

RUNNING HEAD: COMPARISON BETWEEN TWO MEDICATIONS

Comparison between two Medications (Nitrofurantoin vs Trimethoprim)

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Introduction

Independent nurse prescriber is the nurse who has completed the NMC (Independent Nurse Prescribing v300 course) or is undergoing with it. The responsibilities of an independent Nurse Prescriber include; prescribing medicines to the patient as well as, the role of non-medical prescriber in the United Kingdom has been the most important in nursing practices since, it became a profession (Dowen, 2016). This essay aims to present an in-depth understanding of comparison between two medications Nitrofurantoin vs trimethoprim for the role of non-medical prescriber in the treatment of illness. The essay discusses pharmacological, and pharmacokinetics of the following drugs to determine its influences on body, Gibbs model is used as a framework for the structure of this essay. Gibbs model is suitable to evaluate and analyse experiences by putting it into reflection under four phases, namely, Description, Feelings, Evaluation, Conclusion and Action Plan. The study also highlights national guidelines and legislation in prescribing practices, and a conclusion as a prescribing guideline for an Independent Nurse Prescriber.

Discussion

Description, Feelings, Evaluation, Conclusion and Action Plan

According to the Middlesex University of London, non-medical Nurse Prescribers manage and prescribe medications according to their clinical expertise (Boulianne et al., 2016). They perform holistic care assessment of the patient by doing consultations with the patient/client and his parents (Crelli et al., 2018). Nurse Prescribers conduct information about the medical history of the patient to give holistic care as a response to a specific illness, for example, prescribes medication to prevent particular infections like Urinary Tract or Bladder Infections (Cunha et al., 2017). The medicines used to treat bladder infection include Nitrofurantoin and Trimethoprim;

Nurses usually prescribe these medications to the children and adult patients after knowing their medical history. According to the pharmacological (uses, effects and modes of action) study of Nitrofurantoin, it kills bacterial cells in the human body, it is used to treat urinary tract infections therefore, nurses prescribe this medication generally to the patient with urine infection. Similarly, some nurses prescribe Trimethoprim usually for the patient with (UTIs) like cystitis (de Boer et al., 2017). However, it is also used to treat other infections like chest and acne while, Nitrofurantoin is only for the prevention of (UTI's) which caused by bacteria such as *Staphylococcus aureus*, *E. coli*, Cystitis and *Klebsiella* (Downen, 2016). Both of these two drugs rapidly decrease the growth of bacteria. As an independent nurse prescriber, it is crucial to understand the use and effects of these drugs to treat urinary tract infections particularly, of adults and children (Felix et al., 2016). Due to the legal, cognitive, emotional and physical differences between children and adults nurse prescribes different dose to both of them.

Furthermore, Nitrofurantoin and Trimethoprim can impact children adversely than adults if the dose exceeds; Nitrofurantoin sometimes causes dizziness and drowsiness, diarrhoea, nausea and vomit (Hazra et al., 2016). Likewise, Trimethoprim in some children might cause stomach cramps, diarrhoea, headache and loss of appetite. It is suitable to take these medications with food like milk or any other liquid (Jha et al., 2016). Nitrofurantoin is not for the child of less than one month (Katarey and Verma, 2016). According to the research of Mercury Pharmaceuticals Ltd London, Nitrofurantoin medication is suitable to prescribe for a child with acute urinary tract infection with a certain pattern of dosage that includes; 3mg into four dividend doses 1.5mg twice a day, in Suppressive condition 1mg once a day (Talan et al., 2016). Similarly, for adults in the acute condition is 50mg four times a day (one week), for Severe chronic condition 100 mg, seven days (four times a day), and for long term suppression 100 mg once a day (Mercury

Pharmaceuticals Ltd, 2019). Mercury Pharmaceuticals Ltd London also describes the dosage of Trimethoprim for both adults and children, for example, in adults and children over 12 ages in susceptible UTI the dosage is 200 mg twice a day, for long term treatment 100 only at night (May and Hooper, 2017). The treatment and dosage of drug also depend upon the body weight of a person. While undergoing with the course of independent Nurse Prescribing (v300 course), it is vital to understand the pharmacokinetics of these two medications, alternative and complementary health therapies in treating adults and children with UIT's (Merel and Paauw, 2017). According to the pharmacokinetics of Trimethoprim, it secures dihydrofolate reductase (an enzyme) and prevents the reduction of dihydrofolic acid (DHF) to tetrahydrofolic acid. Nitrofurantoin is the most commonly used drug to treat bladder infections (Moran et al., 2017).

NHS had described both medications Trimethoprim and Nitrofurantoin to give efficient knowledge and understanding about its side effects, dosage and how to take it (Muanda, Sheehy and Bérard, 2017). According to NHS nitrofurantoin is also used to treat kidney infections when a person takes it the body after some time filters it out in the form of pee, but a person must take it on the prescription from any professional nurse prescriber or doctor (Ponce et al., 2017). It is usually found in the form of capsules, tablets and liquid which can easily drink by the patient. Similarly, NHS England also had described some facts about Trimethoprim antibiotic such as; it is used to treat other infections as also described above (Pouwels et al., 2018). This antibiotic also must be taken after prescriber's prescription as well as it is found in the form of tables and liquid both likewise Nitrofurantoin. From the study of Jha et al. (2016), it is examined that Trimethoprim is suitable to take twice a day in order to overcome urinary and kidney infections, and the side effects of this drug which are common in men, women, adults, children include, mild skin and rash but these are only for short time, for example, when a person takes it first time (Price et al., 2016).

After some time these effects get removed. On contrary to this, Trimethoprim side effect in men, women, adults, and children includes upset stomach, therefore; prescribers usually prescribe it taking with food or any other liquid like milk as mentioned earlier as well (Talan et al., 2016).

It is vital to determine that who can take Nitrofurantoin and Trimethoprim medication as from the study of Katarey and Verma, (2016), based on the side-effects of Trimethoprim; it is analysed that it can be taken by adults, but Nitrofurantoin is not suitable for everyone, for example, it can be taken by adults, but children should avoid from taking it (van Strien et al., 2017). Trimethoprim is not good for a patient who already has allergic reactions, liver and kidney problems, anaemia, any blood disorder like porphyria and pregnant women. On contrary to this breastfeeding and pregnant women can take Nitrofurantoin (Yeong et al., 2016). The study of May and Hooper (2017), critically emphasises on the side-effects of Nitrofurantoin as according to Merel and Paauw, (2017), this drug is not suitable for a person who has severe kidney disease, diabetes any illness and vitamin B deficiency. Independent Nurse prescribes when and how a person can take drugs like Trimethoprim can be taken 200mg twice a day but, nitrofurantoin dosage is 100mg twice a day or sometimes 50mg in different phases (four times a day) (Boulianne et al., 2016). The study of Moran et al., (2017) had defined the usual dosage of Trimethoprim and Nitrofurantoin such as, the usual dose of Nitrofurantoin which is used to treat common urinary infections is 100 mg, but if a person is taking it in the morning he must take 12 hours gap after this he can take second dose (Crelli et al., 2018). It is better to take Nitrofurantoin with meal or snack because, if a person takes it without food, it may cause stomach problems. The dose of Trimethoprim depends on age and illness (Cunha et al., 2017).

The study of Pouwels et al. (2018), defines methods for taking trimethoprim and Nitrofurantoin tablets (de Boer et al., 2017). A person can take it with drinkable water; it is not

well to chew or break them. Moreover, both of these drugs are also available in liquid form for those who cannot consume swallow tablets. While taking these drugs in liquid form, it is appropriate to take it by means of a syringe or ask a prescriber or doctor regarding how it can be consumed (Downen, 2016). The study of Muanda, Sheehy and Bérard (2017), defines that prescribers usually prescribe Trimethoprim to a person with UTI which occurs after sexual intercourse, but no more than twice a day, a single dose within 2 hours of sexual intercourse is suitable. On the other hand, the dose of Nitrofurantoin depends upon age and severity of infection (Felix et al., 2016). The research study of Ponce et al. (2017), critically analysed that prescribers are responsible for guiding patients how long they can take these drugs such as, women with urinary tract infection can take 3 day course of Trimethoprim for the treatment, but to treat UIT by using Nitrofurantoin usually 7 days course is suitable (Hazra et al., 2016). The dosage of Nitrofurantoin to prevent UTI before surgery includes one tablet at the day of surgery and for the next three days after surgery. For the treatment of acne and UTI's treatment with Trimethoprim sometimes continue for at least six months (Jha et al., 2016). It helps to prevent the infection from coming back. Not only independent nurse prescribers prescribe medicines to a patient, but doctors also prescribe medications when a patient encounters with severe illness (Katarey and Verma, 2016). The study of Pouwels et al., (2018), had defines that if a person missed the dosage, he could not take two doses at the same time, in this situation a person can ask a pharmacist for advice.

According to the report of NHS heavy intake of Trimethoprim and Nitrofurantoin can cause serious weakness (May and Hooper, 2017). Trimethoprim can cause muscle weakness, heart strokes due to an abnormal heartbeat, chest pain and feeling of vomiting. Trimethoprim can increase the amount of potassium in the blood (Merel and Paauw, 2017). It also causes serious skin reactions, red patches on hands, neck, leg, abdomen and chest, as a result, a person encounters

with skin ulcer (Moran et al., 2017). If a person takes this medicine without doctor, pharmacist or nurse prescriber, he can encounter with severe diarrhoea and bleeding longer than 3 or 4 days (Muanda, Sheehy and Bérard, 2017). All these are the serious signs if a person will not take Trimethoprim according to the prescriptions of a doctor (Ponce et al., 2017). Similarly, serious side effects of Nitrofurantoin have seen in many patients, the study of Price et al. (2016), defined some of the serious side effects of Nitrofurantoin, it includes difficulty in breathing, high fever, yellow or white skin, eyes which might lead a person to various gall bladder problems (Pouwels et al., 2018). Abnormal or heavy intake of this drug can cause nerve problems, nosebleeds, throat infection, severe headache and blood problems (Price et al., 2016).

Pouwels et al. (2018), critically had defined methods to cope with serious side-effects of Trimethoprim and Nitrofurantoin. It is crucial to take Trimethoprim after food because; it will help to decrease sick feeling like drowsiness (van Strien et al., 2017). To prevent diarrhoea drink plenty of water, moreover, it is not suitable to use any other medicine while using Trimethoprim or Nitrofurantoin without the prescription of a doctor (Boulianne et al., 2016). To avoid headaches it is suitable to use plenty of fluids and to avoid alcohol. A person can take Trimethoprim with routine painkillers in order to prevent headache but, not with any other drug. The study of Talan et al., (2016), gave some precautions to cope with serious side effects of Nitrofurantoin, for example, to prevent nausea avoid spicy foods, drink fluids like fresh juices, water and squash (Crelli et al., 2018). The fluids will help to prevent diarrhoea and vomiting. It has often seen that patients commonly encounter with loss of appetite after taking Nitrofurantoin; therefore, prefer nutritional snacks with high protein such as milk, meat, vegetables, nuts and fruits. A person also feels sleepy when they take Nitrofurantoin so, if it makes feel dizzy stop other works and lay down to feel better or relax (Cunha et al., 2017).

Nurses and midwives play a significant role in performing holistic care of patients as well as in the United Kingdom there had several laws/orders/legislation passed by The Nursing & Midwifery Council (NMC) to safeguard the wellbeing of patients or public (de Boer et al., 2017). The most important order of NMC is NMC Order 2001 that was passed to set some goals for primary purposes (protection of citizens' health). According to rules and regulations of this order, NMC set education and training standards according to which nurses and midwives will deliver high healthcare quality (Downen, 2016). According to NMC order, 2001 nurses and midwives are accountable to keep their skills and knowledge up to date. According to the rules and regulations of NMC, nurses and midwives are responsible for performing their role efficiently; for example, an independent nurse prescriber is accountable to provide the best drug or medication to patients. If nurses play their role with dignity and respect without doing any cultural difference and discrimination, people will feel, they have gained quality care (Talan et al., 2016).

A clinical management plan is necessary to follow under legislative practices to reduce barriers in nursing practices because; nursing is the challenging profession which demands heavy efforts to fulfil the demands of a patient (Felix et al., 2016). Health care Act is the most important legislation of the United Kingdom which is adopted by NHS and NMC to improve the care quality of patients, as well as NHS itself, had made a number of provisions to improve the wellbeing of the UK people (Hazra et al., 2016). NMC has set the standards for medication management in order to provide them with clinical guidance. According to this standard, it is essential that all the healthcare professionals must access right information regarding the use of medication as well as they are also accountable to provide best treatments to the patient or quality care (Talan et al., 2016). The action plan for an independent nurse prescriber may include investigating further available medications to treat urinary tract infection such as Macrobid, Bactrim, and ciprofloxacin

which can further enhance the practice of prescribing medicines while having a greater knowledge of different medication for the same purpose to fit appropriately according to the condition of patients.

Conclusion

It is concluded that independent nurse prescribers are responsible for prescribing medications and quality care to every individual. The discussion had defined the comparison between two drugs Trimethoprim and Nitrofurantoin as a guideline for nurse prescriber who undergoes with V300 course, the discussion is helpful as it provides appropriate knowledge and further understanding of Trimethoprim and Nitrofurantoin, for example, it made clear that Trimethoprim is more effective in certain cases while Nitrofurantoin can deliver better results for some patients. Moreover, it is also identified that nurses and midwives must follow laws, legislation and roles of NMC to prescribe right medications. It is vital to control specific illness of the patient which is also the demand of United Kingdom nursing profession. NMC also forces to prescribe licensed medicines to the patient. In future, I will prescribe these medications by first analysing the situation of the patient for deciding which medication is more suitable for them.

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