

Announcing landmark license and collaboration agreements to treat bacterial infections by expanding access to cefiderocol in 135 countries

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Antimicrobial resistance is an urgent and important public health threat

- Antimicrobial resistance (AMR) is called the “silent pandemic” and contributed to nearly 1.3 million deaths worldwide in 2019*
- If nothing is done to address it, AMR is estimated to cause more than 10 million deaths per year by 2050 (its economic impact is estimated to be \$100 trillion)**
 - The G7 Health and Finance Ministers have recognized this issue as being critical to address, and have highlighted it in recent communiques, committing to expedite the implementation of strategies to improve the market for antibiotics
- Developing and delivering effective antibiotics to patients is very challenging
 - Hurdles for conducting clinical trials (diagnosis, patient enrollment, differences in regulatory requirements between Europe, the U.S. and Japan, etc.)
 - Product use needs to be monitored and restricted to avoid resistance development
 - Manufacturing and supply chain are more complex
- Providing access to antibiotics is very different than doing so for antivirals

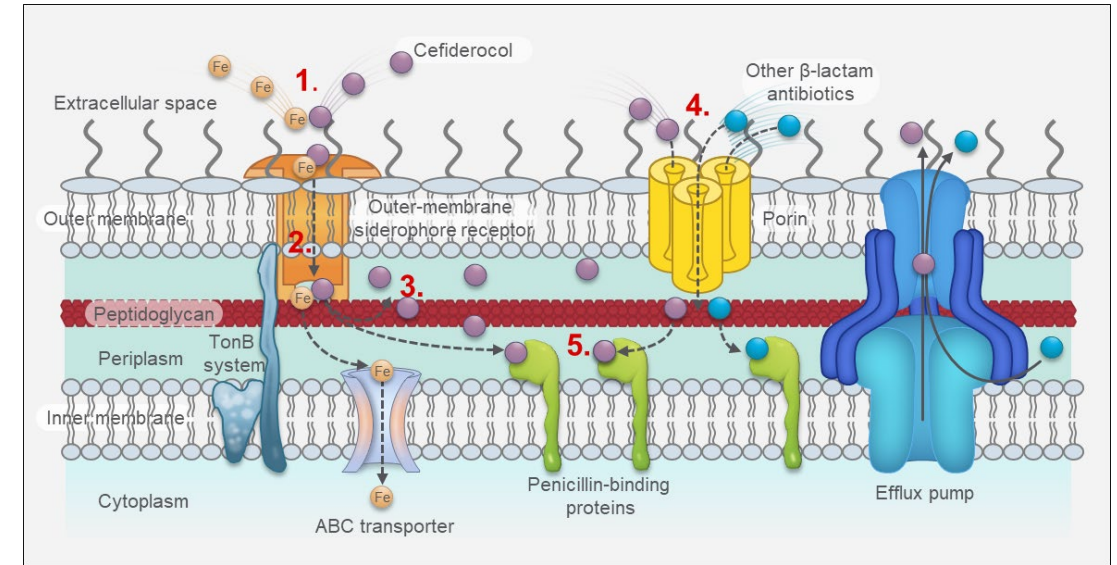


*Murray, CJL. “Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis”, *The Lancet* (2022)

** O’Neill, J. Review on Antimicrobial Resistance (2016)

Cefiderocol is a key tool in combatting AMR

- Cefiderocol is a novel siderophore cephalosporin antibacterial drug which effectively penetrates the outer cell membrane of Gram-negative pathogens
- Cefiderocol is intended for patients with serious Gram-negative bacterial infections (which can include infections that are resistant to other antibiotic treatments)
- Recent inclusion on the WHO Model List of Essential Medicines demonstrates the value that cefiderocol may bring to patients around the world



Cefiderocol binds free iron (1) and then actively enters the bacterial cell through the bacterial iron transport system (2). Like other β-lactam antibiotics, cefiderocol can also enter the bacteria through porin channels (4). Once across the outer membrane, the iron dissociates (3) and the cephalosporin binds to penicillin-binding proteins (5), similar to other cephalosporins, to disrupt cell wall synthesis and contribute to potent antimicrobial activity against Gram-negative bacteria.

[Nature Outlook](#)

Providing world-wide access to cefiderocol is challenging

- SHIONOGI is committed to providing appropriate access to cefiderocol for patients with confirmed or suspected infections due to multi-drug-resistant organisms
- Providing access to new antibiotics in LMICs is a complex process
 - Complex to manage local regulations; need to ensure proper pharmacovigilance and compliance
 - Complicated, unstable supply chain; potential for diversion
 - Challenges associated with appropriate use and stewardship under a variety of healthcare settings
 - Limited guidance and training on stewardship and appropriate use
 - Complex economics from buyer and supplier sides
- SHIONOGI is committed to “Protect people worldwide from the threat of infectious diseases” as our key focus
 - With these complexities and SHIONOGI’s current footprint, SHIONOGI sought to pursue a LMIC partnership to overcome access challenges



Collaboration between SHIONOGI, GARDP, and CHAI can address access challenges

GARDP brings:

- AMR focus and expertise
- Strong link to WHO
- Footprint in Latin America
- Long-term commitment



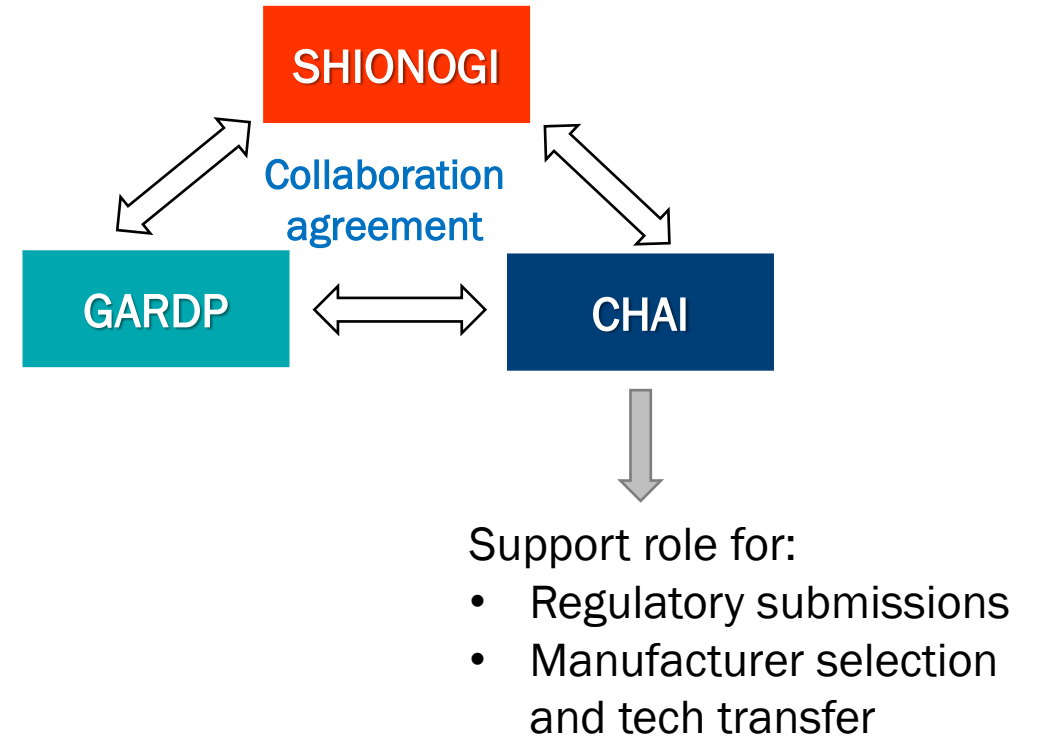
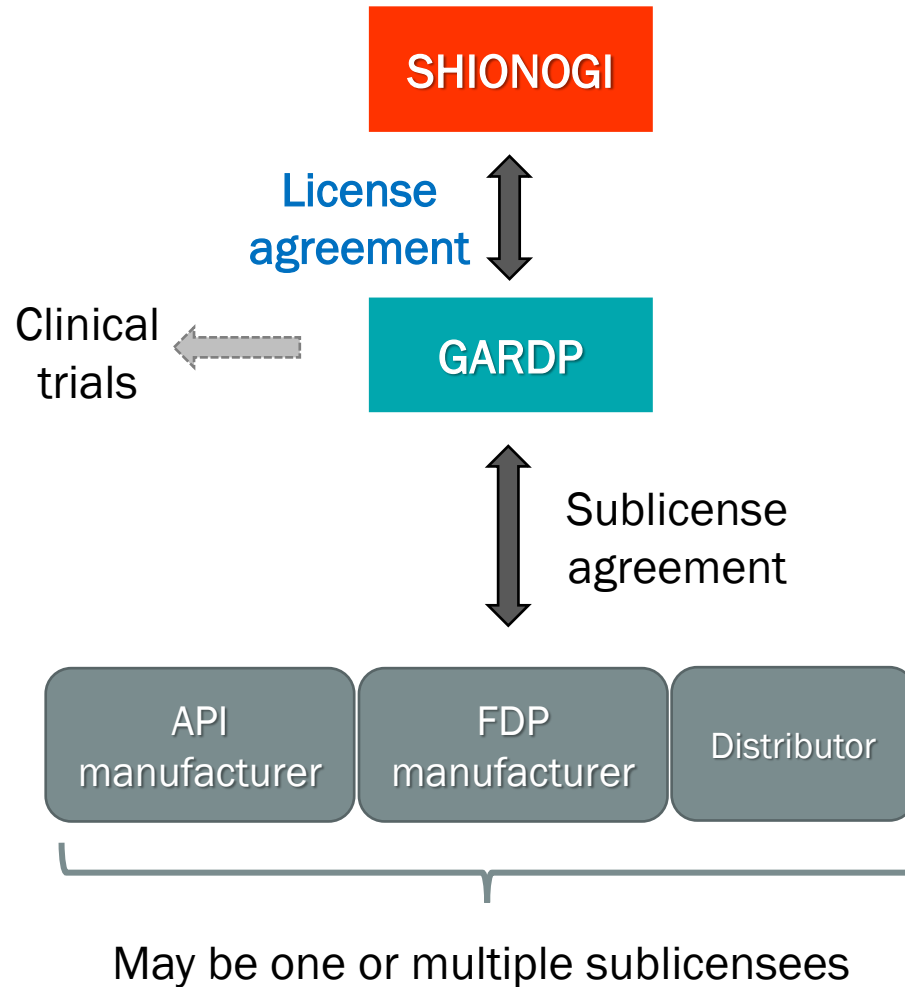
CHAI brings:

- Expertise in managing large HIV LMIC access programs
- Broad footprint in southern Africa, Asia
- Short- to medium-term focus
- Rela

SHIONOGI brings:

- Cefiderocol
- Product knowledge, manufacturing experience
- Commitment to access

A new approach to improve access : Collaboration structure



A new approach to improve access : Outline of the contract

- The License Agreement is between SHIONOGI and GARDP for non-exclusive rights to commercialize cefiderocol in 135 countries, including all low-income and most lower middle- and upper middle-income countries
 - This territory is a much larger geographic scope than other access agreements
- The Collaboration Agreement is between SHIONOGI, GARDP, and CHAI to provide affordable and sustainable access to cefiderocol for patients in need while preserving efficacy and appropriate use and encouraging good antimicrobial stewardship
- SHIONOGI's involvement does not stop at the signing of these agreements
 - SHIONOGI will continue working with GARDP and CHAI to ensure that quality product is produced, that it is used appropriately, and that the markets and public health infrastructure are able to deliver product to patients
 - SHIONOGI is committed to the AMR Industry Alliance's program for managing manufacturing discharge and will ensure that appropriate environmental discharge standards are part of the manufacturing site selection process

The expertise and experience of GARDP and CHAI give SHIONOGI confidence that this collaboration will be successful in delivering on its goals

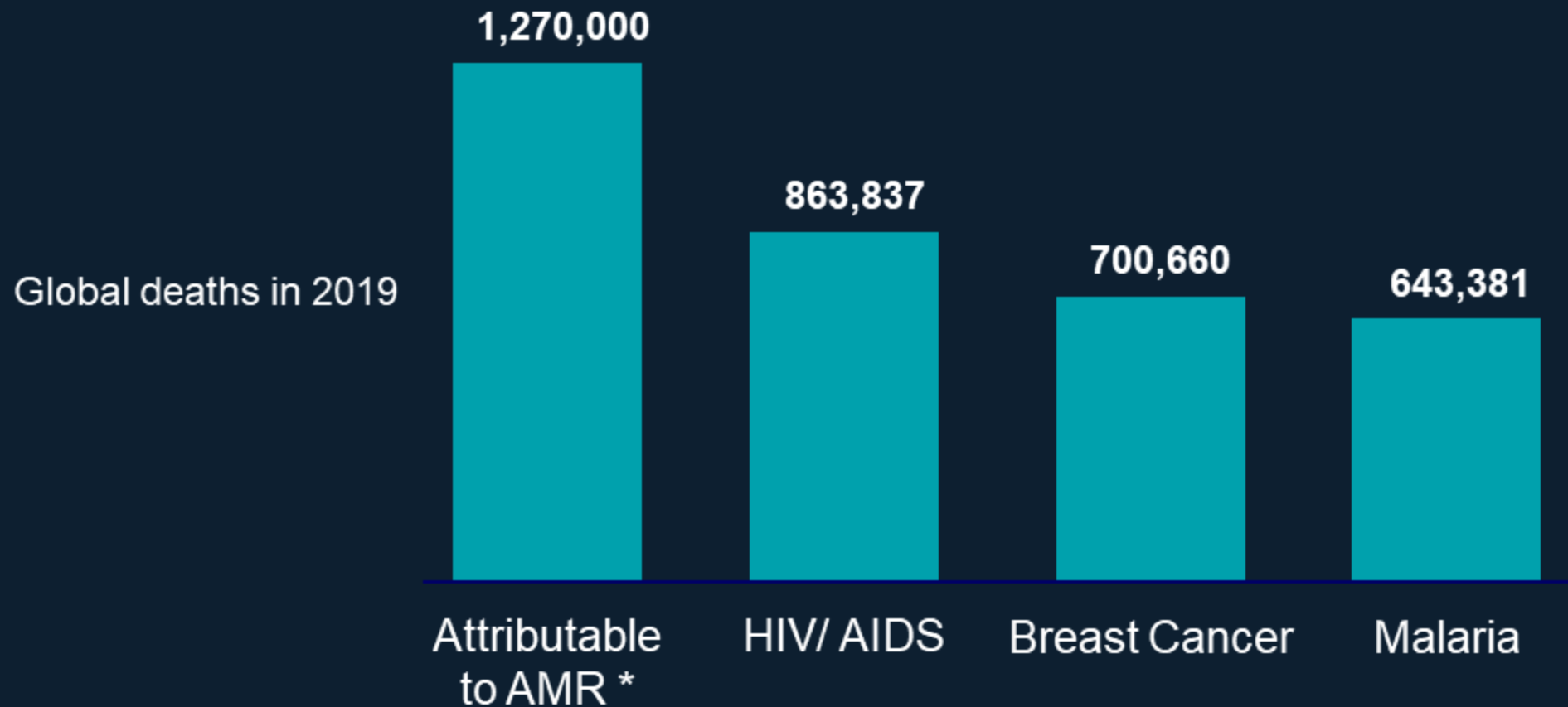


Dr Manica Balasegaram
Executive Director, GARDP

“Without antibiotics, we lose cancer patients, COVID patients and you can’t get your hip replaced. In short, we lose modern medicine.”


*- Gian Maria Rossolini, Professor of Clinical Microbiology,
University of Florence (Italy)*

Antimicrobial resistance (AMR): A leading global health threat



**AMR deaths largely in low- and middle-income countries*

Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis, *The Lancet*, Jan 2022



GARDP is at the heart of the AMR response

Our
focus

Global health

Accelerating R&D while
securing access

Treating sepsis and sexually
transmitted infections

Building a portfolio of critical
antibiotic treatments

Access to antibiotics

Barriers to access



Access for appropriate use



Partnering to break down access barriers

- No single actor alone can take on the challenge of expanding antibiotic access for appropriate use.
- By bringing together key actors from the private sector and non-profit sector, this project aims to overcome barriers so that cefiderocol reaches patients in need.



A comprehensive approach to making cefiderocol accessible



Enable manufacturing of an affordable, quality-assured product from a licensed manufacturer.

Support registration and commercialization in countries with high burdens of resistant infections.



Develop and disseminate best practices and evidence for appropriate use of cefiderocol, in compliance with its label.

Work with partners to develop and implement product introduction plans.



Japan's commitment to tackling AMR

- As a G7 and G20 member, Japan has been calling for action and investment to address antimicrobial resistance, a major public health threat.
- GARDP's work is made possible in part thanks to funding from the Government of Japan, which has pledged to 1 billion yen for the period 2020-2025.
- Efforts by Japanese companies like Shionogi to address global public health issues is beneficial for the world at large as well as Japan.





Dr David Ripin
Chief Science Officer & Executive Vice President
for Infectious Diseases, CHAI

The collaboration agreement will support the **introduction and appropriate use of quality-assured cefiderocol** in a wide range of countries that would otherwise have delayed access, if any, to this antibiotic.



Adding cefiderocol to the AMR toolbox in low- and middle-income countries



CHAI has a proven track record



35+ countries

Around the world in which CHAI operates.



140+ global deals

To lower drug, diagnostic, and other health product prices by 50 to 90%, to accelerate access to developing countries.



84% of staff

and 44% of CHAI leadership are based in the countries where we operate programs.



19 years experience

Founded in 2002 with a focus on HIV/AIDS, our scope has expanded, but our objective remains to save millions of lives.



125+ countries

Have access to CHAI-negotiated price reductions for key high-quality medicines, diagnostics, vaccines and devices.



A unique approach

Ambitious goals that focus on transformational change in global health.



Through this initiative we have the chance to **combat the silent pandemic of antimicrobial resistance** and ensure access to the newest treatments for patients regardless of where they live.



