Methods: Enterobacteriaceae P

Results: −81%) but did not differ between larger (>41 Suppl 1; 2020

In July 2017, (CRE) are public health partnership launched a regional CRE

Simulations identified a threshold reduction at which point effect

Background: Carbapenem-resistant Enterobacteriaceae (CRE) are endemic in the Chicago region. We assessed the regional impact of a CRE control intervention targeting high-prevalence facilities; that is, long-term acute-care hospitals (LTACHs) and ventilator-capable skilled nursing facilities (vSNFs). Methods: In July 2017, an academic–public health partnership launched a regional CRE prevention bundle: (1) identifying patient CRE status by querying Illinois’ XDRO registry and periodic point-prevalence surveys reported to public health, (2) cohorting or private rooms with contact precautions for CRE patients, (3) combining hand hygiene adherence, monitoring with general infection control education, and guidance by project coordinators and public health, and (4) daily chlorhexidine gluconate (CHG) bathing. Informed by epidemiology and modeling, we targeted LTACHs and vSNFs in a 13-mile radius from the coordinating center. Illinois mandates CRE reporting to the XDRO registry, which can also be manually queried or generate automated alerts to facilitate interfacility communication. The regional intervention promoted increased automation of alerts to hospitals. The prespecified primary outcome was incident CRE culture reported to the XDRO registry in Cook County by month, analyzed by segmented regression modeling. A secondary outcome was colonization prevalence measured by serial point-prevalence surveys for carbapenemase-producing organism colonization in LTACHs and vSNFs. Results: All eligible LTACHs (n = 6) and

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Disclosures: Scott Fridkin, consulting fee, vaccine industry (various) (spouse)

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Fig. 2.
vSNFs \( (n = 9) \) participated in the intervention. One vSNF declined CHG bathing. vSNFs that implemented CHG bathing typically bathed residents 2–3 times per week instead of daily. Overall, there were significant gaps in infection control practices, especially in vSNFs. Also, 75 Illinois hospitals adopted automated alerts (56 during the intervention period). Mean CRE incidence in Cook County decreased from 59.0 cases per month during baseline to 40.6 cases per month during intervention \( (P < .001) \). In a segmented regression model, there was an average reduction of 10.56 cases per month during the 24-month intervention period \( (P = .02) \) (Fig. 1), and an estimated 253 incident CRE cases were averted. Mean CRE incidence also decreased among the stratum of vSNF/LTACH intervention facilities \( (P = .03) \). However, evidence of ongoing CRE transmission, particularly in vSNFs, persisted, and CRE colonization prevalence remained high at intervention facilities (Table 1).

**Conclusions:** A resource-intensive public health regional CRE intervention was implemented that included enhanced interfacility communication and targeted infection prevention. There was a significant decline in incident CRE clinical cases in Cook County, despite high persistent CRE colonization prevalence in intervention facilities. vSNFs, where understaffing or underresourcing were common and lengths of stay range from months to years, had a major prevalence challenge, underscoring the need for aggressive infection control improvements in these facilities.

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### Table. Prevalence of Organisms Carrying Carbapenemase Genes by Point Prevalence Survey, Baseline versus Intervention

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Intervention</th>
<th>( P ) value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LTACHs, ( n/N ) (%)</td>
<td>234/984 (24)</td>
<td>128/758 (17)</td>
<td>0.08</td>
</tr>
<tr>
<td>vSNFs (vent floor), ( n/N ) (%)</td>
<td>118/300 (39)</td>
<td>316/751 (42)</td>
<td>0.82</td>
</tr>
</tbody>
</table>

**Note:** Patient rectal swab cultures were obtained during a one-day survey for each facility during baseline (LTACHs 3 baseline surveys; vSNFs 1 baseline survey) and intervention (3 intervention surveys for all). Swabs were tested for the presence of \( \beta \text{-lactamase} \), \( \beta \text{-lactamase} \), \( \beta \text{-lactamase} \), \( \beta \text{-lactamase} \) using polymerase chain reaction testing. \( n/N = \) (patients testing positive for carbapenemase gene) \( / \) (all patients tested). Generalized estimating equation modeling controlling for serial surveys was used to compare the difference between baseline and intervention prevalence within each facility type. For this analysis, we did not distinguish *Enterobacteriaceae* from non-*Enterobacteriaceae*, carbapenemase gene detection was used as a surrogate for carbapenem-resistant *Enterobacteriaceae*. LTACHs = Long term acute care hospitals. vSNFs = ventilator skilled nursing facilities.