

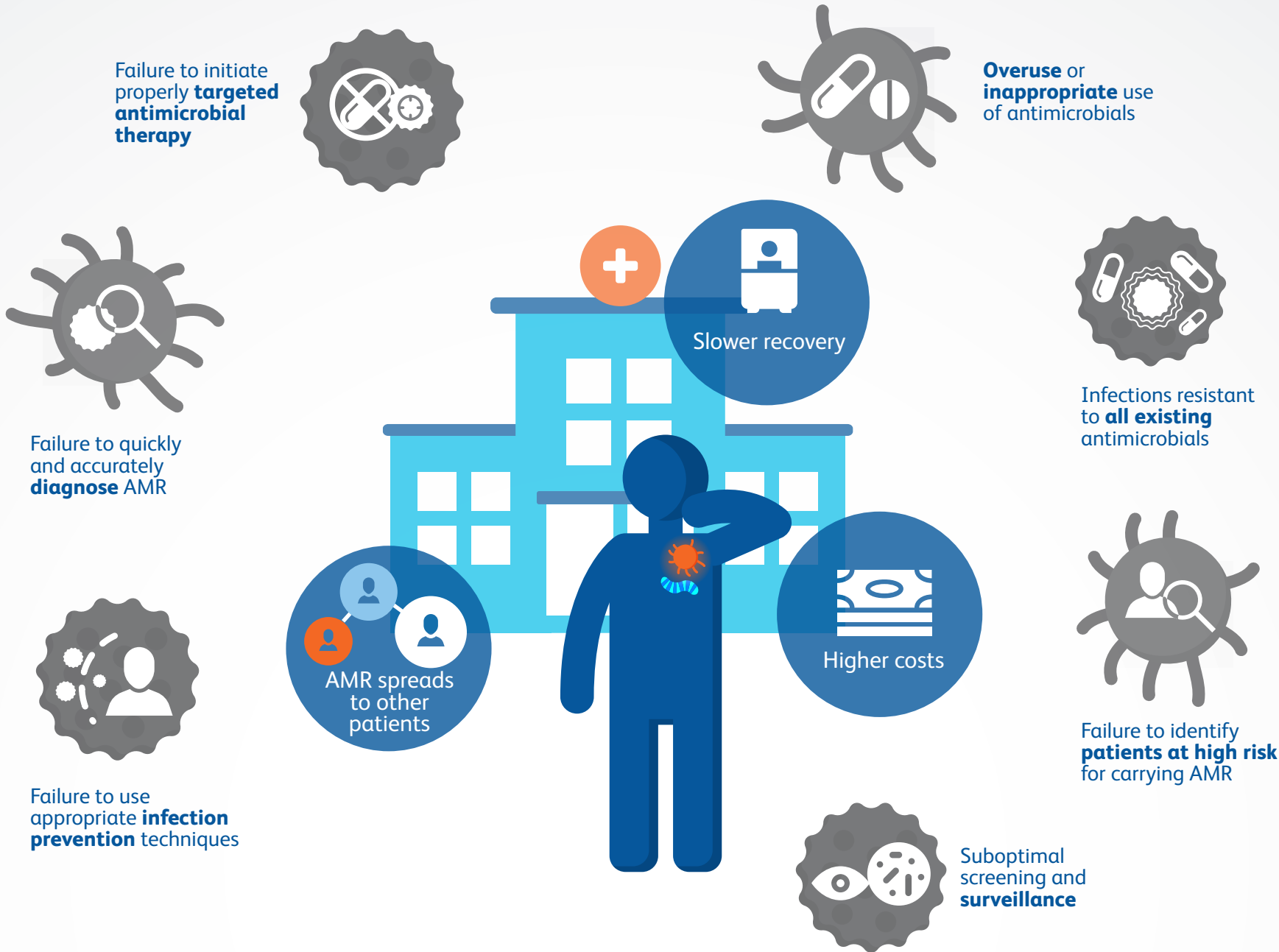
RESPONDING TO THE THREAT OF ANTIMICROBIAL RESISTANCE

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 country¹

The global rise of AMR will have devastating effects on lives and economies²



Antimicrobial-resistant organisms can spread due to lack of effective processes, tools, and communication



With effective coordination, patients and the healthcare institutions are protected and costs are reduced

Infection Prevention & Control

AMR bacteria cause⁵

- 17%** of central-line infections
- 14%** of surgical-site infections
- 10%** of catheter-associated urinary tract infections

CREs* **1/5** occur in of US hospital patients⁶

- Prevent AMR by reducing the spread of pathogens through⁹⁻¹¹
- 1 Comprehensive protocols for patient isolation
 - 2 Cleaning and disinfection
 - 3 Optimal selection of medical devices

Diagnostic Testing

An estimated **30%** of antibiotics prescribed in the United States are unnecessary⁷

Most upper respiratory tract infections are viral, yet **50%** of patients with such infections unnecessarily receive antibiotics⁸

- Effective, timely, accurate diagnostic tests can^{3,9}
- 1 Identify infection-causing organism
 - 2 Determine antimicrobial resistance
 - 3 Guide best therapeutic choice

Surveillance & Reporting

Up to **70%** fewer patients will get CRE over 5 years if surveillance is properly utilized across facilities to protect patients⁶

Status Quo	Independent Efforts	Coordinated Approach
12% patients will get CRE	8% patients will get CRE	2% patients will get CRE

- Coordinated collection, assimilation, and analysis of data are necessary to⁶
- 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

- Accurate patient screening
- Rapid detection and identification
- Precise susceptibility testing

- Surveillance and outbreak detection
- Measurement of antimicrobial use & resistance
- Optimized therapy selection and monitoring

*CRE, carbapenem-resistant *Enterobacteriaceae*: Gram-negative bacteria with high levels of resistance to antibiotics.

References

1. World Health Organization. Antimicrobial Resistance Fact Sheet. <http://www.who.int/mediacentre/factsheets/fs194/en/>. Accessed November 28, 2017. 2. Centers for Disease Control and Prevention. About antimicrobial resistance. <https://www.cdc.gov/drugresistance/about.html>. Accessed May 12, 2017. 3. Tackling drug-resistant infections globally: final report and recommendations. *Review on Antimicrobial Resistance*, 2016. 4. World Bank. 2016. <http://www.worldbank.org/en/news/press-release/2016/09/18/by-2050-drug-resistant-infections-could-cause-global-economic-damage-on-par-with-2008-financial-crisis>. Accessed October 12, 2017. 5. Centers for Disease Control and Prevention. Basic infection control and prevention plan for outpatient oncology settings. <https://www.cdc.gov/hai/pdfs/guidelines/basic-infection-control-prevention-plan-2011.pdf>. 2011. Accessed July 25, 2017. 6. Centers for Disease Control and Prevention. Making healthcare safer. <https://www.cdc.gov/vitalsigns/protect-patients/index.html>. 2016. Accessed July 25, 2017. 7. Fleming-Dutra KE, Hersh AL, Shapiro DJ, et al. Prevalence of inappropriate antibiotic prescriptions among US ambulatory care visits, 2010-2011. *JAMA*. 2016;315(17):1864-1873. 8. Caliendo AM, Gilbert DN, Ginocchio CC, et al. Better tests, better care: improved diagnostics for infectious diseases. *Clin Infect Dis*. 2013;57(suppl 3):S139-S170. 9. Centers for Disease Control and Prevention. Antibiotic resistance threats in the United States, 2013. <https://www.cdc.gov/drugresistance/pdf/ar-threats-2013-508.pdf>. Accessed July 11, 2017. 10. Boyce JM. Modern technologies for improving cleaning and disinfection of environmental surfaces in hospitals. *Antimicrob Resist Infect Control*. 2016;5:10. 11. Weinstein RA. Controlling antimicrobial resistance in hospitals: infection control and use of antibiotics. *Emerg Infect Dis*. 2001;7(2):188-192.