

INTRODUCTION

Antibiotic resistance (AR) in bacteria that cause infections in humans and animals is a growing problem worldwide. The excessive use of antibiotics for many years in both the human and veterinary fields has caused many bacteria to have developed resistance to the most commonly used and effective antibiotics to treat infections. Wildlife species are not treated with antibiotics directly but the transmission of antibiotic resistance genes (ARG) between bacteria means that this AR reaches wildlife. Currently the appearance and increase in the diversity of BRA and ARG in wild fauna is due to anthropogenic sources.

OBJECTIVES

- Investigate how antibiotic resistance occurs in wildlife that has never been treated with antibiotics.
- Find out how antibiotic resistance is transmitted and spread from wild animals.
- Analyze what information wildlife can give us about antibiotic resistance.
- Show real cases of antibiotic resistance.
- Explore the implications of antibiotic resistance in both free-ranging wild animals and rehabilitation centers.

SOURCES OF ANTIBIOTIC RESISTANCE ACQUISITION IN WILD SPECIES

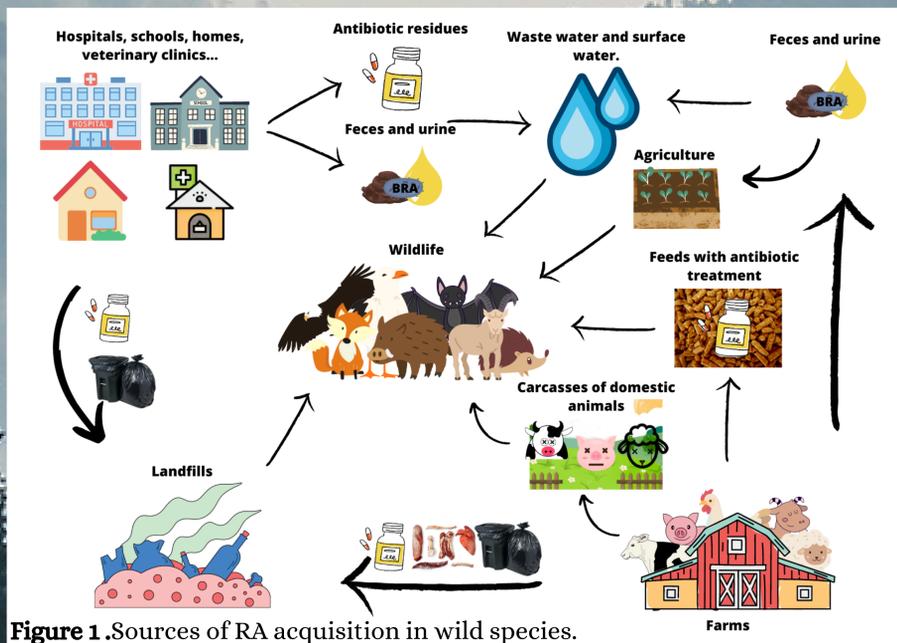


Figure 1. Sources of RA acquisition in wild species.

LOCAL EXPANSION OF ANTIBIOTIC-RESISTANT BACTERIA

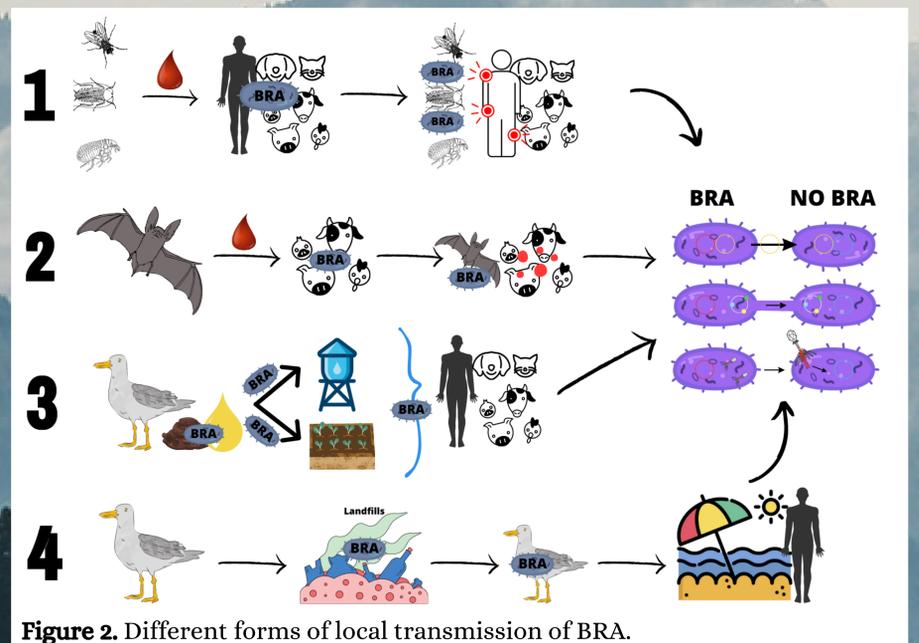


Figure 2. Different forms of local transmission of BRA.

SPREAD OF ANTIBIOTIC-RESISTANT BACTERIA BETWEEN GEOGRAPHICALLY DISTANT AREAS

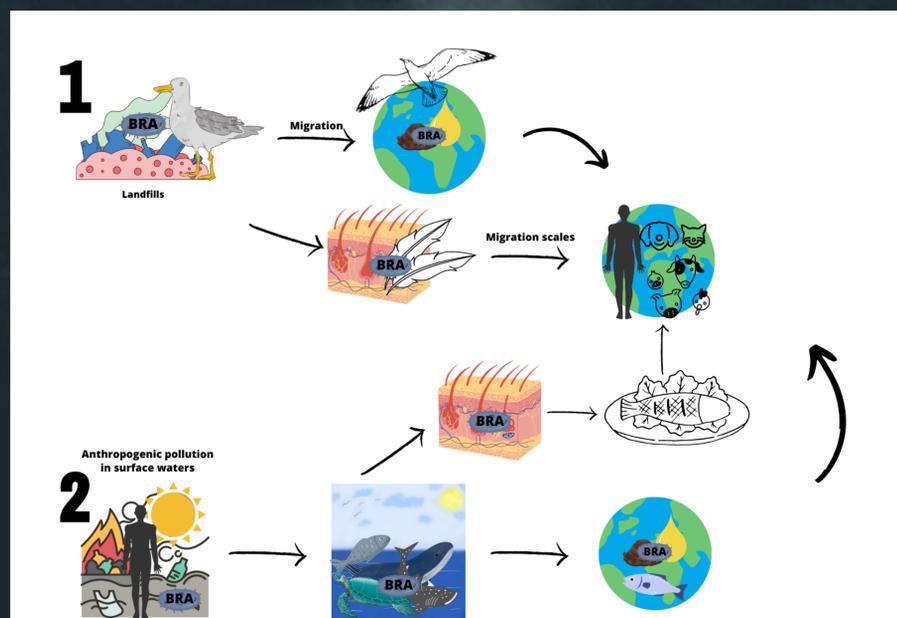


Figure 3. Different forms of transmission between geographically distant areas of BRA.

DOCUMENTED EXAMPLES

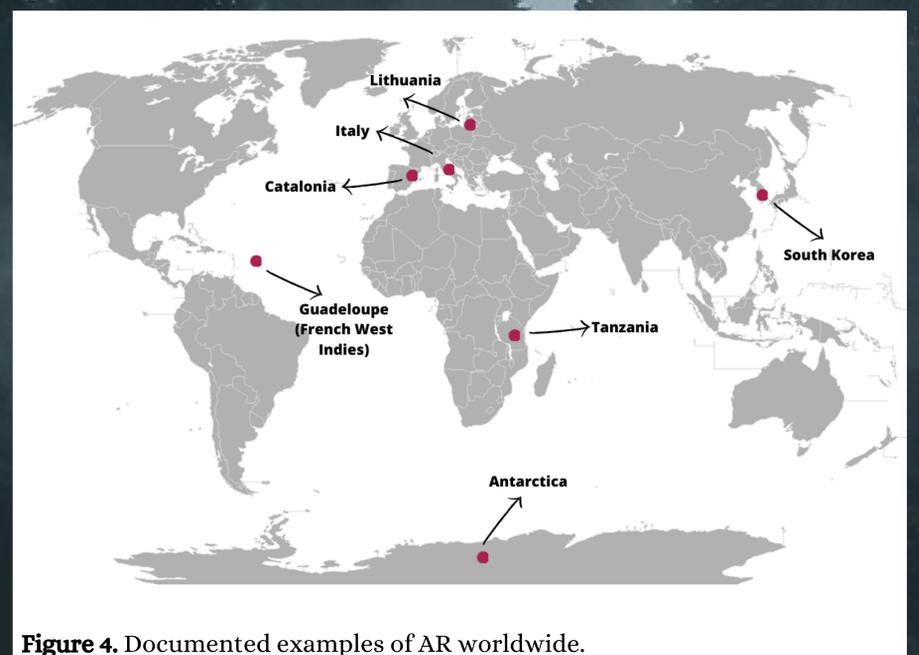


Figure 4. Documented examples of AR worldwide.

CONCLUSIONS

1. Human, animal, and environmental health are interconnected and involved in the emergence, evolution, and spread of antibiotic resistance, forming "One Health".
2. Antibiotic resistance found in wildlife is a consequence of the misuse of antibiotics in human and animal medicine and the mismanagement of antibiotic residues.
3. Wild animals can serve as sentinel species to provide information about the contamination of antibiotic resistance in the environment.
4. The presence of antibiotic resistance in free-ranging wild animals has no implications. The problem arises when they require care from a wildlife rehabilitation center and therapeutic failures occur, limiting treatment options and potentially leading to complications or even death.