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**Mary Teresa O’Riordan, MRCPUK, MPH, MFPHMI;<sup>1</sup>**  
**Patricia Harrington, PhD;<sup>2</sup>**  
**Kathleen Mac Lellen, PhD;<sup>1</sup>**  
**Máirín Ryan, PhD;<sup>2,3</sup>**  
**Hilary Humphreys, MD, FRCPI, FRCPath<sup>4,5</sup>**

Affiliations: 1. Clinical Effectiveness Unit, Department of Health, Dublin, Ireland; 2. Health Technology Assessment Directorate, Health Information and Quality Authority, Dublin, Ireland; 3. Department of Pharmacology and Therapeutics, Trinity College Dublin, Ireland; 4. Department of Clinical Microbiology, Royal College of Surgeons in Ireland, Dublin, Ireland; 5. Department of Microbiology, Beaumont Hospital, Dublin, Ireland.

Address correspondence to Mary O’Riordan, MB, BAO, BCh, MRCPUK, Clinical Effectiveness Unit, Department of Health, Hawkins House, Hawkins Street, Dublin 2, Ireland (Mary\_oriordan@health.gov.ie).

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## REFERENCES

- McKinnell JA, Bartsch SM, Lee BY, Huang SS, Miller LG. Cost-benefit analysis from the hospital perspective of universal active screening followed by contact precautions for methicillin-resistant *Staphylococcus aureus* carriers. *Infect Control Hosp Epidemiol* 2015;36:2–13.
- National Clinical Effectiveness Committee. Prevention and control of methicillin-resistant *Staphylococcus aureus* (MRSA): National Clinical Guideline No. 2. 2013. Available at: <http://health.gov.ie/wp-content/uploads/2015/01/National-Clinical-Guideline-No.-2-MRSA1.pdf>
- Olchanski N, Mathews C, Fusfield L, Jarvis W. Assessment of the influence of test characteristics on the clinical and cost impacts of methicillin-resistant *Staphylococcus aureus* screening programs in US hospitals. *Infect Control Hosp Epidemiol* 2011;32:250–257.
- Tubdicke A, Hubner C, Flessa S. Cost comparison of MRSA screening and management—a decision tree analysis. *BMC Health Serv Res* 2012;12:438.
- Collins J, Raza M, Ford M, Gould FK. Review of a three-year methicillin-resistant *Staphylococcus aureus* screening programme. *J Hosp Infect* 2011;78:81–85.
- Kang J, Mandsager P, Biddle A, Weber D. Cost-effectiveness analysis of active surveillance screening for methicillin-resistant *Staphylococcus aureus* in an academic hospital setting. *Infect Control Hosp Epidemiol* 2012;33:477–486.
- Leonhardt K, Yakusheva O, Costello M. Clinical effectiveness and cost benefit of universal versus targeted methicillin-resistant *Staphylococcus aureus* screening upon admission in hospitals. *Infect Control Hosp Epidemiol* 2011;32:797–803.
- Creamer E, Galvin S, Humphreys H, et al. Evaluation of screening risk and nonrisk patients for methicillin-resistant *Staphylococcus aureus* on admission in an acute care hospital. *Am J Infect Control* 2012;40:411–415.
- Rubinovitch B, Pittet D. Screening for methicillin-resistant *Staphylococcus aureus* in the endemic hospital: what have we learned? *J Hosp Infect* 2001;47:9–18.

## Reply to O’Riordan et al

*To the Editor*—We appreciate the letter from O’Riordan et al<sup>1</sup> in response to our article on the cost benefit of methicillin-resistant *Staphylococcus aureus* (MRSA) screening followed by contact precautions in the hospital setting.<sup>2</sup> We agree that MRSA screening can have an important role as part of infection and control measures. We would like to take the opportunity to highlight 2 important considerations related to cost and benefits of MRSA screening: (1) who is paying for the intervention and who realizes the benefit—that is, the economic perspective, and (2) what we are doing with the MRSA screening data, and particularly what is the resultant intervention efficacy.

Our analysis demonstrated that universal MRSA screening followed by contact precautions would reduce hospital-associated MRSA infections but would result in costs to a hospital. Our findings of increased costs to the hospital remained robust, regardless of number of body sites tested or MRSA identification method. These results are consistent with the literature, including the excellent references presented by O’Riordan et al,<sup>1</sup> and support the notion that hospital-wide, universal surveillance followed by contact precautions would incur significant costs to a single hospital.

Interestingly, if we look at how universal MRSA screening followed by contact precautions impacts the healthcare system as a whole, the program could result in cost savings.<sup>3,4</sup> The fundamental dilemma is that the costs of hospital-based screening and isolation are borne by the individual hospital performing the screening, but the individual benefits of screening may be reaped only later or by external beneficiaries (eg, other hospitals or non-hospital-based care entities). We suggest that the payment and incentive structure in the US system should be changed to support the expenditures necessary for infection prevention programs to realize both local and regional benefit.

Another key finding from our study was that our results were sensitive to the efficacy of the MRSA intervention. Our intervention efficacy estimates were based on the assumption that MRSA screening results were used to apply contact precautions after a positive test result. We did not model a strategy of preemptive isolation or MRSA decolonization programs.<sup>5</sup> Using a more efficacious intervention would have resulted in our model having lower costs for hospitals and potentially cost saving for the hospital.

We would like to highlight a recent analysis of the Randomized Evaluation of Decolonization versus Universal Clearance to Eliminate (REDUCE) MRSA trial that confirmed that a strategy

of using MRSA screening results for targeted decolonization resulted in lower costs compared with screening followed by contact precautions.<sup>6</sup> Perhaps most interestingly, the same analysis demonstrated that a strategy of universal decolonization without MRSA screening had the lowest intervention costs and best efficacy.<sup>6</sup> The results suggest that MRSA screening may not be required in an intensive care unit setting with universal chlorhexidine bathing. Although the REDUCE MRSA trial is based on intensive care unit costs and benefits, ongoing work is being conducted to explore the impact of decolonization and need for MRSA screening in the broader hospital setting.

Overall, we agree with O’Riordan and colleagues<sup>1</sup> in their assessment of the literature to support “generally advocating” for MRSA screening as it relates to “infection and control measures.” In particular, understanding the changing epidemiology of MRSA is not fully possible without screening. Depending on the context, available resources, and comparison group, the available data support a benefit to the overall healthcare system for MRSA screening followed by contact precautions. Nevertheless, additional work is needed to understand the role of MRSA screening in the context of additional “infection and control measures,” particularly in the context of universal decolonization where screening may not be required.

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**James A. McKinnell, MD,<sup>1,2</sup>**  
**Sarah M. Bartsch, MPH,<sup>3</sup>**  
**Bruce Y. Lee, MD, MBA,<sup>3</sup>**  
**Susan S. Huang, MD, MPH,<sup>4</sup>**  
**Loren G. Miller, MD, MPH<sup>1</sup>**

*Affiliations:* 1. Infectious Disease Clinical Outcomes Research Unit, Division of Infectious Disease, Los Angeles Biomedical Research Institute, Harbor-UCLA Medical Center, Torrance, California; 2. Torrance Memorial Medical Center, Torrance, California; 3. Public Health Computational and Operations Research Group, Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland; 4. Division of Infectious Diseases and Health Policy Research Institute, University of California, Irvine School of Medicine, Irvine, California.

Address correspondence to James A. McKinnell, MD, Infectious Disease Clinical Outcomes Research Unit, Division of Infectious Disease, Los Angeles Biomedical Research Institute, Harbor-UCLA Medical Center, Torrance, CA 90502 (dr.mckinnell@yahoo.com).

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#### REFERENCES

- O’Riordan MT, Harrington P, Mac Lellen K, Ryan M, Humphreys H. Response to McKinnell et al’s original article cost-benefit analysis from the hospital perspective of universal active screening followed by contact precautions for methicillin-resistant *Staphylococcus aureus* carriers. *Infect Control Hosp Epidemiol* 2015;36:856–857.
- McKinnell JA, Bartsch SM, Lee BY, Huang SS, Miller LG. Cost-benefit analysis from the hospital perspective of universal active screening followed by contact precautions for methicillin-resistant *Staphylococcus aureus* carriers. *Infect Control Hosp Epidemiol* 2015;36:2–13.
- Lee BY, Bailey RR, Smith KJ, et al. Universal methicillin-resistant *Staphylococcus aureus* (MRSA) surveillance for adults at hospital admission: an economic model and analysis. *Infect Control Hosp Epidemiol* 2010;31:598–606.
- Hubben G, Bootsma M, Luteijn M, et al. Modelling the costs and effects of selective and universal hospital admission screening for methicillin-resistant *Staphylococcus aureus*. *PLOS ONE* 2011;6:e14783.
- Tubbs A, Hubner C, Hubner NO, Wegner C, Kramer A, Flessa S. Cost comparison of MRSA screening and management—a decision tree analysis. *BMC Health Serv Res* 2012;12:438.
- Huang SS, Septimus E, Avery TR, et al. Cost savings of universal decolonization to prevent intensive care unit infection: implications of the REDUCE MRSA trial. *Infect Control Hosp Epidemiol* 2014;35:S23–S31.

## An Adult Returned Traveler from Dubai Hospitalized with an Influenza-Like Illness (ILI): Middle East Respiratory Syndrome (MERS) or Influenza? Infection Control Implications from a Near MERS Case

*To the Editor*—Middle East respiratory syndrome (MERS) is a zoonotic pneumonia caused by coronavirus (MERS-CoV) that emerged from the Middle East. MERS presents as an influenza-like illness (ILI) that is difficult clinically to differentiate from influenza (Table 1).<sup>1</sup> When a woman, recently returned from Dubai, was admitted with an ILI, we still had concerns of possible Ebola in returning travelers and we were in the midst of an influenza A (H<sub>3</sub>N<sub>2</sub>) epidemic. This potential case of MERS vs influenza emphasized the importance of appropriate infection control (IC) precautions.<sup>2</sup>

Some 10 days after returning from Dubai, a 41-year-old woman became ill. It was not known whether she had transited West Africa. She visited a practitioner complaining of chills, myalgias, sore throat, dry cough, and nausea/vomiting. The practitioner informed the local Department of Health (DOH) that she could be a MERS case, and DOH suggested evaluation at our hospital. She was admitted to the Emergency Department as a potential MERS case and was placed on airborne and contact precautions; then she was transferred to the Infectious