

Conclusions

Antimicrobial resistance in animal and public health

We trust that, by examining the latest information available, this edition of the OIE *Scientific and Technical Review* will provide an objective basis for a proper understanding of the problem of the resistance of bacteria to antimicrobial agents.

Nevertheless, many questions still remain unanswered.

Microbial ecology and the reversible and irreversible changes caused by the use of antibiotics are areas of knowledge that have been insufficiently explored.

We know that bacteria respond to the use of antibiotics by developing resistance, and that the prevalence and diversity of this resistance depend on the concentration and the ecological context of the bacterial population in question. However, our current state of knowledge makes it difficult to predict how this bacterial response will change if the use of antibiotics is reduced, so further work is required in these domains.

Similarly, the role of the environment, bacterial 'circulation' and the path of the spread (or transmission) of bacteria in the living world, in each kingdom, species, ecosystem or social unit, needs to be investigated more fully.

In recent years many hospitals throughout the world have achieved positive results in managing multi-resistant bacterial infections in humans. These results can be used to rethink the way in which antibiotics are managed and the way in which we can care for patients exposed or already infected.

If antimicrobial resistance is to be overcome, antibiotics must be used more prudently and there must be a coordinated, global effort to combat resistant bacteria. It is an urgent problem requiring a global response. But although there is an urgent need to implement measures against antimicrobial resistance, it must be recognised that it may be some time before these measures take effect and significant results are obtained.

As controlling resistant bacteria is a costly, long-term undertaking with major socio-economic consequences, a multidisciplinary scientific approach is needed.

We would like to thank personally all those who helped to produce this edition of the *Review*, including the contributing authors and co-authors (A. Aidara-Kane, A. Bruno, K. Bush, E. Cambau, V. Carolissen Mackay, P. Collignon, A. Davin-Regli, M. Doyle, B. Duffy, B. Edwards, P. Gautier, H. Goossens, I.M. Gould, K. Grein, T. Guillard, M.K. Hong, S.Y. Hwang, K.H. Kwon, T. Lambert, X. Li, J.C. McEntire, S.A. McEwen, H. Marion, J.-P. Orand, S.W. Page, J.-M. Pagès, P.-P. Pastoret, S. Schwarz, T.R. Shryock, P. Silley, S. Simjee, V.O. Stockwell, C.J. Teale, J. Vaarten, H. Wang, M. Wooldridge, P. Zarb and L. Zhang), as well as Paula Cray and André Bryskier who, for personal reasons, were unable to complete the work they started. We also extend our gratitude to the head of the OIE Publications Unit and its team of revisers and translators.

J.F. Acar,
OIE expert and member
of the *Ad hoc* Group on Antimicrobials,
22 rue Emeriau,
75015 Paris, France

G. Moulin,
French Agency for Food, Environmental and
Occupational Health and Safety (ANSES),
National Agency for Veterinary Medicinal Products,
La Haute Marche, B.P. 90203,
35302 Fougères, France