Table 2: CLABSI Trend Model Coefficients, Incidence Rate Ratios and Annual Percentage Change by Location Type

Model Parameter[a]	Estimate	Standard Error	p-value	Incidence rate ratio (95% CI)	Percent change per year[b] (95%CI)
ICUs					
Time Trend:2009-14 (β_1)	-0.1067	0.003723	<.0001	0.898(0.892,0.905)	-10.12 (-12.28, -09.63)
Immediate effect of interruption at 2015(β_2)	0.2575	0.01891	<.0001	1.288(1.241,1.336)	28.75 (24.07, 33.62)
Change in slope direction after 2015 (β_3)	0.03667	0.007144	<.0001	1.037 (1.023,1.052)	03.73(02.29,05.20)
Time trend:2009-18 ($\beta_1+\beta_3$)	-0.07004	0.006155	<.0001	0.932 (0.921, 0.944)	-06.76 (-7.88, -5.63)
WARDS					
Time Trend (β_1)	-0.08299	0.004629	<.0001	0.920(0.912, 0.929)	-07.96(-08.8, -07.12)
Immediate effect of interruption at 2015(β_2)	0.2573	0.01751	<.0001	1.2930 (1.25,1.34)	29.34 (24.98, 33.86)

[a]Negative binomial mixed model adjusted for patient care location types, facility type, and annual survey level variables of teaching status, hospital bed size, total number of beds in intensive care units, and average length of patient stay in hospital.
[b]Percent change= (incidence rate ratio-1) x 100

except for an increase in 2015. Similar trends were observed by location type. Among the ICUs, adjusted CLABSI incidence decreased by 10% annually in 2009–2014, increased nearly 29% in 2015, and thereafter decreased at an average of 6.8% per year. Among the wards, adjusted CLABSI incidence decreased at an average of 7.9% annually, except for a 29.3% increase in 2015. **Conclusions:** Substantial progress has been made in reducing CLABSIs in both ICUs and wards over the last 10 years. Indirect effects of CAUTI definitional changes may explain the immediate increase in ICUs, whereas the CMS mandate may explain the similar increase in wards in 2015. Despite this increase, these findings suggest that policies and practices aimed at prevention of CLABSI have likely been effective on a national level.

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Increased Isolation of Pathogens After Resin-Containing Blood Culture Bottle Implementation

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Background: Resin-containing blood culture bottles (RBB) are used to increase the isolation of microorganisms by binding antimicrobials in sampled blood. Since RBB implementation in April 2018, our infection preventionists noted an increase in positive blood cultures on routine surveillance. **Objective:** To describe the change in bacterial isolation post-RBB implementation. **Methods**: All positive blood culture sets drawn in adult inpatient units or the emergency room between October 2017 and September 2018 and their associated organisms were obtained from the hospital laboratory database. Then, regardless of central-line placement or "present on admission" designation, the 2019 NHSN surveillance definitions for laboratory-confirmed bloodstream infection (LCBI-1 and LCBI-2) were applied to categorize all positive cultures as "common commensals" (CCs) or pathogens. A univariate analysis was performed using the Mantel-Haenszel χ^2 test (OpenEpi version 3.01). **Results:** Although the number of monthly blood cultures drawn remained effectively stable before and after implementation (pre-RBB median, 3,512.5; post-RBB median, 3,626), the rate ratio of positive

Figure 1: Monthly Incidence Rate of Positive Blood Cultures by Organism Type

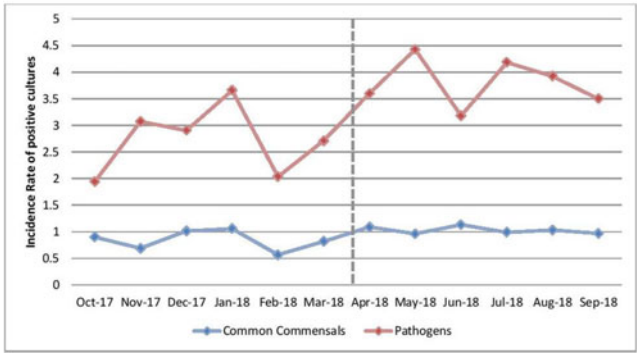

Fig. 1.

cultures increased by 1.36 times: pre-RBB median, 127 sets per month and post-RBB median, 172.5 sets per month ($\chi^2 = 5.785$; $P = .008$). The rate ratio of pathogen-containing cultures increased by 1.40 times (pre-RBB median, 98 sets per month and post-RBB median, 137.5 sets per month; $\chi^2 = 5.615$; $P = .009$) with only a 1.24 increase in CCs (pre-RBB median, 29 and post-RBB median, 36; $\chi^2 = 0.553$; $P = .229$) (Fig. 1). **Conclusions:** After RBB implementation, the monthly incidence rate of pathogen-containing sets increased. Additionally, the increase in these sets as well as of overall positive blood cultures was statistically significant. Current literature on RBBs does not suggest preferential increased isolation of pathogens. Further study is needed to determine whether our findings are related to blood-culturing practices or the RBBs themselves.

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Increased Return Clinic Visits for Adults with Group A Streptococcal Pharyngitis Treated with a Macrolide

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Background: A multicenter audit-and-feedback intervention was conducted to improve management of acute respiratory infections (ARIs) including group A streptococcal (GAS) pharyngitis within 6 VA medical Centers (VAMCs). A relative reduction (24.8%) in azithromycin prescribing after the intervention was observed. Within these facilities during 2015–2018, 2,266 cases of GAS occurred, and susceptibility to erythromycin ranged from 55% to 70%. We evaluated whether prescribing a macrolide for GAS pharyngitis was associated with an increase in outpatient return visits. **Methods:** A cohort of ambulatory adults treated for GAS pharyngitis (years 2014–2019) at 6 VAMCs was created. Demographic, diagnostic, treatment, and revisit data were extracted from the Corporate Data Warehouse. GAS pharyngitis was defined by an acute pharyngitis diagnostic code combined with a GAS-positive rapid strep test or throat culture ≤3 days of index date. Antibiotic prescriptions were included if filled ≤3 days of index date and were classified as first line (penicillin/amoxicillin), second line (cephalexin/clindamycin), macrolides (azithromycin,

Antibiotics	Adjusted OR	95% CI	p-value
Penicillins	Reference	-	-
Cephalosporin/clindamycin	0.93	(0.34, 2.56)	0.88
Macrolides	2.79	(1.19, 6.56)	0.02
Other antibiotics	1.09	(0.23, 5.18)	0.91

Table. 1.

clarithromycin, erythromycin), or other (remaining antibiotics). A return visit was defined as a new visit to primary care, urgent care, or the emergency department with a diagnostic code for an ARI ≤30 days from the index visit. Logistic regression was used to adjust for nonantibiotic covariates and to compare treatments. Results are reported as odds ratio (OR ± 95% CI; *P* value). **Results:** Of 12,666 patients with a diagnostic code for acute pharyngitis, 2,923 (23.1%) had GAS testing performed. Of those, 582 (19.9%) were GAS-positive and 460 (15.7%) received antibiotics. The mean age was 39.0 years (±SD, 11.7) and 73.7% were male. Antibiotics included penicillins for 363 patients (78.9%), cephalosporins for 21 (4.6%), clindamycin for 32 (7.0%), macrolides for 47 (10.2%), and other for 17 (3.9%). Penicillin allergy was documented in 48 patients (10.5%), and these patients received cephalosporins (18.8%), clindamycin (35.4%), macrolides (41.7%), and other antibiotics (4.2%). Return visits occurred in 47 cases (10.4%). Limited chart review indicated that 6 of 10 macrolide recipients (60.0%) with return visits had recurrence or unresolved symptoms. After adjustment for calendar month and facility, odds of a return visit for treatment with a macrolide relative to penicillins was 2.79 (OR, 1.19; 95% CI, ±6.56; $P = .02$). The audit-feedback intervention was not associated with ARI-related return visits (OR, 0.53; 95% CI, 0.26–1.06; $P = .07$). **Conclusions:** Return visit rates were higher for GAS pharyngitis patients treated with a macrolide than for those treated with penicillins. Macrolides were the most commonly prescribed non-penicillin therapy irrespective of penicillin allergy. Further work is necessary to determine the reason for the increase in return visits.

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Increasing Mupirocin Resistance Among MRSA Nasal Surveillance Isolates in the Chicago Area

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Background: In 2005, our healthcare system began universal admission screening for nasal colonization with MRSA and decolonization of MRSA positive patients with mupirocin. In 2010–2012, we studied the impact of nasal MRSA decolonization and concluded that it does not add benefit when contact precautions are used; plus, it resulted in increased rates of mupirocin resistance up to 9.4% in 2012. In September 2012 routine decolonization of hospitalized patients was discontinued. In the 2 years following discontinuation of mupirocin use for decolonization of MRSA carriers, the rate of mupirocin resistance gradually declined. We undertook a contemporary review of mupirocin resistance rates to ensure that the rates were stable. **Methods:** NorthShore University HealthSystem, Illinois, consists of 4 hospitals in the northern suburbs of Chicago, with 750 beds and 60,000 annual admissions. Admission nasal swab samples were collected from at-risk hospitalized patients based on a risk-adjusted algorithm. Nasal swabs were tested using the BD MAX MRSA assay. Positive samples were cultured onto BD BBL CHROMagar MRSA to recover the organism and were tested for the *mupA* gene, which confers high-level mupirocin resistance using an in-house PCR test. Data for mupirocin orders were provided by the pharmacy. **Results:** Mupirocin resistance rates and prescription orders are shown in Figs. 1 and 2. **Conclusions:** Mupirocin resistance rates plateaued between 2012 and 2014 and then increased from 9.1% in 2015 to 18.1% in 2019, despite discontinuation of routine decolonization of hospitalized patients. The reason for the increase is unclear; inpatient mupirocin orders were stable from 2015 to 2017.

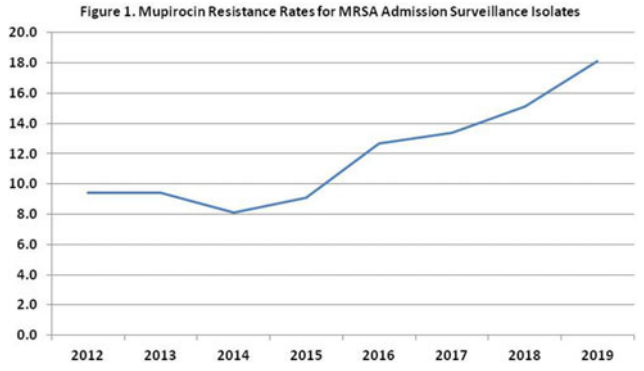

Fig. 1.

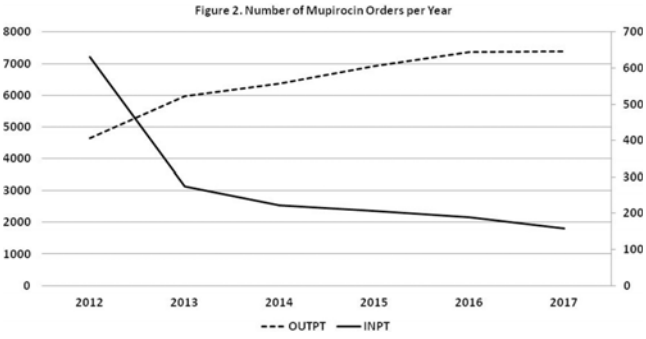

Fig. 2.

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Increasing Voluntary Public Health Reporting to the NHSN Antimicrobial Use Option

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Background: The CDC NHSN launched the Antimicrobial Use Option in 2011. The Antimicrobial Use Option allows users to