaxis in cardiothoracic surgery. Event probabilities were derived from a systematic literature review. A similar cost-minimization model was also developed.RESULTS: At 0% MRSA prevalence, SSI probability was 3.64% with glycopeptide prophylaxis and 3.49% with beta-lactam prophylaxis. At MRSA prevalences of 10%, 20%, 30%, or 40%, SSI probabilities with glycopeptide prophylaxis did not change, but they were 3.98%, 4.48%, 4.97%, and 5.47% with beta-lactam prophylaxis. The threshold of MRSA prevalence at which glycopeptide prophylaxis minimized SSI probability and cost was 3%. In sensitivity analyses, variations in most model estimates only modestly affected the threshold.CONCLUSION: Glycopeptide prophylaxis minimizes the risk of SSIs and cost when MRSA prevalence exceeds 3%. At very low MRSA prevalence (between 3% and 10%), the SSI minimization provided by glycopeptide prophylaxis is small and may be within the error of the model. Given the current MRSA prevalence in most community and healthcare settings, clinicians should consider routine prophylaxis with vancomycin. Our findings may have important policy implications, as benefits in cardiothoracic surgery antibiotic prophylaxis must be weighed against the limitations of increased glycopeptide use.

Source: Medline

Available in fulltext from Infection Control and Hospital Epidemiology at Free
Preventing methicillin-resistant Staphylococcus aureus transmission in long-term care facilities: an executive summary of the APIC Elimination Guide.

Author(s): Rebmann T, Aureden K, Association for Professionals in Infection Control and Epidemiology

Citation: American Journal of Infection Control, April 2011, vol./is. 39/3(235-8), 0196-6553:1527-3296 (2011 Apr)

Publication Date: April 2011

Abstract: This article is an executive summary of the APIC Elimination Guide for methicillin-resistant Staphylococcus aureus infection in long-term care facilities. Infection preventionists are encouraged to obtain the original, full-length APIC Elimination Guidelines for more thorough coverage of methicillin-resistant Staphylococcus aureus prevention in long-term care facilities. Copyright 2011 Association for Professionals in Infection Control and Epidemiology, Inc. Published by Mosby, Inc. All rights reserved.

Source: Medline

Methicillin-resistant Staphylococcus aureus skin and soft tissue infections. Impacting patient care.

Author(s): Estes K

Citation: Critical Care Nursing Quarterly, April 2011, vol./is. 34/2(101-9), 0887-9303;1550-5111 (2011 Apr-Jun)

Publication Date: April 2011

Abstract: With the emergence and rising prevalence of methicillin-resistant Staphylococcus aureus among individuals in the community, it is imperative to standardize patient care and develop best practices among health care providers. Evidence-based standard patient care guidelines for community-acquired methicillin-resistant S aureus skin and soft tissue infections have the potential to positively impact patient outcomes, decrease health risk, reduce hospitalization from insufficient treatment, and decrease or even prevent further transmission to unaffected individuals. Emergency department providers are in a unique position to lead in the management and prevention of skin and soft tissue infections. It is essential that community-acquired methicillin-resistant S aureus skin and soft tissue infections are consistently treated by evidence-based treatment standards, especially with the growing number of pathogens displaying resistance to antibiotics, rising mortality, rapid spread of antimicrobial resistant microbes, and the escalating health care costs. The purpose of this literature review is to provide health care providers with current evidence-based health care guidelines for the treatment and management of community-acquired methicillin-resistant S aureus skin and soft tissue infections.

Source: Medline

Has decolonization played a central role in the decline in UK methicillin-resistant Staphylococcus aureus transmission? A focus on evidence from intensive care.

Author(s): Edgeworth JD

Citation: Journal of Antimicrobial Chemotherapy, April 2011, vol./is. 66 Suppl 2/(ii41-7), 0305-7453;1460-2091 (2011 Apr)

Publication Date: April 2011

Abstract: The UK has seen a dramatic reduction in methicillin-resistant Staphylococcus aureus (MRSA) infection and transmission over the past few years in response to the mandatory MRSA bacteraemia surveillance scheme. Healthcare institutions have re-enforced basic infection control practice, such as universal hand
hygiene, contact precautions and admission screening; however, the precipitous decline suggests other contributing factors. The intensive care unit (ICU), with its high endemic rates and complex patient population, is an important reservoir for seeding MRSA around the hospital and has understandably been at the forefront of MRSA control programmes. Recent studies from the UK and elsewhere have identified decolonization with agents such as chlorhexidine and mupirocin as having an important and perhaps underappreciated role in reducing ICU MRSA transmission, although evidence is incomplete and no prospective randomized studies have been performed. Chlorhexidine particularly is being recommended in the ICU for an increasing number of indications, including decolonization, universal patient bathing, oropharyngeal antisepsis in ventilated patients and vascular catheter insertion sites. Likewise, although there is little published evidence on decolonization efficacy or practice on UK general wards, it is now recommended for all MRSA-colonized patients and uptake is probably widespread. The recent observation that MRSA strains carrying the antiseptic resistance genes qacA/B can be clinically resistant to chlorhexidine raises a note of caution against its unfettered use. The dissemination of chlorhexidine-resistant MRSA would have implications for the decolonization of individual patients and for preventing transmission.

Source: Medline
Available in fulltext from Journal of Antimicrobial Chemotherapy at Oxford University Press

Clinical implications of methicillin-resistant Staphylococcus aureus in pregnancy.

Author(s) Beigi RH
Citation: Current Opinion in Obstetrics & Gynecology, April 2011, vol./is. 23/2(82-6), 1040-872X;1473-656X (2011 Apr)
Publication Date: April 2011
Abstract: PURPOSE OF REVIEW: Methicillin-resistant Staphylococcus aureus (MRSA) has become an increasingly aggressive and prevalent pathogen in medicine. This pattern has also been noted in obstetrics. This review will delineate the epidemiology and clinical implications of MRSA during pregnancy.RECENT FINDINGS: Investigations have focused on prevalence of MRSA colonization in obstetrics and the associated morbidity. In addition, some attention has been focused on the neonatal implications of maternal colonization. Overall, the rates of maternal MRSA colonization noted in the United States have been low, in the range of 0.5-4%. The clinical impact of MRSA colonization among pregnant women has also been estimated to be modest. Roughly 357 invasive MRSA infections per 100,000 live births in the United States occur on an annual basis. It is however important to note that published estimates likely underestimate the full scope of MRSA in pregnancy given the lack of formal reporting, importance of related neonatal colonization and morbidity, the complicated treatment implications in pregnant women, the recognized high pathogenicity of MRSA infections, and propensity for recurrent infections among community-acquired MRSA strains.SUMMARY: MRSA is an increasingly important pathogen in modern healthcare and in the obstetric population. Continued surveillance and research remains a top priority.
Source: Medline

Meticillin-resistant Staphylococcus aureus (MRSA): screening and decolonisation.

Author(s) Cookson B, Bonten MJ, Mackenzie FM, Skov RL, Verbrugh HA, Tacconelli E, European Society of Clinical Microbiology and Infectious Diseases (ESCMID), International Society of Chemotherapy (ISC)
Abstract: Meticillin-resistant Staphylococcus aureus (MRSA) infections are of increasing importance to clinicians, public health agencies and governments. Prevention and control strategies must address sources in healthcare settings, the community and livestock. This document presents the conclusions of a European Consensus Conference on the role of screening and decolonisation in the control of MRSA infection. The conference was held in Rome on 5-6 March 2010 and was organised jointly by the European Society of Clinical Microbiology and Infectious Diseases (ESCMID) and the International Society of Chemotherapy (ISC). In an environment where MRSA is endemic, universal or targeted screening of patients to detect colonisation was considered to be an essential pillar of any MRSA control programme, along with the option of decolonising carriers dependent on relative risk of infection, either to self or others, in a specific setting. Staff screening may be useful but is problematic as it needs to distinguish between transient carriage and longer-term colonisation. The consequences of identification of MRSA-positive staff may have important effects on morale and the ability to maintain staffing levels. The role of environmental contamination in MRSA infection is unclear, but screening may be helpful as an audit of hygiene procedures. In all situations, screening procedures and decolonisation carry a significant cost burden, the clinical value of which requires careful evaluation. European initiatives designed to provide further information on the cost/benefit value of particular strategies in the control of infection, including those involving MRSA, are in progress. Copyright 2010 Elsevier B.V. and the International Society of Chemotherapy. All rights reserved.

Source: Medline

Diagnostic accuracy of culture-based and PCR-based detection tests for methicillin-resistant Staphylococcus aureus: a meta-analysis.

Author(s) Luteijn JM, Hubben GA, Pechlivanoglou P, Bonten MJ, Postma MJ

Abstract: A systematic review and meta-analysis were performed to determine and compare the sensitivity and specificity of PCR-based and culture-based diagnostic tests for methicillin-resistant Staphylococcus aureus (MRSA). Our analysis included 74 accuracy measurements from 29 publications. Nine tests were evaluated: the PCR-based Genotype MRSA Direct and IDI-MRSA, the chromogenic media CHROMagar, Chromogenic MRSA Medium, MRSA ID, MRSA Select and ORSAB, and the nonchromogenic culture media MSA-Cefoxitin and MSA-Oxacillin. For four chromogenic media, incubation periods of 18-24 and 48 h were evaluated. Considerable heterogeneity was detected in most analyses. A significantly higher sensitivity was found for the overall PCR pooled estimate (92.5; 95% CI 87.4-95.9) and the chromogenic media after 48 h of incubation (87.6; 95% CI 82.1-91.6) compared to the overall sensitivity of chromogenic media after 18-24 h (78.3; 95% CI 71.0-84.1). The specificity of chromogenic media after 18-24 h (98.6; 95% CI 97.7-99.1) was higher than the specificity of PCR (97.0; 95% CI 94.5-98.4) but declined after 48 h of incubation (94.7; 95% CI 91.6-96.8). The most sensitive chromogenic medium after 18-24 h of incubation was Chromogenic MRSA Medium (sensitivity: 89.3; 95% CI 72.8-96.3), whereas the most specific chromogenic medium after 18-24 h of incubation was MRSA Select (specificity: 99.4; 95% CI 98.6-99.7). After 48 h of incubation, MRSA Select had the highest sensitivity (93.2; 95% CI 83.5-97.0), whereas CHROMagar had the highest
specificity (96.4; 95% CI 91.3-98.5). This meta-analysis showed statistically significant differences in diagnostic accuracy between several of the tests and the test methods evaluated. A reduction of the incubation time of chromogenic media (from 48 to 18-24 h) increases specificity but reduces sensitivity. 2010 The Authors. Journal Compilation 2010 European Society of Clinical Microbiology and Infectious Diseases.

**Source:** Medline
Available in *fulltext* from *Clinical Microbiology and Infection* at [Wiley](https://onlinelibrary.wiley.com/)

**Clinical practice guidelines by the infectious diseases society of america for the treatment of methicillin-resistant Staphylococcus aureus infections in adults and children.**

**Author(s)** Liu C, Bayer A, Cosgrove SE, Daum RS, Fridkin SK, Gorwitz RJ, Kaplan SL, Karchmer AW, Levine DP, Murray BE, J Rybak M, Talan DA, Chambers HF, Infectious Diseases Society of America

**Citation:** Clinical Infectious Diseases, February 2011, vol./is. 52/3(e18-55), 1058-4838;1537-6591 (2011 Feb 1)

**Publication Date:** February 2011

**Abstract:** Evidence-based guidelines for the management of patients with methicillin-resistant Staphylococcus aureus (MRSA) infections were prepared by an Expert Panel of the Infectious Diseases Society of America (IDSA). The guidelines are intended for use by health care providers who care for adult and pediatric patients with MRSA infections. The guidelines discuss the management of a variety of clinical syndromes associated with MRSA disease, including skin and soft tissue infections (SSTI), bacteremia and endocarditis, pneumonia, bone and joint infections, and central nervous system (CNS) infections. Recommendations are provided regarding vancomycin dosing and monitoring, management of infections due to MRSA strains with reduced susceptibility to vancomycin, and vancomycin treatment failures.

**Source:** Medline
Available in *fulltext* from *Clinical Infectious Diseases* at [Highwire Press](https://onlinelibrary.wiley.com/)

**Treatment of methicillin-resistant Staphylococcus aureus surgical site infections.**

**Author(s)** Santayana EM, Jourjy J

**Citation:** AACN Advanced Critical Care, January 2011, vol./is. 22/1(5-12; quiz 14), 1559-7768;1559-7776 (2011 Jan-Mar)

**Publication Date:** January 2011

**Source:** Medline

**Clinical effectiveness of rapid tests for methicillin resistant Staphylococcus aureus (MRSA) in hospitalized patients: a systematic review.**

**Author(s)** Polisena J, Chen S, Cimon K, McGill S, Forward K, Gardam M

**Citation:** BMC Infectious Diseases, 2011, vol./is. 11/(336), 1471-2334;1471-2334 (2011)

**Publication Date:** 2011

**Abstract:** BACKGROUND: Methicillin resistant Staphylococcus aureus (MRSA) are often resistant to multiple classes of antibiotics. The research objectives of this systematic review were to evaluate the clinical effectiveness of polymerase chain reaction (PCR) versus chromogenic agar for MRSA screening, and PCR versus no screening for several clinical outcomes, including MRSA colonization and infection rates.METHODS: An electronic literature search was conducted on studies evaluating polymerase chain reaction techniques and meticillin (also spelled meticillin) resistant Staphylococcus aureus that were published from 1993 onwards
using Medline, Medline In-Process & Other Non-Indexed Citations, BIOSIS Previews, and EMBASE. Due to the presence of heterogeneity in the selected studies, the clinical findings of individual studies were described. RESULTS: Nine studies that compared screening for MRSA using PCR versus screening using chromogenic agar in a hospital setting, and two studies that compared screening using PCR with no or targeted screening were identified. Some studies found lower MRSA colonization and acquisition, infection, and transmission rates in screening with PCR versus screening with chromogenic agar, and the turnaround time for screening test results was lower for PCR. One study reported a lower number of unnecessary isolation days with screening using PCR versus screening with chromogenic agar, but the proportion of patients isolated was similar between both groups. The turnaround time for test results and number of isolation days were lower for PCR versus chromogenic agar for MRSA screening. CONCLUSIONS: The use of PCR for MRSA screening demonstrated a lower turnaround time and number of isolation days compared with chromogenic agar. Given the mixed quality and number of studies (11 studies), gaps remain in the published literature and the evidence remains insufficient. In addition to screening, factors such as the number of contacts between healthcare workers and patients, number of patients attended by one healthcare worker per day, probability of colonization among healthcare workers, and MRSA status of hospital shared equipment and hospital environment must be considered to control the transmission of MRSA in a hospital setting.

Source: Medline
Available in fulltext from BMC Infectious Diseases at EBSCOhost

Effects of selective patient screening for MRSA on overall MRSA hospital-acquired infection rates.

Author(s) Simmons S
Citation: Critical Care Nursing Quarterly, January 2011, vol./is. 34/1(18-24), 0887-9303;1550-5111 (2011 Jan-Mar)
Publication Date: January 2011

Abstract: PURPOSE: Determine if implementing a methicillin-resistant Staphylococcus aureus (MRSA) active surveillance program in the intensive care unit (ICU) only would affect hospitalwide transmission of MRSA. METHODS: Hospital-acquired MRSA rates were collected from January 2007 to December 2009. In July 2008, an active surveillance program was implemented in all ICU areas. The hospital-acquired MRSA rates were compared before and after the implementation of the screening program. RESULTS: The ICU rate of hospital-acquired MRSA reduced from 3.19/1000 patient-days to 1.66/1000 patient-days (P < .005). The facility's hospital-acquired MRSA rate was reduced from 0.80/1000 patient-days to 0.38/1000 patient-days (P < .0003). CONCLUSION: Implementing an ICU-only active surveillance program is an effective method of controlling MRSA transmission on a hospitalwide level. Additional high-risk areas to consider include long-term acute care facilities, rehabilitation units, and patients with long-term indwelling medical devices.

Source: Medline

A retrospective study of risk factors for poor outcomes in methicillin-resistant Staphylococcus aureus (MRSA) infection in surgical patients.

Author(s) Eseonu KC, Middleton SD, Eseonu CC
Publication Date: 2011
Abstract: BACKGROUND: Since its isolation, Methicillin-resistant Staphylococcus aureus (MRSA) has become a major cause of hospital acquired infection (HAI), adverse patient outcome and overall resource utilisation. It is endemic in Scotland and widespread in Western hospitals. MRSA has been the subject of widespread media interest—a manifestation of concerns about sterile surgical techniques and hospital cleanliness. This study aimed to investigate patient outcome of MRSA infections over the last decade at a major orthopaedic trauma centre. The objective was to establish the association of variables, such as patient age and inpatient residence, against patient outcome, in order to quantify significant relationships; facilitating the evaluation of management strategies with an aim to improving patient outcomes and targeting high-risk procedures.METHODS: This is a retrospective study of the rates and outcomes of MRSA infection in orthopaedic trauma at the Royal Infirmary of Edinburgh. Data was collated using SPSS 14.0 for Windows(R). Shapiro-Wilkes testing was performed to investigate the normality of continuous data sets (e.g: age). Data was analysed using both Chi-Squared and Fisher's exact tests (in cases of expected values under 5).RESULTS: This study found significant associations between adverse patient outcome (persistent deep infection, osteomyelitis, the necessity for revision surgery, amputation and mortality) and the following patient variables: Length of inpatient stay, immunocompromise, pre-admission residence in an institutional setting (such as a residential nursing home) and the number of antibiotics used in patient care. Despite 63% of all infections sampled resulting from proximal femoral fractures, no association between patient outcome and site of infection or diagnosis was found. Somewhat surprisingly, the relationship between age and outcome of infection was not proved to be significant, contradicting previous studies suggesting a statistical association. Antibiotic prophylaxis, previously identified as a factor in reducing overall incidence of MRSA infection, was not found to be significantly associated with outcome.CONCLUSIONS: Early identification of high-risk patients as identified by this study could lead to more judicious use of therapeutic antibiotics and reductions in adverse outcome, as well as socioeconomic cost. These results could assist in more accurate risk stratification based on evidence based evaluation of the significance of the risk factors investigated.

Source: Medline
Available in fulltext from Journal of Orthopaedic Surgery and Research at National Library of Medicine

A cost-effective protocol for screening patients for methicillin-resistant Staphylococcus aureus.

Author(s) Dickson EM, Davidson MM, Hay AJ, Ho-Yen DO

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Publication Date: 2011

Abstract: The incidence of hospital-acquired infection with methicillin-resistant Staphylococcus aureus (MRSA) is rising worldwide. Rapid identification of MRSA carriers is an important step in reducing the risk of transmission to other patients. Molecular methods are increasingly popular but are technically demanding and expensive. This study assesses the modification of one of the commercially available latex agglutination tests (Mastalex-MRSA) for the identification of penicillin-binding protein 2’ on known strains of MRSA as well as other organisms identified from chromogenic agar plates. A total of 3050 patients with unknown MRSA status were processed through the routine laboratory during the investigation period and 73 of these were presumptive positive following overnight incubation. Of 70 patients who could be evaluated, 32 (43.8%) specimens would be
suitable for use with the kit directly from overnight incubation on chromogenic agar, and the other 38 (52.1%) would be suitable following four hours' incubation on blood agar. The cost of one positive MRSA test with the inclusion of this test is Euro 15.15 compared with published reports of Euro 35.00 for a commercial polymerase chain reaction (PCR) test. This protocol would allow the reporting of presumptive positive MRSA results approximately 24 hours earlier than currently achieved.

Source: Medline
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