CHAPTER VI
CONCLUSION

The purpose of the study were to evaluate the effectiveness of the strategies used in promoting patients' knowledge and understanding of drug allergy and drug allergy card to prevent the occurrence of drug allergy. The information was collected from in-and out-patient at the Srinagarind Hospital, Khon Kean University during May 1 to October 10, 2009. The instrument used in this study was a self-reported questionnaire and the content validity and reliability were tested before collecting data. This study was divided into two phases; Phase 1: brochure development from May 1 - July 31, 2009 and Phase 2: prospective intervention study from August 1-October 10, 2009.

In Phase 1, a total of 985 postal pre-test questionnaires were sent to in-and out- patients who had history of drug allergy from pharmacy database during October 1, 2006 - September 30, 2008 and patients who were diagnosed with maculopapular rash, anaphylaxis, erythema multiforme, Stevens-Johnson syndrome, or toxic epidermal necrolysis during the fiscal years 2004-2008. The response rate of pre-test questionnaires was 38.0% (382/ 985). However, 299 (78.2%) valid responses were obtained. Then, 299 post-test questionnaires with either one pattern of drug allergy brochures were sent back to the respondents, 179 of them were returned (response rate 59.9%), consisting of 89 (59.73%) and 90 (60.0%) respondents who received pattern 1 (Group 1) and pattern 2 (Group 2) brochure, respectively. The patients' characteristics between two groups showed no significant difference. Therefore, knowledge and understanding, and behavior between two groups were comparable without bias. The results of providing drug allergy brochures to the patients were summarized as follows;

1. After brochure providing to patients, the total mean scores of post-test in both patient groups (Mean score ± S.D.; Group1: 3.5 ± 1.0 and Group 2: 3.5 ± 0.8) were significantly increased ($P = 0.007$ and $P = 0.039$) compared to the total mean

score of pre-test (Group1: 3.2 ± 1.1 and Group 2: 3.3 ± 1.0). But there were no significant differences in the comparison of post-test score between groups.

2. The patients who had one drug allergy and had higher educational level had a better knowledge and understanding of drug allergy and drug allergy card (Adjusted OR = 2.25; 95% CI, 1.20 - 4.52; p-value 0.015 and Adjusted OR = 2.62; 95% CI, 1.01 - 6.67; p-value 0.044, respectively).

3. After brochures providing to patients, the behaviors were changed in never receiving drugs from non-healthcare professionals, which was significantly increased in both groups (Group 1: pre = 59.3% and post = 74.4%, P = 0.002; Group 2: pre = 56.6% and post = 83.0%, P< 0.001). Moreover, Group 2 patients were significantly increased in always identifying drug allergy card or notifying healthcare professionals about their drug allergy history (Group 1 = 66.2% and Group 2 = 78.8%, P = 0.037).

4. There were no significant difference between two patterns of brochures in improving patients' knowledge and behaviors. Therefore, either of brochures was implicated in Phase 2 of the study.

5. In Phase 2, a hundred of patients who had history of drug allergy detected by pharmacist, admitted to hospital for drug allergy, or experienced drug allergy during their hospitalization, were recruited into the study. Patients received questionnaires three times for pre-test (T1), immediate post-test (T2), and one-month period post-test (T3). After T1 was conducted, pharmacist counseling in drug allergy and drug allergy card was provided with either one of brochures to 100 drug allergy patients. Then, the questionnaires were completed immediately for T2 and mail questionnaires were used for T3 one-month follow up. The total of 96 questionnaires (response rate 96.0%) was returned by mails. The results of pharmacists counseling with brochures to the patients were summarized as follows;

1. After the intervention providing to patients, the total mean scores of immediate post-test (4.2 ± 0.7) were significantly increased (P < 0.001) compared to the total mean score of pre-test (3.5 ± 0.7). The results still remained after one month of the intervention (3.9 ± 0.6) when compared to the total mean score of pre-test (P = 0.012).

2. After the intervention providing to patients, the behaviors were changed between T_1 vs T_2 and T_1 vs T_3 in asking drug names which were given from healthcare professionals ($P < 0.001$, $P = 0.005$), asking healthcare professional about the prevention of recurrent drug allergy ($P < 0.001$, $P = 0.003$), asking healthcare professionals about the management of drug allergy ($P < 0.001$, $P < 0.001$), and asking healthcare professionals when adverse drug event occurred ($P < 0.001$, $P < 0.001$), which were significantly increased in always did those behaviors. Moreover, patients were significantly increased in never receiving drugs from non-healthcare professionals ($P = 0.001$, $P = 0.002$).

The comparison of knowledge score between Phase 1 and Phase 2 was evaluated, the pharmacist counseling plus brochure (Mean ± S.D.; 4.14 ± 0.65) was found to be more effective than brochure alone (Mean ± S.D.; 3.49 ± 0.91) ($P < 0.001$) in the promotion of drug allergy knowledge.

Furthermore, the total of 348 questionnaires from Phase 1 and 2 of the study were evaluated for attitudes toward drug allergy and drug allergy card. The majority of the patients had positive attitudes toward drug allergy and drug allergy card, except for the statement that drug allergy limits their opportunities in drug utilization for underlying disease. Since it was found that more knowledgeable patients were more likely to have high level of attitude, drug allergy education could help patients to magnify their knowledge which could amplify the attitude towards drug allergy and drug allergy card.

Pharmacists' roles in the ADRs monitoring system were routinely worked following the guideline from Ministry of Public Health. The findings of this study have demonstrated that pharmacist counseling with brochures was more effective than brochure alone for improving the knowledge and understanding of drug allergy and drug allergy card and promoting drug allergy card carrying behavior. The only one time education was not sufficient to maintain patients' knowledge of drug allergy. Therefore, the intermittent continuous education was necessary. Furthermore, even though both patterns of brochures were equally effective in the promoting of patients' knowledge, pattern 2 brochure had a better ability to improve patients' awareness of drug allergy especially notification about their drug allergy history to healthcare professionals. Therefore, brochures may be able to use as an educational aid, which

was useful for patients' continual reminding in drug allergy knowledge and understanding.

There were some limitations in the present study. Firstly, retrospective study was often incomplete and most likely from recalling-information. Secondly, drug allergy history on patients' chart was occasionally recorded only diagnosis without physical examination information which was difficult to assess the accuracy of patients' reports. Thirdly, short duration of study might not be sufficient to assess the re-occurrence of drug allergy. Lastly, the patients' counseling place was interfered and time needed to be adjustable.

In the future study, to solve the problems of retrospective study, questionnaires should be distributed to patients at the time that drug allergy was diagnosed and should allow pharmacist appropriate time for drug allergy counseling without any interference. The longer prospective study should be performing to assess long term efficacy of the intervention in patients' knowledge, behaviors, and the recurrent rate of drug allergy. Beside this, the future studies should investigate the cost-effectiveness of brochures in the prevention of recurrent drug allergy. Moreover, patients' attitude towards pharmacists counseling and brochures should be studied in the future.