

- 一、 請寫出 compounding 的定義與限制，並說明目前藥局內有那些作業屬於 compounding，需要怎樣設備、作業流程與標示。 (10 分)
- 二、 完整的靜脈輸注醫囑，藥師須檢核那些項目？為什麼？ (8 分)
- 三、 請就下述案例，列出問題，並以 SOAP 型式記錄藥事照護。另，請寫出各縮寫的全稱。 (12 分)

Pan, a 69-year-old male with a Hx of CVA & TIA, was admitted to the hospital due to oral and esophageal candidiasis, and fever. Fluconazole 100 mg bid po was administered. CBC & differential on admission showed a WBC count of  $1000/\text{mm}^3$  with 2% seg, a platelet count of  $90000/\text{mm}^3$ , and a RBC count of  $4 \times 10^6/\text{mm}^3$ . Baseline WBC count 1 month PTA was  $4000/\text{mm}^3$ , and the RBC and platelet counts were WNL. Aplastic anemia was diagnosed. Bone marrow aspiration found no stem cell at all. Series study ruled out the possibility of AIDS. A drug history showed that the patients started ticlopidine 100 mg tid therapy 3 weeks PTA. Filgrastim (G-CSF) 5 mcg/kg/day was administered intravenously. However, the ANC remained below  $100/\text{mm}^3$  until 2 weeks after admission when a sudden rise of ANC above  $500/\text{mm}^3$  was seen.

- 四、 下列衛教內容是否正確？若有錯誤，請寫出正確的答案（共 15 分）：
  - (一) 使用 warfarin 的病人在服藥期間，應避免食用任何深綠色蔬菜。(5 分)
  - (二) 使用 clopidogrel 的病人在服藥期間，若需併服 esomeprazole 或 omeprazole，應至少間隔 2 小時以避免藥品交互作用。(5 分)
  - (三) 使用 moxifloxacin 的病人在服藥期間，若併服鐵劑、氧化鎂等藥品，應至少間隔 2 小時以避免藥品交互作用。(5 分)

見背面

- 五、 以下短文係利用國內健保資料庫分析新一代 macrolides 可能造成心律不整之安全性議題研究，請仔細閱讀後回答相關問題（共 15 分）：

**Risks of Cardiac Arrhythmia and Mortality among Patients Using New-Generation Macrolides, Fluoroquinolones, and  $\beta$ -Lactam/ $\beta$ -Lactamase Inhibitors: A Taiwanese Nationwide Study**

**Background:** Previous studies have demonstrated increased cardiovascular mortality related to azithromycin and levofloxacin. Risks associated with alternative drugs in the same class, including clarithromycin and moxifloxacin, were unknown. We used the Taiwan National Health Insurance Database to perform a nationwide, population-based study comparing the risks of ventricular arrhythmia and cardiovascular death among patients using these antibiotics.

**Methods:** Between January 2001 and November 2011, a total of 10684100 patients were prescribed oral azithromycin, clarithromycin, moxifloxacin, levofloxacin, ciprofloxacin, or amoxicillin-clavulanate at outpatient visits. A logistic regression model adjusted for propensity score was used to calculate the odds ratios (ORs) and 95% confidence intervals (CIs) for adverse cardiac outcomes occurring within 7 days after the initiation of antibiotic treatment.

**Results:** Compared with amoxicillin-clavulanate treatment, the use of azithromycin and moxifloxacin was associated with significant increases in the risks of ventricular arrhythmia and cardiovascular death. The adjusted ORs for ventricular arrhythmia were 4.32 (95% CI, 2.95–6.33) for azithromycin, 3.30 (95% CI, 2.07–5.25) for moxifloxacin, and 1.41 (95% CI, .91–2.18) for levofloxacin. For cardiovascular death, the adjusted ORs for azithromycin, moxifloxacin, and levofloxacin were 2.62 (95% CI, 1.69–4.06), 2.31 (95% CI, 1.39–3.84), and 1.77 (95% CI, 1.22–2.59), respectively. No association was noted between clarithromycin or ciprofloxacin and adverse cardiac outcomes.

**Conclusions:** Healthcare professionals should consider the small but significant increased risk of ventricular arrhythmia and cardiovascular death when prescribing azithromycin and moxifloxacin. Additional research is needed to determine whether the increased risk of mortality is caused by the drugs or related to the severity of infection or the pathogens themselves.

*Clinical Infectious Diseases* 2015;60:566–577.

- (一) 國外其他相似研究通常僅分析感染社區型肺炎 (community-acquired pneumonia, CAP) 的病人群，請問此本土研究中探討的口服藥物 azithromycin、clarithromycin、moxifloxacin、levofloxacin、ciprofloxacin、amoxicillin-clavulanate 在治療 CAP 時的定位各是什麼？ (10 分)
- (二) 身為藥師，那些病人使用 azithromycin 與 moxifloxacin 時，要特別留意心律不整的問題？你將如何處理？ (5 分)

接次頁

六、請閱讀以下短文並回答問題：

**Impact of Pharmacist Intervention in Conjunction with Outpatient Physician Follow-up Visits after Hospital Discharge on Readmission Rate**

**OBJECTIVE:** The Medicare Hospital Readmissions Reduction Program (MHRRP) which took effect on October 1st, 2012 holds providers accountable for quality of care delivered, placing a greater focus on care coordination. Innovative strategies in medication management in the acute care and outpatient primary care settings require vigilant pharmacist intervention. The objective of this study is to determine if pharmacist-provided medication reconciliation service in conjunction with hospital follow-up outpatient physician visits reduces hospital readmission rate.

**METHODS:** This was a prospective study in which physician-initiated outpatient hospital follow-up appointment scheduling was used to identify patients at time of hospital discharge. All patients  $\geq 50$  years of age were eligible for outpatient pharmacist visits. Emergency room visits were excluded. Data collected included: patient demographics, characteristics of identified drug therapy problems, accuracy of outpatient medication histories and time required by pharmacist to perform the reviews. Patient adherence to early (24-72 hours) outpatient hospital follow-up visit was also evaluated. Previous year's readmission data for high risk patients who received only physician visits were also collected for comparison with those who were jointly visited by pharmacists and physicians.

**RESULTS:** A total of 98 patients were assigned to receive pharmacist intervention in conjunction with physician hospital follow-up visits. Nine of the 98 patients seen by pharmacists at hospital follow-up visits were readmitted (9.2%) to a hospital within 30 days of discharge. Out of the 236 patients seen during the same period the previous year (2011) for physician alone hospital follow-up visits 46 were readmitted (19.4%) within 30-days of hospital discharge. The difference between these groups was statistically significant ( $p = 0.023$ ), with patients in the pharmacist intervention group experiencing a reduction in 30-day readmission risk. Physician alone outpatient follow-up was associated with earlier mean time to readmission, 12.8 days vs. 18.3 days in the pharmacist intervention group ( $p = 0.042$ ).

**CONCLUSION:** Pharmacist involvement in hospital discharge follow-up visits reduced overall readmission rate in high risk patients and improved monitoring of drug therapy, and medication history accuracy when compared to physician-alone visits.

*Am J Health Syst Pharm 2015;72(11 Suppl 1):S36-42.*

- (一) 請以中文簡要敘述此研究之方法與結果。 (6分)
- (二) 根據此論文摘要內容，您是否欲對其研究方法提出疑問，以進一步確認其研究推論？若有，請說明之？ (4分)
- (三) 文中提及之 drug therapy problems 可能包含哪些類型，請列舉至少八種類別說明之。 (4分)

見背面

七、請閱讀下列案例報告並回答問題：

#### Eosinophilia and Fever with Levetiracetam: A Case Report

Levetiracetam is considered by many clinicians to be one of the most benign antiepileptic medications available. We report the case of a 24-year-old man presenting with seizures for which he was started on levetiracetam. Despite an extensive work-up and treatment of possible infectious and noninfectious issues, the patient remained intermittently febrile. When a marked peripheral eosinophilia was noted, the patient's levetiracetam was discontinued and phenytoin prescribed. The fever resolved within 24 hours, and the patient's eosinophilia count returned to normal limits following discharge back to his long-term care facility. We estimate the probability of this reaction related to levetiracetam as probable based on a score of 7 on the Naranjo scale. Clinicians should be aware of the possibility that levetiracetam may be an offending agent in a patient with unexplained fever and eosinophilia. These may be early signs of the progression to a more serious drug hypersensitivity reaction, such as drug rash, eosinophilia, and systemic symptoms (DRESS) syndrome.

*Pharmacotherapy* 2015;35:e131-135.

- (一) 請以中文簡要敘述此案例報告之內容。 (4分)
- (二) 請問 levetiracetam 的臨床適應症及其他可能之臨床用途為何？其藥品動態學特性有何與常見之抗癲癇藥不同之處？ (6分)
- (三) 文中有那些描述有助於確認此案例之藥物不良反應相關性？若於臨床上遇到類似之疑似案例，還有那些資訊可協助評估此藥物不良反應之相關性？ (6分)

試題隨卷繳回