

**Antimicrobial Arrowgard Blue Advance® Catheters
Protect from pathogens on the CDC's "Severe Threats" List**

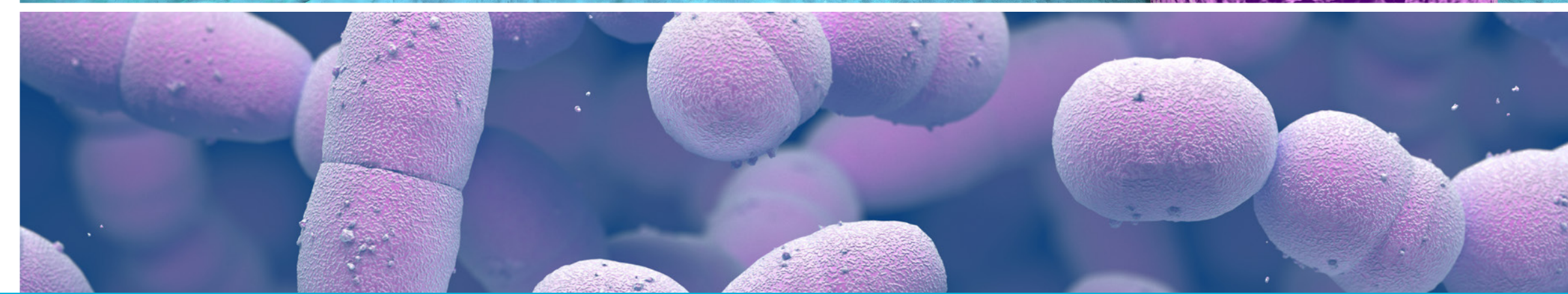
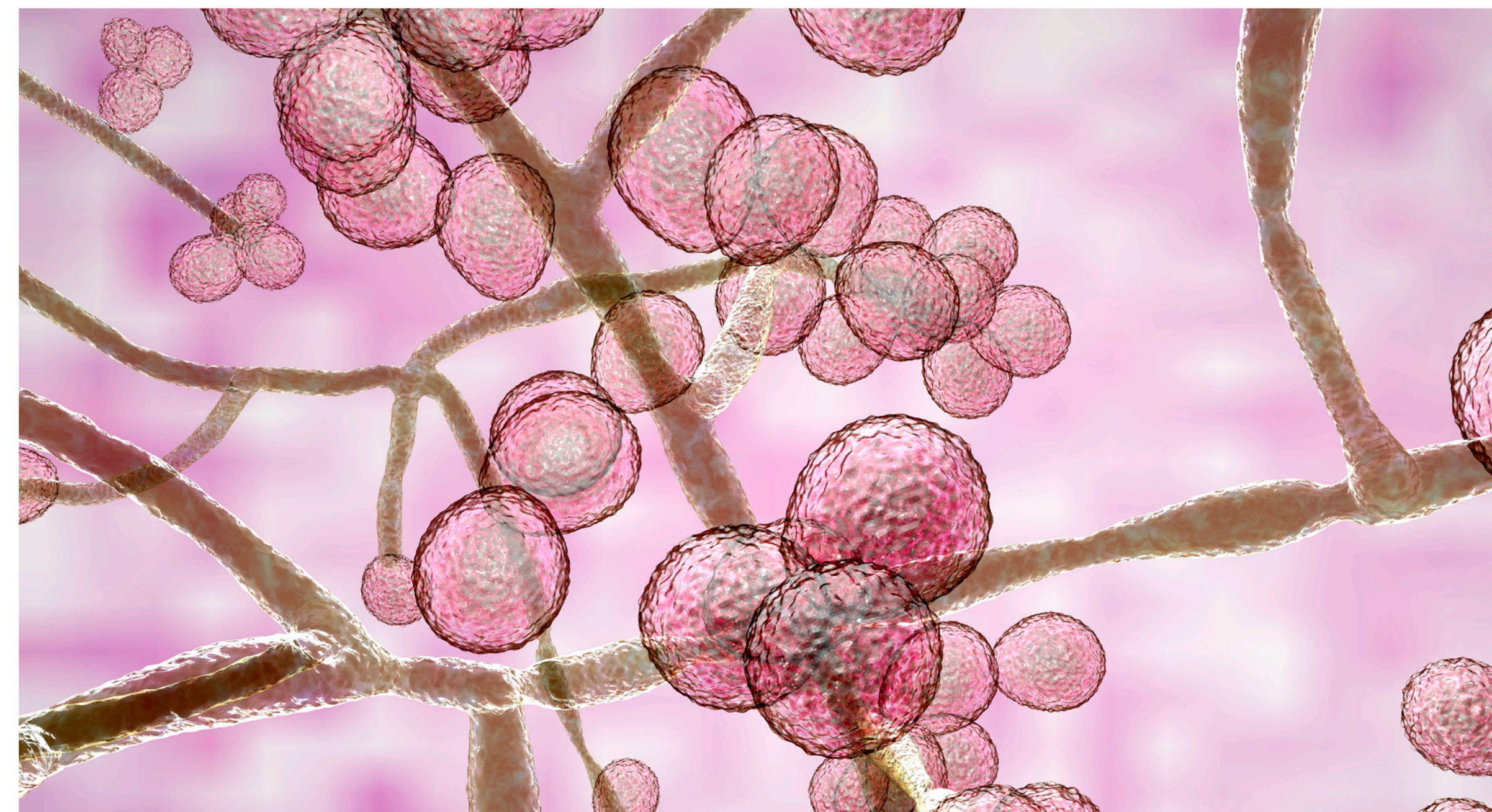
What's the threat?

The invisible risk

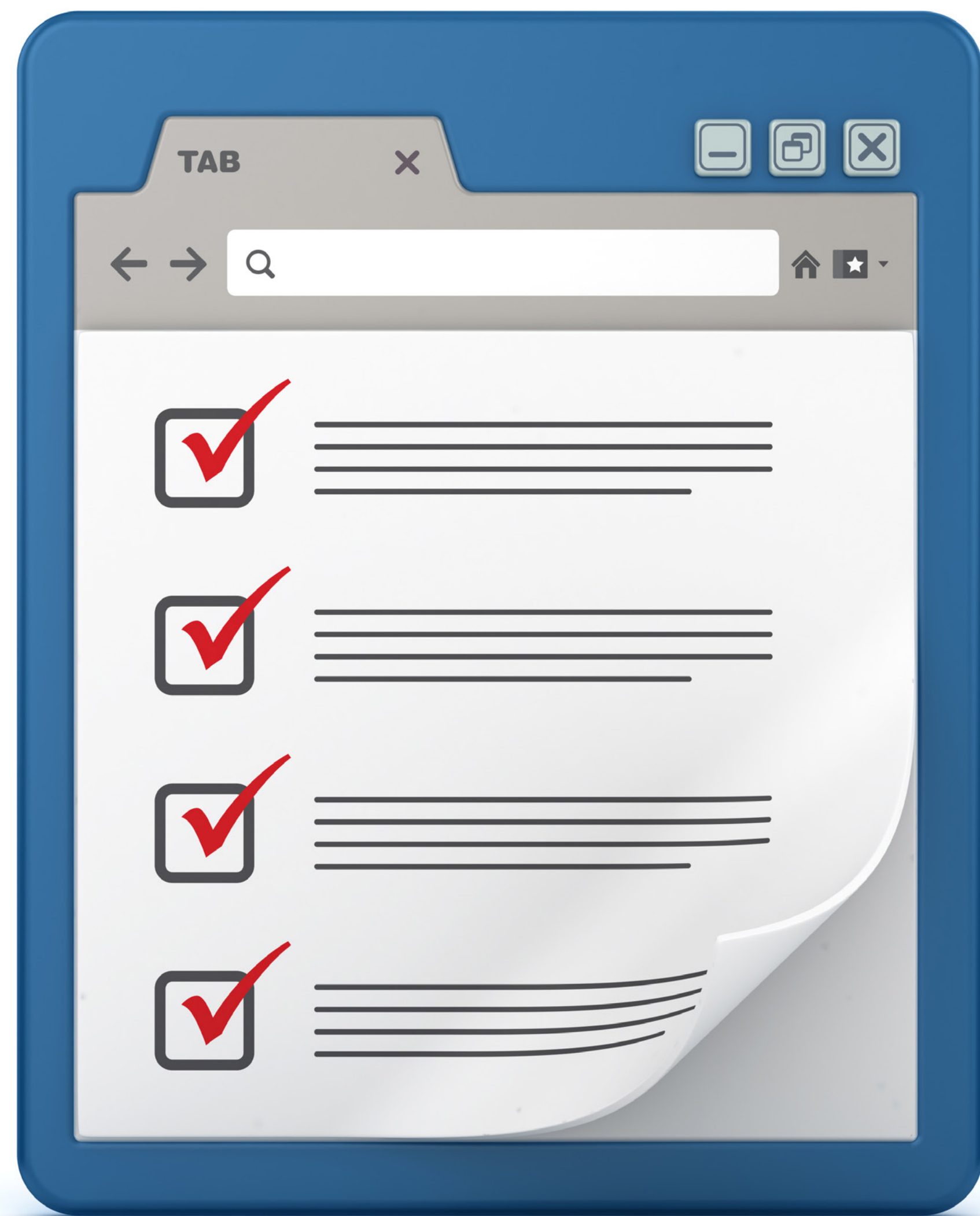
According to the CDC, antibiotic resistance is one of the greatest global public health challenges of our time.¹



[Click here to read the 2019 CDC AR Threats Report](#)



How are providers responding?



Antimicrobial Stewardship Programs

Hospital antimicrobial stewardship programs are implementing **systematic programs and practices in order to limit the use of antibiotics** that could result in increasing antibiotic resistance in dangerous bacteria.

What are your challenges?

Stopping the spread of antibiotic resistant pathogens

Catheters help treat patients, but can be pathways for germs (including antibiotic resistant bacteria) to enter the body.



[Click here to read evidence-based practices from the 2020 Joint Commission National Patient Safety Goals](#)



How can Teleflex help?

With Arrowg+ard Blue Advance[®] Catheters

Arrowg+ard Blue Advance Catheters are the 3rd generation of chlorhexidine-based protective treatment from Teleflex.

**99.99%
Colonization
Reduction³**

Arrowg+ard Blue Advance Catheters have been shown to provide at least 99.99% reduction in catheter colonization by gram-positive and gram-negative bacteria and fungi for at least 30 days.²



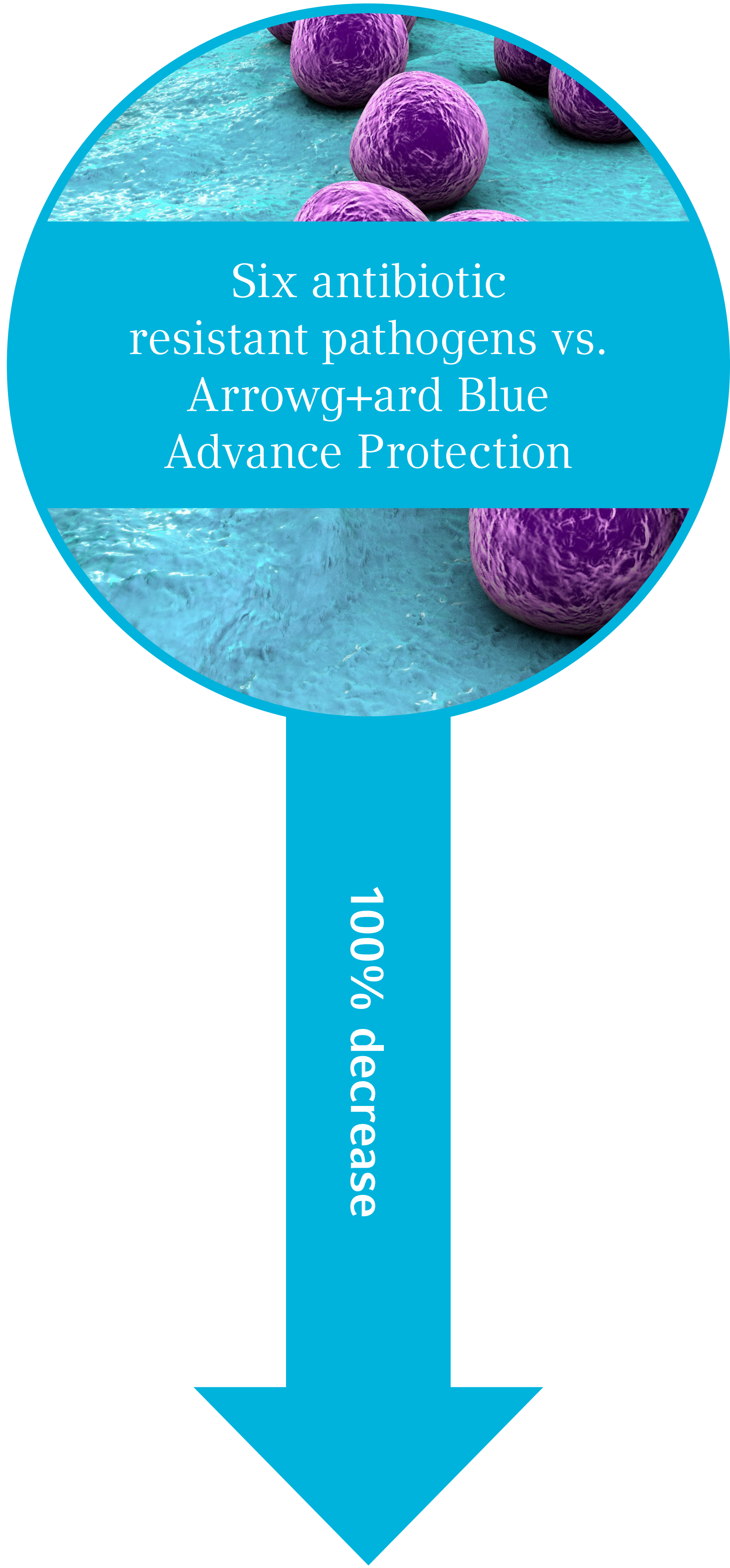
Where's the proof?

The power of blue

In a controlled benchtop study, antimicrobial **Arrowg+ard Blue Advance[®] Catheters** demonstrated a **100% decrease in bioburden on the catheter surface of various CLABSI pathogens³ (6 of them antibiotic resistant and on the CDC Serious Threats¹), including:**

- Methicillin Resistant *Staphylococcus aureus*
- Carbapenem Resistant *Enterobacter cloacae*
- Methicillin Resistant *Staphylococcus epidermidis*
- Carbapenem Resistant *Escherichia coli*
- Carbapenem Resistant *Klebsiella pneumoniae*
- Vancomycin Resistant *Enterococcus faecalis*

See page 9, *Comparing Antimicrobial Effectiveness*, for testing data.



Six antibiotic resistant pathogens vs. Arrowg+ard Blue Advance Protection

100% decrease

Where's the proof?

In that same test, the **Bard® PICC** and the **AngioDynamics Bioflo® PICC** actually demonstrated an **increase in bioburden** in five out of six tested antibiotic resistant pathogens³ on the CDC Serious Threats List¹ tested, including:

- Methicillin Resistant *Staphylococcus aureus*
- Carbapenem Resistant *Enterobacter cloacae*
- Carbapenem Resistant *Escherichia coli*
- Carbapenem Resistant *Klebsiella pneumoniae*
- Vancomycin Resistant *Enterococcus faecalis*

See page 9, *Comparing Antimicrobial Effectiveness*, for testing data.



Using a protected Arrowg+ard Blue Advance® Catheter can help you combat antibiotic resistant bacteria by:

- **Reducing catheter colonization** from major CLABSI causing pathogens including antibiotic resistant bacteria on
- **Protecting the catheter inside and out** with antimicrobial protection along the entire intra- and extraluminal fluid pathway, including the extension lines



Click here to see video of the antimicrobial Arrowg+ard Blue Advance Catheter in action

Comparing Antimicrobial Effectiveness³

Objective: To evaluate and compare the antimicrobial effectiveness of three different types of commercially available Peripherally Inserted Central Catheters (PICCs) against six antibiotic-resistant bacteria (superbugs).

Methodology: Equal segments were cut from three groups of PICCs: Chlorhexidine-based (Group A), Fluorine-based (Group B), and untreated (Group C). The external surface of the cut segments was challenged with one of the six tested organisms for 24 hours. All six organisms were tested on each of the three groups. The concentration of the challenge inoculum for each organism was at 1.5×10^5 Colony Forming Units per Milliliter (CFU/mL). Adherent microorganisms were recovered by sonication in Dey-Engley (D/E) neutralizing broth and subsequent quantitative plating on D/E agar. The Log_{10} reduction (LR) was determined by comparing the CFUs recovered from the segments to the initial inoculum concentration as well as to the positive control. Each test was done in triplicate. Percent increase/decrease in bioburden (adherent microorganisms) was calculated from Log_{10} reduction results.

Results:

| ORGANISM | ARROWG+ARD BLUE ADVANCE [®] PICC | | | BARD [®] PICC | | | ANGIODYNAMICS BIOFLO [®] PICC | | |
|---|---|----------------------------------|---|----------------------------------|----------------------------------|---|--|----------------------------------|---|
| | CHALLENGE CONCENTRATION (CFU/ML) | RECOVERED CONCENTRATION (CFU/ML) | PERCENT DECREASE/ INCREASE IN BIOBURDEN (%) | CHALLENGE CONCENTRATION (CFU/ML) | RECOVERED CONCENTRATION (CFU/ML) | PERCENT DECREASE/ INCREASE IN BIOBURDEN (%) | CHALLENGE CONCENTRATION (CFU/ML) | RECOVERED CONCENTRATION (CFU/ML) | PERCENT DECREASE/ INCREASE IN BIOBURDEN (%) |
| Methicillin Resistant Staphylococcus aureus ATCC 33591 | 150,000 | 0 | 100.00 | 150,000 | 2,398,833 | -1,499.22 | 150,000 | 3,235,937 | -2,057.29 |
| Carbapenem Resistant Enterobacter cloacae BAA-2468 | 150,000 | 0 | 100.00 | 150,000 | 32,359,366 | -21,472.91 | 150,000 | 23,988,329 | -15,892.22 |
| Carbapenem Resistant Escherichia coli BAA-2469 | 150,000 | 0 | 100.00 | 150,000 | 478,630 | -219.09 | 150,000 | 1,202,264 | -701.51 |
| Carbapenem Resistant Klebsiella pneumoniae BAA-2470 | 150,000 | 0 | 100.00 | 150,000 | 64,565,423 | -42,943.62 | 150,000 | 17,782,794 | -11,755.20 |
| Methicillin Resistant Staphylococcus epidermidis ATCC 51625 | 150,000 | 0 | 100.00 | 150,000 | 3,981 | 97.35 | 150,000 | 1,047 | 99.30 |
| Vancomycin Resistant Enterococcus faecalis ATCC 51299 | 150,000 | 0 | 100.00 | 150,000 | 3,715,352 | -2,376.90 | 150,000 | 2,630,268 | -1,653.51 |

Disclosure Statement – Study was funded by and authors are employed by Teleflex LLC.

Rx only.

Contraindications: Clinical assessment of the patient must be completed to ensure no contraindications exist. Arrowg+ard Blue Advance® Catheters are contraindicated in the following areas:

- Patients with known hypersensitivity to chlorhexidine
- In presence of device related infections
- In presence of previous or current thrombosis in the intended vessel or along the catheterized vessel pathway.

No correlation between *in vitro/in vivo* testing methods and clinical outcomes have currently been ascertained.

References:

1. Centers for Disease Control and Prevention. (2019). Biggest Threats and Data: 2019 AR Threats Report. Retrieved from <https://www.cdc.gov/drugresistance/biggest-threats.html> on 1/28/2020
2. *In vitro data* on file 2010: AVER-004371 and AVER-004483. No correlation between *in vitro* / *in vivo* testing methods and clinical outcomes have currently been ascertained.
3. Gupta N, Giare-Patel K, et al. Are PICCs with eluting technology more effective against antibiotic resistant bacteria than non-eluting technology? Poster #T3. Disclosure Statement – Study was funded by and authors are employed by Teleflex LLC.

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