

Clinical Pharmacist Contributions to Antibiotic Stewardship



Josephine Yung
Pharmacist
Tuen Mun Hospital



Worldwide & Local Concerns on Antibiotic Resistance

CDC Home | Search | Health Topics A-Z

Campaign to Prevent Antimicrobial Resistance in Healthcare Settings

The 4 Strategies (click on each piece for description)

prevent infection | diagnose and treat infection

use antimicrobials wisely | prevent transmission

濫用抗生素,人體發現抗藥惡菌

抗藥惡菌襲公立醫院

4月6日 星期二 03:00



【東方日報專訊】抗藥性細菌肆虐公立醫院的情況愈來愈嚴近日便出現病人

學家邁克爾米
體內有能抵抗

抗藥惡菌恐擴散全港 (明報)

11月 17日 星期五 05:05AM 【明報專訊】

可致命的超級惡菌「社區性抗藥性金黃葡萄球菌 (CA-MRSA)」恐已廣佈全港，衛生署繼上月接獲最少3宗有關呈報後，本月首2周再接獲4宗分佈於元朗、葵涌、將軍澳及大嶼山的個案，2男 廣告 2女患者同屬22至40歲年輕一族，全部均是長出膿瘡需往醫院放膿，始發現身染惡菌。衛生署正積極研究將CA-MRSA列作法定傳染病，以及實施所須的具體措施。

本月再錄4宗 今年個案增1.6倍

Join | Career Center | Calendar | Directories | News Room | Update Profile | Site Map | Contact Us

Member Login

USER NAME | PASSWORD | LOGIN

GO | ADVANCED SEARCH

Education & Training | Resources | Practice Guidelines | Journals & Publications | Policy & Advocacy | Meetings | About IDSA

Home

Bad Bugs, No Drugs As Antibiotic Discovery Stagnates . . . A Public Health Crisis Brews

Download white paper (PDF, 37 pgs)
The PDF will take a few minutes to download.

Read the Executive Summary
Learn about IDSA's concerns about the lack of new antibiotics to fight drug-resistant infections and proposed novel measures to avert this looming crisis.

Advocacy Alert

Critical legislation was introduced in the Senate, on April 28, 2005, to address the "Bad Bugs, No Drugs" problem. IDSA strongly endorses this bill. (Learn more about the bill and IDSA's support for it.) We ask everyone to send letters or e-mails urging Congress to act. The helpful talking points available at the link below makes it easy, and it only takes three minutes.

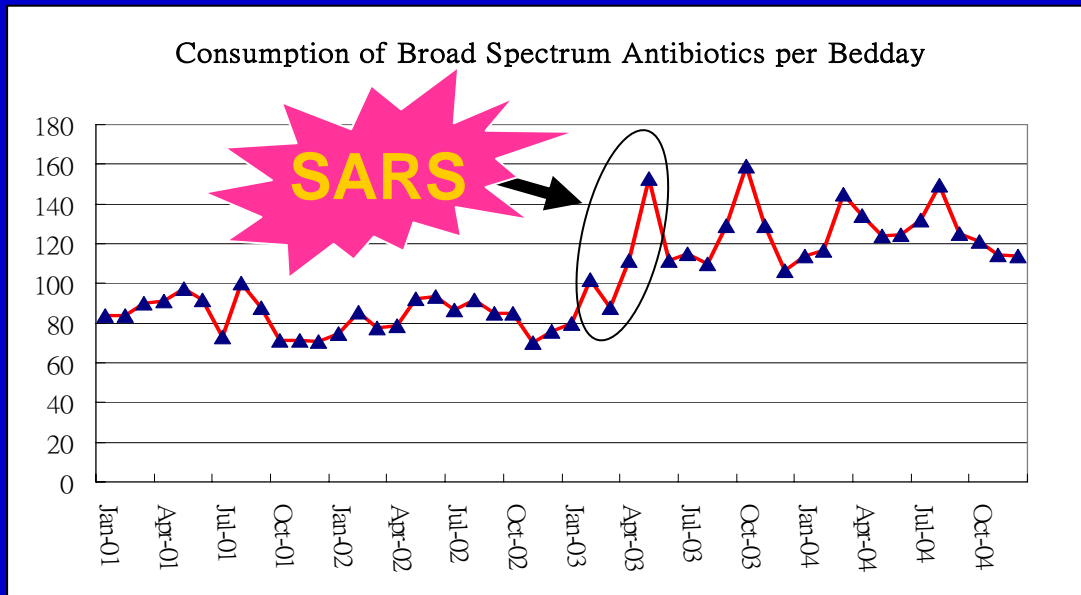
Alert: Urge the Senate to Pass the "Project Bioshield II Act"

IDSA Contacts:
Media and the Public: Diana Olson (703) 299-0201
Federal Policymakers: Robert J. Guidos, JD (703) 299-0200



Situation in my Hospital

- Substantial Increase of Consumption of Broad Spectrum Antibiotics (especially at SARS and Post-SARS period)



Role of Antibiotic Pharmacist

The role of the pharmacist on the proper use of antibiotic against methicillin-resistant *Staphylococcus aureus*

Journal Title;Journal of the Nissei Hospital

Author;HAMAGUCHI YOSHIHIKO(Nisseibyoin Yakuzaiibu) NOMURA HIROHIDE(Nisseibyoin Yakuzaiibu) SHICHIJO HATSUMI(Nisseibyoin Yakuzaiibu)

Journal of Antimicrobial Chemotherapy (2004) 54, 295-298

DOI: 10.1093/jac/dkh327

Advance Access publication 16 June 2004

JAC

The expanding role of the antibiotic pharmacist

Chemotherapy (2007) 60, Suppl. 1, i73-i76

Antibiotic pharmacists in the ascendancy

Kieran Hand*

Department, Southampton University Hospitals NHS Trust, Southampton General Hospital, Tremona Road, Southampton SO16 6YD, UK

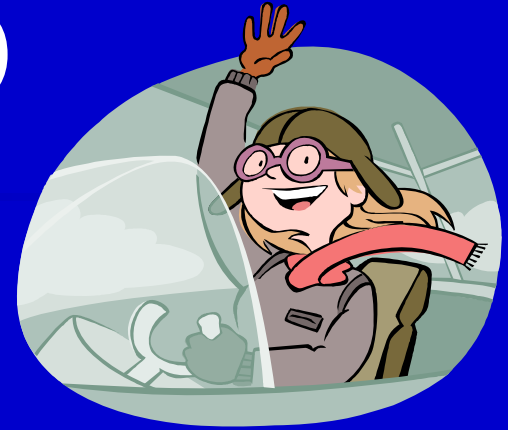
Antibiotic pharmacists have become an established feature of the antibiotic stewardship programme throughout the UK over the last decade. This review examines the origins of the antibiotic pharmacist and how the role has developed in recent years. Antibiotic pharmacists in modern National Health Service hospitals as key members of the inter-professional team have all responsibility for initiatives to promote rational antibiotic prescribing. The role of antibiotic pharmacists on clinical, microbiological and financial outcomes. Examples of innovative practice. Finally, a vision for the future of the antibiotic pharmacist.

Antibiotic Utilization Optimization Programme

- Started at December, 2004
- Together with Department of Clinical Pathology
- Introduced Antibiotic Order Form (serves as Educational Tool)
- Role of Pharmacist
 - Antibiotic order form design
 - Programme coordination



Pilot Study (Antibiotic Stewardship)



- April, 2005
- Worked with Clin. Path, M&G, ICN
- Assess the outcome of antibiotic stewardship programme
 - intervention wards vs control wards

Working Logistics of Pilot Study

ID Specialist

+

Pharmacist

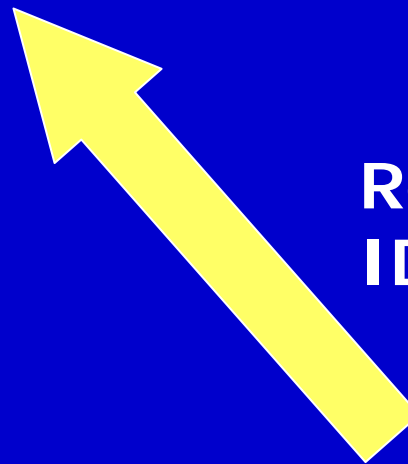
Pharmacist

Together



Initial
Case Assessment
& Intervention

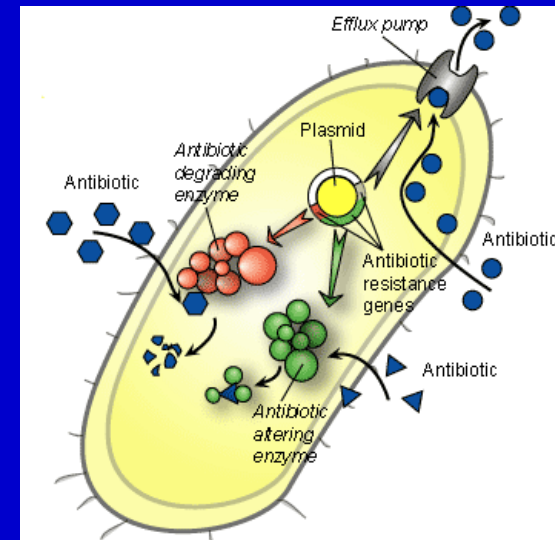
**Refer back to
ID Specialist**



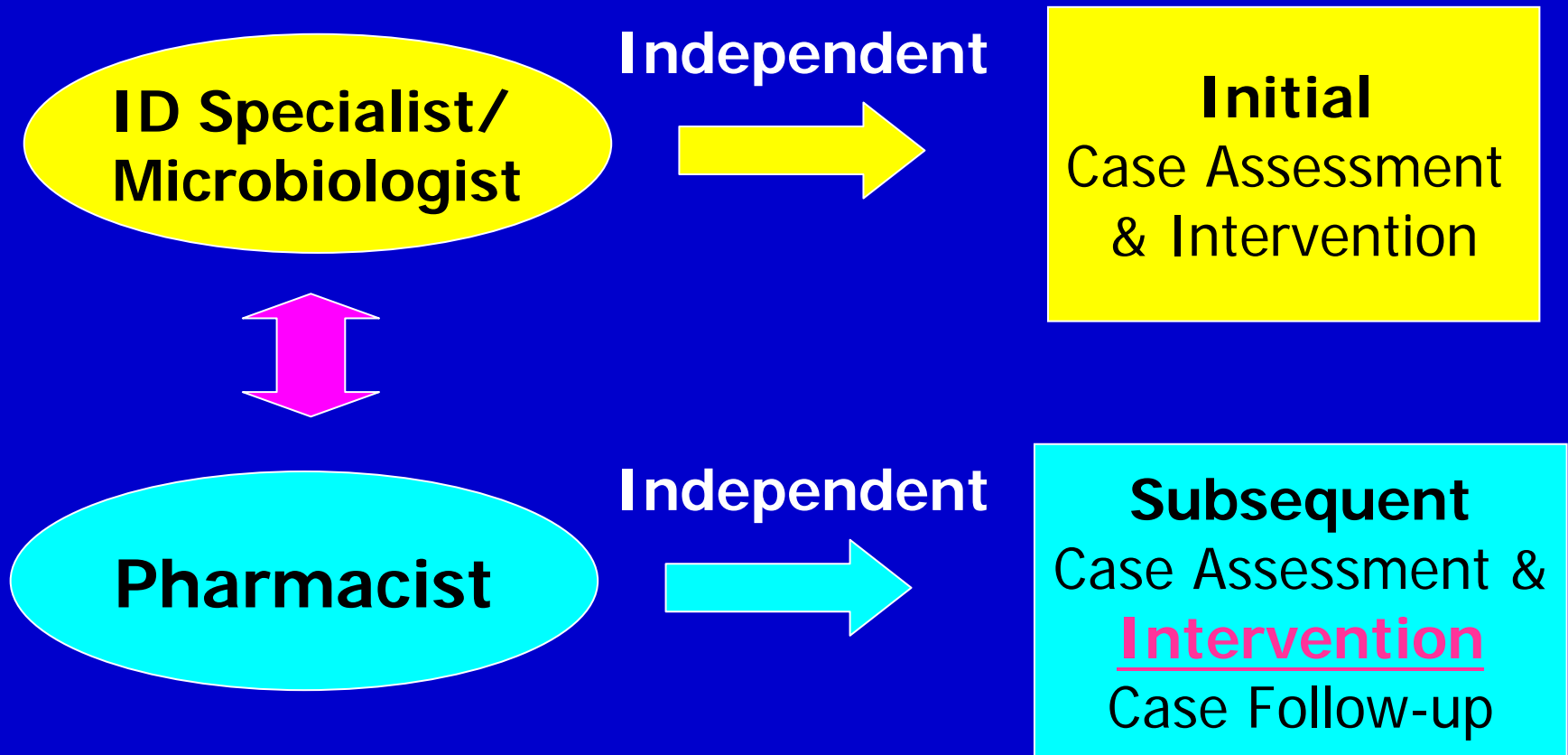
Subsequent
Case Assessment
& Follow-up

Full Implementation of Antibiotic Stewardship Programme (ASP)

- November, 2005
- In line with HAHO Directives
- Role of Pharmacist:
 - Programme Coordination
 - Case Assessment & Intervention
 - Guideline Formulation
 - Antibiotic Utilization education bulletins
 - Monitoring of antibiotic consumption

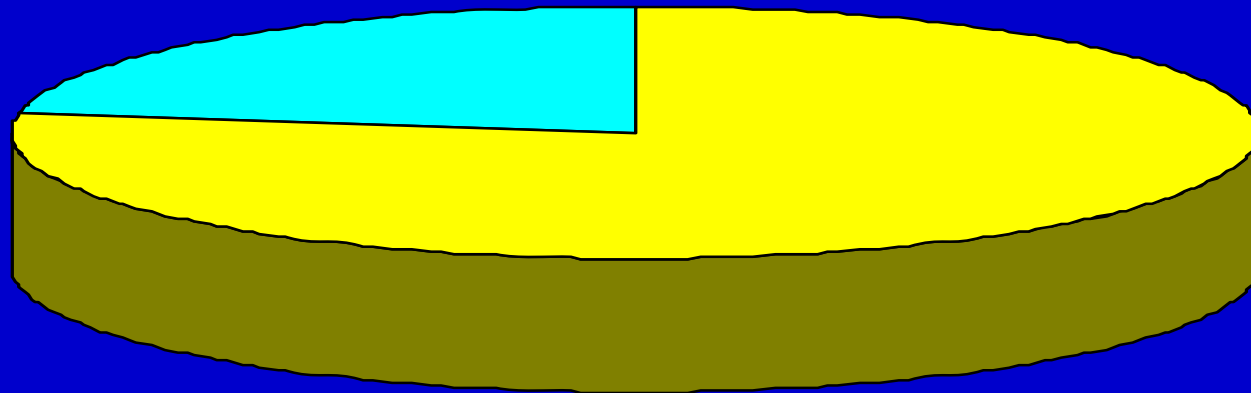


Working Logistics of ASP



Clinical Interventions

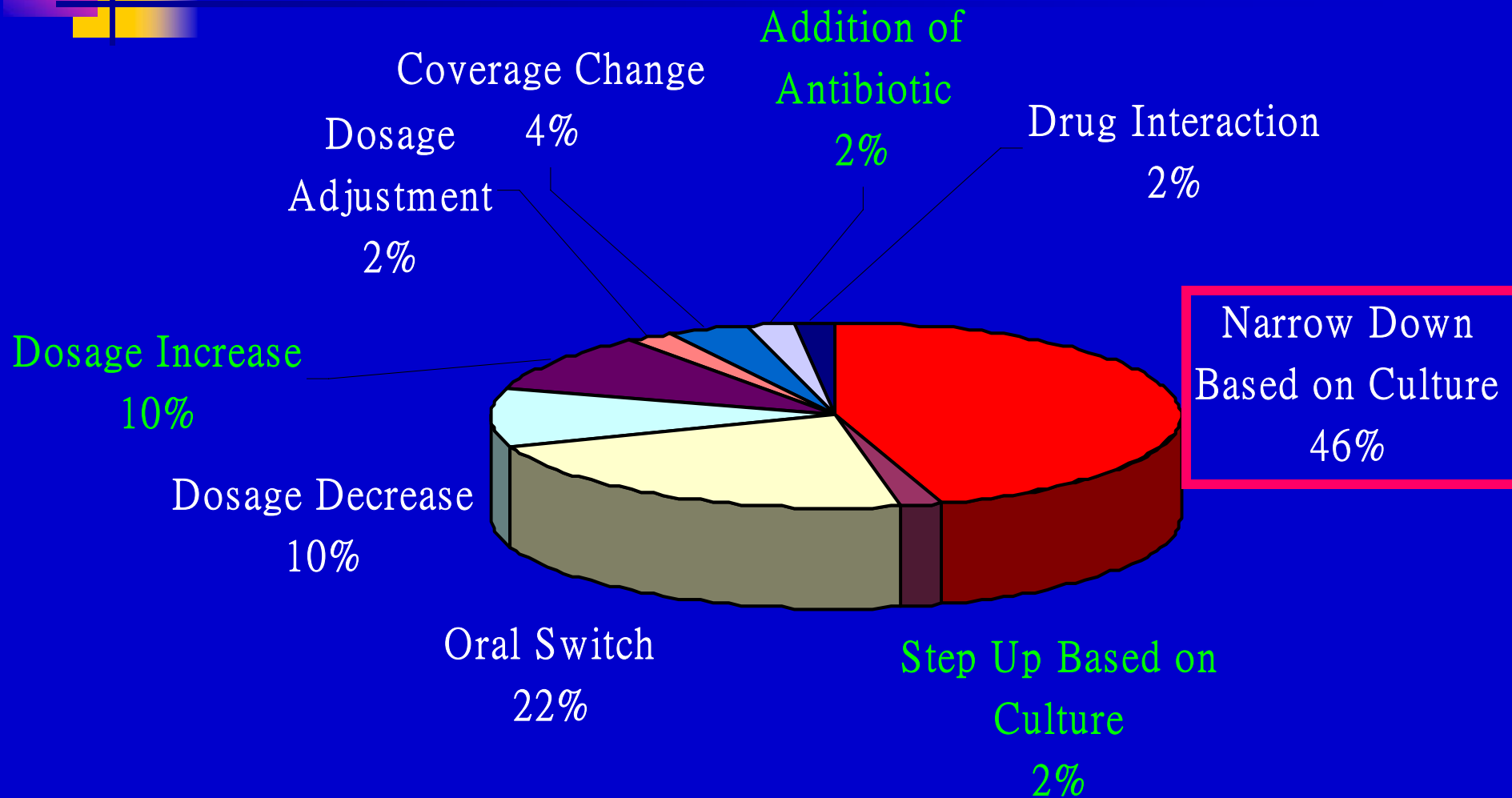
49, 22%



170, 78%

- Microbiologist / ID Specialist's Interventions
- Pharmacist's Interventions

Categories of Pharmacist's Interventions



Outcomes of Pharmacist's Interventions

- Acceptance Rate to Intervention
= 43/49 (88%)
- Recommendations resulted in either in antibiotic cost increase or decrease.
- Overall Savings
= ~HK\$45,000
= >HK\$1,000 per accepted case.



Infectious Diseases/ Antibiotic Guidelines



NTWC Antibiotic Prophylaxis for Surgery Guidelines

For Department of Neurosurgery, Obstetrics & Gynaecology, Orthopaedics, Urology, ENT, Plastic Surgery, Paediatrics, and General Surgery

Single dose of IV antibiotic is sufficient in the great majority of cases. If postoperative prophylactic antibiotic deemed necessary, duration should not exceed 24 hours

Launched

Recommended Drugs	Dilution	Administration	Intraoperative
NTWC Guidelines for the Empirical Treatment of Common Infections			
(Indications)	Respiratory Tract Infection		
Cefazolin 1-2g	CAP¹ – Non-hospitalized	<i>S. pneumoniae</i> , <i>H. influenzae</i> , <i>M. pneumoniae</i> , <i>C. pneumoniae</i> , <i>C. psittaci</i> (influenza A, <i>M. tuberculosis</i>)	[PO Amoxicillin-clavulanate (Augmentin) 1g q12h or Unasyn ± macrolide ²] or [PO Amoxicillin 500mg – 1g q8h + a newer macrolide (e.g. Clarithromycin, Azithromycin) ²] {Duration : ≥ 5d}
Augmentin 1.2g	CAP^{1,3} – Hospitalized (General Ward) (Indications: Abdo)	<i>S. pneumoniae</i> , <i>H. influenzae</i> , <i>M. pneumoniae</i> , <i>C. pneumoniae</i> , <i>C. psittaci</i> (influenza A, <i>M. tuberculosis</i>)	[IV Amoxicillin-clavulanate (Augmentin) 1.2g q8h or PO Amoxicillin-clavulanate (Augmentin) 1g q12h] ± macrolide ^{2,4} {Duration : ≥ 5d or afebrile x 2-3d and no more than 1 CAP-associated sign of clinical instability ⁵ and initial therapy active against identified pathogens}
Cefazolin 1-2g			[Ceftriaxone 2g daily (1g daily if >65 y.o.) or Cefotaxime 1g q8h] ± macrolide ^{2,4} {Duration : ≥ 5d or afebrile x 2-3d and no more than 1 CAP-associated sign of clinical instability ⁵ and initial therapy active against identified pathogens}
Cefazolin 1-2g	CAP¹ – ICU for serious pneumonia	As above + <i>Enterobacteriaceae</i>	[Ceftriaxone 2g daily (1g daily if >65 y.o.) or Cefotaxime 1g q8h or Piperacillin-tazobactam (Tazocin) 4.5g q8h] plus macrolide ⁴
	Hospital-acquired Pneumonia – Late onset⁶	MRSA, <i>P. aeruginosa</i> , <i>Acinetobacter</i> , <i>Klebsiella</i> spp., <i>Enterobacter</i> spp.	Piperacillin-tazobactam (Tazocin) 4.5g q6-8h or Timentin ± aminoglycoside {Duration : 7-8d if uncomplicated ⁷ }
	COAD Exacerbation⁸	Respiratory viruses, <i>S. pneumoniae</i> , <i>H. influenzae</i> ,	IV Amoxicillin-clavulanate (Augmentin) 1.2g q8h or PO Amoxicillin-clavulanate (Augmentin) 1g q12h or Unasyn
			Ceftriaxone 1-2g daily or Cefotaxime 1g q8-12h or [PO/IV Levofloxacin 500mg daily or Moxifloxacin 400mg daily (for multiresistant

Developing

“Proper Antibiotic Use” Education Bulletins

- Treatment recommendations update of levofloxacin
- Pharmacological therapy for CAPD-related peritonitis
- Surgical antibiotic prophylaxis
- Sequential antibiotic therapy
- Biliary tract infection
- Cellulitis
- More coming.....



Infectious Diseases Round

- **Role:**

- **Comment on antibiotic choice, dosage, etc.....**

- **Infectious diseases round**

- **Medicine & Geriatrics ID round**
- **Intensive Care Unit ID round**
- **Haematology ID round**



Role of Antibiotic Pharmacist

- Programme coordination
- Case assessment and intervention
- Guideline formulation/ promulgation
- Education
- Antibiotic formulary management
- Antibiotic drug information
- Antibiotic usage monitoring

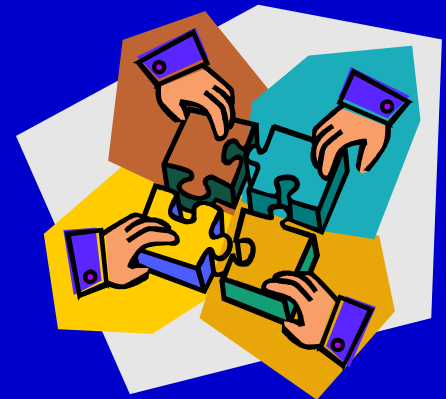


Conclusion & Way Forward



FOUR Elements of Innovative Service Model

- Address to the genuine concerns of our patient / public
 - Antibiotic resistance problem
- Benchmarking
 - Learn from overseas antibiotic pharmacist role model
- Teamwork
- Management Support



Pharmacist Contributions



- **Optimization of antibiotic therapy**
- **Interventions result in**
 - **savings in monetary terms**
 - **improve the quality of patient care**

The Road Ahead

- Outpatient parenteral antibiotic therapy
- Antibiotic therapeutic drug monitoring
- More.....





Thank You

Acknowledgements:

Dr. T L Que

Ms Pauline Chu

Dr. K M Chan

Dr. H L Ng

Infection Control Nurses

Microbiology Lab Colleagues

Fellow Pharmacist colleagues

Pharmacist Interns

Pharmacy Supporting Staff

Case Assessment Workload Statistics in 2007

- Time spent on case assessments
 - 106 Hours
- Laboratory result assessment
(based on CMS record)
 - 3541 case episodes
- Bedside assessment
 - 258 case episodes



Pharmacist Role in Case Assessment

Independent Assessment

- Recommend targeted antibiotic therapy (based on culture & susceptibility result)
- Recommend IV to PO switching, where appropriate
- Ensure proper antibiotic dosing (e.g. based on patient renal function)
- Ensure optimal antibiotic delivery (e.g. sort out drug interaction problem)
- Patient follow up after intervention