

IN ORDER TO PROTECT ANTIBIOTICS, WHICH ARE A REAL TREASURE, WE SHOULD LIST THEM AS UNESCO WORLD HERITAGE!

DR JEAN CARLET, FOUNDER AND PRESIDENT, WAAAR, ARCHITECT OF THE NATIONAL PLAN TO PRESERVE ANTIBIOTICS, FRANCE AND GARANCE UPHAM, VICE-PRESIDENT, WAAAR



Antibiotics are in great danger (1). Antibiotic resistance has increased dramatically in the last few years, and very few new compounds have been marketed in the recent years or will be made available in the next few years. Therefore, antibiotic resistance represents one of the most important public health issues of our time (2,3). Resistance to antibiotics is due to many factors, in particular the overuse of antibiotics in both humans and animals, and the cross-transmission of resistant microorganisms in both the community, the hospitals and livestock. The presence of antibiotics and resistant microorganisms in the environment is also a key mechanism.

Antibiotics are very special drugs because their target is a living one, able to adapt and become resistant to the drug. This is unique! In addition, the effect of antibiotics is not only visible in the treated patient, but also in other patients, since antibiotics act not only on the microorganism(s) responsible for the treated infection, but also on the commensal flora, in particular the digestive microbiota. The gut is the silent epicentre of antibiotic resistance, because the antibiotics modify profoundly the gut microbiome, and allow resistant microorganisms to grow and to colonize this organ for prolonged periods of time (4). Those resistant strains can then be transferred to other patients in the hospitals, or to relatives in the community. Antibiotics, and resistant microorganisms present in the effluents can contaminate the environment (5,6). Microorganisms carried by animals can contaminate humans via either the environment or the food chain.

Antibiotics are overused nearly everywhere. There are huge differences in their usage between countries. For example, Scandinavian countries use one third of the amount used by countries like France and Greece. There is a clear relationship between the consumption of antibiotics and the resistance level. It is more than unlikely that Scandinavian patients are less well treated than patients in France or Greece! It is known that between one third and half of the antibiotic therapies are either unnecessary or inappropriate, both in the inpatient and in the outpatient settings. Patients are very often treated with antibiotics for viral diseases, in particular for upper tract

respiratory infections, or for simple colonization, in particular for asymptomatic bacteriuria. Even when the treatment is indicated, patients are often treated for too long a period of time.

It is really time to act vigorously in order to save antibiotics through an active protection of available compounds, including the old ones and the acceleration of the innovation to bring new drugs to the clinicians in the near future. The action must be global and worldwide.

Antibiotics need to be actively protected like a precious resource (7) and must be considered in the context of sustainable development (8). Antibiotic prescription is still considered everywhere like a trivial act. In many countries antibiotics are available over the counter. This must be combated, as well as the use of counterfeit or outdated antibiotics. Antibiotics are widely available and wasted in developed countries, but the access to those drugs is limited in many developing countries (9). This is not acceptable! In drafting the French national plan, we purposefully placed our objective as "preserving antibiotics" (10).

Those are the main reasons why we have proposed to UNESCO to list antibiotics in their World Heritage programme (UWH). WAAAR is a large international non-governmental organization, with regular contacts with WHO, FAO, OIE, United Nations, European and International agencies (CDC, ECDC...), to cite a few. The members of the association come from many different sectors, in particular, but not only, healthcare professionals, researchers, patients and

consumers. Reading the press, citizens are more and more concerned and afraid of this new worldwide danger.

We perfectly realize that antibiotics are a very different topic than the one usually selected by UWH, which are specific and located geographical sites. However, we do think that it would be very appropriate to have them on board, since they must be actively protected like precious gifts provided by mother Nature to treat severe infections and sepsis. Antibiotic resistance will be perfectly able, if we remain inactive, to destroy totally our anti-infectious armoury, and bring us to the pre-antibiotic area. We hope that UNESCO will consider that this huge danger for the human community should fall in their range of missions. ■

Dr Jean Carlet, is the President and Founder of ACdeBMR/WAAAR (the World Alliance Against Antibiotic Resistance). Trained in internal medicine, head of the ICU in Hospital St Joseph, Paris, for 25 years, he has published in medical journals on the issue of antibiotic resistance for over 30 years. WAAAR gained

international recognition with the launch of the Paris Declaration which gathered over 700 signatories from 55 countries, or which over a 100 scientific societies. In 2015 Dr Carlet was nominated by France's Ministry of Health to head the Special Task Force for Antibiotic Preservation. He is a steering committee member of several coalitions such as CARA and lately ANTARTICA (ANTimicrobial Resistance CriTical Care).

Garance Upham, journalist and economist has a long-term involvement in global health issues. In the late 1980s and 1990s she was involved in training healthcare systems in French speaking Africa on the prevention of bloodborne and airborne pathogens transmission in health systems.

She has worked as a consultant on injection safety, tuberculosis, macroeconomics and health, as well as recently mapping civil society globally for the SDGs' health goals.

Between 2004 and 2014, she was on the Steering committee of Patients for Patient Safety, PSP, WHO. A member of WAAAR from the start, she is based in the Geneva suburbs.

References

1. Laxminarayan R, Duse A, Watal C. Antibiotic resistance. The need for global solutions. *Lancet Infect Dis* 2013;13:1057-98
2. Hollis A, Ahmed Z. Preserving antibiotics rationally. *New Engl J Med* 2013;369:2474-76
3. Antibiotic resistance – problems, progress, and prospects. Nathan C, Cars O. *N Engl J Med*. 2014 Nov 6;371(19):1761-3. doi: 10.1056/NEJMp1408040. Epub 2014 Oct 1. No abstract available.
4. Carlet J. The gut is the epicentre of antibiotic resistance. *Antimicrob Resist Infect Control* 2012;1:39
5. Rigal GK, Zmuda JT, Gore R et al. Antibiotic resistant bacteria in waste water processed by the metropolitan water reclamation of greater Chicago system. *Water Sci Technol*.2009;59:2297-304
6. Whitehead TR, Cotta MA. Stored swine manure and swine faeces as reservoirs of antibiotic resistant genes. *Lett Appl Microbiol*.2013;56:264-7
7. Carlet J, Collignon P, Goldmann D et al. Society's failure to protect a precious resource: antibiotics. *Lancet* 2011;378:369-7
8. Jasovský D, Littmann J, Zorzet A, Cars O. Antimicrobial resistance-a threat to the world's sustainable development. *Ups J Med Sci*. 2016 Aug;121(3):159-64. doi: 10.1080/03009734.2016.1195900. Epub 2016 Jul 14. Review
9. Carlet J, Pittet D. Access to antibiotics: a safety and equity challenge for the next decade. *Antimicrob Resist Infect Control* 2013;2:1
10. Together, let's save antibiotics, France's national plan, English version : solidarites-sante.gouv.fr/IMG/pdf/rapport_carlet_anglais.pdf