(77.3%) isolates with reported susceptibility data (Fig. 1). Of these, data were analyzed for 187 (87.0%) (Fig. 2). All isolates tested for carbapenems were susceptible. Fluoroquinolone non-susceptibility was most prevalent among *E. coli* (42.9%) and *P. mirabilis* (55.9%). Among *Klebsiella* spp, the highest percentages of non-susceptibility were observed for extended-spectrum cephalosporins and folate pathway inhibitors (25.0% each). Glycopeptide non-susceptibility was 10.0% for *Enterococcus* spp. The percentage of isolates classified as MDR ranged from 10.1% for *E. coli* to 14.7% for *P. mirabilis*. **Conclusions:** Substantial levels of non-susceptibility were observed for nursing home residents' urine isolates, with 10% to 56% reported as non-susceptible to the antibiotics assessed. Non-susceptibility was highest for fluoroquinolones, an antibiotic class commonly used in nursing homes, and ≥ 10% of selected isolates were MDR. Our findings reinforce the importance of nursing homes using susceptibility data from laboratory service providers to guide antibiotic prescribing and to monitor levels of resistance.

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Poster Presentation

**Antibiotic Use at the End-of-Life in Patients with Advanced Dementia: A Systematic Literature Review**

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**Background:** Improving the use of antibiotics across the care continuum will be necessary as we strive to protect our patients from antimicrobial resistance. One potential target for antimicrobial stewardship is during end-of-life care of patients with advanced dementia. We aimed to perform a systematic literature review measuring the burden of antibiotic use during end-of-life care in patients with dementia. **Methods:** We searched PubMed, CINAHL, and Embase through July 2019 for studies with the following inclusion criteria in the initial analysis: (1) end-of-life patients (ie, dementia, cancer, organ failure, frailty or multi-morbidity); (2) antibiotic use in the end-of-life care; with the final analysis restricted to (3) patients with advanced dementia. Only randomized controlled trials (RCTs) and cohort studies were included. **Results:** Of the 93 full-text articles, 17 studies (18.3%) met the selection criteria for further analysis. Most of the included studies were retrospective (n = 8) or prospective (n = 8) cohort studies. These studies in combination included 2,501 patients with advanced dementia. Also, 5 studies (698 patients, [27.9%]) were restricted to patients with Alzheimer's disease. In 5 studies in which data were available, fewer than one-quarter of patients (19.9%, 498) with advanced dementia were referred to palliative care. In 12 studies >50% of patients received antibiotics during the end-of-life period. Also, 15 studies did not report the duration of antimicrobial therapy. Only 2 studies reported the antimicrobial consumption in days of therapy per 1,000 resident days. Only 6 studies studied whether the use of antibiotics was associated with beneficial outcomes (survival or comfort), and none of them evaluated potential adverse effects associated with antibiotic use. **Conclusions:** There are significant gaps in the literature surrounding antimicrobial use at the end of life in patients with advanced dementia. Future studies are needed to evaluate the benefits and harms of using antibiotics for patients during end-of-life care in this patient population.

**Table 1.**

| Subgroups | No. of Studies | No. of Advanced Dementia Patients (%) |
|---|---|---|
| All studies | 17 | 2,501 |
| Alzheimer's disease | 5 | 698 (27.9) |
| Any type of dementia | 12 | 1,803 (72.1) |
| RCTs | 1 | 99 (3.9) |
| Prospective cohort study | 8 | 937 (37.5) |
| Retrospective cohort study | 8 | 1,465 (58.6) |
| Palliative care | 5 | 498 (19.9) |
| Not reported the duration of antimicrobial therapy | 15 | … |
| Not reported the outcome measured after antibiotic use (survival or comfort) | 11 | 1,437 (57.5) |

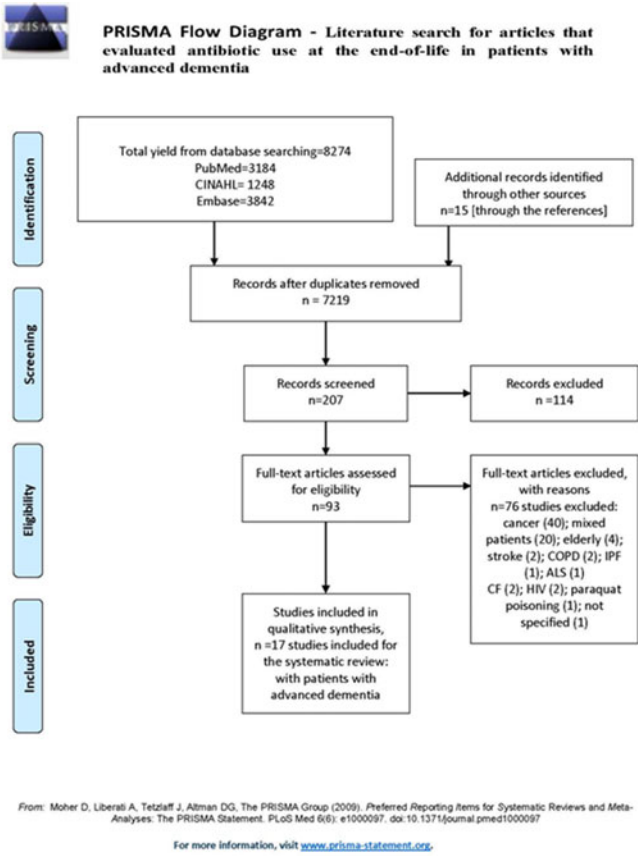


**Fig. 1.**

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Poster Presentation

**Antimicrobial Nonsusceptibility Among Invasive MRSA USA300 Strains by Healthcare Exposure, Three Sites, 2005–2016**

Kelly Jackson, Centers for Disease Control and Prevention; Runa Gokhale, Centers for Disease Control and Prevention; Davina

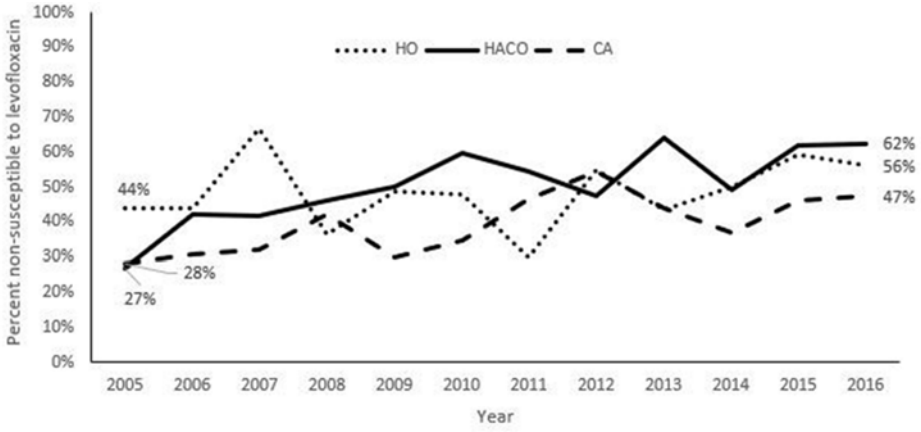


Figure. Percent levofloxacin non-susceptibility among invasive MRSA USA300 isolates by epidemiologic classification and year.

**Fig. 1.**

Campbell, Centers for Disease Control and Prevention; Amy Gargis, Centers for Disease Control and Prevention; Susan Ray, Georgia Emerging Infections Program and the Atlanta Veterans Affairs Medical Center; Ruth Lynfield, Minnesota Department of Health; William Schaffner, Vanderbilt University School of Medicine; Joseph Lutgring, Centers for Disease Control and Prevention; Isaac See, Centers for Disease Control and Prevention

**Background:** Incidence of community-associated (CA) and healthcare-associated, community-onset (HACO) USA300 methicillin-resistant *Staphylococcus aureus* (MRSA) bloodstream infections has remained unchanged in recent years. Traditionally considered a CA strain, USA300 is increasingly associated with healthcare settings. We examined whether antimicrobial nonsusceptibility among USA300 strains could distinguish epidemiologic class (community vs hospital), and whether divergences in susceptibility were occurring over time. **Methods:** We used data on invasive MRSA infections from active, population, and laboratory-based surveillance during 2005–2016 from 11 counties in 3 states. Invasive cases were defined as MRSA isolation from a normally sterile site in a surveillance area resident. Cases were considered hospital-onset (HO) if the culture was obtained >3 days after hospitalization and HACO if ≥1 of the following risk factors was present: hospitalization, surgery, dialysis, or residence in a long-term care facility in the past year; or central vascular catheter ≤2 days before culture. Otherwise, cases were considered CA. Sites submitted a convenience sample of clinical MRSA isolates for molecular typing and antimicrobial susceptibility testing. Molecular typing was performed by pulsed-field gel electrophoresis until 2008, when typing was inferred using a validated algorithm based on molecular characteristics. Reference broth microdilution was performed for 8 antimicrobials and interpreted based on CLSI interpretive criteria. We compared USA300 nonsusceptibility for HO and CA isolates. For antimicrobials with >5% nonsusceptibility and for which HO isolates had greater nonsusceptibility than CA isolates, we compared nonsusceptibility for HACO and CA and analyzed annual trends in nonsusceptibility within each epidemiologic class (ie, CA, HACO, and HO) using linear regression. **Results:** Of 17,947 MRSA cases during 2005–2016, isolates were available for 6,685 (37%), and 2,120 were USA300 (34% CA, 52% HACO, 14% HO). HO isolates had more nonsusceptibility than CA isolates to gentamicin (2.2% vs 0.6%; $P = .03$), levofloxacin (47.8% vs 39.7%; $P = .02$), rifampin (3.7 vs 1.1%; $P = .01$), and trimethoprim-sulfamethoxazole (3.4% vs 0.6%; $P = .04$). HACO isolates also had more nonsusceptibility than CA isolates to levofloxacin (50.9% vs 39.7%; $P < .01$). Levofloxacin nonsusceptibility increased during 2005–2016 for HACO and CA isolates ($P < .01$), but not among HO isolates ($P = .36$) (Fig. 1). **Conclusions:** Overall, nonsusceptibility across drugs cannot distinguish USA300 isolates causing HO versus CA disease. Although HO isolates had higher levofloxacin nonsusceptibility than CA and HACO isolates early on, USA300 MRSA HACO isolates now have levofloxacin nonsusceptibility most similar to that of HO isolates. Further study could help to explore whether increases in fluoroquinolone nonsusceptibility among CA and HACO cases may be contributing to the persistence of USA300 strains.

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**Antimicrobial Resistance and Biofilm Formation by *Staphylococcus aureus* Isolated From Ocular Infections**

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**Background:** Untreated staphylococcal ocular infections may cause injuries in the ocular structure and lead to visual impairments, lesions in the anatomical ocular surface, and blindness. The aim of the study was to describe the characteristic of 90 *Staphylococcus aureus* (SA) strains from hospital and community treated ocular infections with a special emphasis on ability of biofilm formation and drug resistance. The biofilm formation was carried out using the Congo red agar (CRA) method applying Congo red dye. Studies have demonstrated that the CRA method is simple, fast, and repeatable and that modifications of some components