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Online Supplementary Material

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Table S1. Proportion of Pathogens for Each Indication
Table S2. Calculation of the Patient Numbers Within Each Scenario by Pathogen Using MDV
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This supplementary material has been provided by the authors to give readers additional information about their work.

Table S1. Proportion of Pathogens for Each Indication

Input	Input Value	Source
HAP		
Proportion *E.coli*	0.00%	The JRS Guidelines for the Management of Pneumonia in Adults[1]
Proportion *Klebsiella pneumoniae*	5.40%	
Proportion *P.aeruginosa*	13.90%	
Total	**19.30%**	NA
VAP		
Proportion *E.coli*	2.50%	The JRS Guidelines for the Management of Pneumonia in Adults[1]
Proportion *Klebsiella pneumoniae*	6.40%	
Proportion *P.aeruginosa*	34.80%	
Total	**43.70%**	NA
UTI		
Proportion *E.coli*	39.84%	Kobayashi et al.[2]
Proportion *Klebsiella pneumoniae*	13.84%	
Proportion *P.aeruginosa*	5.79%	
Total	**59.47%**	NA
IAI		
Proportion *E.coli*	17.50%	Mikamo et al.[3]
Proportion *Klebsiella pneumoniae*	8.75%	
Proportion *P.aeruginosa*	5.62%	
Total	**31.87%**	NA

Abbreviations: HAP, hospital-acquired pneumonia; IAI, intra-abdominal infection; JRS, Japanese Respiratory Society; UTI, urinary tract infection; VAP, ventilator-associated pneumonia.

Table S2. Calculation of the Patient Numbers Within Each Scenario by Pathogen Using MDV

Input	Input Value			Source/calculation
	E.coli	*Klebsiella pneumoniae*	*P.aeruginosa*	
Pathogen Proportion Within Each Indication				
Pathogen proportion for HAP; %	0.00%	27.98%	72.02%	Scaled based on the pathogen distribution shown in Table S1
Pathogen proportion for VAP; %	5.72%	14.65%	79.63%	
Pathogen proportion for UTI; %	66.99%	23.27%	9.74%	
Pathogen proportion for IAI; %	54.91%	27.46%	17.63%	
Scenario A - Patient Numbers				
Total HAP patients; n		109 307		MDV; Unique number of in-patients, 15 years or older and diagnosis (HAP, VAP, UTI, and IAI) ‡
Total VAP patients; n		271		
Total UTI patients; n		119 601		
Total IAI patients; n		85 708		
Total; n (%)	**62 655 (52.36%)**	**29 972 (25.05%)**	**27 030 (22.59%)**	Calculation; Sum of pathogen distribution (Table S1) multiplied by patient numbers
Scenario B - Patient Numbers				
Total HAP patients; n		78 416		MDV; Unique number of in-patient with 15 years or older with diagnosis (HAP, VAP, UTI, and IAI) and prescribed possible antimicrobial agents with antibacterial sensitivity against 3 species‡
Total VAP patients; n		222		
Total UTI patients; n		88 890		
Total IAI patients; n		76 420		
Total; n (%)	**101 524 (41.62%)**	**63 641 (26.09%)**	**78 783 (32.26%)**	Calculation; Sum of pathogen proportion within each indication multiplied by patient numbers
Scenario C - Patient Numbers				
Total HAP patients; n		35 342		MDV; Unique number of in-patient with 15 years or older with diagnosis (HAP, VAP, UTI, and IAI) and prescribed PIP/TAZ or MEMP‡
Total VAP patients; n		142		
Total UTI patients; n		27 462		
Total IAI patients; n		26 514		
Total; n (%)	**32 964 (36.85%)**	**23 580 (26.36%)**	**32 916 (36.79%)**	Calculation; Sum of pathogen proportion within each indication multiplied by patient numbers

Abbreviations: MDV, Medical Data Vision; HAP, hospital-acquired pneumonia; IAI, intra-abdominal infection; MEMP, Meropenem; PIP/TAZ, Piperacillin/Tazobactam; UTI, urinary tract infection; VAP, ventilator-associated pneumonia.

The count results of hospital acquired pneumonia may include community-acquired pneumonia patients. ‡The column of "Total" is not unique number of patients. It is the total of 4 unique patient numbers.

Table S3. Calculation of Resistance Rates for PIP/TAZ and MEMP for Each Scenario (pooled by pathogen)

Input	Input Value			Source/calculation
	E.coli	*Klebsiella pneumoniae*	*P.aeruginosa*	
Resistance Rates by Pathogen				
PIP/TAZ resistance	4.90%	5.10%	17.30%	JANIS[4]
MEMP resistance	0.30%	0.60%	15.50%	
Scenario A				
Proportion of patients	52.36%	25.05%	22.59%	See Table S2
PIP/TAZ resistance (weighted by proportion of patients)	2.57%	1.28%	3.91%	Calculation; Proportion of patients multiplied by PIP/TAZ resistance
MEMP resistance (weighted by proportion of patients)	0.16%	0.15%	3.50%	Calculation; Proportion of patients multiplied by MEMP resistance
PIP/TAZ Resistance (pooled)		**7.75%**		Calculation; Sum of PIP/TAZ resistance (weighted by proportion of patients) by pathogen
MEMP Resistance (pooled)		**3.81%**		Calculation; Sum of MEMP resistance (weighted by proportion of patients) by pathogen
Scenario B				
Proportion of patients	41.62%	26.09%	32.29%	See Table S2
PIP/TAZ resistance (weighted by proportion of patients)	2.04%	1.33%	5.59%	Calculation; Proportion of patients multiplied by PIP/TAZ resistance
MEMP resistance (weighted by proportion of patients)	0.12%	0.16%	5.01%	Calculation; Proportion of patients multiplied by MEMP resistance
PIP/TAZ Resistance (pooled)		**8.96%**		Calculation; Sum of PIP/TAZ resistance (weighted by proportion of patients) by pathogen
MEMP Resistance (pooled)		**5.29%**		Calculation; Sum of MEMP resistance (weighted by proportion of patients) by pathogen
Scenario C				
Proportion of patients	36.85%	26.36%	36.79%	See Table S2
PIP/TAZ resistance (weighted by proportion of patients)	1.81%	1.34%	6.37%	Calculation; Proportion of patients multiplied by PIP/TAZ resistance
MEMP resistance (weighted by proportion of patients)	0.11%	0.16%	5.70%	Calculation; Proportion of patients multiplied by MEMP resistance
PIP/TAZ Resistance (pooled)		**9.52%**		Calculation; Sum of PIP/TAZ resistance (weighted by proportion of patients) by pathogen
MEMP Resistance (pooled)		**5.97%**		Calculation; Sum of MEMP resistance (weighted by proportion of patients) by pathogen

Abbreviations: MEMP, Meropenem; PIP/TAZ, Piperacillin/Tazobactam.

REFERENCES

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