Results of a Veterans Affairs employee education program on antimicrobial stewardship for older adults

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Aged

Antibiotics represent 40% of all prescriptions in nursing homes.1 In community facilities, between 25% and 75% of these prescriptions are unnecessary or prescribed inappropriately.2 A study in a Veterans Affairs (VA) nursing home, termed a Community Living Center (CLC), demonstrated that 40% of antimicrobial days of therapy were unnecessary.3 Inappropriate antimicrobial use unnecessarily puts long-term care residents at risk for adverse drug events and increases their vulnerability to colonization and infection with healthcare-associated pathogens, including Clostridium difficile and other drug-resistant bacteria. Antimicrobial stewardship seeks to minimize unnecessary and inappropriate antimicrobial use to curtail these negative consequences and ultimately improve patient outcomes. To date, most antimicrobial stewardship efforts focus on acute care settings and on prescribers, not on nursing homes and nurses.

Physicians who work at nursing homes report spending an average of 12 h/wk providing primary care at a median of 3 facilities.4 Accordingly, the event leading to an antibiotic prescription rely heavily on the assessments of the nurses and their subsequent communication of the resident’s condition, often by telephone, with providers.5 In acute care, education of bedside nurses led to an increase in antimicrobial stewardship knowledge and the potential to influence antibiotic management.6 Given their central role in evaluating residents, nurses who work in nursing homes have the capacity to serve as key collaborators in support of antimicrobial stewardship. To engage nurses at VA CLCs in antimicrobial stewardship efforts, we developed an online course that focuses on infections in older adults and emphasizes antimicrobial stewardship principles.

The course was presented as 6 interactive modules (30 minutes each) for a total of 3 continuing educational credits through the VA Employee Education System (course no. 18842). The modules addressed the following topics: signs and symptoms of infection in older adults; differentiating urinary tract infections from asymptomatic bacteriuria; recognition and evaluation of upper respiratory tract infections, bronchitis, and pneumonia; appropriate application of transmission-based precautions; proper collection of...
samples for microbiologic culture; and improving communication with providers. The communication module taught the principles of situation, background, assessment, and recommendation. The rationale for including this as a specific topic was to teach nursing staff to include their reason for communication with providers (ie, change in status, new laboratory result) and their assessment of the resident. This communication style fostered enhanced team change in status, new laboratory result) and their assessment of the staff to include their reason for communication with providers (ie, situation, background, assessment, and recommendations. The communication module taught the principles and practices in VA CLCs. By addressing an important knowledge gap, this course will inform development of future educational content targeted toward nursing staff in ongoing efforts to improve the care of older adults with infections and to advance antimicrobial stewardship efforts at nursing homes. Conversely, on the pretest, the proportion of correct answers for questions relating to isolation precautions ranged from 84%-94%, suggesting good baseline knowledge on this topic. Both the previous literature and comments from participants in this course stressed the need to incorporate antimicrobial stewardship into nurses’ workflow and education. For example, as indicated by Naughton et al, compared with education for only physicians and nurse practitioners, providing training session for nurses improved overall adherence to treating nursing home—acquired pneumonia in accordance with therapy recommended by guidelines.

Our study has limitations. Restrictions in the data available from the VA Employee Education System precluded robust statistical tests and did not permit evaluating outcomes based on participants’ roles. Second, the outcomes measures do not assess knowledge retention or practice change as a result of the course. The course reached VA employees working at 118 medical centers across 47 states, rendering assessment of individual-level or even facility-level changes impracticable. Third, none of the test questions addressed content from the respiratory tract infections modules, finally, the course did not assess participants’ perceptions of their role as antimicrobial stewards. Despite these limitations, these outcomes suggest an effective strategy for engaging nursing staff in ongoing efforts to improve the care of older adults with infections and to advance antimicrobial stewardship principles and practices in VA CLCs. By addressing an important knowledge gap, this course will inform development of future educational content targeted toward nursing staff. We intend to make it available to health care workers outside of the VA system.

Table 1 compares the proportion of correct answers on the pre- and post-tests. Respondents showed the greatest increase for questions focused on recognition of fever in older adults (27%), appropriate urine sample collection technique (22%), and preventing catheter-associated urinary tract infections (15%).

To our knowledge, this is the first description of an online educational course designed for nursing staff who work with older adults that specifically addresses infections and antimicrobial stewardship. Although a variety of health care workers viewed the modules, most participants were registered nurses, who were the intended audience. Based on the outcomes reported in Table 1, ongoing education should focus on collecting samples for microbiologic culture and signs and symptoms of infection in older adults. Lim et al previously identified the importance of educating nurses regarding asymptomatic bacteriuria to improve antimicrobial stewardship efforts at nursing homes. Conversely, on the pretest, the proportion of correct answers for questions relating to isolation precautions ranged from 84%-94%, suggesting good baseline knowledge on this topic. Both the previous literature and comments from participants in this course stressed the need to incorporate antimicrobial stewardship into nurses’ workflow and education. For example, as indicated by Naughton et al, compared with education for only physicians and nurse practitioners, providing training session for nurses improved overall adherence to treating nursing home—acquired pneumonia in accordance with therapy recommended by guidelines.

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Table 1

<table>
<thead>
<tr>
<th>Module and question no.*</th>
<th>Topic</th>
<th>Pretest, % (n = 2,240)</th>
<th>Post-test, % (n = 2,058)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signs and symptoms of infection in older adults</td>
<td>Fever in older adults</td>
<td>53</td>
<td>80</td>
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<tr>
<td></td>
<td>Atypical signs and symptoms of infection</td>
<td>86</td>
<td>90</td>
</tr>
<tr>
<td>Urinary tract infection versus asymptomatic bacteriuria</td>
<td>Urinary tract infection symptoms</td>
<td>88</td>
<td>92</td>
</tr>
<tr>
<td></td>
<td>Preventing catheter-associated urinary tract infection</td>
<td>73</td>
<td>88</td>
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<tr>
<td></td>
<td>Indications to place, change, and remove urinary catheters</td>
<td>86</td>
<td>89</td>
</tr>
<tr>
<td>Isolation precautions</td>
<td>Rational for using personal protective equipment for residents colonized with methicillin-resistant Staphylococcus aureus</td>
<td>94</td>
<td>93</td>
</tr>
<tr>
<td></td>
<td>Reducing transmission of Clostridium difficile</td>
<td>90</td>
<td>91</td>
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<tr>
<td></td>
<td>Contact precautions for drug-resistant gram negatives</td>
<td>84</td>
<td>85</td>
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<tr>
<td>Collecting samples for microbiologic culture</td>
<td>Urine</td>
<td>42</td>
<td>64</td>
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<td></td>
<td>Sputum</td>
<td>69</td>
<td>76</td>
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<tr>
<td>Communication with providers using SBAR</td>
<td>Definition of SBAR</td>
<td>92</td>
<td>95</td>
</tr>
<tr>
<td></td>
<td>Purpose of SBAR</td>
<td>71</td>
<td>80</td>
</tr>
</tbody>
</table>

SBAR, situation, background, assessment, and recommendations.

*There were no questions specific to 1 module: upper respiratory tract infections, bronchitis, and pneumonia.