Table 1.

Table 2. Adjusted quarterly decrease estimates from the multivariable interrupted time series generalized linear mixed random intercept model

Variable[a]	Estimate	Standard Error	p-value	Rate Ratio	Annual percent change of rate ratio (95% CI)
Slope1[b]	-0.005	0.001	<0.0001	0.996	-0.45 (-0.01, -0.33)
Indicator[c]	0.583	0.020	<0.0001	1.791	79.14 (72.42, 86.11)
Slope2[d]	-0.029	0.001	<0.0001	0.972	-2.82 (-2.53, - 2.21)

a: the model adjusted for the following variables: CDI test method; community-associated infection rate (CO); facility type; medical school affiliation type; number of beds; number of Intensive Care Unit (ICU) beds; presence of an emergency department of observation unit; b: estimate, rate ratio and % of rate change at quarterly level for the year between 2010 to 2014; c: estimate, ratio and % of rate change 2015 vs. 2014; d: estimate, rate ratio and % of rate change at quarterly level for the year between 2015-2018.

(−2.82%; 95% CI, −3.10% to −2.54%; $P < .0001$). Compared to 2014, the adjusted rate in 2015 increased by 79.14% (95% CI, 72.42%–86.11%; $P < .0001$). **Conclusions:** The number of hospitals reporting CDI LabID data grew substantially in 2013 as a result of the CMS requirement for reporting. Adjusted HO-CDI rates decreased over time, with a rate hike in the year of 2015 and a rapid decrease thereafter. The increase in 2015 may be explained by changes in the NHSN CDI surveillance protocol and better test type classification in later years. Overall decreases in HO-CDI rates may be influenced by prevention strategies.

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Oral Presentation

Universal Decolonization Reduces MDRO Burden on High-Touch Objects in Nursing Home Resident Rooms and Common Areas

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Background: More than half of nursing home (NH) residents harbor a multidrug-resistant organism (MDRO), and MDRO contamination of the environment is common. Whether NH decolonization of residents reduces MDRO contamination remains unclear. The PROTECT trial was a cluster-randomized trial of decolonization versus routine care in 28 California NHs from April 2017 through December 2018. Decolonization involved chlorhexidine bathing plus nasal iodophor (Monday–Friday, every other week), and it reduced resident nares and skin MDRO colonization by 36%. **Methods:** We swabbed high-touch objects in resident rooms and common areas for MDROs before and after the 3-month decolonization phase-in (April–July 2017). Five high-touch objects (bedrail, call button and TV remote, doorknob, light switch, and bathroom handles) were swabbed in 3 resident rooms per NH based on care needs (Alzheimer's disease and related dementias (ADRD), ie, total care; ADRD, ambulatory care; and short stay). Five high-touch objects were also swabbed in the common area (nursing station, table, chair, railing, and drinking fountain). Swabs were processed for methicillin-resistant *S. aureus* (MRSA), vancomycin-resistant *Enterococcus* (VRE), extended-spectrum β-lactamase (ESBL) producing *Enterobacteriaceae*, and carbapenem-resistant *Enterobacteriaceae* (CRE). We used generalized linear mixed models to assess the impact of decolonization on MDRO environmental contamination when clustering by NH and room and adjusting for room type and object because unclustered and unadjusted results are likely to be inaccurate. **Results:** A high proportion of rooms were contaminated with any MDRO in control NHs: 43 of 56 (77%) in the baseline period and 46 of 56 (82%) in the intervention period. In contrast, decolonization NHs had similar baseline contamination (45 of 56, 80%) but lower intervention MDRO contamination (29 of 48, 60%). When evaluating the intervention impact using multivariable models, decolonization was associated with significantly less room contamination for any MDRO (OR, 0.25; 95% CI, 0.06–0.96; $P = .04$) and MRSA (OR, 0.16; 95% CI, 0.05–0.55; $P = .004$) but nonsignificant reductions in VRE contamination (OR, 0.86; 95% CI, 0.23–3.13) and ESBL contamination (OR, 0.13; 95% CI, 0.01–1.62). CRE was not modeled due to rare counts (2 rooms total). In addition, room type was important, with common areas associated with 5-fold, 9-fold, and 3-fold higher contamination with any MDRO, MRSA, and VRE, respectively, compared with short-stay rooms. **Conclusions:** The high burden of MDROs in NHs calls for universal prevention strategies that can protect all residents. Although decolonization was associated with an 84% reduction in odds of MRSA contamination of inanimate room objects, significant reductions in VRE or ESBL contamination were not seen, possibly due to the lower proportion of baseline contamination due to these organisms. Multimodal strategies are needed to address high levels of MDRO contamination in NHs.

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Disclosures: Gabrielle Gussin: Stryker (Sage Products): Conducting studies in which contributed antiseptic product is provided to participating hospitals and nursing homes. Clorox: Conducting studies in which contributed antiseptic product is provided to participating hospitals and nursing homes. Medline: Conducting studies in which contributed antiseptic product is provided to participating hospitals and nursing homes. Xttrium:

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Oral Presentation

VA Antibiotic Stewardship Intervention to Improve Outpatient Antibiotic Use for ARIs: A Cost-Effectiveness Analysis

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Background: The *Core Elements of Outpatient Antibiotic Stewardship* provide a framework to improve antibiotic use, but cost-effectiveness data on interventions to improve antibiotic use are limited. Beginning in September 2017, an antibiotic stewardship intervention was launched in within 10 outpatient Veterans Healthcare Administration clinics. The intervention was based on the Core Elements and used an academic detailing (AD) and an audit and feedback (AF) approach to encourage appropriate use of antibiotics. The objective of this analysis was to evaluate the cost-effectiveness of the intervention among patients with uncomplicated acute respiratory tract infections (ARI). **Methods:** We developed an economic simulation model from the VA's perspective for patients presenting for an index outpatient clinic visit with an ARI (Fig. 1). Effectiveness was measured as quality-adjusted life-years (QALYs). Cost and utility parameters for antibiotic treatment, adverse drug reactions (ADRs), and healthcare utilization were obtained from the published literature. Probability parameters for antibiotic treatment, appropriateness of treatment, antibiotic ADRs, hospitalization, and return ARI visits were estimated using VA Corporate Data Warehouse data from a total of 22,137 patients in the 10 clinics during 2014–2019 before and after the intervention. Detailed cost data on the development of the AD and AF materials and electronically captured time and effort for the National AD Service activities by specific providers from a national ARI campaign were used as a proxy for the cost estimate of similar activities conducted in this intervention. We performed 1-way and probabilistic sensitivity analyses (PSAs) using 10,000 second-order Monte Carlo simulations on costs and utility values using their means and standard deviations.

Figure 1: Decision analytic model

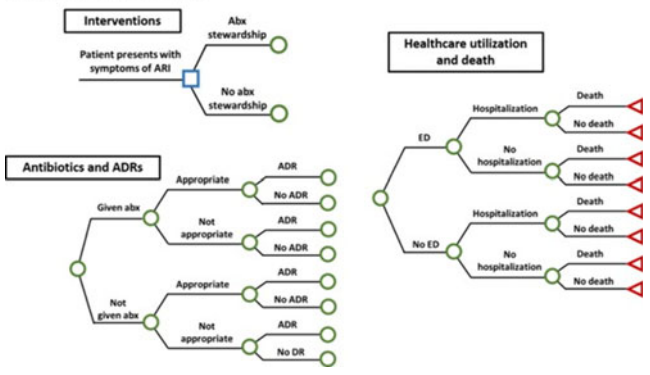

Fig. 1.

Figure 2: Scatterplot of results from probabilistic sensitivity analysis

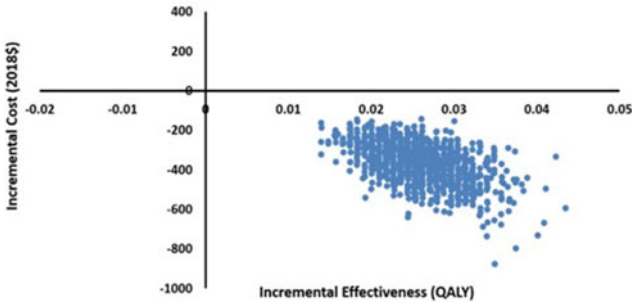

Fig. 2.

Results: The proportion of uncomplicated ARI visits with antibiotics prescribed (59% vs 40%) was lower and appropriate treatment was higher (24% vs 32%) after the intervention. The intervention was estimated to cost $110,846 (2018 USD) over a 2-year period. Compared to no intervention, the intervention had lower mean costs ($880 vs $517) and higher mean QALYs (0.837 vs 0.863) per patient because of reduced inappropriate treatment, ADRs, and subsequent healthcare utilization, including hospitalization. In threshold analyses, the antibiotic stewardship strategy was no longer dominant if intervention cost was > $64,415,000 or the number of patients cared for was <3,672. In the PSA, the antibiotic stewardship intervention was dominant in 100% of the 10,000 Monte Carlo iterations (Fig. 2). **Conclusions:** In every scenario, the VA outpatient AD and AF antibiotic stewardship intervention was a dominant strategy compared to no intervention.

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Validation of a Surgical Site Infection Detection Algorithm for Use in Cardiac and Orthopedic Surgery Research

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Background: Studies of interventions to decrease rates of surgical site infections (SSIs) must include thousands of patients to be statistically powered to demonstrate a significant reduction. Therefore, it is important to develop methodology to extract data available in the electronic medical record (EMR) to accurately measure SSI rates. Prior studies have created tools that optimize sensitivity to prioritize chart review for infection control purposes. However, for research studies, positive predictive value (PPV) with