



Daffodil
International
University

Thesis on

**Survey on Irrational Use of Antibiotics in Rural Areas of Dhamrai &
Noakhali**

[In the partial fulfillment of the requirements for the degree of Masters of
Pharmacy]

Submitted To

The Department of Pharmacy,
Faculty of Allied Health Sciences,
Daffodil International University

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APPROVAL

This thesis paper, “**Survey on Irrational Use of Antibiotics in Rural Areas of Dhamrai & Noakhali**”, submitted to the Department of Pharmacy, Faculty of Allied Health Sciences, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of Masters of Pharmacy and approved as to its style and contents.

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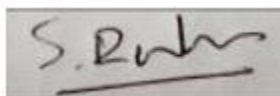
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DECLARATION

I hereby declare that this project report, “**Survey on Irrational Use of Antibiotics in Rural Areas of Dhamrai & Noakhali**”. I am declaring that this Project is my original work. I also declare that neither this project nor any part thereof has been submitted elsewhere for the award of Masters or any degree.

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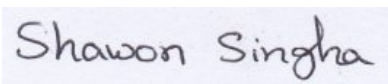
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Dedication.....

My Parents

**The persons who always encourage me in
every sphere of my life**

Abstract

Antibiotics have traditionally renovated the medical sciences, but now their usefulness is in question since hazardous germs are becoming resistant to drugs. This poll aims to determine public awareness regarding the inappropriate usage of antibiotics. In the Dhamrai and Noakhali area, feedback made with questionnaires' was being distributed one-on-one, face-to-face. While 66% of respondents were unaware of the true reason for using antibiotics, 34% of respondents were aware of it. Antibiotic resistance is known to affect 13% of respondents, whilst 87% of respondents were unaware of it. 53% of respondents said they had not finished their antibiotic dosage. Even after the symptoms subsided, they did not finish the entire antibiotic prescription 47% of respondents said they had finished their antibiotic prescription. 79% of respondents said they had no trouble getting antibiotics without a prescription. In response, 21% said they haven't been purchasing antibiotics without them. 88% of participants, or the majority, said they were unconscious of the negative effects of antibiotic resistance. People continue to use antibiotics because they are unaware of the hazards associated with antibiotic resistance. In response, 78% said they were unaware of the prudent use of antibiotics. Antibiotic resistance steadily rises as a result of a lack of understanding regarding the responsible use of medication. Various people have used various kinds of antibiotics. Of those surveyed, 35% said they had taken azithromycin often. 11% took cefuroxime, 17% metronidazole, and 21% ciprofloxacin. Initiatives to enhance antibiotic prescribing and infection control procedures may be jeopardized by differences in medical professionals' knowledge, attitudes, and beliefs.

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Chapter 1

Introduction

1.1. Introduction

Antibiotics play a vital role in combating bacterial infections and safeguarding public health. However, the misuse of antibiotics presents a momentous threat, contributing to the occurrence of antibiotic resistance and compromising the therapeutic value of these life-saving medications. While concerns about antibiotic misuse have been extensively discussed in global healthcare discourse, there remains a need for focused investigations at the local level to understand specific patterns and drivers of irrational antibiotic use [1]. This survey endeavors to shed light on the prevalence and determinants of irrational antibiotic use in the rural areas of Dhamrai and Noakhali, two distinct regions in Bangladesh. Rural communities often face unique challenges in healthcare access, awareness, and practices, making them particularly susceptible to inappropriate antibiotic use [2]. By delving into the dynamics of antibiotic consumption in these specific locales, we aim to contribute valuable insights that can inform targeted interventions and policies to address this critical issue. The rural populations of Dhamrai and Noakhali represent diverse socioeconomic backgrounds, cultural contexts, and healthcare infrastructures. Factors such as limited healthcare facilities, inadequate awareness about antibiotic resistance, and socio-cultural beliefs may contribute to the misuse of antibiotics in these areas. Understanding the intricacies of antibiotic utilization in these communities is essential for designing effective strategies to promote judicious antibiotic use, preserve antibiotic efficacy, and mitigate the growing threat of antibiotic resistance [3]. This survey will employ a multidisciplinary approach, combining epidemiological, sociocultural, and healthcare system perspectives to comprehensively assess the irrational use of antibiotics. Through structured interviews, observational studies, and data analysis, we aim to identify patterns of antibiotic prescription, dispensing, and consumption, as well as the knowledge, attitudes, and practices of healthcare providers and the general population. The findings of this survey are anticipated to not only contribute to the existing body of knowledge on antibiotic misuse but also serve as a foundation for targeted interventions in these specific rural contexts. By addressing the root causes of irrational antibiotic use, we aspire to pave the way for sustainable improvements in healthcare practices and contribute to the global effort to preserve the effectiveness of antibiotics for future generations [4].

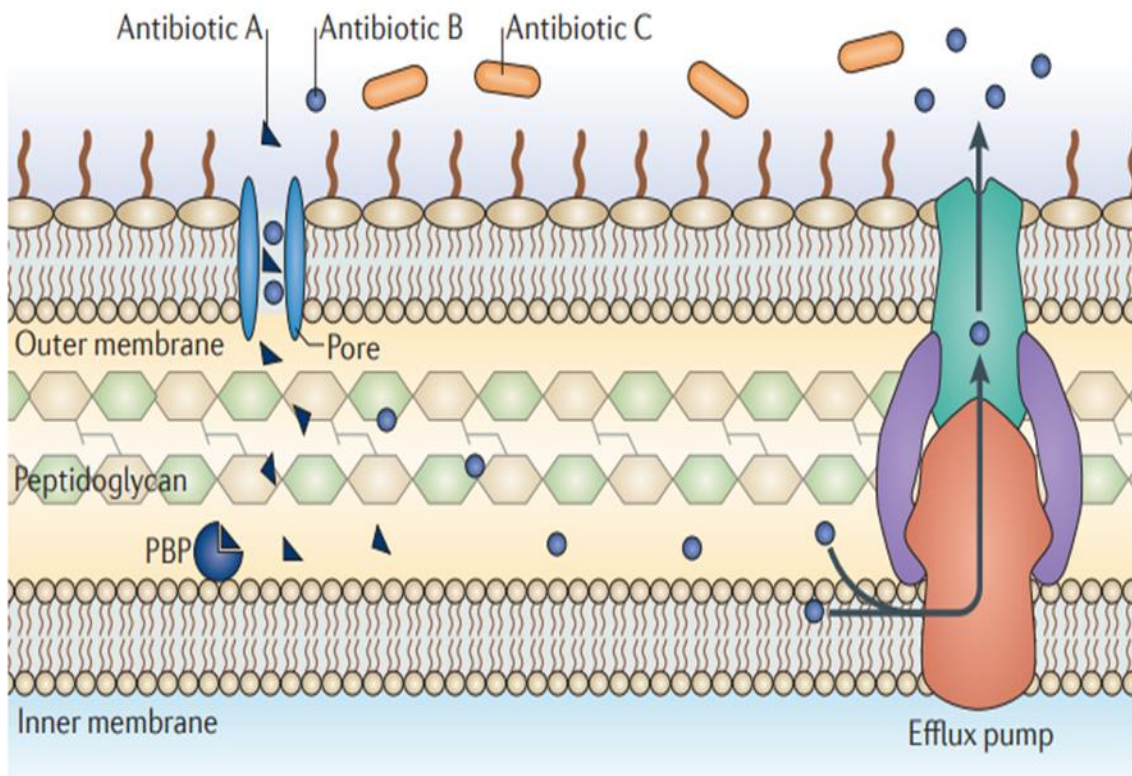


Figure 1: Intrinsic mechanisms of resistance [5]

1.2. Antibiotic Overuse and Misuse Is a Major Problem

Absolutely, antibiotic overuse and misuse pose significant challenges and threats to public health. Here are some key points to consider:

Antibiotic Resistance:

Antibiotic-resistant microorganisms are a result of both misuse and excess use of antibiotics. Antibiotics lose some of their effectiveness when they are administered incorrectly or needlessly because bacteria may develop to become resistant to them [6].

Ineffectiveness of Antibiotics:

The more antibiotics are used, the higher the likelihood that bacteria will adapt and become resistant. This can lead to common infections becoming harder to treat and increases the risk of prolonged illness or even death.

Human Health Impact:

Antibiotic resistance jeopardizes the effectiveness of medical treatments that rely on antibiotics, such as surgeries, cancer chemotherapy, and organ transplants. Infections that were once easily treatable may become life-threatening [7].

Increased Healthcare Costs:

An increase in hospital admissions, doctor visits, and demand for more costly and involved therapies can result from the growth in antibiotic-resistant illnesses. This, in turn, increases healthcare costs for individuals and society as a whole.

Agricultural Use:

Antibiotics are utilized extensively in agriculture to promote development and avoid sickness in cattle, in addition to their use in human healthcare. This application in agriculture adds to the broader issue of antibiotic resistance [8].

Lack of New Antibiotics:

The rise of microorganisms resistant to antibiotics has outpaced the creation of newly discovered antibiotics. This scarcity of new drugs limits treatment options and underscores the importance of preserving the effectiveness of existing antibiotics.

Global Impact:

Resistant bacteria can easily spread between countries, making it crucial for international cooperation to address the problem [9].

Education and Awareness:

Education campaigns can help curb unnecessary prescriptions and promote responsible antibiotic use.

Alternative Approaches:

Research into alternative approaches to combat bacterial infections, such as the development of new vaccines, phage therapy, and other innovative treatments, is essential to supplement the dwindling effectiveness of antibiotics [10].

It involves promoting responsible use, developing new antibiotics, and implementing policies to curb misuse in both human and animal health [11].

1.3 Mechanisms of Antibiotic Resistance

Mutation:

Bacteria can undergo genetic mutations that confer resistance to antibiotics. These mutations may occur naturally over time, and bacteria with resistance traits have a survival advantage when exposed to antibiotics [12].



Horizontal Gene Transfer:

During appliances including conjugation, transformation, and transduction, bacteria can exchange genetic material. This allows the transfer of antibiotic resistance genes between different bacterial species, facilitating the spread of resistance [13].



Enzymatic Inactivation:

Certain bacteria generate enzymes with the ability to alter or neutralize antibiotics. As an illustration, beta-lactamase enzymes have the ability to degrade beta-lactam antibiotics, making them useless [14].



Efflux Pumps:

Efflux pumps are particular proteins that proactively pump antibiotics out of the cells of bacteria while they have a chance to do any damage. Bacteria may have these pumps. By using this technique, the amount of antibiotics inside the bacterial cell is decreased [15].



Altered Target Sites:

Antibiotics usually collaborate with target areas that can be altered by bacteria. This alteration can make the antibiotics unable to bind to their intended targets, reducing their efficacy [16].



Biofilm Formation:

Antibiotic resistance is frequently higher among bacteria found in biofilms, which are populations of microorganisms encased in a protective matrix. Antibiotics may find tough to penetrate the biofilm matrix and approach the bacterial cells [17].



Persisters:

Bacterial persisters are dormant cells with reduced metabolic activity. They can survive antibiotic treatment and later resume normal growth, contributing to recurrent infections.



Selective Pressure:

This occurs as non-resistant bacteria are eliminated, leaving behind a population that is increasingly resistant [18].



Antibiotic Modification:

Bacteria can modify the structure of antibiotics through chemical alterations, rendering them ineffective. This variation is often accepted out by enzymes shaped by the bacteria.



Compartmentalization:

Antibiotics can be sequestered by certain bacteria behind cellular sections, obstructing the medications' intended outcomes. This lessens the effect of antibiotics on the ability to survive of bacteria [19].

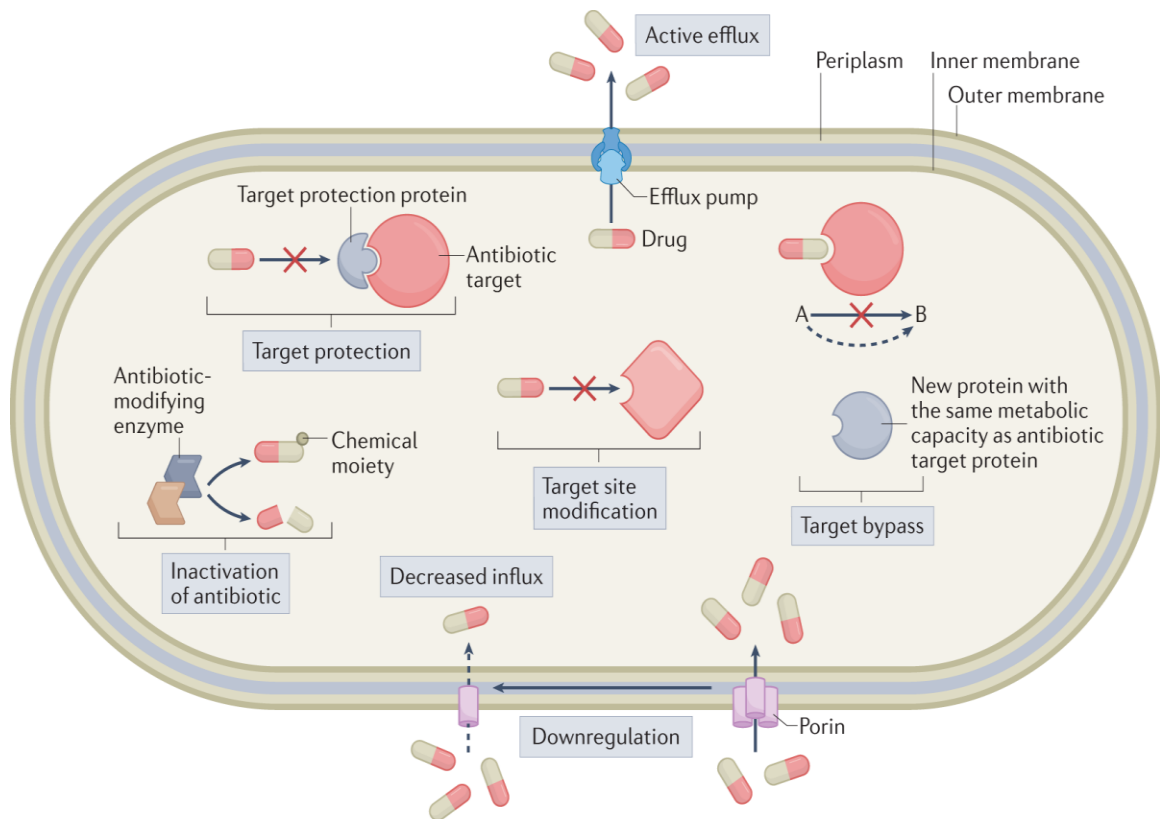


Figure 2: General antimicrobial resistance mechanisms [20]

1.4 Factor associated with irrational uses of antibiotics

Self-medication: People often self-prescribe and use antibiotics without consulting a healthcare professional. This may be due to easy access to antibiotics without a prescription, inadequate knowledge about the appropriate use of antibiotics, or a desire for quick relief from symptoms [21].

Over-the-counter availability: In some regions, antibiotics are available over the counter without a prescription. This makes it easier for individuals to obtain antibiotics without proper medical guidance, contributing to inappropriate use.

Incomplete treatment courses: If an antibiotic course isn't finished as directed, bacteria may not be completely eradicated, which could contribute to the development of resistance in the remaining bacteria. Instead of receiving antibiotics for the entire recommended course, patients may quit taking them once they start to get healthier [22].

Inappropriate prescription practices: Healthcare providers may prescribe antibiotics unnecessarily due to various reasons, such as diagnostic uncertainty, patient demand for antibiotics, or pressure to provide a quick solution. Overprescribing can lead to antibiotic misuse.

Lack of awareness: Both healthcare practitioners and the general population may lack understanding of the repercussions of antibiotic overuse and the need of conserving the usefulness of antibiotics for future decades. Education programs are important to solve this knowledge gap [23].

Poor infection prevention and control: Insufficient methods for infection prevention and control in healthcare facilities can lead to the propagation of illnesses, leading to increased demand for antibiotics. Effective infection control practices can help reduce the need for antibiotic treatment.

Agricultural use of antibiotics: The application of antibiotics in agriculture, especially in livestock for encouraging growth or prevention of illness, can lead to the creation of antibiotic-resistant microorganisms. Resistant strains can be passed on to people through the food chain [24].

Globalization and travel: The mobility of people around the world and a rise in travel are factors in the cross-border transmission of microorganisms resistant to antibiotics. In regions with lax antibiotic regulations, individuals may purchase antibiotics without proper oversight and bring them across borders [25].

Chapter 2

Literature Review

2.1 Antibiotic resistance

Bacterial pathogens face a problem with high rates of morbidity and mortality: antibiotic resistance. Because multidrug-resistant gram-positive and gram-negative bacteria can also be resistant to popular medications, eliminating them might be challenging. Since there are currently few effective medications, new antibiotics, and workable preventive measures, It is essential for the development of novel therapeutic strategies and substitute antibacterial treatments. Multi-drug resistance is associated with biofilms, that may render infection control challenging. Further subjects addressed included pathogenicity, *Staphylococcus aureus*, *Clostridium difficile* disease, Vancomycin-resistant enterococci, and control subjects in an ambulance [26].

2.2 Bacterial resistance to antibiotics: access, excess, and awareness in Bangladesh

Antibiotic resistance significantly contributes to morbidity and mortality in Bangladesh. This point-of-view article examines antibiotic resistance using information from scholarly research and the author's personal experiences. The battle towards antibiotic resistance has advanced significantly in spite of Bangladesh's efforts. To ensure that the regulations are fully implemented, public knowledge is required. Given that the issue is more social than medical, the health sector cannot handle it on its own. To determine the functions and relative importance of each sector (human, animal, and environment), a coordinated approach is required. The battle towards antibiotic resistance has advanced significantly in spite of Bangladesh's efforts. To ensure that the regulations are fully implemented, public knowledge is required. Given that the issue is more social than medical, the health sector cannot handle it on its own. To determine the functions and relative importance of each sector (human, animal, and environment), a coordinated approach is required. A number of suggestions on involvement have been made available to the administration [27].

2.3 Antibiotic resistance situation in Dhaka, Bangladesh: a review

The main goals of this thorough inquiry were to identify any oversights in the meticulous surveillance, offer recommendations, and deliver an impression of the present state of antibiotic resistance in Dhaka. Founded without a doubt on justice and the results. Online resources including Google Scholar, PubMed, and Bangladeshi journals have been searched using the appropriate search criteria to find publications published between 2004

and 2020 that discuss antibiotic resistance in Dhaka, Bangladesh. Once upon a time, attention was given to the mean susceptibility and interquartile range of medicine resistance in a bacterium. The current systematic review covered a total of 41 publications. Most patients had only mild carbapenems resistance up until this point. It has been demonstrated that the majority of them frequently acquire antibiotic resistance [28].

Chapter 3

Purpose of the Learning

3.1 The objective of the study:

The goal of this research is to thoroughly examine and assess the trends, causes, and effects of excessive consumption of antibiotics in Dhamrai and Noakhali's rural communities. Antibiotics are essential for treating bacterial infections; nevertheless, overuse or incorrect use of antibiotics can result in antibiotic resistance, which is a serious risk to public health. The unreasonable consumption of antibiotics in rural areas may be influenced by socioeconomic situations, poor healthcare accessibility, and low consciousness.

Assessment of Antibiotic Utilization Patterns:

- Examine the prevalence and frequency of antibiotic use in the target rural areas.
- Identify common types of antibiotics used and the conditions for which they are predominantly prescribed.

Determinants of Irrational Antibiotic Use:

- Investigate socio-economic factors influencing antibiotic consumption.
- Explore healthcare-seeking behaviors and their impact on antibiotic prescription and usage.
- Assess the role of cultural beliefs, traditional practices, and self-medication in antibiotic misuse.

Healthcare Infrastructure and Access:

- Evaluate the accessibility and quality of healthcare facilities in Dhamrai and Noakhali.
- Examine the availability of trained healthcare professionals and their influence on antibiotic prescription practices.

Community Awareness and Education:

- Portion the level of awareness among the rural population regarding the appropriate use of antibiotics.
- Identify gaps in knowledge that contribute to irrational antibiotic use.
- Assess the effectiveness of existing health education programs in promoting responsible antibiotic use.

Antibiotic Resistance and Public Health Implications:

- Examine how common antibiotic resistance is in the locations under investigation.
- Examine the possible effects of excessive antibiotic use on public health, such as the establishment of resistance strains.

Recommendations for Intervention:

- Propose evidence-based interventions to address the identified determinants of irrational antibiotic use.
- Suggest strategies for enhancing healthcare infrastructure, promoting community awareness, and improving antibiotic prescription practices.

Policy Implications:

- Provide insights for the development and implementation of policies aimed at curbing irrational antibiotic use in rural areas.
- Advocate for a multi-stakeholder approach involving healthcare providers, community leaders, and policymakers.

Chapter 4

Methodology

4.1 Setting and Participants

- To collect information from an accurate representation of the people in Dhamrai and Noakhali, Bangladesh, use a cross-sectional questionnaire design.
- I began working on the study in October of 2023.

4.2 Data Collection:

- Develop a structured questionnaire based on validated scales and existing literature interrelated to irrational usage of antibiotics.
- Convert the questionnaire into Bengali so that the local populace can comprehend it better. A group of data collectors should receive training on the questionnaire and ethical issues.
- Conduct face-to-face interviews, phone interviews, or online surveys, depending on the accessibility of the respondents. Ensure informed consent and data confidentiality.
- Reviewing numerous relevant article papers from various websites, including Google Scholar, Research Gate, and PubMed, allowed us to compile some significant data.

4.3 Data Variables:

- Compile demographic data, such as living, occupation, age, gender, and level of education.
- Compile data on the excessive use of antibiotics, including indicators, family history, causes, range, and use of healthcare.
- Examine lifestyle elements such as eating habits, physical exercise, and smoking behaviors.
- Evaluate environmental elements, including housing quality, air quality, and closeness to any allergies.

4.4 Sample size

- The thirteen short-answer questions on the test took four to five minutes to complete.
- I have made every effort to get information from a variety of professionals in order to compile a variety of kinds of data.

- Approximately 200 communities participated in the questionnaire-based study that led to the examination.

4.5 Data analysis strategy

Data analysis is the systematic use of logical and/or statistical tools for recitation and illuminating, compressing and analyzing, and appraising data. Utilize suitable statistical software to examine the gathered information. Utilize descriptive statistics to provide an overview of the population and frequency data.

Chapter 5

Results & Discussion

5.1 Results & Discussion of Age

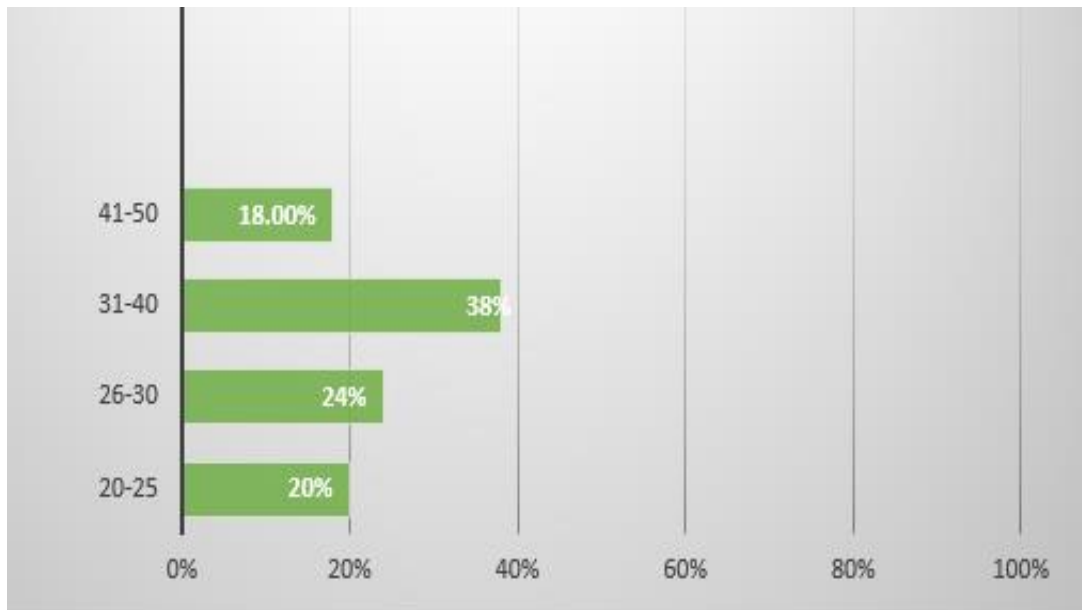


Figure 3: Results of age

Discussion: People from a wide range of age groups have answered to this research evaluation. Twenty percent of those who took part were in the 20–25 age range, twenty-four percent were in the 26–30 age assortment, thirty percent of respondents were in the 31–40 age range, and eighteen percent of respondents were in the 41–50 age range.

5.2 Gender

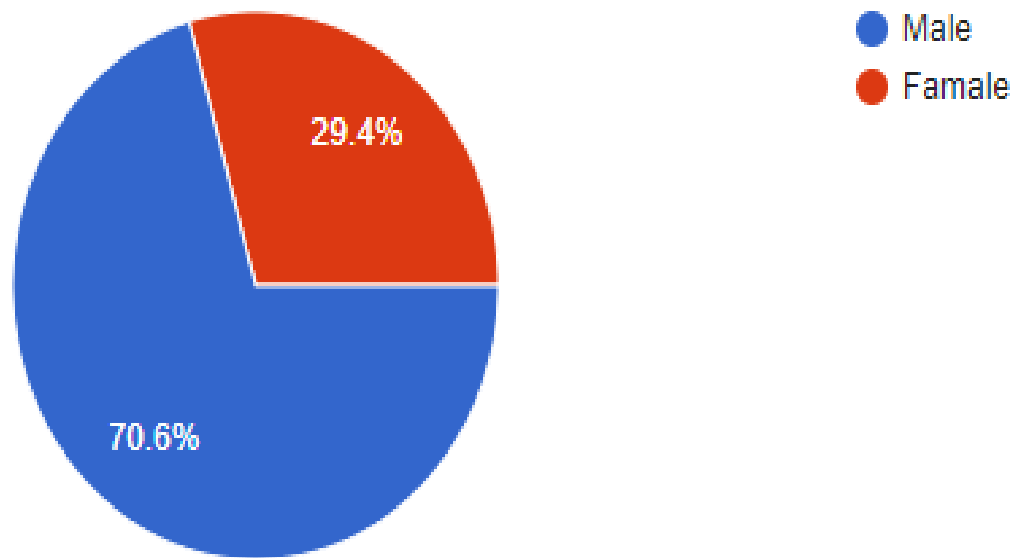


Figure 4: Result of gender

Discussion: Two hundred entities completed the survey with questions. Out of the 200 individuals who answered the question on their greeting, 70.6 percent were men and 29.4% were women.

5.3 Idea about antibiotics

Q: Do you know what antibiotics is?

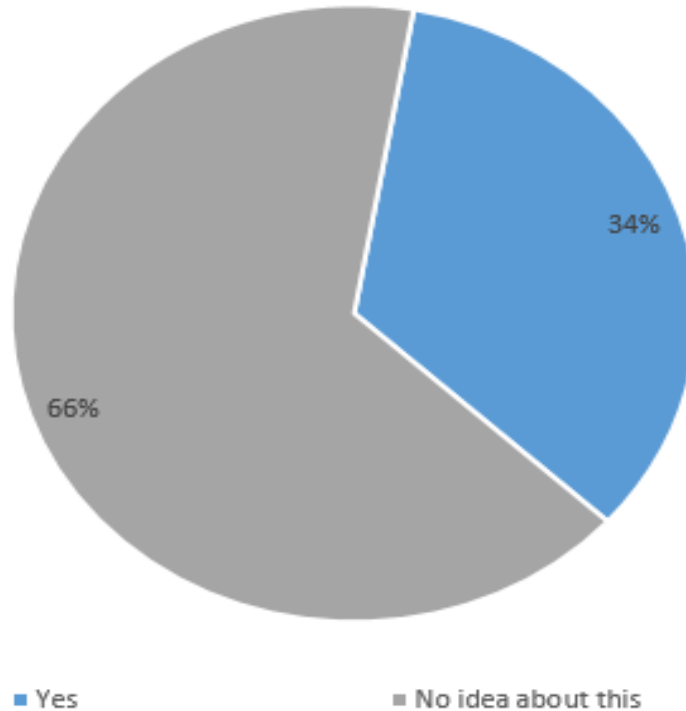


Figure 5: Idea about antibiotics

Discussion: Animal and human bacterial illnesses are treated with medications referred to as antibiotics. They work by either completely eliminating the germs or by interpreting it tougher for the bacteria to multiply and thrive. Few respondents (34%), established to the findings of the research, were attentive of the true meaning of antibiotics, while the bulk of respondents (66%), were unaware of it. The majority of the general public has taken antibiotics carelessly without understanding how they work.

5.4 Idea about antibiotic resistance

Q: Have you any idea about antibiotic resistance?

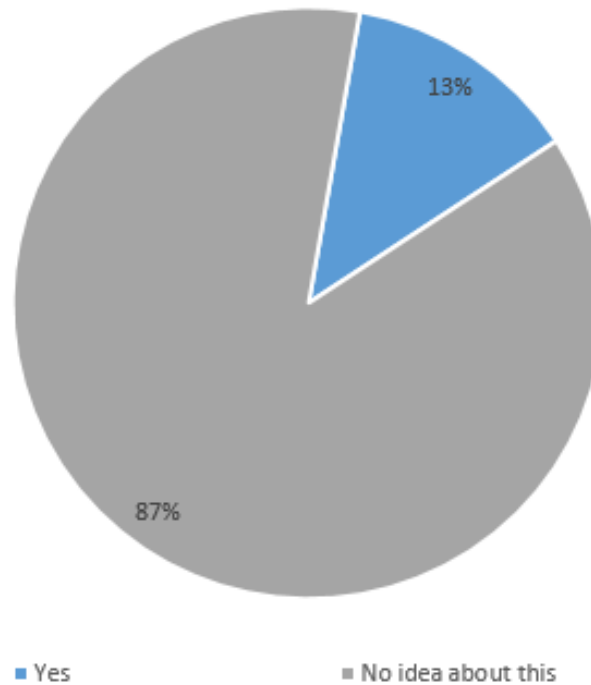


Figure 6: Idea about antibiotic resistance

Discussion: The development of resistance of bacteria, fungus, and other microbes to drugs intended to eradicate them is known as antimicrobial resistance. A large percentage of respondents (87%), corresponding to the survey, were unaware of antibiotic resistance, while only 13% of respondents had any prior knowledge of it.

5.5 Taken antibiotic according to register doctor or yourself

Q: Have you taken antibiotic according to register doctor or yourself?

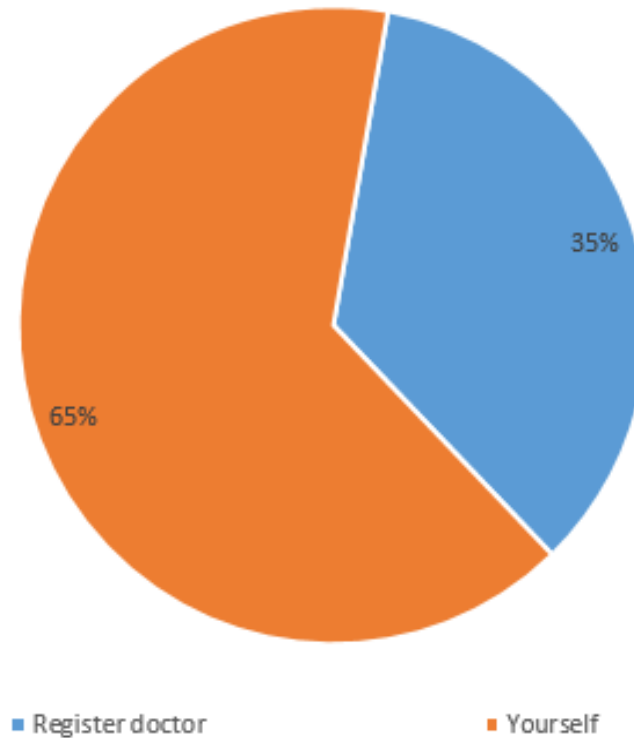


Figure 7: Taken antibiotic according to register doctor or yourself

Discussion: A small percentage of participants 35 percent, in accordance to the investigation took antibiotics at the commendation of their doctors. The mainstream of respondents acknowledged to consuming antibiotics without a doctor's advice. Everyone needs to understand how antibiotics are used.

5.6 Do you complete the dose of antibiotic?

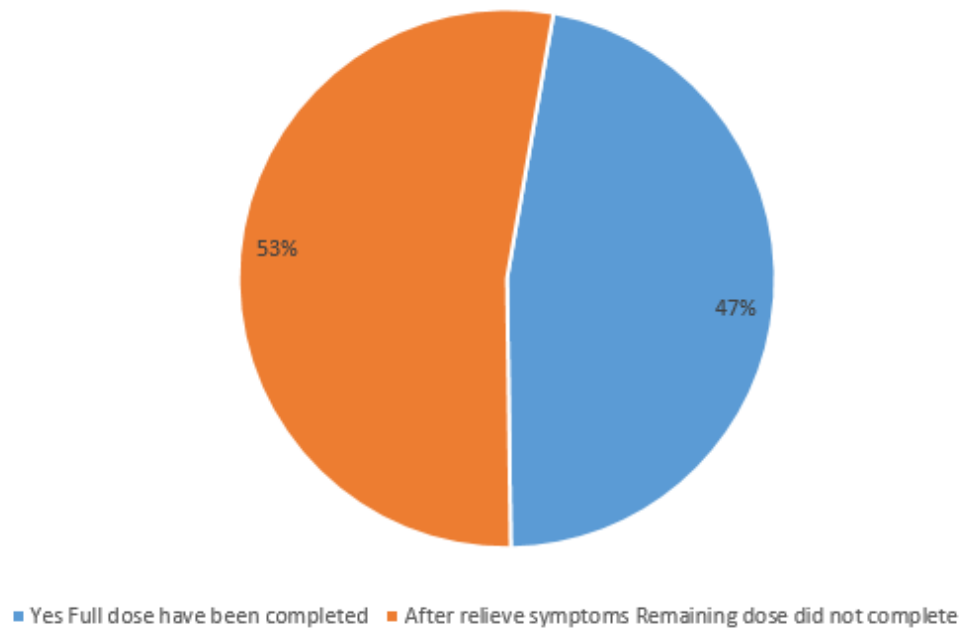


Figure 8: Dose of antibiotics

Discussion: One of the main reasons of antibiotic resistance is improper antibiotic dosing. Permitting this survey to be carried out, the vast majority of participants (53%), stated that they had not completed their antibiotic prescription. They didn't take the full course of the antibiotic medication, despite the fact that the signs of infection disappeared. Of those surveyed, 47% stated they had completed their antibiotic prescription.

5.7 Do you take antibiotic for which disease frequently

Name of the illness	Percentage of responders
Fever	33%
Urinary tract Infection	22%
Diarrhea	25%
Wounds healing	20%

Table 1: More taken antibiotic

Discussion: The mainstream of defendants (33%), pursuant to the examination, stated that they had taken antibiotics repeatedly to treat fevers. Twenty percent were taken for wound healing, twenty percent were given for urinary tract infections, and twenty percent of participants were given antibiotics to treat diarrhea.

5.8 Antibiotics buying rate without prescription

Q: Can you buy antibiotics without a prescription from a pharmacy?

Variables	Percentage of the responders
Yes, it is unassuming to acquisitions antibiotics without a prescription	79%
No, they ask for prescription	21%

Table 2: Antibiotics buying rate without prescription

Discussion: It should be genuine that no medication can be sold without a prescription, with the exception of over-the-counter medications. The ease of obtaining medications is contributing to the rapid rise in antibiotic resistance. 79% of survey participants said they had no trouble getting antibiotics without a prescription. Just 21% of respondents said they haven't been purchasing antibiotics without them.

5.9 Idea about harmful effect of antibiotic resistance

Q: Do you have any idea about harmful effect of antibiotic resistance?

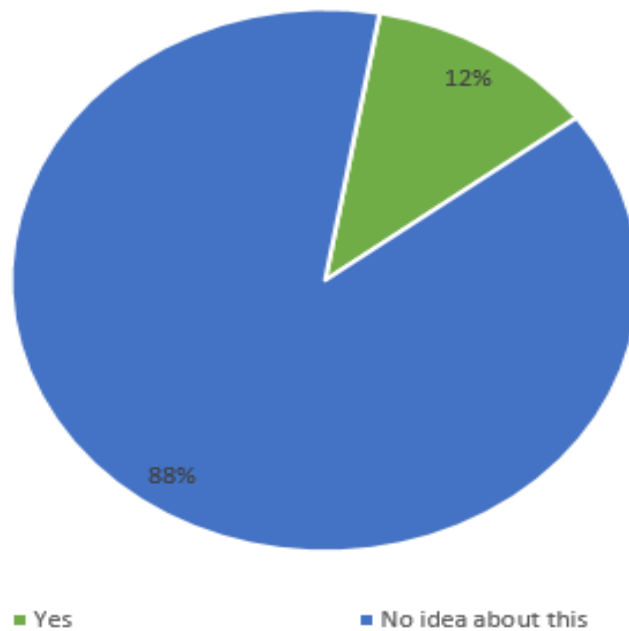


Figure 9: Idea about harmful effect of antibiotic resistance

Discussion: Antibiotic resistance reduces the ability of antibiotics to eradicate infections and illnesses in people, animals, and plants. This could lead to an increase in human sickness, pain, and mortality rates as well as an increase in the cost and length of therapy. A large number of those who took part in the survey 88% reported that they were unaware of the negative effects of antibiotic resistance. People persist to use antibiotics because they are unaware of the risks associated with antibiotic resistance.

5.10 Side effect after taking antibiotic

Q: Do you feel any side effect after taking antibiotic?

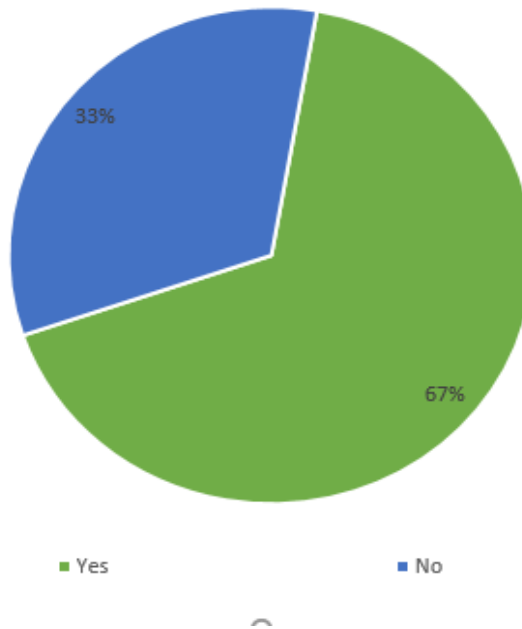


Figure 10: Side effect after taking antibiotic

Discussion: The mainstream of respondents (67%), pursuant to the examination, stated that they have experienced side effects from using antibiotics.

5.11 If yes, which kind of side effect felt?

Side effects	Percentage of the responders
Nausea, vomiting	34%
Diarrhea	23%
Stomach pain	21%
Dehydration	22%

Table 3: Side effect of antibiotics

Discussion: Conferring to the inspection, 34% of respondents thought they had nausea and vomiting following the use of antibiotics. Of those who responded, 23% reported having experienced diarrhea following antibiotic management, 21% reported having experienced stomach pain following antibiotic administration, and 22% reported experiencing lack of water following antibiotic administration.

5.12 Idea about rational use of antibiotics

Q: Do you know rational use of antibiotics?

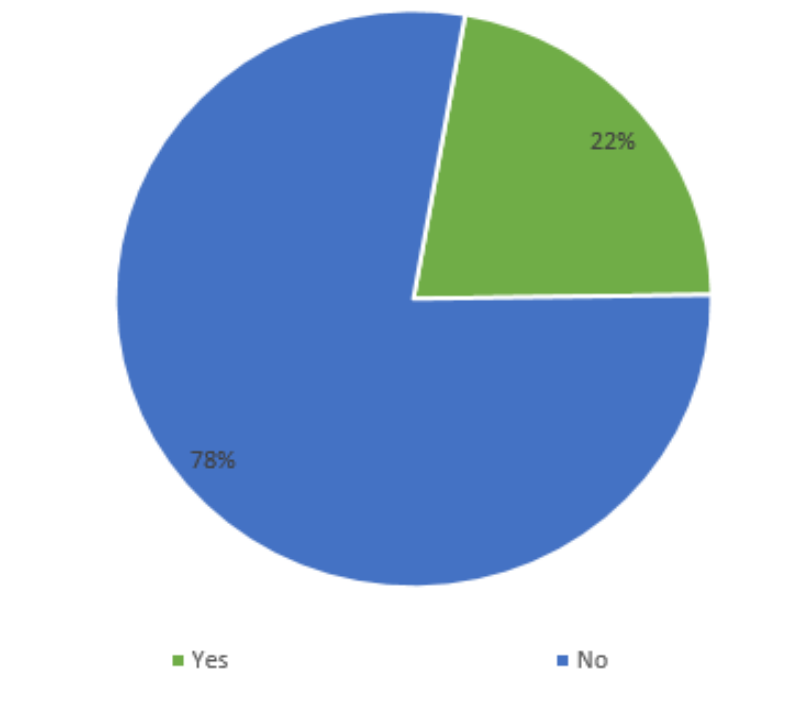


Figure 11: Idea about rational use of antibiotics

Discussion: It is imperative that "patients obtain medicine appropriate to their medical requirements, in doses that fulfill their very particular requirements for an adequate length of time, and at the lowest cost to them and their environment" in order to use pharmaceuticals effectively. The mainstream of respondents (78%), pursuant to the research, stated that they were unacquainted of the rational use of antibiotics. Antibiotic resistance steadily rises as a result of an abundance of understanding regarding the responsible use of medication.

5.13 Which antibiotic have you been frequent taken?

Medicine name	Percentage of responders
Azithromycin	35%
Ciprofloxacin	21%
Amoxicillin	9%
Metronidazole	17%
Cefuroxime	11%
Cefixime	7%

Table 4: Frequent taken antibiotic

Discussion: Various people have used innumerable kinds of antibiotics. An inquiry revealed that 35 percent of respondents said they had taken azithromycin often. 11% took cefuroxime, 17% metronidazole, and 21% ciprofloxacin.

Chapter 6

Conclusion

6.1 Conclusion

We need to put in more effort to find out how big of an issue AMR is. If AMR is to be controlled, precise and widespread data meeting is obligatory. The present level of apprehension around this issue is due to gaps in facts. It is difficult to predict the future with any degree of precision at this time, but it seems that the absence of novel antibiotics will make controlling AMR more challenging. Many approaches should be taken to solve this problem. Few respondents (34%), corresponding to the research, were aware of the true function of antibiotics, while the bulk of respondents (66%), were unaware of it. The majority of the general public has taken antibiotics carelessly without understanding how they work. Allowing this poll to be conducted, the mainstream of respondents 53% reported not having finished their antibiotic dosage. Even after the signs of infection subsided, they did not finish the entire antibiotic prescription. 47% of respondents said they had finished their antibiotic prescription. Keeping an eye on AMR and MDR illnesses at the national, regional, and worldwide levels, as well as implementing mitigation and preventative strategies, could help control the "global resistance."

Chapter 7

Reference

Reference

1. Singer AC, Shaw H, Rhodes V, Hart A. Review of antimicrobial resistance in the environment and its relevance to environmental regulators. *Front Microbiol.* 2016; 7:1728. [PMC free article] [PubMed] Google Scholar
2. Marshall BM, Levy SB. Food animals and antimicrobials: impacts on human health. *Clin Microbiol Rev.* 2011;24(4):718–733. [PMC free article] [PubMed] [Google Scholar]
3. Nathan C, Cars O. Antibiotic resistance-problems, progress, and prospects. *N Engl J Med.* 2014;371(19):1761–1763. [PubMed] [Google Scholar]
4. Nathan C. Antibiotics at the crossroads. *Nature.* 2004;431(7011):899–902. [PubMed] [Google Scholar]
5. Davies J, Davies D. Origins and evolution of antibiotic resistance. *Microbiol Mol Biol Rev.* 2010;74(3):417–433. [PMC free article] [PubMed] [Google Scholar]
6. van Boeckel TP, Brower C, Gilbert M, et al. Global trends in antimicrobial use in food animals. *Proc Natl Acad Sci U S A.* 2015;112(18):5649–5654. [PMC free article] [PubMed] [Google Scholar]
7. Roca I, Akova M, Baquero F, et al. The global threat of antimicrobial resistance: science for intervention. *New Microbes New Infect.* 2015;6:22–29. [PMC free article] [PubMed] [Google Scholar]
8. Rossolini GM, Arena F, Pecile P, Pollini S. Update on the antibiotic resistance crisis. *Curr Opin Pharmacol.* 2014;18:56–60. [PubMed] [Google Scholar]
9. Michael CA, Dominey-Howes D, Labbate M. The antimicrobial resistance crisis: causes, consequences, and management. *Front Public Health.* 2014;2:145. [PMC free article] [PubMed] [Google Scholar]
10. Spellberg B, Srinivasan A, Chambers HF. New societal approaches to empowering antibiotic stewardship. *JAMA.* 2016;315(12):1229–1230. [PMC free article] [PubMed] [Google Scholar]

11. Hoffman SJ, Caleo GM, Daulaire N, et al. Strategies for achieving global collective action on antimicrobial resistance. *Bull World Health Organ.* 2015;93(12):867–876. [PMC free article] [PubMed] [Google Scholar]
12. Payne DJ, Miller LF, Findlay D, Anderson J, Marks L. Time for a change: addressing R&D and commercialization challenges for antibacterials. *Philos Trans R Soc Lond B Biol Sci.* 2015;370(1670):20140086. [PMC free article] [PubMed] [Google Scholar]
13. Luepke KH, Mohr JF. The antibiotic pipeline: reviving research and development and speeding drugs to market. *Expert Rev Anti Infect Ther.* 2017;15(5):425–433. [PubMed] [Google Scholar]
14. Landers T, Kavanagh KT. Is the Presidential Advisory Council on Combating Antibiotic Resistance missing opportunities? *Am J Infect Control.* 2016;44(11):1356–1359. [PubMed] [Google Scholar]
15. Ventola CL. The antibiotic resistance crisis: part 1: causes and threats. *P T.* 2015;40(4):277–283. [PMC free article] [PubMed] [Google Scholar]
16. Prestinaci F, Pezzotti P, Pantosti A. Antimicrobial resistance: a global multifaceted phenomenon. *Pathog Glob Health.* 2015;109(7):309–318. [PMC free article] [PubMed] [Google Scholar]
17. Laxminarayan R, Duse A, Wattal C, et al. Antibiotic resistance-the need for global solutions. *Lancet Infect Dis.* 2013;13(12):1057–1098. [PubMed] [Google Scholar]
18. Guidos RJ. Combating antimicrobial resistance: policy recommendations to save lives. *Clin Infect Dis.* 2011;52(Suppl 5):S397–S428. [PMC free article] [PubMed] [Google Scholar]
19. Gould IM, Bal AM. New antibiotic agents in the pipeline and how they can help overcome microbial resistance. *Virulence.* 2013;4(2):185–191. [PMC free article] [PubMed] [Google Scholar]
20. Bartlett JG, Gilbert DN, Spellberg B. Seven ways to preserve the miracle of antibiotics. *Clin Infect Dis.* 2013;56(10):1445–1450. [PubMed] [Google Scholar]

21. Economou V, Gousia P. Agriculture and food animals as a source of antimicrobial-resistant bacteria. *Infect Drug Resist.* 2015;8:49–61. [PMC free article] [PubMed] [Google Scholar]
22. Maron DF, Smith TJ, Nachman KE. Restrictions on antimicrobial use in food animal production: an international regulatory and economic survey. *Global Health.* 2013; 9:48. [PMC free article] [PubMed] [Google Scholar]