Abstracts of Dissertations
June 2007 Exit Assessment Exercise

MANAGEMENT OF DIABETES MELLITUS IN GENERAL OUT PATIENT CLINIC --- POSSIBLE ROLE OF AMBULATORY CARE PHYSICIAN IN THE DEVELOPMENT OF THE COMMUNITY HEALTH CARE MODEL

Dr Hui Suet, Department of Medicine, Queen Elizabeth Hospital (June 2007 Advanced Internal Medicine Exit Assessment Exercise)

Background Well controlled diabetes mellitus (DM) has been shown by various studies to greatly reduce complications, morbidity and mortality. The Hospital Authority (HA) has provided guidelines for target values to be achieved for six parameters, namely body mass index (BMI), waist circumference (WC), fasting blood glucose (FBG), **glycosylated hemoglobin (**HbA1c), blood pressure (BP), lipid level for good control of DM but at General Out Patient Clinic (GOPC) we do not know how much of these target values are being met. Moreover, the Hong Kong College of Physicians created a new specialty – Ambulatory Care Physician (ACP) to act as a gatekeeper for public hospital's health care. By using DM as an example, what are the possible roles of ACP in the development of the community health care model?

Objectives In section 1: To assess the effectiveness of management of DM at GOPC settings. In section 2: To discuss the possible role of ACP in the development of the community health care model.

Design and subjects This is a cross sectional survey.

Methods Chinese type II diabetic patients in Yau Ma Tei (YMT) GOPC in Hong Kong were recruited for the study from February to November 2006.

All patients were assessed by using a standard questionnaire (Appendix 1) followed by thorough physical examination performed by an ACP trainee. Blood and urine tests including FBG, HbA1c, lipid profile and urine microalbumin were collected for analysis.

Results

Section I

A total of 94 type II diabetic patients, age between 36 to 83, with or without concurrent diseases who were followed up in YMT GOPC participated in the study.

Majority of the diabetic patients in YMT GOPC were old with an mean age of 62 years old (SD 8.83), more than half of them had metabolic syndrome (62.8%) and multiple complicated concurrent diseases (73.4%).

Most of them were not receiving appropriate multidiscipline management, majority had never seen dietician (56%) and DM nurse (59.6%), no regular exercise (51.1%), had inadequate DM concept (56.4%), and no regular HBGM (66%).

Only small percentage of diabetic patients reached the DM control 6 targets as suggested by HA, namely BMI (23.4%), WC (10.6%), HbA1c (21.3%), FBG (14.9%), BP (38.3%) and lipid (14.9%). None of the patients was able to achieve the 6 targets. Thirty-five (37.2%) patients did not reach any of these 6 targets.

About complications, 22 (23.4%) patients were found to have diabetic nephropathy. Among these 22 patients, only 4 (18%) patients with microalbuminuria were on angiotensin-converting enzyme inhibitor (ACEI) treatment. Most patients who had significant diabetic retinopathy did not receive specialist referral.

There was a significant association between HbA1c < 7% (good control) and DM nurse's interview (P=0.012), dietitian's interview (P=0.03) and HBGM (P=0.026). Also, poor blood pressure control was related to the presence of nephropathy (P=0.007) in univariate analysis. No significant predictors were found in multivariate analysis.

Section II

To co-ordinate the care of DM patients is one example to demonstrate the role of ACP in developing the community health care model. The ACP can play the following roles:

1 Formulate a total care plan and give holistic care to patients with multiple medical illnesses.
2 Liaise with other healthcare workers and act as a leader to form a multidiscipline team for community care of patients.
3 Carry out regular auditing on DM control in GOPCs and ensure guidelines implementation.
4 Identify the potentially high risk group who will develop DM complications early and thus give early intervention and appropriate referral accordingly.

Conclusion The control of DM in YMT GOPC was suboptimal.

An ACP can play an active role in improving the care of DM patients in the community. By formulating a total care plan and early recognition of complications in DM patients, the ACP will help to reduce the financial health burden in the long run.

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EVALUATION OF THE USE OF ALLOPURINOL IN THE MANAGEMENT OF GOUT

Dr LAM Chi-Kwan, Department of Medicine & Geriatrics, United Christian Hospital
(June 2007 Advanced Internal Medicine Exit Assessment Exercise)

Background Gout is a common form of inflammatory arthritis frequently encountered both in hospital and in general practice. Allopurinol has been the mainstay of prophylactic treatment since 1960s. Its usefulness has been well documented. The suboptimal use of allopurinol in the management of gout can lead to complications that should be preventable.

Objective The aim of this study is to review the use of allopurinol against published recommendations in the management of gout in the general medical outpatient clinics of United Christian Hospital.

Method This is a retrospective review. The case notes of patients attending the general medical outpatient clinics of United Christian Hospital between 1st September 2006 and 30th November 2006 were screened. Case notes of patients with the possible diagnosis of gout as suggested by their symptoms and signs, risk factors, medications,

or clinical diagnosis recorded would be retrieved and reviewed. The use of allopurinol in the management of gout is assessed and compared to the international recommendations.

Results Two hundred patients with the clinical or definite diagnosis of gout were reviewed in this study. Half of the indicated patients had used allopurinol continuously. Less than a quarter of patients had concomitant prophylactic anti-inflammatory agents on initiation of allopurinol. Around one-thirds of patients had dose adjustment according to the clinical and biochemical status. Only nineteen patients achieved good control in this study.

Conclusion The use of allopurinol in the management of gout is suboptimal in the general medical outpatient clinic. Indicated patients should be started on allopurinol appropriately and adjustment of dose should be carried out according to the clinical and biochemical status. It is important to increase the awareness of evidence based recommendations on the use of allopurinol in the management of gout.

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CLINICAL CHARACTERISTICS OF DIABETIC KETOACIDOSIS IN A HONG KONG REGIONAL HOSPITAL OVER THE PAST DECADE

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(June 2007 Advanced Internal Medicine Exit Assessment Exercise)

Objectives Clinical characteristics, laboratory results and clinical courses of patients admitted for DKA were analyzed. Predictors of mortality were also explored. Factors associated with successful discontinuation of insulin among Ketosis-Prone Type 2 Diabetes Mellitus (KPT2DM) patients were evaluated.

Methods A retrospective medical record review of all episodes of DKA in a regional hospital in Hong Kong from 1996 to 2006.

Results Two hundred patients were included in this study. The annual incidence of DKA is 3.9/1000 diabetic patients. The in-patient mortality rate was 3.5% and univariate analysis yielded four significant predictors: increasing age, higher APACHE II score, urea and creatinine levels at 24 hours after admission. Eighteen (10% of adult patients) were found to be KPT2DM who had older age of onset of DM and had lower insulin requirement on discharge. Eleven percent (8/72) known T2DM patients after presented with DKA were able to discontinue insulin therapy. They had significantly lower insulin requirement on discharge ($p = 0.025$) when compared to patients who remained insulin-dependent. None of them required insulin treatment before index admission ($p = 0.007$).

Conclusions DKA can happen in both T1DM and T2DM. Clinical features and course of KPT2DM fall between classic T1DM and T2DM. After acute insulin treatment KPT2DM and some of T2DM can be insulin independent again. Acknowledging this distinct clinical entity should alert clinicians to follow-up these cases more closely. Recognition of the predictors of successful early discontinuation of insulin in the KPT2DM helps avoid unwarranted hypoglycemia and shorten the insulin treatment duration.

Abbreviations

DKA	Diabetic Ketoacidosis
DM	Diabetes Mellitus
T1DM	Type 1 Diabetes Mellitus
T2DM	Type 2 Diabetes Mellitus
KPT2DM	Ketosis-Prone Type 2 Diabetes Mellitus

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PARTNER NOTIFICATION FOR SEXUALLY TRANSMITTED DISEASES IN HONG KONG

Dr Chan Hau Ngai, Social Hygiene Service, Department of Health (June 2007 Dermatology & Venereology Exit Assessment Exercise)

Background Partner notification (PN) aims to prevent the spread of sexually transmitted diseases (STDs), to trace partners and to provide health counseling. Studies on the effectiveness of PN have been conducted in different parts of the world. However, data on PN in Hong Kong is lacking.

Objectives To evaluate the effectiveness of the PN in Social Hygiene Service (SHS) and to identify the key factors affecting its success.

Design Prospective study

Settings All Social Hygiene Clinics (SHCs) in Hong Kong

Subjects Patients newly diagnosed with (1) syphilis; (2) gonorrhoea; (3) non specific genital infection/ non gonococcal urethritis (NSGI/NGU); (4) genital wart and (5) genital herpes between 1st July 2005 and 31st December 2005.

Results 7736 patients were newly diagnosed with a total of 7921 diagnoses. NSGI / NGU was the most frequently diagnosed STD (58.8%). 3131 patients (40.5%) had no traceable partners. After counseling, 2489 PN notes were given to 2304 patients (29.8%). 1072 partners attended SHCs after receiving PN notes. The proportion of outstanding contacts screened[a] was 16.6%. This was statistically significantly higher among females than males (31.6% vs. 9.6%, $p<0.05$). The proportion of patient referral which resulted in verified contact attendance[b] was 43.1%. This proportion was significantly higher in the ≥ 40 than < 40 age group (49.6% vs. 42.2%, $p < 0.05$). The proportion of elicited partners who were newly diagnosed[c] was the highest in NSGI/NGU patients (33%). The brought-to-treatment was the highest in gonorrhoea patients (0.16).

Conclusions Hong Kong's PN system is highly effective, and is comparable to that in the US and the UK.

[a] Proportion of outstanding contacts screened = Partners returned / (Total no. of partners referred + Patients with no traceable partners) x 100%

[b] Proportion of patient referral which resulted in verified contact attendance = Partners returned / No. of PN notes given

[c] Proportion of elicited partners who were newly diagnosed = No. of newly diagnosed partners / No. of partners elicited / investigated

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A STUDY OF CLINICAL MICROBIOLOGICAL AND EPIDEMIOLOGICAL FEATURES OF URETHRAL INFECTIONS IN A MALE SEXUALLY TRANSMITTED INFECTION CLINIC IN HONG KONG

Dr Yu Ho Tak John Timothy, Social Hygiene Service, Department of Health (June 2007 Dermatology & Venereology Exit Assessment Exercise)

Background Urethral infections are the most common sexually transmitted infections (STIs) seen in males attending social hygiene clinics (SHC). Locally, the majority of cases are managed by general practitioners (GPs). Some patients may be asymptomatic.

Objectives The objectives are to test the association of symptoms, sign and sexual demographics with urethral infections so as to develop a diagnostic algorithm of urethral infection for GPs, and to determine the microbiological profile and proportion of patients with asymptomatic urethral infection in SHC.

Methods New male cases (507) attending Yung Fung Shee SHC were recruited. A questionnaire was used to record symptoms, sexual history and demographics. Further assessment including observable urethral discharge, urinary dipstick for leucocytes and urethral smear for Gram stain, gonococcal culture and polymerase chain reaction for *Chlamydia trachomatis* (CT), *Mycoplasma genitalium* and *Ureaplasma urealyticum* were performed.

Results The best predictive symptoms were urethral discharge and dysuria with odds ratios of 17.4 and 9.35 respectively. Based on the symptoms and assessments with the best odds ratios, namely urinary frequency, dysuria, subjective urethral discharge, urethral discomfort, observable urethral discharge and urinary dipstick for leucocytes, an algorithm with sensitivity and specificity of 61.2% and 87.3% respectively was piloted in a GP clinic.

Among 274 asymptomatic patients, 52 (19.0%) were found to have urethral infection. CT was found in 16.6% of patients with asymptomatic urethritis but in 50.0% of symptomatic patients with urethritis.

Conclusions A diagnostic algorithm could be helpful in the diagnosis of urethral infections by GPs. A significant number of asymptomatic urethral infections were identified and screening is needed.

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IMPACT OF USING STANDARDIZED INSULIN TITRATION ALGORITHMS IN LIEU OF ARBITRARY DOSE ADJUSTMENT IN A USUAL CLINICAL AMBULATORY CARE SETTING

Dr Chan Chi Pun, Department of Medicine, Tseung Kwan O Hospital (June 2007 Endocrinology, Diabetes & Metabolism Exit Assessment Exercise)

Objective To assess the feasibility and acceptability of using standardized insulin titration algorithms for patients with poorly controlled Diabetes Mellitus (DM).

Design Prospective observational study.

Setting This study was performed in a community hospital. An ambulatory insulin stabilization program had been established for DM patients requiring initiation or titration of insulin in the diabetes centre.

Methods Titration algorithms were designed as a guide for patients and diabetes nurses to titrate insulin dosage. Patients were asked to perform self-monitoring of blood glucose (SMBG) according to standardized schedules that depended on their insulin regimens. Patients or their caretakers deemed capable of making self-titration were instructed to titrate the dosage every 3 days according to the algorithms, and report to the centre weekly. Other patients were asked to report their SMBG results to the centre weekly and our nurse would titrate accordingly. Fifty four consecutive patients were prospectively recruited and followed for 12 months. The clinical notes and laboratory results of another 50 consecutive patients just before the implementation of the standardized algorithms were reviewed for comparison. All patients had baseline HbA1c > 7.5%. Either the patients themselves or their caretakers performed SMBG and reporting. Patients who refused to perform SMBG were excluded.

Main outcome measures Improvement in glucose control as indicated by changes in HbA1c was the primary outcome measure. HbA1c was measured before starting the algorithm and at 3-monthly intervals thereafter. The target HbA1c was set at <7%. Secondary outcomes included adverse events and adherence to the algorithms. An acceptability questionnaire was designed to assess patient's acceptance.

Results With the use of standardized algorithms, HbA1c level improved from 9.8% (S.D. 1.9) to 7.4% (S.D. 1.2, $p<0.05$) after 6 months, and to 7.3% (S.D. 1.1, $p<0.05$) after 12 months. Mean HbA1c before the implementation of algorithms improved from 10.3% (S.D. 2.1) to 8.8% (S.D. 1.7, $p<0.05$) after 6 months, and to 7.8% (S.D. 1.5, $p<0.05$) after 12 months. The mean HbA1c achieved with the use of standardized algorithms was significantly lower than the HbA1c achieved without algorithms after 6 months ($p<0.05$), but not after 12 months ($p=0.120$). With the use of algorithms, 33% and 60% patients had HbA1c<7% after 6 and 12 months respectively. Without the use of algorithms, the percentages were smaller at 18% and 38% respectively ($p<0.05$). Before implementation of the algorithms, there were four episodes of severe hypoglycemia requiring hospital admission and the adherence rate was only 41.8%. After the implementation, there were two episodes of severe hypoglycemia requiring hospital admission, and the adherence rate was 71.7-84.9%. Eighty six percent reported that the algorithms were acceptable and they were able to follow the algorithms.

Conclusion The use of standardized algorithms is feasible and acceptable and can increase the proportion of patients achieving the target of glycemic control.

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THE METABOLIC SYNDROME AND ITS ASSOCIATION WITH CHRONIC KIDNEY DISEASE IN CHINESE PATIENTS WITH TYPE 2 DIABETES

Dr Luk On Yan, Andrea, Department of Medicine & Therapeutics, Prince of Wales Hospital (June 2007 Endocrinology, Diabetes & Metabolism Exit Assessment Exercise)

The past decade has witnessed an upsurge of literature published on the subject of the metabolic syndrome. While it has been shown with irrefutable evidence the strong

association with cardiovascular diseases, controversies regarding the clinical definition, pathophysiology, and clinical utility continue. An emerging area of interest is the link between the metabolic syndrome and chronic kidney disease. Diabetes mellitus is the leading cause of end-stage renal failure worldwide, and metabolic factors, aside from hyperglycaemia, have recently been implicated in determining renal outcome. A cohort of Chinese subjects with type 2 diabetes is studied to evaluate the relationship between chronic kidney disease and the metabolic syndrome, as defined by the National Cholesterol Education Program's Adult Treatment Panel III. The relative contribution of each metabolic factor towards the development of CKD is explored and potential pathogenesis discussed.

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DIABETIC ERECTILE DYSFUNCTION – REVIEW OF PATHOPHYSIOLOGY AND RISK FACTORS AND A CROSS-SECTIONAL STUDY IN HONG KONG CHINESE TYPE 2 DIABETIC MEN

Dr Yu Wai Ling, Linda, Department of Medicine and Therapeutics, Prince of Wales Hospital (June 2007 Endocrinology, Diabetes and Metabolism Exit Assessment Exercise)

Erectile dysfunction (ED) is highly prevalent in type 2 diabetic men and its cause is multi-factorial. It leads to decrease in quality of life and has been showed to be associated with endothelial dysfunction and cardiovascular disease. ED is often under-diagnosed due to embarrassment. However, data on ED in Hong Kong Chinese diabetic men is sparse. A consecutive cohort of 153 Chinese type 2 diabetic men aged between 25 and 75 years attending a tertiary diabetes centre were recruited between October 2006 and January 2007. Detailed assessments, using the European DiabCare protocol and the 5-item version of the International Index of Erectile Function (IIEF-5) questionnaire, were performed. Of the study population, the frequency of ED was 32.6% [using to the National Institute of Health (NIH) Consensus Conference criteria], compared to 85% (31.4% having moderate to severe ED) as diagnosed by IIEF-5 questionnaire. ED as defined by NIH criteria was associated with diabetes duration ($p=0.006$), non-high density lipoprotein (HDL) cholesterol ($p=0.047$), estimated glomerular filtration rate (eGFR) ($p<0.0001$), diabetic retinopathy ($p=0.027$), coronary heart disease ($p=0.006$) and macrovascular complications ($p=0.004$). Using the IIEF-5 questionnaire, ED was significantly associated with age ($p<0.0001$), diabetic duration ($p=0.008$), hypertension ($p<0.0001$), use of beta-blocker ($p=0.005$), angiotensin converting enzyme inhibitor or angiotensin II receptor blocker ($p=0.005$), glycosylated haemoglobin (HbA_{1c}) ($p=0.002$), fasting plasma glucose ($p=0.025$), total triglyceride ($p=0.028$), mean urine albumin-creatinine ratio (ACR) ($p=0.002$), eGFR ($p<0.0001$), microvascular complication ($p<0.0001$) and macrovascular complication ($p=0.042$). After adjusted for confounding factors by logistic regression, ED defined by NIH criteria was associated with coronary heart disease (OR=4.49 [95% CI 1.55-12.97], $p=0.006$) and diabetic retinopathy (OR=2.84 [95% CI 1.14-7.09], $p=0.025$), whereas ED defined by IIEF-5 questionnaire was associated with age (OR=1.16 [95% CI 1.06-1.26], $p=0.001$), mean urine ACR (OR=3.94 [95% CI 1.02-12.93], $p=0.046$) and hypertension (OR 4.06 [95% CI 1.13-14.63], $p=0.032$), compared to those with no ED. IIEF-5 score was inversely related to age ($p<0.0001$), urinary albumin-creatinine ratio ($p<0.0001$), diabetic neuropathy ($p=0.013$), retinopathy ($p=0.034$) and coronary heart disease ($p=0.019$) after adjustment for confounding factors.

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FALL PREVENTION FOR COMMUNITY-DWELLING ELDERLY

Dr. Chan Yui Kin Jonathan, Department of Medicine, Pamela Youde Nethersole Eastern Hospital (June 2007 Geriatric Medicine Exit Assessment Exercise)

Fall is one of the geriatric giants and it commonly occurs in the older population. This leads to fall related complications and increases social and economic burden of the society. A critical literature review of the prevalence, risk factors and complications of falls in the community-dwelling elderly was performed. The approach of fall assessment, assessment tools and components of comprehensive fall evaluation were reviewed.
Literature review of evidence of different single-intervention strategies and multi-factorial intervention strategies of fall prevention in the community-dwelling elderly was done.

Currently the strongest evidence in clinical studies in fall prevention is the multidisciplinary multi-factorial risk factor assessment and intervention, particularly if they are targeting elderly persons at risk. Study showed that the elderly fallers who attended Accident and Emergency Department (A&E) were prone to have recurrent fall and result in fall related morbidity and mortality. Study also showed that those community-dwelling elderly fallers directly discharged from A&E after fall were noted to have high prevalence of fall risk factors and were at risk of functional decline.

Therefore a home-based fall intervention program empowered the doctor, nurses, volunteers and community nurses (CNS) to study the risk factors and baseline characteristics in this group of community-dwelling elderly persons through the medical assessment by doctor in Elderly Assessment Clinic in 2006.

A randomized controlled trial was employed to compare the control group with the home-based fall intervention group. It tried to study the effectiveness of fall prevention by home-based fall intervention which was aimed to improve lower-limb balance and strength and home environmental safety by CNS.

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THE USE OF WARFARIN AMONG CHINESE PATIENTS WITH ATRIAL FIBRILLATION ASSOCIATED STROKE IN A REGIONAL HOSPITAL IN HONG KONG

Dr Chan King Chung, Department of Medicine & Geriatrics, Kowloon Hospital (June 2007 Geriatric Medicine Exit Assessment Exercise)

Background. Ischemic stroke patients in atrial fibrillation (AF) have a high risk of recurrent stroke. Warfarin significantly reduces this risk. We aim to provide a surveillance study on the use of warfarin among Chinese patients with AF associated strokes.

Methods. A retrospective cohort study was undertaken in a regional rehabilitation hospital. Patients with AF associated strokes admitted within the 3 year study period were identified. Demographic and other data, including whether warfarin was commenced upon discharge and the reason why warfarin was not started, were recorded. Predictors associated with warfarin use were also analyzed.

Results. A total of 491 AF associated strokes were identified, constituting of 15% of the all the cases of stroke. The mean age was 77.8 and 62.5% were female. The outcome of AF associated strokes was poor. More than 70% of them had large-artery infarcts. One quarter of survivors became dependent and needed on-going institutional care at discharge. The 30-day, 1 year mortality and 18-months mortality was 5.9%, 14.5% and 28.3% respectively. The incidence of recurrent stroke at 1 year was 11.8%. Only 14.6% of the known AF subjects were given warfarin at the time of admission. Approximately one fifth of the survivors were given warfarin at discharge. Severe disability and frailty was the commonest reason for withholding warfarin (53.6%). Other reasons included patient refusal (15.7%), active bleeding (6.9%) and risk of falls (6.4%). In 11.3% of patients, no clear documentation of the reason was found in the clinical notes. Advance age, dependent activities of daily living, valvular type of AF, and the need for institutional care was found to be negative predictors for warfarin prescription.

Conclusion. In this cohort, the underutilization of anticoagulation primarily occurred before the stroke onset. Once a stroke had occurred, it was too late to use anticoagulant therapy in approximately half of the patients.

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THE CHARACTERISTICS OF BACTEREMIA IN COMMUNITY-ACQUIRED AND NOSOCOMIAL *KLEBSIELLA PNEUMONIAE* INFECTION

Dr. Lee Mei Yee, Department of Medicine & Geriatrics, United Christian Hospital
(June 2007 Infectious Disease Exit Assessment Exercise)

Background Among Asian countries, *Klebsiella pneumoniae* (*K. pneumoniae)* is an emerging pathogen in causing liver abscess with or without metastatic complications. In our locality, *K. pneumoniae* is a common isolate from clinical specimens in hospitals in Hong Kong. However, the correlation with *K. pneumoniae* bacteremia and the clinical manifestation is not well documented.

Objective A study was conducted to evaluate the characteristics and antibiotic susceptibility pattern of bacteremia in community-acquired and nosocomial *K. pneumoniae* infection.

Method This was a retrospective study which recruited 191 hospitalized patients with *K. pneumoniae* bacteremia in a regional hospital in Hong Kong from July 2004 to December 2005; of these, 100 episodes were nosocomial acquired.

Result Neutropenia ($p=0.001$), haematological malignancy ($p=0.035$), steroid use ($p=0.030$), urinary catheterization ($p=0.005$), prior chemotherapy ($p<0.001$), recent surgery ($p=0.005$) and prior antibiotic used ($p<0.001$) were more common in patients with nosocomial compared with community-acquired infections. Underlying diabetes mellitus was similar in both groups ($p=0.130$). Diabetes mellitus was not significantly more common in patients with distinct bacteremia syndrome (liver abscess, and/or meningitis, endophthalmitis) than those without the distinct bacteremia syndrome. *K. pnuemoniae* cholangitis and urinary tract infection were the two leading sources of *K. pneumoniae* bacteremia and were more frequent in community-acquired infection, accounting for 32% and 28% of all bacteremic episodes respectively. *K. pneumoniae* liver abscesses were more common in the community-acquired than in nosocomial

infection (p=0.008). There was one case of *K. pneumoniae* meningitis without liver abscess. No case of *K. pneumoniae* endophthalmitis was identified. No attributable source of infection was found in 62% of nosocomial infection and 17% of community-acquired infection (p<0.001). Underlying malignancy (p=0.005) and high Pitt bacteremia score (p<0.001) were the significant risk factors for the mortality in *K. pneumoniae* bacteremia. Extended spectrum beta-lactamase (ESBL) strains were more prevalent in nosocomial infection (p=0.018). The problem of antibiotic resistance was more important in nosocomial infection. Nosocomial isolates had higher prevalence of resistance to amoxicillin-clavulanate (p<0.001), ceftriaxone (p=0.008), cefuroxime (p=0.011), co-trimoxazole (p=0.015), ticarcillin-clavulanate (p=0.013) and ampicillin-sulbactam (p<0.001) than community strains.

Conclusions Significant differences were identified between community-acquired and nosocomial *K. pneumoniae* bacteremia. The mortality was more significant among nosocomial *K. pneumoniae* bacteremia. Underlying malignancy, high Pitt bacteremia score at the onset of bacteremia were significant risk factors for the mortality. Diabetes mellitus was commonly found in patients with community acquired *K. pneumoniae* bacteremia. Distinct *K. pneumoniae* syndrome was significantly more common in community acquired cases. Antibiotic resistance including ESBL positivity is a concern for nosocomial *K. pneumoniae* bacteremia cases.

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RETROSPECTIVE REVIEW OF CAPD FUNGAL PERITONITIS IN TWO REGIONAL HOSPITALS

Dr Leung Wai Shing, Department of Medicine & Geriatrics, Kwong Wah Hospital
(June 2007 Infectious Disease Exit Assessment Exercise)

Background Fungal peritonitis (FP), although uncommon, is associated with significant morbidity and mortality among patients undergoing long term continuous ambulatory peritoneal dialysis (CAPD). The current study aims to 1) review the clinical features of fungal peritonitis; 2) explore the use of different treatment profiles and 3) delineate the predictors for poor outcomes in CAPD patients with FP.

Patient and methods Patients diagnosed with CAPD fungal peritonitis between 2000 and 2005 from 2 dialysis centers were retrospectively studied. Prognostic factors for outcomes, namely, in-hospital mortality and technique failure were analyzed.

Result 71 episodes of CAPD fungal peritonitis were included. 59 episodes (83%) of FP are attributable to *Candida* species and *C. albicans* was the most predominant isolate (36.6%). Patients managed to continue CAPD in only 19 episodes (26.8%) after FP. The in-hospital mortality rate was 43.7%. Diabetes mellitus (odds ratio [OR], 3.99; 95% confidence interval [CI], 1.01 to 15.96, P = 0.048), higher lymphocyte count (OR, 4.92 for every 10^9/L increase in lymphocyte count; 95% CI, 1.16 to 20.81; P = 0.030), and catheter remaining in situ (OR, 16.18; 95% CI, 3.73 to 70.21; P < 0.001), were independently associated with increase in in-hospital mortality. Among patients with *Candida* peritonitis, *C. parapsilopsis* (OR, 0.60; 95% CI, 0.01 to 0.89; P = 0.041) was an independent factor associated with less mortality. On the other hand, while patient with FP caused by *Candida* species (OR, 6.86; 95% CI, 1.37 to 34.36, P = 0.019) had significantly greater technique failure rate, addition of 5-flucytosine to the antifungal regimen (OR, 0.15; 95% CI, 0.03 to 0.77, P = 0.023) was associated

with less technique failure. For patients with catheter removal, delay catheter removal (OR, 0.92 for every one day delay in catheter removal; 95% CI, 0.86 to 0.98, P = 0.013) was associated with lower technique failure rate.

Conclusion Various predictors of in-hospital mortality and technique failure were identified in this review of FP, and it provides a basis for further prospective study to determine the optimal strategy for CAPD fungal peritonitis.

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NONTUBERCULOUS MYCOBACTERIA (NTM) PULMONARY INFECTION IN HONG KONG: STUDY ON EPIDEMIOLOGY, CLINICAL CHARACTERISTICS AND TREATMENT OUTCOME FROM A REGIONAL CHEST HOSPITAL

Dr Lin, Wai Chi, Department of Medicine, Pamela Youde Nethersole Eastern Hospital (June 2007 Infectious Disease Exit Assessment Exercise)

Background: Recent international guideline has been published for diagnostic and treatment criteria for nontuberculous mycobacteria (NTM) disease. Despite increasing recognition of this disease entity worldwide, local data has been inadequate.

Objective: To investigate the epidemiology, clinical characteristics and associated factors with treatment outcome of pulmonary NTM infection in Hong Kong.

Design and Methods: Medical records of patients admitted to a local chest hospital for NTM lung disease were reviewed. Clinical, bacteriological and radiological data was recorded. Outcome measures included sputum conversion rate, clinical symptom and radiological improvement.

Results: Seventy-six patients were recruited. The commonest organisms involved were *Mycobacterium avium* complex (MAC), followed by ***M. chelonae.*** Male to female ratio was 1.3, and the mean age was 65 years old. Sixty-two patients (81%) had underlying chest disease. Majority of patients (87%) presented with cough, and more than half of them (52%) had bilateral disease radiologically. Upper lobe involvement was found in 68% of patients. Multiple nodules was the commonest finding in computed tomography scan. The overall sputum conversion rate was 81%. Patients with MAC lung disease were more likely to have had received previous treatment for the disease ($p=0.02$), and patients with ***M. chelonae*** disease were more likely to have bronchiectasis ($p=0.001$). Patients with treatment failure were more likely to have positive smear sputum specimen ($p<0.0001$), have prior treatment for the same NTM pulmonary infection ($p<0.001$) and have cavities in their radiographic findings ($p=0.013$).

Conclusion: Pulmonary NTM disease is not uncommon in Hong Kong. It commonly occurred in patients with underlying chest disease without a recognized immune defect. Infection caused by MAC, followed by ***M. chelonae***, constituted the majority of the local NTM pulmonary disease. There was no major difference in radiographic features between diseases caused by different NTM species. The overall treatment outcome was satisfactory with medical therapy.

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INACTIVATION OF SECRETED WNT ANTAGONISTS (*WIF1 AND SFRPS*) IN NASOPHARYNGEAL CARCINOMA: EPIGENETIC PERSPECTIVE

Dr Chan Lam, Department of Clinical Oncology, Prince of Wales Hospital (June 2007 Medical Oncology Exit Assessment Exercise)

Aberrant activation of Wnt pathway is evident during nasopharyngeal carcinogenesis yet the detailed mechanism is unclear. Wnt inhibitory factor 1 (*WIF1*) and secreted frizzled-related protein family (*SFRPs*) are two important secreted Wnt antagonists, which are silenced by epigenetic mechanism in various cancers. However, data about *WIF1* and *SFRPs* are scanty in nasopharyngeal carcinoma (NPC). In the first chapter of this dissertation, the concepts of epigenetics and its emerging role in the pathogenesis of NPC will be reviewed. In the second chapter, the canonical Wnt pathway (with emphasis on the secreted antagonists WIF1 and SFRPs) and its involvement in nasopharyngeal carcinogenesis will be discussed. In the third chapter, we sought to prove the following three hypotheses (1) *WIF1* and *SFRPs* are inactivated by epigenetic mechanism in NPC (2) The epigenetic modifications of *WIF1* and *SFRPs* can be reversed by epigenetic therapy. (3) *WIF1* and *SFRPs* possess tumor suppressor properties in NPC. We found frequent silencing of *WIF1* and *SFRP* genes in a panel of NPC cell lines. High methylation rates (6 out of 6 cell lines; 100%) were identified in promoters of *WIF1, SFRP 1, 2, 4* and *5*. Methylation of *WIF1* and *SFRP* genes was demonstrated in 58-81% of primary nasopharyngeal tumor samples. In-vitro demethylation and reactivation of *WIF1* and *SFRPs* can be achieved by application of 5-aza-2'deoxycytidine. Ectopic expressions of *WIF1* and *SFRPs* in cell lines were found to inhibit the colony formations. For *WIF1*, ectopic expression also leads to downregulation of intracellular β-catenin level. This highlights the tumor suppressor role of *WIF1* and *SFRPs* in nasopharyngeal carcinogenesis and the potential of epigenetic therapeutics in NPC.

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PREVALENCE AND PREDICTIVE FACTORS OF NEW ONSET DIABETES MELLITUS IN RENAL TRANSPLANT RECIPIENTS - A CROSS SECTIONAL STUDY IN A SINGLE CENTRE

Dr. Chan Hoi Wong, Department of Medicine, Queen Elizabeth Hospital (June 2007 Nephrology Exit Assessment Exercise)

Background The incidence of new onset diabetes mellitus (NODM) after renal transplantation is underestimated. Its development is associated with adverse outcome on graft functioning and survival. It increases cardiovascular morbidity and mortality. In this cross sectional study, we estimate the prevalence of NODM and identify its predictive factors.

Methods Patients who received solitary living related or cadaveric kidney transplantations in our center from 1997 to 2005 were recruited. Oral Glucose Tolerance Test (OGTT) were performed in patients who were not diagnosed DM pre- and post-transplant and had spot glucose levels ≥ 5.6mmol/L for at least 2 occasions 6 months after transplantation. Demographics data and relevant clinical information were extracted from case records.

Results Of 131 renal recipients enrolled, 31 patients had OGTT performed. The prevalence of NODM and abnormal glucose tolerance (AGT) which included

impaired fasting glucose (IFG) and impaired glucose tolerance (IGT) was 21.8% and 10.1%, respectively. The cumulative incidence of NODM at 1, 3, 5 years was 12%, 14% and 21%, respectively.

On multivariate analysis, NODM was associated with age (odds ratio, 1.082; 95% CI, 1.027-1.139) and hepatitis B seropositivity (odds ratio, 4.662; 95% CI, 1.390-15.634). There were no significant difference in graft and patient survival irrespective of diabetes status.

Conclusion NODM was prevalent among renal transplant recipients and deserved early detection and attention to prevent long term complications, though its association with poor graft and patient survival could not be demonstrated in this small scale study. Older age and hepatitis B seropositivity were independent predictive factors of development of NODM.

Keywords New onset diabetes mellitus; renal transplant; predictive factors; oral glucose tolerance test (OGTT).

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EFFICACY OF BI-WEEKLY VERSUS FOUR-WEEKLY LOW DOSE SUBCUTANEOUS DARBEPOETIN-ALPHA FOR THE MAINTENANCE TREATMENT OF ANAEMIA IN PERITONEAL DIALYSIS PATIENTS – AN OPEN-LABEL RANDOMIZED STUDY

Dr Kwan Ching Ha Bonnie, Department of Medicine & Therapeutics, Prince of Wales Hospital (June 2007 Nephrology Exit Assessment Exercise)

Background A randomized control study was conducted to compare the efficacy of four-weekly versus bi-weekly low dose subcutaneous darbepoetin-alpha for the treatment of anaemia in peritoneal dialysis (PD) patients.

Methods Sixty-four stable PD patients on weekly subcutaneous recombinant human erythropoietin (rHuEPO) were randomized into 2 groups, one group receiving 4-weekly darbepoetin, the other group bi-weekly darbepoetin. Dose of darbepoetin was calculated according to the patient's original rHuEPO dosage, and was kept unchanged throughout the study period (24 weeks).

Results Twenty-six of the 64 patients were male. Mean age was 51.2 ± 13.3 years. Mean duration of dialysis was 64.4 ± 41.4 months. Thirty-four patients received darbepoetin bi-weekly, thirty 4-weekly. Mean dose of darbepoetin in the bi-weekly and 4-weekly groups were 16.3 ± 4.5 and 15.8 ± 4.6 mcg/week respectively. After 24 weeks of treatment, there was no change in haemoglobin (Hb) level in the bi-weekly group (9.0 ± 1.3 to 8.8 ± 1.5 g/dL, $p=0.48$), but a significant drop in Hb in the 4-weekly group (9.1 ± 1.7 to 8.4 ± 1.7 g/dL, $p<0.05$). As compared to the bi-weekly group, marginally more patients in the 4-weekly group required blood transfusions (8 versus 3, $p = 0.06$) or intravenous iron supplement (9 versus 4, $p = 0.07$), but neither of the difference reach statistical significance.

Conclusion In stable PD patients receiving once weekly rHuEPO, Hb level could be maintained by switching to bi-weekly low dose darbepoetin therapy, while 4-weekly low dose therapy on this conversion dosage without titration was less effective, resulting in a marginal increase in blood transfusion requirement. Further study is required to investigate effect of increasing the dosage in patients with reduced

darbepoetin frequency, to better define the conversion ratio when switching from rHuEPO to darbepoetin.

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OUTCOMES OF RENAL TRANSPLANTATION IN ELDERLY PATIENTS: EXPERIENCE FROM TWO CENTRES

Dr Lo Man Wai, Department of Medicine & Geriatrics, Kwong Wah Hospital (June 2007 Nephrology Exit Assessment Exercise)

Background Elderly patients are the fastest growing age group in end-stage renal failure. Data from overseas show that transplantation is a safe and reliable mode of treatment for this group of patients. However, local data about the outcome for these patients are lacking.

Aim To study and compare the outcome of renal transplantation among elderly recipients and younger recipients.

Method Using ORTS in Kwong Wah Hospital and Princess Margaret Hospital, adult patients who underwent renal transplantations and were followed up by the medical units were recruited. They were divided into the control group (age <60) and the elderly group (age ≥60) according to the age at transplantation. The following data were collected for the cross-sectional analysis: co-morbid illnesses, transplantation details, immunosuppressive therapy, incidence and severity of acute rejections, incidence of infection and malignancy, graft and patient survival and causes of graft loss and death.

Results A total of 324 episodes of transplantation were recorded (controls (n=266) and elderly group(n=58)). The incidence of acute rejection is higher in the control group (18% vs 8.6%, P=0.08). There was a trend towards higher incidence of infection and malignancy in the elderly group though the difference did not reach statistical significance. The graft survival rate is similar in the two groups, while the 5-year patient survival rate is worse in the elderly group (92.1% vs 79.3%, P=0.0058).

Conclusion The outcome of elderly transplantation is satisfactory and age per se should not be considered as contraindication to transplantation.

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RETROSPECTIVE STUDY ON THE TRANSPLANT RENAL ARTERY STENOSIS (TRAS) IN KIDNEY TRANSPLANT RECIPIENTS: A SINGLE CENTRE EXPERIENCE

Dr. Yim Ka Fai, Department of Medicine & Geriatrics, Princess Margaret Hospital (June 2007 Nephrology Exit Assessment Exercise)

Introduction Transplant renal artery stenosis (TRAS) is an important cause of post transplant hypertension and allograft dysfunction. It is increasingly recognized in our clinical practice, however, local data among Chinese subjects is lacking.

Objective The aim of this study is to review our experience in managing TRAS in a local transplantation centre.

Patients and method 398 patients had kidney transplantation between 1st January 1996 and 31st December 2005 and followed up in our unit. Among these, patients with TRAS were identified. Their clinical records were retrospectively reviewed to study the incidence, clinical features, treatment options and clinical outcome of TRAS.

Results 23 patients (18 males and 9 females) were confirmed to have TRAS by renal angiography with mean age of 52.4 +/- 8.9 years. The incidence of TRAS in our cohort was 5.8%. Mean time from kidney transplantation to the diagnosis of TRAS was 9.0 months. Four types of clinical presentation were identified: (i) refractory hypertension, (ii) allograft dysfunction, (iii) renal bruit and (iv) asymptomatic. 8 patients were treated conservatively with antihypertensive medications alone. Their blood pressure control and allograft function were remained satisfactory despite they had TRAS. 10 patients were treated by percutaneous transluminal renal angioplasty (PTRA). Both blood pressure and allograft function were improved at 1-month and 1-year after PTRA. 5 patients were treated by PTRA with stent deployment. They showed improvement in blood pressure and allograft function after PTRA and stenting 2 patients in PTRA alone group developed restenosis. Both of them had anastomotic stenosis who successfully managed by stent deployment. No restenosis was documented in PTRA with stenting group. The overall complication rate was 8.7%.

Conclusion Findings from this small study confirmed PTRA with/without stent deployment is safe and effective treatment for TRAS. Not all stenoses require intervention. Revascularization should be considered in haemodynamically significant lesions. Stent placement after baolloon angioplasty is recommended for those stenotic lesions at anastomotic site.

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BURDEN OF MICROBLEEDS IN PATIENTS WITH ISCHAEMIC STROKE

Dr. Soo Oi Yan, Yannie. Department of Medicine and Therapeutics. Prince of Wales Hospital (June 2007 Neurology Exit Assessment Exercise)

Purpose – Silent cerebral microbleeds (MB) are frequently identified in stroke patients by gradient-echo T2* weighted magnetic resonance images (MRI). Several retrospective studies suggested that MB are associated with increased risk of intracerebral hemorrhage, leukoaraiosis and lacunar infarct. Treatment for ischemic stroke patients with MB, therefore, become challenging. The aim of this study is to assess the burden of MB in ischemic stroke patients and their influence on patients' outcome. We also evaluate the role of MB as a predictor for future intracerebral hemorrhage (ICH).

Methods – We analyze MRI images of 1016 patients admitted consecutively for acute ischemic stroke to Acute Stroke Unit in a regional hospital between January 1999 and November 2004. Lesion load and distribution of MB, as well as white matter change were documented. Radiological features were correlated with outcomes events (subsequent intracerebral hemorrhage, recurrent infarct and mortality) using multivariate analyses.

Results –MB were identified in 28.5% (290/1016) of patients. Presence of MB was significantly more common in patients with hypertension, prior ICH and subsequent ICH. And they were more frequently found in the thalamus. Multivariate analysis showed that MB (HR 6.142, p = 0.002, 95% CI 1.976 – 19.113) and age (1.082, p = 0.008, 95% CI 1.021 – 1.147) were the only independent predictors for subsequent ICH. White matter change was a common associated finding that combination of MB and white matter change might represent

an advanced stage of microangiopathy with bleeding tendency. ROC showed that MB ≥ 8 has a sensitivity of 58.3% and specificity of 80.6% in predicting subsequent ICH.

Conclusion – In ischemic stroke, gradient-echo T2* weighted MRI sequence is important for risk stratification. Asymptomatic MB can be commonly found in ischemic stroke patients and is an independent predictor for future ICH. When managing patients with MB, risk and benefit of anti-thrombotic agents should be carefully weighed. Extra cautions should be taken to minimize risk of future ICH. Nevertheless, MB should not be used alone for risk stratification. Other clinical factors, especially age, should be taken into consideration when determining risk of hemorrhage.

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A RETROSPECTIVE STUDY ON THE COMPLICATIONS AND OUTCOMES OF SPINAL PATIENTS IN A TERTIARY REHABILITATION UNIT IN HONG KONG Dr Cheng Chi Kai Michael, Department of Rehabilitation, Kowloon Hospital (June 2007 Rehabilitation Exit Assessment Exercise)

Objective To study the complications and outcomes of spinal patients in a rehabilitation unit.
Design Retrospective, 3-year study.

Setting Tertiary rehabilitation unit specializing in spinal cord lesion rehabilitation.

Participants 103 referred in-patients.

Interventions Not applicable.

Main Outcomes measures Demographic characteristics, neurological level, etiology, comorbidities and complication of spinal cord lesion (SCL), length of stay (LOS), discharge destination, rehospitalization within the first year after discharge and total mortality.

Results 88% of patient suffered from non-traumatic SCL. Degenerative disease was the predominant cause but there were many different etiologies. 84% of patients returned home on discharge. The rate of subsequent emergency rehospitalization was 33%. Musculoskeletal problem was the leading cause of rehospitalization. The first year mortality rate was 10%.

Conclusion Most SCL patients returned home after a course of inpatient rehabilitation training. Rehospitalization rates remain high with different causes of rehospitalization. Comparing with the general population, people with SCL are still dying at earlier ages as a result of underlying etiology or medically related issues.

Note: For obtaining the full dissertation, please contact the author directly.