Physicians' Knowledge, Attitude, and Practice regarding Prolonged Antimicrobial Use

Contact Information
Hong Bin Kim, MD
Seoul National University Bundang Hospital
82 Gumi-ro,173 Beon-gil,Bundang-gu,Seongnam-si,Gyeonggi-do 13620, Rep. of Korea
Tel: 82-31-787-2034
E-mail: hbkimmd@snu.ac.kr

Da Young Kim[a], Dahye Kim[b], Eunjeong Heo[b], Hyung-sook Kim[b], Jun-Won Seo [a],Ji Young Park[c], Hyunju Lee[c], Jongtak Jung[a], Song Mi Moon[a], Kyoung-Ho Song[a], Eu Suk Kim[a], and Hong Bin Kim[a]

Division of Infectious Diseases, Department of Internal Medicine[a], Department of Pharmacy[b], Department of Pediatrics[c] , Seoul National University Bundang Hospital (SNUBH)

INTRODUCTION

- To reduce unnecessary long-term antibiotic therapies, pharmacist-led intervention followed by the involvement of infectious diseases (ID) specialist was implemented

- In addition, a survey for the prescribers was conducted to find the gaps for improvement

METHODS

- Between August 1, 2018 and February 28, 2019, which was focused on those to whom antibiotics had been administered for over 15 days

- Treatment duration according to the indications was compared between pre-intervention period (Aug to Sep 2017) and post-intervention period

- The following patients were excluded: patients having hematologic diseases, patients in the neonatal intensive care units, and patients who were recommended to maintain antibiotics by ID specialist

- A questionnaire based on clinical vignettes was distributed

CONCLUSIONS

- The duration of long-term antibiotic treatment was shortened by active participation of pharmacist as well as ID specialists

- The treatment durations decreased from 21.0 (27.3–18.0) days pre-intervention to 16.0 (20.0–15.0) days post-intervention (*p*=0.000).

- However, gaps between the knowledge and practice on the duration of antibiotic treatment were also found

- Therefore, it is necessary to implement appropriate feedback and education based on clinical scenario in order to improve the physicians' antibiotic prescription

RESULTS

1. Patient characteristics and indications for antibiotic administration

| Patient characteristics	Before intervention (N=146)	After intervention (N=500)	*p*-value
Median age, years (IQR)	70.5 (57.5-78.0)	69.0 (57.0-78.0)	0.963
Male, N (%)	91 (66.9)	308 (64.0)	0.414
Indications, N (%)			
Respiratory tract infection	64 (43.8)	215 (43.0)	0.858
Skin soft tissue infection	9 (6.2)	35 (7.0)	0.724
Deep tissue infection	9 (6.2)	31 (6.2)	0.987
Intra-abdominal infection	32 (21.9)	127 (25.4)	0.390
Urinary tract infection	9 (6.2)	32 (6.4)	0.918
Catheter related infection	0	11 (2.2)	0.136
Bone and joint infection	9 (21.9)	11 (2.2)	0.026
Cardiovascular infection	3 (2.1)	1 (0.2)	0.038
Endovascular infection	2 (1.4)	3 (0.6)	0.317
Central nervous system infection	6 (4.1)	12 (2.4)	0.261
Primary bacteremia	1 (0.6)	8 (1.6)	0.692
Unknown	2 (1.4)	8 (1.6)	1.000
Others	0	6 (1.2)	0.346

Abbreviations; IQR, interquartile range ; N, number

2. Frequently prescribed antibiotics before and after intervention

	Before intervention (N=146)	After intervention (N=500)	*p*-value
Total	152	594	-
Antibiotics, N (%)			
Piperacillin/tazobactam	41 (27.0)	162 (27.3)	0.323
Cefazolin	20 (13.2)	54 (9.1)	0.333
Ertapenem	16 (11.0)	17 (2.9)	0.000
Ceftriaxone	14 (9.2)	100 (16.8)	0.004
Vancomycin	12 (7.9)	14 (2.4)	0.003
Levofloxacin	11 (7.2)	51 (8.6)	0.336
Ciprofloxacin	5 (3.3)	43 (7.2)	0.036
Meropenem	5 (3.3)	12 (2.0)	0.496
Moxifloxacin	4 (2.6)	12 (2.0)	0.767
Metronidazole	4 (2.6)	34 (5.7)	0.067
Ampicillin/sulbactam	1 (0.7)	18 (3.0)	0.091
Ceftazidime	3 (2.0)	15 (2.5)	0.776
Others	16 (11.0)	62 (10.4)	0.638

Abbreviations; N, number

3. Results of survey on duration of antibiotic treatment
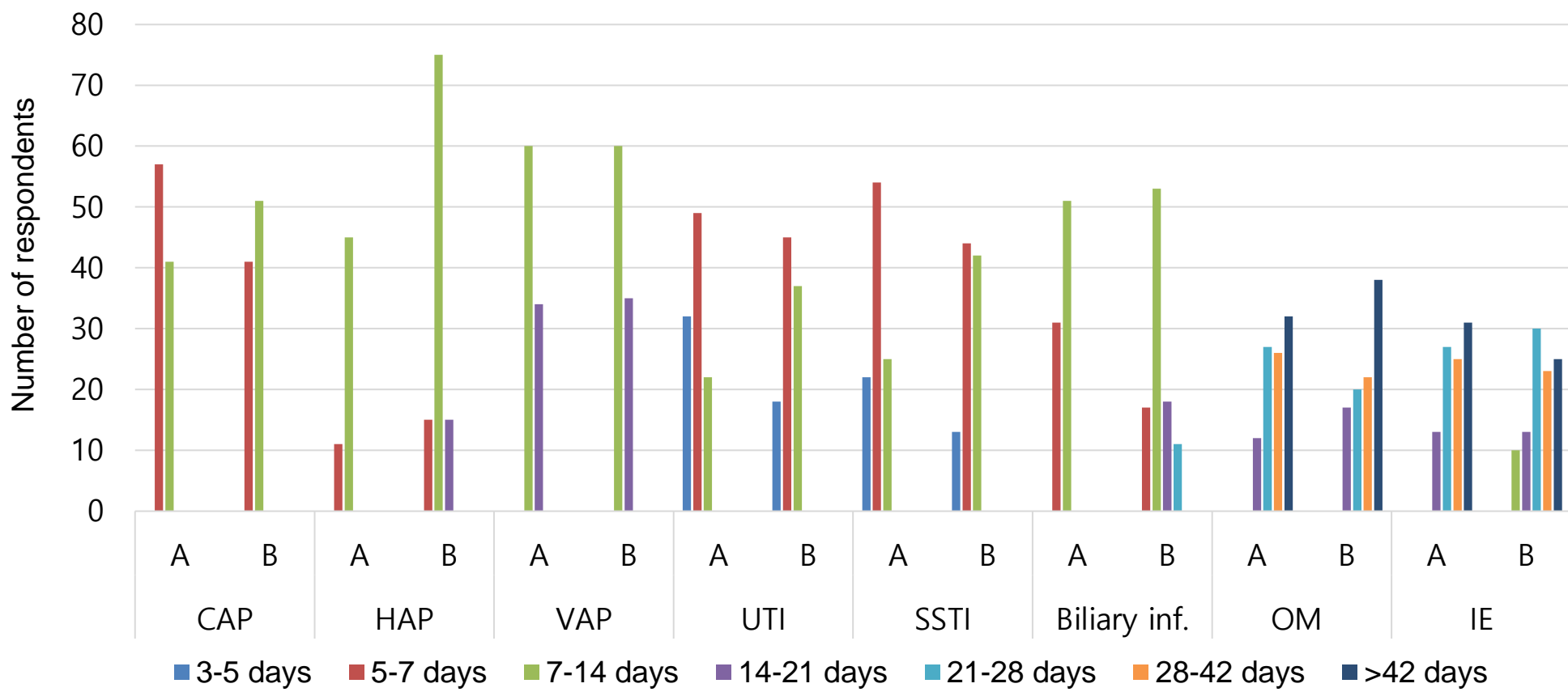
(A) Question: How many days were antibiotics actually prescribed for this disease ?
(B) Question: How many days do you think the appropriate antibiotic administration period is for this disease ?

CAP=community acquired pneumonia, HAP=hospital acquired pneumonia, VAP=ventilator associated pneumonia, SSTI=surgical site infection, Biliary inf.=biliary tract infection, OM=osteomyelitis, IE=infective endocarditis

4. The proportion of the physicians knowing the duration of antibiotic treatment

Indications	A† Total (N=107)	B‡ Total (N=107)	*p*-value
Community acquired pneumonia	53.3% (57/107)	38.3% (41/107)	0.028
Hospital acquired pneumonia	71.0% (76/107)	70.1% (75/107)	0.077
Ventilator associated pneumonia	56.1% (60/107)	56.1% (60/107)	1.0
Urinary tract infection	29.9% (32/107)	16.8% (18/107)	0.024
Skin soft tissue infection	50.5% (54/107)	41.1% (44/107)	0.170
Biliary tract infection*	54.2% (51/107)	49.5% (53/107)	0.784
Osteomyelitis	54.2% (58/107)	56.1% (60/107)	0.783
Infective endocarditis	52.3% (56/107)	44.9% (48/107)	0.274

Abbreviations; N, number

† is percentage of physicians who know the exact duration of antibiotic administration

‡ is percentage of physicians who adhered to the antibiotic administration date in the correct administration period

* Excluding liver abscess