

PHARMACISTS PRESCRIBING OF NON-STEROIDAL ANTI-INFLAMMATORY DRUGS

Maria Scerri, Lilian M.Azzopardi
Department of Pharmacy, Faculty of Medicine and Surgery, University of Malta, Msida.

Corresponding author: Maria Scerri
E-mail: maria20scerri@gmail.com

ABSTRACT

OBJECTIVE To develop, implement and validate a framework and protocol directed to pharmacists regarding prescription of non-steroidal anti-inflammatory drugs (NSAIDs) and to propose a documentation system to be used when prescribing NSAIDs.

METHOD A module highlighting the information on NSAID use and on pharmacists prescribing of NSAIDs was developed to be used as a tool for development of pharmacists' knowledge to participate in the framework of pharmacist prescribing of NSAIDs. A protocol to be used when prescribing NSAIDs was developed. The developed protocol is concise and includes all relevant data. Evaluation of the proposed module and protocol was carried out by an expert panel consisting of 14 professionals. The readability of the module was assessed. A documentation system was set up using Microsoft Excel® 2007.

KEY FINDINGS A module named 'Supplementary Prescribing for Pharmacists' was developed as a Power point Presentation using Microsoft PowerPoint® 2007. The final version of the module scored 55 in the Flesch Reading Ease formula. The expert panel rated the overall presentation as very good. The module was considered a good tool of information for its intended purpose. Eleven healthcare professionals found the module very helpful and 7 found it very practical for its intended use. A protocol named: 'Protocol for Prescribing NSAIDs' was developed. Twelve health care professionals found the protocol easy to use while 5 of the participants thought it was time consuming.

CONCLUSION The module and protocol were very well accepted by the expert panel. Up till now there was a lack of protocols regarding NSAID use in Malta and that some potential side effects pertaining to this class of drugs were not always taken into consideration while dispensing. This study is now proposing a module to establish a safe and standard practice for recommendation of use of NSAIDs.

KEY WORDS Pharmacists prescribing, NSAIDs, Protocol

INTRODUCTION

Pharmacists are healthcare professionals, who are experts in safe and effective medication use. Pharmacists prescribing

may lead to the full use of this expertise and thus benefiting from the full potential of the pharmacy profession. With the introduction of pharmacists prescribing rights, health care delivery would improve and time and cost to deliver patient care, would be reduced.

There are two types of pharmacists prescribing, dependent and independent prescribing. In dependent prescribing, the physician and the pharmacist have equal responsibilities towards patient's health. The physician diagnoses and makes treatment decisions whilst the pharmacist may select, monitor, modify or discontinue drug therapy.^{1,2}

In independent prescribing, the pharmacist prescriber takes responsibility for the clinical assessment of the patient by establishing a diagnosis, deciding the clinical management required and taking responsibility for appropriately prescribing where necessary.^{1,2}

NSAIDs are known to cause gastrointestinal events which may cause complications such as gastro-intestinal ulceration and bleeding.³⁻⁹ They are also known to cause cardiovascular events such as increasing the risk of a myocardial infarction in susceptible patients.^{6,10-13} Other adverse effects of NSAIDs include renal impairment which leads to an increase in blood pressure if the patient is already hypertensive^{8,9,15} and induction of bronchospasms especially if the patient already suffers from asthma.^{4,16,17} All these side effects and drug-drug interactions warrant pharmacists within an independent or dependent prescribing scenario to ensure patient safety.

The aims of the study were to develop and validate a framework and a protocol directed to pharmacists regarding prescription of NSAIDs and to propose a documentation system to be used when prescribing NSAIDs.

METHODOLOGY

A module highlighting the information on NSAID use and pharmacists prescribing of NSAIDs was developed to be used as a tool for continuous development of pharmacists' knowledge. This was done after thorough research regarding this class of drugs.

A protocol to be used as an aid for the safe prescribing of NSAIDs was then drafted using Microsoft Word®2007.



This module could be used in conjunction with a prescribing module to support pharmacists develop pharmacist prescribing for NSAIDs.

After the module and protocol were ready, a documentation system was drafted with the help of a physician to ensure that all necessary data was included whilst keeping record of the prescribing activity.

Health care professionals were asked to give feedback regarding the information on these tools using a questionnaire which was developed and disseminated as a hard copy and an online version. The Chi square test were used when 2 categorical variables needed to be analysed.

RESULTS

Out of the 20 health care professionals contacted, 14 answered the questionnaire, with 7 being physicians and/or consultants and the other 7 being pharmacists. When comparing level of education with the profession it was observed that most pharmacists did not continue to post tertiary education as opposed to physicians ($\chi^2 (1) = 7.778, p=0.005$).

The module proposed was considered to be professional by 13 out of the 14 health care professionals in the expert panel. Its presentation and writing style were well accepted by the panel which rated the module as very good and/or excellent. The language, words and technical terms used were all considered understandable by 93%, 100% and 86% of the expert panel respectively ($\chi^2 (2) = 2.154, p=0.341$). Seventy one per cent (n=10) of the expert panel rated the way the module was written as very good. The Flesch Reading ease score of the module was found to be 55. The module was found to be very helpful and very practical for its intended use by 9 physicians and 8 pharmacists ($\chi^2 (1) = 0.150, p=0.699$).

Although the proposed protocol was seen as very easy to use by 93% (n=13) and the incorporated flow charts were rated as very clear and clear by 8 and 6 health care professionals respectively, it was found to be time consuming by 43% (n=6).

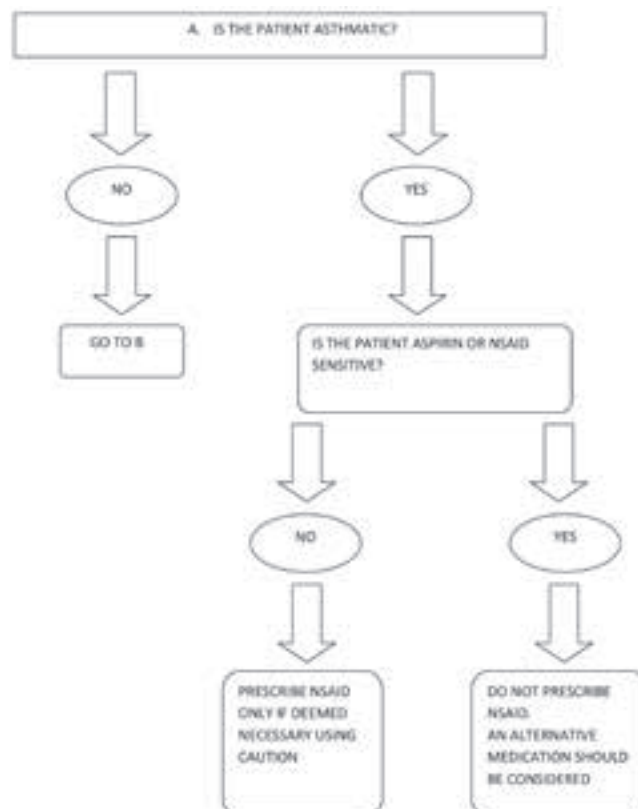


Figure 1: Part of Proposed Protocol regarding NSAIDs

DISCUSSION

When comparing the level of education with profession, it was observed that since the p-value obtained (0.005) is less the 0.05 level of significance, physicians tend to further their studies to a post tertiary level significantly more than pharmacists.

For the proposed module, a Flesch Reading ease score between 10 till 40 was aimed for, since it is targeted for professional people who have graduated with a University degree in pharmacy. The final version of the module scored 55 in the Flesch Reading Ease score which is deemed satisfactory for this type of audience composed of graduated professionals.

There was no statistical difference ($p=0.341$) between how health care professionals rate the language, words and use of technical terms, which were found to be very understandable. The module was found to be very helpful and practical for its intended use. There was no statistically significant difference between helpfulness and practicality of the module ($p=0.699$).

The proposed protocol was found to be time consuming by almost half of the expert panel, whilst almost all experts found the protocol to be easy to use and rated the steps as clear. One limitation of the study was that a small sample size was used to evaluate the module and protocol. It is recommended that the evaluation is implemented on a larger scale. The module included all information regarding safe use of NSAIDs but no information regarding prescribing skills. These skills are taught to physicians and are gained through experience. Information regarding such skills could be inserted in the module.

CONCLUSION

The module regarding NSAIDs and the protocol regarding the use of these drugs suggested in this study are well accepted by both pharmacists and physicians. This module could be used in conjunction with a prescribing module to support pharmacists develop pharmacist prescribing for NSAIDs.

References

1. Schembri A. Devising a course to enhance prescribing competence [project]. Msida (Malta): Department of Pharmacy, University of Malta;2009.
2. Baldacchino D, Azzopardi LM. Use of NSAIDs and Patient Safety. *JEMP*. 2012;(2):15-19.
3. Doherty M, Hawkey C, Goulder M, Gibb I, Hill N, Aspley S, et al. A randomised controlled trial of ibuprofen, paracetamol, or a combination tablet of ibuprofen/Paracetamol in community. Derived people with knee pain. *Ann Rheum Dis* 2011;70:1541.
4. Rabia B, Nouseen A. An overview of clinical pharmacology of Ibuprofen. *Oman Medical Journal*. 2010;25(3):155-161.
5. Kiltz U, Zochling J, Schmidt WE, Brawn J. Use of NSAIDs and infection with helicobacter pylori. What does the rheumatologist need to know? *Rheumatology*. 2008;47:1342-1347.
6. Rostom A, Moayyedi P, Hunt R. Canadian Consensus guidelines on long term non steroidal anti-inflammatory drug therapy and the need for gastroprotection: benefits versus risks. Division of Gastroenterology, University of Calgary Medical Clinic AB, Canada. *Aliment Pharmacol Ther*. 2009;29:481-496 [internet] 2009. [cited 2014 Jan 08]. Available from: URL: <http://farncombe.mcmaster.ca/documents/Rostometal.AlimentPharmacolTher2009295481-96.pdf>
7. Lanasa A, Garcia Rodriguez LA, Arroyo MT, Gomollon F, Feu F, Gonzalez-Perez A, et al. Risk of upper Gastrointestinal ulcer bleeding associated with selective cyclo-oxygenase-2 inhibitors, traditional non aspirin non-steroidal anti-inflammatory drugs, aspirin and combinations. *Dyspepsia. GUT* 2006;55:1731-1738.
8. Ejaz P, Bhajani K, Joshi VR. NSAIDs and Kidney. *JAPI* [internet]. 2004 [cited 2014 Jan 08]; 52:632-640. Available from URL: <http://japi.org/august2004/U-632.pdf>
9. Hawkey CJ and Langman MJS. Non Steroidal anti-inflammatory drugs: overall risks and management. Complementary roles for COX-2 inhibitors and proton pump inhibitors. *BMJ* 2003;52:600-608
10. Fosbol EL, Folke F, Jacobsen S, Rasmussen JN, Sorensen R, Scharanm TK, et al. Cause Specific Cardiovascular Risk Associated with Non Steroidal Anti-Inflammatory drugs Among Healthy Individuals. *Circulation : Cardiovascular Quality and Outcomes*. [Internet] 2010 March. [cited 2014 Jan 08]. Available from: URL: <http://circoutcomes.ahajournals.org/content/early/2010/06/08/CIRCOUTCOMES.109.861104.full.pdf>
11. White WB, West CR, Borer JS, Gorelick PB, Lavange L, Pan SX, et al. Risk of cardiovascular events in patients receiving Celecoxib. A meta-Analysis Randomised Clinical Trial, *Am J Cardiol* 2007; 99:91-98.
12. Liou J, Wy C, Chen B, Yen LB, Wu KK. Non Steroidal Anti-Inflammatory Drugs Induced Endothelial Apoptosis by Perturbing Peroxisome Proliferator-Activated Receptor Transcriptional Pathway. *Mol Pharmacol* 2008;74:1399-1406
13. Hernandez – Diaz S, Varas-Loreno C, Garcia Rodriguez LA. Non-Steroidal anti-inflammatory drugs and the risk of acute myocardial infarction. *Basic Clin Pharmacol Toxicol*2006;98:266-274
14. Ng LE. Action of diclofenac and Meloxicam on nephrotoxic cell death. [MSc thesis]. National University of Singapore 2008[cited 2012 Oct 13]. Available from URL: <http://scholarbank.nus.edu.sg/bitstream/handle/10635/16059/NgNLE.pdf?sequence=1>
15. Horl W. Nonsteroidal Anti Inflammatory Drugs and the Kidney. *Pharmaceuticals* 2010 ; 3: 2291-2321. [cited 2014 Jan 08]. Available from: URL: <http://www.mdpi.com/1424-8247/3/7/2291>
16. Leuppi JD, Schnyder P, Hartmann K, Reinhart WH, Kuhn M. Drug – induced Bronchospasms : Analysis of 187 Spontaneously reported cases. *International Journal of Thoracic Medicine*. 2001; 68(4) : 345-351
17. Gohil Unnati, Modan Abdulkadir and Gohil Priyansher. Aspirin induced Asthma-a Review. *Global Journal of Pharmacology* 2010; 4(1) : 19-30.