Presentation Type:
Poster Presentation - Poster Presentation
Subject Category: Antibiotic Stewardship
Prescriptions patterns and appropriateness of usage of antibiotics in small and medium- sized hospitals in Korea
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Background: Although small- and medium-sized hospitals comprise most healthcare providers in South Korea, data on antibiotic usage is limited in these facilities. We evaluated the pattern of antibiotic usage and its appropriateness in hospitals with <400 beds in South Korea. **Methods:** A multicenter retrospective study was conducted in 10 hospitals (6 long-term care hospitals, 3 acute-care hospitals, and 1 orthopedic hospital), with <400 beds in South Korea. We analyzed patterns of antibiotic prescription and their appropriateness in the participating hospitals. Data on the monthly antibiotic prescriptions and patient days for hospitalized patients were collected using electronic databases from each hospital. To avoid the effect of the COVID-19 pandemic, data were collected from January to December 2019. For the evaluation of the appropriateness of the prescription, 25 patients under antibiotic therapy were randomly selected at each hospital over 2 separate periods. Due to the heterogeneity of their characteristics, the orthopedics hospital was excluded from the analysis. The collected data were reviewed, and the appropriateness of antibiotic prescriptions was evaluated by 5 specialists in infectious diseases (adult and pediatric). Data from 2 hospitals were assigned to each specialist. The appropriateness of antibiotic prescriptions was evaluated from 3 aspects: route of administration, dose, and class. If the 3 aspects were 'optimal,' the prescription was considered 'optimal.' If only the route was 'optimal,' and the dose and/or class was 'suboptimal,' but not 'inappropriate,' it was considered 'suboptimal.' If even 1 aspect was 'inappropriate,' it was classified as 'inappropriate.' **Results:** The most commonly prescribed antibiotics in long-term care hospitals was fluoroquinolone, followed by β-lactam/β-lactamase inhibitor (antipseudomonal). In acute-care hospitals, these were third-generation cephalosporin, followed by first-generation cephalosporin and second-generation cephalosporin. The major antibiotics that were prescribed in the orthopedics hospital was first-generation cephalosporin. Only 2.3% of the antibiotics were administered inappropriately. In comparison, 15.3% of patients were prescribed an inappropriate dose. The proportion of inappropriate antibiotic prescriptions was 30.6% of the total antibiotic prescriptions. **Conclusions:** The antibiotic usage patterns vary between small- and medium-sized hospitals in South Korea. The proportion of inappropriate prescriptions exceeded 30% of the total antibiotic prescriptions.
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Table 1. Baseline characteristics for patients in the study for evaluation of appropriateness of antibiotic use

	All hospitals (N=422)	Long-term care hospitals (N=272)	Acute care hospitals (N=150)	*P*-value
Age, median (IQR)	79.0 (67.0-85.0)	80.0 (72.0-86.0)	73.0 (61.0-82.0)	<0.001
Female sex (%)	216 (51.2)	138 (50.7)	78 (52.0)	0.804
Ward type (%)				
General ward	378 (89.6)	260 (95.6)	118 (78.7)	<0.001
Intensive care unit	44 (10.4)	12 (4.4)	32 (21.3)	-
Classification of department (%)				
Internal Medicine	165/419 (39.4)	68/270 (25.2)	97/149 (65.1)	<0.001
Medical department (Excluding Internal Medicine)	167/419 (39.9)	162/270 (60.0)	5/149 (3.4)	-
Surgical department	87/419 (20.8)	40/270 (14.8)	47/149 (31.5)	-
Data about renal function at EMR (%)				
Existence of result of CrCl	122 (28.9)	72 (26.5)	50 (33.3)	0.137
Existence of result of eGFR	190 (45.0)	76 (27.9)	114 (76.0)	<0.001
Patients underwent renal replacement therapy (%)	30/420 (7.1)	24/270 (8.9)	6 (4.0)	0.062
Patients with cognitive disorder (%)	310/420 (73.8)	238/270 (88.1)	72 (48.0)	<0.001
Ambulation status				
Ambulation, regardless of external support	86/420 (20.5)	17/270 (6.3)	69 (68.5)	<0.001
Ambulation with wheelchair	70/420 (16.7)	45/270 (16.7)	25 (16.7)	-
Bed-ridden status	264/420 (62.9)	208/270 (77.0)	56 (37.3)	-
Microbiological culture test				
Existence of result of culture with blood sample	135/421 (32.1)	33 (12.1)	102/149 (68.5)	<0.001
Existence of result of culture with non-blood sample	140/420 (33.3)	37 (13.6)	103/148 (69.6)	<0.001

Abbreviations: IQR, interquartile range; EMR, electronic medical record; CrCl, creatinine clearance; eGFR, estimated glomerular filtration rate

Table 2. Appropriateness of antibiotic prescriptions

	All hospitals (N=569)	Long-term care hospitals (N=384)	Acute care hospitals (N=185)	*P*-value
Route of administration (%)				0.562
Appropriate	556 (97.7)	374 (97.4)	182 (98.4)	
Inappropriate	13 (2.3)	10 (2.6)	3 (1.6)	
Dose (%)				<0.001
Optimal	251 (44.1)	112 (29.2)	139 (75.1)	
Suboptimal: excessively high dose	34 (6.0)	32 (8.3)	2 (1.1)	
Inappropriate: excessively low dose	87 (15.3)	62 (16.1)	25 (13.5)	
N/A	197 (34.6)	178 (46.4)	19 (10.3)	
Antibiotic choice (%)				
Antibiotics for the treatment of infectious diseases				0.034
Optimal	228/525 (43.4)[1]	146/370 (39.5)[1]	82/155 (52.9)	
Suboptimal	76/525 (14.5)[1]	60/370 (16.2)[1]	16/155 (10.3)	
Inappropriate	173/525 (33.0)[1]	129/370 (34.9)[1]	44/155 (28.4)	
N/A	48/525 (9.1)[1]	35/370 (9.5)[1]	13/155 (8.4)	
Antibiotics for the prophylaxis of surgical site infection				0.579
Appropriate	18/33 (54.5)	1/3 (33.3)	17/30 (56.7)	
Inappropriate	15/33 (45.5)	2/3 (66.7)	13/30 (43.3)	
Antibiotics for other or unknown reasons				-
Appropriate	0	0	0	
Inappropriate	10/10 (100)	10/10 (100)	10/10 (100)	
Appropriateness of antibiotic prescription, by each antibiotic (%)				<0.001
Optimal	125/569 (22.0)	49/384 (12.8)	76/185 (41.1)	
Suboptimal	41/569 (7.2)	29/384 (7.6)	12/185 (6.5)	
Inappropriate	174/569 (30.6)	109/384 (28.4)	65/185 (35.1)	
N/A	229/569 (40.2)	197/384 (51.3)	32/185 (17.3)	
Appropriateness of antibiotic prescription, by each patient (%)				<0.001
Optimal	86/422 (20.4)	29/272 (10.7)	57/150 (38.0)	
Suboptimal: one or more antibiotics were suboptimal	35/422 (8.3)	26/272 (9.6)	9/150 (6.0)	
Suboptimal: unnecessary combination therapy	5/422 (1.2)	1/272 (0.4)	4/150 (2.7)	
Inappropriate	135/422 (32.0)	85/272 (31.3)	50/150 (33.3)	
N/A	161/422 (38.2)	131/272 (48.2)	30/150 (20.0)	

[1] One case was excluded because the data was insufficient.

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Subject Category: Antibiotic Stewardship
Antibiotic use in end-of-life care patients: A nationwide Veterans' Health Administration cohort study
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Background: Antibiotic use during end-of-life (EOL) care is an increasingly important target for antimicrobial stewardship given the high prevalence of antibiotic use in this setting with limited evidence on safety and effectiveness to guide antibiotic decision making. We estimated antibiotic use during the last 6 months of life for patients under hospice or palliative care, and we identified potential targets (ie time points) during the EOL period when antimicrobial stewardship interventions could be targeted for maximal benefit. **Methods:** We conducted a retrospective cohort study of nationwide Veterans' Affairs (VA) patients, 18 years and older who died between January 1, 2014, and December 31, 2019, and who had been hospitalized within 6 months prior to death. Data from the VA's integrated electronic medical record (EMR) were collected including demographics, comorbid conditions, and duration of inpatient antibiotics administered, along with outpatient antibiotics dispensed. A propensity-score matched-cohort analysis was conducted to compare antibiotic use between patients placed into palliative care or hospice matched to patients not receiving palliative care or hospice care. Repeated measures ANOVA and repeated measures linear regression methods were used to analyze difference in difference (D-I-D) of days of therapy (DOT) between the 2 cohorts. **Results:** There were 251,822 patients in the cohort, including 23,746 in hospice care, 89,768 in palliative care, and 138,308 without palliative or hospice care. The median days from last discharge to death was 9 days. The most common comorbidities were chronic obstructive pulmonary diseases (50%), malignancy (46%), and diabetes mellitus (43%). Overall, 18,296 (77%) of 23,746 hospice patients, and 71,812 (80%) of 89,768 palliative care patients received at least 1 antibiotic, whereas 95,167 (69%) of 138,308 who were not placed in hospice or did not receive palliative care received antibiotics. In the primary matched cohort analysis that compared patients placed into hospice or palliative care to propensity-score matched controls, entry into palliative care was associated with a 11% absolute increase in antibiotic prescribing, and entry into hospice was associated with a 4% absolute increase during the 7–14 days after entry versus the 7–14 days before entry (Fig. 1). The stratified cohorts had very similar balanced covariates as the overall cohort. **Conclusions:** In our large cohort study, we observed that patients receiving EOL care had high levels of antibiotic exposure across VA population, particularly on entry to hospice or during admissions when they received palliative care consultation. Future studies are