RESPONDING TO THE THREAT OF ANTIMICROBIAL RESISTANCE

Antimicrobial resistance (AMR) is the ability of microorganisms *(such as bacteria, fungi, viruses or protozoa)* to nullify the effects of antimicrobial drugs, resulting in these drugs becoming ineffective.[1,2] AMR can affect anyone, of any age, in any country.[1]

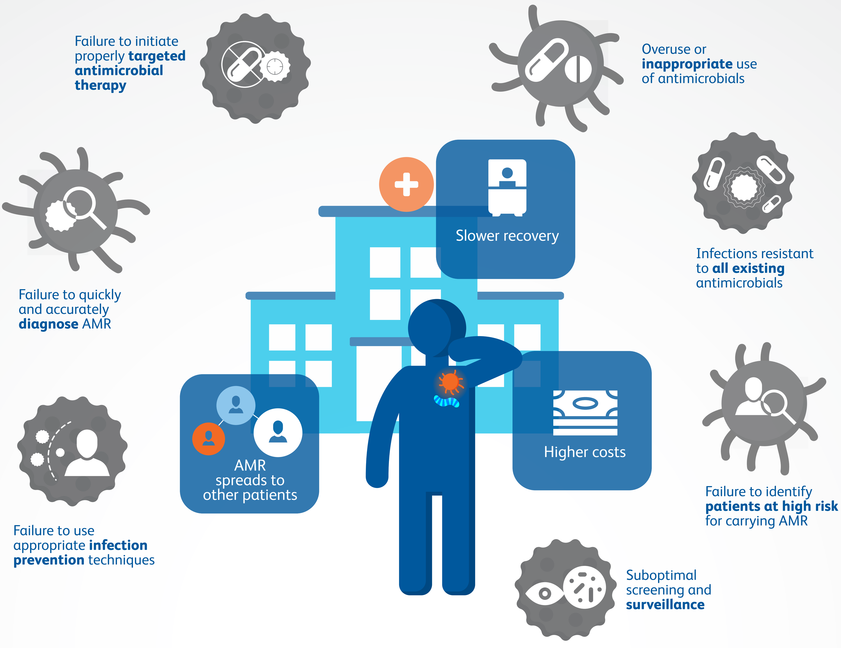
The global rise of AMR will have devastating effects on lives and economies[2]

Cost[3]
$1 billion
annually in Canada

Impact[4]
700,000
preventable deaths worldwide annually

Projections[5]
10 million deaths and more than
$1 trillion* globally per year by 2050

A new class of antibiotics hasn't been discovered since 1987.[6] **Antimicrobial-resistant organisms can spread due to lack of effective processes, tools and communication.**



To combat AMR, protect patients and reduce costs, healthcare facilities need to strengthen infection prevention and antimicrobial stewardship programs

Infection prevention and control

1 in 12 patients in Canadian hospitals have MRSA, VRE or CDI[7‡]

8,000 Canadians die from hospital-acquired infections each year[8]

MRSA and VRE bloodstream infection rates are increasing in pediatric and adult hospitals, respectively[9]

Prevent AMR by reducing the spread of pathogens through[15-17]

1. Comprehensive protocols for patient isolation
2. Cleaning and disinfection
3. Optimal selection of medical devices

Diagnostic testing

25 million antibiotic prescriptions filled by Canadians yearly[10]

30%–50% are estimated to be unnecessary[11]

46% of patients with upper respiratory tract infections were prescribed antibiotics unnecessarily[12]

Effective, timely, accurate diagnostic tests can[4,17]

1. Identify infection-causing organisms
2. Determine antimicrobial resistance
3. Guide the best therapeutic choice

Surveillance and reporting

Successful **surveillance** requires cross-sector **coordination** and cooperation[13]

Status quo	Independent efforts	Coordinated approach[14]
12% of patients will get CRE‡	9% of patients will get CRE	2%‡ of patients will get CRE

Coordinated collection, assimilation and analysis of data are necessary to[14]

1. Track high-priority organisms and infections
2. Provide early warning of infection outbreaks
3. Drive decision-making

BD solutions to combat AMR

- Integrated vascular access
- Standardized surgical preparation procedures
- Safe drug delivery and blood drawing
- Patient screening
- Rapid detection and identification
- Susceptibility testing
- Surveillance and outbreak detection
- Measurement of antimicrobial use and resistance
- Optimized therapy selection and monitoring

* Low-impact modeling scenario assuming effects of AMR on labor supply and livestock productivity

† MRSA, methicillin-resistant *Staphylococcus aureus*: gram-positive bacteria with high levels of resistance to antibiotics
VRE, vancomycin-resistant Enterococcus: gram-positive bacteria with high levels of resistance to antibiotics
CDI, *Clostridium difficile* infection: gram-positive anaerobic bacteria directly related to antibiotic use and resistance
CRE, carbapenem-resistant Enterobacteriaceae, gram-negative bacteria with high level of resistance to antibiotics

‡ Modeling scenario estimating CRE spread within a health network when various levels of coordination are applied to stewardship efforts

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