



## Context

Bacterial resistance to antibiotics is an increasing problem. Common antibiotic-resistant organisms (AROs) include:

- Vancomycin-resistant enterococci (VRE)
- Bacteria that produce extended spectrum beta-lactamases (ESBL)
- Methicillin-resistant *Staphylococcus aureus* (MRSA).

## Technology

Prevention and control measures for AROs may include:

- Screening (should everyone be tested to find out if they are carrying AROs?)
- Isolation (should patients or residents who are carrying AROs be separated from other people?)
- Decolonization (should people who carry AROs without getting sick be given treatment to eliminate the AROs?).

## Issue

AROs lead to increased use of hospital resources, but prevention and control strategies also use resources, so there is demand for these strategies to be evidence-based and cost-effective. Some strategies may also affect patient well-being (e.g., psychological effect of isolation).

## Methods

This project had three components:

- Full review of VRE and ESBL, including a review of the health services impact
- Smaller review of MRSA (recognizing much work has already been done in this area)
- Reference lists for related questions on risk factors for the carriage of AROs.

## Key Findings

### Screening

- For VRE, screening of high-risk patients may reduce spread.
- For ESBL-producing organisms, insufficient evidence was found.
- For MRSA, evidence for different screening strategies was inconsistent and inconclusive.

### Isolation

- For VRE, ESBL-producing organisms, and MRSA, isolation and contact precautions may reduce spread but can be associated with depression in hospitalized patients.

### Decolonization

- For MRSA, topical mupirocin (together with surveillance) reduced colonization and infection rates.

### Health Services Impact

- Patients infected or colonized with VRE or ESBL-producing organisms use more hospital resources through increased length of hospital stay, blocking of beds and rooms, and increased time devoted to direct patient care by health care workers.

## Results

From a total of 1,672 citations reviewed, 10 studies were included in the VRE and ESBL report, and 21 in the MRSA report. Almost all were observational studies. It is difficult to draw conclusions based on the limitations of the available evidence.

For complete reports on this topic, please visit [www.cadth.ca](http://www.cadth.ca).