

# Effects of Using Guideline for Home Visits for Family Pharmacists of Samutsakhon Hospital

นิพนธ์ต้นฉบับ

Original Article

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## บทคัดย่อ

**วัตถุประสงค์:** เพื่อประเมินผลการใช้กระบวนการเยี่ยมบ้านตามคู่มือและหลักเกณฑ์การปฏิบัติงานเยี่ยมบ้านผู้ป่วยโดยเภสัชกรครอบครัวของโรงพยาบาลสมุทรสาครสามารถต่อจำนวนคนไข้ที่แบ่งตามระดับความจำเป็นในการออกเยี่ยม  
**วิธีการศึกษา:** การศึกษาแบบกึ่งทดลองนี้เป็นส่วนหนึ่งของการพัฒนาแนวทางการเยี่ยมบ้านสำหรับเภสัชกรครอบครัว โรงพยาบาลสมุทรสาคร ตั้งแต่มีกฎหมายถึงธันวาคม 2558 โดยเน้นที่การปฏิบัติงานเยี่ยมบ้านตามคู่มือและหลักเกณฑ์การปฏิบัติงานฯ คัดเลือกคนไข้ที่มีความจำเป็นในการเยี่ยมบ้านระดับ A (จำเป็นที่สุด) และ B จำนวน 15 ราย โดยแบ่งตามระดับปัญหาเกี่ยวกับการใช้ยาและความทุกข์จากการใช้ยา แล้วติดตามเยี่ยมและประเมินระดับความจำเป็นอีกครั้ง แสดงผลคนไข้เฉพาะราย และแสดงความถี่และร้อยละ **ผลการศึกษา:** คนไข้ทั้งหมด 15 รายที่ผ่านการคัดเลือกเป็นระดับ A ส่วนมากถูกส่งมาโดยเภสัชกรงานบริหารทางเภสัชกรรมในผู้ป่วยใน (11 ราย) ส่วนใหญ่เป็นเพศหญิง (ร้อยละ 60.00) อายุเฉลี่ย 61 ปี สถานภาพคู่ (ร้อยละ 46.67) ไม่ได้ประกอบอาชีพ (ร้อยละ 80) ใช้สิทธิหลักประกันสุขภาพถ้วนหน้า (UC) (ร้อยละ 93.33) มีผู้ดูแลการใช้ยา (ร้อยละ 60.00) โดยผู้ป่วย 15 รายนี้ได้รับการเยี่ยมบ้านรวม 47 ครั้ง เฉลี่ย 3 ครั้งต่อราย (ช่วง 1 – 7 ครั้ง) เมื่อสิ้นสุดการเก็บข้อมูล ผู้ป่วยส่วนมากยังอยู่ในระดับ A (ร้อยละ 60) และที่เหลือทั้งหมด (ร้อยละ 40) เปลี่ยนจากระดับ A เป็น B สรุป: การเยี่ยมบ้านโดยเภสัชกรครอบครัวตามคู่มือและหลักเกณฑ์การปฏิบัติงานเยี่ยมบ้านโดยเภสัชกรครอบครัวของโรงพยาบาลสมุทรสาครสามารถดำเนินการได้จริงและทำให้ความจำเป็นในการเยี่ยมบ้านลดจากระดับ A เป็นระดับ B ได้ร้อยละ 40 ของคนไข้ การศึกษาในอนาคตควรเพิ่มจำนวนคนไข้และระยะเวลาในการเยี่ยมบ้านเพื่อให้สามารถเยี่ยมได้หลายครั้งขึ้น

**คำสำคัญ:** เภสัชกรครอบครัว, หลักเกณฑ์การเยี่ยมบ้าน, ปัญหาที่เกี่ยวกับการใช้ยา, ความทุกข์ที่เกี่ยวกับการใช้ยา

## Abstract

**Objectives:** To determine the effect of home visit using guideline for pharmacists at Samutsakhon Hospital on the patient's need for home visit.  
**Methods:** This quasi-experiment study was the second part of the research and development study to develop the guideline for home visits for family pharmacists conducted from June to December 2015. Fifteen patients with level A of need for home visit (i.e., the highest need) and level B were subject to recruitment. Drug related problems and sufferings were considered in grading these need levels. After home visits, level of home visit need was re-evaluated. Findings on individual patients, as well as, frequency with percentage were presented. **Results:** All 15 patients were in level A of home visit need. Most were transferred for home visit by pharmacists in in-patient pharmaceutical care service (11 patients). The majority were female (60.00%), married (46.67%), having no job (80.00%), using universal care scheme (93.33%), having caregiver (60.00%), with a mean age of 61 years. Of a total of 47 home visits, 3 home visits were made per patient with a range of 1 to 7 visits. At the end of the study, the majority of the patients stayed at level A (60.00%), while the rest 40.00% were alleviated to level B.  
**Conclusion:** Home visits by family pharmacists using the guideline established for Samutsakhon Hospital were executable and could alleviate the need level from A to B in 40% of patients. Future research with a larger sample size and a longer follow-up period should be conducted.

**Keywords:** family pharmacist, guideline for home visit, drug related problems, drug related sufferings

## Introduction

In Thailand, home healthcare has been mostly provided by the official community health volunteers, healthcare providers of the sub-district health service office, or nurses from community hospitals. It was documented that home healthcare service in the remote area by physicians was provided in 1978.<sup>1</sup> Recently, more physicians, especially those specialized in family medicine have increasingly taken more role in home healthcare service. In the National Health Security Act B.E. 2545 (A.D. 2002), home healthcare is included in the benefit package for the national universal coverage. This Act mandates that family medicine or family

practice be provided at the primary care unit to satisfy the clients than does the conventional care.<sup>2</sup> Meanwhile, nurses have been developing their primary nursing care as mandated by the Professional Nursing and Midwifery Act B.E. 2528 (A.D. 1985). As a result, their patient care has been extended from hospital nursing care to home and community healthcare service.<sup>3</sup>

Home healthcare by family pharmacists is one of the five primary pharmacy services stated in the National Health Security Act B.E. 2545 (A.D. 2002). In the Act, pharmacy home healthcare service is under the section of the continuous

medication management system in the community. Home healthcare by family pharmacists in various hospitals has been conceived with different concepts and processes as a result of diverse problems, resources, populations, and levels of healthcare settings. Consequently, standard home healthcare practice has not been established for the nation-wide as a benchmark for regular practice as well as assessment for family pharmacists.

In 2009, the Office of Service Quality Development, Ministry of Public Health, in association with Drugs, Medical Supplies and Vaccines Fund of the National Health Security Office, and the Consumer Health Protection project under the Thai Health Promotion Foundation initiated the project entitled "the Development of the Community Pharmacy Service" to improve the performance of family pharmacists in primary care unit, to develop the protocol for pharmacy primary care service, and to strategically plan for human resource development. One of the family pharmacy practice components is the community-based pharmaceutical care with clinical guidelines for select illnesses. This practice aims, among patients and their families, to improve medication adherence, to self-manage medication use, and to achieve a safe and effective use of medications and health products. In addition, the practice also aims to effectively allocate budget to the development of the primary care unit.<sup>4,5</sup>

In 2014, the Hospital Pharmacy Association of Thailand initiated the support for the community of pharmacy practice (COP). Such campaign has encouraged the collaboration of hospital pharmacists and faculty members in various fields of pharmacy practice. To thrive for excellence in pharmacy practice, these parties shared their experiences and obstacles in their works. In 2012, pharmacists who had been working in primary pharmaceutical care formed the group called the Society of Family Pharmacist-Thailand (SOFT). The SOFT group aimed to identify and solve drug-related problems in the patients from the hospital to their residence. The vision of SOFT facilitated pharmacists to engage more in home healthcare.<sup>6</sup>

In a continuum of seamless and continuous care, processes of care from institutional to residential need to be identified. Specific services provided by pharmacists to identify, solve and prevent drug-related problems, at each point of care must be strictly followed. This is because, like services provided by other healthcare professionals, drug-related problems have been found considerably prevalent at

the seam of the care. For example, an incomplete history of medication use from the previous hospital could lead to missing certain medications at the present hospital admission if medication reconciliation is not performed. In addition, medication regimen could be changed for hospitalized patients. Without discharge counseling, any misunderstanding on the medication regimen after leaving the hospital could lead the patients to an unintended medication use.<sup>7-9</sup>

In Samutsakorn Hospital, the family pharmacy healthcare service was initiated in 2011 to verify the actual cause of the patient's drug-related problems at their residence. At the early phase, only one pharmacist provided the service by joining the hospital's nursing home healthcare team. This pharmacist also cooperated with sub-district health promoting hospitals under the provision Samutsakorn Hospital. In 2013, a total of four pharmacists were responsible for the home healthcare in addition to their other routine services in the hospital. In each of their weekly home healthcare visit, two pharmacists made a trip to the patient's house. Since 2012 to November 2014, 224 home visits for 122 patients had been done. These were patients with chronic diseases including hypertension and diabetes (48.36%), kidney diseases (20.49%), heart diseases (9.01%), cerebrovascular diseases (6.56%), psychiatric disorders (5.73%), asthma and chronic obstructive pulmonary disease (5.73%), and HIV and pulmonary tuberculosis (4.09%).

A number of patients larger than 122 were with the need for home visit. However, with verbal not documented referrals from other departments in the hospital to the pharmacy department, only 122 patients were visited. In selecting patients for home visit, family pharmacists categorized these patients into different levels of need specifically A, B, C and D. Being mutually agreed among family pharmacists, these need levels helped facilitate the management of home visit. In our initial phase, the family pharmacist team could partially provide the seamless care. This was in part due to a lack of well-established protocol. Some steps were missing from the existing initial protocol. For example, criteria for selecting and referring cases to the pharmacy home healthcare team, appropriate criteria for categorizing the patient's problem severity, specific guideline for planning scheduled visits for given patients, guideline for cooperation among involving parties, and appropriate outcome measures. With the need to improve the quality of pharmaceutical home healthcare service of Samutsakorn Hospital, we conducted a research

and development project entitled the development of the Guideline for Home Visits for Family Pharmacists, and this research article is a part of the project report.

In this study, drug related problems (DRPs) were defined based on the work of Cipolle and colleagues<sup>10</sup> including unnecessary drug therapy, wrong drug, dosage too low, dosage too high, need for additional drug therapy, adverse drug reactions, and inappropriate compliance. Regarding inappropriate compliance, we used the term “non-adherence” which could be further categorized into nine groups including self-dose decrease, self-dose increase, self-discontinuation, irregular use, discontinuation of drugs, redundant drugs with similar pharmacological action, wrong administration of drugs, wrong drugs, and drugs affecting the desired outcomes of the given drugs. In addition to DRPs, we employed the concept of drug-related sufferings (DRSs) based on the work of Wisetsorn<sup>11,12</sup> to reflect a holistic impact of drug use on the patient’s life. Based on this concept, six sufferings were identified. First, the patient could lose certain functions in their daily living because of drug use such as the drugs’ adverse drug reactions (ADRs). Second, the patient could experience stress and anxiety associated with drug use and related side effects. Such psychological distress could lead certain patients to a reluctance or fear to use the drug. Third, confidence in drug use could be lost in some patients. Fourth, caregivers could also face stress in taking care of drug use for the patient. Fifth, some patients perceived that their drug use is a burden to the others. Sixth, relationship among family members could be negatively affected by various conflicts, for example, the patient’s annoyance once reminded by family members to take drugs.

In categorizing the patient’s **need** for home visit, we considered two aspects of their drug related problems, namely the **severity** and **urgency** of the problem. Severity of the problem was defined as how severe the undesirable outcomes could be if not corrected or controlled. Urgency was defined as how fast the problem needed correction or control before the undesirable outcomes occurred or worsened. To reach a set of comprehensive criteria, four levels of need, specifically A, B, C and D were created. The level A of need was defined as patients with the highest need for home visit. They could be those new cases referred from family pharmacists at any settings in the hospital. They had DRPs and/or DRSs, or their diseases uncontrolled. Those with level B need referred to patients whose DRPs and DRSs had been corrected but their

diseases had not been well controlled and other health-related problems, such as inappropriate behaviors affecting adherence, had been found. For C-level need, neither DRPs nor DRSs had been found. Other health-related problems had also been resolved. Finally, D-level need was defined as those with all problems resolved and follow-up was no longer needed and hence terminated. The use of need-based criteria incorporating severity and urgency of the problems was considered comprehensive. In this present research report, the **specific objective** was to preliminarily determine how the levels of need for home visit, i.e., A, B, C and D, changed after the use of the Guideline for Home Visits for Family Pharmacists of Samusakorn Hospital.

## Methods

This quasi-experiment study was the second phase of the research and development project entitled the development of the Guideline for Home Visits for Family Pharmacists of Samusakorn Hospital from June to December 2015. In phase 1, situational analysis was conducted and guideline including the protocol for home visits provided by family pharmacists was developed. In the second phase, family pharmacists including the researcher (Salisa Saploy) made home visits to selected patients using the developed guideline.

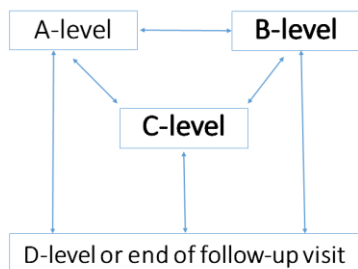
In this second phase, the outcome was the proportion of patients in each level of need for home visit before and after the home visit using the guideline. Need levels, i.e., A, B, C and D, were the results of DRPs, DRSs, disease control status and other health-related problems as previously described. This consideration was based on the concept that all relevant aspects of problems and factors should be taken into account in classifying the need for home visit. To be able to see clear changes in level of need, only patients with moderate to high levels of need, i.e., levels A and B, were selected.

Based on the developed guideline and protocol, not only family pharmacists but also other professionals were involved in the home healthcare service. These 16 professionals including physicians, nurses, nutritionists, and social workers were selected by a purposive sampling method. These professionals were involved in home healthcare visit of Samutsakorn Hospital and had worked at the hospital for at least two years. In the actual practice, these professionals took part in choosing the patients for home visit, and providing opinion, advice and information relevant to their expertise. For

physicians, they helped select the patients with the need for home visit and provided consultation when asked by the home visiting team. These physician specialists included one with social medicine and the other with internal medicine. Six nurses with various responsibilities were included. Samutsakorn Hospital was responsible for home healthcare of the patients living in Muang district area. We selected a home healthcare nurse who was taking care of patients residing in the municipal area of Muang district. The other nurse from the social medicine department of the hospital was selected as she took care of patients living in sub-districts out of the municipal area of Muang district. In visiting those patients out of the municipal area, the coordination between the team of Samutsakorn Hospital and those of sub-district health promoting hospitals was needed. Therefore we selected a nurse from a sub-district health promoting hospital to facilitate home visit in this study. Another nurse selected was the one responsible for psychiatric home healthcare visit of Samutsakorn Hospital. The fifth selected nurse was responsible for continuous ambulatory peritoneal dialysis (CAPD) who also made home visits for CAPD patients. Finally, a nurse in internal medicine department was selected. This nurse was responsible for home visit for chronic illness patients with any health-related problems. In this study, six family pharmacists participated in the thorough process of home healthcare. They were involved in identifying the patients' DRPs, DRSSs, other health-related problems, and disease control status which were necessary for classifying the patient into each of the four levels of need, i.e., A, B, C and D, for home visit. In addition to their routine pharmaceutical care service both in the in-patient and out-patient departments of the hospital, these six family pharmacists also provided the home healthcare service. We selected one social worker responsible for home visit to take care of patients with social problems including family problem, abandoned elderly and children, and family financial problem. Finally, a nutritionist responsible for home visit for patients with nutrition problems.

For **patient sample**, we also selected them by the purposive sampling method. The patients had DRPs and were screened and referred from various points of care in the hospital. They were referred by pharmacists, physicians, nurses in Samutsakorn and sub-district health promoting hospitals, social worker, and nutritionist, from out-patient and in-patient departments and home visit. In this preliminary

study, we selected only 15 patients for as many visits as possible within the limited period of time. In general, we intended to make at least three visits to obtain adequate information for future study. However, if any patients were found to have less severe and urgent problems, they could be re-assessed for outcomes (need level) at the second visit. For those whose severe and urgent problems persisted, the third visit was needed. The selected patients were in accordance with the criteria stated in the developed guideline. There were considered based on the severity and urgency of their problems as follows. The patients with redundant medications or medications with a high potential for drug interactions. They were patients with chronic illnesses who had a risk of wrong drug administration, who were frequently hospitalized with DRPs, whose health problems were not corrected or alleviated, and who used a large number of drugs, for example, those with chronic kidney disease. At the start of the study, if any of these problems led to a severe and urgent outcome, the patient was classified as a level A of need for home visit regardless of their experience with home visit. In addition, those with a recurrence of the previously solved problem were also classified as level A. Patients with level A of need were subject to a re-visit within three months and follow-up phone calls. Three visits and re-assessments were planned for these A-level patients. For patients with less severe and urgent problems, re-assessment of the need at visit two could be made. However, if the severity and urgency remained high, the re-assessment at the third visit was needed. The re-assessment at the second or third visit could result in B, C, or D level (Figure 1). Patients with level B of need at the start of the study were those whose problems were resolved but their diseases were not well controlled and with other health-related problems such as inappropriate behaviors that could lead medication non-adherence. This group of patients was subject to a re-visit within six months and re-assessments similar to those in level A. Even though not included in our study, patients with C-level of need were those subject to regular scheduled visit mainly by the hospital. Once three visits were completed, re-assessment was made. In addition, patients with B- or C-level of need could be re-classified as level A.



**Figure 1** Level of need for home visit.

### Research tools

This study employed three sets of tools including 1) Guideline for Home Visits for Family Pharmacists of Samutsakhon Hospital, 2) data collection forms consisting of home pharmaceutical care record form, DRP and DRS record form, and problem summary and management form, and 3) HOSxP electronic database program and conventional medical records of Samutsakhon Hospital.

### Home visit procedure

Home visits had been made from June 1<sup>st</sup> to December 30<sup>th</sup>, 2015. Based on the developed guideline, only patients with level A and B of need were selected and scheduled for home visit. In each home visit, the researcher (Salisa Saploy), and two family pharmacists joined the team. Among these family pharmacists, one was acting as the case manager. In addition to family pharmacists, other professionals, if available, also joined the team. Home visit was scheduled once a week with three patients to visit. Information of the patients' medical records were communicated among all professionals through the TurboHOSxP program. The team telephoned the patient or their relatives for home visit consent. If agreed, the team asked the patient for traveling information and searched for maps and remarks from the internet. Additional phone numbers of the patient were also requested. In each trip, visits for three patients living close to each other were scheduled for time-saving purpose. Failed visit, if any, was rescheduled for the following week.

In addition to TurboHOSxP program, information of the patient before and after home visit was also conveniently shared among all professionals through Note Photo<sup>TM</sup> which was a sub-module in the HOSxP<sup>TM</sup> program. Plan and result of each home visit was communicated and shared effectively. We also used Google Map<sup>TM</sup> to share the patient's information on the internet which could be accessed by all kinds of electronic communication devices. This information included

the patient's name, HN, address, phone numbers, hospital appointment date, level of need for home visit, number visits made, and the last visit date. Google Drive<sup>TM</sup> was used to store information for later analysis.

At least one day before the trip, family pharmacists reviewed the patient's information from HOSxP<sup>TM</sup>, conventional medical records, Note Photo<sup>TM</sup> and Google Map<sup>TM</sup>. Information from the last three to five visits was reviewed. Then plans for intervention and management, trip and sequence of home visits were made.

During home visit, the family pharmacist observed and interviewed the patient according to the INHOMESSS concept.<sup>17</sup> This concept helped assess the capacity and potential for self-care of the patient and their relatives, the patient's disease status, the real illness, and risks toward family health. I-Immobility helped assess the patient's capability in activities of daily living including getting up from bed, having meals, using restroom, doing household chores, and taking medications. N-Nutrition helped evaluate the patient's nutritional status, favorite foods, food preparations, food storage, amount of food consumed, and dietary habits. H-Housing helped the pharmacist assess the patient's housing whether it was comfortable, tidy, warm, private, and safe. It also assessed the space, surrounding, neighborhood, and relationship among family members. O-Other people helped assess role and responsibility of each family member toward the patient. It also helped identify the primary caregiver. M-Medications helped the pharmacist evaluate medication use and the preparation of each dosing. It also assessed the use of medications, herbs and nutritional supplements other than those prescribed by the doctor. This could indicate the patient's self-care behaviors. E-Examinations was employed for physical examination and daily living assessment. The evaluation could help reveal the real illness of the patient. S-Safety helped assess the household safety so that home improvement could be made. For example, furniture rearrangement could help avoid accidents, especially falls, among the elderly. S-Spiritual health was used to assess beliefs and values of all family members. Finally, S-Services helped indicate the preference and access to healthcare facilities, communication methods with such facilities, when to contact such facilities, and other nearby healthcare facilities available. Family pharmacists considered all aspects of INHOMESSS to better understand the problems and offer the best solutions for the patient's DRPs and DRSSs.

## Results

All information observed and interviewed and the detail of all actions taken were recorded on the relevant forms as previously mentioned. All information was further electronically recorded and shared on Note Photo™ for all professionals to prepare for the following visit. Comments and advices from relevant professionals could be added and shared. The latest information of the patient was updated in all databases including Google Map™ and Google Calendar™. In addition, case manager pharmacist contacted the patient's primary physician, if needed, for advice and shared solutions. All information and summary was updated and readily available for planning the following visit.

### Data analysis

Demographic and clinical data of each of individual patients were presented. These included gender, age, number and kind of diseases, marital status, occupation, payment scheme, caregiver, level of need for home visit at the start of the study, and the experience on home visit. Frequency and percentage of such characteristics were also presented. The need level at visit 3, or visit 2, if applicable, was presented for each of individual patients. Frequency and percentage of the need change were also presented.

Of all 15 patients, the majority was referred from in-patient pharmacists (11 patients, or 73.33%) followed by the out-patient pharmacist, nurse at CAPD unit, social worker, and nurse at a sub-district health promoting hospital (one patient each). All 15 patients were classified as a level A of need for home visit. There were more women (60.00%) than men (Table 1). Their age ranged from 39 to 80 years with an average of 61 years. Most of them were in the age of 61 – 70 years old (53.33%), married (46.67%), not working (80.00%), under the universal coverage (UC) payment scheme (93.33%), having care givers to take care of medication use (60.00%). All patients had hypertension and more than one underlying disease. Thirteen patients had diabetes (86.67%) with an average HbA1C before the first visit of 10.26% (Table 1).

There were 47 home visits for 15 patients with an average of 3 visits per patient. The most and least numbers were 7 and 1 visits respectively. Slightly more than half of the total visits were done by pharmacists only (53.33%) followed by pharmacists accompanied with a CAPD unit nurse (20.00%), and pharmacists accompanied with a nurse from sub-district health promoting hospital (13.33%). At the end of the study, almost two-thirds of the patients remained at level A of need (60.00%) while the rest (40.00%) changed to level B (Table 2).

**Table 1** Characteristics of the patients (N = 15).

No.	Gender	Age (yrs.)	No. of underlying diseases	Underlying disease	HbA1C (%)	Marital status	Occupation	Payment scheme*	Having care giver
1	Male	42	3	HTN, DM, DLP	13.0	Single	Small business	UC	Yes
2	Female	60	3	HTN, DM, DLP	15.5	Widowed	Labor	UC	No
3	Male	64	2	HTN, HIVs	-	Widowed	None	UC	Yes
4	Female	67	5	HTN, DM, DLP, IHD, CKD	8.5	Widowed	None	UC	Yes
5	Female	51	3	HTN, DM, HIVs	8.0	Widowed	None	UC	No
6	Female	46	3	HTN, DM, DLP	13.0	Married	None	UC	No
7	Male	64	3	HTN, DM, DLP	9.1	Single	None	UC	Yes
8	Female	61	2	HTN, DM	13.8	Married	Small business	UC	No
9	Male	39	3	HTN, Gout, CKD(CAPD)	-	Married	None	UC	No
10	Female	68	3	HTN, DM, DLP	10.8	Widowed	None	Civil servant	Yes
11	Female	69	3	HTN, DM, DLP	7.6	Married	None	UC	Yes
12	Female	67	3	HTN, DM, DLP	7.0	Married	None	UC	Yes
13	Male	78	4	HTN, DM, DLP, CVA	7.5	Widowed	None	UC	No
14	Male	80	4	HTN, DM, DLP, CKD	8.1	Married	None	UC	Yes
15	Female	63	4	HTN, DM, DLP, CKD (CAPD)	11.5	Married	None	UC	Yes

**Note:**

HTN = hypertension  
IHD = ischemic heart disease  
UC = universal coverage

DM = diabetes mellitus  
CKD = chronic kidney disease

DLP = dyslipidemia  
CAPD = continuous ambulatory peritoneal dialysis

HIV = human immunodeficiency viral infection  
CVA = cardiovascular accidents

**Table 2** Home visits and level of need for home visit (N = 15).

No.	Professional referring the patient for home visit	Number of visits received	No. of visits provided by family pharmacist	Professionals accompanying the team	Need level at the end of home visits
1	Out-patient pharmacist	7	6	Social worker (1 visit)	A
2	In-patient pharmacist	3	2	IPD pharmacist (1 visit)	B
3	Social worker	1	1	None	A
4	In-patient pharmacist	3	3	None	B
5	In-patient pharmacist	4	4	None	B
6	In-patient pharmacist	3	3	None	A
7	Out-patient pharmacist	2	2	None	B
8	In-patient pharmacist	5	5	None	A
9	CAPD unit nurse	3	1	CAPD nurse (1 visit) and nurse from sub-district health promoting hospital (1 visit)	A
10	Nurse from sub-district health promoting hospital	2	1	Nurse from sub-district health promoting hospital (1 visit)	A
11	In-patient pharmacist	1	1	None	A
12	In-patient pharmacist	2	2	None	B
13	In-patient pharmacist	5	4	OPD internal medicine nurse (1 visit)	A
14	In-patient pharmacist	2	1	CAPD nurse (1 visit)	B
15	In-patient pharmacist	4	2	CAPD nurse (2 visit)	A

Of 47 home visits, DRPs were found in 40 visits (85.11%) with a total of 78 DRPs. DRPs were found in all patients at their first visit. Of 78 DRPs, the most frequently found was medication non-adherence (93.59%). Regarding drug related sufferings or DRSs, seven patients (46.67%) who collectively experienced 29 DRPs were found that their medications caused DRSs to themselves and their family members. The most frequently found DRS was stress and anxiety related to the use of medications and their side effects which was found in 6 of 15 patients (40.00%). In addition, other health-related problems that could affect medication use were found in 10 patients (66.67%). A total of 125 times of medication use were affected. The patient limited ability to use medications was the most frequently found cause (52.00%), followed by a lack of knowledge on diseases and medications, their belief and anxiety about diseases and medications, and financial problem.

Two problem managements could be classified. The family pharmacists could manage the problems for the patient with or without the help from or co-operation with other professionals. Without help or co-operation, it was found that family pharmacists could provide knowledge or advice about diseases and relevant life-style managements (23 advices), and medication use (31 advices) to all patients at all 47 visits. Caregivers, if available, were also given such knowledge. In addition, the family pharmacists prepared 19 drug-use devices for 10 patients. For the management that needed co-operation with others, a total of 17 co-operations were found with 12 co-

operations with professionals in the hospital and 5 with those outside the hospital. All co-operations were successful.

## Discussions and Conclusion

To test the benefit of the guideline for home visits for family pharmacists of Samutsakhon Hospital, we selected 15 patients with drug-related problems and suspected drug-related sufferings. All patients with chronic diseases had a level A of need for home visit. We found that all patients had more than two underlying diseases and an average of eight medications for chronic illnesses. Thirteen of them had diabetes with an average HbA1C of 10.26%. Our patient sample had more severe illnesses and more complicate problems than the study of Suradechawut and colleagues.<sup>13</sup> In Suradechawut's work, HbA1C of 8.7%, four medications for chronic illnesses and only two underlying diseases by average were found. Patients in Suradechawut's study experienced an overt improvement in the outcomes with the use of self-efficacy driven strategy. In our present study, only 40% of the patients improved from level A to B of need for continuing home visit. In addition, patients in our study struggled with DRPs while those in Suradechawut's study were more likely to face dietary challenges. The results of the two studies were therefore different.

At the end of home visit, 6 patients (patient numbers 2, 4, 5, 7, 12 and 14) improved from level A to B of need. The improvement could be due to the willingness of the patients and their caregivers to follow the pharmacist's advice. As a



part of the success, family pharmacists could identify and find ways to solve problems and sufferings related to drug use, and encourage the patients and caregivers for such improvement. In doing so, family pharmacists acting as the patient's delegate sought help from and co-operations with other involving parties.

Our present study was a part of the development of the guideline for home visits for family pharmacists based on the concept of seamless care. With a drug use counseling provided before hospital discharge and a follow-up home visit, more appropriate drug use and adherence and better outcomes were found. These findings were consistent with the study of Polpoat<sup>15</sup> which also reported that discharge counseling and home visit provided by pharmacists reduced DRPs and improved treatment outcomes among the elderly patients. Furthermore, Apisitsak's study found that home visit accompanied with pharmaceutical care service at the hospital in patients using warfarin resulted in a decrease in adverse drug events and a larger number of patients with INR within therapeutic range.<sup>14</sup> Like our study, both studies employed a seamless care, from hospital to home care, with pharmacists as the primary coordinator.

Our study was somewhat disappointing with 60% of the patients remaining at the highest level of need for home visit. Their problems could be more severe and complicate that needed more time to solve. For example, patient number 1 had diabetes with poor glycemic control. With a poor eyesight, he could not see clearly and could not self-inject his insulin. At all seven home visits, non-adherence to medication use was found. Other health-related problems that could worsen the medication use included his negligence on medication use, perceived severity of his illness, narcotic addiction, poor dietary habit, and his wound care problem. We also found that, based on the Transtheoretical Model Stage of Change, it took six visits for him to start to change his behavior from pre-contemplation to contemplation stage (data not shown).

Based on the INHOMESSS concept to assess the patient and caregiver's capacity and potential in self-care, disease severity, real illness, and risk toward family health, we found that all patients could perform daily activities. At the end of the study, 20.00% of patients could take care of their own medication use. For those with diabetes, could not achieve an adequate glycemic control since they could not control their diet. Ten patients (66.67%) had their blood pressure at mild to severe level ( $\geq 141/100$  mmHg). Among 13 patients with

poor glycemic control, a better HbA1C was found in six of them at the end of the study (data not shown).

As 33.33% of the patients were suspected of adverse drug reactions and another 33.33% with suspected causes other than drugs. Family pharmacists provided advice to solve the problems to most of them (93.33%). All but one patient lived with their family members. Only two patients had an absolute positive belief toward self-care while 13 of them (86.67%) had mixed beliefs. These patients had a high trust on healthcare facilities. All of them preferred receiving continuous care at Samutsakorn Hospital while 46.67% preferred sub-district health promoting hospital for minor health problems and mild wound care (data not shown).

Our preliminary study shows a promising result that the guideline for home visits for family pharmacists of Samutsakhon Hospital could be used in the actual practice. Other healthcare settings could try this guideline with some adaptations to suit their context. Co-operation of the multidisciplinary team is also a key factor for success.

This study was not free from limitations. A small sample size of 15 patients made it difficult to summarize the results as the average measure. More subjects are needed in the future studies. With a relatively short period of study time, the long-term beneficial effect could not be reflected. Therefore, we recommend future studies with a longer study period. In addition, some patients were provided with a small number of home visits. A longer duration of study is again needed to allow for more visits.

In conclusion, home visits following the guideline for home visits for family pharmacists of Samutsakhon Hospital could be conducted and could help reduce the need for home visit in 40% of 15 patients. Future studies should have more patients and a longer study period to allow for more visits.

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