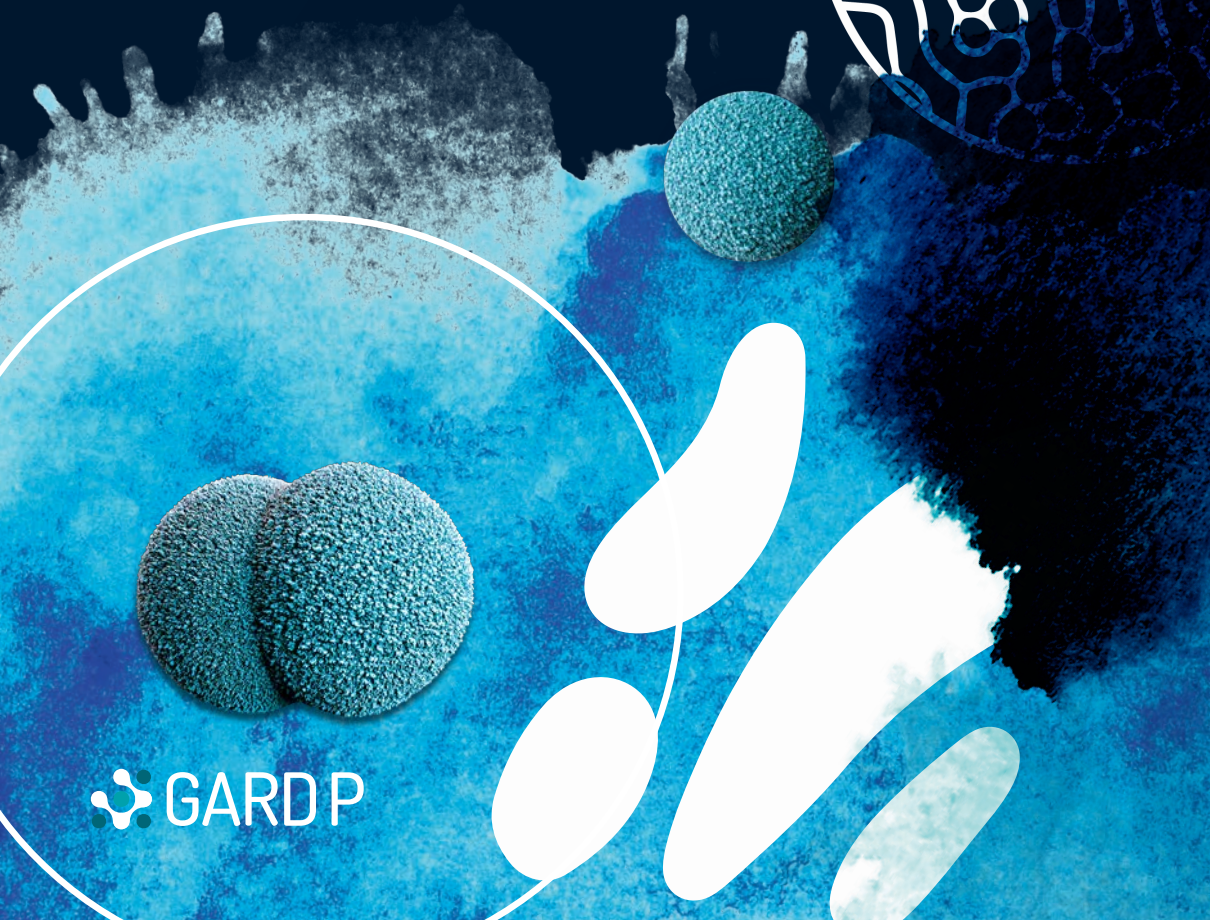


ACTIVITY REPORT 2021

Global Antibiotic
Research & Development
Partnership



 GARDP

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MESSAGE

FROM THE BOARD CHAIR & EXECUTIVE DIRECTOR

The arrival of COVID-19 has brought profound and often tragic disruptions to every facet of life.

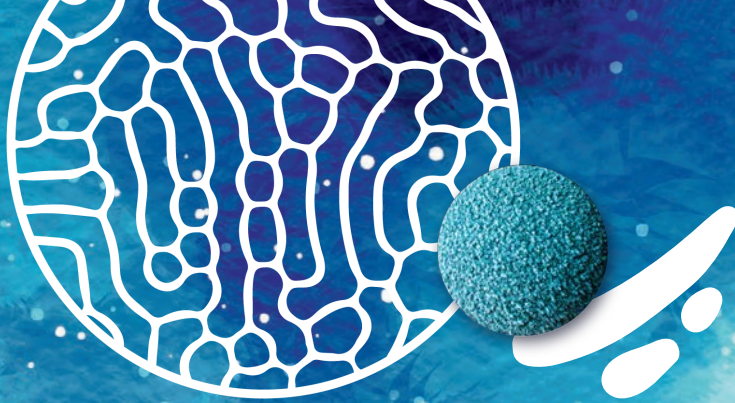
The arrival of COVID-19 has brought profound and often tragic disruptions to every facet of life. In 2021, we have nonetheless witnessed more of the astounding achievements that can be made through global investment into the research and development of diagnostics, vaccines, and treatments. We have also realised that, in the absence of equitable access to these tools, the SARS-CoV-2 virus continues to propagate and mutate, rendering all of us vulnerable.

The issue of inequitable access to new health technologies to address COVID-19 has highlighted the importance of our mission to accelerate the development and access of treatments for drug-resistant infections. A recent study in *The Lancet* highlighted the nearly 1.3 million deaths that occurred in 2019 due to antimicrobial resistance—more than malaria and HIV/AIDS—and made the case for greater access to effective antibiotics

for all people. The importance of GARDP's mission could not be more evident.

In our **sexually transmitted infections** programme, we continued to collaborate with Entasis Therapeutics on the development of a new drug, zoliflodacin, to treat gonorrhoea. This disease is on the rise globally and has become increasingly resistant to existing treatments. In 2021, we activated two new countries (South Africa and Thailand) in our pivotal phase 3 trial and finished the year with significant recovery in patient recruitment following the initial impact of the pandemic. GARDP also signed a memorandum of understanding (MOU) with the Thailand Ministry of Public Health to improve treatment for gonorrhoea in the country by exploring timely access to newly developed antibiotics like zoliflodacin.

We made significant progress in our efforts to address **serious bacterial infections**, which are among the major causes of disability and



Manica Balasegaram
GARDP EXECUTIVE DIRECTOR

death for people in healthcare settings. At the end of 2021, through our collaboration with the biotech Venatorx Pharmaceuticals, patient recruitment for the phase 3 trial of cefepime-taniborbactam was completed. This novel antibiotic is designed to treat infections that are resistant to second- and third-line carbapenem antibiotics. Separately, in July, we announced an MOU with the Clinton Health Access Initiative (CHAI) and Japanese pharmaceutical Shionogi & Co., Ltd. The MOU is designed to work toward affordable, sustainable access to cefiderocol, an antibiotic that is included on the World Health Organization's (WHO) Model List of Essential Medicines, and that is effective

against several pathogens included on the WHO Priority Pathogens List.

Our **children's antibiotics** programme reached a critical milestone: we completed one of the largest observational studies on the care of babies with sepsis, one of the leading causes of death and disability in newborns up to 28 days old. The results of this ambitious study are forthcoming. In addition, we identified three existing antibiotics (fosfomycin, flomoxef, and amikacin) that have the potential to be used to treat babies with sepsis. Informed by our observational study, we have designed a global public health trial to rank the safety and efficacy of new



Ramanan Laxminarayan
GARDP BOARD CHAIR

combinations of these antibiotics against existing antibiotic treatments (including the current WHO-recommended treatment, ampicillin–gentamicin) for the treatment of sepsis in newborns. The trial will also consider how these combinations can best be used in hospital settings with varying levels of antibiotic resistance. Moreover, we are exploring partnerships to support access to these treatments, including with German pharmaceutical company InfectoPharm for fosfomycin.

The issue of **access** is integral to all of our research and development programmes. We are working to ensure that new and existing antibiotic treatments like zoliflodacin and cefiderocol are affordable and available globally, particularly in low- and middle-income countries (LMICs), which shoulder a greater burden of drug resistance.

In our **Discovery & Exploratory Research (DER) programme**, we completed work on three chemical series derived from novel chemical entity hits obtained in our high throughput screening.

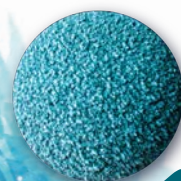
We have been able to drive the conversation around the challenges and opportunities related to antimicrobial resistance (AMR) through our **Scientific Affairs** programme. In 2021, we saw substantial growth of the


Antimicrobial Encyclopaedia, worked with the British Society for Antimicrobial Chemotherapy (BSAC) and three German guest organizations to host the virtual Antimicrobial Chemotherapy Conference (ACC) 2021, increased the geographic reach of our webinars (which, altogether, saw nearly 3,000 participants from 108 countries join 13 events), and launched the AMR Discussion series. The REVIVE webinars aim to preserve and share knowledge among the scientific community working on AMR, while the newly launched AMR Discussions webinars are a platform for experts in the field to share ideas on how to tackle drug resistance.

GARDP also played a role in increasing **political engagement** to counter antibiotic resistance. Declarations by the G7 Health and Finance Ministers in June and December drew attention to the issue of AMR and cited GARDP's role to “support the development and approval of much-needed innovative antimicrobial therapeutics”. In addition, as part of the UNITE Annual Parliamentary Summit in December, GARDP organized a high-level panel on the role of G7 leadership in accelerating the AMR response.

In 2021, we were honoured to have been granted a **privileged status** by the Swiss Federal Council, which recognises the major role we play in the fight against antibiotic resistance. We are one of a few international

“Patient need—not money or location or social status—should determine whether or not a patient receives an effective antibiotic treatment.”





foundations that have been granted such status since the Swiss Host State Act took effect in 2008.

Alongside the long-term ongoing commitments of key funders such as Germany and the Netherlands, we are incredibly grateful for **new and renewed funding commitments** from the governments of Australia, Japan, Monaco, Switzerland and the UK, as well as from the South African Medical Research Council and the Canton of Geneva. By the end of 2021, GARDP had invested over €75 million since our inception

in developing and making accessible antibiotic treatments. The ongoing support of our funding partners is critical to building on these investments.

COVID-19 has taught us that we must do everything we can to avoid another pandemic that disrupts entire economies, societies and health systems. We remain fully committed to addressing antibiotic resistance, a growing health emergency. Together with our partners, GARDP is rising to meet this great health challenge of our time.

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INTERVIEW

MANICA BALASEGARAM: BUILDING ON 5 YEARS OF IMPACT

WHY WAS 2021 A SUCCESS?

Last year was a very important one for GARDP. We continued to deliver on our portfolio projects, including a pivotal stage of our phase 3 trial of zoliflodacin, a new treatment for gonorrhoea. We supported our partner Venatorx with its regulatory trial of cefepime–taniborbactam for complicated urinary tract infections. We also enhanced our knowledge-sharing efforts through REVIVE’s online platform. Given that we did all of this while mitigating the ongoing impact of the COVID-19 pandemic and maintaining a strong focus on antibiotic resistance, I believe we ended the year with a stronger team.

HOW WILL GARDP BUILD ON THE PAST FIVE YEARS OF IMPACT?

I think we are now in a great position to focus on three key things. The first is continuing to develop, and potentially expand, our portfolio of antibiotics. Second, we will do much more in-depth work on access, which is a critical component of our social mission. And third, we will deliver these expansions of GARDP’s mission by securing the necessary resources. This is vital considering, on the one hand, that many countries are now much more focused

on long-term pandemic preparedness beyond COVID-19, and, on the other, the most recent data on antibiotic resistance. There is a significant and increasing burden of disease from drug resistance that is currently projected to cause around 1.3 million deaths—a number that is sure to keep rising. Taking on these challenges will require a significant focus on obtaining new and renewed funding, as well as on developing existing partnerships and forging new ones. As such, 2022 will be a pivotal year as we look to build the foundations we need for the work to come.

WHY IS ACCESS CENTRAL TO GARDP’S WORK?

Access is a very complicated issue, and the COVID-19 crisis has highlighted the many challenges in this area. In short, we cannot just deliver innovation and expect things to fall into place, and we have to learn that lesson—especially when it comes to public health challenges as complex as antibiotic resistance. We have to focus far more on access if we are to deliver on our mission, not least because there are very few other actors already doing so. As our portfolio continues to mature and expand, access will only become more

important to maximizing the impact of the products we bring to market.

SECURE (see 'Access for all') will be a key part of our access strategy going forward. Although the initiative will incorporate many proven pathways to delivering access, SECURE is highly innovative in the sense that we will be combining them into a framework specifically developed for the problem we are trying to solve.

HOW WILL YOU CAPITALIZE ON GARDP'S UNIQUE COLLABORATIVE MODEL TO FACE THE NEW CHALLENGES AHEAD?

I think there is a growing appetite to look at new cooperative models that involve a range of sectors and countries. What we have to work on now is getting the political and financial support we need, working directly with key partners and countries, developing new collaborative models and pilots, and implementing demonstrable pathways. All of that will take time, but

we have already begun by using our existing individual projects as pathfinders, as we are doing with cefiderocol (see 'Access for all').

One particular challenge is the fact that overall financing for antimicrobial resistance (AMR) is inadequate and, in R&D, funding is currently geared more toward early-stage development. While I think that is probably a good thing during this initial period, we need to begin shifting the focus and significantly enhancing financing towards late-stage development and access. Fortunately, given the institutional experience and expertise that GARDP has built over the last five years, I think we are in a good position to begin working with a range of partners to play a key role in covering this critical gap.

MANICA BALASEGARAM

Executive Director of GARDP

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GOAL

ACCESS FOR ALL

At GARDP, we are committed to fostering innovation and eliminating barriers to accessing new and existing antibiotics for the people who need them, regardless of location or socioeconomic status. This is vital not just for those in immediate danger from infection, but for all of us—the challenge of antibiotic resistance is a global one, and emerging drug-resistant infections can quickly spread beyond their points of origin. As such, we take a holistic view of access at the global, regional, national, and local levels, and address access barriers along the entire drug-to-patient pathway.

KEY ATTRIBUTES OF GARDP'S ACCESS STRATEGY

COMPREHENSIVE

Build access considerations and interventions into GARDP's work at every stage of the drug-to-patient pathway, from R&D to policy and advocacy, market and patient access, and implementation.

RAPID

Accelerate equitable access so that quality products arrive at points of care whenever and wherever they are needed.

SUSTAINABLE

Extend the useful life of antibiotics through rational use and stewardship programmes that improve access to effective treatments, while also working to build sustainable markets for products.

INTEGRATED

Collaborate and partner with local and international actors—including industries and countries—taking into account local contexts, needs, and capabilities.



HOW GARDP AND ITS PARTNERS WORK TO DELIVER ACCESS FOR ALL



To achieve our access goals, we:

- **support** access-oriented target product profiles, market signals, donor frameworks, and policies that can help link innovation and access;
- **facilitate** sufficient and predictable supplies of quality antibiotics actors—including industries and at affordable yet sustainable prices;
- **generate** evidence to demonstrate safety and effectiveness, as well as to support optimal antibiotic use in real-world contexts;
- **overcome** barriers to availability, such as lack of registration and poor quantification of antibiotic demand; enable the updating and dissemination of normative and national guidelines and essential medicine lists, focusing on product-epidemiology matching,
- and **collaborate** with key stakeholders, such as ministries of health, to build robust product introduction and stewardship plans that reinforce rational use.

GARDP maintains relationships with both innovators and generic producers to monitor the product landscape and identify opportunities to enhance drug access. For instance, at the

end of 2020, GARDP signed a Memorandum of Understanding (MOU) with Dr Reddy's Laboratories and Aurigene Pharmaceutical Services Limited (APSL) to explore joint opportunities around delivering access to zoliflodacin, a new treatment for gonorrhoea, in South Africa and Thailand.

GARDP also works with innovative companies and other access organizations to explore how we can combine our expertise to collaborate on accelerating the delivery of access in LMICs. This is the aim of the MOU that GARDP signed with the Clinton Health Access Initiative (CHAI) and Shionogi & Co., Limited related to cefiderocol—an antibiotic for bacterial infections in patients with limited treatment options—in July 2021.

CHAI already has access capabilities developed in the HIV market, while GARDP has extensive expertise in antibiotic development, technical aspects of antimicrobial resistance, and developing solutions to access barriers for the antibiotic market. Together, this puts us in a strong position to work with Shionogi—a Japanese pharmaceutical company whose footprint lies

primarily in Asia, Europe, and the US—to bring cefiderocol to patients in a large territory of LMICs in a way that ensures access through appropriate use and minimizes emerging resistance to the drug.

At GARDP, we see cefiderocol as a pathfinder that will help us develop our future approach to access. We have already started to examine criteria—including epidemiology, national health systems, and regulatory pathways—that will determine how we will ensure access to cefiderocol in LMICs. Once a license agreement is signed, we will turn our attention to securing a quality-assured local manufacturer, drug registration, partner engagement, and planning for early introduction and rollout. All of this will enable GARDP to increase our expertise, gather evidence, and build networks around the different aspects of access, so we will be better positioned to deliver new antibiotics to those who need them in the future.

SECURE – THE ‘ANTIBIOTIC FACILITY’: A NEW MODEL FOR ACCESS



Recent data show that death rates due to AMR are highest in some LMICs. As such, antibiotic resistance is not only a major health problem globally, but also a particularly serious issue for some of the world’s poorest countries. Increasing access to antibiotics would both reduce the burden of AMR in some locations where second-line antibiotics are unavailable and save lives¹.

SECURE—a collaborative initiative developed by GARDP and the World Health Organization (WHO) with the support of other international organizations—aims to help countries address the silent pandemic of drug-resistant bacterial infections by expanding access to a portfolio of essential antibiotics. Without such an aligned and collaborative global approach, the international community will face increasingly common outbreaks in which antibiotics are ineffective against new strains of resistant bacteria, further exacerbating antibiotic resistance.

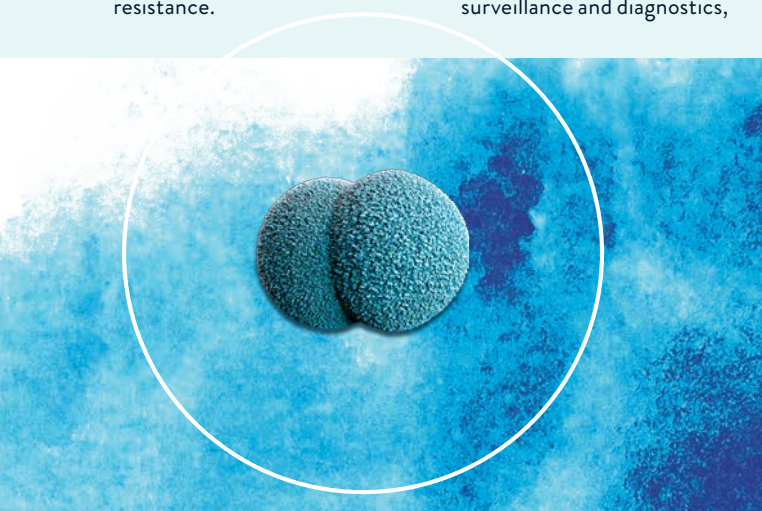
SECURE’s antibiotics portfolio will be adapted to individual countries’ needs, with a focus on existing antibiotics that are subject to frequent supply chain interruptions alongside new reserve antibiotics. Participating countries will be able to purchase the antibiotic portfolio at affordable prices through UNICEF or alternative procurement mechanisms.

SECURE will work with each country and local partners to ensure good stewardship, including guideline updates, appropriate use, improved surveillance and diagnostics,

and the collection of real-time clinical data. Clinical sites will help deliver post-approval trials to further assess the efficacy of new antibiotics for the most threatening drug-resistant infections.

This pioneering initiative will not only increase access to life-saving drugs, but also make an important contribution towards the development of a new business model for antibiotics and extend the evidence base for the clinical utility of novel antibiotic treatments.

Before scaling up SECURE in every country that would benefit from the initiative, GARDP and its partners will launch a four-year pilot at the end of 2022/beginning of 2023 in participating countries. The pilot phase will serve to demonstrate SECURE’s public health value, test and learn from the model, and implement key activities to ensure pandemic preparedness.





ACHIEVEMENTS

OUR PROGRESS AGAINST ANTIBIOTIC RESISTANCE

In 2016—the year of GARDP’s founding—the Review on AMR commissioned by the UK Government stated that this global threat could kill 10 million people a year by 2050². In the five years since, the world has become more conscious of the growing need to tackle AMR. The landmark Global Research on Antimicrobial Resistance (GRAM) study, published in 2022 in *The Lancet*, stated that antibiotic resistance is a leading cause of death globally, higher than HIV/AIDS or malaria¹.

This study showed that, in 2019, AMR directly caused approximately 1.27 million deaths and was associated with around 3.7 million more¹. The problem is most acute in low- and middle-income countries (LMICs), with the highest death rates occurring in sub-Saharan Africa and South Asia due, in part, to the higher prevalence of critical infections such as lower respiratory, bloodstream, and intra-abdominal infections for which effective treatments can be difficult to access in these regions¹.

COUNTRIES AND ORGANIZATIONS ARE BEGINNING TO ACT

As the antibiotic resistance threat grows ever more tangible, organizations and governments around the world have started to launch programmes designed to address this challenge. According to WHO, 140 countries now have national action plans for tackling antimicrobial resistance³, a 40% increase since 2018⁴. The G7 also now recognizes antibiotic resistance as a priority from both health and economic perspectives, and, in June⁵ and December 2021⁶, the issue was discussed at the G7 finance meeting for the first time.

ANTIBIOTIC RESISTANCE WAS RECOGNISED AS A KEY HEALTH ISSUE AT G7 MEETINGS IN JUNE AND DECEMBER 2021.

“We appreciate the work of initiatives including the Global Antibiotic Research and Development Partnership (GARDP) [...] to support the development and approval of much-needed innovative antimicrobial therapeutics.”
G7 Health Ministers’ Meeting, communiqué, 4 June 2021



AWARENESS IS GROWING & MORE PARTNERS ARE JOINING GARDP

By the end of 2021, GARDP had invested over €75 million since our founding into developing antibiotic treatments and making them accessible.

Many partners have joined GARDP in its mission to develop

new or improved treatments for drug-resistant infections that pose the greatest threat to health during the past five years (see 'Partners').

Awareness is growing not only among governments, but also

private companies of the crucial role they must play in developing and expanding access to new antibiotics. However, we still need much more investment to bring the growing threat of drug resistance under control.

#RESISTRESISTANCE CAMPAIGN

From June to December 2021, GARDP ran a digital campaign to raise awareness of drug resistance and call for more action to tackle this global health

issue. The content was seen by over 15 million people in Switzerland, the UK, and the US, and generated over 13,000 visits to the GARDP website: gardp.org.

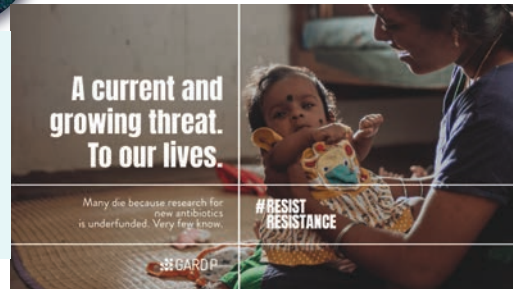
A current and growing threat. To our lives.

Many die because research for new antibiotics is underfunded. Very few know.

#RESISTRESISTANCE



over 13,000 visits
to gardp.org.



15 million people
saw the content in Switzerland,
the UK, and the US.

THE CHALLENGES AHEAD

We have made great progress in raising awareness of drug resistance, but the hardest work still lies ahead. Now, we must continue to enhance international recognition of AMR while accelerating the work required to tackle this global threat. This includes

prevention and control, vaccination, minimizing the unnecessary use of antibiotics, reducing their use outside of treating human disease (especially in animal agriculture), and investing in the development pipeline for new antibiotics and combination regimens¹.

“Inventing and developing novel antibiotics for resistant infections is only part of the solution to the global challenge of AMR. Appropriate use of new antibiotics is vital to ensuring their durability around the world. Through our partnership with GARDP, we aim to deliver access to new antibiotics and ensure their optimal use for all patients in need.”

MANOS PERROS
CEO of Entasis Therapeutics

PIPELINE

GARDP'S PORTFOLIO OF ANTIBIOTIC TREATMENTS

Since 2016, GARDP has developed a strong portfolio of antibiotics to treat drug-resistant infections and made progress through three core research and development programmes:

CHILDREN'S ANTIBIOTICS

SEXUALLY TRANSMITTED INFECTIONS

SERIOUS BACTERIAL INFECTIONS

Our children's antibiotics projects are currently focused primarily on clinical development, including conducting the first ever studies designed to evaluate drugs such as flomoxef and fosfomycin as alternatives in the treatment of neonatal sepsis. Meanwhile, zoliflodacin—a potential new treatment for gonorrhoea in our sexually transmitted infections programme—is being investigated in a pivotal phase 3 trial. Two antibiotics with the potential to treat infections

caused by WHO priority pathogens are part of our serious bacterial infections programme: cefepime-taniborbactam, for which we are in the recruitment stage of a crucial phase 3 clinical trial; and cefiderocol, which was recently approved by the Federal Drugs Administration (FDA) and European Medicines Agency (EMA). Access work activities have already begun for all the projects mentioned above.

DISCOVERY	DISEASE AREA	TRANSLATIONAL	DEVELOPMENT		REGULATORY	IMPLEMENTATION
		Pre-clinical / Early clinical	Paediatric	Phase 3	Registration Status	Registration Status
AMR Screening Consortium Eisai, Takeda & Daiichi S.	SERIOUS BACTERIAL INFECTIONS				Cefepime-taniborbactam (NCE) Venatorx Pharma**	Access Strategy
Antibiotic potentiators Calibr / Scripps			Cefiderocol*** Neonatal PIP / PSP		Cefiderocol (Shionogi)*** Approved USA / EU	Access Opportunity
Natural Products HIPS		Potential candidate A (NCE or repurposed)				
CHILDREN'S ANTIBIOTICS	NEONATAL SEPSIS	IV Fosfomycin	Treatment regimens Public health strategic efficacy and safety trials		Approved in EU, with Neo & Paeds label	
		Flomoxef			Approved in Asia: Neo & Paeds data	
		Amikacin			Approved globally: Neo & Paeds data	
	PAEDIATRIC DEVELOPMENT	Polymyxin B*	Regulatory paediatric plans (serious bacterial infections paediatric and neonates)		Approved in USA, with limited Neo & Paeds label	
		Paediatric cefepime-taniborbactam (NCE) Venatorx Pharmaceuticals				
		Potential candidate A (NCE or repurposed)				
SEXUALLY TRANSMITTED INFECTIONS				Zoliflodacin (NCE) Entasis Therapeutics Inc.	Access strategy including manufacturing development	
		Potential candidate B (NCE)			Approved in USA / EU for CABP	Surveillance / Prevalence studies

* Under review / on-hold

** Development of cefepime - taniborbactam is sponsored by Venatorx Pharmaceuticals and has been funded in whole or in part with federal funds from NIAID/ NIH/HHS and BARDA/ ASPR/HHS in the United States and the Wellcome Trust in the United Kingdom

*** Potential pipeline addition, MOU signed between GARDP, Shionogi and Clinton Health Access Initiative (CHAI) to explore Cefiderocol access in LMICs



CHILDREN'S ANTIBIOTICS

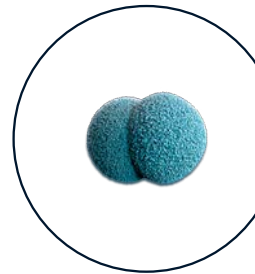
WHY NEW CHILDREN'S ANTIBIOTICS MATTER

Antibiotic resistance disproportionately affects children, especially newborns (babies under 28 days old). In 2019, over 560,000 neonatal deaths were associated with AMR, including nearly 140,000 deaths directly attributable to AMR⁷.

Despite the urgent need for antibiotics that meet the unique needs of children, the development of new treatments and expansion of access to existing antibiotics continue to be neglected. GARDP created its children's antibiotics programme to address this

crucial gap in antibiotic R&D, with a particular focus on developing new antibiotic treatments for newborn babies who are most at risk from drug-resistant infections.

**OUR PRIORITY:
REDUCE MORTALITY
FROM NEONATAL SEPSIS**



Neonatal sepsis is a life-threatening condition often associated with a bacterial bloodstream infection that affects up to 3 million newborns every year⁸.

WHO estimates that early diagnosis and treatment could prevent around 84% of deaths from neonatal sepsis⁹. However, high rates of drug resistance often complicate treatment, with up to 40% of bacterial infections in hospitalized babies now resistant to standard treatments¹⁰.

As such, we urgently need effective new antibiotics for this vulnerable population.



BEHIND THE SCENES:

Treating babies with neonatal sepsis in South Africa, with neonatologist Dr. Tanusha Ramdin

Dr. Tanusha Ramdin, a senior neonatologist at Charlotte Maxeke Johannesburg Academic Hospital, is passionate about working with GARDP and its partners to give more babies with neonatal sepsis a fighting chance to survive.

I work with very tiny babies, who are especially vulnerable to infections because of their underdeveloped immune systems. If they pick up an infection, their chances of dying are high. Most childhood deaths from blood infections occur in newborns up to 28 days old.

In these situations, we have to administer antibiotics to babies very quickly. It's often a life-and-death situation. If a baby responds well to an antibiotic, it can be lifesaving. It's an incredible relief.

Antibiotic resistance is a major problem, and superbugs have made the situation much worse. In our ward, we only have one antibiotic that still works against these

superbugs. We are running out of options. If we don't get more antibiotics soon, more babies are going to die. We desperately need research and investment into new, safe, and effective antibiotics for our newborns, who have different needs than adults. The treatments, formulations, and dosages all need to be tailored to neonates.

Most childhood deaths from blood infections occur in newborns up to 28 days old.

CHILDREN'S ANTIBIOTICS

2021 PROGRESS

OUR ACHIEVEMENTS

IDENTIFIED

three potential combination treatments for neonatal sepsis

ADVANCED

the clinical development of cefepime-taniborbactam for children

INITIATED

collaborations to develop access to antibiotics

R&D PROGRESS IN NEONATAL SEPSIS

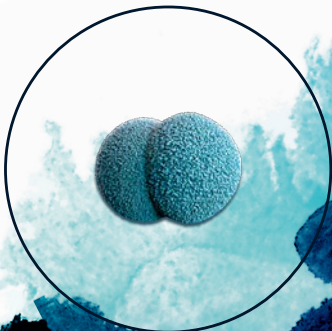
In 2020, GARDP worked with Penta - Child Health Research, the University of Antwerp, the Medical Research Clinical Trial Unit at University College London, and St. George's, University of London to complete the global neonatal sepsis observational study, one of the largest ever on the care of babies with sepsis.

This research, which looked at over 3,200 newborns across 19 sites in 11 countries, provided evidence that will fill gaps in our knowledge, transform treatments, and save lives. GARDP presented preliminary conclusions at the European Society of Clinical Microbiology and Infectious Diseases (ECCMID) conference in July 2021 and plans to publish the full results in 2022.

We identified five antibiotics as potential treatments for neonatal sepsis, with three showing particular promise

when evaluated in combination using the Hollow Fibre Infection model: **amikacin**, **fosfomycin**, and **flomoxef**¹¹.

In 2022, GARDP is planning to launch a strategic public health clinical trial that will validate the flomoxef–fosfomycin dosage and evaluate and rank the three new combinations (fosfomycin–amikacin, flomoxef–amikacin, and flomoxef–fosfomycin) alongside currently used combinations of antibiotics as reported from the neonatal observation study. These existing combinations include the WHO standard-of-care for neonatal sepsis: ampicillin–gentamicin, cefotaxime, piperacillin–tazobactam with or without amikacin, ceftazidime with or without amikacin, and meropenem. The trial, which aims to enrol over 3,000 babies globally, will start in three hospitals in 2022—one in Kenya and two in South Africa—with additional hospitals to follow in up to ten countries.



BRINGING CEFEPIME-TANIBORBACTAM TO CHILDREN

In 2020, GARDP joined forces with Venatorx Pharmaceuticals to study the use of cefepime-taniborbactam in children and newborns. Cefepime-taniborbactam is an investigational combination of cefepime, an existing antibiotic, and taniborbactam, a novel, broad-spectrum beta-lactamase inhibitor that restores the activity of cefepime against carbapenem-

resistant Enterobacterales (CRE) and carbapenem-resistant *Pseudomonas aeruginosa* (CRPA).

GARDP and Venatorx have started the paediatric programme focusing on the required non-clinical studies. Three of those studies were completed in 2021, and the definitive study is planned for 2022.

NEW COLLABORATIONS TO EXPAND ACCESS TO CHILDREN'S ANTIBIOTICS

Access is a crucial aspect of GARDP's partnerships, including those around children's antibiotics. It is central to our planned agreements with InfectoPharm and Shionogi to develop new antibiotic treatment combinations for neonatal sepsis, as well as our collaboration with Venatorx to enable the use of cefepime-taniborbactam for children. It was also a key component of our discussions with Shionogi on cefiderocol (see 'Access for all'), where we agreed to

work together to bring cefiderocol to patients in LMICs for both adults and children. Shionogi is conducting the initial paediatric development programme, and two of the three studies in children aged three months to 18 years are ongoing. The final study, which will establish the correct dose for infants under three months old, is currently planned to start in late 2022.

OUR NEXT CHALLENGE?

"In 2022, we will focus our efforts on using what we learned in our neonatal observational study to pursue clinical research around the three antibiotic combinations that show promise in treating newborns with sepsis. This will include identifying new study sites and building on the strong framework for our clinical trials. We will also continue to strengthen our collaborations around accelerating access to existing antibiotics for children."

SALLY ELLIS

Children's Antibiotics Project Leader, GARDP



SEXUALLY TRANSMITTED INFECTIONS

KEEPING SEXUALLY TRANSMITTED INFECTIONS TREATABLE

In 2020, an estimated 374 million new cases of curable sexually transmitted infections (STIs) (gonorrhoea, chlamydia, syphilis and trichomoniasis) occurred among 15-to 49-year-olds worldwide. This included 82 million cases of gonorrhoea¹², a number that is on the rise^{12 13}.

OUR PRIORITY: DEVELOPING A LIFE-CHANGING NEW TREATMENT FOR GONORRHOEA

Resistance of *Neisseria gonorrhoeae* to first-line antibiotics has grown rapidly in recent years, resulting in increasingly limited treatment options^{12 14}. In 2017–2018, 70 countries reported resistance to at least one antibiotic treatment, including azithromycin, ceftriaxone, cefixime, and ciprofloxacin¹⁴.

Gonorrhoea complications disproportionately affect women and include pelvic inflammatory disease, ectopic pregnancy, infertility, and increased risk of HIV transmission. Effective, accessible, and affordable antimicrobial treatment is imperative for the management of gonorrhoea as a public health goal¹⁴.

With new antibiotics taking more

than 10 years and US\$1.5 billion to develop¹⁵, we cannot afford any delay. GARDP is acting now to ensure that gonorrhoea remains treatable for future generations.

In partnership with Entasis Therapeutics, GARDP is leading the late-stage development of a new antibiotic, zoliflodacin.

Zoliflodacin is bactericidal, with a low frequency of resistance and potent antibacterial activity against *N. gonorrhoeae*, including multi-drug-resistant strains¹⁶. GARDP is sponsoring the pivotal global phase 3 clinical study, which is funded with the support of our donors.





BEHIND THE SCENES:

Addressing a public health challenge in Thailand

Thailand is one of the countries in which we are evaluating zoliflodacin. The trial sites—the Silom Community Clinic, the Institute of HIV Research and Innovation Foundation (IHRI), and the Bangrak STIs Center—are all based in Bangkok.

*“A *Neisseria gonorrhoeae* infection is particularly insidious, as it often lacks symptoms. However, if left untreated, gonorrhoea can have serious and permanent consequences, including infertility, ectopic pregnancies, and an increased risk of contracting HIV. This trial is an opportunity to address this public health challenge, which particularly affects the at-risk groups our clinic serves: men who have sex with men, and transgender women.”*

JOSEPH WOODRING

Principal Investigator for the zoliflodacin trial, Silom Community Clinic; and Senior Medical Officer, Centers for Disease Control and Prevention, Thailand

SEXUALLY TRANSMITTED INFECTIONS

2021 PROGRESS

OUR ACHIEVEMENTS

ADVANCED R&D

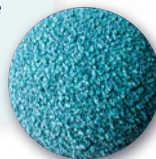
through several projects, including the development of an in vitro Hollow Fibre Infection Model (HFIM) to examine the pharmacodynamic dosing, bacterial kill, and resistance suppression of zoliflodacin against *Neisseria gonorrhoeae*

ACTIVATED

new countries and sites and recovered recruitment (following the impact of the COVID-19 pandemic) for the phase 3 trial of zoliflodacin, a potential treatment for gonorrhoea

LED

key initiatives that will facilitate future access to zoliflodacin



R&D PROGRESS

In 2021, GARDP completed its hollow fibre work on zoliflodacin. This research, which was conducted at Örebro University Hospital, Sweden, aims to evaluate pharmacodynamic dosing, bacterial kill, and resistance suppression for zoliflodacin against *Neisseria gonorrhoeae*.

We have also launched research projects that will improve our understanding of the disease and public health needs in target countries. The Kenya Prevalence Survey on pregnant women and high-risk groups received approval, with the first site activation planned for 2022. The survey aims to estimate the burden of gonorrhoea and chlamydia among pregnant women and other high-risk populations.

Meanwhile, the WHO Research Project Review Panel (RP2) approved the Prevalence Survey protocol for estimating the frequency of bacterial STIs among pregnant women in Thailand, which GARDP has now

submitted to the WHO Ethics Review Panel (ERC) for assessment. The operating model for this study is currently under review.

Finally, in South Africa, GARDP and Wits Reproductive Health and HIV (Wits RHI) signed an agreement to collaborate on a project that will examine resistance to current treatments in pregnant women with gonorrhoea, with GARDP funding the microbiology assessments. We have also agreed a similar collaboration with the Foundation for Professional Development (FPD), in which we will conduct a study to assess the STI screening and treatment strategy in order to reduce the STI burden in pregnant women.

RECOVERING RECRUITMENT FOR PHASE 3 TRIAL

In 2019, GARDP and Entasis initiated the phase 3 trial of zoliflodacin, a potential treatment for gonorrhoea, with the first trial sites activated and patient recruitment started in the US in 2019 and in the Netherlands in 2020. During 2021, we opened the first sites in South Africa and Thailand, and ended the year with 14 trial sites activated. Since June 2021, there has been a consistent improvement in recruitment as we managed the impact of the unpredictable COVID-19 pandemic, primarily at our sites in South Africa, Thailand, and the Netherlands.

October 2021 was our best month for recruitment and, to date, South Africa has been the top-recruiting country. In addition, South Africa's participation is enabling the recruitment of a significant number of women, which is a critical outcome for the study.

GARDP also began working on adding new trial sites to the study by contacting potential locations in Belgium, South Africa, and the UK, as well as continuing to work intensively with current sites to enhance recruitment against the backdrop of COVID-19.

FACILITATING ACCESS IN COUNTRIES WITH THE GREATEST NEED

GARDP further developed its draft access strategy for zoliflodacin in 2021—including updated regulatory and market access pathway scenarios—to support the product's introduction in our territories following US FDA approval. We also signed a memorandum of understanding (MOU) with the Thailand Ministry of Public Health to improve treatment for gonorrhoea in the country by exploring timely access to new antibiotics like zoliflodacin.

In March 2021, GARDP initiated a series of actions to assess the evidence necessary to support the introduction and appropriate use of zoliflodacin in our territories. Our newly created Evidence Generation Working Group for zoliflodacin has had discussions on the focus and implementation of this evidence generation plan.

GARDP has also consulted with key experts in India, Kenya, Thailand, and South Africa to develop our understanding of STI management practices, the potential positioning of zoliflodacin, the added value of the treatment, and the additional evidence needed to support its appropriate use in these countries.

A second consultation phase, consisting of a survey of caregivers, has been concluded in South Africa and is underway in India and Thailand. To help evaluate data gaps between the FDA submission dossiers and country-specific requirements for registration, regulatory consultants have started assessments in Kenya and India and will soon begin similar work in South Africa and Thailand.

OUR NEXT CHALLENGE?

“In 2022, we will continue to progress the development of zoliflodacin by increasing the recruitment target of the phase 3 trial, initiating the final drug product manufacturing process, and further defining the public health value through regulatory and access pathways to ensure the future availability of a much-needed treatment option.”

SEAMUS O'BRIEN
R&D Director, GARDP



SERIOUS BACTERIAL INFECTIONS

DELIVERING NEW SOLUTIONS

Serious bacterial infections are a major cause of death in hospitals and healthcare settings. Bacteria can enter the body through wounds and surgery sites, ventilators, and intravenous or urinary catheters, leading to pneumonia, urinary tract, abdominal, soft tissue, and bloodstream infections. Drug resistance is making these infections increasingly difficult to treat.

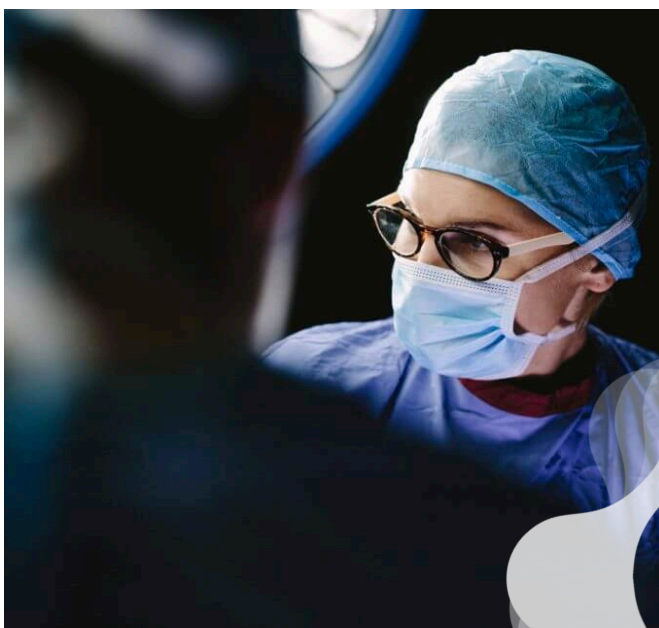
Surgical procedures and chemotherapy put patients at greater risk of bacterial infections. Between 39% and 51% of bacteria that can cause surgical-site infections and 27% of bacteria capable of causing post-chemotherapy infections are now resistant to

commonly used antibiotics in the US¹⁷. These risks are amplified for patients in low- and middle-income countries (LMICs) due to factors such as inadequate sanitation and infection control, as well as a lack of suitable diagnostics and effective treatments.

OUR PRIORITY: FINDING TREATMENTS FOR GRAM-NEGATIVE BACTERIA

The most difficult-to-treat hospital infections are caused by Gram-negative bacteria, which have evolved and/or acquired genetic material from other bacteria to become resistant to most antibiotic treatments and can pass along these traits.

Some of these bacteria have become resistant to carbapenems, which are considered antibiotics of last resort. Therefore, the WHO identifies carbapenem-resistant Gram-negative bacteria as 'critical level' priority pathogens that urgently require new treatments and as being among the greatest threats to health. GARDP is working with its partners to develop novel treatments for these dangerous bacterial infections.



BEHIND THE SCENES: LIMITING THE IMPACT OF COVID-19



COVID-19 has had a significant impact on the fight against antibiotic resistance. First, it has contributed to the problem directly as hospitals around the world treating seriously ill patients have been pushed to maximum capacity, leading to increased use of antibiotics and outbreaks of antibiotic-resistant infections.

Nevertheless, Venatorx has been able to continue developing its product portfolio, which includes antibiotic and antiviral drugs: “We, like many others, suffered last year, but we’re back up and running.” said Christopher Burns, President and CEO, Venatorx Pharmaceuticals (US).

Kamini Walia, Senior Scientist at the Indian Council of Medical Research (ICMR), recognized that their antimicrobial stewardship programme “definitely took a hit from the COVID outbreak for multiple reasons, like staff being diverted to COVID-related activities.” Even so, Walia noted that the ICMR was still able to capture important data on antimicrobial use in patients with COVID-19 and other diseases.

“We made significant progress in our efforts to address serious bacterial infections, which are among the major causes of disability and death for people in healthcare settings.”

HANAN H. BALKHY

Assistant Director-General for Antimicrobial Resistance
World Health Organization

SERIOUS BACTERIAL INFECTIONS

2021 PROGRESS

OUR ACHIEVEMENTS

VENATORX COMPLETED

enrolment for the pivotal phase 3 trial of cefepime–taniborbactam, a promising new antibiotic treatment

IDENTIFIED

sites to be part of a network in India and South Africa that will improve our understanding of how to treat drug-resistant infections in adults and children

INITIATED

an agreement to deliver access to cefiderocol in the countries that need it most



PAVING THE WAY FOR APPROVAL OF CEFEPIME-TANIBORBACTAM

GARDP is collaborating with Venatorx on cefepime–taniborbactam, a promising new antibiotic combination. This compound offers a potential treatment option for patients with serious infections caused by highly resistant bacteria, including those resistant to existing last-resort carbapenem antibiotics (see ‘Our priority: Finding treatments for Gram-negative bacteria’).

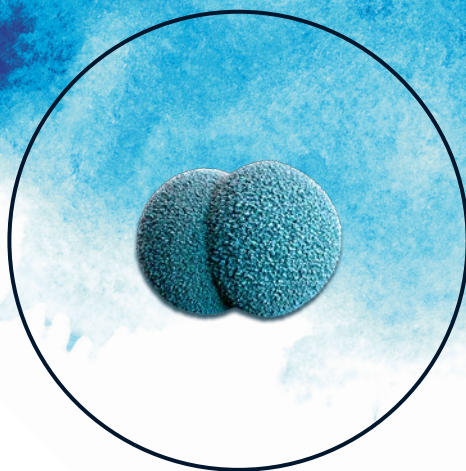
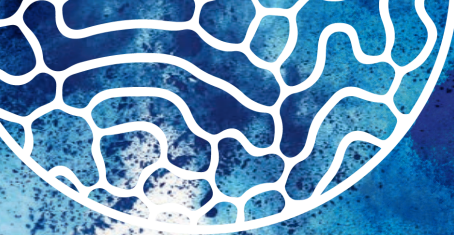
In 2021, we conducted site feasibility assessments in India and South Africa for an observational study that will further examine existing treatment paradigms for patients with serious carbapenem-resistant bacterial infections.

Last year also saw the completion of patient recruitment for the pivotal phase 3 trial of cefepime–taniborbactam, which will pave the way for the initial drug registration and eventual approval of this potential new combination treatment for clinical use. Once approved, Venatorx has granted GARDP exclusive rights to license and distribute cefepime–taniborbactam throughout most LMICs, which, in giving these countries access to a new treatment option where existing last-resort antibiotics are not enough, would be a significant breakthrough.

EXPANDING ACCESS TO CEFIDEROCOL

With its novel ‘trojan horse’ Gram-negative bacteria penetration mechanism, cefiderocol is a potential new treatment option for priority antibiotic-resistant infections. First approved in 2019, cefiderocol is active against many types of Gram-negative bacteria and is currently approved for use in the US and the EU.

In July 2021, GARDP signed a Memorandum of Understanding (MOU) with the Clinton Health Access Initiative (CHAI) and Shionogi & Co., Ltd to accelerate access—including in LMICs—to cefiderocol for bacterial infections in patients with limited treatment options (see ‘Access for all’).



OUR NEXT CHALLENGE?



“We have made good progress towards the development of new treatment options for serious bacterial infections. Together with Venatorx we aim to gain regulatory approval for cefepime-taniborbactam. We are focused more than ever on completing plans to expand access for this and other much-needed treatments.”

FRANÇOIS FRANCESCHI

Head of Asset Evaluation and Development and Serious Bacterial Infections Project Leader, GARDP

ADVANCING ANTIBIOTIC R&D

2021 PROGRESS

GARDP focuses on collaborating with partners on late-stage clinical trials to build a pipeline of new treatments. But to discover vital next-generation antibiotics, we must also address critically underfunded and neglected gaps in research and development. In 2021, GARDP's Advancing Antibiotic R&D activities included asset development and evaluation activities in three priority areas: children's antibiotics, sexually transmitted infections, and serious bacterial infections. Our R&D activities also progressed through Discovery and Exploratory Research (DER) and scientific partnerships.

DISCOVERY AND EXPLORATORY RESEARCH

SCREENING

chemical compound libraries in search of potential new antibiotics with activity against drug-resistant pathogens that urgently require new treatments

DEVELOPING

GARDP's models and collaborations to enable the identification of hit compounds and their prioritization for further work

IDENTIFYING

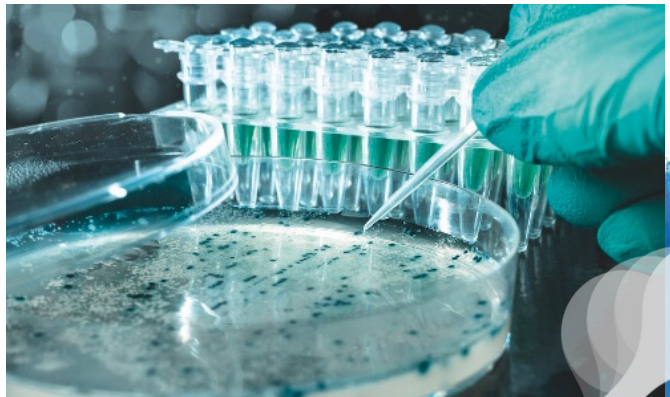
gaps in the global DER ecosystem to facilitate the exploration of opportunities for developing new discovery projects.



In 2020, GARDP evaluated ten new assets by conducting systematic reviews and meta-analyses of antibiotic combinations used on carbapenem-resistant pathogens.

In April, GARDP and Venatorx Pharmaceuticals announced a collaboration for the co-development of cefepime-taniborbactam, an asset identified by the asset evaluation and development programme in 2019. We integrated this new compound into our programme for the treatment of serious carbapenem-resistant infections (see 'Serious Bacterial Infections' to find out more).

With cefepime-taniborbactam active against two of WHO's three carbapenem-resistant priority pathogens, our current focus is on identifying compounds that complement the activity of cefepime-taniborbactam by having the potential to cover the third: carbapenem-resistant *Acinetobacter baumannii*.



In 2020, we evaluated four potential assets in clinical development and are having ongoing discussions with the companies that own these compounds.

The Asset Evaluation and Development team also began conducting non-clinical studies on an approved asset to determine whether it may also work as a potential treatment for STIs.



THE GLOBAL EARLY DISCOVERY PIPELINE REMAINS INSUFFICIENT

In December, GARDP published an open-access report which found that the world's current early discovery antibacterial pipeline targeting Gram-negative drug-resistant bacteria is scientifically diverse. Even so, our report also

concluded that many discoveries cannot be developed into new drugs and, as a consequence, the discovery pipeline remains insufficient for delivering the new antibacterial treatments we desperately need.

ADVANCING ANTIBIOTIC R&D

PRESERVING & SHARING SCIENTIFIC KNOWLEDGE

Alongside the growing alarm over drug resistance, there is also concern around the slow rate at which new treatments are being discovered and developed. As many antibiotic researchers re-focus their activities or leave the field entirely, we risk losing precious knowledge and experience—losses that seriously impact the discovery, research, and development of urgently needed treatments.

Since 2018, GARDP's Scientific Affairs team has worked to improve, accelerate, and streamline antibiotic discovery and R&D by facilitating learning and knowledge exchange, including by forging a strong network of world-class experts to ensure that knowledge is shared between clinical, industry, and academic researchers at all stages of their careers.

THE REVIVE COMMUNITY

In 2018, GARDP created the REVIVE website—revive.gardp.org—to capture and share new and existing knowledge and skills in antibiotic discovery and R&D, as well as to support and connect this global community. We host all of our Scientific Affairs activities and outputs on REVIVE on an open-access basis worldwide.

Our Scientific Affairs team has built relationships with over 70

scientific societies and partner organizations globally, which work with us to help disseminate GARDP's materials among the international antimicrobial R&D community. Six new societies joined our network in 2021, including the Australian Research Council (ARC) Research Hub to Combat AMR, the Federation of European Microbiological Societies (FEMS), and Students against Superbugs Africa.

2021 PROGRESS

- ▶ 46 new REVIVE experts joined the community, which now has 148 members.
- ▶ 13 webinars for 2,727 participants with an average of 210 participants per webinar from 108 countries. Recordings of all our webinars are freely available on revive.gardp.org.
- ▶ 10 new Antimicrobial Viewpoint articles, with a total of 42 now published and readers from 149 different countries last year. All of these articles are freely available on revive.gardp.org.
- ▶ Users from 198 countries have accessed the REVIVE website since 2018, with over 4,200 website views per month.

2021 ANTIMICROBIAL VIEWPOINT READERSHIP



ANTIMICROBIAL ENCYCLOPAEDIA AND LIBRARY

Last year, REVIVE finalized and uploaded 99 new terms and two expert videos (with another in development) to its Antimicrobial Encyclopaedia, which now contains over 170 terms and 14 expert videos.

ANTIMICROBIAL CHEMOTHERAPY CONFERENCE (ACC) 2021

In February 2021, GARDP hosted the widely acclaimed ACC2021 in collaboration with the British Society of Antimicrobial Chemotherapy (BSAC). Three guest organizations—the German Center for Infection Research (DZIF), Helmholtz Institute for Pharmaceutical Research Saarland (HIPS), and the International Research Alliance for Antibiotic

Discovery and Development (IRAADD)—joined the scientific programme committee.

797 registered and 626 live participants from 63 countries (top five countries: UK, Germany, US, Switzerland, and India) attended the conference. You can access all conference recordings on revive.gardp.org.

OUR NEXT CHALLENGE?



“In 2022, we will screen new chemical libraries identified by computational chemistry analysis and continue our hit expansion activities. The current horizon-scanning projects for antibacterial discovery research targets will

identify opportunities for new discovery projects, partnerships, and collaborations. Another exciting event will be the launch of the Antibiotic Discovery & Development Roadmap, which will be hosted on REVIVE. This will provide people working on different stages of the antibiotic R&D pipeline with critical information about the entire product development pathway.”

LAURA JV PIDDOCK

Scientific Director, GARDP

PARTNERS

COLLABORATIVE INVESTMENT TO COUNTER DRUG RESISTANCE

GARDP's mission is to discover, develop, and deliver new antibiotic treatment options for drug-resistant infections that pose the greatest threat to health. This work could not be done without investment and support from our funding partners, each of whom understand the urgent need to address drug resistance. We would like to thank all of them.

We would also like to acknowledge the ongoing recognition that the G7 and G20 give to AMR as a crucial global health issue (see 'Our Progress against Antibiotic Resistance').

BILL & MELINDA GATES foundation



LE GOUVERNEMENT
DU GRAND-DUCHÉ DE LUXEMBOURG

 Department
of Health &
Social Care

 saMRC

 UKaid
from the British people

DNDi
Drugs for Neglected Diseases *initiative*



Gouvernement Princier
PRINCIPAUTÉ DE MONACO

 MEDECINS
SANS FRONTIERES

 Swiss Confederation
Federal Department
of Home Affairs FDHA
Federal Office
of Public Health FOPH



Federal Ministry
of Education
and Research

NIHR | National Institute
for Health Research



Ministry of Health, Welfare and Sport

 GAMRIF



 REPUBLIQUE
ET CANTON
DE GENÈVE



Federal Ministry
of Health

 World Health
Organization

LUXEMBOURG
AID & DEVELOPMENT

 W
wellcome

Leo Model Foundation



In 2021, the Swiss government recognized our mission to develop new treatments for drug-resistant infections by granting a privileged status to GARDP.

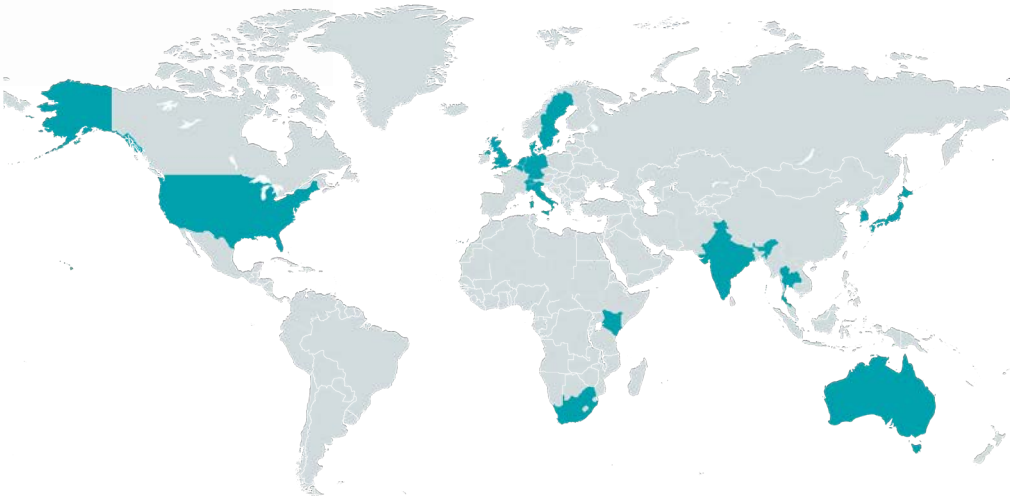


“Since 2001, Geneva has devoted a significant part of its budget to international cooperation and humanitarian aid projects. Each year, nearly 20% of this solidarity fund is allocated to global health projects. It is through this fund that the canton has supported the Drugs for Neglected Diseases initiative since 2004 and, now, GARDP. We are proud to continue contributing to GARDP’s efforts by funding a clinical study in Thailand aimed at developing a new treatment for forms of gonorrhoea resistant to current treatments.”

NATHALIE FONTANET

Geneva State Councillor

Partnerships with governments, academia, research centres, and industry are at the heart of GARDP's work. Without the support of its partners, GARDP's achievements to date would not have been possible.



AUSTRALIA

- Australian Research Council (ARC) Research Hub to Combat Antimicrobial Resistance
- University of Queensland's Community for Open Antimicrobial Drug Discovery (CO-ADD)
- Kirby Institute
- Melbourne Sexual Health Clinic

BELGIUM

- University of Antwerp

DENMARK

- REPAIR Impact Fund

GERMANY

- Evotec
- InfectoPharm
- Helmholtz-Institute for Pharmaceutical Research Saarland (HIPS)

INDIA

- All India Institute of Medical Sciences (AIIMS)
- Indian Council of Medical Research
- Dr Reddy's
- Bugworks Research Inc.

ITALY

- Penta Foundation

JAPAN

- Eisai
- Takeda Pharmaceutical Company Limited
- Daiichi Sankyo
- Shionogi & Co, Ltd

KENYA

- Kenyan Medical Research Institute (KEMRI)

KOREA

- Institut Pasteur Korea

THE NETHERLANDS

- Department of Infectious Diseases, Public Health Service Amsterdam

SOUTH AFRICA

- National Institute for Communicable Diseases (NICD)
- South African Medical Research Council (SAMRC)
- Stellenbosch University
- University of KwaZulu Natal
- Wits Health Consortium (WHC)
- Wits Reproductive Health and HIV (Wits RHI), University of Witwatersrand

SWEDEN

- WHO Collaborating Centre for Gonorrhoea and other sexually transmitted infections, University Hospital, Örebro (WHOCC)
- Joint Programming Initiative on Antimicrobial Resistance (JPIAMR)

SWITZERLAND

- European Society of Clinical Microbiology and Infectious Diseases (ESCMID)
- Foundation for Innovative New Diagnostics (FIND)
- Sandoz, the Novartis generics division
- Drugs for Neglected Diseases initiative (DNDi)
- Bioversys AG
- World Health Organization

THAILAND

- Bureau of AIDS, TB, and STIs, Department of Disease Control, Ministry of Public Health
- Thailand US CDC Collaboration
- Thai Red Cross, AIDS Research Center
- University of Mahidol, Tropical Medicine Hospital

UNITED KINGDOM

- British Society of Antimicrobial Chemotherapy (BSAC)
- St George's, University of London
- Medical Research Council – Clinical Trials Unit (MRC CTU) at University College – London (UCL)
- The University of Liverpool
- The Wellcome Trust
- Institute of Child Health, University College, London
- Oxford University

UNITED STATES

- American Society of Microbiology (ASM)
- CARB-X
- Clinton Health Access Initiative (CHAI)
- Entasis Therapeutics
- National Institutes of Health (NIH)
- National Institute of Allergy and Infectious Diseases (NIAID)
- The Pew Charitable Trusts
- University of Alabama
- University of Florida
- Venetorx Pharmaceuticals

GARDP is also collaborating with research centres on activities in the following countries: Bangladesh, Brazil, China, Greece, India, Italy, Kenya, the Netherlands, South Africa, Thailand, Vietnam, Uganda, and the United States.



2021 PARTNERSHIP AND FUNDING MILESTONES

JANUARY

- Signed a Memorandum of Understanding (MOU) with the British Society for Antimicrobial Chemotherapy (BSAC) to collaborate on education, policy, and advocacy around antibiotic resistance.

FEBRUARY

- The UK government announced £1.5 million of additional funding for GARDP to support the ongoing development of zoliflodacin, a potential new treatment for gonorrhoea.

MARCH

- The Swiss government recognized our mission to develop new treatments for drug-resistant infections by granting a privileged status to GARDP.

APRIL

- Signed a Declaration of Intent with the French Ministry for Europe and Foreign Affairs to explore opportunities for collaboration and strengthening activities to tackle antibiotic resistance.

MAY

- Signed an MOU with the Indian Council of Medical Research (ICMR) to explore joint opportunities to tackle antibiotic resistance in India and globally.
- The South African Medical Research Council renewed its funding to GARDP, providing an additional 4 million South African rand (ZAR) to support our activities in developing new and improved antibiotic treatments for drug-resistant infections.

JUNE

- The Japanese and British governments separately announced investments of ¥200 million and £1 million, respectively, in GARDP to support our work in tackling drug-resistant infections.

JULY

- Signed an MOU with the Clinton Health Access Initiative (CHAI) and Shionogi & Co., Ltd to accelerate access to cefiderocol for bacterial infections in patients with limited treatment options, including in low- and middle-income countries (LMICs).
- Initiated a partnership with German pharmaceutical company InfectoPharm to develop improved treatment options for neonatal sepsis using combinations of existing antibiotics.

SEPTEMBER

- Signed an MOU with the Department of Disease Control of the Thailand Ministry of Public Health (Thai DDC) to collaborate on an access and stewardship plan for zoliflodacin.
- The Republic and Canton of Geneva announced funding of CHF 540,000 to support the development of zoliflodacin.

FINANCE

OVERVIEW

In March 2021 the Swiss Federal Council granted GARDP a privileged status, exonerating the organization from VAT as well as all direct and indirect taxes within Switzerland.

From an international perspective GARDP has a global presence in North America (GARDP NA, incorporated in May 2021) and South Africa (DNDi GARDP Southern Africa 2018). The accounts of both legal entities are consolidated into the combined financial statements. GARDP's international presence is further enhanced through the DNDi offices located in East Africa, South-East Asia, Latin America, India and Japan.

Since its inception in 2016, GARDP has secured in excess of EUR 100M in funding. Despite the unpredictable nature of 2021, GARDP was able to successfully secure further funding from the UK, Japan and Switzerland (Canton de Genève and the Federal Office of Public Health) as well as the Leo Model Foundation. A further pledge for funding was also received from the Principality of Monaco.

To safeguard GARDP's development in future, a diversified funding model of both restricted and unrestricted funding from both public and private sources will provide GARDP with the flexibility to manage its R&D activities into the long-term.

***Numbers extracted from the unaudited “2021 Finance & Performance Report”.
The full report, audited by Deloitte, will be available in June 2022 www.gardp.org***

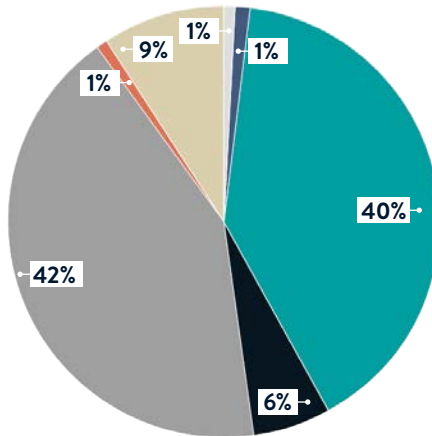
FINANCE

INCOME

In 2021 the UK's Department of Health and Social care (DHSC) increased their financial support by contributing a further £4.5M and Switzerland (the Federal Office of Public Health) increased their funding by CHF 100k. The Leo Model Foundation continued its longstanding support with an additional \$50k. New funding of \$1.8M was received from a the Japanese Ministry of Health, Labour and Welfare, with a further pledge of \$5.4M over the next three years as well as the Canton de Genève who have contributed CHF 540k. The Principality of Monaco pledged a further EUR 400k from 2022-24, and we received new funding of A\$300k from the Australian government.

2021 FUNDING

EUR 17.3M



- Germany (BMBF & BMG)
- Netherlands (VWS)
- United Kingdom (DHSC GAMRIF & NIHR)
- Switzerland (FOPH)
- Japan (Ministry of Health, Labour and Welfare)
- Canton de Genève
- The Principality of Monaco
- Others (South African Medical Research Council, Leo Foundation)

FUNDING COMMITMENTS AND PLEDGES TO DATE

EUR 104.7M:

PUBLIC CONTRIBUTORS FROM 2016 - 2025	EUR 101M
Germany (BMBF and BMG)	EUR 60.1M
UK (DFID, DHSC and NIHR)	EUR 21.7M
Japan (Ministry of Health, Labour and Welfare)	EUR 7.9M
The Netherlands (VWS)	EUR 7.5M
Switzerland (FOPH)	EUR 1.3M
South African Medical Research Council	EUR 0.9M
The Principality of Monaco	EUR 0.8M
Canton de Genève	EUR 0.5M
Australia (Department of Health)	EUR 0.2M
Grand Duchy of Luxemburg	EUR 0.1M

PRIVATE CONTRIBUTORS FROM 2016 - 2025	EUR 3.7M
Bill & Melinda Gates Foundation	EUR 1.8M
Wellcome Trust	EUR 1.1M
Others: Médecins Sans Frontières, Leo Model Foundation	EUR 0.8M

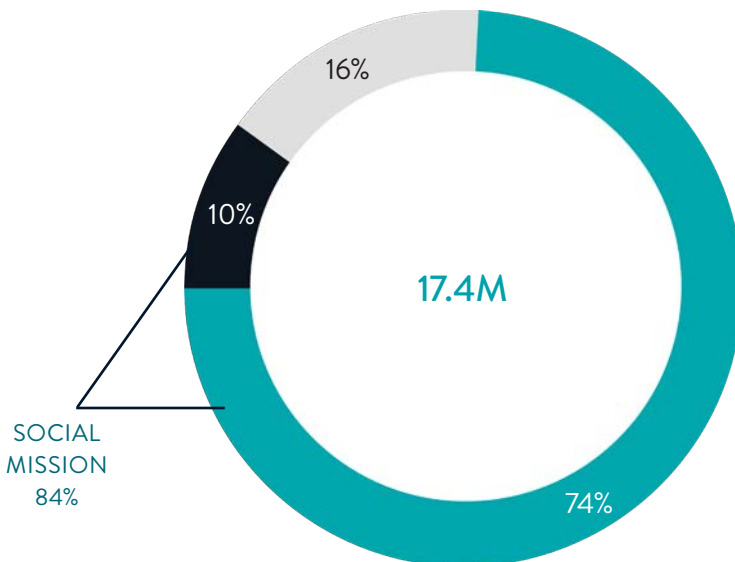
FINANCE

EXPENDITURE

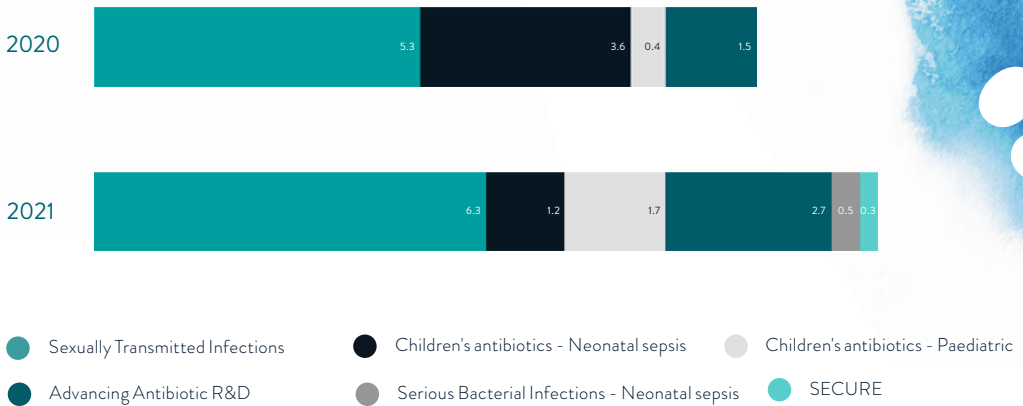
Excluding the one-off early investment of EUR 8.9M in relation to cefepime-taniborbactam in 2020, total expenditure increased by EUR 2.6M or 18% in 2021. The growth of operational expenses reflects the increased activity within the Serious Bacterial Infections programme (in relation to cefepime-taniborbactam), the Sexually Transmitted Infections programme and the continued strengthening of the R&D structure along with and to a much lesser extent the set-up of GARDP North America Inc.

GARDP's ratio of social mission to non-social mission spending dropped to 84% in 2021. This reduction was due to the continued impact of COVID-19 on some planned R&D operational activities.

2021 EXPENDITURE

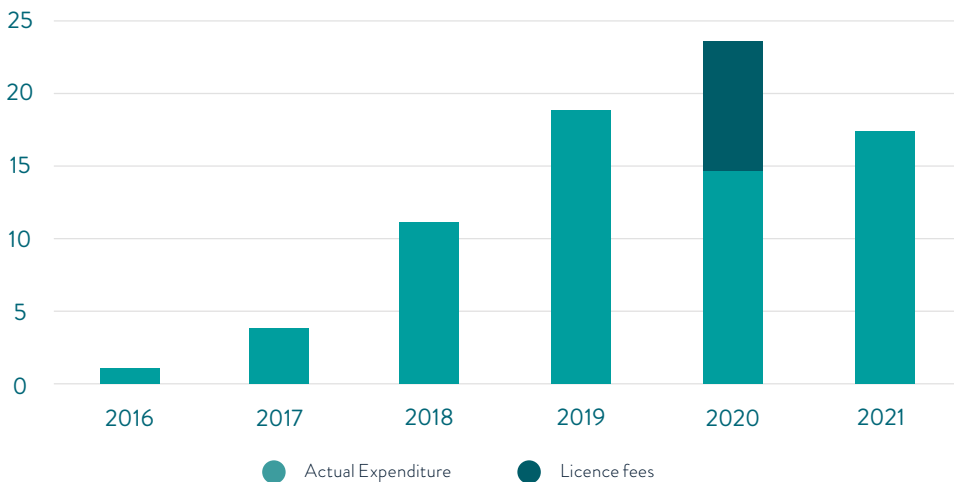


R&D EXPENDITURE (EUR MILLION)



Total GARDP expenditure since the start of its incubation within DNDi in 2016 totals EUR 76M

ACTUAL EXPENDITURE 2016 - 2021 (EUR MILLION)



Further information on GARDP's income and expenditure will be available in GARDP's 2021 Financial and Performance Report.

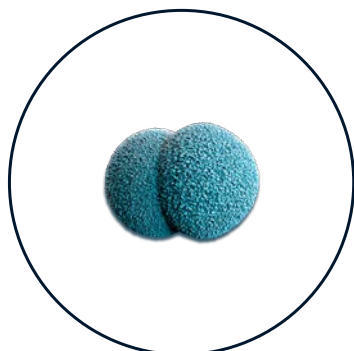
EXECUTIVE STRUCTURE

GOVERNANCE & MANAGEMENT

GARDP was created in 2016 by WHO and DNDi to deliver the Global Action Plan on AMR. GARDP draws its strength from WHO's mandate to drive the global response to AMR and set health priorities, and DNDi's expertise in harnessing partnerships with the public and private sectors and building an R&D pipeline focused on public health needs. The composition of GARDP's governance and management teams aims to reflect these dual origins.

BOARD OF DIRECTORS

Our Board of Directors, which meets twice a year, is GARDP's ultimate policy and decision-making authority and includes leading international figures in global health. The Board's six current members determines GARDP's strategic goals and ensures that its management works efficiently to achieve them. It establishes the policies and principles we follow and appoints the Chair, Vice-chair, and Treasurer of the Board as well as the Executive Director.



BOARD MEMBERS

Ramanan LAXMINARAYAN

Chair, Center for Disease Dynamics, Economics and Policy, USA

Marie-Paule KIENY

Vice-chair, Institut national de la santé et de la recherche médicale, INSERM, France

Frédéric VALLAT

Treasurer, Ville de Genève, Switzerland

Glenda GRAY

South African Medical Research Council, South Africa

Hiroki NAKATANI (new member)

Global Research Institute, Keio University, Japan

Mercedes TATAY

Médecins Sans Frontières

Veronika VON MESSLING

Federal Ministry of Education and Research, Germany

OBSERVERS

Gregg ALTON (new observer)

Formerly Gilead Sciences, USA

Manica BALASEGARAM

Ex officio, GARDP

Hanan H. BALKHY

World Health Organization, Switzerland

Prabhavathi FERNANDES

Chair of the GARDP Scientific Advisory Committee

Ambassador Nora KRONIG ROMERO (new observer)

Chair of the GARDP Donor Partnership Advisory Committee

Bernard PÉCOUL

Drugs for Neglected Diseases initiative, Switzerland

SCIENTIFIC ADVISORY COMMITTEE

GARDP's Scientific Advisory Committee (SAC) is made up of scientists with expertise in various disciplines within infectious diseases and microbiology. The SAC has a consultative function: its members advise and make recommendations to GARDP's Board of Directors in order to carry out GARDP's scientific objectives, assess its scientific strategy and projects and provide guidance and medical and scientific expertise to GARDP's programmes.

MEMBERS

Karl-Heinz ALTMANN

Swiss Federal Institute of Technology, Switzerland

Marc BONTEN

University Medical Centre Utrecht, The Netherlands

Anthony COATES

St George's University, UK

Prabhavathi FERNANDES

Chair, USA

Mark J. GOLDBERGER

Formerly AbbVie, USA

William HOPE

University of Liverpool, UK

Rudo MATHIVHA

Chris Hani Baragwanath Hospital, South Africa

Marc MENDELSON

University of Cape Town, South Africa

Malcolm PAGE

Formerly Basilea, Switzerland

Andreas RUMMELT

InterPharmaLink AG

Kamini WALIA

Indian Council of Medical Research, India

Nicholas WHITE

Mahidol University, Thailand

OBSERVERS

Laurent FRAISSE

Drugs for Neglected Diseases initiative, Switzerland

Valeria GIGANTE

World Health Organization, Switzerland

DONOR PARTNERSHIP ADVISORY COMMITTEE

The Donor Partnership Advisory Committee (DPAC) ensures key funding partners are represented as stakeholders and partners in GARDP, allowing them to bring their insights to the Board. Importantly, it provides advice and funder perspectives that assist the Board in fulfilling its mission by reviewing the success of previous and ongoing donor investments made into GARDP and providing advice to the Board on how further funding can deliver the highest possible impact. It also provides advice to the Board on how GARDP can widen and better manage its partnerships with governments and other important global health funders. The Chair of the Committee represents the Committee at the Board meetings and ensures that key decisions of the Board are brought back to the full Committee.

MEMBERS

Niresh BHAGWANDIN

South African Medical Research Council, South Africa

Jasper CLAESSEN

Ministry of Health, Netherlands

Hajime INOUE

Ministry of Health, Labour and Welfare, Japan

Ambassador Nora KRONIG ROMERO

Chair, Federal Office of Public Health, Switzerland

Louise NORTON-SMITH

Department of Health and Social Care, UK

Dagmar REITENBACH

Federal Ministry of Health, Germany



GARDP LEADERSHIP & PROGRAMMES

GARDP's leadership team and staff work to deliver on our vision by supporting the R&D ecosystem while developing and securing sustainable access to new treatments.

GARDP has a flexible R&D operating model that enables cross-functional project leadership integrating technical disciplines from across GARDP and our partners. At the core of the model is a collaborative project team focusing on the development of a drug and delivery of an antibiotic treatment. The collaborative project teams lead by GARDP project leaders follow development plans underpinned by target treatment/product profiles, with progress reviewed via GARDP R&D governance and a GARDP Board-appointed Scientific Advisory Committee.

GARDP DIRECTORS

Manica BALASEGARAM
Executive Director

Vincent CONSTANTIN
General Counsel

Pierre-Yves DELHEZ
Internal Operations Director

Jennifer KATZ
External Affairs Director

Seamus O'BRIEN
Research & Development Director

Jean-Pierre PACCAUD
Business Development and Corporate Strategy Director

Laura PIDDOCK
Scientific Affairs Director

Subasree SRINIVASAN
Medical Director

PROGRAMME LEADS

Sally ELLIS
Children's Antibiotics Project Leader

Christophe ESCOT
Clinical Operations Leader

François FRANCESCHI
Head of Asset Evaluation and Development and Serious Bacterial Infections Project Leader

Julie MIRALVES
R&D Portfolio and Planning Lead

Seamus O'BRIEN
Sexually Transmitted Infections Interim Project Leader

Laura PIDDOCK
Discovery & Exploratory Research/Scientific Affairs Leader

GARDP WORLDWIDE

GARDP, through DNDi, has a global presence with regional offices in Africa, North America, Latin America and Southeast Asia, and country offices in Japan and India. In-country implementation of GARDP's programmes is supported by these offices and a joint DNDi-GARDP office for Southern Africa. GARDP also has representation in Australia.

GARDP's regional and country offices are critical in connecting us with partners and the people we serve. Staff in these offices oversee clinical trials and research, provide links to health ministries and national disease control programmes, patients, clinicians and researchers, and raise funds to make our work possible.



JOIN US

HELP US FIGHT ANTIBIOTIC RESISTANCE

To address the growing threat of antibiotic resistance, we must work together.
By collaborating with urgency, we can stop this silent pandemic in its tracks.



To help GARDP achieve its mission, you can:

- Become a scientific or financial partner: <https://gardp.org/take-action/become-a-partner/>
- Donate to GARDP: <https://gardp.org/donate-to-gardp/>
- Join our Scientific Affairs activities via REVIVE to support and connect with the antimicrobial discovery, research, and development community: <https://revive.gardp.org/about-revive/>

Thank you for your support.

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FOR MORE INFO

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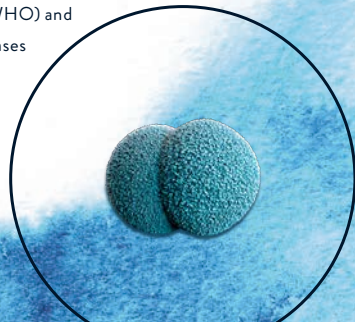
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The Global Antibiotic Research and Development Partnership (GARDP) is a Swiss not-for-profit organization developing new treatments for drug-resistant infections that pose the greatest threat to health. GARDP was created by the World Health Organization (WHO) and the Drugs for Neglected Diseases *initiative* (DNDi) in 2016 to ensure that everyone who needs antibiotics receives effective and affordable treatment.



 GARDP

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