International Journal of Pharmaceutical Research and Applications
Volume 6, Issue 4 July-Aug 2021, pp: 934-947 www.ijprajournal.com ISSN: 2249-7781

"Common Antibiotics for General Uses" Mewar University, Chittorgarh

Kamlesh Kumar Gupta[1], Mr. Ravi Verma[2], Dr. Gaurav Kumar Sharma[3], Dr. Kaushal Kishore Chandrul[4]

(Student[1],
Assistant Professor[2], HOD of Pharmacy[3], Dean of Pharmacy[4])
Faculty of
Pharmaceutical Sciences,
Mewar University, Chittorgarh, Rajasthan, 312901

Date of Submission: 01-08-2021 Date of Acceptance: 11-08-2021

ABSTRACT: Physicians mention patients' expectations as a reason for prescribing antibiotics for common upper respiratory tract infections despite clinical evidence against their use and the physicians' better judgement. We aimed to assess the prevalence of such expectations and factors of influence (knowledge and attitudes) in Germany's general population. In November 2008, 1,778 persons registered with a large market research company were invited to complete an online questionnaire on expectations concerning prescription of antibiotics and on knowledge and attitudes regarding the effectiveness and use of antibiotics for upper respiratory tract infections. A total of 1,076 persons aged 15-78 years participated (response: 61%), of whom 91.8% reported using antibiotics 'only if absolutely necessary'. Prescription of antibiotics was expected by 113 (10.5%) of the 1,076 respondents for the common cold and by 997 (92.7%) for pneumonia. In a logistic regression analysis, predictors for expecting a prescription for antibiotics for the common cold included the following opinions: 'common cold or flu can effectively be treated with antibiotics' (prevalence: 37.6%; odds ratio (OR): 9.6; 95% confidence interval (CI): 3.8 to 24.3) and 'antibiotics should be taken when having a sore throat to prevent more serious illness' (prevalence 8.6%; OR: 7.6; 95% CI: 3.9 to 14.5). Among those expecting a prescription (n=113), 80 (71%) reported that they would trust their physician when he or she deems a prescription unnecessary; a further eight (7%) would be unsatisfied, but would accept the decision. Our results suggest that only a minority expects antibiotics for the treatment of cold symptoms. Physicians should be educated that their decisions not to prescribe antibiotics for the common cold, even when against patients' expectations, are apparently accepted by the majority.

Keywords:- : Antibiotics, expectation, judgement, population, infecation, physicians.

I. INTRODUCTION

Antibiotics, either are cytotoxic or cytostatic to the micro-organisms, allowing the body's natural defenses, such as the immune system, to eliminate them. They often act by inhibiting the synthesis of a bacterial cell, synthesis of proteins, deoxyribonucleic acid (DNA), ribonucleic acid (RNA), by a membrane disorganizing agent, or other specific actions . Antibiotics may also enter the cell wall of the bacteria by binding to them, using the energy-dependent transport mechanisms in ribosomal sites, which subsequently leads to the inhibition of the protein synthesis .

To combat against infections or microbes, undoubtedly antibiotics are a blessing to human civilization that has saved millions of people . Multiple varieties of the antibiotics have been used for therapeutic purposes over time. Antibiotics were seen as the 'wonder drug' in the mid-20th century. At the time, there was an optimistic belief that communicable disease was nearly coming to a complete halt. The beginning of modern "antibiotic era" was synonymously associated with two names Alexander Fleming and Paul Ehrlich . Antibiotics were considered a magic bullet that selectively targeted microbes that were responsible for disease causation, but at the same time would not affect the

International Journal of Pharmaceutical Research and Applications
Volume 6, Issue 4 July-Aug 2021, pp: 934-947 www.ijprajournal.com ISSN: 2249-7781

host. Fleming was the first who cautioned about the potential resistance to penicillin if used too little or for a too short period of treatment . The period from the 1950s to 1970s was thus considered as the golden era for the discovery of novel antibiotics classes .

Millions of metric tons of newer classes of antibiotics have been produced in last 60 years since its inception. Increased demand for antibiotics across many sectors has allowed for less expensive and off-label uses of drugs. Conversely, due to the enormous and irresponsible use of the antibiotics, has contributed significantly to the advent of the resistant strains . In the previous days, the production of new antibiotics was directly proportional to the development of resistant strains. However, the mainstream approach in fighting against the diseases is now focused on the modification of existing antibiotics to combat emerging and re-emerging resistance of pathogens globally .

Resistance to an antibiotic develops in no time and hence, is a big matter of concern . With the improvement of technology, more people are now aware of the ill-effects caused by resistance to the available drugs, however, very few take pro-active steps to curb the resistance by not over using the antibiotics . In the developing world, almost all the antibiotics are available over the counter and can be bought without any medical prescription which is one of the most important factors in causing the resistance. Therefore, if the resistance to the antibiotics needs to be curbed, the only way shall be to educate the patients and the general public.

The present review is one such way to educate the public by showing the development and plausible future of antibiotic resistance and existing regulation to reduce the antibiotic resistance crisis.

1.1 What is infection ?

Infection: The invasion and multiplication of microorganisms such as bacteria, viruses, and parasites that are not normally present within the body. An infection may cause no symptoms and be subclinical, or it may cause symptoms and be clinically apparent. An infection may remain localized, or it may spread through the blood or lymphatic vessels to become systemic (bodywide). Microorganisms that live naturally in the body are not considered infections. For example, bacteria that normally live within the mouth and intestine are not infections

1.2 Type of infection

Infections are caused by infectious agents (pathogens) including:

- Bacteria (Mycobacterium tuberculosis, Staphylococcus aureus, Escherichia coli, Clostridium botulinum, and Salmonella spp.)
- Viruses and related agents such as viroids (HIV, Rhinovirus, Lyssaviruses such as Rabies virus, Ebolavirus and Severe acute respiratory syndrome coronavirus 2)
- Fungi, further subclassified into:
- Ascomycota, including yeasts such as Candida, filamentous fungi such as Aspergillus, Pneumocystis species, and dermatophytes, a group of organisms causing infection of skin and other superficial structures in humans.[5]
- Basidiomycota, including the human-pathogenic genus Cryptococcus.[6]
- Prions (although they don't secrete toxins)
- Parasites, which are usually divided into:[7]
- Unicellular organisms (e.g. malaria, Toxoplasma, Babesia)
- Macroparasites[8] (worms or helminths) including nematodes such as parasitic roundworms and pinworms, tapew orms (cestodes), and flukes (trematodes, such as schistosomiasis)
- Arthropods such as ticks, mites, fleas, and lice, can also cause human disease, which conceptually are similar to infections, but invasion of a human or animal body by these macroparasites is usually termed infestation. (Diseases caused by helminths, which are also macroparasites, are sometimes termed infestations as well, but are sometimes called infections.)

1.3 What is antibiotics?

An antibiotic is a type of antimicrobial substance active against bacteria. It is the most important type of antibacterial agent for fighting bacterial infections, and antibiotic medications are widely used in the treatment and prevention of such infections.[1][2] They may either kill or inhibit the growth of bacteria. A limited number of antibiotics also possess antiprotozoal activity.[3][4] Antibiotics are not effective against viruses such as the common cold or influenza;[5] drugs which inhibit viruses are termed antiviral drugs or antivirals rather than antibiotics.

International Journal of Pharmaceutical Research and Applications
Volume 6, Issue 4 July-Aug 2021, pp: 934-947 www.ijprajournal.com ISSN: 2249-7781

1.4 Types of antibiotics ?

(a) Penicillins
(b) Cephalosporins
(c) Macrolides
(d) Fluoroquinolones (broad-spectrum antibiotics)
(e) Sulfonamides
(f) Tetracycline

II. PENICILLINS

2.1 INTRODUCTION

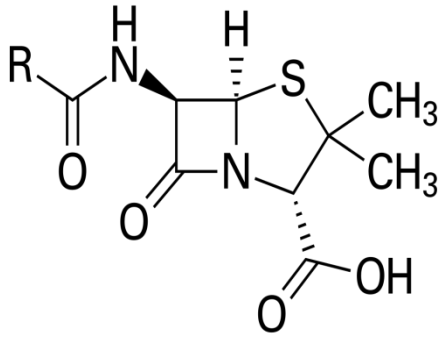
Penicillin was the first antibiotic to be used clinically in (1941) . the first penicillin gave rise to an entire class of antibiotics known as penicillin . penicillin are derived from a specific meld (a type of fungi) – penicillin. They are widely useful antibiotics that are often a doctor's first choice for several types of infection . This includes skin, respiratory, ear, sexually transmitted diseases, and dental infection.

Common side effects :- Diarrhea, nausea, and abdominal pain .

Examples of penicillines :-

- Amoxicillin
- Ampicillin
- Penicillin G
- Penicillin V

2.2 Chemical structure :- (C16H18N2O4S)



.

2.3 **MECHANISM OF ACTION**

Penicillin kills bacteria through binding of the beta-lactam ring to DD-transpeptidase, inhibiting its cross-linking activity and preventing new cell wall formation. Without a cell wall, a bacterial cell is vulnerable to outside water and molecular pressures, which causes the cell to quickly die. Since human cells do not contain a cell wall, penicillin treatment results in bacterial cell death without affecting human cells.

2.4 ROUTES OF ADMINISTRATION :-

For amoxicillin:

- For bacterial infections:
  - For oral dosage forms (capsules, oral suspension, tablets, and chewable tablets):
    - Adults, teenagers, and children weighing more than 40 kilograms (kg) (88 pounds)—250 to 500 milligrams (mg) every eight hours or 500 to 875 mg every twelve hours, depending on the type and severity of the infection.

For ampicillin:

- For bacterial infections:
  - For oral dosage forms (capsules and oral suspension):
    - Adults, teenagers, and children weighing more than 20 kilograms (kg) (44 pounds)—250 to 500 milligrams (mg) every six hours.

For penicillin G:

- For bacterial infections:
  - For oral dosage form (oral solution, oral suspension, and tablets):
    - Adults and teenagers—200,000 to 500,000 Units (125 to 312 milligrams [mg]) every four to six hours.
    - Infants and children less than 12 years of age—Dose is based on body weight and must be determined by your doctor.

For penicillin V:

- For bacterial infections:
  - For the benzathine salt oral dosage form (oral solution):
    - Adults and teenagers—200,000 to 500,000 Units every six to eight hours.
    - Children—100,000 to 250,000 Units every six to eight hours.

III. CEPHALOSPORINS :-

3.1 INTRODUCTION :-

These are a group of semisynthetic antibiotic derived form (cephalosporium –c) obtained from a fungus cephalosporium. They both belong to a large class called beta lactams . There are five generations of cephalosporins .Each generation covers different types of bacteria . As a

International Journal of Pharmaceutical Research and Applications
Volume 6, Issue 4 July-Aug 2021, pp: 934-947 www.ijprajournal.com ISSN: 2249-7781

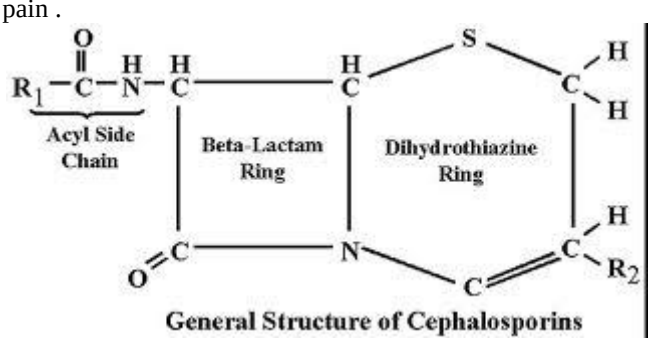
result the class can treat a variety of infections from strep throat and skin infection to very serious infection like meningitis . Because they are related to penicillin allergies may also react to cephalosporins.

Common side effects :- Diarrhea, nausea, heartburn, and abdominal pain .

Examples of cephalosporins :-

- Cefixime
- cefpodoxime
- cefuroxime
- cephalexin

3.2Chemical structure :- (c15H21N3O7S)



General Structure of Cephalosporins

3.3 MECHANISM OF ACTION

Cephalosporins are bactericidal and have the same **mode of action** as other β-lactam antibiotics (such as penicillins), but are less susceptible to β-lactamases. **Cephalosporins** disrupt the synthesis of the peptidoglycan layer forming the bacterial cell wall.

3.4 ROUTES OF ADMINISTRATION :

DOSAGE AND ADMINISTRATION:

Cephalexin is administered orally.

Adults-- The adult dosage ranges from 1 to 4 g daily in divided doses. The 333 mg and 750 mg strengths should be administered such that the daily dose is within 1 to 4 grams per day. The usual adult dose is 250 mg every 6 hours. For the following infections, a dosage of 500 mg may be administered every 12 hours:

DOSAGE AND ADMINISTRATION

Cefiximr is administered orally

Adults: The recommended dose of cefixime is 400 mg daily. This may be given as a 400 mg tablet or capsule daily or the 400 mg tablet may be split and given as one half tablet every 12 hours. For the treatment of uncomplicated cervical/urethral gonococcal infections, a single oral dose of 400 mg is recommended. The capsule and tablet may be administered without regard to food.

IV. MACROLIDES

4.1 INTRODUCTION

Macrolides are a completely different class of antibiotics form the beta- lactams . But they effectively treat many of the same infecations . This includes respiratory,ear,skin and sexually transmitted infecation . So, they are very usefully for people with allergies to beta- lactams . they are also usefully when bacteria develop resistance to beat- lactam antibiotics . How wever ,macrolides have a lot of drug interactions. Be sure your doctor and pharmacist know about all your medications when you take a macrolide.

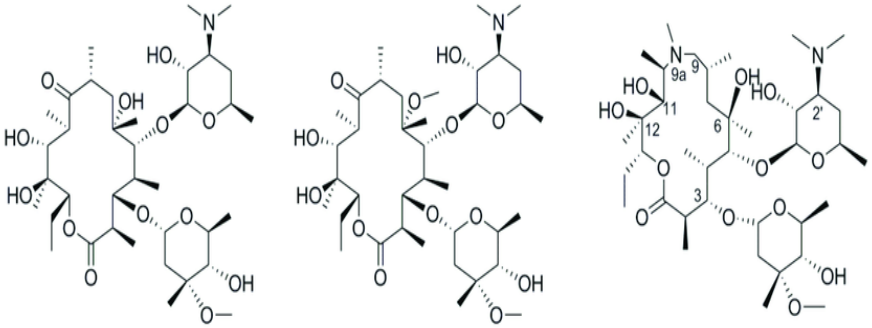
Common side effects :- Nausea , vomiting , stomach pain , and diarrhea .

Examples of macrolides :-

Azithromycin
Clarithromycin
Erthromycin

4.2 Chemical structure :-

International Journal of Pharmaceutical Research and Applications
Volume 6, Issue 4 July-Aug 2021, pp: 934-947 www.ijprajournal.com ISSN: 2249-7781



Erythromycin Clarithromycin Azithromycin

4.3 MECHANISM OF ACTION :-

The mechanism of action of macrolides revolves around their ability to bind the bacterial 50S ribosomal subunit causing the cessation of bacterial protein synthesis. Once bound, the drug prevents the translation of mRNA, specifically the growing peptide chain, by preventing the addition of the next amino acid by the tRNA. Since the bacterial ribosomal structure is highly conserved across most, if not all, bacterial species, it is considered to be broad-spectrum. Macrolides are considered to be bacteriostatic as they only inhibit protein synthesis, although, at high doses, they can be bactericidal.

4.4 **ROUTES OF ADMINISTRATION**

Macrolides come in various forms for administration, depending on the desired medication and reason for their use. Most commonly used are oral formulations in tablet form, but they also come as topical creams, intravenous formulations, as well as ophthalmic preparations.

Erythinromyc
250mg / 500mg – oral tablets
Clarithromycin
125mg / 250mg / 500mg / 1000mg (extended release) – oral tablets
Azithromycin
100mg / 250mg / 500mg / 600mg – oral tablets

V. FLUOROQUINOLONES

5.1 INTRODUCTION

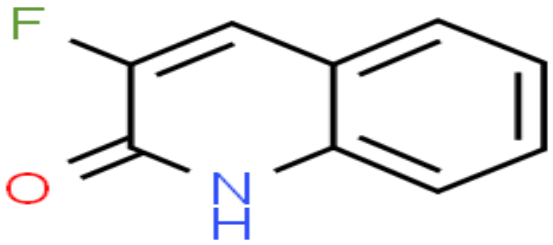
Fluoroquinolones – or quinolones – are active against a very wide variety of bacteria . This makes them useful for treating infection when other antibiotics have failed . They are also an alternative when people have allergies to other antibiotics. They can treat anything from eyeinfection to pneumonia to skin, sinuous, joint, urinary, or gynologics infection or many more. Howhere this class can be a problem for people with certain heart condition and with some other medicines. Be sure your doctor and pharmacist. Known your complete medical history.

- **Common side effects:-** stomach upset or pain**,** diarrhea, headache and drowsiness.

Example of fluoroquinolones

- **Ciprofloxacin**
- **Livofloxacin**
- **Moxifloxacin**

4.5 Chemical Structure:- (C9H6FNO)



International Journal of Pharmaceutical Research and Applications
Volume 6, Issue 4 July-Aug 2021, pp: 934-947 www.ijprajournal.com ISSN: 2249-7781

4.6 Mechanism of Action :-

- Fluroquninolones are bactericidal agents .
- They block bacterial DNA synthesis by inhibiting bacterial DNA gyrase and topoisomerase .
- Inhibition of DNA gyrase prevents the relaxation of positively super coiled DNA that is required for normal transcription and replication .

4.7 ROUTES OF ADMINISTRATION :-

CIPROFLOXACIN

- Usual duration is 7—14 days .
- Available forms

ORAL	PARENTRAL	OPTHALMIC
100mg	200mg IV	3mg/ml solution
250mg	400mg IV	3.3mg/mg
500mg	.....	ointment

LEVOFLOXACIN

- Usual duration same 7—14 days .
- Available forms

ORAL	PARENTAL	OPTHALMIC
100mg	5mg/ml IV	5mg/ml solution
250mg	25mg/ml IV	.....
500mg	.....	.....

VI. SULFONAMIDES

6.1 INTRODUCTION

Derived from the chemical sulfanilamide, 'sulfa drugs' have been around about as long as penicillin. Technically, sulfonamides don't kill bacteria the way other antibiotics do. Instead, they are bacteriostatic—they stop bacterial growth and your immune system does the rest. They are very good topical treatments for burns and vaginal or eye infections. They can also treat UTIs (urinary tract infections) and traveler's diarrhea. However, resistance is common with this class.

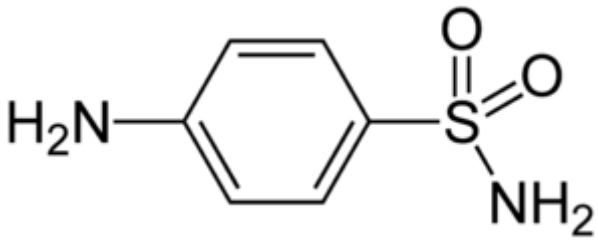
Common side effects

diarrhea, nausea, rash, and sun sensitivity. Allergies

. Examples of sulfonamides

- Sulfacetamide
- Sulfadiazine
- Sulfamethoxazole-Trimethoprim

6.2 Chemical structure(C6H8N2O2S)



6.3 MECHANISM OF ACTION

Sulfanilamide is a competitive inhibitor of bacterial enzyme dihydropteroate synthetase. This enzyme normally uses para-aminobenzoic acid (PABA) for synthesizing the necessary folic acid. The inhibited reaction is normally necessary in these organisms for the synthesis of folic acid. Without it, bacteria cannot replicate.

6.4 ROUTES OF ADMINISTRATION

For sulfadiazine

- For oral dosage form (tablet):
  - For bacterial or protozoal infections:
    - Adults and teenagers—2 to 4 grams for the first dose, then 1 gram every four to six hours.
    - Children 2 months of age and older—Dose is based on body weight. The usual dose is 75

International Journal of Pharmaceutical Research and Applications
Volume 6, Issue 4 July-Aug 2021, pp: 934-947 www.ijprajournal.com ISSN: 2249-7781

milligrams (mg) per kilogram (kg) (34 mg per pound) of body weight for the first dose, then 37.5 mg per kg (17 mg per pound) of body weight every six hours, or 25 mg per kg (11.4 mg per pound) of body weight every four hours.
- Children up to 2 months of age—Use is not recommended.

For sulfamethizole

- For oral dosage form (tablets):
  - For bacterial infections:
    - Adults and teenagers—500 milligrams (mg) to 1 gram every six to eight hours.
    - Children 2 months of age and older—Dose is based on body weight. The usual dose is 7.5 to 11.25 mg per kilogram (kg) (3.4 to 5.1 mg per pound) of body weight every six hours.
    - Children up to 2 months of age—Use is not recommended.

For sulfamethoxazole

- For oral dosage form (tablets):
  - For bacterial or protozoal infections:
    - Adults and teenagers—2 to 4 grams for the first dose, then 1 to 2 grams every eight to twelve hours.
    - Children 2 months of age and older—Dose is based on body weight. The usual dose is 50 to 60 milligrams (mg) per kilogram (kg) (22.7 to 27.3 mg per pound) of body weight for the first dose, then 25 to 30 mg per kg (11.4 to 13.6 mg per pound) of body weight every twelve hours.
    - Children up to 2 months of age—Use and dose must be determined by your doctor.

VII. TETRACYCLINE

7.1 INTRODUCTION

These antibiotics come from a species of bacteria called Streptomyces. It seems odd that a bacterium could produce an antibiotic that kills other bacteria, but it's true. Tetracyclines are bacteriostatic, like the sulfonamides. They treat various infections, such as respiratory, skin and genital infections. They also treat unusual infections, including Lyme disease, malaria, anthrax, cholera, and plague. They have noninfectious uses as well, such as treating rosacea.

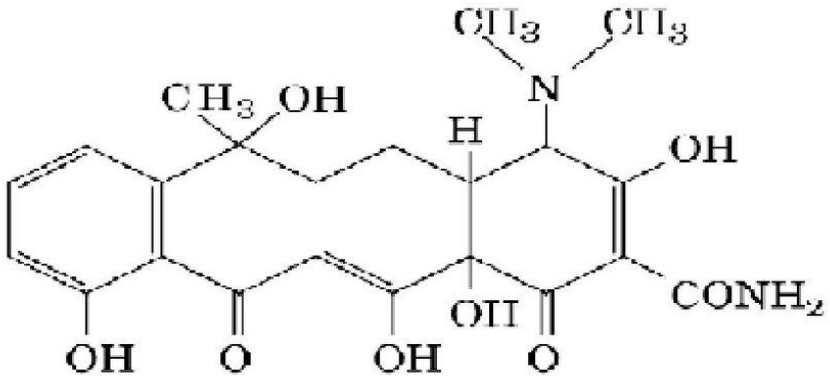
Common side effects

stomach pain or upset, sun sensitivity, and yeast infections.

Examples of tetracyclines

- Doxycycline
- Minocycline
- Tetracycline

7.2 Chemical structure($C_{22}H_{24}N_2O_8$)



7.3 MECHANISM OF ACTION

Tetracycline passively diffuses through porin channels in the bacterial membrane and reversibly binds to the 30S ribosomal subunit, preventing binding of tRNA to the mRNA-ribosome complex, and thus interfering with protein synthesis.

International Journal of Pharmaceutical Research and Applications
Volume 6, Issue 4 July-Aug 2021, pp: 934-947 www.ijprajournal.com ISSN: 2249-7781

TARGET	ACTIONS	ORGANISM
A 30S ribosomal protein S7	**inhibitor**	Escherichia coli (strain K12)
A 30S ribosomal protein S14	**inhibitor**	Escherichia coli (strain K12)
A 30S ribosomal protein S3	**inhibitor**	Escherichia coli (strain K12)
A 30S ribosomal protein S8	**inhibitor**	Escherichia coli (strain K12)
A 30S ribosomal protein S19	**inhibitor**	Escherichia coli (strain K12)
A 16S ribosomal RNA	**inhibitor**	Enteric bacteria and other eubacteria
U Major prion protein	**inhibitor**	Humans
U Multidrug translocase MdfA	Not Available	Escherichia coli
U Protein-arginine deiminase type-4	Not Available	Humans

7.4 ROUTES OF ADMINISTRATION

For doxycycline

- **For oral dosage forms** (capsules, suspension, and tablets):
  - For bacterial or protozoal infections:
    - Adults and children older than 8 years of age who weigh more than 45 kilograms (kg) (99 pounds)—100 milligrams (mg) every twelve hours the first day, then 100 mg once a day or 50 to 100 mg every twelve hours.
    - Children older than 8 years of age who weigh 45 kg (99 pounds) or less—Dose is based on body weight. The usual dose is 2.2 mg per kg (1 mg per pound) of body weight two times a day on the first day, then 2.2 to 4.4 mg per kg (1 to 2 mg per pound) of body weight once a day or 1.1 to 2.2 mg per kg (0.5 to 1 mg per pound) of body weight twice a day.
    - Infants and children 8 years of age and younger—Tetracyclines are usually not used in young children because tetracyclines can permanently stain teeth.
  - For the prevention of malaria:
    - Adults and teenagers—100 mg once a day. You should take the first dose one or two days before travel to an area where malaria may occur, and continue taking the medicine every day throughout travel and for four weeks after you leave the malarious area.
    - Children older than 8 years of age—Dose is based on body weight. The usual dose is 2 mg per kg (0.9 mg per pound) of body weight once a day. You should take the first dose one or two days before travel to an area where malaria may occur, and continue taking the medicine every day throughout travel and for four weeks after you leave the malarious area.
    - Infants and children 8 years of age and younger—Tetracyclines are usually not used in young children because tetracyclines can permanently stain teeth.
- **For injection dosage form:**
  - For bacterial or protozoal infections:
    - Adults and children older than 8 years of age who weigh more than 45 kg of body weight (99 pounds)—200 mg injected slowly into a vein once a day; or 100 mg injected slowly into a vein every twelve hours the first day, then 100 to 200 mg injected slowly into a vein once a day or 50 to 100 mg injected slowly into a vein every twelve hours.
    - Children older than 8 years of age who weigh 45 kg of body weight (99 pounds) or less—Dose is based on body weight. The usual dose is 4.4 mg per kg (2 mg per pound) of body weight injected slowly into a vein once a day; or 2.2 mg per kg (1 mg per pound) of body weight injected slowly into a vein every twelve hours the first day, then 2.2 to 4.4 mg per kg (1 to 2 mg per pound) of body weight once a day, or 1.1 to 2.2 per kg (0.5 to 1 mg per pound) of body weight every twelve hours.
    - Infants and children 8 years of age and younger—Tetracyclines are usually not used in young children because tetracyclines can permanently stain teeth

For minocycline

- **For oral dosage forms** (capsules and suspension):
  - For bacterial or protozoal infections:
    - Adults and teenagers—200 milligrams (mg) at first, then 100 mg every twelve hours; or 100 to 200 mg at first, then 50 mg every six hours.
    - Children older than 8 years of age—Dose is based on body weight. The usual dose is 4 mg per kilogram (kg) (1.8 mg per pound) of body weight at first, then 2 mg per kg (0.9 mg per pound) of body weight every twelve hours.
    - Infants and children 8 years of age and younger—Tetracyclines are usually not used in

International Journal of Pharmaceutical Research and Applications
Volume 6, Issue 4 July-Aug 2021, pp: 934-947 www.ijprajournal.com ISSN: 2249-7781

young children because tetracyclines can permanently stain teeth.

- **For injection dosage form**:
  - For bacterial or protozoal infections:
    - Adults and teenagers—200 mg at first, then 100 mg every twelve hours, injected slowly into a vein.
    - Children older than 8 years of age—Dose is based on body weight. The usual dose is 4 mg per kg (1.8 mg per pound) of body weight at first, then 2 mg per kg (0.9 mg per pound) of body weight every twelve hours, injected slowly into a vein.
    - Infants and children 8 years of age and younger—Tetracyclines are usually not used in young children because tetracyclines can permanently stain teeth

For tetracycline

- **For oral dosage forms** (capsules and suspension):
  - For bacterial or protozoal infections:
    - Adults and teenagers—250 to 500 milligrams (mg) every six hours; or 500 mg to 1 gram every twelve hours. Gonorrhea is treated with 1.5 grams as the first dose, then 500 mg every six hours for four days.
    - Children older than 8 years of age—Dose is based on body weight. The usual dose is 6.25 to 12.5 mg per kilogram (kg) (2.8 to 5.7 mg per pound) of body weight every six hours; or 12.5 to 25 mg per kg (5.7 to 11.4 mg per pound) of body weight every twelve hours.
    - Infants and children 8 years of age and younger—Tetracyclines are usually not used in young children because tetracyclines can permanently stain teeth

VIII. OTHER TYPES OF ANTIBIOTICS

Doctors have several other antibiotic choices if none of these classes will work. You will find some of them only in a hospital. Others just don't fit into the main groups, but are very useful.

This includes antibiotics like clindamycin, metronidazole (Flagyl) nitrofurantoin (Furadantin, Macrodantin).

Each antibiotic, whether in a defined class or not, has different dosing requirements. You need to take some on an empty stomach and others with food. Ask your doctor or pharmacist about the best way to take an antibiotic. With all antibiotics, it's important to finish the entire course your doctor prescribes. This ensures adequate treatment and prevents antibiotic resistance.

IX. CONCLUSION

There is no reason to explain why antibiotic prescribing in infections (the most frequent primary care) is so great. Doctors have to do well and not harm, while respecting the ethical principles of autonomy and justice. However, in the case of ethical conflict, nonmaleficence and justice (at a public and obligatory level) take precedence. We know that we can reduce antibiotic prescribing in many of the infections that are currently unnecessarily treated without compromising our patients' health. By accomplishing this, we will do less harm. Moreover, we know that antibiotics can stop being effective in the short and medium term. The use of the strategies discussed in this paper will help GPs to reduce prescribing of antibiotics. Our duty is to prescribe antibiotics only when they are necessary, i.e. in less than 20% of the infectious seen in primary care.

Rapidly emerging resistant bacteria threaten the extraordinary health benefits that have been achieved with antibiotics. This meta-analysis of current literature shows that patients with uncomplicated diverticulitis can be monitored off antibiotics.

REFERANCE

[1]. Definition of "infection" from several medical dictionaries – Retrieved on 2012-04-03

[2]. ^ Sehgal, Mukul; Ladd, Hugh J.; Totapally, Balagangadhar (2020-12-01). "Trends in Epidemiology and Microbiology of Severe Sepsis and Septic Shock in Children". Hospital Pediatrics. 10 (12): 1021–1030. doi:10.1542/hpeds.2020-0174. ISSN 2154-1663. PMID 33208389.

[3]. ^ GBD 2013 Mortality and Causes of Death, Collaborators (17 December 2014). "Global, regional, and national age-sex specific all-cause and cause-specific mortality for 240 causes of death, 1990–2013: a systematic analysis for the Global Burden of Disease Study". Lancet. 385 (9963): 117–71. doi:10.1016/S0140-6736(14)61682-2. PMC 4340604. PMID 25530442.

[4]. ^ "Infectious Disease, Internal Medicine". Association of American Medical Colleges. Archived from the original on 2015-02-06. Retrieved 2015-08-20. Infectious disease is the subspecialty of internal medicine dealing

International Journal of Pharmaceutical Research and Applications
Volume 6, Issue 4 July-Aug 2021, pp: 934-947 www.ijprajournal.com ISSN: 2249-7781

with the diagnosis and treatment of communicable diseases of all types, in all organs, and in all ages of patients.

[5]. ^ "Types of Fungal Diseases". www.cdc.gov. 2019-06-27. Retrieved 2019-12-09.

[6]. ^ Mada, Pradeep Kumar; Jamil, Radia T.; Alam, Mohammed U. (2019), "Cryptococcus (Cryptococcosis)", StatPearls, StatPearls Publishing, PMID 28613714, retrieved 2019-12-09

[7]. ^ "About Parasites". www.cdc.gov. 2019-02-25. Retrieved 2019-12-09.

[8]. ^ Brown, Peter J. (1987). "Microparasites and Macroparasites". Cultural Anthropology. 2 (1): 155–71. doi:10.1525/can.1987.2.1.02a00120. JSTOR 656401.

[9]. ^ Kayser, Fritz H; Kurt A Bienz; Johannes Eckert; Rolf M Zinkernagel (2005). Medical microbiology. Stuttgart: Georg Thieme Verlag. p. 398. ISBN 978-3-13-131991-3.

[10]. "Antibiotics". NHS. 5 June 2014. Retrieved 17 January 2015.

[11]. ^ "Factsheet for experts". European Centre for Disease Prevention and Control. Archived from the original on 21 December 2014. Retrieved 21 December 2014.

[12]. ^ For example, metronidazole: "Metronidazole". The American Society of Health-System Pharmacists. Retrieved 31 July 2015.

[13]. ^ Jump up to:[a] [b] Chemical Analysis of Antibiotic Residues in Food. John Wiley & Sons, Inc. 2012. pp. 1–60. ISBN 978-1-4496-1459-1.

[14]. ^ ou=, c=AU; o=The State of Queensland; ou=Queensland Health (6 May 2017). "Why antibiotics can't be used to treat your cold or flu". www.health.qld.gov.au. Retrieved 13 May 2020.

[15]. Antibacterial resistance worldwide: causes, challenges and responses. Levy SB, Marshall B. Nat Med. 2004;10:122–129. [PubMed] [Google Scholar]

[16]. Antimicrobial resistance in staphylococci: Epidemiology, molecular mechanisms, and clinical relevance. Maranan MC, Moreira B, Boyle-Vavra S, et al. Infect Dis Clin North Am. 1997;11:813–849. [PubMed] [Google Scholar]

[17]. Levy SB. The Antibiotic Paradox. Springer: 1992. From tragedy the antibiotic age is born; pp. 1–12. [Google Scholar]

[18]. A brief history of the antibiotic era: lessons learned and challenges for the future. Aminov RI. Front Microbiol. 2010;1:134. [PMC free article] [PubMed] [Google Scholar]

[19]. Origins and evolution of antibiotic resistance. Davies J, Davies D. Microbiol Mol Biol Rev. 2010;74:417–433. [PMC free article] [PubMed] [Google Scholar]

[20]. The influence of pellet shape and surface properties on the drug release from uncoated and coated pellets. Chopra R, Alderborn G, Podczeck F, et al. Int J Pharm. 2002;239:171–178. [PubMed] [Google Scholar]

[21]. The challenge of antibiotic resistance. Levy SB. http://schimizzi.cmswiki.wikispaces.net/file/view/antibiotic%20resistance.pdf/493751958/antibiotic%20resistance.pdf Scientific American. 1998;278:32–39. [PubMed] [Google Scholar]

[22]. Is self-medication with antibiotics in Europe driven by prescribed use? Grigoryan L, Burgerhof JG, Haaijer-Ruskamp FM, et al. J Antimicrob Chemother. 2007;59:152–156. [PubMed] [Google Scholar]

[23]. Altiner A., Brockmann S., Sielk M., Wilm S., Wegscheider K., Abholz H. (2007) Reducing antibiotic prescriptions for acute cough by motivating GPs to change their attitudes to communication and empowering patients: A cluster-randomized intervention study. J Antimicrob Chemother 60: 638–644. [PubMed] [Google Scholar]

[24]. Arnold S., Straus S. (2005) Interventions to improve antibiotic prescribing practices in ambulatory care. Cochrane Database Syst Rev 4: CD003539. [PMC free article] [PubMed] [Google Scholar]

[25]. Ashworth M., Charlton J., Ballard K., Latinovic R., Gulliford M. (2005) Variations in antibiotic prescribing and consultation rates for acute respiratory infection in UK practices 1995–2000. Br J Gen Pract 55: 603–608. [PMC free article] [PubMed] [Google Scholar]

[26]. Ayanruoh S., Waseem M., Quee F., Humphrey A., Reynolds T. (2009) Impact of rapid streptococcal test on antibiotic use in a pediatric emergency department. Pediatr

International Journal of Pharmaceutical Research and Applications
Volume 6, Issue 4 July-Aug 2021, pp: 934-947 www.ijprajournal.com ISSN: 2249-7781

Emerg Care 25: 748–750. [PubMed] [Google Scholar]

[27]. Bergman M., Huikko S., Pihlajamäki M., Laippala P., Palva E., Huovinen P., et al. (2004) Effect of macrolide consumption on erythromycin resistance in Streptococcus pyogenes in Finland in 1997–2001. Clin Infect Dis 38: 1251–1256. [PubMed] [Google Scholar]

[28]. Bjerrum L., Gahrn-Hansen B., Munck A. (2004) C-reactive protein measurement in general practice may lead to lower antibiotic prescribing for sinusitis. Br J Gen Pract 54: 659–662. [PMC free article] [PubMed] [Google Scholar]

[29]. Bjerrum L., Munck A., Gahrn-Hansen B., Hansen M., Jarbol D., Cordoba G., et al. (2011) Health Alliance for prudent antibiotic prescribing in patients with respiratory tract infections (HAPPY AUDIT) -impact of a non-randomised multifaceted intervention programme. BMC Fam Pract 12: 52. [PMC free article] [PubMed] [Google Scholar]

[30]. Borg M., Sciclunca E. (2002) Over-the-counter acquisition of antibiotics in the Maltese general population. Int J Antimicrob Agents 20: 253–257. [PubMed] [Google Scholar]

[31]. Boucher H., Talbot G., Benjamin D., Jr, Bradley J., Guidos R., Jones R., et al. (2013) 10 × ′20 progress—development of new drugs active against Gram-negative bacilli: an update from the Infectious Diseases Society of America. Clin Infect Dis 56: 1685–1694. [PMC free article] [PubMed] [Google Scholar]

[32]. Butler C., Rollnick S., Pill R., Maggs-Rapport F., Stott N. (1998) Understanding the culture of prescribing: qualitative study of general practitioners' and patients' perceptions of antibiotics for sore throats. BMJ 317: 637–642. [PMC free article] [PubMed] [Google Scholar]

[33]. Butler C., Simpson S., Dunstan F., Rollnick S., Cohen D., Gillespie D., et al. (2012) Effectiveness of multifaceted educational programme to reduce antibiotic dispensing in primary care: practice based randomised controlled trial. BMJ 344: d8173. [PMC free article] [PubMed] [Google Scholar]

[34]. Cals J.W., Scheppers N.A., Hopstaken R.M., Hood K., Dinant G.J., Goettsch H., et al. (2007) Evidence based management of acute bronchitis; sustained competence of enhanced communication skills acquisition in general practice. Patient Educ Couns 68: 270–278. [PubMed] [Google Scholar]

[35]. Cals J., Butler C., Hopstaken R., Hood K., Severens J., Dinant G. (2009) Effect of point of care testing for C reactive protein and training in communication skills on antibiotic use in lower respiratory tract infections: cluster randomised trial. BMJ 338: b1374. [PMC free article] [PubMed] [Google Scholar]

[36]. Cals J., de Bock L., Beckers P., Francis N., Hopstaken R., Hood K., et al. (2013) Enhanced communication skills and C-reactive protein point-of-care testing for respiratory tract infection: 3.5-year follow-up of a cluster randomized trial. Ann Fam Med 11: 157–164. [PMC free article] [PubMed] [Google Scholar]

[37]. Cals J., Schot M., de Jong S., Dinant G., Hopstaken R. (2010) Point-of-care C-reactive protein testing and antibiotic prescribing for respiratory tract infections: a randomized controlled trial. Ann Fam Med 8: 124–133. [PMC free article] [PubMed] [Google Scholar]

[38]. Cals J., van Weert H. (2013) Point-of-care tests in general practice: hope or hype? Eur J Gen Pract 19: 251–256. [PubMed] [Google Scholar]

[39]. Carrasco-Garrido P., Jiménez-García R., Barrera V., Gil de Miguel A. (2008) Predictive factors of self-medicated drug use among the Spanish adult population. Pharmacoepidemiol Drug Saf 17: 193–199. [PubMed] [Google Scholar]

[40]. Centers for Disease Control and Prevention (2012) Diseases/pathogens associated with antimicrobial resistance. Available at: http://www.cdc.gov/drugresistance/DiseasesConnectedAR.html (Accessed: 24 August 2014).

[41]. Chang C., Schiano T. (2007) Review article: drug hepatotoxicity. Aliment Pharmacol Ther 25: 1135–1151. [PubMed] [Google Scholar]

[42]. Chen L., Chopra T., Kaye K. (2009) Pathogens resistant to antibacterial agents. Infect Dis Clin North Am 23: 817–845. [PubMed] [Google Scholar]

[43]. Coenen S., Francis N., Kelly M., Hood K., Nuttall J., Little P., et al. (2013) Are patient

International Journal of Pharmaceutical Research and Applications
Volume 6, Issue 4 July-Aug 2021, pp: 934-947 www.ijprajournal.com ISSN: 2249-7781

views about antibiotics related to clinician perceptions, management and outcome? A multi-country study in outpatients with acute cough. PLoS One 8: e76691. [PMC free article] [PubMed] [Google Scholar]

[44]. Cole A. (2014) GPs feel pressurised to prescribe unnecessary antibiotics, survey finds. BMJ 349: g5238. [PubMed] [Google Scholar]

[45]. Costelloe C., Metcalfe C., Lovering A., Mant D., Hay A. (2010) Effect of antibiotic prescribing in primary care on antimicrobial resistance in individual patients: Systematic review and meta-analysis. BMJ 340: c2096. [PubMed] [Google Scholar]

[46]. Davies S., Grant J., Catchpole M. (2013) The drugs don't work. A Global Threat. London: Penguin Specials. [Google Scholar]

[47]. Department of Health (2012) Chief Medical Officer Annual Report 2011: Volume 2. Available at: http://www.gov.uk/government/publications/chief-medical-officer-annual-report-volume-2 (Accessed: 24 August 2014).

[48]. Deschepper R., Vander Stichele R. (2001) Differences in use of antibiotics in Europe: the role of cultural aspects. Pharm Weekbl 136: 794–797. [Google Scholar]

[49]. Dingle T., Abbott A., Fang F. (2014) Reflexive culture in adolescents and adults with group A streptococcal pharyngitis. Clin Infect Dis 59: 643–650. [PubMed] [Google Scholar]

[50]. Ebell M.H., Lundgren J., Youngpairoj S. (2013) How long does a cough last? Comparing patients' expectations with data from a systematic review of the literature. Ann Fam Med 11: 5–13. [PMC free article] [PubMed] [Google Scholar]

[51]. European Commission (2010) Eurobarometer 338. Antimicrobial resistance. Survey carried out by TNS Opinion & Social at the request of the Directorate-General for Health and Consumers. Available at: http://ec.europa.eu/health/antimicrobial_resistance/docs/ebs_338_en.pdf (Accessed: 24 August 2014).

[52]. European Centre for Disease Prevention and Control (2010) Surveillance report. Surveillance of antimicrobial consumption in Europe. 2010. Available at: http://www.ecdc.europa.eu/en/publications/Publications/antimicrobial-antibiotic-consumption-ESAC-report-2010-data.pdf (Accessed: 24 August 2014).

[53]. European Centre for Disease Prevention and Control (2011) Antimicrobial resistance surveillance in Europe. Annual report of the European Antimicrobial Resistance Surveillance Network (EARS-Net). Available at: http://www.ecdc.europa.eu/en/publications/Publications/antimicrobial-resistance-surveillance-europe-2011.pdf (Accessed: 24 August 2014).

[54]. European Centre for Disease Prevention and Control (2014) Key messages for primary care prescribers. Available at: http://ecdc.europa.eu/en/eaad/antibiotics/pages/messagesforprescribers.aspx (Accessed: 24 August 2014)

[55]. Falagas M., Rafailidis P., Matthaiou D., Virtzili S., Nikita D., Michalopoulos A. (2008) Pandrug-resistant Klebsiella pneumoniae, Pseudomonas aeruginosa and Acinetobacter baumannii infections: Characteristics and outcome in a series of 28 patients. Int J Antimicrob Agents 32: 450–454. [PubMed] [Google Scholar]

[56]. Flanders S., Stein J., Shochat G., Sellers K., Holland M., Maselli J., et al. (2004) Performance of a bedside C-reactive protein test in the diagnosis of community-acquired pneumonia in adults with acute cough. Am J Med 116: 529–535. [PubMed] [Google Scholar]

[57]. Francis N., Butler C., Hood K., Simpson S., Wood F., Nuttall J. (2009) Effect of using an interactive booklet about childhood respiratory tract infections in primary care consultations on reconsulting and antibiotic prescribing: A cluster-randomised controlled trial. BMJ 339: b2885. [PMC free article] [PubMed] [Google Scholar]

[58]. Gonzales R., Anderer T., McCulloch C., Maselli J., Bloom F., Jr, Graf T., et al. (2013) A cluster randomized trial of decision support strategies for reducing antibiotic use in acute bronchitis. JAMA Intern Med 173: 267–273. [PMC free article] [PubMed] [Google Scholar]

[59]. Goossens H., Ferech M., Vander Stichele R., Elseviers M. and ESAC Project Group. (2005) Outpatient antibiotic use in Europe and association with resistance: A cross-

International Journal of Pharmaceutical Research and Applications
Volume 6, Issue 4 July-Aug 2021, pp: 934-947 www.ijprajournal.com ISSN: 2249-7781

national database study. Lancet 365: 579–587. [PubMed] [Google Scholar]

[60]. Harbart S., Samore M. (2005) Antimicrobial resistance determinants and future control. Emerg Infect Dis 11: 794–801. [PMC free article] [PubMed] [Google Scholar]

[61]. Hay A., Tilling K. (2014) Can 88% of patients with acute lower respiratory infection all be special? Br J Gen Pract 64: 60–62. [PMC free article] [PubMed] [Google Scholar]

[62]. Ho J., Tambyah P., Paterson D. (2010) Multiresistant gram-negative infections: A global perspective. Curr Opin Infect Dis 23: 546–553. [PubMed] [Google Scholar]

[63]. Hollis A., Ahmed Z. (2013) Preserving antibiotics, rationally. N Engl J Med 369: 2474–2476. [PubMed] [Google Scholar]

[64]. Hopstaken R., Muris J., Knottnerus J., Kester A., Rinkens P., Dinant G. (2003) Contributions of symptoms, signs, erythrocyte sedimentation rate, and C-reactive protein to a diagnosis of pneumonia in acute lower respiratory tract infection. Br J Gen Pract 53: 358–364. [PMC free article] [PubMed] [Google Scholar]

[65]. Høye S., Gjelstad S., Lindbæk M. (2013) Effects on antibiotic dispensing rates of interventions to promote delayed prescribing for respiratory tract infections in primary care. Br J Gen Pract 63: e777–e786. [PMC free article] [PubMed] [Google Scholar]

[66]. Huang Y., Chen R., Wu T., Wei X., Guo A. (2013) Association between point-of-care CRP testing and antibiotic prescribing in respiratory tract infections: a systematic review and meta-analysis of primary care studies. Br J Gen Pract 63: e787–e794. [PMC free article] [PubMed] [Google Scholar]

[67]. Hulscher M., Grol R., van der Meer J. (2010) Antibiotic prescribing in hospitals: a social and behavioural scientific approach. Lancet Infect Dis 10: 167–175. [PubMed] [Google Scholar]

[68]. Humair J., Revaz S., Bovier P., Stalder H. (2006) Management of acute pharyngitis in adults: reliability of rapid streptococcal tests and clinical findings. Arch Intern Med 166: 640–644. [PubMed] [Google Scholar]

[69]. Huttner B., Goossens H., Verheij T., Harbarth S. (2010) Characteristics and outcomes of public campaigns aimed at improving the use of antibiotics in outpatients in high-income countries. Lancet Infect Dis 10: 17–31. [PubMed] [Google Scholar]

[70]. Infectious Diseases Society of America, Spellberg B., Blaser M., Guidos R., Boucher H., Bradley J., et al. (2011) Combating antimicrobial resistance: policy recommendations to save lives. Clin Infect Dis 52(Suppl. 5): S397–S428. [PMC free article] [PubMed] [Google Scholar]

[71]. Kenealy T., Arroll B. (2013) Antibiotics for the common cold and acute purulent rhinitis. Cochrane Database Syst Rev 6: CD000247. [PMC free article] [PubMed] [Google Scholar]

[72]. Kirby A., Herbert A. (2013) Correlations between income inequality and antimicrobial resistance. PLoS One 8: e73115. [PMC free article] [PubMed] [Google Scholar]

[73]. Kollef M. (2008) Broad-spectrum antimicrobials and the treatment of serious bacterial infections: Getting it right up front. Clin Infect Dis 47: S3–S13. [PubMed] [Google Scholar]