

## Oral Abstract Session:

### 103. Advances in MRSA Infection Prevention

Friday: 8:30 a.m. - 10:00 a.m.

Room: SDCC 32 AB

#### Moderators:

SUSAN S. HUANG, MD, MPH, FIDSA; University of California Irvine School of Medicine

W. CHARLES HUSKINS, MD, MSC, FSHEA; College of Medicine, Mayo Clinic

#### Presenters:

- 646** 8:30 a.m. **Are People with High Nasal Burden of Methicillin-Resistant *Staphylococcus aureus* (MRSA) at Higher Risk for Invasive Infection?**  
**ATIA SHAH, MD<sup>1</sup>**, RUPAK DATTA, MPH<sup>2</sup>, SUSAN S. HUANG, MD, MPH, FIDSA<sup>3</sup>, ERIC CUI, BS<sup>4</sup>, SUSAN WELBOURNE, BS<sup>5</sup> and LAURI THRUPP, MD<sup>1</sup>; <sup>1</sup>University of California Irvine Medical Center, Orange, CA, <sup>2</sup>University of California, Irvine, Irvine, CA, <sup>3</sup>Division of Infectious Diseases and Health Policy Research Institute, University of California Irvine School of Medicine, Irvine, CA, <sup>4</sup>University of California Irvine, Irvine, CA, <sup>5</sup>University of California, Irvine, Orange, CA
- 647** 8:45 a.m. **Veterans Affairs (VA) Methicillin-Resistant *Staphylococcus aureus* (MRSA) Bundle Associated with a Sustained Effect on Transmissions and Healthcare-Associated Infections (HAIs)**  
**MARTIN EVANS, MD**; University of Kentucky School of Medicine, Lexington, KY, STEPHEN KRALOVIC, MD, MPH; University of Cincinnati, Cincinnati, OH, LORETTA SIMBARTL, MS; Department of Veterans Affairs Central Office, Washington, DC, RON FREYBERG, MS; VHA Inpatient Evaluation Center, Cincinnati, OH, D. SCOTT OBROSKY, MS; VHA Center for Health Equity Research and Promotion, Pittsburgh, PA, GARY ROSELLE, MD; Dept of Veterans Affairs, Cincinnati, OH and RAJIV JAIN, MD; Department of Veterans Affairs, Veterans Health Administration, Washington, DC
- 648** 9:00 a.m. **An Automated Electronic Rule For Predicting Methicillin-Resistant *Staphylococcus aureus* (MRSA) Carriage Upon Hospital Admission At VA Medical Centers (VAMC) Nationwide**  
**MICHAEL RUBIN, MD, PHD<sup>1</sup>**, JOSE CAMPO, MD<sup>2</sup>, ANDREW REDD, PHD<sup>1</sup>, MOLLIE CUMMINS, PHD<sup>1</sup>, BRIAN SAUER, PHD<sup>1</sup>, MARTIN EVANS, MD<sup>3</sup> and CHRISTOPHER NIELSON, MD, MPH<sup>4</sup>; <sup>1</sup>University of Utah School of Medicine, Salt Lake City, UT, <sup>2</sup>VA Salt Lake City Health Care System, Salt Lake City, UT, <sup>3</sup>University of Kentucky School of Medicine, Lexington, KY, <sup>4</sup>Veterans Healthcare System, Reno, NV
- 649** 9:15 a.m. **Impact of a Horizontal Infection Prevention Strategy on MRSA Infections at an Academic Medical Center**  
**MICHAEL EDMOND, MD, MPH, MPA, FIDSA, FSHEA<sup>1</sup>**, MICHAEL STEVENS, MD, MPH<sup>1</sup>, JANIS OBER, RN, BSN<sup>1</sup>, SAMEEH GHAZAL, MRCPC, ABP<sup>1</sup> and GONZALO BEARMAN, MD, MPH<sup>2</sup>; <sup>1</sup>VCU Medical Center, Richmond, VA, <sup>2</sup>Virginia Commonwealth University Medical Center, Richmond, VA
- 650** 9:30 a.m. **Progress in Reducing National Burden of Invasive Methicillin-Resistant *Staphylococcus aureus* Infections, United States, 2005-2010**  
**RAYMUND DANTES, MD, MPH<sup>1</sup>**, FERNANDA LESSA, MD<sup>1</sup>, RUTH BELFLOWER, RN, MPH<sup>1</sup>, YI MU, PHD<sup>2</sup>, JOELLE NADLE, MPH<sup>3</sup>, DEBORAH ARAGON, MSPH<sup>4</sup>, SUSAN PETIT, MPH<sup>5</sup>, SUSAN M. RAY, MD<sup>6</sup>, LEE HARRISON, MD<sup>7</sup>, GHINWA DUMYATI, MD, FSHEA<sup>8</sup>, RUTH LYNFIELD, MD<sup>9</sup>, JOHN TOWNES, MD<sup>10</sup>, WILLIAM SCHAFFNER, MD<sup>11</sup> and SCOTT FRIDKIN, MD<sup>1</sup>; <sup>1</sup>Centers for Disease Control and Prevention, Atlanta, GA, <sup>2</sup>Centers for Disease Control and Prevention, Division of Healthcare Quality Promotion, Atlanta, GA, <sup>3</sup>California

Emerging Infections Program, Oakland, CA, <sup>4</sup>Colorado Department of Public Health & Environment, Denver, CO, <sup>5</sup>Connecticut Department of Public Health, Hartford, CT, <sup>6</sup>Emory University School of Medicine and Georgia Emerging Infections Program, Atlanta, GA, <sup>7</sup>Johns Hopkins Bloomberg School of Public Health, Pittsburgh, PA, <sup>8</sup>University of Rochester, Rochester, NY, <sup>9</sup>Minnesota Department of Health, St. Paul, MN, <sup>10</sup>Oregon Health and Science University, Portland, OR, <sup>11</sup>Vanderbilt University School of Medicine, Nashville, TN

**651 9:45 a.m. Epidemiology of Methicillin-Resistant *Staphylococcus aureus* (MRSA) Colonization among Adult Intensive Care Unit (ICU) Patients Following State-Mandated Active Surveillance**

**MICHAEL Y. LIN, MD, MPH<sup>1</sup>**, ROSIE D. LYLES-BANKS, MD, MS<sup>2</sup>, KAREN LOLANS, BS<sup>1</sup>, MARY HAYDEN, MD<sup>1</sup>, HONG LI, MS<sup>1</sup>, ALEXANDER KALLEN, MD, MPH<sup>3</sup>, STEPHEN G. WEBER, MD, MS<sup>4</sup>, ROBERT WEINSTEIN, MD<sup>1</sup>, WILLIAM TRICK, MD<sup>1</sup> and FOR THE CDC PREVENTION EPICENTER PROGRAM (RAW - PI); <sup>1</sup>Rush Univ. Med. Ctr., Chicago, IL, <sup>2</sup>Cook County Health and Hospitals System, Chicago, IL, <sup>3</sup>Centers for Disease Control and Prevention, Atlanta, GA, <sup>4</sup>University of Chicago Medical Center, Chicago, IL

**Session #103 Presentations:**

**646. Are People with High Nasal Burden of Methicillin-Resistant *Staphylococcus aureus* (MRSA) at Higher Risk for Invasive Infection?**

Part of Session: 103. Advances in MRSA Infection Prevention

8:30 a.m.

**ATIA SHAH, MD<sup>1</sup>**, RUPAK DATTA, MPH<sup>2</sup>, SUSAN S. HUANG, MD, MPH, FIDSA<sup>3</sup>, ERIC CUI, BS<sup>4</sup>, SUSAN WELBOURNE, BS<sup>5</sup> and LAURI THRUPP, MD<sup>1</sup>; <sup>1</sup>University of California Irvine Medical Center, Orange, CA, <sup>2</sup>University of California, Irvine, Irvine, CA, <sup>3</sup>Division of Infectious Diseases and Health Policy Research Institute, University of California Irvine School of Medicine, Irvine, CA, <sup>4</sup>University of California Irvine, Irvine, CA, <sup>5</sup>University of California , Irvine, Orange, CA

**Background:** *S. aureus* nasal colonization generally precedes infection and high quantitative nasal counts have been shown to increase risk for surgical site infection for MSSA. Our goal was to assess whether high levels of nasal MRSA growth increases the risk for MRSA blood and urine infection.

**Methods:** We conducted a retrospective cohort study of adults admitted to the University of California Irvine Medical Center who were newly-detected to harbor MRSA by nasal screening cultures between March 1, 2008 and June 30, 2011. The routine report of semi quantitative MRSA were classified into three groups: "rare/few", "1+/2+", and "3+/4+", corresponding to logarithmic increases in growth. Collected cohort characteristics included age, gender, ICU admission, surgical procedure, and comorbidities from ICD9 codes. Patients decolonized with mupirocin were excluded. Bivariate tests ( $\chi^2$  test) were used to assess the association between these variables and the outcome of any MRSA blood or urine culture within 6 months. Variables with  $\alpha < .2$  in bivariate testing were assessed by logistic regression. Final model variables with  $\alpha < .05$  are shown.

**Results:** The cohort of 1,140 adults with newly-detected MRSA had a mean age of 58y, 59% male, 19.2% with diabetic, 7.7% liver disease, 10.5% renal disease. MRSA growth was rare/few in 356 (31%), 1+/2+ in 621 (54%), and 3+/4+ in 169 (15%). Overall, 58 (5.1%) patients developed a subsequent MRSA blood or urine culture within 6 months; the mean time to infection was 24 days. Factors significantly associated with subsequent MRSA infection in multivariate models included length of initial hospital stay, and MRSA nasal burden (Table).

Table. Predictors of MRSA Invasive Disease\*

	Odds Ratio (CI)	P-value
MRSA Nasal Burden		0.028
Rare/few	--	
1+/2+	2.1 (1.0, 4.3)	
3+/4+	3.2 (1.4, 7.6)	
Length of Stay		<0.0001
1 - <3	-	
3 - <5	1.1 (0.5, 2.6)	

5 - <7	0.4 (0.1, 1.9)
7 - <10	1.4 (0.5, 4.0)
>10	3.8 (1.9, 7.6)

\* Also adjusted for age, diabetes, renal disease (p = NS)

**Conclusion:** Inpatients with high nasal MRSA colonization burden are at higher risk of subsequent invasive infections. This high risk group may benefit from targeted decolonization to reduce disease.

\*\*Co-first author, A Shah and R Datta

Findings in the abstracts are embargoed until 12:01 a.m. PST, Oct. 17th with the exception of research findings presented at the IDWeek press conferences.

## 647. Veterans Affairs (VA) Methicillin-Resistant *Staphylococcus aureus* (MRSA) Bundle Associated with a Sustained Effect on Transmissions and Healthcare-Associated Infections (HAIs)

Part of Session: 103. Advances in MRSA Infection Prevention

8:45 a.m.

**MARTIN EVANS, MD;** University of Kentucky School of Medicine, Lexington, KY, **STEPHEN KRALOVIC, MD, MPH;** University of Cincinnati, Cincinnati, OH, **LORETTA SIMBARTL, MS;** Department of Veterans Affairs Central Office, Washington, DC, **RON FREYBERG, MS;** VHA Inpatient Evaluation Center, Cincinnati, OH, **D. SCOTT OBROSKY, MS;** VHA Center for Health Equity Research and Promotion, Pittsburgh, PA, **GARY ROSELLE, MD;** Dept of Veterans Affairs, Cincinnati, OH and **RAJIV JAIN, MD;** Department of Veterans Affairs, Veterans Health Administration, Washington, DC

**Background:** We previously reported that implementation of a “MRSA bundle” consisting of 1) nasal surveillance for MRSA on all hospital admissions, in-hospital transfers, and discharges, 2) Contact Precautions for patients carrying MRSA, 3) hand-hygiene, and 4) an institutional culture change where infection control became everyone’s responsibility in all acute care VA healthcare centers nationwide was associated with a decline between October 2007 and June 2010 in in-hospital transmission rates by 17% to 2.50/1,000 patient (pt)-days in intensive care units (ICUs) ( $P<0.001$  for trend, Poisson regression) and by 21% to 2.00/1,000 pt-days in non-ICUs ( $P<0.001$ ). MRSA HAI rates declined by 62% to 0.62/1,000 pt-days in ICUs ( $P<0.001$ ) and by 45% to 0.26/1,000 pt-days in non-ICUs ( $P=0.001$ ). Here we show a sustained effect for another 20 months.

**Methods:** Nationwide data entered into the VA Inpatient Evaluation Center (IPEC) database were analyzed for the 20-month period of July 2010 through February 2012. Poisson regression was used to examine trends during this period.

**Results:** During the analysis period, there were 1,178,386 admissions to or transfers from ICUs and non-ICUs (ICUs, 217,828; non-ICUs, 960,558) and 4,978,133 pt-days (ICUs, 762,086; and non-ICUs, 4,216,047) nationwide. The mean monthly percentage of patients screened for MRSA upon facility admission was 96.3% ( $\pm 3.5\%$  SD). The prevalence of patients carrying MRSA at admission decreased from 16.0% to 14.9% ( $P<0.0001$ ). Transmission rates remained unchanged in the ICUs (2.54 to 2.42/1,000 pt-days;  $P=0.88$ ), but decreased 31.7% in non-ICUs (2.27 to 1.55/1,000 pt-days;  $P=0.0003$ ). There was a 29.6% decline in MRSA HAI rates in ICUs (0.54 to 0.38/1,000 pt-days,  $P=0.10$ ), and a 41.4% decline in MRSA HAI rates in non-ICUs (0.29 to 0.17/1,000 pt-days,  $P<0.0001$ ).

**Conclusion:** Rates of MRSA transmissions and HAIs in VA ICUs and non-ICUs are continuing to decrease or may be becoming asymptotic. The MRSA Bundle is associated with this effect, sustained over 52 months, in a large health care system.

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## 648. An Automated Electronic Rule For Predicting Methicillin-Resistant *Staphylococcus aureus* (MRSA) Carriage Upon Hospital Admission At VA Medical Centers (VAMC) Nationwide

Part of Session: 103. Advances in MRSA Infection Prevention

9:00 a.m.

**MICHAEL RUBIN, MD, PHD<sup>1</sup>**, JOSE CAMPO, MD<sup>2</sup>, ANDREW REDD, PHD<sup>1</sup>, MOLLIE CUMMINS, PHD<sup>1</sup>, BRIAN SAUER, PHD<sup>1</sup>, MARTIN EVANS, MD<sup>3</sup> and CHRISTOPHER NIELSON, MD, MPH<sup>4</sup>; <sup>1</sup>University of Utah School of Medicine, Salt Lake City, UT, <sup>2</sup>VA Salt Lake City Health Care System, Salt Lake City, UT, <sup>3</sup>University of Kentucky School of Medicine, Lexington, KY, <sup>4</sup>Veterans Healthcare System, Reno, NV

**Background:** Universal active surveillance testing of inpatients for MRSA carriage at hospital admission has been found to be associated with decreased prevalence of MRSA infections in VAMC. A more cost-efficient approach may be to use the large VA electronic health record (EHR) database to identify and test only those at highest risk of MRSA carriage.

**Methods:** Data from hospital admissions at all acute care VAMC from 09/2007 to 04/2011 were retrieved from the VA EHR system from the Clinical Data Warehouse and individual hospital databases using the Medical Domain Web Services system. We included data on demographics, admissions and movements, diagnoses, laboratory results, procedures, orders, medications, and vital signs from the 3-12 month time period prior to the index hospitalization. The data were aggregated, standardized, and uploaded into Structured Query Language tables. We fitted a logistic regression model to the data, with relevant variables selected on the basis of clinical grounds and likelihood-ratio tests, eliminating terms for maximum likelihood models.

**Results:** The final model demonstrated a C statistic of 0.8. Unsurprisingly, prior positive MRSA (surveillance test or clinical culture) had the strongest correlation, relative to the time since the positive result. Other key variables represented the intensity of medical care (e.g., medication refills); disease severity (e.g., extreme sodium values); factors related to prior respiratory or cardiovascular disease; and factors related to prior infectious disease (including wound care and antibiotics). With a probability cutoff of 0.05, only 52% of admissions need testing, but 1.6% of MRSA importations are missed; a cutoff of 0.10 requires only 20% of admissions to be tested but 3.7% of importations are missed. Different thresholds for different patient subpopulations resulted in further tradeoffs between testing and missed importations.

**Conclusion:** A prediction model can estimate a Veteran's risk of MRSA carriage at the time of hospitalization using only data available in the EHR with good performance characteristics. This rule could be automated to run at all VAMC nationwide for all admissions to allow for targeted active MRSA surveillance, resulting in substantial cost savings while still capturing the majority of MRSA importations.

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## 649. Impact of a Horizontal Infection Prevention Strategy on MRSA Infections at an Academic Medical Center

Part of Session: 103. Advances in MRSA Infection Prevention

9:15 a.m.

**MICHAEL EDMOND, MD, MPH, MPA, FIDSA, FSHEA<sup>1</sup>**, MICHAEL STEVENS, MD, MPH<sup>1</sup>, JANIS OBER, RN, BSN<sup>1</sup>, SAMEEH GHAZAL, MRCPC, ABP<sup>1</sup> and GONZALO BEARMAN, MD, MPH<sup>2</sup>; <sup>1</sup>VCU Medical Center, Richmond, VA, <sup>2</sup>Virginia Commonwealth University Medical Center, Richmond, VA

### Background:

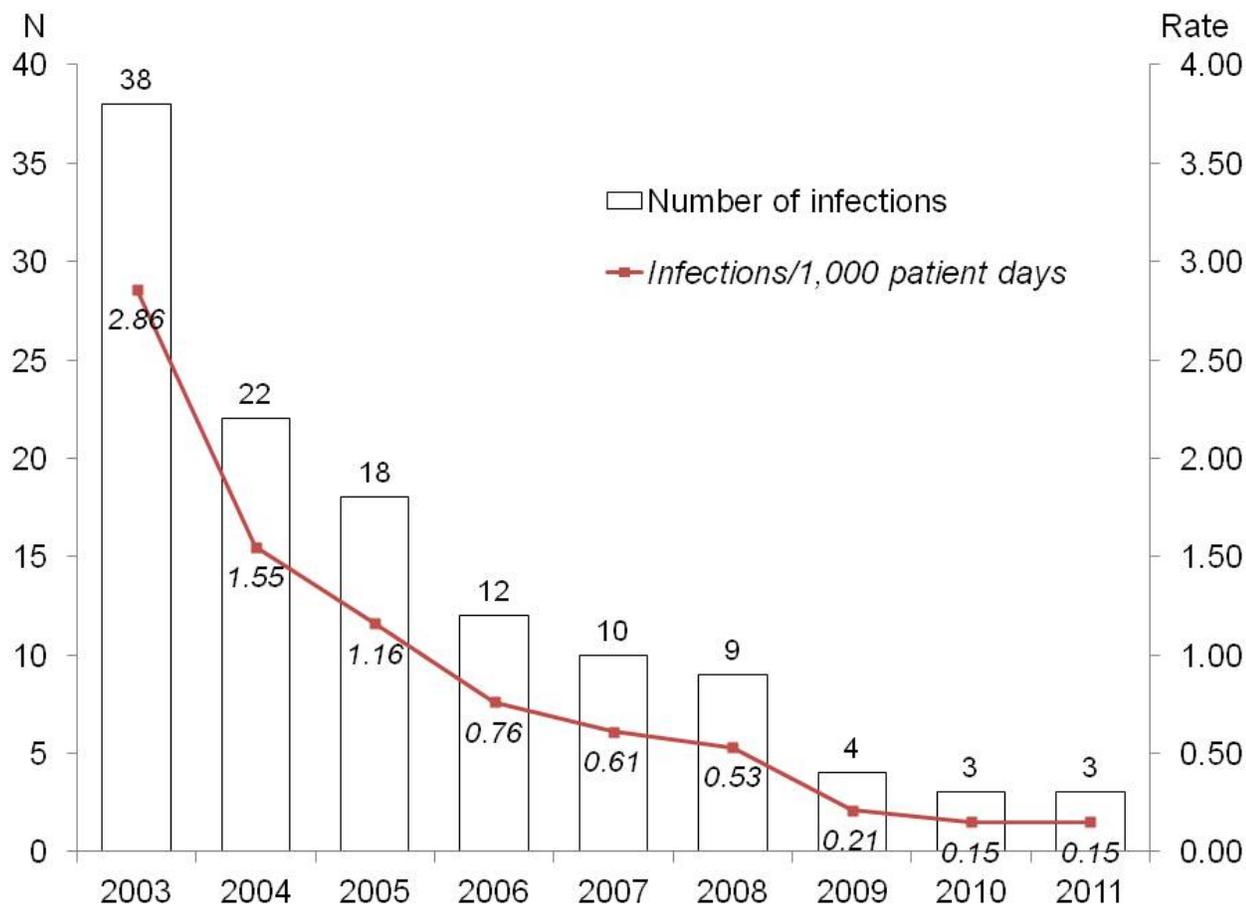
Over the past decade many hospitals have embarked on pathogen-specific (vertical) infection prevention strategies (e.g., MRSA active detection and isolation [ADI]) to control multidrug resistant organisms (MDROs). Proponents have argued that vertical strategies are required for successful control of MDROs. Alternatively, horizontal strategies focus on multipotent, non-pathogen specific interventions (e.g., high compliance with hand hygiene).

### Methods:

VCU Medical Center, a 780-bed, urban academic medical center, has pursued horizontal infection prevention strategies. Active surveillance for MRSA is only performed in the neonatal ICU. Surveillance for device associated HAIs (CLABSI, VAP, CAUTI) began in some ICUs in 1998 and expanded to include all ICUs by 2009. Surveillance was expanded to all inpatient units (i.e., to include wards) in 2010. All surveillance was performed by trained infection preventionists utilizing CDC methodology.

### Results:

For the medical, surgical, and neuroscience ICUs (units with the longest period of trended data), surveillance data for MRSA device associated HAIs for the most recent 9 year period revealed a 95% reduction in the infection rate (shown below).



Moreover, in 2011 across the entire hospital (8 ICUs, 25 wards), there were only 5 device associated MRSA HAIs in toto (0.02 infections/1,000 patient days).

**Conclusion:**

MRSA ADI is not required to control infections due to this organism. Horizontal strategies can be employed to prevent infections due to all MDROs.

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**650. Progress in Reducing National Burden of Invasive Methicillin-Resistant *Staphylococcus aureus* Infections, United States, 2005-2010**

Part of Session: 103. Advances in MRSA Infection Prevention

9:30 a.m.

**RAYMUND DANTES, MD, MPH<sup>1</sup>**, FERNANDA LESSA, MD<sup>1</sup>, RUTH BELFLOWER, RN, MPH<sup>1</sup>, YI MU, PHD<sup>2</sup>, JOELLE NADLE, MPH<sup>3</sup>, DEBORAH ARAGON, MSPH<sup>4</sup>, SUSAN PETIT, MPH<sup>5</sup>, SUSAN M. RAY, MD<sup>6</sup>, LEE HARRISON, MD<sup>7</sup>, GHINWA DUMYATI, MD, FSHEA<sup>8</sup>, RUTH LYNFIELD, MD<sup>9</sup>, JOHN TOWNES, MD<sup>10</sup>, WILLIAM SCHAFFNER, MD<sup>11</sup> and SCOTT FRIDKIN, MD<sup>1</sup>; <sup>1</sup>Centers for Disease Control and Prevention, Atlanta, GA, <sup>2</sup>Centers for Disease Control and Prevention, Division of Healthcare Quality Promotion, Atlanta, GA, <sup>3</sup>California Emerging Infections Program, Oakland, CA, <sup>4</sup>Colorado Department of Public Health & Environment, Denver, CO, <sup>5</sup>Connecticut Department of Public Health, Hartford, CT, <sup>6</sup>Emory University School of Medicine and Georgia Emerging Infections Program, Atlanta, GA, <sup>7</sup>Johns Hopkins Bloomberg School of Public Health, Pittsburgh, PA, <sup>8</sup>University of Rochester, Rochester, NY, <sup>9</sup>Minnesota Department of Health, St. Paul, MN, <sup>10</sup>Oregon Health and Science University, Portland, OR, <sup>11</sup>Vanderbilt University School of Medicine, Nashville, TN

**Background:** Estimating US burden of methicillin-resistant *Staphylococcus aureus* (MRSA) infections is challenging

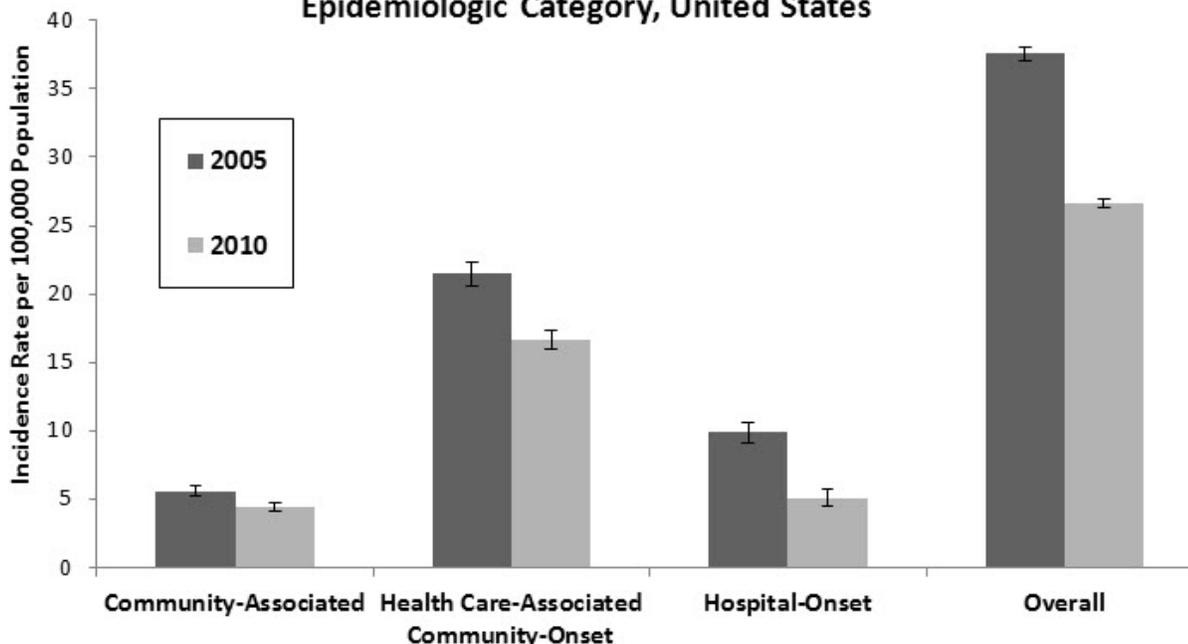
because infections occur across different healthcare settings. We used surveillance data to describe national estimates of invasive MRSA (iMRSA) infections in 2010 and compare them with 2005 estimates.

**Methods:** Population-based surveillance for iMRSA in 9 metropolitan areas with a population of approximately 19 million persons was performed from 2005-2010. Through active laboratory-based case finding, cases (i.e. MRSA cultured from a normally sterile body site) were classified as hospital-onset (HO, cultured > 3 days after admission), health care-associated community-onset (HACO, cultured  $\leq$ 3 days after admission and dialysis, hospitalization, surgery, or long term care residence within 1 year prior to infection, or community-associated (CA, when neither HO nor HACO criteria are met). National estimates were calculated using US Census and US Renal Data System adjusting for age, race, gender, and receipt of chronic dialysis. Confidence intervals were calculated using a gamma distribution. Adjusted incidence rates for 2005 and 2010 were compared with a chi-squared test.

**Results:** An estimated 82,042 (79,718-84,411) iMRSA infections occurred nationally in 2010 (compared to an estimated 111,345 in 2005); of these, 13,799 (12,875-14,789) were CA, 15,730 (14,723-16,794) were in dialysis patients, 13,894 (12,967-14,912) were HO (non-dialysis), and 37,406 (35,876-39,087) were HACO (non-dialysis). An estimated 11,478 hospitalized persons died within 30 days of infection. Among HACO (non-dialysis) infections, 50.7% occurred within 3 months of hospitalization. Adjusted national estimated incidence rates varied by epidemiologic category (Figure), and have decreased: CA by 20.3% (18.5-22.1%), HACO by 22.7% (21.8-23.6%), and HO by 48.3% (47.4-49.4%) since 2005 ( $P < 0.001$  for all comparisons).

**Conclusion:** An estimated 29,300 fewer iMRSA infections occurred in the United States in 2010 compared to 2005, with modest declines among CA infections and greatest declines among HO infections. Prevention strategies directed at infections outside acute care settings will be needed to further reduce the national burden of iMRSA infections.

**Figure: National Estimated Incidence Rates for Invasive Methicillin-resistant *Staphylococcus aureus* Infections by Epidemiologic Category, United States**



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## 651. Epidemiology of Methicillin-Resistant *Staphylococcus aureus* (MRSA) Colonization among Adult Intensive Care Unit (ICU) Patients Following State-Mandated Active Surveillance

Part of Session: 103. Advances in MRSA Infection Prevention

9:45 a.m.

MICHAEL Y. LIN, MD, MPH<sup>1</sup>, ROSIE D. LYLES-BANKS, MD, MS<sup>2</sup>, KAREN LOLANS, BS<sup>1</sup>, MARY HAYDEN, MD<sup>1</sup>, HONG LI, MS<sup>1</sup>,

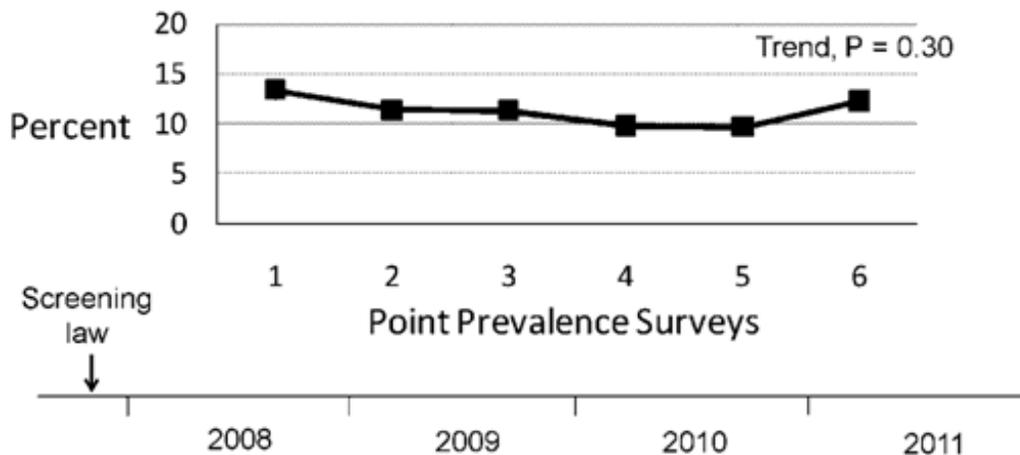
ALEXANDER KALLEN, MD, MPH<sup>3</sup>, STEPHEN G. WEBER, MD, MS<sup>4</sup>, ROBERT WEINSTEIN, MD<sup>1</sup>, WILLIAM TRICK, MD<sup>1</sup> and FOR THE CDC PREVENTION EPICENTER PROGRAM (RAW - PI); <sup>1</sup>Rush Univ. Med. Ctr., Chicago, IL, <sup>2</sup>Cook County Health and Hospitals System, Chicago, IL, <sup>3</sup>Centers for Disease Control and Prevention, Atlanta, GA, <sup>4</sup>University of Chicago Medical Center, Chicago, IL

**Background:** The effectiveness of active surveillance in reducing MRSA prevalence in a region with endemic MRSA is unclear. Beginning October 2007, the MRSA Screening and Reporting Act (210 ILCS 83/) mandated active surveillance for all ICU patients in Illinois, with isolation of MRSA-colonized patients. We assessed the law's impact on region-wide MRSA epidemiology.

**Methods:** Hospitals in the city of Chicago with  $\geq 10$  ICU beds were recruited for 6 point prevalence surveys (PPSs) approximately 6 months apart between June 2008 and July 2011. Adult ICU patients were cultured for MRSA in the nose and groin using one swab for each site. For each patient, hospitals also reported admission MRSA surveillance adherence (i.e. 210 ILCS 83/-mandated). PPS swabs were processed in a central laboratory and screened for MRSA using broth enrichment and chromogenic agar; suspected MRSA isolates were confirmed using standard biochemical methods and cefoxitin disk testing. All MRSA isolates were typed by pulsed-field gel electrophoresis (community-associated [CA] MRSA defined as USA 300, 400, 1000, 1100) and tested for mupirocin resistance (high level, MIC  $\geq 512$ ; low level, MIC 8 - 64  $\mu\text{g}/\text{mL}$ ). MRSA trends were modeled using generalized estimating equations to account for ICU and hospital-level correlation across time.

**Results:** All 25 eligible hospitals participated, with 95% of eligible adult ICU patients cultured at PPSs. 94% of patients had received mandated MRSA surveillance at the time of admission. From the PPSs, the observed MRSA colonization prevalence was 11.3% (340/3010). No significant decline was observed in MRSA colonization prevalence during the study period (figure; estimated yearly odds ratio 0.92, 95% confidence interval 0.79 to 1.08,  $P=0.30$ ). CA-MRSA strains were identified in 39% (134/340) of MRSA-colonized ICU patients, unchanged throughout the study. Mupirocin resistance was uncommon and stable (high level resistance, 2.7%; low level resistance, 4.4%).

## Prevalence of MRSA colonization among adult ICU patients



**Conclusion:** In the time period following a region-wide mandate for MRSA active surveillance and isolation, no significant decline in MRSA colonization prevalence was observed among adult ICU patients. Other control measures are likely needed to reduce MRSA colonization burden among adult ICU patients.

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