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Extended Use

With a few notable exceptions, antimicrobial therapy should be intended to treat an acute illness that should be resolved within a finite, limited time period[1]. While re-infection and subsequent re-treatment may be expected to a certain extent, there are very few indications for true sustained use of antibiotics in the nursing home population. For the purposes of this discussion, this document will focus on antibiotics used for **prophylaxis and suppression** of urinary tract infections in the elderly.

Features of UTI in Nursing Homes

Based on the definition of a complicated UTI to be a UTI occurring in a patient with "a structural or functional abnormality of the genitourinary tract," then it could be said that *most* UTIs in the nursing home are complicated (infections in males are always considered complicated)[3].

Antibiotics for Prophylaxis

Prophylactic use of antimicrobials should be considered a last line option in most circumstances. Though there is evidence for prophylactic use of antibiotics in UTI in uncomplicated infections in adult females, there is currently no evidence to support this practice in geriatrics. A 2008 Cochrane review identified possible antibiotic options like nitrofurantoin, cotrimoxazole, cephalexin and quinolones as potential long-term treatments that are statistically shown to decrease incidence of UTIs. However, it should be noted that the subjects in these studies had very liberal inclusion criteria (e.g. non-pregnant females 14 years and older), but excluded subjects with renal failure. Furthermore, eradication of offending organisms is not possible; even in healthy individuals, upon cessation of the 6-12 month trial period, infections in the antibiotic prophylaxis groups returned to baseline[2].

It is suggested that prophylactic use in the geriatric population will likely be unsuccessful due to re-infection with resistant organisms[3]. Whether the resistant organisms were already present at admission, or they are selected for due to frequent infections and treatments, one of the primary concerns about prophylaxis in the LTC population is the emergence of organisms resistant to all available treatments. In Calgary specifically, there is a noticeable difference in susceptibility to common UTI-causing pathogens as reported by Calgary Lab Services (CLS).

	Ampicillin/ Amoxicillin		Cloxacillin		Amoxicillin/ Clavulanate		Pip/Tazo		Cephalexin (urine)		Cefazolin		Ceftriaxone		Ceftazidime		Clindamycin		Erythromycin		SXT		Norfloxacin (urine)		Ciprofloxacin		Nitrofurantoin (urine)		Fosfomycin (Urine)		Vancomycin		Gentamicin		Tobramycin		Tetracycline	
	Community	Nursing Home	Community	Nursing Home	Community	Nursing Home	Community	Nursing Home	Community	Nursing Home	Community	Nursing Home	Community	Nursing Home	Community	Nursing Home	Community	Nursing Home	Community	Nursing Home	Community	Nursing Home	Community	Nursing Home	Community	Nursing Home	Community	Nursing Home	Community	Nursing Home	Community	Nursing Home	Community	Nursing Home	Community	Nursing Home	Community	Nursing Home	Community	Nursing Home
Enterococcus faecalis	100	100																							87	70	99	99			100	100						
Staphylococcus aureus (ALL)			85	77							85						84	83	74	74	94	97			68						100	100					96	99
•MSSA			100	100							100						86	90	81	85	95	98									100	100					96	98
•MRSA			0	0							0						74	60	32	32	88	97									100	100					93	98
Escherichia Coli (ALL)	60	50			86	77	97	95	92	80			93	83							78	69	86	57	86	57	98	95					92	85				
•ESBL							94	90													41	39	29	2	29	2	93	88	97	95			66	56				
Klebsiella oxytoca					95	92	96	95	92	85			95	92							96	95	98	98	98	98	91	90					98	92				
Klebsiella pneumoniae					96	99	96	99	98	98			98	98							94	93	98	97	98	96	43	48					98	100				
Proteus mirabilis	76	65			98	99			97	97			98	100							85	72	97	85	97	83							94	95				
Pseudomonas aeruginosa							96	99							97	99									89	95							94	93	97	99		

All susceptibilities via antibiograms from Calgary Lab Services (http://www.calgarylabservices.com/education-research/publications/microbiology-Antibiograms.aspx)

*These organisms usually produce inducible B-lactamase which cause failure of 3rd generation B-lactam therapy, despite in vitro susceptibility indicated for treatment purposes.

Note: Please refer to the Calgary Lab Services website for the complete LTC antibiogram and others

As indicated by CLS data, there is significant variation in susceptibility amongst the same organisms in a nursing home setting. There is concern that overuse of currently effective antimicrobials may lead to the evolution of resistant mechanisms[7].

Suppression

Antimicrobial “suppression” is a rare circumstance where an underlying infection is recognized but cannot be eradicated. In these cases, treatment should be limited to cases where

symptomatic infection can be controlled only by sustained antibiotic therapy. Possible examples of this may include clients with ureteric stents, struvite stones, renal transplants, and in some cases, renal failure[3]. The dose and duration for this indication has not been proven by evidence and should be decided upon by the appropriate specialists (e.g. urology, infectious disease, nephrology, etc.) on an individualized basis.

References

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