2024, une année particulière pour l'antibiorésistance ?

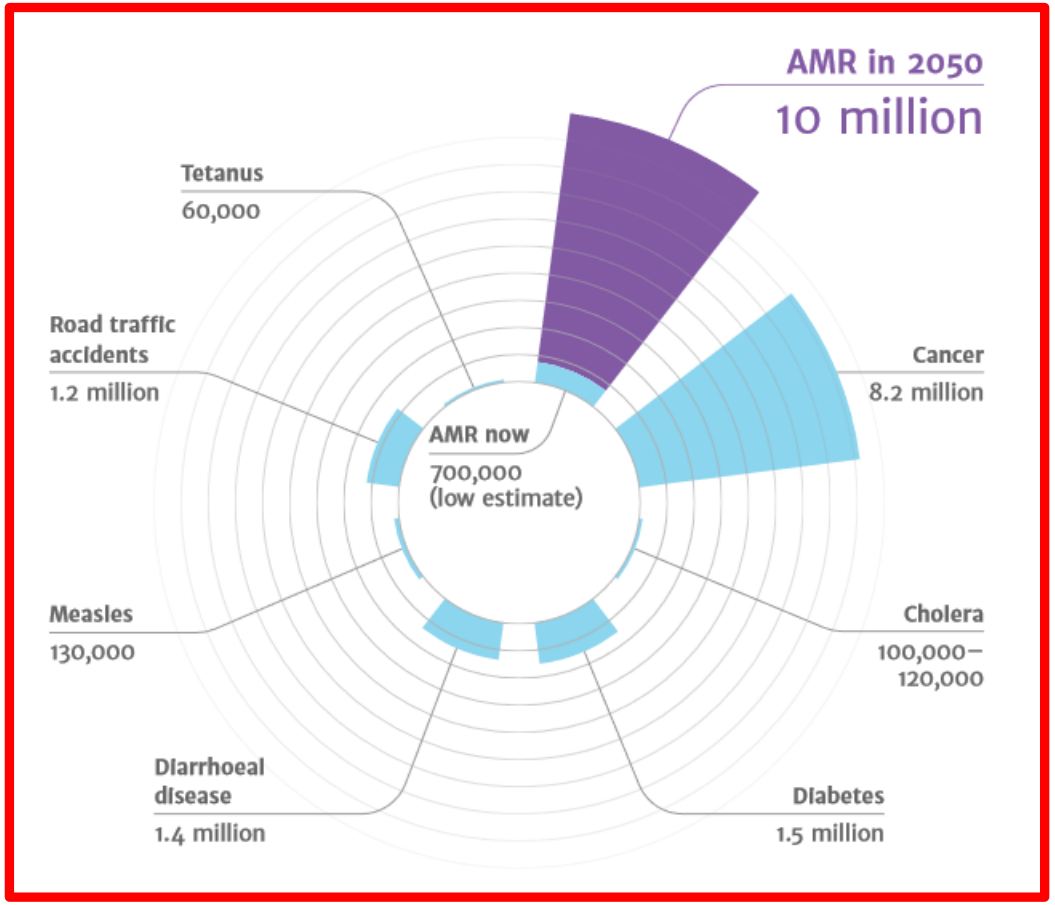
Prof. Antoine Andremont
antoine.andremont@gmail.com

Mes propos ne reflètent que mes analyses personnelles et n'engagent évidemment pas le MESR

Une épidémiologie qui semble incontrôllée

A rough but highly cited estimation and projection

Many critics but it's there for good



Jim O'Neil

2016

Sources:
Diabetes: www.whi.int/mediacentre/factsheets/fs312/en/ Cancer: www.whi.int/mediacentre/factsheets/fs297/en/
Cholera: www.whi.int/mediacentre/factsheets/fs107/en/ Diarrhoeal disease: www.sciencedirect.com/science/article/pii/S0140673612617280
Measles: www.sciencedirect.com/science/article/pii/S0140673612617280 Road traffic accidents: www.whi.int/mediacentre/factsheets/fs358/en/
Tetanus: www.sciencedirect.com/science/article/pii/S0140673612617280

Review on Antimicrobial Resistance

Un cauchemar pour les épidémiologistes….

- Car l’ antibiorésistance n’est pas une maladie
- Les patients infectés par une bactérie “résistante” ne se différencie pas facilement de ceux infectés par une bactérie “sensible”
- Le terme même de “bactérie résistante” est complètement dépendant du test utilisé pour la détection
- Le très grand nombre de couples “bactérie-antibiotique” qui rend impossible une description exhaustive.
- Le choix d’indicateurs (couple bactérie-antibiotique) ciblés est forcemment orienté (Tuberculose, IST, infections néonatales)

The best global available estimate is for the year 2019

Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis

Antimicrobial Resistance Collaborators*

Lancet 2022; 399: 629–55

4·95 million deaths
"associated"
1·27 million deaths
"attributable"
to bacterial AMR.

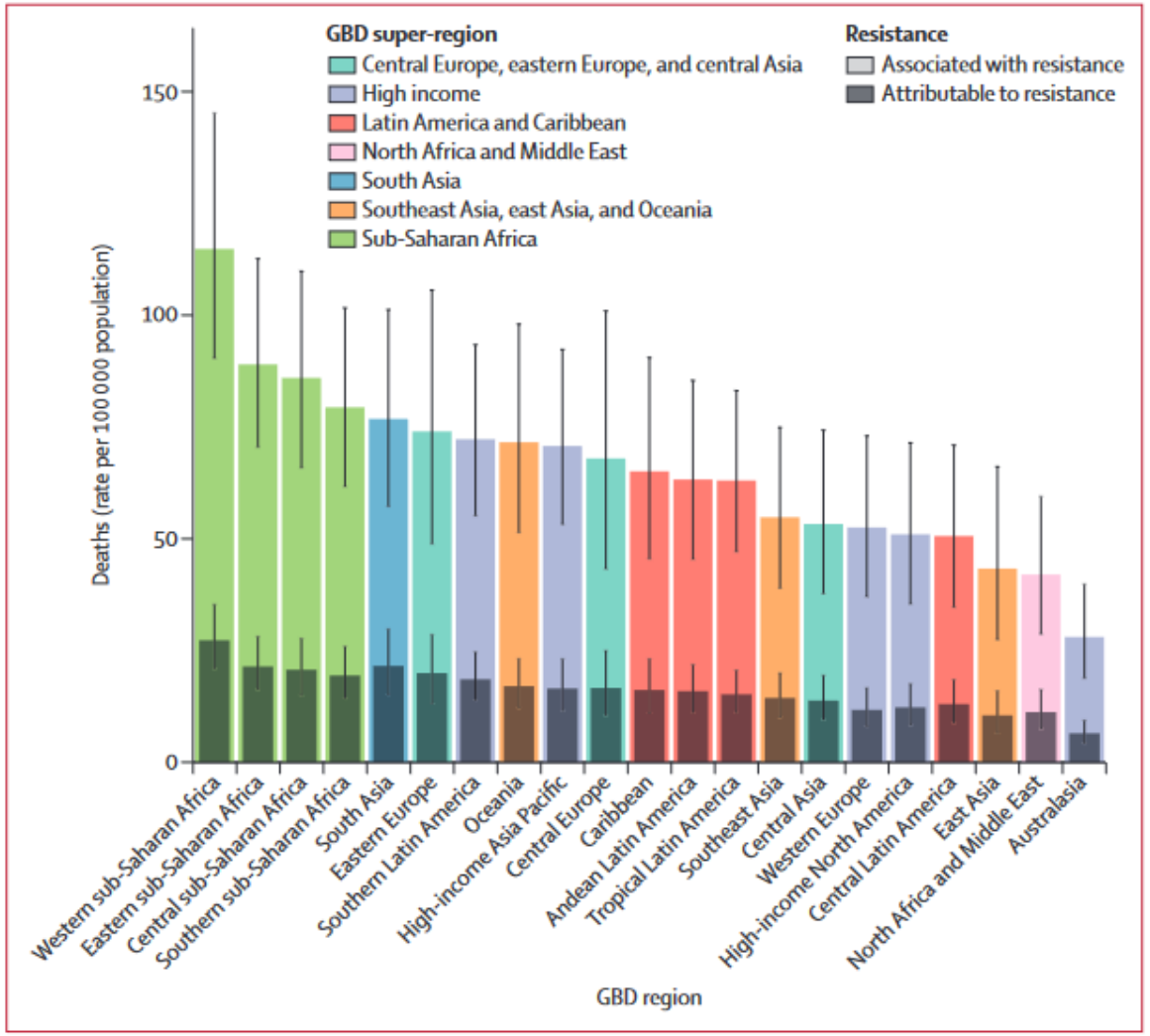
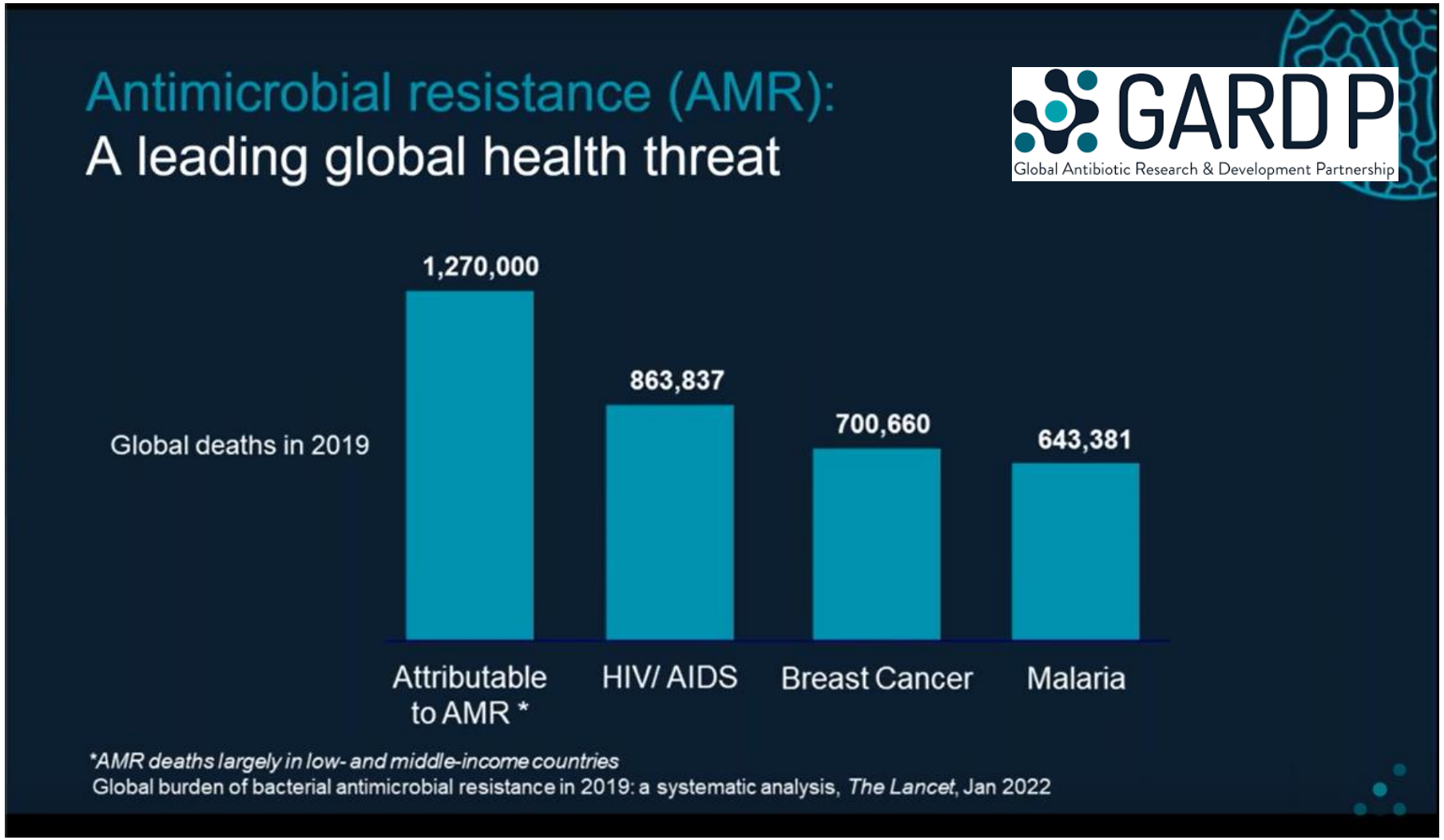


Figure 2: **All-age rate of deaths attributable to and associated with bacterial antimicrobial resistance by GBD region, 2019**

Highly importantly a comparison can be made with other infectious diseases



https://gardp.org/news-resources/breaking-down-access-barriers-for-antibiotics-cefiderocol-as-a-pathfinder/

This Lancet paper gives info on which bacteria is important.

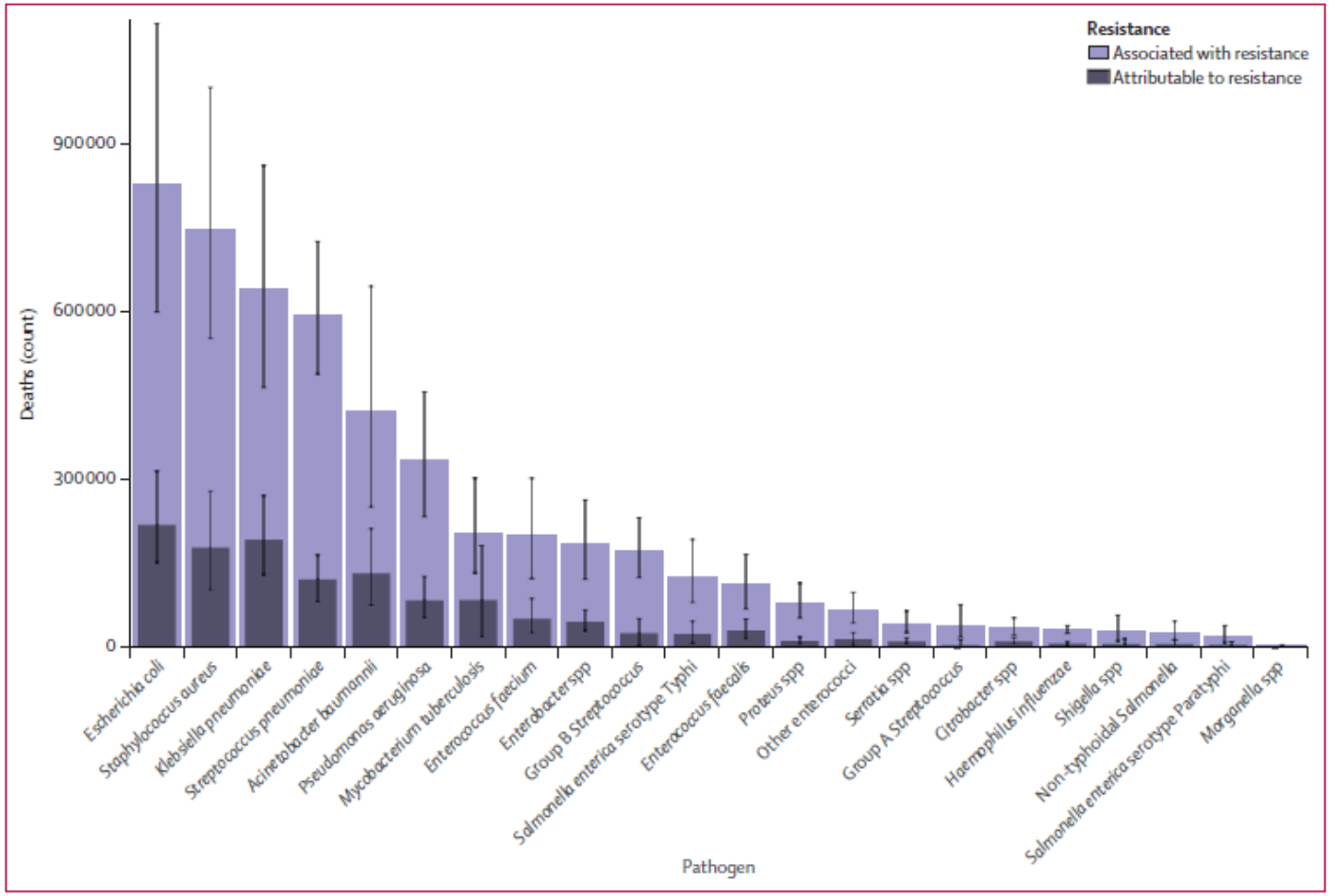
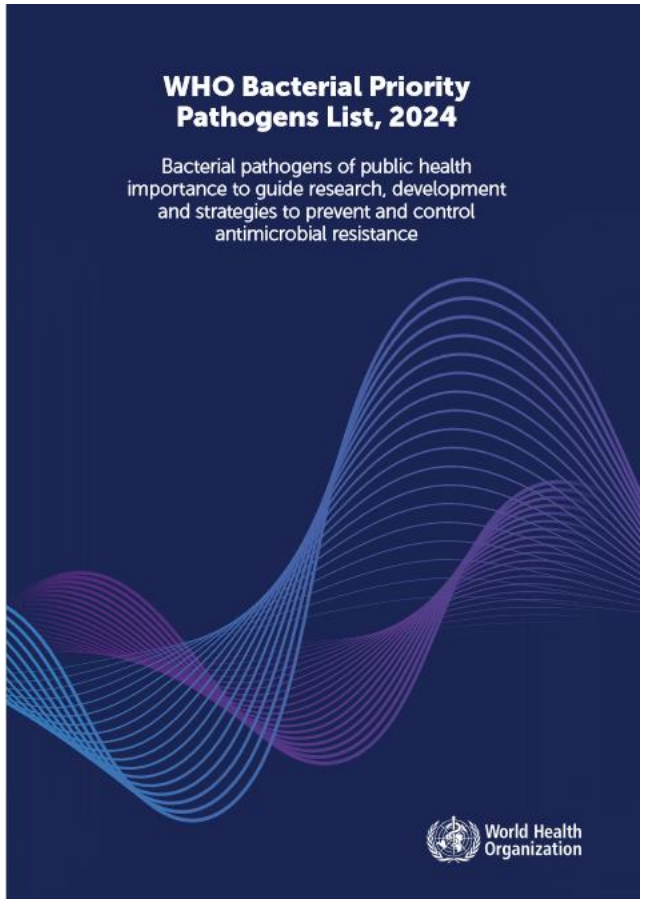
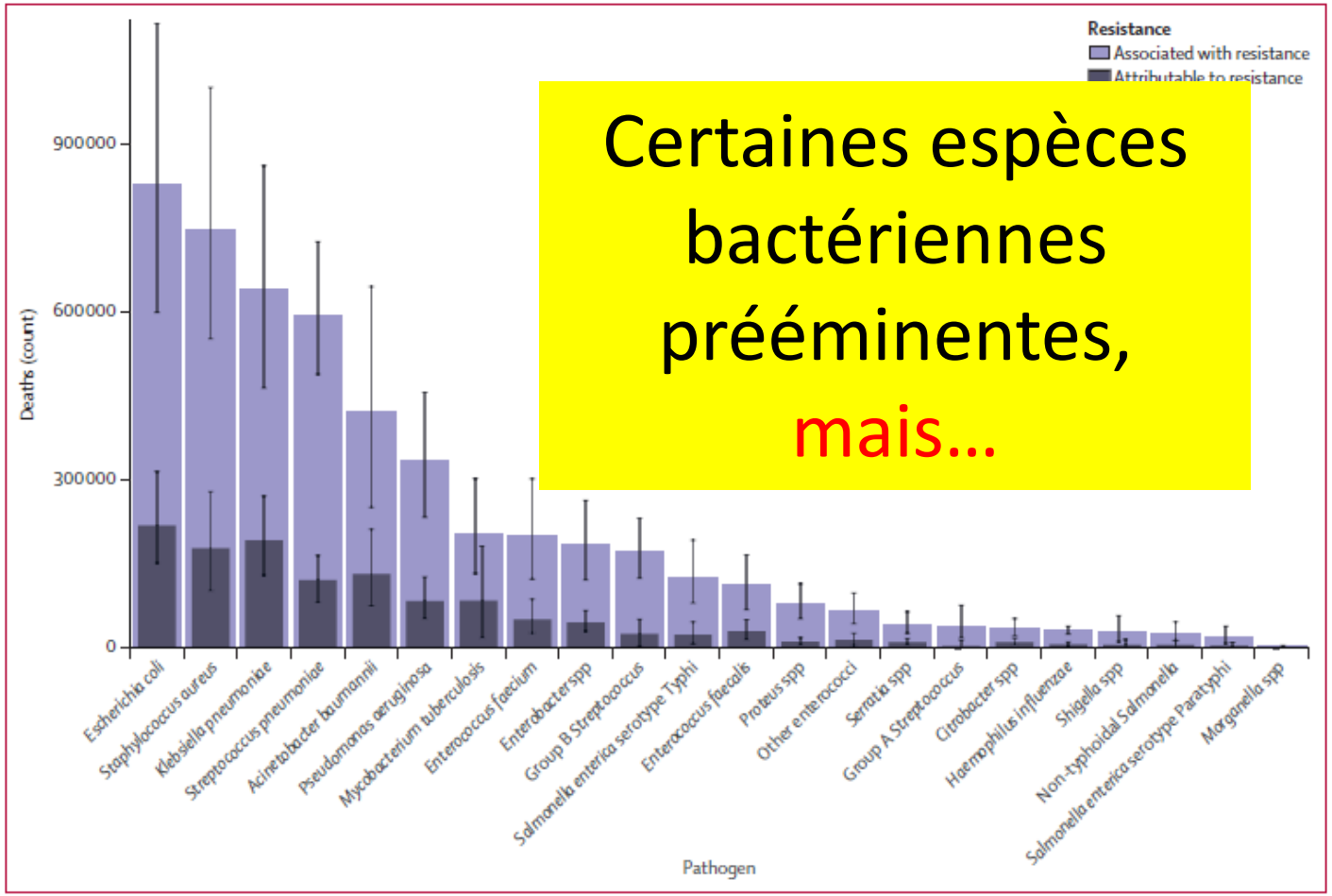


Figure 4: **Global deaths (counts) attributable to and associated with bacterial antimicrobial resistance by pathogen, 2019**
Estimates were aggregated across drugs, accounting for the co-occurrence of resistance to multiple drugs. Error bars show 95% uncertainty intervals.

This remarkable paper give info on which bacteria is important.





Certaines espèces bactériennes prééminentes, mais…

Figure 4: **Global deaths (counts) attributable to and associated with bacterial antimicrobial resistance by pathogen, 2019**
Estimates were aggregated across drugs, accounting for the co-occurrence of resistance to multiple drugs. Error bars show 95% uncertainty intervals.

…ce ne sont pas les mêmes pathogènes qui sont importants en fonction des regions…..

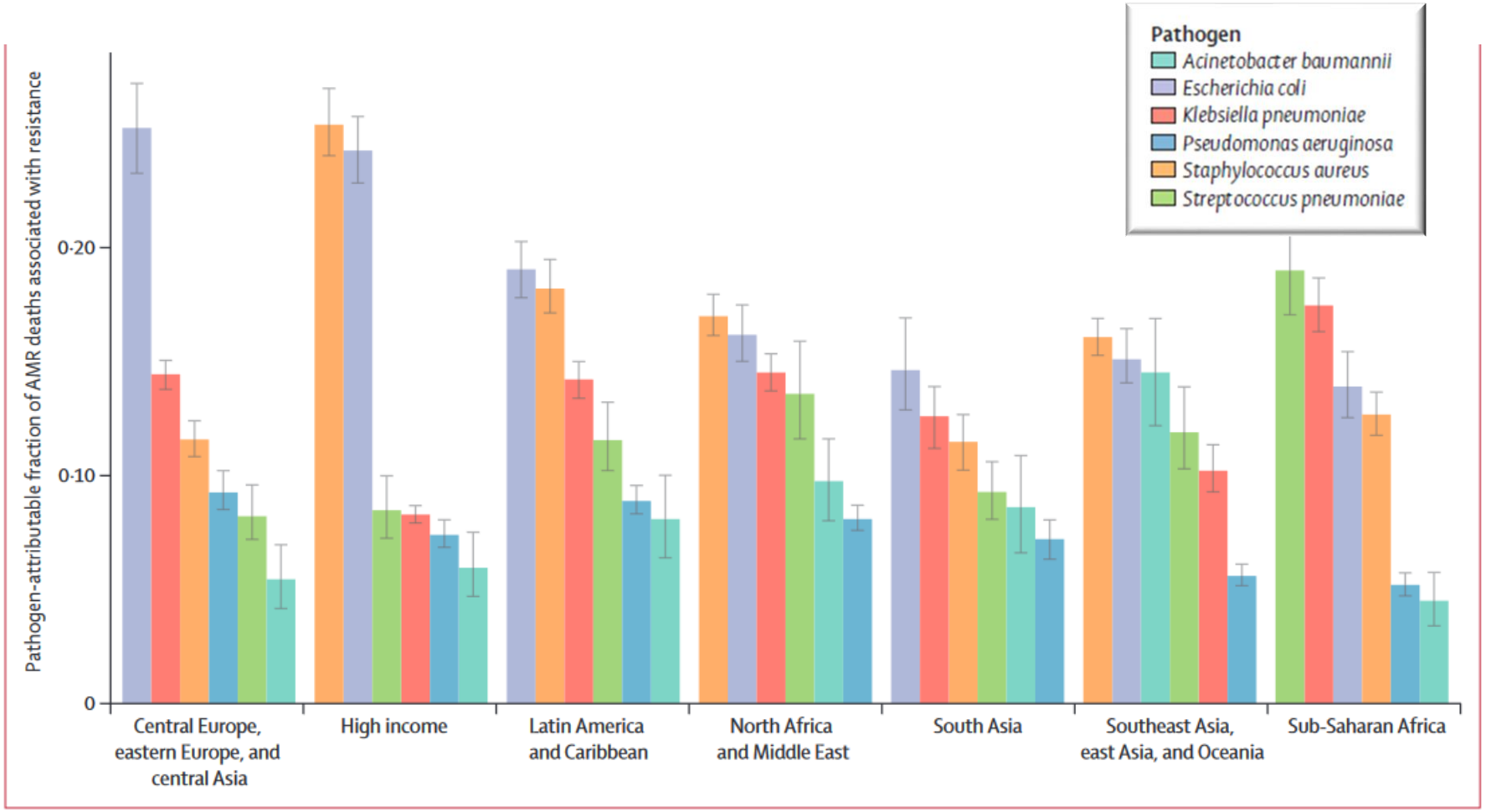
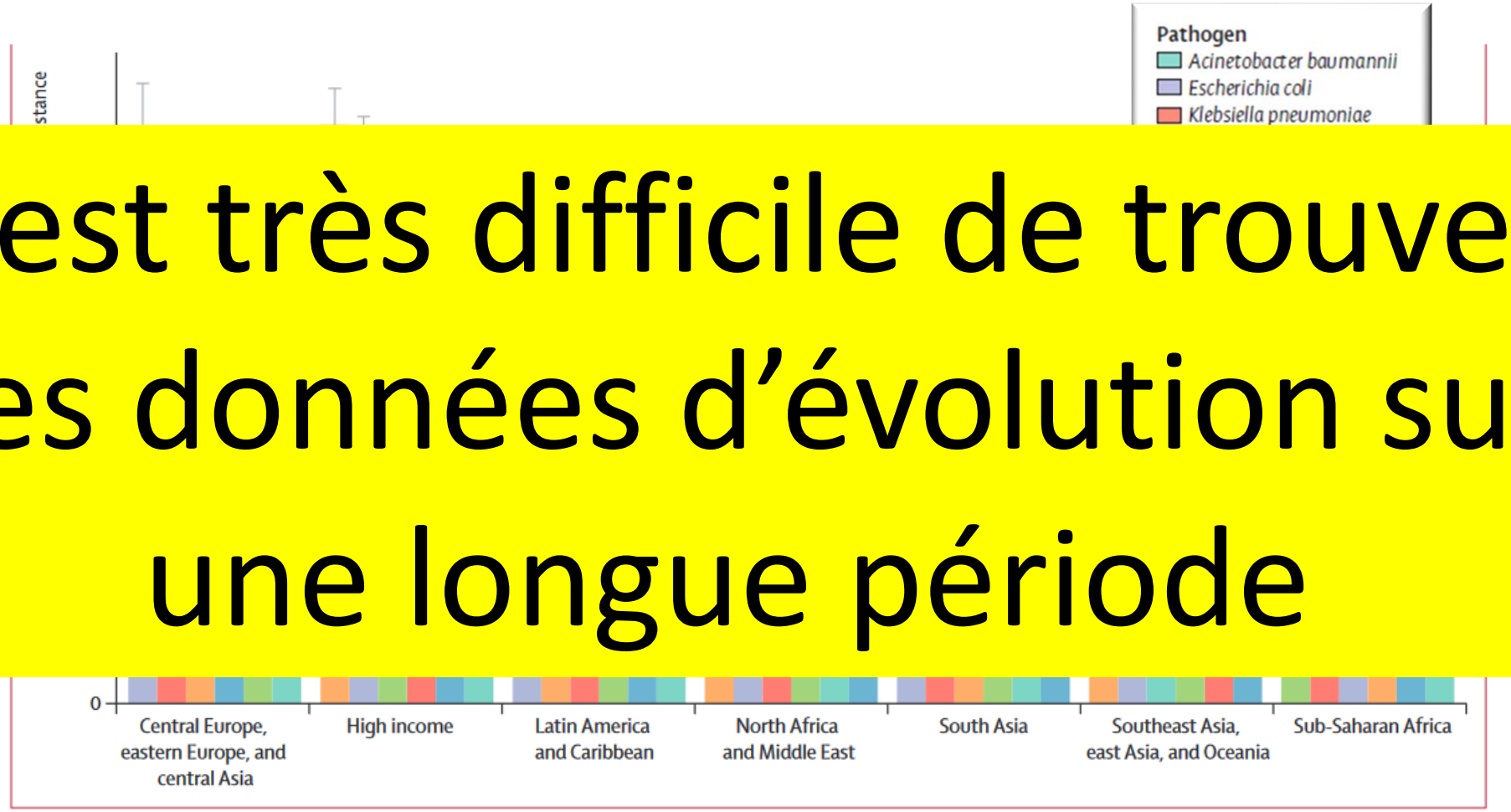


Figure 5: **Pathogen-attributable fraction of deaths attributable to (A) and associated with (B) bacterial AMR for the six leading pathogens by GBD super-region, 2019**

Error bars show 95% uncertainty intervals. AMR=antimicrobial resistance. GBD=Global Burden of Diseases, Injuries, and Risk Factors Study.

…ce ne sont pas les mêmes pathogènes qui sont important en fonction des regions…..

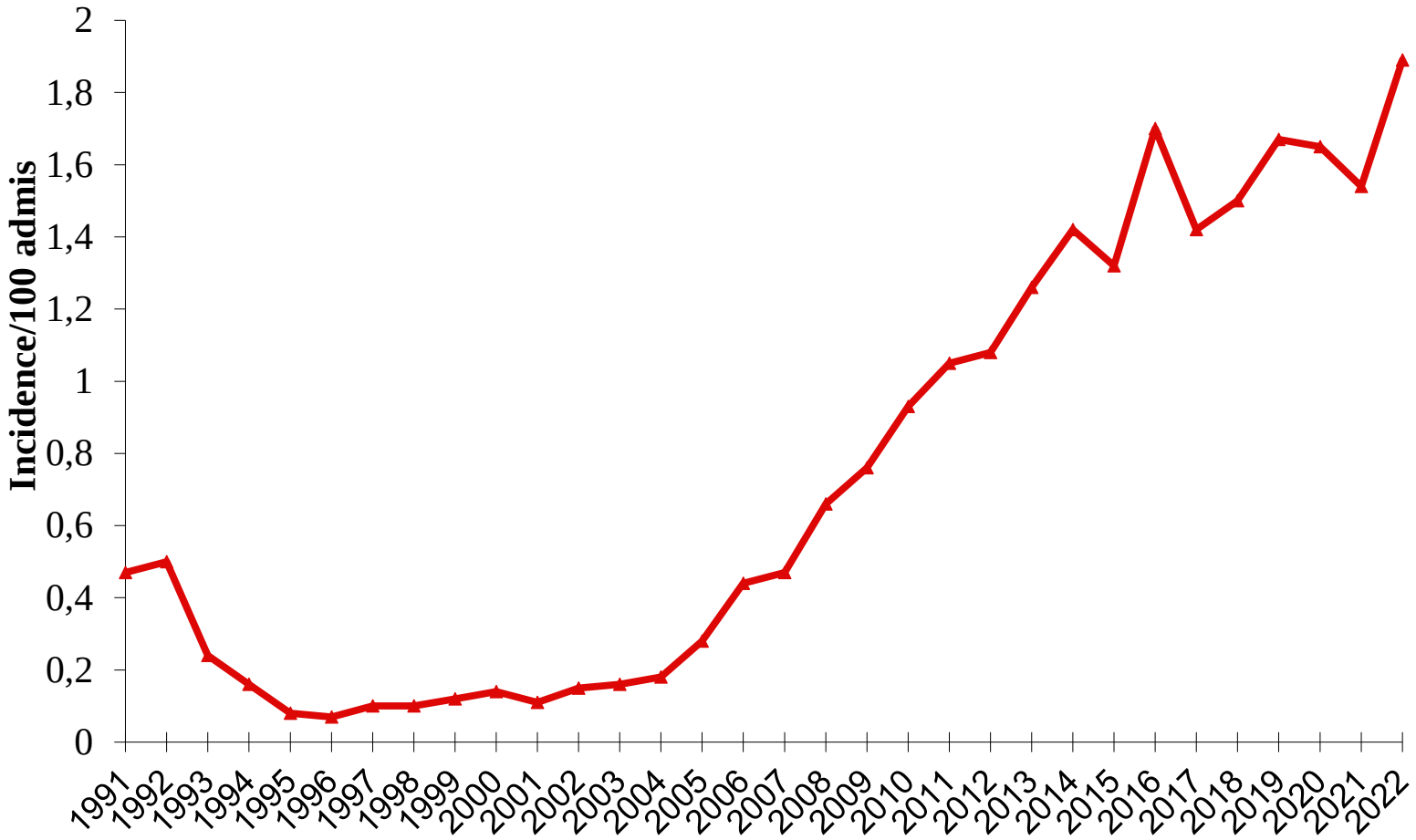


Il est très difficile de trouver des données d'évolution sur une longue période

Figure 5: **Pathogen-attributable fraction of deaths attributable to (A) and associated with (B) bacterial AMR for the six leading pathogens by GBD super-region, 2019**

Error bars show 95% uncertainty intervals. AMR=antimicrobial resistance. GBD=Global Burden of Diseases, Injuries, and Risk Factors Study.

Evolution de l'incidence des infections à entérobactéries résistantes aux céphalosporines de troisième génération. Hôpital Bichat-Claude Bernard



(Courtoisie du Prof. Laurence ARMAND)

Le système annuel reporting GLASS de l'OMS est encore jeune

GLASS Reports

9 December 2022

Global antimicrobial resistance and use surveillance system...

Download Read More

5 August 2021

GLASS: the detection and reporting of colistin resistance, 2nd ed

Download Read More

9 June 2021

Global Antimicrobial Resistance and Use Surveillance System...

Download Read More

25 May 2020

GLASS Report: Early Implementation 2020

Download Read More

What about trends in the last ?

An increase >15% in 2020 vs. 2017 for :

- meropenem and 3rdGC bloodstream *E. coli*
- ciprofloxacin in Salmonella spp.
- azithromycin resistance in gonorrhoea

Ce n'est pas très réjouissant

https://iris.who.int/bitstream/handle/10665/364996/9789240062702-eng.pdf?sequence=1

Il y a quelques jours, le 23 mai 2024, le Lancet a publié une longue série de superbes papiers sur le contrôle de l'AMR

Antimicrobial resistance: an agenda for all

In 2016, antimicrobial resistance (AMR) was gaining political attention at the highest levels. At a UN high-level meeting (only the fourth on a health issue), UN member states pledged to take a coordinated approach to address the root causes of antimicrobial resistance across human health, animal health, agriculture, and environmental health. 8 years later though, progress has been patchy at best. Although 178 countries have developed national action plans, fewer than a fifth are funded or implemented. The UN is hosting a second high-level meeting in September, aimed at accelerating multisectoral global, regional, and national actions to address AMR. How might this meeting make meaningful progress on one of the most pressing threats to health of the 21st century?

A new *Lancet* Series on AMR provides key evidence on interventions and investments to inform decision

prioritised. Bacterial infections are the second leading cause of death worldwide and, as flagged by the *Lancet* Series on AMR in 2015, insufficient access to antibiotics kills more people than AMR. High rates of infection encourage antibiotic use, and little access to high-quality routine antibiotics and poor regulation in LMICs can promote antibiotic misuse. The new Series provides robust evidence on the effects of expanding methods to prevent infections, such as access to safe drinking water, effective sanitation, vaccination, and infection and prevention control in health-care facilities. These interventions could prevent more than 750 000 deaths associated with bacterial AMR each year in LMICs, with additional health and societal benefits.

Access needs to be at the heart of innovation in research and development. Developing new antibiotics is crucial, but they must be affordable where they are most needed.

Mayur Kakade via Getty Images

Published Online
May 23, 2024
https://doi.org/10.1016/
S0140-6736(24)01076-6

See Perspectives page 2367

See Series pages 2426 and 2439

See Online/Series
https://doi.org/10.1016/
S0140-6736(24)00878-X
and https://doi.org/10.1016/
S0140-6736(24)01019-5

What does it says ?

- AMR is a symptom of health inequities **not addressable by focusing on HIs**.
- Newborns, old people, or with chronic illnesses particularly susceptible.
- These effects compromise the achievement of the UN SDGs
- **Tx for AMR infections cost US$412 billion/y**
- **Productivity losses account for $443 billion/y.**
- Funding for new antibiotics is low
- **Funding for diagnostic tests and vaccines targeting AMR bacteria even more scarce**

Devant cette situation très inquiétante, un Espoir ….

United Nations | General Assembly of the United Nations

On 26 September 2024, High-level meeting on AMR at UNGA.

"Investing in the present and securing our future together: Accelerating multi-sectoral global, regional and national actions to address Antimicrobial Resistance."

https://www.qjsamr.org/docs/librariesprovider25/unga-hlm/glg-report-final.pdf?sfvrsn=4b84972e_3

Le bruit court que l'UNGA se donnerait les moyens d'atteindre les objectifs suivants

- 10% global reduction in AMR related deaths
- 20% reduction inappropriate human use of antibiotics
- 30% reduction in inappropriate animal use of antibiotics

Overseen by an independent panel of evidence

Me prenant pour Auguste à la fin de “Cinna”:

“j’en accepte l’augure et ose l’espérer”

Merci pour votre attention et bonne journée !