

A Moment to Reset

Antibiotic resistance represents one of the gravest threats we face to global public health.¹ Antibiotics are becoming less effective due to bacteria naturally evolving to become more resistant to drugs.² In 2019, it was predicted that 1.27 million deaths worldwide would be directly attributed to antibiotic resistance³ and by 2050, it could be responsible for

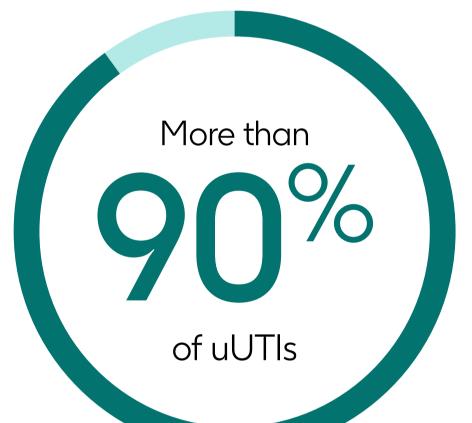
10 million deaths a year.⁴

Despite the consequences of antimicrobial resistance (AMR), there is a lack of new antibiotics making it to market and only one new class of antibiotics has been launched in recent decades,^{5,6} but why is this?

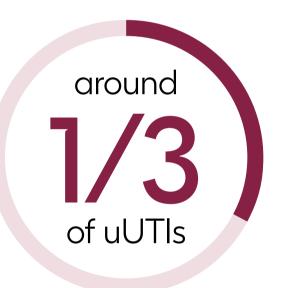
- Developing a new antibiotic is a challenge, both scientifically and financially.⁷
- Bacteria and other micro-organisms have evolved to avoid attacks by chemicals, such as antibiotics. They can double every 20 minutes and rapidly adapt to hostile environments, which creates a need for large doses of antibiotics.^{8,9}
- It is therefore very difficult to discover medicines that are both highly effective and sufficiently safe at high doses.¹⁰

Rising resistance in uncomplicated urinary tract infections

Uncomplicated urinary tract infections (uUTIs) are one of the most common infections in women in the community.¹¹



The World Health Organization (WHO) has put E. coli on a critical list of pathogens responsible for AMR¹³ and it has been reported that...



are already resistant to a



commonly-used antibiotic.¹⁴

are caused by a bacterium called Escherichia coli (or E. coli).¹²

uUTIs can have limitations on women's lives, including discomfort, potential days off work and they can put a strain on intimate relationships.^{11,15}



Our commitment

- GSK is one of the few pharmaceutical companies committed to investing in this space and is using its 70 years of expertise to help the fight against bacterial threats.¹⁶
- As well as progressing possible new antibiotics, GSK is also investigating vaccines that

could help combat AMR.¹⁷

Nobody can outwit AMR alone. There has never been a better time for us to come together and take A Moment to Reset.

References

- Thomson, P. "Pull" the Science: 2020 Antimicrobial Resistance Benchmark. Available from: https://www.gsk.com/en-gb/ responsibility/improving-health-globally/pull-the-science-2020antimicrobial-resistance-benchmark/ [Accessed November 2022]
- 2. Stat. My company is developing new antibiotics. My resistant infection showed me we need them now. 2021. Available from: https://www.statnews.com/2021/10/29/ antibiotics-are-not-alright/ [Accessed October 2022]
- 3. Antimicrobial Resistance Collaborators. Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis. Lancet. 2022;399:629–655.
- 4. WHO. No time to wait: securing the future from drugresistant infections. 2019. Available from: https://www.who. int/docs/default-source/documents/no-time-to-waitsecuring-the-future-from-drug-resistant-infections-en. pdf?sfvrsn=5b424d7_6 [Accessed November 2022]
- WHO. 2021 Antibacterial agents in clinical and preclinical development: an overview and analysis. Geneva: World Health Organization; 2022. Available from: https://www.who.int/ publications/i/item/9789240047655 [Accessed November 2022]
- 6. IFPMA. Global Principles on Incentivizing Antibiotic R&D. Available from: https://www.ifpma.org/wp-content/ uploads/2021/02/IFPMA-Global-Principles-on-Incentivizing-Antibiotic-RD.pdf [Accessed November 2022]
- 7. Wellcome. Why is it so hard to develop new antibiotics? 2020. Available from: https://wellcome.org/news/why-is-it-sohard-develop-new-antibiotics [Accessed November 2022]
- Munita JM, Arias CA. Mechanisms of antibiotic resistance. Microbiol Spectr. 2016; 4(2). doi: 10.1128/microbiolspec.VMBF-0016-2015.
- 9. Allen RJ, Waclaw B. Bacterial growth: a statistical physicist's guide. Rep Prog Phys. 2019; 82(1): 016601. doi: 10.1088/1361-6633/aae546.
- Payne DJ, Miller LF, Findlay D, Anderson J, Marks L. Time for a change: addressing R&D and commercialization challenges for antibacterials. Phil Trans R Soc 2015; 370(1670): 20140086 doi: 10.1098/rstb.2014.0086
- 11. Colgan R, Williams M. Diagnosis and treatment of acute uncomplicated cystitis. Am Fam Physician. 2011; 84(7): 771–776.
- 12. Madappa T. Medscape. What is the etiologic role of Escherichia coli (E coli) in urinary tract infections? Available from: https://www.medscape.com/answers/217485-38629/ what-is-the-etiologic-role-of-escherichia-coli-e-coliinurinary-tract-infections [Accessed November 2022]
- 13. WHO. Global priority list of antibiotic-resistant bacteria to guide research, discovery, and development of new antibiotics. 2017.
- New York Times. Urinary Tract Infections Affect Millions. The Cures Are Faltering. 2019. Available from: https:// www. nytimes.com/2019/07/13/health/urinary-infectionsdrugresistant.html [Accessed November 2022]
- Colgan R, Keating K, Dougouih M. Survey of symptom burden in women with uncomplicated urinary tract infections. Clin Drug Investig. 2004; 24(1): 55–60.
- 16. GSK. 300 years of GSK three centuries of innovation.
- 17. GSK. How vaccine science can help tackle antimicrobial resistance. 2020.