Efficacy of implementation of the STOPP/START criteria in Chinese nursing home older adults: a 12-month prospective cohort study

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Background: Potentially inappropriate prescription (PIP) was prevalent among older adults and may lead to adverse outcomes. STOPP/START are evidence-based sets of criteria to identify PIP in older adults. Whether its implementation is effective to reduce the prevalence of PIP and improve clinical outcomes in local settings is unknown. Objective: To determine the effect on PIP over time with written recommendations based on STOPP/START criteria and to assess the clinical outcomes of implementing the STOPP/START criteria. Methods: 990 residents from 13 nursing homes who were prescribed at least one medication under the care of Hong Kong West Community Geriatric Assessment Team (CGAT) were recruited. Of these, 500 residents from six nursing homes who received an enhanced medication screening programme based on the STOPP/START criteria were regarded as the intervention group, whereas 490 residents from seven nursing homes who received usual care were regarded as the control group. All participants were followed up at 12 months. Results and Discussion: 459 (46.4%) residents had at least one PIP according to STOPP/START criteria. 80% of the 281 written recommendations made in the intervention group were followed by the attending CGAT clinician. The number of PIPs per 100 residents reduced significantly in the intervention group at 12 months (from 56 to 20, p<0.001), but there was no significant difference in the control group. The number of residents with at least one accident and emergency department (AED) visit not requiring hospitalisation increased in the control group (p=0.02) while the intervention group remained unchanged. The total number of medications, rates of unscheduled hospitalisation, falls, and mortality were similar for both groups at 12 months. The enhanced medication screening programme led by geriatricians may have resulted in a high percentage of recommendation being followed by the attending clinician and a sustained reduction in PIP in the intervention group at 12 months. The optimisation of prescriptions in the intervention group may have resulted in fewer medication-related adverse effects requiring AED visits. Conclusion: In Chinese nursing home older adults, enhanced medication screening with written recommendations based on STOPP/START criteria significantly reduced PIP with the effect maintained at 12 months. The number of residents with AED visits not requiring hospitalisation increased in the control group but remained unchanged in the intervention group at 12 months. The STOPP/START criteria is a useful tool to improve the quality of prescribing practice and reduce health care utilisation.

Orthogeriatric co-care model for elderly patients with hip fractures improves outcomes

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Background: Hip fracture is common among elderly patients and has significant morbidity and mortality. Traditionally, these patients were only reviewed by general physicians in the events of medical complications upon requests of the orthopaedic surgeons. Orthogeriatric collaboration has been introduced as a new care model to improve the clinical outcome of patients with acute hip fractures. We retrospectively review records of elderly patients with hip fractures admitted to the department of orthopaedics and traumatology in six public hospitals in Hong Kong from 2012. Objective: To compare the clinical outcomes of hip fracture patients managed by on-request general physicians with those co-cared proactively by geriatricians. Methods: Of 1427 elderly patients with hip fractures identified, 1004 were managed by the on-call general physicians upon requests of the orthopaedics teams (conventional group) and 423 received peri-operative co-care by both orthopaedic surgeons and geriatricians (orthogeriatric group). The two groups were compared in terms of mortality in the orthopaedic ward, in-hospital mortality (both acute and convalescence hospitals), early surgery (within 48 hours of admission), and length of hospital stay in the orthopaedic ward. A p value of <0.05 was considered statistically significant. Results and Discussion: The two groups of patients shared similar characteristics including age, residential status, premorbid functional status, number of co-morbidities, and preoperative mini-mental state examination scores. The orthogeriatric group had lower mortality in the orthopaedic ward (1.9% vs. 4.1%, p=0.043), lower in-hospital mortality (3.8% vs. 6.7%, p=0.035), higher early surgery rate (59.3% vs. 48.1%, p=0.001), and shorter length of hospital stay (14.5 days vs. 15.4 days, p=0.29). Conclusion: Peri-operative orthogeriatric co-care of elderly patients with hip fracture can facilitate early detection and management of medical complications, therefore avoiding the delay of surgery and reducing unnecessary mortality. In addition, geriatricians are specialised in managing geriatric conditions such as postoperative delirium of various aetiologies. Further studies are warranted to evaluate the cost-effectiveness of this co-care model.
An interdisciplinary team approach for the prevention of minimal trauma fractures in long-term care residents

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Background: Minimal trauma fractures (MTFs) or care-related fractures occur mostly in debilitated and dependent long-term care residents. MTFs are devastating events in long-term care residents, causing pain and suffering and increasing morbidity and mortality. Moreover, there may be medicolegal issues about the possibility of mistreatment and inadequate care. There is a lack of data on the risk factors associated with MTFs, and no evidence-based prevention strategies of MTFs have been published. Objective: To identify risk factors for MTFs in long-term care residents, and to develop the prevention strategies accordingly. Methods: This was a longitudinal cohort study of prospectively collected data. All long-term care residents in the Shatin Cheshire Home who needed continuous medical and nursing care for their activities of daily living were followed up from March 2007 to March 2016 or until death. Information on patient demographic data, severe contracture (defined as a decrease of ≥50% of the normal passive range of joint movement), and severe limb spasticity (defined as the Modified Ashworth Scale of higher than grade 3), medical comorbidities, functional status, cognitive status, nutritional status (body mass index and serum albumin), and history of fractures were evaluated as potential risk factors for MTFs. Results and Discussion: 248 female and 148 male residents (mean±standard deviation [SD] age, 79±16 years) were included for analysis. 91% of residents had at least one severe contracture, and 41% of residents had severe contractures involving all four limbs. Moreover, a significant proportion of residents had severe limb spasticity with the elbow flexors (32.4%) and knee flexors (33.9%). Over a median follow-up of 33 (SD, 30) months, 12 (3%) residents sustained a MTF; 7 of them died, and the mean survival was 17.8 (SD, 12.6) months after the fracture event. In a multivariate Cox regression, predictors of MTF were bilateral severe spastic knee contractures (hazard ratio=16.5, p<0.0001) and diabetes mellitus (hazard ratio=4.0, p=0.018). Conclusion: An interdisciplinary team approach should be adopted for the prevention of MTFs. Spasticity management and prevention of contractures combined with education programmes are recommended for caregivers to identify the high-risk residents and apply proper handling techniques during routine care. Moreover, nutritional programme should be implemented to ensure adequate nutrition and supplementation of calcium and vitamin D. Pharmacological treatments of osteoporosis may also be considered for high-risk residents who can tolerate them.

Achieved blood pressure and clinical outcomes in institutionalised diabetic older adults

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Background: Blood pressure (BP) lowering is beneficial for community-dwelling robust hypertensive elderly people. Nonetheless, evidence-based data on optimal BP targets, especially in frail elderly, are scant. Objective: The study aimed to assess mortality and adverse cardiovascular outcomes in institutionalised diabetic older adults according to achieved systolic blood pressure (SBP) and diastolic blood pressure (DBP) levels. Methods: We retrospectively review a cohort of Chinese older adults (age ≥65 years) with diabetes and hypertension living in residential care homes during 1 January 2013 to 31 December 2013. BP and haemoglobin A1c were measured. Baseline characteristics included demographics, clinical, functional, and laboratory parameters. Study outcomes were all-cause mortality, myocardial infarction, stroke, and hospitalisation for heart failure. They were categorised into subgroups according to their BP levels: ≤120, 121-140, 141-160, and >160 mmHg (for SBP); ≤60, 61-70, 71-80, >80 mmHg (for DBP). Hazard ratios (HR) were estimated with multivariable adjusted cox proportional hazards models, using 121-140 mmHg SBP and 71-80 mmHg DBP subgroups as reference. Results: 205 female and 124 male institutionalised older adults (mean age, 81.9±6.6 years) were included. The mean SBP and DBP were 133±14 mmHg and 72±7 mmHg, respectively. Most had multiple comorbidities (mean Charlson comorbidity index, 4.9±2.2) and functional limitations (70.2% with impaired mobility). After 2 years of follow-up, the all-cause mortality was 36.5% and adverse cardiovascular event rates were 7.3%, 5.5%, and 14.9% for myocardial infarction, stroke, and hospitalisation for heart failure, respectively. Increased SBP was associated with increased risk of mortality (adjusted HR=2.83 [95% confidence interval (CI)=1.23-6.52] for SBP >160 mmHg) and myocardial infarction (adjusted HR=5.82 [95% CI=1.82-18.57] for SBP >160 mmHg) and hospitalisation for heart failure (adjusted HR=6.70 [95% CI=2.04-21.94] for SBP >160 mmHg). Likewise, DBP of >80 mmHg was associated with increased risk of myocardial infarction (adjusted HR=5.67 [95% CI=1.15-11.69]). Meanwhile, SBP of ≥120 mmHg was associated with increased risk of mortality (adjusted HR=1.82 [95% CI=1.14-2.91]) and myocardial infarction (adjusted HR=9.17 [95% CI=2.37-35.51]), showing J-shaped associations between SBP and HR for mortality and between SBP and HR for myocardial infarction with best outcomes in those with SBP of 121-140 mmHg.

Discussion and Conclusion: In institutionalised diabetic
older adults with hypertension, SBP of 121–140 mmHg had the lowest risk of adverse outcomes. Over-control of SBP to ≤120 mmHg or under-control of SBP to >160 mmHg was associated with increased risk of adverse outcomes. In frail elderly people with hypertension, systematic drug review and de-intensification of drug therapy should be considered, particularly to those with low SBP.

**How to do better prognostication?**

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**Objective:** To evaluate the prognostic factors in predicting the 6-month mortality of nursing home residents with advanced dementia who were recruited into the End of Life Care in Nursing Homes (EOLNH) programme. **Methods:** A retrospective review of 114 nursing home residents in New Territories West Cluster with advanced dementia was conducted between January and June 2016. Patients were recruited by experienced geriatricians during outpatient or inpatient visits. The residents were predicted ‘not surprise to die in the next 6 months’ and therefore entered into the EOLNH programme. The 6-month mortality and independent variables were obtained. Binary logistic regression was used to compute a predictive model. The efficacy of the model was assessed using the area under the receiver operating characteristic curve (AUROC). **Results:** Over 6 months, 50% of 114 residents with advanced dementia died. Only the number of previous 6-month hospitalisation best predicted the 6-month mortality among other independent variables of age, sex, tube feeding, Charlson comorbidity index, serum albumin level, and estimated glomerular filtration rate. For each increase in previous 6-month hospitalisation, the odds of death in 6 months increased by 1.18. The probability of death in 6 months with 2 and 3 previous 6-month hospitalisation were 49% and 53%, respectively. If we included age, sex, and number of previous 6-month hospitalisation into the final predictive model, the p value of Hosmer-Lemeshow test was >0.05, indicating a goodness of fit. The AUROC of the model predicting 6-month mortality was 0.63. **Conclusion:** The age, sex, and number of previous 6-month hospitalisation can predict 6-month mortality with moderate accuracy. Further independent variables should be found to improve prognostication.

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**Effectiveness of the rehabilitation ward multidisciplinary programme for feeding problems in patients with advanced dementia**

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**Background:** Many elderly patients with advanced dementia are admitted to hospital for feeding-related issues. They usually stay in the acute ward where feeding environment may not be optimal. Evidences suggest careful hand feeding, rather than tube feeding, to older adults with advanced dementia. In our daily practice, nasogastric tube feeding is often initiated too early and results in complications that prolong the length of stay. Meanwhile, caregivers are frustrated when facing these feeding-related issues. Thus, a dedicated multidisciplinary team for those with feeding difficulties is essential. **Objectives:** (1) To promote careful hand feeding and reduce nasogastric tube feeding in patients with advanced dementia, (2) to provide education to caregivers on careful hand feeding strategies, (3) to equip staff with skills in careful hand feeding, (4) to optimise nutritional support by providing dietary counselling and offering individualised nutrition care plan, and (5) to decrease length of stay in advanced dementia patients with feeding problems. **Methods:** Patients with moderate-to-advanced dementia who are admitted to the acute wards for behavioural feeding problems were recruited. Doctors in the acute wards identified suitable patients and transferred them to the rehabilitation ward early. The reversible causes of feeding problems were first managed. Patients’ relatives were interviewed to explore their preference on mode of feeding. Speech therapists assessed patients’ swallowing functions, guide ward staff to feed the patient, and educate their relatives on safe feeding skills and tactics to feed patients. Dietitians assessed nutritional and diet prescriptions for the patients. Ward nurses performed the careful hand feeding skills suggested by speech therapists. Feeding progress of the recruited patients was reviewed and early discharge aimed. **Results and Discussion:** A total of 16 patients (mean age, 88.8±8.4 years) were recruited in the first 4 months of the programme. All were diagnosed by speech therapists to have behavioural feeding disorder, and 10 of them had at least moderate oropharyngeal dysphagia. None required nasogastric tube insertion during admission. Three patients died during admission due to underlying medical problems. Of the remaining 13 patients, the median calories intake per day increased from 315 to 650 Kcal (Z = -2.69, p = 0.007) before discharge, and the median protein intake per day increased from 10 to 15 g (Z = -2.62, p = 0.009). The mean length of stay was 6.5 days in acute ward and 12.9 days in rehabilitation ward. Relatives were satisfied with the programme, with satisfaction score of 8 out of 10. **Conclusion:** A dedicated multidisciplinary team for feeding problems is effective in avoiding nasogastric tube insertion and increasing calories and protein intake in patients with advanced dementia.
Effectiveness of geriatric consultation service at the accident and emergency department of an acute hospital

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Background: High prevalence of elderly patients with various geriatric syndromes has increased the burden to the healthcare system over the past decade. Since 2007, cross-departmental collaboration between geriatric teams of the Department of Medicine and Geriatrics of Tai Po Hospital and the Accidents and Emergency Department of Alice Ho Miu Ling Nethersole Hospital (AHNH) has provided geriatric consultation service with suggestions of post-discharge support and follow-up for elderly patients. This collaboration on every weekday morning aims to relieve the burden of acute geriatric medical admissions.

Objective: This retrospective study reviews the performance of the geriatric consultation service in relieving burden of acute medical admission by diverting suitable geriatric admissions to Tai Po Hospital, a convalescence hospital, or discharging stable patients to the community with outreach support and follow-up. Methods: Eligible elderly patients were recruited from April 2011 to March 2017. Demographic data, disease case mix, discharge destinations, referrals to Integrated Community Discharge Support Service (ICDS) or Community Nurse Service (CNS), and adverse outcomes were recorded. Results: A total of 8319 elderly patients (52.1% were female) attending to Emergency Medical Ward of AHNH were referred to the Tai Po Hospital geriatric team. Most had cardiorespiratory diseases (e.g. chronic obstructive airway disease, congestive heart failure) or geriatric problems (e.g. dizziness, walking instability, or fall). Of them, 3902 (46.9%) were discharged, 2618 (31.5%) were transferred to Tai Po Hospital for convalescence care, and the rest were admitted to the medical ward of AHNH. Among those discharged to the community, 1371 (35.1%) were referred to ICDS or CNS as outreach support. Conclusion: With the provision of convalescence beds at Tai Po Hospital, and ICDS or CNS outreach support, the geriatric consultation service is an effective way to relieve burden of acute medical admissions of elderly people.

Protecting elderly from peripheral arterial disease by managing dyslipidaemia

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Background: Dyslipidaemia is common in general population especially elderly people, partly due to sedentary lifestyle, diet habit, and previous working environment. The effect of management for dyslipidaemia in elderly people remains controversial. Peripheral arterial disease (PAD) of lower extremities is closely related to dyslipidaemia. Objective: This study aims to determine the prevalence of PAD among elderly people in our locality and associated factors for PAD, with emphasis on the effect of lipid-lowering agents.

Methods: This single-centre, cross-sectional observational study was approved by the local research ethics committee. Patients aged ≥75 years from medical rehabilitation ward of Tseung Kwan O Hospital were invited. Basic demographics and clinical characteristics were collected, including anti-platelet, anti-thrombotic, and lipid-lowering agents taken. PAD was determined using non-invasive Doppler instruments to assess the ankle-brachial index. The presence of PAD was defined as an ankle-brachial index of <0.9 in either lower limb.

Results: A total of 212 elderly patients (mean age, 82.6±4.7 years) were recruited. The prevalence of PAD was 23.1% (49/212). Most of PAD cases were mild to moderate (47/49) and asymptomatic (40/49). In univariate analysis, PAD was associated with previous lipid-lowering therapy, total cholesterol level, and low-intensity lipoprotein level. In the regression model, those receiving lipid-lowering agents were less likely to have PAD (odds ratio=0.46, p=0.037), whereas those not receiving any therapy for dyslipidaemia were more likely to have PAD (odds ratio=2.19, 95% confidence interval=1.1-4.6). PAD was not associated with Charlson comorbidity index, creatinine clearance level, history of diabetes, hypertension, chronic or paroxysmal atrial fibrillation, cerebrovascular disease, ischaemic heart disease. Interestingly, those receiving anti-platelet or anti-thrombotic agents did not show protective effect from PAD.

Conclusion: The prevalence of PAD among elderly people was 23.1%, in whom most were asymptomatic. Routine foot examination with ankle-brachial index measurement is suggested. Treating dyslipidaemia for elderly people appeared to be effective in preventing PAD. Further large-scale research is warranted to explore the benefits and safety of lipid-lowering therapy in elderly people.