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

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Abstract

- Urinary tract infection (UTI) is a common cause of fever encountered in pediatric outpatients visiting.
- We evaluate the adherence rate of physicians by the recommended guideline of IDST.
- Data bank from NHIRD was analyzed by year, treatment in private offices or different medical care setting levels, gender, age and the speciality of the prescribing health care provider.

Introduction

- UTI without adequate antimicrobial treatment may progress to ureter stricture or hydronephrosis in children.
- The antimicrobial resistance of *Escherichia coli* and other uropathogens causing uncomplicated UTI in children has been increasing significantly
- This study aims to explore the relationship between physician characteristics, medical care settings and prescribing behavior for children with urinary tract infections.

Materials & Methods

- This study used 1,000,000 persons' data from the Taiwan National Health Insurance Research Database.
- Study sample consisted of first-time ambulatory care visits for treatment of UTIs among children between 2004 and 2006 (n = 5,764).
- 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).
- Multivariate logistic regression analysis using generalized estimated equations was performed.

Results-1

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)	<.0001	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)	<.0001	1.82 (1.00~3.32)	0.049
12~18	3.74 (2.66~5.27)	<.0001	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)	<.0001	1.60 (1.18~2.17)	0.003
>55	2.82 (2.11~3.76)	<.0001	2.05 (1.45~2.90)	<.0001

Results-2

Table 1. (continued) 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
Physician specialty				
Pediatrics (reference group)	1.00		1.00	
General	1.69 (1.15~2.47)	0.007	1.26 (0.78~2.05)	0.348
Urology	2.39 (1.69~3.38)	<.0001	3.11 (1.93~4.99)	<.0001
Emergency	2.69 (1.99~3.63)	<.0001	1.49 (1.04~2.12)	0.029
Family medicine	2.67 (2.01~3.56)	<.0001	1.69 (1.19~2.40)	0.003
Internal medicine	3.20 (1.95~5.23)	<.0001	2.08 (1.19~3.63)	0.010
Surgery	5.20 (3.97~6.83)	<.0001	2.60 (1.84~3.68)	<.0001
Other	3.59 (2.73~4.71)	<.0001	1.97 (1.52~2.74)	<.0001
Unknown	1.89 (1.28~2.74)	0.001	1.00 (0.64~1.59)	0.945
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)	<.0001	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)	<.0001	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.