



Protect Your Patients and Staff

From Drug-Resistant Infections with Fast PCR

→ Improve **Infection Control and Antimicrobial Stewardship** with Cepheid's Portfolio of Testing Solutions





Antimicrobial Resistance (AMR)

The Pandemic Behind The Pandemic

AMR is growing rapidly, with superbugs threatening our ability to treat common infectious diseases. Fast and accurate diagnostics can greatly improve **time to result**, allowing clinicians and infection prevention professionals to quickly identify, isolate and appropriately manage patients colonized or infected with drug-resistant bacteria, helping to prevent the spread of resistance in patients and staff alike.¹



THE PROBLEM

1 Why AMR Matters:



2.8 Million
infections annually¹



35,000
deaths annually in the U.S.²



4.6 Billion
in extra healthcare costs³

2 Relationship to Healthcare-Associated Infections (HAIs)^{4,5}

HAIs are frequently caused by drug-resistant bacteria. HAIs can:

- Prolong length of stay
- Cause large outbreaks
- Worsen patient outcomes



1 in 3
bacteria associated with HAIs
are **resistant to antibiotics**⁴



4.5 Million
annual number of patients
with at least one HAI⁵



1 in 15
number of patients on any given
day with **at least one HAI**⁴

3 Everyone is at Risk⁶

Some, however, are high-risk and disproportionately impacted:



Patients **undergoing**
cancer therapy



Patients with **weakened**
immune systems



Patients **undergoing**
dialysis



Patients **undergoing**
complex surgery

1 Centers for Disease Control and Prevention: Antibiotic Resistance Threats in the United States, 2019. <https://www.cdc.gov/drugresistance/pdf/threats-report/2019-ar-threats-report-508.pdf>. Accessed April 18, 2022.

2 World Health Organization: Antimicrobial resistance. <https://www.who.int/news-room/fact-sheets/detail/antimicrobial-resistance>. Accessed April 18, 2022.

3 Centers for Disease Control and Prevention: CDC Study Shows National Healthcare Costs from AR Infections Exceed \$4.6 Billion. <https://www.cdc.gov/nceid/what-we-do/partnership-in-action/healthcare-costs-associated-with-ar-infections.html>. Accessed April 18, 2022.

4 MedTech Europe. 2014. Healthcare-Associated Infections Brochure. Accessed Feb 2021. <https://www.medtecheurope.org/resource-library/hai-brochure/>

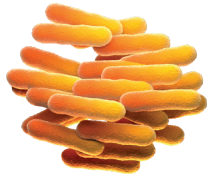
5 ECDC. 2018. Healthcare-Associated Infections - A Threat to Patient Safety in Europe. Accessed Feb 2021. <https://www.ecdc.europa.eu/en/publications-data/infographichealthcare-associated-infections-threat-patient-safety-europe>

6 CDC. 2019. Antibiotic Resistance Threats in the United States 2019. Accessed Feb 2021. <https://www.cdc.gov/drugresistance/pdf/threats-report/2019-ar-threats-report-508.pdf>

Infectious Diseases of Concern

Bacteria associated with resistance are spreading

Highly transmissible microorganisms such as *Clostridioides difficile* (*C. difficile*) and carbapenem-resistant bacteria can quickly result in difficult-to-manage outbreaks, and can be harmful to patient outcomes, disruptive to clinical service delivery and costly.^{1,2}



C. difficile

Leading cause of antibiotic-associated diarrhea³



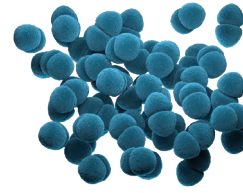
Carbapenem-resistant Bacteria

Significant threat to antibiotics of last resort²



Methicillin-resistant *Staphylococcus aureus* (MRSA)

Prominent cause of HAIs⁴



Vancomycin-resistant Bacteria

Has few or no treatment options⁵



Drug-resistant Tuberculosis (TB)

Frequent cause of death worldwide⁶



Group B Streptococcus (GBS)

Leading cause of early onset neonatal sepsis⁷



Group A Streptococcus

Most common bacterial cause of sore throats⁵

1 van Beurden Y, et al. Cost analysis of an outbreak of *Clostridium difficile* infection ribotype 027 in a Dutch tertiary care centre. *J Hosp Infect.* 2017 Apr;95(4):421-425.

2 Patel, B, et al. Carbapenemase-producing Enterobacterales: a challenge for healthcare now and for the next decade. *IPIP.* 2020 Sep;2(3):100089.

3 Guery B, et al. *Clostridioides difficile*: diagnosis and treatments. *BMJ.* 2019 Aug;366:4609.

4 Hübner C, et al. Impact of different diagnostic technologies for MRSA admission screening in hospitals – a decision tree analysis. *Antimicrob Resist Infect Control.* 2015 Dec;4(50).

5 CDC. 2019. Antibiotic Resistance Threats in the United States 2019. Accessed Feb 2021. <https://www.cdc.gov/drugresistance/pdf/threats-report/2019-ar-threats-report-508.pdf>

6 WHO. Global Tuberculosis Report 2019. Accessed Feb 2021. <https://www.who.int/teams/global-tuberculosis-programme/tb-reports/global-report-2019>

7 Helali E, et al. Point-of-care intrapartum Group B Streptococcus molecular screening: effectiveness and costs. *Obstet Gynecol.* 2019 Feb;133(2):276-281.



THE IMPACT TODAY

80%

Patients hospitalized with COVID-19 that received an antibiotic¹

15%

The percentage resistant hospital-onset infections and deaths increased during the first year of the pandemic¹

92.5%

COVID-19 ICU-admitted patients who received antibiotics²

COVID-19 Impact on AMR and HAIs

Viruses can contribute to the AMR threat

The COVID-19 pandemic has elevated concerns about AMR, with significant increases in prescriptions for antibiotics, hospitalizations and drug-resistant bacteria transmissions.¹ Patients admitted to hospital with suspected COVID-19 are frequently empirically prescribed with antibiotics; however, many do not have a bacterial co-infection, thereby potentially propagating more resistance.³



Increased usage of broad-spectrum antibiotics⁴



Increase in drug-resistant outbreaks in COVID-19 ICUs^{5,6}

¹ Centers for Disease Control and Prevention. (2022, February 25). Covid-19 & Antibiotic resistance. Centers for Disease Control and Prevention. Retrieved July 21, 2022, from https://www.cdc.gov/drugresistance/covid19.html#anchor_1656421934582

² Pritchard M, et al. International Severe Acute Respiratory and Emerging Infections Consortium, COVID-19 Report: 8 June 2020. medRxiv. Accessed Feb 2021. https://www.researchgate.net/publication/343217999_ISARIC_COVID-19_Clinical_Data_Report_8_June_2020

³ Hsu, J. How covid-19 is accelerating the threat of antimicrobial resistance. BMJ. 2020 May;369:m1983.

⁴ Abelenda-Alonso G, et al. Antibiotic prescription during the COVID-19 pandemic: a biphasic pattern. Infect Control Hosp Epidemiol. 2020 Nov;41(11):1371-1372.

⁵ Arcari G, et al. *Klebsiella pneumoniae* infections in COVID-19 patients: a 2-month retrospective analysis in an Italian hospital. Int J Antimicrob Agents. 2021 Jan;57(1):106245.

⁶ Kampmeier S, et al. A nosocomial cluster of vancomycin resistant Enterococci among COVID-19 patients in an intensive care unit. Antimicrob Resist Infect Control. 2020;9(1):1540820-8.



Preventing Infections and the Spread of Resistance

THE SOLUTION

1 Fast & Accurate PCR Answers in ~1 hour* with Cepheid's GeneXpert® system

On-demand identification with the GeneXpert system's fast PCR tests help healthcare professionals reduce onward transmission of resistant bacteria throughout the patient pathway, and optimize appropriate therapy management, helping prevent the spread of pathogens and resistance.^{1,2} Explore fast and accurate testing for:



With Xpert® C. difficile/Epi you can:

- Improve antibiotic stewardship
- Start contact precautions and effective treatment earlier
- Help identify and prevent outbreaks



With Xpert® MRSA NxG you can:

- Manage the use of contact precautions for colonized patients more judiciously
- Help support antimicrobial stewardship



With Xpert® Carba-R you can:

- Identify and isolate positive patients
- Implement infection control protocols that can prevent outbreaks in your institution
- Help direct therapeutic strategy from pure colonies



With Xpert® SA Nasal Complete you can:

- Optimize pre-admission workflow and counseling
- Rapid and accurate detection of colonization facilitates targeted infection control practices



With Xpert® Xpress Strep A you can:

- Facilitate effective patient management
- Accurately diagnose GAS
- Support antimicrobial stewardship which may reduce the amount of patients inappropriately prescribed antibiotics



With Xpert® MTB/RIF you can:

- Quickly identify infectious patients
- Guide the decision making process for an earlier initiation of appropriate treatment
- Detect drug resistance in infections accurately



With Xpert® Xpress CoV-2 plus[^] you can:

- Offer healthcare providers lab-quality results in a test that can be performed at the point of care
- Support clinicians with broader coverage for SARS-CoV-2 variants with a three-gene design



With Xpert® Xpress CoV-2/Flu/RSV plus[^] you can:

- Accurately detect and differentiate SARS-CoV-2, Flu A, Flu B, and RSV
- Standardization of results between the central lab and near-patient testing sites

US-IVD. In Vitro Diagnostic Medical Device. Not available in all countries.

* Turnaround times vary by test. See individual Product Inserts for specific turnaround times.

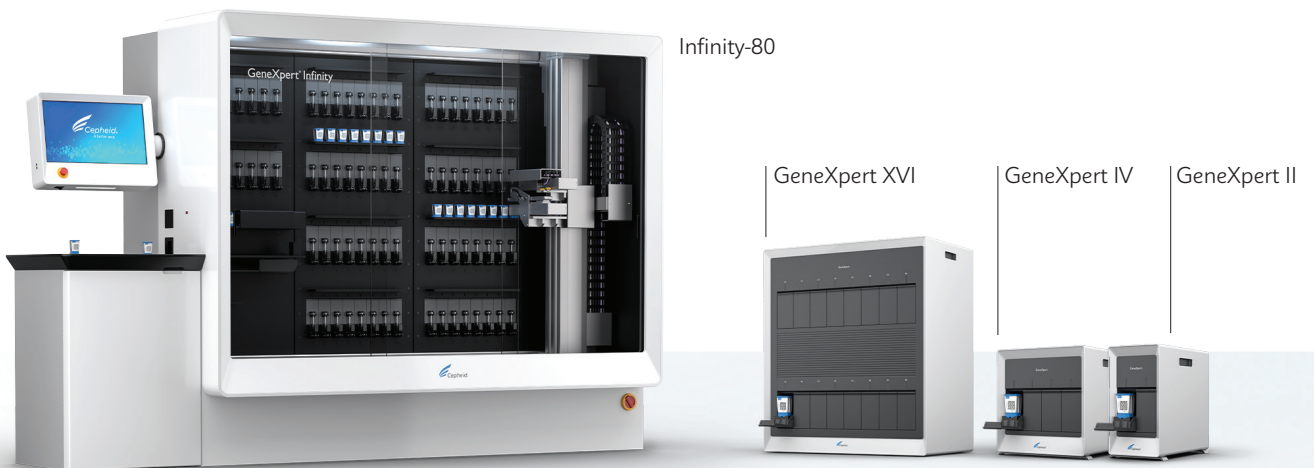
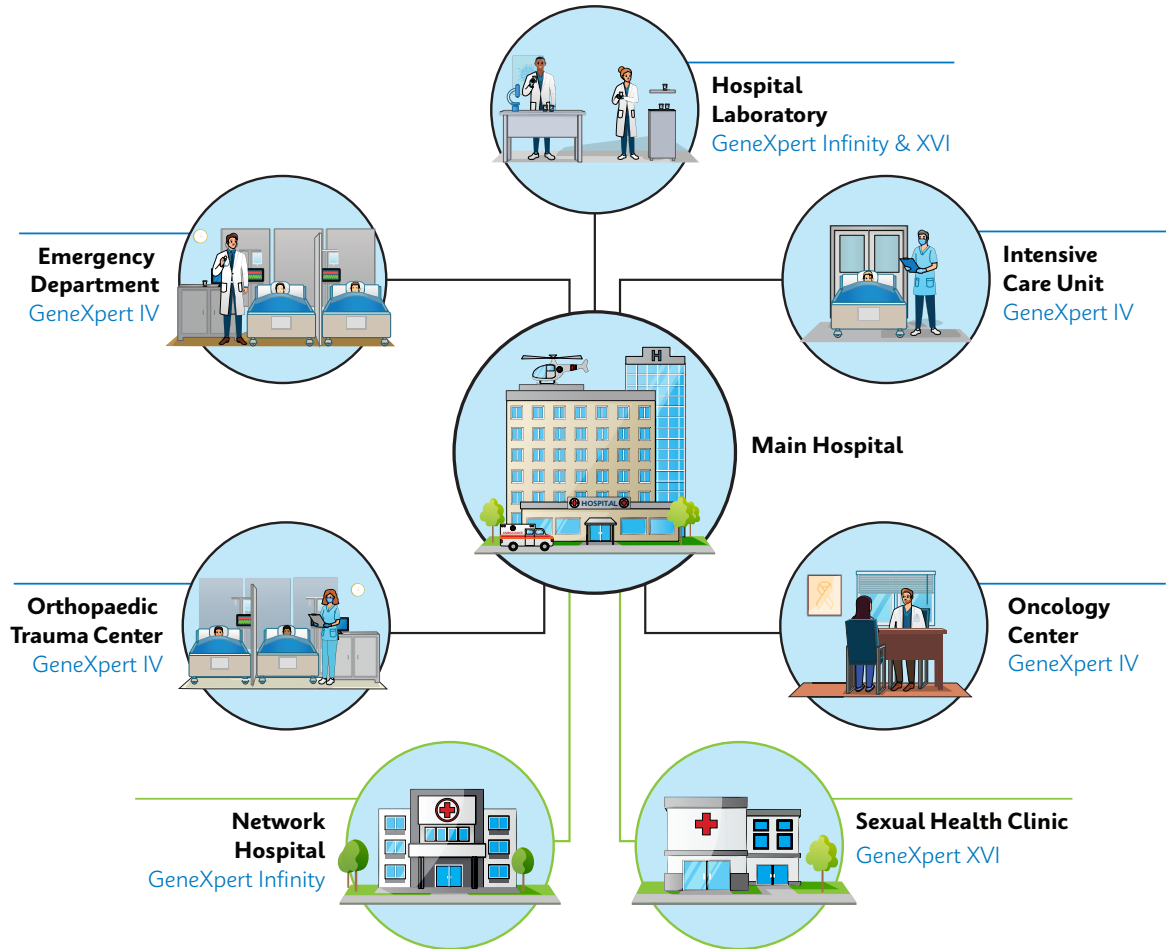
[^] For use under an Emergency Use Authorization in the United States.

¹ Casari E, et al. Reducing rates of C. difficile infection by switching to a stand-alone NAAT with clear sampling criteria. Antimicrob Resist Infect Control. 2018 Mar;7(40).

² Corless C, et al. Impact of different carbapenemase-producing Enterobacteriales screening strategies in a hospital setting. IPIP. 2020 May;2(3):100011.

2 Enable High-Quality Answers for Anyone, Anywhere, Anytime*

Now more than ever, immediate access to fast and accurate answers is essential for improving infection control and patient management. Cepheid's GeneXpert® system provides on-demand PCR answers within and across sites of care, for optimized management of patients and infectious diseases everywhere, 24/7.



* Refer to package insert for intended use.



Broad Infectious Disease Coverage

Through the most easy-to-use PCR menu

With testing that spans 20+ disease states, Cepheid is the ideal diagnostics partner for improved clinical decision making and patient care.

**Coverage, plus
Accuracy, plus
Peace of mind**

That's the **PCR^{plus}** advantage.
From Cepheid.

Respiratory Diseases	<i>Combined and stand-alone tests for:</i> Influenza Respiratory syncytial virus (RSV)	COVID-19 Group A <i>Streptococcus</i>
Healthcare-Associated Infections & Other Infectious Diseases	MRSA screening MRSA infection <i>C. difficile</i> -associated disease Enterovirus-mediated meningitis	Vancomycin-resistant bacteria Carbapenem-resistant bacteria Norovirus
TB & Emerging Infectious Diseases	Tuberculosis Rifampicin resistance	Ebola virus
Women's & Sexual Health	Chlamydia Gonorrhea	Trichomonas Group B <i>Streptococcus</i>
Oncology & Genetics	<i>Chronic Myeloid Leukemia</i> BCR-ABL monitoring	<i>Coagulation</i> Factor II and Factor V Leiden



Visit us at www.cephid.com

to explore Cepheid's full AMR and infectious disease solutions

US-IVD. *In Vitro* Diagnostic Medical Device. May not be available in all countries.

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