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## Infrequent Use of Isolation Precautions in Nursing Homes: Implications for an Evolving Population

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With rates exceeding those in acute care hospitals, including intensive care units, over 50% of nursing home residents harbor a multi-drug resistant organism (MDRO) without having any symptoms of infection.<sup>1–8</sup> When a nursing home resident develops a symptomatic infection, it is often caused by an MDRO.<sup>9</sup> Guidance from the Centers for Disease Control and Prevention on the use of isolation practices in nursing homes suggests modified contact precautions based on case-mix.<sup>10</sup> In acute care hospitals, contact precautions, as defined by isolation in a single room with use of gowns and gloves by healthcare workers during care, is the primary approach to preventing transmission of MDROs. However, prior studies have shown that adoption of this strategy in nursing homes results in social stigma including feelings of “isolation” and constrain in a home-like environment.<sup>11</sup> Thus, most nursing homes do not use contact precautions for residents colonized with MDROs such as methicillin-resistant *Staphylococcus aureus* (MRSA) or vancomycin-resistant enterococcus (VRE).<sup>12</sup>

Because of growing concerns about MDRO transmission and infection in nursing homes, active diagnosis of “MDRO infection” and the special procedure of “isolation for active infectious disease” variables were added to the Minimum Data Set (MDS) in 2010. In this issue, Cohen et al. report on the use of isolation practice in nursing home residents with active MDRO infections using 2010-2013 data from the MDS.<sup>13</sup> Overall, the use of isolation was recorded in a minority (13%) of residents with MDRO infections. Of note, needing support with ambulation and eating, evidence of functional disability, having a urinary catheter, and dementia were associated with an increase in isolation use for residents with MDRO infection. Higher levels of staffing for Registered Nurses (RNs), Licensed Practical Nurses (LPNs), and Certified Nursing Assistants (CNAs) were all associated with lower isolation use in the nursing home. This begs the question- could optimally functioning nursing homes rarely use isolation precautions because a highly trained staff and a favorable RN-to-resident ratio allow staff to carefully assess the consequences of isolation use, allowing time to consider alternative infection-control methodologies? This study also found that nursing homes with a recent infection control citation were more likely to use isolation for residents with an MDRO infection. Nursing homes are a heavily regulated industry and

citations and quality indicators remain the most effective trigger to change practice. A salient example is the use of urinary catheters. Since the inclusion of urinary catheters as a quality indicator, their use has plummeted from 13% to 5%.<sup>14,15</sup> Similarly, resident immunization rates are publicly reported quality measures and approach 90%.<sup>16</sup> As evidence for how to best prevent the transmission of MDROs in nursing homes emerge, quality indicators should be developed.

In this study, Cohen et al. used national secondary data sets that, although efficient, have a few limitations. First, due to a look-back period of 15 days, clinically significant interval changes are often not captured. Furthermore, the association between isolation and MDRO infection is cross-sectional with the assumption that instituting isolation practices occurred after the diagnosis of infection. Additionally, there is always the potential mismatch in timing between the identification of the MDRO, the isolation precautions, and documentation on the MDS. Residents could have been placed in isolation before an MDRO infection. Procedures, duration and any adverse consequences of isolation are unknown. That MDS does not record the type of MDRO infection is an additional limitation. Future studies should validate these measures through chart reviews in order to further characterize individual nursing home practices and adequately allocate financial and personnel resources.<sup>17</sup>

Limitations notwithstanding, this study describes for the first time the prevalence and variations in the use of isolation practices for MDRO infected residents in a national sample of nursing homes. When placed in context with recently published papers, it highlights several key points regarding policies and practices to prevent transmission of MDROs in these settings.<sup>18,19</sup> As shown in this study targeting residents at high risk for new acquisition of an MDRO or transmission of MDRO for others is an important strategy for preventing transmission because it limits the negative consequences of isolation while preventing most transmission. We recently demonstrated that MRSA colonized residents with chronic skin breakdown such as pressure ulcers are more likely to transmit MRSA to health-care worker gowns and gloves during high contact care than residents without skin breakdown.<sup>18</sup> Using barrier precautions in high-risk residents can reduce costs.<sup>19</sup> In another major cluster-randomized study, a multicomponent bundle targeting high risk residents with indwelling devices and that included enhanced barrier precautions, interactive infection prevention education and active surveillance with data feedback, reduced prevalence and new acquisition of MDROs as well as device-associated infections.<sup>1,20,21</sup> It is also necessary to use other strategies to contain the spread of pathogens among this susceptible and chronically ill including surveillance of significant pathogens and attention to environmental cleaning.<sup>22</sup>

With the burgeoning short stay population, a number of infection prevention practices including isolation precautions need to be revisited. The short stay population in nursing homes closely resembles hospitalized patients. Although isolation for MDRO colonization is not a common practice, more research on frequency, route, and mechanism of MDRO transmission is needed as a short stay population mingles with a long-stay population. The accompanying paper is an important first step. Understanding the downstream consequences

of MDRO colonization and the adverse events and costs associated with the use of enhanced barrier precautions will be important to drive future policy.

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## References

1. Mody L, Krein SL, Saint SK, et al. A targeted infection prevention intervention in nursing home residents with indwelling devices: A cluster randomized trial. *JAMA Intern Med.* 2015; 175:714–723. [PubMed: 25775048]
2. Mody L, Maheshwari S, Galecki A, et al. Indwelling device use and antibiotic resistance in nursing homes: Identifying a high-risk group. *J Am Geriatr Soc.* 2007; 55:1921–1926. [PubMed: 18081670]
3. Mitchell SL, Shaffer ML, Loeb MB, et al. Infection management and multidrug-resistant organisms in nursing home residents with advanced dementia. *JAMA Intern Med.* 2014; 174:1660–1667. [PubMed: 25133863]
4. O'Fallon E, Pop-Vicas A, D'Agata E. The emerging threat of multidrug-resistant gram-negative organisms in long-term care facilities. *J Gerontol A Biol Sci Med Sci.* 2009; 64:138–141. [PubMed: 19164271]
5. O'Fallon E, Kandel R, Schreiber R, et al. Acquisition of multidrug-resistant gram-negative bacteria: Incidence and risk factors within a long-term care population. *Infect Control Hosp Epidemiol.* 2010; 31:1148–1153. [PubMed: 20923286]
6. Hudson LO, Reynolds C, Spratt BG, et al. Diversity of methicillin-resistant *Staphylococcus aureus* strains isolated from residents of 26 nursing homes in Orange County. *California J Clin Microbiol.* 2013; 51:3788–3795. [PubMed: 24025901]
7. McKinnell JA, Miller LG, Singh R, et al. Prevalence of and factors associated with multidrug resistant organism (MDRO) colonization in 3 nursing homes. *Infect Control Hosp Epidemiol.* 2016; 27:1–4.
8. Munoz-Price LS, Stemer A. Four years of surveillance cultures at a long-term acute care hospital. *Infect Control Hosp Epidemiol.* 2010; 31:59–63. [PubMed: 19951201]
9. Cassone M, Mody L. Colonization with multi-drug resistant organisms in nursing homes: Scope, importance, and management. *Curr Geriatr Rep.* 2015; 4:87–95. [PubMed: 25664233]
10. Gucwa AL, Dolar V, Ye C, et al. Correlations between quality ratings of skilled nursing facilities and multidrug-resistant urinary tract infections. *Am J Infect Control.* 2016; 44:1256–1260. [PubMed: 27810066]
11. Furuno JP, Krein S, Lansing B, et al. Health care worker opinions on use of isolation precautions in long-term care facilities. *Am J Infect Control.* 2012; 40:263–266. [PubMed: 21784557]
12. Ye Z, Mukamel DB, Huang SS, et al. Healthcare-associated pathogens and nursing home policies and practices: Results from a national survey. *Infect Control Hosp Epidemiol.* 2015; 36:759–766. [PubMed: 25797334]
13. Cohen CC, Dick A, Stone P. Isolation precautions use for multidrug resistant organism infection in nursing homes. *J Am Geriatr Soc.* 2017; 65:483–489. [PubMed: 28211567]
14. Rogers MA, Mody L, Kaufman SR, et al. Use of urinary collection devices in skilled nursing facilities in five states. *J Am Geriatr Soc.* 2008; 56:854–861. [PubMed: 18454750]

15. Mody L, Meddings J, Edson BS, et al. Enhancing resident safety by preventing healthcare-associated infection: A national initiative to reduce catheter-associated urinary tract infections in nursing homes. *Clin Infect Dis*. 2015; 61:86–94. [PubMed: 25814630]
16. [Accessed November 11, 2016] Short-stay nursing home care: Percent of residents who received the seasonal influenza vaccine. Agency for Healthcare Research and Quality (online). Available at: <https://www.qualitymeasures.ahrq.gov/summaries/summary/50038/shortstay-nursing-home-care-percent-of-residents-who-received-the-seasonal-influenza-vaccine>
17. Cohen CC, Pogorzelska-Maziarz M, Herzig CT, et al. Infection prevention and control in nursing homes: A qualitative study of decision-making regarding isolation-based practices. *BMJ Qual Saf*. 2015; 24:630–636.
18. Roghmann MC, Johnson JK, Sorkin JD, et al. Transmission of methicillin-resistant *Staphylococcus aureus* (MRSA) to healthcare worker gowns and gloves during care of nursing home residents. *Infect Control Hosp Epidemiol*. 2015; 36:1050–1057. [PubMed: 26008727]
19. Roghmann MC, Lydecker A, Mody L, et al. Strategies to prevent MRSA transmission in community-based nursing homes: A cost analysis. *Infect Control Hosp Epidemiol*. 2016; 37:962–966. [PubMed: 27174005]
20. Mody L, Bradley SF, Galecki A, et al. Conceptual model for reducing infections and antimicrobial resistance in skilled nursing facilities: Focusing on residents with indwelling devices. *Clin Infect Dis*. 2011; 52:654–661. [PubMed: 21292670]
21. Koo E, McNamara S, Lansing B, et al. Making infection prevention education interactive can enhance knowledge and improve outcomes: Results from the Targeted Infection Prevention (TIP) study. *Am J Infect Control*. 2016; 44:1241–1246. [PubMed: 27553671]
22. [Accessed November 11, 2016] MDRO Prevention and Control. Centers for Disease Control and Prevention (online). Available at: [http://www.cdc.gov/hicpac/mdro/mdro\\_4.html](http://www.cdc.gov/hicpac/mdro/mdro_4.html)