



九龍醫院
KOWLOON HOSPITAL

Kowloon Hospital

Pharmacist steps to integrated care
in high-risk geriatrics:

Ward Aged Patient Pharmacist Service (WardAPPS)

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Pharmacist, Kowloon Hospital



Ward Aged Patient Pharmacist Service (WardAPPS)

Service Demand

20% elderly taking ≥ 5 drugs

[euthical Care and Utilization](#) > Media Release, March 26 2013

Seniors five times more likely to be hospitalized for adverse drug reactions

What:

[Adverse Drug Reaction-Related Hospitalizations Among Seniors, 2006 to 2011](#)

March 26, 2013—One in 200 seniors was hospitalized because of an adverse drug reaction (ADR) in 2010–2011, compared with 1 in 1,000 of all other Canadians. This translates to approximately 27,000 people age 65 and older, according to the **Canadian Institute for Health Information (CIHI)**.

七旬翁藥物過敏死亡 老人用藥須防不良反應

一位70多歲的老人在使用左氧氟沙星針劑治病時過敏休克而死亡，為老人治病的嘉定安亭醫院立即通過嘉定藥監分局向市藥品不良反應中心緊急報告，目前此事正在調查中。市藥品不良反應中心常務副主任杜文民博士為此提醒，老年人在用藥時更要當心藥品的不良反應。

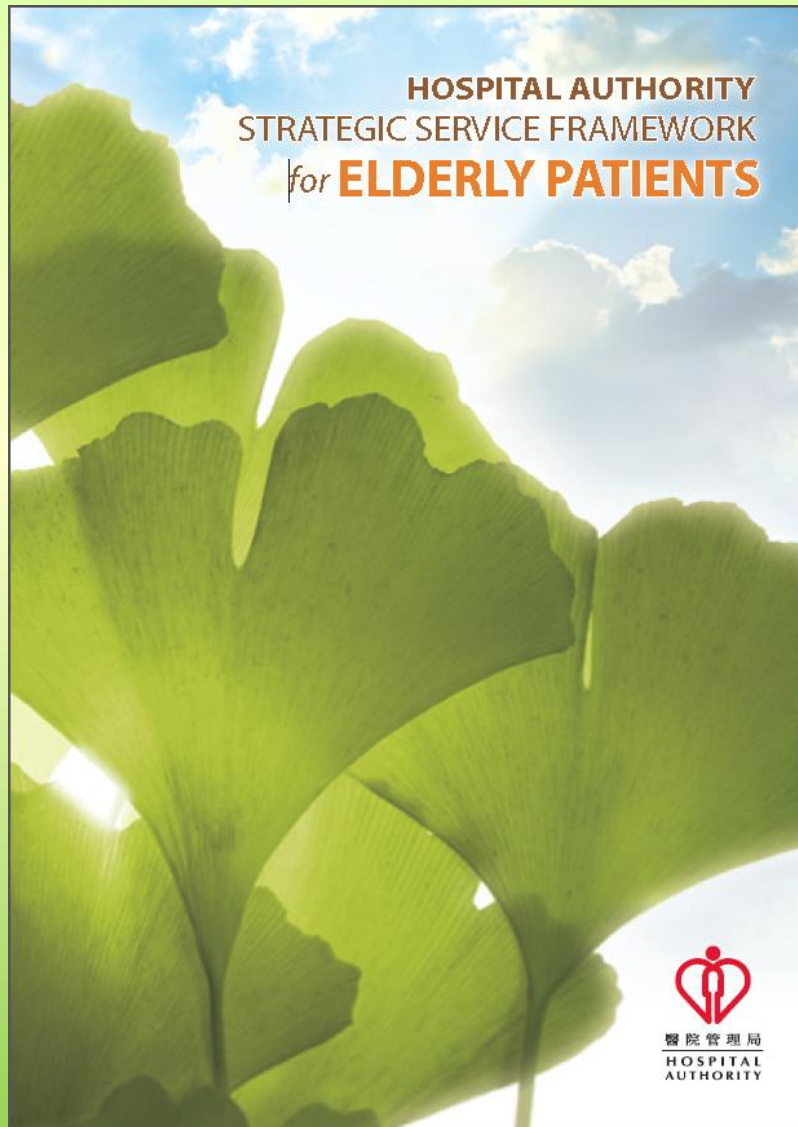


藥物副作用 老人易中招

<http://news.sina.com> 2013年04月03日 01:40 僑報



Strategic Service Framework 2012

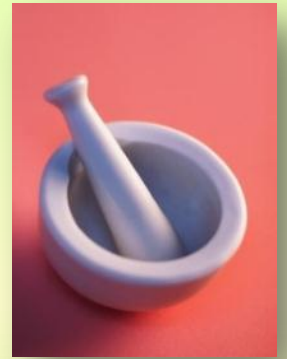


Integrated care
Targeted elderly patients
Multi-disciplinary
Patient empowerment

Background

Collaboration of physicians and pharmacists¹⁻²

- Identify drug-related problems (DRP)
- Improve medication safety
- Reduce total falls rate



1. Hoy S. Pharmacist involvement in fall prevention. *American Journal of Health-System Pharmacy* 2010; 67(16): 1312.
2. Zermansky A, Alldred D, Petty D, Eastaugh J, Bowie P *et al.* Clinical medication review by a pharmacist of elderly people living in care homes – randomized controlled trial. *Age and Ageing* 2006; 35: 586-591.

Integrated Care Model (ICM)

- Implemented in KCC since Oct 2011
- Geriatric patients with $HARRPE \geq 0.2$
 - **H**ospital **A**dministration **R**isk **R**eduction **P**rogramme for the **E**lderly
 - 20% risk of A&E admission in 28 days



Project Team

Project Leader	Ms. Kitty Chu, P (PHA), KH
Project Sponsors	Dr. Hobby Cheung, SD(P&CHC), KCC / HCE, KH&HKEH Mr. Kenneth Law, CSC (PHA), KCC / DM (PHA), QEH
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Team Members	Mr. Walen Leung, DOM (R&E), KH Ms. Sally Tse, WM (REH), KH Ms. Rita Lau, NO (REH), KH Ms. Jenny Ngai, APN (CNS), KH Ms. Natalie Lui, APN (CNS), KH



Objectives

- Implement reconciliation service
- Proactively identify drug-related problems
- Provide medication counseling to geriatric patients

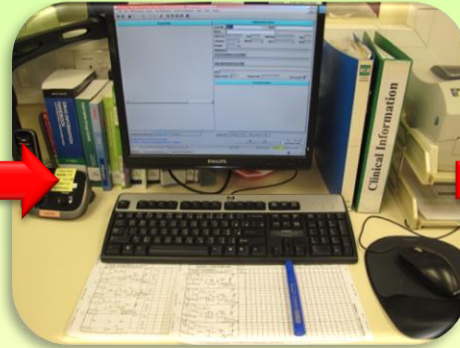


Methodology

1. Streamline inpatient workflow in medical extended care ward 5A



Initial Practice



New Workflow



Methodology

2. Perform regular pharmacist ward round

- Identify prescribing discrepancy & drug-related problem
- Deliver patient counseling
- Provide drug information



Methodology

3. Perform weekly clinical round between geriatrician and pharmacist



Outcome Measures

- Capture intervention in web-based program
- Classify DRP³
- Rate the severity of DRP by independent pharmacist⁴

WardAPPS - DRP	
HN	
Date (yyyymmdd)	20120828
Reported by	cky447
SUE	N
Description of DRP	NORTRIPTYLINE IS PRESCRIBED IN PAIN CLINIC. PATIENT HAS BPH, ON FOLEY, ADDED FINASTERIDE, SUGGESTED TO OFF NORTRIPTYLINE AND TITRATE GABAPENTIN (CURRENTLY 600MG BD) IF NECESSARY.
Drug Compliance	%
Problem	
2. Adverse reactions Patient suffers, or will possibly suffer, from an adverse drug event	Adverse drug event (non-allergic)
Cause	
1. Drug Selection The cause of the DRP is related to the selection of the drug	Inappropriate drug (incl. contra-indicated)
Intervention	
1. At prescriber level	Intervention proposed, approved by Prescriber
Outcome	
1. Solved	Problem totally solved
Value of service (ranked by yyh031)	
Severity of DRP	Serious
Value of pharmacist intervention	Very significant

3. Classification for Drug related problems V6.2. The Pharmaceutical Care Network Europe (PCNE).
4. Overhage JM, Lukes A. Practical, reliable, comprehensive method for characterizing pharmacists' clinical activities. American Journal of Health System Pharmacy 1999; 56(23): 2444-50.

Service Evaluation

Survey on service acceptance

- Healthcare professionals
- Patients

WISER Project
Ward Aged Patient Pharmacist Service - WardAPPS

WardAPPS is a pilot service for high risk elderly with HARRPE 0.2. It has been started in 5A ward from July 2012. The objectives are

- To identify reconciliation errors at admission and discharge
- To proactively identify drug-related problems and advise potential mitigation solutions
- To provide medication counseling and education to geriatric patients

We are interested in obtaining your opinions about this pilot service. We would be very grateful if you would complete this satisfaction survey so that we can improve our service to achieve quality multidisciplinary care to the elderly.
(For your information, medication reconciliation is the process of obtaining a complete and accurate list of patients' medications including all medications and supplements.)

Questions	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1) Medication reconciliation performed by pharmacists at transition point (e.g. admission, ward transfer, discharge) can prevent medication error.	1	2	3	4	5
2) This pilot geriatric service can aid health care professionals to determine appropriate regimens for patients.	1	2	3	4	5
3) Regular drug review performed by pharmacists can reduce the problems of adverse drug reaction.	1	2	3	4	5
4) Regular drug review performed by pharmacists can avoid drug-drug and drug-herb interaction.	1	2	3	4	5
5) Educating patients on the appropriate ways to take medicine performed by pharmacists can improve patients' compliance.	1	2	3	4	5
6) This pilot geriatric service can reduce treatment costs.	1	2	3	4	5
7) Medication reconciliation in this pilot geriatric service is able to reduce your workload.	1	2	3	4	5
8) Overall, this pilot geriatric service performed by pharmacists is satisfactory.	1	2	3	4	5

Please circle the most agreed score!

Other comments

§ Thank you §

九龍中聯網 WISER 計劃
年長病人藥劑師服務

您好！我們於今年七月開始，為高危年長病人提供了綜合醫藥服務，加入了藥劑師主動評估病人的藥物，以提升醫療質素。現在，我們正進行一份問卷調查，希望能了解現時病人對藥劑師服務的滿意程度。

此問卷調查會以不記名方式進行，懇請您能仔細回答以下問題，以助我們分析資料，並為日後改善服務水平作為基礎。

問題：

	非常不同意	不同意	一般	同意	非常同意
1) 您認為經過藥劑師講解藥物後，您能更了解藥物的用途嗎？	1	2	3	4	5
2) 您認為經過藥劑師教導用藥方法後，您能正確地用藥嗎？	1	2	3	4	5
3) 您認為經過藥劑師的指導用藥後，能減低您服藥的疑慮嗎？	1	2	3	4	5
4) 您認為藥劑師指導如何用藥的內容充足嗎？	1	2	3	4	5
5) 您認為藥劑師講解藥物的時間充足嗎？	1	2	3	4	5
6) 您認為每次使用藥物都應該交由藥劑師指導如何服用嗎？	1	2	3	4	5
7) 您認為藥劑師有讓你參與藥物治療嗎？	1	2	3	4	5
8) 您認為藥劑師有加強您自我管理疾病的能力嗎？	1	2	3	4	5

請圈出您最認同的分數！

其他意見

§ 謝謝 §

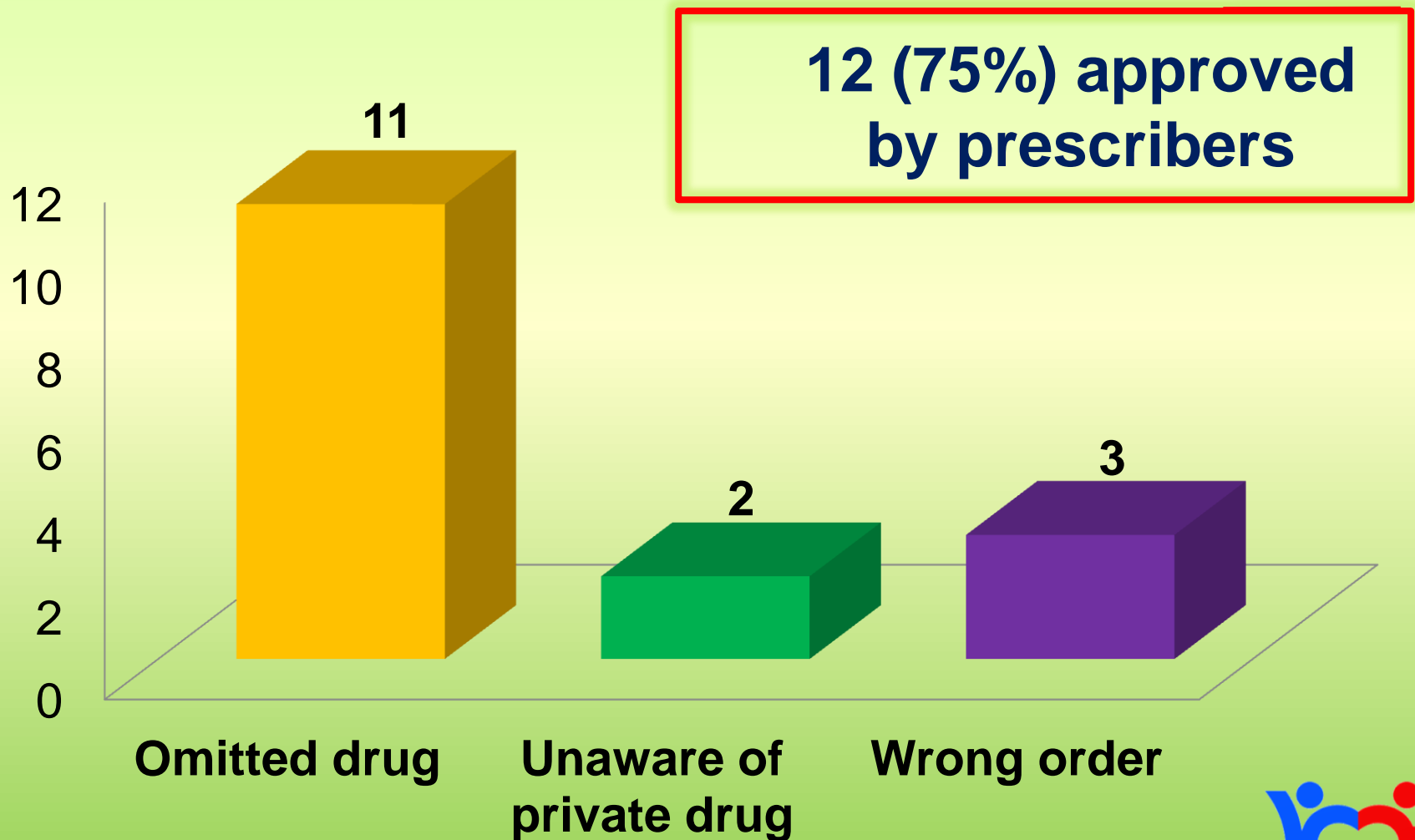


Results

Pilot implementation period: Jul – Dec 2012

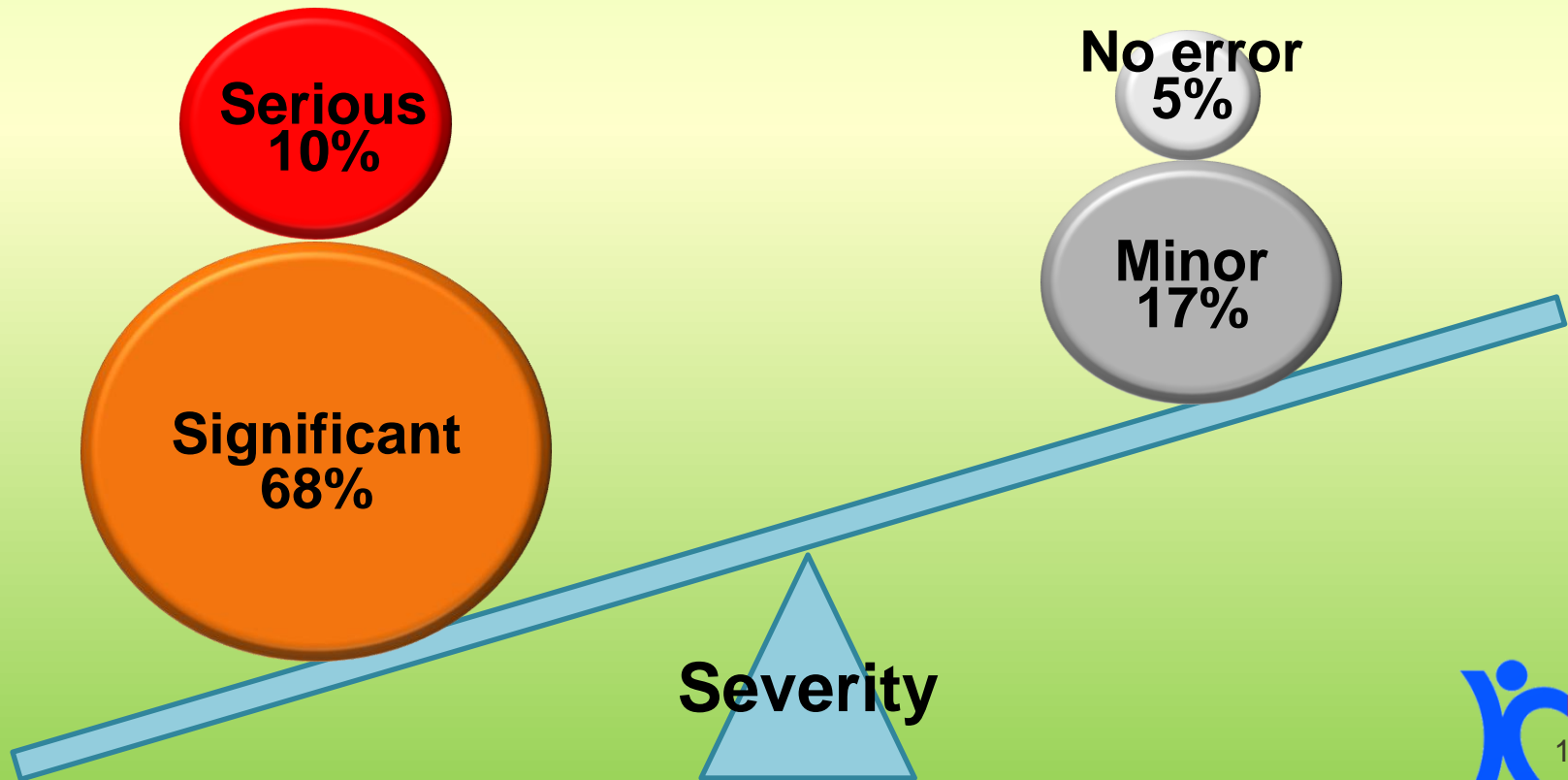
	Ward 5A
No. of patients reviewed	238
Mean age	83.2 ± 9.8
Male : Female	106 (44.5%) : 132 (55.5%)
Old-aged home resident Yes : No	113 (47.5%) : 125 (52.5%)
Mean HARRPE	0.36 ± 0.13

Prescribing Discrepancies: 16



Drug-related Problems: 78

Treatment effectiveness	69%
Adverse reactions	26%
Treatment costs	5%



Drug-related Problems Solved



- Phenytoin toxicity in patient with renal impairment & low albumin
- Amitriptyline with unknown indication
- Hypokalemia(K 2.2) due to high dose terbutaline + theophylline
- Gliclazide in severe renal impairment (CrCl~11ml/min)

Drug-related Problems Solved



- Isoniazid-induced neuropathy
- Amiodarone-induced hypothyroidism
- Untreated anemia (Hb: 9, folate: 7.1 & Vit B12: 110)
- Wrong dosage form (Phenytoin, Pantoprazole, Terbutaline SR)

Example of Patient Empowerment

Demographics: Mr. C, 77-year-old gentleman

Allergy: NKDA

Social history: ex-smoker

PMH

1. Acute coronary syndrome
2. Hypertension
3. Hyperlipidemia
4. Renal impairment
5. Congestive heart failure
6. Atrial fibrillation
7. Chronic obstructive pulmonary disease
8. Benign prostate hyperplasia

Example of Patient Empowerment

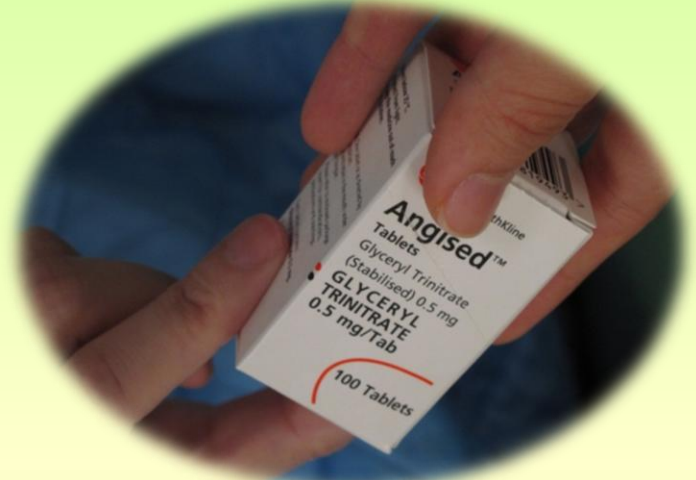
Chief complaint: on and off chest discomfort

Medications on admission

1. TNG 500mcg stat prn
2. Aspirin 80mg daily
3. Famotidine 20mg nocte
4. Frusemide 40mg daily
5. Isosorbide dinitrate SR 40mg BD
6. Terazosin 2mg bedtime
7. Ventolin 4 puffs QID
8. Senokot 15mg nocte
9. Synalar 0.025% TDS
10. Aqueous cream BD

Example of Patient Empowerment

- Patient and his son believed TNG was used for headache and dizziness.



- Medication education

NEVER assume patients know!

認識舒緩心絞痛藥

藥類
硝酸甘油副底藥片 (俗稱副底丸)
Glyceril Trinitrate Sublingual

常見副作用
眩暈、頭痛、面紅、心跳加速、「體位性低血壓」、在含服此藥時，舌頭可能有灼熱感

服藥方法
此藥能即時舒緩心絞痛，當心絞痛發作時，應先坐下，然後將一粒藥片含於舌下（切勿吞服或咬碎）。若數分鐘後，心絞痛未舒緩，可再含服二粒，若15分鐘內已含服三粒藥片，而心絞痛仍未消除，要立即聯絡醫生或到急症室，因這顯示可能有心肌梗塞的情況出現，須盡快接受治療。

注意事項
• 須隨身攜帶，以備不時之需
• 副底丸的藥力較易揮發，應小心貯存（請參考貯存藥物須知）
• 含服此藥時，舌頭會有灼熱感，這表示藥物沒有失效，但如果你不會有以上反應，仍應含服，以試驗藥效的準確程度

藥劑師教你認識正確的服藥觀念

- ⊗ 害怕藥物的副作用，不肯服藥。
- ✔ 不是每個人服藥後都會出現副作用，而副作用的嚴重程度亦因人而異，所以毋須過份擔心。如因怕服藥而令病情惡化，後果反而更為嚴重。一般的副作用通常均屬輕微，並會隨身體的適應而逐漸消失。即使嚴重的副作用，亦通常會在停藥後消失。若副作用嚴重影響日常生活或情況惡化，便需告知醫生或藥劑師，以便作出跟進。
- ⊗ 心絞痛的發作率已減低，便相信病情已好轉，故自行減少劑量或停止服藥。
- ✔ 是否需要減藥或停藥必須由醫生決定，心絞痛的發作率減低並非病情受到藥物控制，若自行減藥或停止服藥，反而會令病情失控，對健康產生不良後果。
- ⊗ 既然副底丸可舒緩心絞痛，便無需服用預防藥物。
- ✔ 當心絞痛發作，表示心臟肌肉有缺氧的情況，會令心臟受損。服用預防藥物可預防心臟繼續受損，故此不應忽視這預防藥物的重要性。若醫生指示服藥，應遵照指示服藥。

如忘記服藥...

應盡快補服所忘記的劑量。若忘記時已接近服用下一劑量的時間，便不必補服，只需依時服食下一劑量。切勿服用雙倍的劑量。

貯存藥物須知

- ♥ 副底丸的藥力容易揮發，特別易受熱力光線影響，為免藥效減低，貯存時應注意下列各點：
 - 放置在陰涼乾爽處，不應放在書櫃內或容易被太陽直接照射的地方
 - 每次取出藥片後須把瓶蓋扭緊
 - 勿放棉花於瓶內，因棉花會吸收藥力，減低藥效
 - 勿存放藥片於塑膠容器內
 - 攜帶此藥時，應避免將藥瓶存放在太靠近身體的地方（如褲袋），以免體溫使藥力揮發；建議你可把藥瓶放於手袋或公事包內
 - 藥片的有效期為開瓶貯存後八星期
- ♥ 放在小孩子拿不到的地方
- ♥ 除非醫生另有指示，否則不應貯存剩餘藥物在家中作「留門口」之用
- ♥ 切勿將自己的藥物給予他人服用，以免引起不良效果

如有疑問，
請向你的醫生、藥劑師或有關的醫護人員查詢。

SN 01893 01/08

心臟科藥物之抗心絞痛藥

Service Acceptance

Interventions approved by prescribers: 90.2%

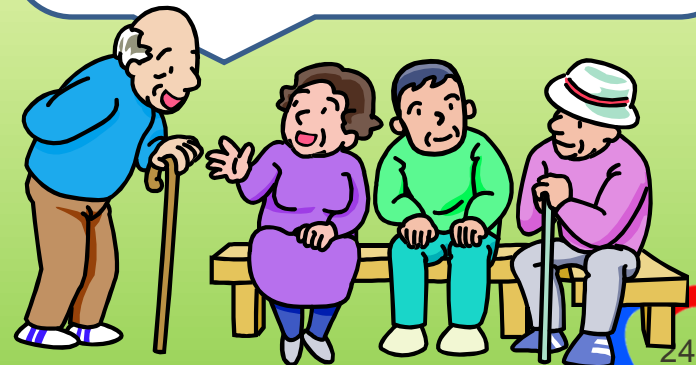
Response rate from professionals: 78.6%

Pharmacists can aid me to determine **appropriate regimens.**

Pharmacists can **reduce adverse drug reactions and interactions.**

Response rate from patients: 90.0%

Pharmacists can empower my **self management skills.**



Conclusions

In 238 patients,

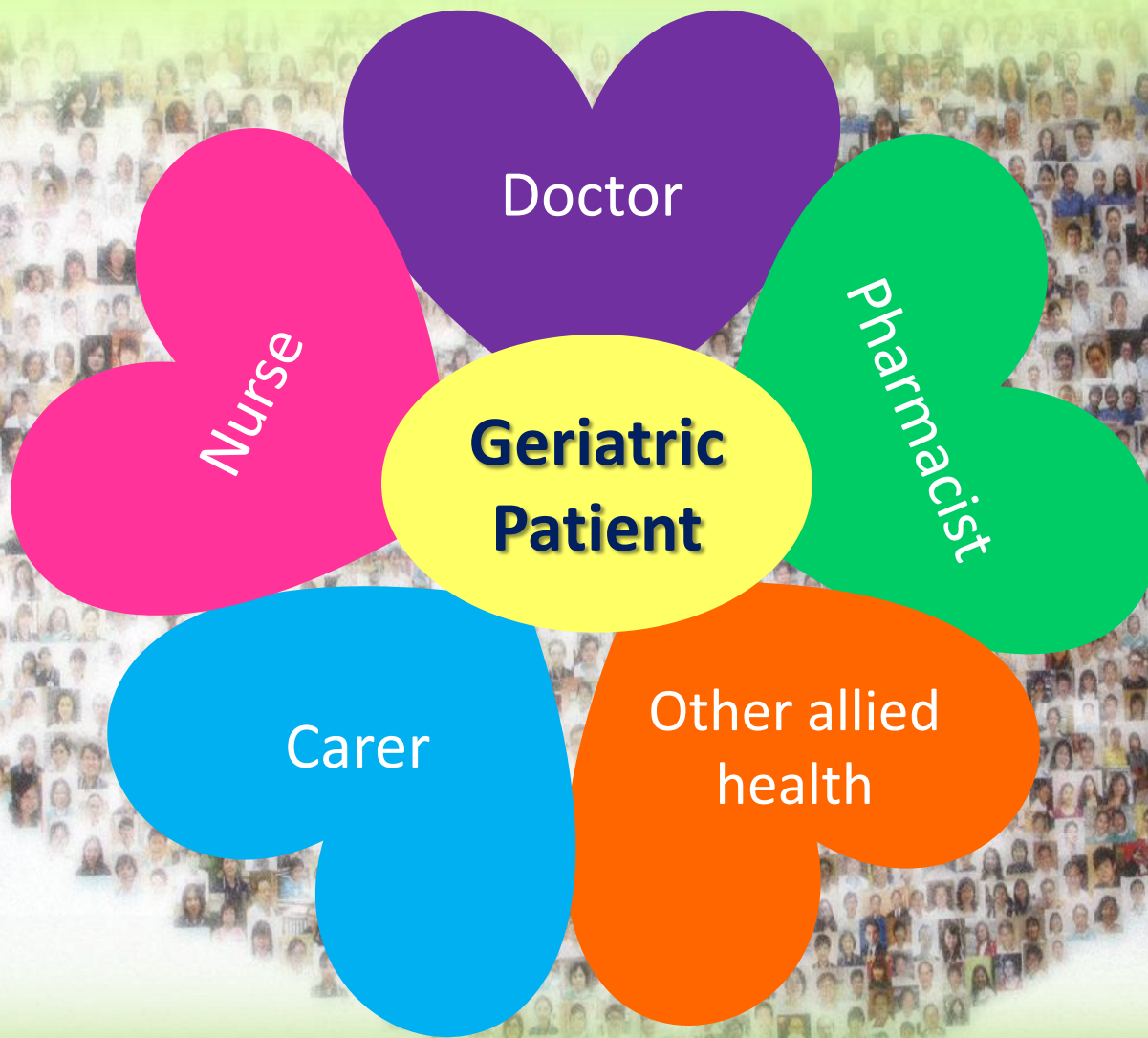
78 drug problems +16 prescribing discrepancies





**>4000
DRP**

Better Health Outcomes, More Efficient Care



Acknowledgement

Dr. Hobby Cheung SD (P&CHC), KCC / HCE, KH & HKEH
Mr. Kenneth Law CSC (PHA), KCC / DM (PHA), QEH
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Ms. Annette Tsang P (PHA), KH
KH pharmacy colleagues
KH medical extended care ward 5A medical & nursing staff

