

# Antimicrobial Resistance: The Moral Compass of Health

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**Abstract:** *Antimicrobial Resistance (AMR) in the simplest terms describes a paradoxical and disproportionate relationship between the irrational consumption of antibiotics and the real needs. The developing Antimicrobial Resistance (AMR) is considered one of the most serious public health issues which in the last years have started to be perceived as the real threat it is. The paper has a double purposes: a) to critically analyze the methods in which such a complex phenomenon is conceptualized and b) to better understand the possible available approach methods that specialists in the field of public health have in their ongoing attempt to slow down and reduce the momentum of this phenomenon. The overall reasoning of the paper is to better understand the current correct decision-making of a healthcare provider regarding the use and the restriction of antibiotics on a patient.*

**Keywords:** *Antimicrobial Resistance; Ethics; Ethics of Care; Antibiotics; Morality; Prevention; Public Health.*

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## Introduction

Antimicrobial resistance is one of the most burdensome public health problems that are still in search of solutions. The answers outlined in order to disband this problem seem to fall primarily to the task of philosophy and ethicists. Medical humanities can contribute significantly to the development of correct policies, and to the education of the population to stop the process of accelerating the ineffectiveness of antibiotics. The whys of antibiotic resistance have a circular trajectory. Antibiotics are used excessively or administered improperly. These deficiencies in the administration of antibiotics lead to an increase in microbial resistance. The simplest intervention to correct this situation is outlined by ethics and moral behavior, care for oneself and others, or attention to spending common resources that must be reserved for generations to come. If it is about what is given to them in excess and the lack of administration of antibiotics, adverse effects occur in people who do not act the right way. In the case of excess, the antibiotic taken for a respiratory tract infection, which can be treated by ingesting liquid and rest, can generate resistance of the microbes and at the subsequent relapse, the antibiotic can no longer cope, be ineffective for the person caring for the abused and furthermore, there will be constant danger of passing on the resistant microbe. In the case of improper uses, for example, the person who does not follow the doctor's prescription to take antibiotics to treat tuberculosis abandons the treatment. The disease can recur and tuberculosis can be resistant to drugs. Treatment of drug-resistant TB takes around two years. That is, daily, for a period of 24 months, the patient will be administered therapy that includes antibiotics that are much more toxic and aggressive for the body and much more expensive than first-line drugs. According to the studies, (Jang & Chung, 2020) only in 54% of the cases, the success of the therapy found. For other severe infections caused by antibiotic-resistant bacteria, for example, *P. aeruginosa*, which affects immunocompromised hospitalized patients, there are often no alternative therapies. Morbidity and mortality in this case of nosocomial infections (Horcajada et al., 2019) represent a considerable threat worldwide. There is a need to find the fine line between what is too much or too less for each patient who might be treated with antibiotics and to develop procedures based on ethical principles and moral values that put the patient and his needs at the center of attention or to develop protocols to prevent and control the evolution of infectious diseases to stop the process of eroding the effectiveness of antimicrobials.

AMR in the simplest terms describes a paradoxical and disproportionate relationship between the irrational consumption of antibiotics and the real needs. The Centre of Disease Control or CDC describes the situation in these terms: „The more we use antibiotics, the more we contribute to the pool of antibiotic-resistant microbes. (...) All antibiotic use, whether warranted or not, places selection pressure on bacteria, and some organisms that possess genetic mutations will survive antibiotic treatment” (Viens & Littman, 2015). The developing Antimicrobial Resistance or AMR is considered one of the most serious public health issues which in the last years has started to be perceived as the real threat it is. This is due to its disastrous effect on people’s health worldwide. Around 700.000 people die of antibiotic-resistant infections every year, and by 2050 10 million lives a year will be at risk due to drug-resistant infections (Giubilini, 2017, Kamenschikova et al. 2018). In Europe, each year, more than 670 000 infections occur due to bacteria resistant to antibiotics and approximately 33000 people die as a direct consequence of these infections. The related cost to the healthcare systems of EU/EEA countries is estimated according to European Centre for Disease Prevention and Control (2022) to be around €1.1 billion.

Due to the conjuncture created by the SARS-COV-2 pandemic, the consumption of antibiotics has decreased in humans by more than 15% between 2019 and 2020 as announced by the European Center for Disease Prevention and Control (2021). However, antimicrobial resistance (AMR) levels remain high for several important combinations of bacterial species and antimicrobial groups, with the highest percentages generally reported by countries in the south and east of Europe. However, the risk of eroding the effectiveness of antibiotics due to improper administrations remains pressing and the danger increases for generations to come. Under these conditions, what are the concepts around which antibiotic administration procedures should be built? Are the ethical justifications and arguments brought either in favor of antibiotic rationalization, taxation, or delayed prescribing strategy sufficiently strong and effective?

Having these questions at the front, the paper has a double purpose: a) to critically analyze the ways in which such a complex phenomenon as AMR is conceptualized and b) to better understand the possible approach methods that philosophers and ethicists in the field of public health proposed in their ongoing attempt to slow down and reduce the momentum of this phenomenon. The overall reasoning of the paper is to better understand the current correct decision-making of a healthcare provider regarding the use and the restriction of antibiotics on a patient and to sketch

an ethical path (Pahlman et al., 2022) for the use of both individuals and policymakers.

Methodologically, the critical analysis of specialty literature was performed using two ethical filters: a) ethics of care as an element that may provide an adequate but impartial fundamental in the passing between going from taking care of a person to taking care of a multitude of people; b) minimum conception of morality as an instrument that may support the specialist in public health to make, indifferent of the case, the best rational and morally correct decision. The result of this critical analysis was afterward interpreted ethically, especially with regards to the orientation towards ethics of care in collaboration with elements of minimum conception of morality. Inclusion criteria (McDougall, 2015) in this non-systematic review were based on the relevance of the thematic content of articles, books, or research as part of the philosophical/ ethical field. Quantitative research depicting numbers of AMR prevalence or incidence in certain regions, countries, etc. was discarded from the research itself but noted as a reference to the magnitude of the scale of AMR worldwide.

### **Strategies for reasonable use of antibiotics**

To be able to discuss the various strategies of the reasonable use of antibiotics, for whatever reason there may be or however justified they may be, they come into direct conflict with the will, right or interest of a person through the simple fact that said person has access to this type of medication by law. That is why before any type of analysis and discussion of strategies regarding the use of antibiotics put in practice by clinics, hospitals, or in the measures of prevention and screening we have to respond to the question: who is the patient? Who is the person which for the good of the community we must solicit to endure the pain? How it is normal to perceive this patient: as isolated from the community he lives in or to consider him as if broken from it? Of course, through the course of philosophical history, there have been documented responses (Foucault, 2007; Person, 2017) to these questions and from this point of view, there are at least two options evidently opposing one another. Each of them adds different methodologies which healthcare workers use: a naturalistic view of the person and a practical-moral view of the person. In a naturalistic account, the person is reduced to a mere organism. This reductionist perspective is used commonly in statistics, economy, decision theory, and epidemiology and it has a limited but precise function to determine the way in which the gestures, options, preferences, how each one's diseases are inter-connected, and the context in which they are integrated. The other option takes into consideration the

perspective developed by Taylor (1985, pp. 97-114) in which the person „has a sense of self, of his/her own life who can evaluate it, and make choices about it”. This is the basis of „respect we owe persons”. If we are to analyze in a naturalistic view of the person and compare it with the metaphysical perspective of the person, the identity and individual autonomy (Verkerk, 2001) developed by Taylor (1985) and at the same time direct our attention towards the situation in which a person is put under the scenario of applying strategies of rationalization of antibiotics, we can very easily observe that the person is situated outside of the possibility to take a decision regardless if the capacity to decide is altered by disease or not. For example, in the case of the measures taken by the Infectious Diseases Society of America through their guidelines for developing antimicrobial stewardship programs or ASP’s, the doctors are solicited to reduce the dose and to shorten the duration of antibiotic use (Oczkowski, 2017). To accomplish these guidelines that have been set out, doctors are solicited to take a decision of action while taking into account a series of aspects that transform the decision into an ethically justified decision: publicity condition; appeals/revision conditions, and enforcement condition. This mechanism of decision making where a health physician, first of all, let the patient know, or the close relatives of the patient the necessity to restrict access to medication, is called public condition (Beauchamp & Childress, 2012). In the context of taking such a decision, this condition is very important as there may be situations in which healthcare providers consider it is not always necessary to burden the patient with such information if at that moment he/she does suffer from an antibiotic-resistant acute infection (Kamenschikova, 2018). In the case of relevance and revision condition, the doctor must evaluate the health state of an individual and the level of risk the patient is at if he is not empirically administered (as in without an answer from a laboratory that would indicate specifically which type of antibiotic would the bacteria be susceptible to) a wide spectrum antibiotic as protocol solicits in cases of emergency. If the patient is temporarily incapacitated and does not have the mental state to make a decision or to partake in the decision-making alongside the doctor, the healthcare provider is advised to come to a conclusion using the ethical principle of Rawls, also called the ignorance veil. Ethical justification in these conditions is extremely important. The lack of an ethical foundation in these circumstances does not mean anything else but abuse from the doctor and the breaking of one most fundamental principles (Beauchamp, Childress, 2012) of professional deontology: *primum non-nocere* - first, to do no harm. The problem that appears here is one of the instruments utilized to come to an ethically justified decision. The principle of Rawls (1999), the veil of

ignorance, will give the possibility to make a moral evaluation of individuals from positions of the original agreement. According to this point of view, participants in social cooperation should choose together, by means of a unitary act, the principles which allocate the rights and obligations of everyone, which establish the distribution of benefits of social cooperation. People should decide beforehand how they will adjust the expectations they have from each other and what is going to be the fundamental agreement in their society. Rawls says that those who participate in the act of taking decisions should fulfill certain conditions and, at the same time, certain rights are assumed; first, it's about rational persons and, consequently, they are ensured equal freedom. The original status is seen as a purely hypothetical situation, nothing primitive, cultural, or historic, which could have a strict role, in Rawls' terms, to configure a certain conception of justice and the individuals who accept this situation are not aware of their status in society. Here, Rawls takes into account the class or social status and the natural qualities and abilities, e.g., intelligence, power- and the participants do not know their own conceptions about good or their particular psychological inclinations. Under these conditions, nobody will be disadvantaged or advantaged by the contingency of a social lottery. If we take into account the strict specifications of this principle we can note that it can be used in the case of rule making which will be at the base of decision-making and not the decision of action. The requirement imposed by the Antimicrobial Stewardship Programmes (ASPs) to include the principle of Rawls as a support instrument of decision-making is simply ineffective.

### **The idea of need in the medical system**

Realistic situations in which a sick person is sitting in a bed do not necessitate in any way for the doctor to cover his face and judge with his eyes closed. A clear difference has to be made though, between personalized treatment and discrimination in this case. It is morally wrong to discriminate but personalized treatments are necessary for certain scenarios for the good health of a patient. All doctors should have the same amount of care when treating a patient, but that does not mean the same treatment. A better response to the situation to this would be the one given by the ethics of care. Beyond the problems not well developed yet by the ethics of care, this orientation is considered to be close to the ethics of justice just as Rawls' theory is. But different when compared to Rawls (1999) that promotes a particularistic moral epistemology in which attention, contextual and narrative appreciation, and communication are considered elements of moral deliberation.

In this ethical context, the doctor would have to confront making the decision of limiting the consumption of antibiotics. In a case such as that he could decide based on the following structure: The elements taken into account are derived from the ethic developed by Joan C Tronto (2009) and requires from the one that is taking the decision: attentiveness, responsibility, competence, and responsiveness. Tronto in his ethics linked all these elements coming from the idea that treatment as an act in itself is based on the idea of need-the needs-to observe the fact that someone needs help. And as this need seemingly may be an infinite one, Tronto affirms that in the medical system of healthcare there will be permanent moral dilemmas linked with the need to satisfy all requirements of care. And the judgment of the doctor that takes responsibility for caring for a person will be a judgment of needs. Besides professional competence, in this ethical framework, the specialist that offers healthcare services must take into consideration before the decision of action the response of the patient or the ones that replace the patient in the taking of the decision. Because the point of view of the two denominators that participate in this deliberative act with regard to what the need represents may be radically different. Ethics of care do mention the fact that it is individualistic but must be situated in the broader context. This concept can be understood through the perspective of moral practice upon a person based on Taylor's view (1985), which finds an adequate response for this scenario: the fact that an individual is not the only person that suffers from an affliction, that other people may be in the same situation; that other people have the same needs and require the same amount of attention. The fact that one is part of a world that is shared by others automatically comes with the fact that one must share all the resources that make one able to maintain life in this world. And to take correct action, indifferent of the situation in which someone is in the process of care, be it a patient or a healthcare provider, they must first start acknowledging the situation in which they are, beginning with "the minimum conception of morality" (Rachels, 2003). Every individual has the duty to ask and at the same time respond to the question of what is right, what is correct to do in this situation? With at least one valid argument.

### **Strategies for reducing consumption of antibiotics**

Even if some concepts considered key to ethical-philosophical research that focuses on finding the least restrictive ways to reduce antibiotic consumption are not fully clarified, they are functional and can be used with caution. There are still discussions in this field that reveal a secondary antagonism regarding the classification of antibiotics as a common good or a

public good. But researchers seem to agree on the fact that the erosion of the effectiveness of antibiotics represents a tragedy of the commons (Giubilini, 2019).

In establishing strategies to limit consumption, both types of responsibilities were taken into account (Dyar et al., 2016), the possibility of charging the consumption of antibiotics in certain circumstances (Giubilini, 2019) or the delay of purchase reactions and immediate gratification of the consumption of antibiotics (Peters et al. 2011).

The taxation model depicted by Giubilini (2019) has some features slightly similar to the taxation model for alcoholic beverages and tobacco consumption. The difference between the two models actually lies in the consequences on the body of the consumption of the products for which the so-called "vice tax" is charged and the harmful effects of the unjustified consumption of antibiotics that affect not only the person who consumes them but also future generations. The tax would apply only to those cases in which the consumption of antibiotics is not an immediate necessity and the sum of the tax, in the view of the author of the model, should be directed to the research and development of new generations of more effective antibiotics. If in the case of alcoholic beverages and tobacco a series of taxes were successfully imposed that limited the excessive consumption of alcohol, would the taxation of antibiotics follow the same pattern? Certainly, there are major differences between what alcohol and tobacco represent for consumption and, on the other hand, under what conditions the antibiotic can be administered. If in order to enhance the well-being provided by the consumption of alcohol and tobacco a person is willing to pay more, would people be willing to pay more to eliminate a bad, unpleasant state that could deepen?

Administration of the antibiotic appears as a need dictated by the deterioration of the individual's well-being and based on previous experiences, the patient believes that to overcome the condition he is facing he needs the antibiotic. The patient's interest is to overcome the condition he is facing as quickly as possible, and the doctor has the duty to help him, taking into account the patient's opinion and decision to act. Every individual has the right to decide on his own course of life and the laws governing societies must ensure and protect this fundamental right.

In the case of respiratory tract infections (RTIs), a category in which sore throat, acute cough, and ear infection are included, most of the viral ones can be self-managed without antibiotics. However, it was found that in these cases primary doctors prescribe antibiotics at the patients' request 60% of cases (Peters et al., 2011).



One of the strategies to reduce the consumption of antibiotics in this context was the introduction in 2008 in the UK by the National Institute for Health and Clinical Excellence of a delayed prescribing strategy. In fact, those authorized to prescribe antibiotics post-dated the prescription so that the patients could not obtain the medicine until the date indicated on the prescription, in case they still considered that the antibiotic was needed. Doctors felt that this strategy was affecting their therapeutic relationship with the patient. According to the study carried out by Peters et al. (2011) this strategy was not successful.

By comparison with the model of taxing the consumption of antibiotics (Giubilini, 2019) which was ethically justified with the same arguments with which the unqualified supererogation was justified and whose argumentation is partially supported, the delayed prescribing strategy can easily find its supporters among the followers of stoicism and the strategy would also be considered in the future.

## **Conclusion**

The conclusions of this paper go into multiple directions which require more study; as such they remain open and can describe at most some possibilities for future research. First of all it is necessary to develop a new generation of antibiotics which has to delay the confrontation with the era of post-antibiotics as much as possible; the necessary transformation of new methodology of work in medical sciences of public health that requires a unified concept regarding what a person means and the way in which the person is attributed to meaningful and rational decision making regarding itself. And lastly, the direction in which one has to find the best most suitable ethical instruments that can help professionals of the health domain to take the best decisions of action in the morally complex situations which they are confronted with daily.

On the other part, interdisciplinary, ethical, and philosophical investigations in the field of medical humanities should develop in search of answers, justifications, and correct and convincing arguments capable of changing behaviors. In the same direction, researchers and specialists who bring a new perspective, and add knowledge in this field should also undertake the exercise of communicating science to the non-specialist public. The communication of science and the delivery of correct, verified, valid, ethically justified information has the best chances to decrease anti-vaccination attitudes against infections, form and maintain behavioral patterns to maintain proper hygiene, and thus prevent infections and antibiotic consumption.

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