

***RENAL DOSAGE ADJUSTMENT FOR PATIENTS ON
ANTIMICROBIALS WITH AN AUTOMATED
PROGRAMME: A PILOT STUDY***

Errol WONG

Department of Pharmacy, Caritas Medical Centre

BACKGROUND AND OBJECTIVES

- ✗ Unadjusted antimicrobial doses increase risk of toxicity in patients with compromised kidney function
- ✗ With the heavy workload.....
 - + Renal dose screening for EVERY patients is not practicable
 - + Antimicrobial doses are often inappropriately adjusted
- ✗ Possible solution?
 - + Computerized ***clinical decision support system (CDSS)*** to facilitate routine pharmacists' screening
 - ✗ Renal function estimation
 - ✗ Dose checking
 - ✗ Alternative dosing recommendation

STUDY DESIGNS AND DAILY LOGISTICS

- ✗ 16-weeks prospective, interventional study
- ✗ *ALL* in-patients from the Department of Medicine and Geriatrics in Caritas Medical Centre prescribed with the selected antimicrobials
- ✗ Combining clinical data in the automated programme:
 - + Serum creatinine: GFR and CrCl estimations
 - + Patients active medication profile
- ✗ Inappropriate orders will be highlighted ***within minutes!***

THE AUTOMATED PROGRAMME

Antimicrobial	Route	Multiple Line	Dosage	Unit	Frequency	Recommendation
Augmentin	PO		1	TABLET(S)	TDS	250-500mg Amoxicillin BD
Augmentin	INJ		600	MG	Q8H	600mg Q12H
Sulperazon	INJ		1	G	Q12H	
Augmentin	INJ		1.2	G	Q12H	600mg Q12H
Augmentin	INJ		600	MG	Q8H	600mg Q12H
Meropenem	INJ		500	MG	Q12H	250-1000mg Q24H
Augmentin	PO		1	TABLET(S)	TDS	250-500mg Amoxicillin daily
Augmentin	PO		1	TABLET(S)	TDS	
Augmentin	INJ		1.2	G	Q8H	600mg Q12H
Amoxicillin	PO		20	ML	BD	750-1000mg Amoxicillin BD
Nitrofurantoin	PO		1	TABLET(S)	QID	consider clinical alternative
Vancomycin	INJ		500	MG	Q12H	
Augmentin	INJ		1.2	G	Q8H	600mg Q12H
Ceftazidime	INJ					
Gentamicin	INJ					
Vancomycin	INJ					
Augmentin	PO					
Ceftazidime	INJ					

Automated recommendations provided for inappropriate regimen

Augmentin	INJ	1.2	G	Q8H
Augmentin	PO	1	TABLET(S)	TDS
Augmentin	PO	10	ML	TDS
Vancomycin	INJ	500	MG	Q24H
Amoxicillin	PO	20	ML	BD
Nitrofurantoin	PO	1	TABLET(S)	QID

Coloured cells imply potentially inappropriate dosages

- Red colour → dose/frequency too high
- Yellow colour → dose/frequency too low
- Black colour → drug contraindicated with the estimated GFR/CrCl

RESULTS AND CONCLUSION

- ✖ Total 5715 new orders reviewed
- ✖ Total intervention: 401
- ✖ Outcome Measurement:
 - + Primary: Physician acceptance: **79.52%**
 - + Secondary: Incidence of inappropriate orders reduced from 13.85% to 7.61% ($p < 0.001$)
- ✖ Computerized clinical decision support system can effectively and efficiently facilitate routine screening of renal dosage and provision of alternative dosing recommendations by pharmacist