

Compliance of physicians to guideline for the treatment of pediatric urinary tract infection in Taiwan

Hsiu-Chen Lin¹, Hsun Hui Hsu², Heng Ching Lin³

Department of Pediatrics, Taipei Medical University Hospital^{1,2}, Taiwan

Department of Health Care Administration, Taipei Medical University Hospital³, Taiwan

Objectives

Urinary tract infection (UTI) is a common cause of fever in children. This study aims to explore the relationship between physician characteristics, medical care settings and prescribing behavior for children with urinary tract infections. We evaluate the adherence rate of physicians by the recommended guideline of IDST.

Methods

This study used 1,000,000 persons' data from the Taiwan National Health Insurance Research Database. Our study sample consisted of first-time ambulatory care visits for treatment of UTIs among children between 2004 and 2006 ($n = 5,764$). We exclude the patients with other infectious diseases or urogenital anomaly. We examined the prescribing practices for the treatment of uncomplicated UTI and determined whether these practices were influenced by the recommendation in the Infectious Diseases Society of Taiwan (IDST). Data were analyzed by year, treatment in private offices or different medical care setting levels, gender, age and the speciality of the prescribing health care provider. Multivariate logistic regression analysis using generalized estimated equations was performed to assess the adjusted odds ratio of above factors.

Results

According to the guideline of IDST, 20.3% of the sampled children were prescribed the non-recommended antimicrobials at their first visit for treatment of UTIs. The elder children (12-18 years age) received the higher rate of non-recommended antimicrobials (adjusted OR= 5.61, 95%, CI:1.32-2.13). The adjusted odds of prescribing adherence to guideline for physicians age >55 years were 1.44 ($p < 0.05$) times that of doctors aged <35 years, there was also significant trend analysis. Non-compliance was observed to be highest in children treated by internal medicine (adjusted OR=1.40), followed by other specialities (adjusted OR=1.70, $p < 0.05$), with pediatrics as the referent speciality. Cephalosporins and aminopenicillins were the most commonly prescribed drugs. Nevertheless, 21% of non-adherent drugs were ciprofloxacin made an astonished observation.

Table 1. Generalized estimated equations for relationship between physician characteristics and taking inappropriateness of antibiotics prescription for patients with urinary tract infections in Taiwan in 2004~2006 ($n=5,764$)

Variable	Crude odds		Adjusted odds	
	OR, 95% CI	p value	OR, 95% CI	p value
Patients characteristics				
Patients gender				
Male(reference group)	1.00		1.00	
Female	1.33 (1.19~1.48)	<0.001	1.02 (0.88~1.19)	0.769
Patients age (years)				
Trend p value<0.0001				
<1 (reference group)	1.00		1.00	
1~6	1.35 (0.99~1.84)	0.058	1.22 (0.70~2.13)	0.486
6~12	2.09 (1.48~2.97)	<0.001	1.82 (1.00~3.32)	0.049
12~18	3.74 (2.66~5.27)	<0.001	2.84 (1.57~5.15)	0.001
Physician characteristics				
Physician gender				
Male(reference group)	1.00		1.00	
Female	0.73 (0.61~0.88)	0.001	0.90 (0.69~1.17)	0.426
Physician age (years)				
Trend p value<0.0001				
<35 (reference group)	1.00		1.00	
35~45	1.34 (1.06~1.70)	0.013	1.17 (0.87~1.57)	0.297
45~55	2.08 (1.62~2.67)	<0.001	1.60 (1.18~2.17)	0.003
>55	2.82 (2.11~3.76)	<0.001	2.05 (1.45~2.90)	<0.001
Physician specialty				
Pediatrics (reference group)				
General	1.69 (1.15~2.47)	0.007	1.26 (0.78~2.05)	0.348
Urology	2.39 (1.69~3.38)	<0.001	3.11 (1.93~4.99)	<0.001
Emergency	2.69 (1.99~3.63)	<0.001	1.49 (1.04~2.12)	0.029
Family medicine	2.67 (2.01~3.56)	<0.001	1.69 (1.19~2.40)	0.003
Internal medicine	3.20 (1.95~5.23)	<0.001	2.08 (1.19~3.63)	0.010
Surgery	5.20 (3.97~6.83)	<0.001	2.60 (1.84~3.68)	<0.001
Other	3.59 (2.73~4.71)	<0.001	1.97 (1.52~2.74)	<0.001
Unknown	1.89 (1.28~2.74)	0.001	1.00 (0.64~1.59)	0.945

Variable	Crude odds		Adjusted odds	
	OR, 95% CI	p value	OR, 95% CI	p value
Hospital characteristics				
Hospital accreditation level				
Medical center(reference group)	1.00		1.00	
Regional hospital	0.75 (0.45~1.23)	0.250	0.75 (0.40~1.38)	0.351
District hospital	1.67 (1.03~2.71)	0.037	0.99 (0.48~2.06)	0.978
Clinic	2.83 (1.83~4.36)	<0.001	1.52 (0.70~3.30)	0.296
Status of hospital teaching				
Yes(reference group)	1.00		1.00	
No	2.91 (2.30~3.69)	<0.001	1.26 (0.73~2.17)	0.416

Conclusion

Physician speciality, age and different hospital levels were found to be significantly associated with rate of adherence to guideline. Continuing medical education and intervention should be conducted for different speciality physicians and clinics with undesirable performance in prescribing antimicrobials. It is very important view in reducing the antimicrobial resistance of pathogens.