CHAPTER V

DISCUSSION AND CONCLUSION

Discussion

With respect to the objectives of the study, to characterize the patterns of usage of specific COX II inhibitors and to determine economic impact of using specific COX II inhibitors, the study result showed that specific COX II inhibitors cost waste in low risk group was extremely high. The inappropriate prescribing of specific COX II inhibitors had economic impact on individual patients and health care cost. These excessive expenditure demand attention of policy decision maker to intervene effective cost containment program.

The results of this study are inconsistent with a previous study conducted by Phochanukul (6), which demonstrated that the most frequent prescribing pattern was specific COX II inhibitors alone or NSAIDs alone. However in this study, the most frequent prescribing was specific COX II inhibitors plus GPA or NSAIDs plus GPA. An earlier work noted that 43% of patients were prescribed celecoxib as first line therapy (4), the present study is consistent with the previous research. We found that 33.5% of patients were prescribed celecoxib as first line therapy. Finding from previous research reported cost saving per year for denied specific COX II inhibitors prescriptions under a prior authorization policy of Medicaid or HMO (3). In Thailand, Pharmaceutical and Therapeutic Committee (PTC) should develop or implement this policy to their hospitals. Prior authorization policy of appropriate specific COX II inhibitors utilization will help saving substantial amount of money in long term.

Other additional discussions were described in the following:

1. Additional cost waste from gastroprotective drugs (GPAs)

Cost waste from GPAs occurred when they were prescribed with specific COX II inhibitors or NSAIDs in low risk patients

1.1 Cost waste from prescribed with NSAIDs

Pattern of GPA prescribed with specific COX II inhibitors resulting cost waste could be divided into two groups including specific COX II inhibitors plus GPA in low risk and specific COX II inhibitors plus GPA in high risk group as shown in Table 5.1.

Table 5.1: Number of Prescriptions of Specific COX II inhibitors plus Gastroprotective Drug and Specific COX II inhibitors plus Non Gastroprotective Drug by Low Risk and High Risk Group

Sample	Low Risk Group	High risk Group
COX II + GPA	88	71
COX II + without GPA	223	137

In low risk patients, 88 received specific COX II inhibitors plus GPA. Physicians prescribed GPA in low risk group, resulting in additional cost waste from GPA. The real cost waste in actual practice would come from both specific COX II inhibitors and GPA therapy in low risk group. Cost waste of this present study should be higher than the findings. In addition, 71 patients received specific COX II inhibitors plus GPA in high risk group. Since, specific COX II inhibitors were recommended to be used in high risk group to decrease GI problem, there was no need to include GPA in addition to specific COX II inhibitors. Therefore, there was also cost waste from GPAs in high risk group.

1.2 Cost waste from GPAs prescribed with NSAIDs

Cost waste from GPA in NSAIDs came from 233 patients receiving GPA in low risk group as shown in Table 5.2. These appropriate uses resulted in additional cost waste from GPA in low risk group.

Table 5.2: Number of Prescriptions of NSAIDs plus Gastroprotective Drug and NSAIDs plus Non Gastroprotective Drug by Low Risk and High Risk Group

Sample	Low Risk Group	High Risk Group
NSAIDs + GPA	233	56
NSAIDs + without GPA	248	57

2. Estimated additional cost for high risk group might be lower

For high risk patients who received NSAIDs, they should receive better drug. Additional costs from switching NSAIDs to specific COX II inhibitors were also analyzed. We estimated that additional cost of physicians prescribing celecoxib therapy replacing NSAIDs therapy would be 1,536,033.48 Baht and prescribing rofecoxib therapy replacing NSAIDs therapy would be 1,824,039.78 Baht. But specific COX II inhibitors are substantial and additional budget from government are limited, so we analyze the cost of NSAIDs plus gastroprotective drugs and suggested that NSAIDs plus GPA might be the alternative.

Of the 113 high risk prescriptions in NSAIDs group, 56 were NSAIDs plus GPA. It was appropriate use for high risk patients (See Table 5.2). Fifty seven prescriptions were inappropriate NSAIDs use. The real additional cost was additional GPA cost in these 57 patients. However, when we include GPA for high risk, we added GPA for all high risk patients (See Appendix C). Estimated additional cost from this study might be lower than the findings. Nevertheless, outcome studies of NSAIDs plus GPAs versus specific COX II inhibitors were not well documented (53). Further investigation should be made on whether specific COX II inhibitors or NSAIDs plus GPA is more cost-effective.

3. Maximum Allowable Price

In this study, calculation of drug cost waste was based on acquisition cost, the medium price or maximum allowable price was not used for calculation. In general, acquisition cost was lower than medium price. Cost waste of specific COX II inhibitors compared with NSAIDs in actual practice or compare with diclofenac, Voltaren® and ibuprofen 400 mg in standard treatment might be greater than using medium price for drug cost.

4. The appropriate duration for calculation drug cost

Mean duration of this study was mean duration of all patients. The present study did not use mean duration which was specific to low risk or high risk group. Based on our observation, only mean duration of rofecoxib in low risk was lower than the mean duration of all patients. Average cost per day of rofecoxib in low risk might be greater than the findings. Cost waste of rofecoxib might be higher than the results. However, this might be opposite in high risk group.

The calculation for duration in NSAIDs might also affected the mean duration of NSAIDs in high risk and low risk group.

Conclusion

This was the first pharmacoeconomic comparison of specific COX II inhibitors utilization to be undertaken in Thailand. This study demonstrated inappropriate use of specific COX II inhibitors by orthopedists. It was an evidence that , many patients at low risk group were prescribed specific COX II inhibitors while many patients at high risk groups were prescribed NSAIDs alone. We studied cost impact of using specific COX II inhibitors to increase efficiency in improving the health of a population. Focusing on the health of population rather than individual patients, pharmacoeconomic result from this study could help improving relevant efficiency in health care system (54).

Specific COX II inhibitors are not recommended for routine use in patients with RA or OA. Thus, they should be used, in preference to standard NSAIDs use based on NICE guidance. From this study, however, we found that cost waste of specific COX II inhibitors in low risk group compared with NSAIDs was 2.4 million Baht/year in actual practice. Compared with each of the three highest volumes of standard treatment NSAIDs used in the hospital including diclofenac, Voltaren® and ibuprofen 400 mg, excessive expenditures were 3.4, 1.7, and 3.2 million Baht/year, respectively. The excessive expenditures were extremely high and need pharmacy intervention to subside this high cost waste.

Policy Recommendations

For health care provider, organization should be intensified to control specific COX II inhibitors use. Health care professionals should control specific COX II inhibitors use. The interventions might include implementation clinical practice guideline, restriction of prescribing, and drug use review (54). Selection an appropriate drug use for patients and classification type of high risk patients is important for rational prescribing of specific COX II inhibitors.

Clinical practice guideline of specific COX II inhibitors should be employed. The guideline of National Institute for Clinical Excellence (NICE) in the UK is an appropriate guideline of specific COX II inhibitors use. Restricted prescriptions can control specific COX II inhibitors use by allowing only the use in high risk patients (55).

Drug Utilization Review (DUR) Programs which is the evaluation of the appropriateness of drug use should be also employed (56). Pharmaceutical and Therapeutic Committee (PTC) should implement DUR to evaluate specific COX II inhibitors use.

Limitations

Several limitations were described in the following:

First, design of this study was retrospective research and collecting data from prescriptions and OPD Card. Data might not be complete when compared with data from prospective study. For instance, data on serious co-morbidity, gastrointestinal history or concomitant use of medication were based on physicians writing on OPD Card, there might be some degree of information bias.

Second, we studied only cost arm, there is no comparison with outcome arm. Because we analyzed additional cost of NSAIDs in high risk group compared with NSAIDs plus gastroprotective drugs or specific COX II inhibitors. Outcome study of specific COX II inhibitors versus NSAIDs plus gastroprotective drugs (GPAs) should be conducted.

Third, the present study used data of two months utilization. The study conducted longer than 2 months might better explain cost waste in actual practice.

Further Studies

Further investigations should be made including:

1. What are the factors influencing prescribing specific COX II inhibitors? Which payment status including CSMBS, State Enterprise MBS, and out of pocket are the factors influencing prescribing specific COX II inhibitors?

2. There is a need to conduct cost-effectiveness analysis between NSAIDs plus GPAs versus specific COX II inhibitors in high risk gastrointestinal adverse effect.

3. Conducting experimental study to demonstrate the cost-effectiveness policy intervention including the interventions on clinical practice guidelines, prior authorization, and drug use evaluation.