

尊敬的郭家麒議員、張超雄議員：

**關於：福利事務委員會及衛生事務委員會聯席會議
安老院派錯藥事件**

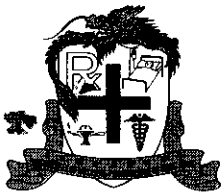
近年因安老院派錯藥導致長者入院個案有增加趨勢，本港三個藥劑業團體(代表全港 1,500 名藥劑師)均為此表示極度關注。頃閱資料，04 年港島區發生至少 6 宗因安老院配錯藥而令長者入住深切治療部事件；至本年在過去 9 個月內公立醫院發現 9 宗牽涉安老院因誤服降血糖藥求診的個案，可見同類事件的問題仍然普遍存在。學會認為政府對安老院分發藥物的監管不足，特此函達，希望當局正視問題。

我們想指出今次事件只是冰山一角，每當有藥物事故，政府都以發出指引的手法了事，誤導群眾以為有了一些指引，問題便可解決，企圖將事件淡化。如今政府監管不力，藥物事故接二連三，事後安排都只是建議在短期訓練一些非專業人員，從事這高風險工作。社署雖說會加強保健員認識藥物的訓練時數，並將學歷由中三提升至中五，卻不考慮長遠的解決方法。這正等如給一些中三或中五的人員完備的指引，培訓他們十數小時，便可診治做手術一樣，那還需政府動用大量公帑，訓練醫生藥劑師呢？

現時安老院舍在藥物分發方面，尚有許多改進的空間。早於一九九四年，醫院管理局成立了社區老人評估小組，專責為安老院舍的長者評估照顧及康復期間治療質素，對用藥監察則未盡完善。醫管局總藥劑師辦事處曾就安老院舍藥物處理問題，於八十五間院舍進行為期八個月的調查，並於二零零三年發表的報告（見附件 Outreach Pharmacy Service in Old Age Homes: a Hong Kong Experience, J Chin. Med. Assoc. 2003;66:346-354）。報告中包括觀察安老院舍於藥物貯存、派藥流程、用藥記錄及員工對藥物的基本知識等，分析問題；於研究中段加入藥劑師的參與，以專業意見為各院舍提供意見及定期教育講座，並評估其先後改變。

依報告指，安老院舍因缺乏監察制度，衍生不少用藥問題，其中有四十所安老院舍更被評估有潛在問題達十五個以上，情況令人關注。當中涉及五個重要範圍：

1. 藥物存放位置不妥善：如與食物同放，擅自更換原裝藥瓶等。
2. 藥物存放質素的要求：溫度、濕度等。藥瓶欠標籤，甚至用上錯誤標籤。
3. 派藥流程：欠缺派藥標準規範，派藥流程混亂。
4. 缺少用藥記錄：也沒有保障正確用藥的機制，自行更改劑量或停藥都沒有記錄。
5. 工作人員的知識：藥物知識不足以应付工作需要與培訓亦不足夠。



然而，研究結果顯示工作人員對藥物危機意識不足，又沒有適當的藥物教育，不能有效減低錯誤的發生及人為的失誤，這些都是源自知識的貧乏。通過數星期藥劑師舉辦的教育講座、示範和實習後，評估的結果都一致轉好，錯誤次數也大幅下跌。報告並指出藥劑師能擔任藥物顧問一職，填補院舍用藥機制上的漏洞，效果更顯事半功倍。

可惜至今，安老院舍有關用藥的隱性危機還未解決。我們有以下數項建議，希望當局參考。首先，規定藥物必須由合適及有專業資格人士處理，例如護士負責派發，並加強培訓，保證治療質素。由於大部份長者的藥物，都是由醫院管理局供應，醫管局亦應增撥予藥劑師的服務資源，安排講解公院常用如血壓藥及糖尿藥等藥物常識。

其次，社署的要求過於寬鬆，疏忽院舍監管，難以確保病人用藥正確無誤。我們認為院舍在藥物管理方面，必須修訂指引，建立藥物存放及分發制度和程序，分藥過程必須有完善紀錄；同時也應邀請社區的藥劑師合作，建立安全藥物管理流程，作出定期監察，以徹底改善院舍藥物管理的系統。

設施方面，院舍也可引入電腦系統，為病人作服藥紀錄。在病人出院時，建議由醫院協助印備詳盡的藥物紀錄，列出所有在院舍服用的藥物，及病人家中的用藥，方便社區藥劑師跟進。此外，每當醫管局更換藥物供應商，同一種藥物的外貌便會不一樣，分辨藥物困難，因此必須要有獨立標籤。在分藥的器皿、杯身和蓋亦不例外，清楚寫上病人名字，避免交叉污染。

現時政府對安老院舍藥物處理缺乏監管；保健員質素參差，對藥物安全的警覺性不足夠，即使加強訓練，也難以妥善解決問題。這樣不單有損藥物療效，更連老人用藥的安全也不能保障。我們希望當局及院舍考慮邀請社區藥劑師定期監察，採用電腦系統記錄病人服藥資料，並改善藥物標籤制度，避免同類事件再發生。

醫院藥劑師學會謹啓
二零零六年五月十五日

Outreach Pharmacy Service in Old Age Homes: a Hong Kong Experience

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Key Words

elderly;
Hong Kong;
nursing homes;
old age homes;
pharmacy services

Background. To explore drug-related problems in old age homes in Hong Kong through outreach pharmacy service.

Methods. A standard form was used by outreach pharmacists to identify drug-related problems at old age homes. Homes were selected through random sampling, voluntary participation or adverse selection. Initial observation and assessment were performed in the first and second weeks. Appropriate advice and recommendations were given upon assessment and supplemented by a written report. Educational talks were provided to staff of the homes in addition to other drug information materials. At week 7 to 9, evaluations were carried out.

Results. Eighty-five homes were assessed and identified to have problems in the drug management system. These problems could generally be classified into physical storage (8.8%), quality of storage (19.2%), drug administration system (13.3%), documentation (16.4%), and drug knowledge of staff of homes (42.2%). Quality of drug storage was the most common problem found, followed by documentation and drug knowledge (73%, 50% and 44% of points assessed with problems, respectively). Apart from lack of drug knowledge and unawareness of potential risks by staff, minimal professional standards unmet may be fundamentally related to lack of professional input and inadequacy in legislation. Most homes demonstrated significant improvements upon simple interventions, from a majority of homes with more than 10 problems to a majority with less than 5 problems.

Conclusions. Diverse problems in drug management are common in old age homes, which warrants attention and professional inputs. Simple interventions and education by pharmacists are shown to be effective in improving the quality of drug management and hence care to residents. While future financing of old age home service can be reviewed within the social context to provide incentives for improvement, review of regulatory policy with enforcement may be more fundamental and effective in upholding the service standard.

Population ageing is a global phenomenon in both developed and developing countries.¹ In Hong Kong, the population size of age 65 and above increased from 482,040 in 1991 to 747,052 in 2001 (from 8.7% to 11.1% of total population).² At the same time, there were increasing numbers of elderly moving into old age homes, which resulted in a boom of such homes in the 1990s.³ These became regulated thereafter, with minimal licensing requirements. Old age homes in Hong Kong can be classified into nursing homes, care and attention homes (C&A homes), homes for the aged and self-care hostels

for the elderly, in descending level of care delivered. In 1994, Community Geriatric Assessment Teams (CGATs) were established in the Hospital Authority. They provide comprehensive medical, nursing and rehabilitative support through outreach service to the elderly residing mainly in C&A homes, which provide nursing service and constitute the greatest number of places (16,426 out of 26,904 places for government-run/-subvented homes, and all places (~28,000) in private homes).^{4,5} Common problems such as multiple medical follow-up, poor medical record keeping, poor drug keeping system and many others

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were then identified.⁶ In some countries, drugs are supplied and/or managed under designated pharmacists' advice^{7,8} and various drug-related problems such as under-use and/or over use of drugs, drug-related morbidity and mortality, *etc.* have been reported.⁹⁻¹³ In Hong Kong, C&A homes are bound to staff registered nurses or health workers⁸ to be in charge of the homes (including drug management), the number of whom is determined by the number of residents. Elderly bring their drugs from multiple sources to the old age homes, and the staff is responsible for the storage and administration of drugs thereafter. To explore drug-related problems identified under this drug management model in old age homes, a pilot study of outreach pharmacy service was carried out in collaboration with CGATs.

METHODS

The study was carried out in C&A homes between February 2001 and October 2001. Seven out of the 12 CGATs participated in the study (non-participating CGATs either already had some sort of outreach pharmacy support or were relatively small and/or newly established). All C&A homes with CGATs support were eligible, with no specific selection criteria. About 30% of C&A homes were selected by each corresponding CGAT through random sampling (36), voluntary participation (36) or adverse selection (13). The number of subvented and private homes recruited was in accordance with their proportions in each CGAT.

A standard assessment form was designed in the form of all-or-none checklist for data collection by on-site observation and interviewing staff who handle drug storage and administration. Areas reviewed included physical drug storage, quality of drug storage, drug administration, drug documentation and caregivers' drug knowledge. Points assessed represent basic requirements that help ensure safe and efficacious use of drugs. Under the first four areas, 4 to 7 standard statements were checked against (details of the points for each area are shown in

corresponding graphs in the result section). For caregivers' knowledge, methods and precautions of using metered-dose inhaler, nebulizer, insulin, glyceryl trinitrate (TNG) and warfarin, together with general knowledge in caring for diabetic residents (DM residents) were assessed against listed points.

Outreach pharmacists visited each home 3 times, at week 1, week 2 and week 7 to 9, respectively. Initial observation was carried out at week 1. At week 2, detailed assessment was performed with the use of the standard assessment form. Only points applicable to individual homes were assessed (e.g. homes with no residents using insulin would not have knowledge on insulin assessed). Appropriate advice and recommendations were given upon assessment. Further reinforcement was made through a written report. Various forms and lists were also distributed to homes as tool aids if needed. These include drug preparation and administration records, insulin administration record, drug disposal recording forms, sample label illustration, and lists of common drug names (brand vs. generic, English vs. Chinese). In addition, an educational talk was provided to staff of the homes covered by each CGAT between weeks 2 and 7. Other drug information materials provided included patient information leaflets, pamphlets and drug management handbook for old age homes published by the Chief Pharmacist's Office, Hospital Authority, Hong Kong. At week 7 to 9, post-intervention evaluations were carried out with the same standard assessment form. Two satisfaction surveys were also carried out after the talks and the outreach pharmacy service, respectively (though results were not reported). Results of assessments before and after intervention were interpreted by descriptive statistics.

RESULTS

A total of 85 CGAT-covered homes were recruited (Table 1), 68 out of which were private homes and 17 subvented ones. These represented 13% of all C&A homes and nursing homes in Hong Kong.¹⁴ All visited homes

^aHealth workers obtain registration after completion of a 210-hour certificate training on caring of elderly in old age home. Basic drug knowledge is part of the curriculum.

Table 1. Details of CGAT-covered homes visited by outreach pharmacists

CGAT	No. of homes visited by pharmacist	% of CGAT-covered homes visited
1	16	30%
2	3	30%
3	11	24%
4	14	33%
5	12	32%
6	21	31%
7	8	28%
Total	85	21% ^a

CGAT = Community Geriatric Assessment Team.

^a In calculating the percentage, all CGAT-covered homes were taken into account, including those covered by CGATs but not involved in this study.

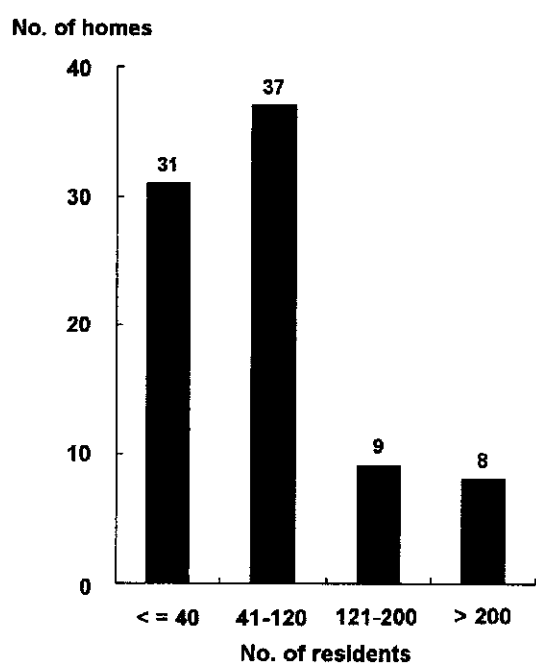


Fig. 1. Distribution of number of residents in 85 recruited old age homes.

were C&A homes except one nursing home, which provide both medical and nursing services. Fig. 1 shows the distribution of number of residents in homes visited. At least one member of staff of each visited home, who was responsible for handling drug storage and administration, was interviewed. The interviewed ones had various qualifications, and included registered nurses, health workers and personal care workers^b.

All recruited homes were identified to have problems in the drug management system. These problems could generally be classified into physical storage (8.8%), quality of storage (19.2%), drug administration system (13.3%), documentation (16.4%), and drug knowledge of staff of C&A homes (42.2%). The percentage of homes with problems identified before and after interventions in each area is shown in Table 2. Table 3 shows that the quality of drug storage was the most common problem found before intervention, followed by documentation and drug knowledge (72% ± 5.8%, 50% ± 6.2% and 44% ± 4.2% of

Table 2. Percentage of homes with problems identified before and after interventions by outreach pharmacists (n = 85)

Area	Before intervention	After intervention	<i>p</i> value ^a
Storage (physical)	72.9%	29.4%	<0.0001
Storage (quality)	98.8%	75.3%	0.12
Administration	88.2%	61.2%	0.05
Documentation	84.7%	54.1%	0.02
Knowledge	100.0%	72.6%	0.07

^a McNemar's test.

^b There is no pre-requisite in being a personal care worker. Personal care workers usually work under a health worker in helping daily activities of elderly such as bathing and having meals.

Table 3. Overviews of results from pre- and post-intervention assessments of 85 homes

Area	Total no. of problems		Total no. of points assessed	% points assessed with problems	
	Pre-intervention	Post-intervention		Pre-intervention (Av. ± 95% CI)	Post-intervention (Av. ± 95% CI)
Storage (physical)	113	35	585	19% ± 3.4%	6% ± 2.1%
Storage (quality)	246	115	340	72% ± 5.8%	34% ± 5.9%
Administration	171	77	593	29% ± 3.9%	13% ± 2.7%
Documentation	211	76	425	50% ± 6.2%	18% ± 4.4%
Knowledge	542	158	1238	44% ± 4.2%	13% ± 3.4%

Av. = average; CI = Confidence interval.

points assessed with problems, respectively). Significant magnitude of improvement was also ranked in the same sequence (34% ± 5.9%, 18% ± 4.4% and 13% ± 2.7% of points assessed with problems post-intervention, respectively). Most homes demonstrated improvements upon simple interventions. Fig. 2 shows the prevalence of problems per home before and after intervention. It demonstrates a major shift in the distribution of number of problems per home as assessed, from a majority of homes with over 10 problems before intervention to a majority with less than 5 problems after intervention.

Each standard statement on the assessment form in each area was translated into a problem identified in the

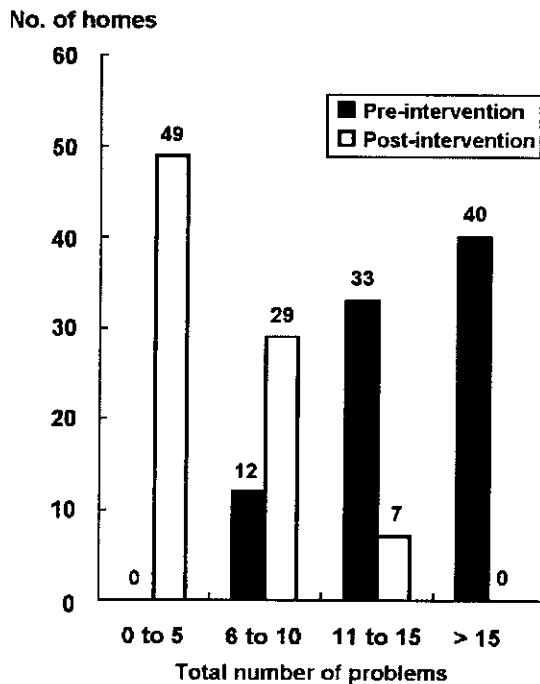


Fig. 2. Distribution of prevalence of problems per home before and after intervention.

corresponding graph of that particular area. For physical storage conditions, “no individualised drug container for individual resident,” “resident’s name unavailable on drug container” and “drugs stored improperly with food in fridge” constitute the most common problems (n = 85; 38%, 48% and 32% of homes with problems respectively). The percentages improve to 15%, 14% and 8%, respectively, after intervention. For quality of drug stor-

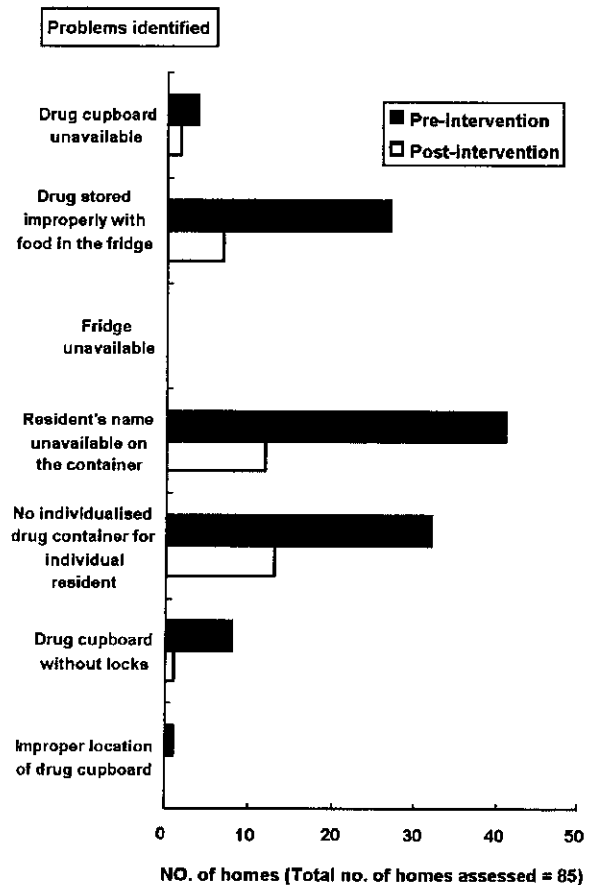


Fig. 3. Distribution of problems in the physical storage of drugs before and after intervention.

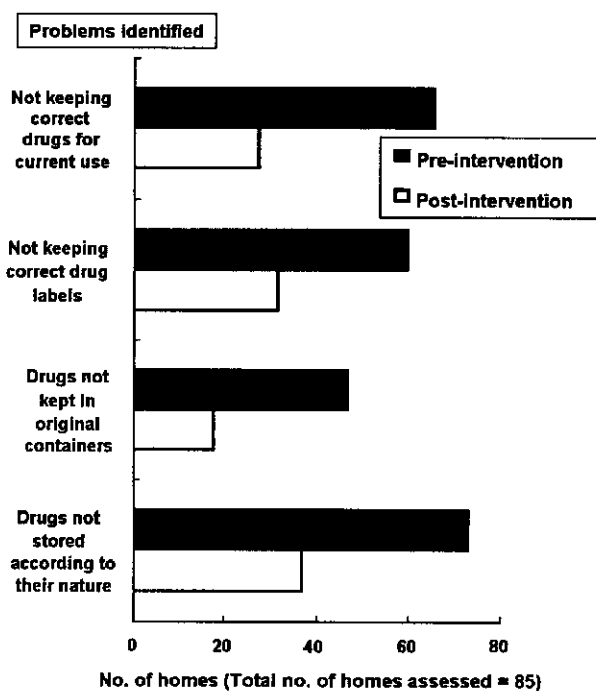


Fig. 4. Distribution of problems in the quality of drug storage before and after intervention.

age, the most common problem was “drugs not stored according to their nature,” which involved not storing fridge/non-fridge drugs accordingly, prematurely dividing tablets, and prematurely removing drugs from strip- or blister-packing. Figs. 3 and 4 show the detailed distribution of problems in physical condition and quality of drug storage, respectively, before and after intervention.

For drug administration system, efforts were made to ensure that a proper system was in place for proper drug re-distribution^c and administration, and that drugs are given according to instructions. As shown in Fig. 5, 59 out of 85 homes did not give drugs according to the instructions on the dispensing labels. Other high-risk areas include “improper drug containers for administration” and “drugs not given by trained personnel.” On the other hand, Fig. 6 shows that over 60% of homes lack drug administration record, record of over-the-counter (OTC) drugs and record of as needed drugs (prn drugs). On evaluation, among those lacking the mentioned records, 45%

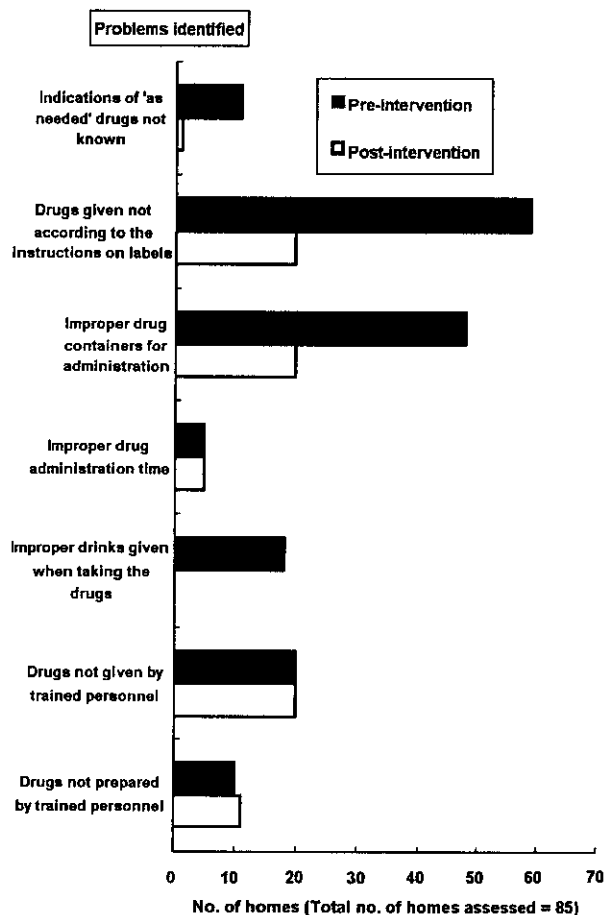


Fig. 5. Distribution of problems in drug administration system before and after intervention.

homes have taken advice and achieved complete documentation for all residents. When taking into account of those in proceedings of improvements, the improvement percentage increases to over 70%.

Regarding the drug knowledge among homes' staffs, therapeutic areas assessed included respiratory devices (inhalers and nebulizers), insulins, caring for DM residents, TNG and warfarin. These were assessed in view of the relatively complex methods and/or precautions involved in their proper use, and the subsequent great impact on therapy success. Over 80% of homes had problems in the proper use or storage of respiratory devices, insulins and TNG despite their high level of usage in the

^c Drugs for individual residents are re-distributed (or pre-packed) into smaller drug containers well in advance of administration, instead of taking out drugs for direct administration at the appropriate dosing time in old age homes.

^d Trained personnel mean health workers or nurses.

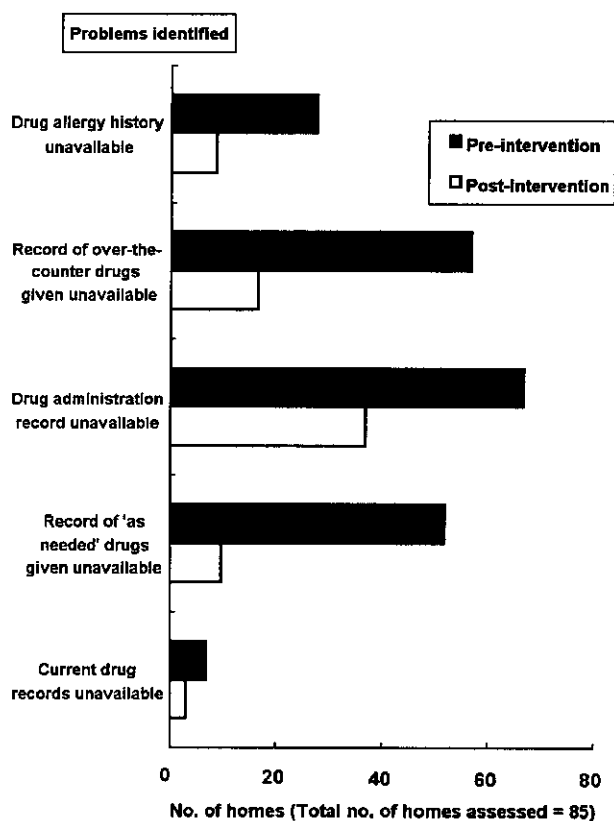


Fig. 6. Distribution of problems of insufficient drug documentation before and after intervention.

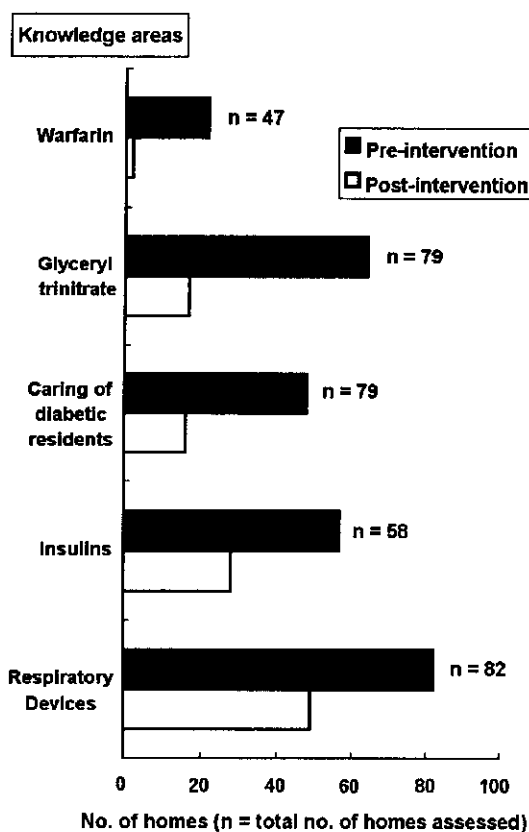


Fig. 7. Distribution of drug knowledge level in different therapeutic areas before and after intervention.

Table 4. Problems identified through observation that were excluded in the core assessment

1. Storage conditions

- Storage condition not controlled under definite humidity and temperature
- Residual drugs due to excessive remaining 'as needed' drugs, early follow-up or admission to hospitals, decease, and duplicated orders upon attending polyclinics

2. Drug administration system

- Different practices/advice on issues of supply of non-crushable drugs to patients on Ryle's tube feeding by healthcare professionals
- Improper use of drugs such as using other residents' drugs, premature termination of drug by own judgement, altering dosage without doctor's verbal order and/or documentation, and self-initiation of high-risk drugs such as furosemide and haloperidol
- Administration of duplicates of drugs owing to duplication upon polyclinic visits or concurrent use of old drugs

3. Drug documentation

- Illegible and unrecognised brands of drug names on labels of drugs supplied from general practitioner, making it extremely difficult for healthcare professionals to identify interactions with or duplication of drugs from other sources

4. Other potential areas

- Improper drug disposal
- Polypharmacy common in elderly population, rendering adverse drug reactions and drug interactions more common problems in old age homes
- Old age homes generally lack the concept of risk management and mechanisms to detect medication incidents

elderly population. Fig. 7 shows the distribution of drug knowledge level in various therapeutic areas.

In addition to the standard data collection form, other problems and potential areas for improvement are identified through observation as shown in Table 4.

DISCUSSION

With people enjoying longer life expectancy, care of the elderly, especially for those with chronic illness, has become a challenge to both the society and the healthcare professionals. Hong Kong has experienced a rapid increase in private C&A homes in the past decade.³ It is easily understandable that quality drug management is of paramount importance to the health of the elderly with chronic illness and/or disability residing in these old age homes. For instance, a proper physical storage system helps minimize risks of contamination, unward access and accidental mix-up. Good quality of drug storage and a proper drug administration system help ensure safety and efficacy of drug therapy. Complete, up-to-date documentation facilitates clinical judgments and helps avoid duplication. Additionally, sound knowledge on the proper usage of high-risk drugs is crucial to therapeutic success and monitoring of residents. All these have significant impact on the health of residents. However, this study shows that diverse drug-related problems associated with these areas in drug management system are common in old age homes in Hong Kong.

The causes of these basic drug-related problems are multi-factorial. Lack of drug knowledge is one of the major reasons. This is probably due to lack of information and variable training background of staff of C&A homes. Staff of C&A homes responsible for drug management ranged from personal care workers without drug knowledge to health workers with 210-hour certificate training and up to registered nurses. In fact, the needs for up-to-date information were indicated in both satisfaction surveys after the educational talks and the outreach pharmacy service targeting the staff of C&A homes (results not reported in this article). Provision of information is found to be effective in improving staff's drug knowledge, as reflected by percentage of points assessed with

problems, dropping from $44\% \pm 4.2\%$ before intervention to $13\% \pm 3.4\%$ after intervention in the area assessing drug knowledge.

Another major reason for basic drug-related problems found is an awareness of the potential risks. For example, staff's non-compliance with label instructions was partly due to unfamiliarity of information provided on labels and partly due to unawareness of the importance of compliance with the instructions. An other example is that most staff did not recognize the importance of keeping complete and up-to-date records as a means of communication. General recommended conditions of drug storage are also often overlooked due to unawareness of the risks behind doing so. In this study, the number of homes with null problem in physical drug storage increased from 27% to 71% ($p < 0.0001$) after intervention. The percentages of points assessed with problems in physical drug storage, quality of drug storage, drug administration system, documentation and knowledge also dropped significantly (Table 3). These reflect that such problems of unawareness can be effectively rectified through simple advice and education by pharmacists.

Despite significant improvements in the number of points assessed with problems, only about 40% of homes achieve null problem in their drug administration systems. A similar phenomenon was observed in drug documentation (46%). These phenomena are due to certain substandard points observed, improvements of which are often hindered by other factors that have contributed to drug-related problems, including lack of facilities and manpower. For instance, documentation demands much manpower input and is perceived by staff as a time-consuming process. With minimal manpower, staff of homes often expressed difficulty and showed reluctance in adopting improvement measures. Yet, with explanation and provision of tool aids, most homes with problems in documentation (75%) still have taken initiatives for improvement, though not achieving complete documentation for all residents on evaluation. Subsequent phone follow-ups reveal that the improvements continue to extend to other residents after the evaluations, suggesting that sufficient time is needed for improvement by homes with limited manpower. On the other hand, recommendations on changing drug containers showed a

relatively lower adoption rate within the study period. It was suggested by homes' staff that injection of monetary resources is often a major concern of budget holders.

The diverse drug-related problems revealed in this study warrant attention to the lack of professional input in the drug management system and pharmaceutical issues in Hong Kong old age homes as compared to other countries.¹⁵⁻¹⁶ It is obvious that resources and knowledge are two major hurdles to wards provision of quality service by old age homes. However, the reason behind may be more of a social policy problem. Private, for-profit C&A homes emerged in the early 1980s in response to a tremendous shortage of old age homes provided by the Government and voluntary organizations.³ Many of these homes generate profit from small amount of social security payments from the elderly. These became regulated in the 1990s, with only minimal licensing requirements supplemented by a code of practice.¹⁷ Both the legislation and the code of practice concentrate on basic manpower, duty and space requirements with hardly any suggestions/requirements on drug management. While quality of care is crucial to the health of the elderly with chronic illness and/or disability, revenue generation or cost containment often takes priority over service standard in terms of quality of facilities and manpower.

In fact, most private homes only staff one or two health workers, who are qualified through a 210-hour certificate course and are eligible to be in charge of drug management as well as nursing care. Some homes largely rely on mainland China immigrants, who have some nursing skills but are not qualified as nurses/health workers in Hong Kong, for daily care of the elderly. Inability in reading English and lack of up-to-date drug knowledge hinder them in distinguishing drugs, rendering drug administration merely a process of following dosage instructions on labels. Multiple sources of drugs further deepen the risks of drug-related problems. With multiple clinics' follow-ups, risks of polypharmacy, duplicated drugs and/or clinics, adverse drug reactions and drug interactions inevitably increase. Without seamless information flow among hospitals, government clinics, gen-

eral practitioners and contracted practitioners of homes, detection of the above drug-related problems is largely relied on or facilitated by staff of homes, which is probably beyond their capabilities.

While the Government's Bought Place Scheme/Enhanced Bought Place Scheme^e and business competition have provided financial incentives to some private homes to raise their service standard to a relatively higher acceptance criteria, some homes still resist improvement measures and take a hide-and-seek approach to the minimal regulatory policy set out in the 1990s. Compared to the 1980s, the old age home market is now maturer, with more competition. Although resources could be tight, basic service standards should not be sacrificed. Given the fact that more elderly with chronic illnesses and disability are likely to need such residential care service upon population ageing, and that substandard service has great impact on the health of the elderly and hence the demand for healthcare service, considerations of more stringent legislation and better enforcement become obvious and fundamental. Within this context, feasibility of different collaboration models among healthcare professionals in hospital and community settings should be studied, and the provision of pharmaceutical advisory service in C&A homes should be considered.

Regarding Limitations, the data collection form used in this study demands only basic, minimal requirements to the safety and efficacy of drug use for all areas assessed in contrast to high standards used in hospitals. Null problem may not reflect high standard of service. Secondly, the tool only indicates the existence of problems but does not reveal extents of problems. It is also not sensitive to extents of improvement like changes from generalized problems to odd cases in areas assessed. Further study may, therefore, be needed to review the extents and prevalence of individual problems before and after interventions for more direct and accurate comparison. Thirdly, lack of complete up-to-date record kept by homes renders surveys of polypharmacy, polyclinics, adverse drug reactions and drug interactions not feasible. Further surveys in these areas may be carried out upon

^eBought Place Scheme/Enhanced Bought Place Scheme are two schemes under which the Government buy places from existing private homes so as to shorten the waiting list by generating a supply of additional C&A home places of a higher acceptable level.

improvement in documentation. Fourthly, each home had only limited contact time with outreach pharmacists and was offered only 5 to 7 weeks for improvement, which may not be sufficient for larger homes.

In short, this study identified diverse problems in drug management in C&A homes in Hong Kong, which warrants attention and professional inputs. Simple interventions and education by pharmacists have shown to be effective in improving the quality of drug management and hence care to residents. Therefore, closer collaboration among healthcare professionals in hospital and community setting, and provision of pharmaceutical advisory services should be considered. While future financing of old age home service can be reviewed within the social context to provide incentives for improvement, review of regulatory policy with enforcement may be more fundamental and effective in upholding the service standard. These would help safeguard the health of residing elderly and hence minimize unnecessary burden on the healthcare system of the society.

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