

# Antimicrobial Resistance (AMR)

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## Documents

ASSOCIATION OF MEDICAL PROFESSIONS AND INFECTIOUS DISEASE CANADA  
AMMI  
CANADIAN MEDICAL ASSOCIATION  
Association of Medical Microbiology and Infectious Disease Canada  
Canadian Society for Antimicrobial Chemotherapy

### Antimicrobial Resistance (AMR)

See also [Background to CMA Policy on Antimicrobial Resistance PD19-08](#)

#### Context

Antimicrobials (which include antibiotics) are a precious public resource and an essential tool for fighting infections in both humans and animals. Their importance to human medical, nutritional and economic security cannot be understated. Yet globally, antimicrobials are losing their effectiveness more quickly than new such drugs, treatments and therapies are being identified and introduced to market. <sup>1</sup>Consequently, this dynamic has eroded the human antimicrobial arsenal, placing the lives and futures of an unacceptable number of people at risk.

Antimicrobial resistance (AMR) occurs when microorganisms such as bacteria, viruses, fungi and parasites come into contact with antimicrobial drugs, such as antibiotics, antivirals, antifungals, antiparasitics and antipneumonia, and undergo changes. The drugs are rendered ineffective and cannot eradicate infections from the body.

AMR is an international challenge that threatens to reverse over a century of progress in public health, health care and human development attributable to antimicrobial use. Indeed, the effects of AMR are already being felt across Canada's health care system. Currently, Canada's dedicated investment in solutions to mitigate against increasing AMR in the AMR and antimicrobial stewardship (AMS) fields (both federally and provincially/territorially) can only be viewed as wholly inadequate to address the scope of the problem and the risks it poses for the health of Canadians.

Therefore, to: (1) promote awareness of AMR; (2) incentivize investment in AMR mitigation strategies; and (3) support the implementation of an effective suite of more clinically effective management/health care practices and policies, the following target audience recommendations are offered.<sup>2</sup>

\* All the policy recommendations made in this document are not meant to be interpreted as clinical practice guidelines. They represent the expert best view on whether should promptly proceed to practice.  
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### BACKGROUND TO CMA POLICY

#### Antimicrobial Resistance

See also [CMA Policy Antimicrobial Resistance PD19-08](#)

#### OVERVIEW

The world is at the tipping point of a post-antibiotic era. "Worldwide, we are relying more heavily on antibiotics to ensure our medical, nutritional, and economic security, while simultaneously causing the decline of their usefulness with overuse and ill advised use."<sup>1</sup> It is estimated that the world's use of antimicrobials increased by 65% between 2000 and 2015 — nearly as fast as in middle-income countries.<sup>2</sup>

Dr. Margaret Chan, the former head of the World Health Organization (WHO), described antimicrobial resistance (AMR) as a "disease-causing tsunami for public health. Other experts have characterized AMR as a looming "antibiotic apocalypse," warning that all countries "will face disaster consequences if the spread of AMR is not contained."<sup>3</sup> Others are now calling AMR the "climate change" of health care. According to the IJC review on AMR, an estimated 10 million people globally will die annually by 2050, and AMR will surpass cancer to become the leading cause of death.<sup>4</sup>

AMR occurs when "microorganisms (such as bacteria, fungi, viruses, and parasites) change when they are exposed to antimicrobial drugs (such as antibiotics, antifungals, antivirals, antiparasitics, and antipneumonia) ... As a result, the medicines become ineffective and infections persist in the body, increasing the risk of spread to others."<sup>5</sup> Microorganisms that develop antimicrobial resistance are sometimes referred to as "superbugs." "Tougher bacteria," as they have been dubbed, are bacterial strains that no conventional antimicrobial can effectively treat; their incidence is on the rise.<sup>6</sup>

AMR represents a unique challenge for the medical profession as it is estimated that as many as 50% of current antibiotic prescriptions are either inappropriate or unnecessary.<sup>7</sup> In addition, taking an antimicrobial involves potentially considerable exposure to side effects or risk. As there are more powerful, durable, and less-toxic forms of medical treatment. Critically, these include many medications for currently treatable bacterial infections, and many forms of surgery (including organ delivery), radiation therapy, chemotherapy and neonatal care.<sup>8</sup>

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