



Supplementary Materials

Bacterial Coinfection and Superinfection in Respiratory Syncytial Virus-Associated Acute Respiratory Illness: Prevalence, Pathogens, Initial Antibiotic-Prescribing Patterns and Outcomes

Phunsup Wongsurakiat ^{1,*}, Siwadol Sunhapanit ² and Nisa Muangman ³

¹ Division of Respiratory Diseases and Tuberculosis, Department of Medicine, Faculty of Medicine Siriraj Hospital, Mahidol University, 2 Wanglang Road, Bangkoknoi, Bangkok 10700, Thailand

² Division of Pulmonary Medicine and Pulmonary Critical Care, Faculty of Medicine, Vajira Hospital, Navamindradhiraj University, Bangkok 10300, Thailand; siwadol2530@gmail.com

³ Diagnostic Division, Department of Radiology, Faculty of Medicine Siriraj Hospital, Mahidol University, 2 Wanglang Road, Bangkoknoi, Bangkok 10700, Thailand; mailtonisa@gmail.com

* Correspondence: phunsup.won@mahidol.ac.th

Table S1. American Thoracic Society/Infectious Diseases Society of America criteria for defining severe community-acquired pneumonia [1].

Major criteria	Minor criteria
<ul style="list-style-type: none">Respiratory failure requiring invasive mechanical ventilationSeptic shock with need for vasopressors	<ul style="list-style-type: none">Confusion/disorientationHypotension requiring aggressive fluid resuscitationPaO₂/FiO₂ ratio ≤ 250 mmHgRespiratory rate ≥ 30 breaths/min or need for non-invasive ventilationMultilobar infiltratesHypothermia (core temperature < 36°C)Blood urea nitrogen level ≥ 20 mg/dLLeukopenia (white blood cell count < 4,000 cells/mm³)Thrombocytopenia (platelet count < 100,000 cells/mm³)
Definition includes ≥ 1 major criterion or ≥ 3 minor criteria	

Table S2. American Thoracic Society/Infectious Diseases Society of America Guideline Recommendations for empirical therapy for community-acquired pneumonia [1].

Inpatients, non-ICU treatment

A nonantipseudomonal β-lactam^a plus a macrolide^b

A respiratory fluoroquinolone^c

Inpatients, ICU treatment

A nonantipseudomonal β -lactam^a plus either azithromycin or a respiratory fluoroquinolone^c

If *Pseudomonas* is a concern

An antipneumococcal, antipseudomonal β -lactam^d plus either ciprofloxacin or levofloxacin

or

The above β -lactam plus an aminoglycoside^e and azithromycin

or

The above β -lactam plus an aminoglycoside^e and a respiratory fluoroquinolone^c

ICU: intensive care unit.

aCefotaxime, ceftriaxone, ampicillin/sulbactam, or ertapenem

bAzithromycin, clarithromycin, or erythromycin

c Levofloxacin, or moxifloxacin

d Piperacillin-tazobactam, cefepime, imipenem, or meropenem

e According to Thai guidelines for the management of adults with community-acquired pneumonia, adding an aminoglycoside is optional. An aminoglycoside may be added to the initial antibiotic regimens only if multi-drug resistant *Pseudomonas* infection is suspected.

Table S3. Initial antibiotics treatment and hospital-free days within 30 days after hospital admission of all patients hospitalized with respiratory syncytial virus-associated acute respiratory illness.

	All Patients		Bacterial coinfection		No bacterial coinfection	
	n = 175		n = 30		n = 145	
	Hospital free	p value	Hospital free	p	Hospital free	p value
	days ^a		days ^a	value	days ^a	
Initial antibiotic treatment:		0.06		-		0.19
Yes	20 (10.7-23)		16 (3-20.2)		21 (13-24)	

			(n = 150)		(n = 30)		(n = 120)
No			22 (18-25)		-		22 (18-25)
			(n = 25)		(n = 0)		(n = 25)
Inadequate	initial	antibiotic	-	-		.8	-
treatment ^b :					17 (4 to 20)		
Yes					(n = 23)		
					9 (0 to 23)		
No					(n = 7)		
Antibiotic classes:							
Nonantipseudomonas	β-lactams			0.85	-		0.94
only:			20 (14-27)		-		20 (14-27)
Yes			(n = 7)		(n = 0)		(n = 7)
			20 (13-23)		16 (3-20.2)		21 (14.7-24)
No			(n = 168)		(n = 30)		(n = 138)
Antipseudomonas β-lactams:				0.009*	0.5		0.11
Yes			18.5 (5-22.2)		15 (5-19)		20 (6-23)
			(n = 58)		(n = 19)		(n = 39)
No			21 (15.5-24)		19 (0-23)		21 (16-24)
			(n = 117)		(n = 11)		(n = 106)
Macrolide:				0.42	0.57		0.55
Yes			20 (9-24)		9 (0-21)		20 (12.2-24)

	(n = 79)		(n = 15)		(n = 64)	
No	20.5 (16-23)		17 (9-20)		21 (17-24)	
	(n = 96)		(n = 15)		(n = 81)	
Quinolone only:		0.63		0.83		0.63
Yes	20 (13-22)		16.5 (3.2-21.5)		20 (13-22)	
	(n = 19)		(n = 4)		(n = 15)	
No	20 (13-24)		16 (3-20.2)		21 (14.7-24)	
	(n = 156)		(n = 26)		(n = 130)	
Atypical pathogen coverage:		0.19		0.58		0.29
Yes	20 (9.7-23.2)		12.5 (1-20.7)		20 (12.7-24)	
	(n = 105)		(n = 20)		(n = 86)	
No	21 (17-23.5)		18 (6.7-20.7)		21 (18-24)	
	(n = 69)		(n = 10)		(n = 59)	
Guideline concordant therapy ^c :		0.37		0.36		0.73
Yes	20 (7-24)		10.5 (1-19.7)		21 (10.5-24)	
	(n = 81)		(n = 16)		(n = 65)	
No	20 (16-23)		18 (6.7-22.2)		21 (17-23)	
	(n = 94)		(n = 14)		(n = 80)	
Duration of initial antibiotics <5 days	23.5 (19-25.2)	<0.001*	21.5 (4.7-24.7)	0.22	23.5 (19-26)	<0.001*
	(n = 58)		(n = 4)		(n = 54)	
	19 (8-22)		14 (3-20)		20 (12-22)	

Duration of initial antibiotics ≥ 5	(n = 117)	(n = 26)	(n = 91)
days			

Data are presented as mean \pm SD or n (%), unless otherwise stated. ^aNumber of days from admission to day 30 that the patient was not admitted to the hospital. ^bPathogens detected were not susceptible to the antibiotics administered within 24 h of presentation. ^cThe 2019 ATS/IDSA guidelines on the management of community-acquired pneumonia in adults. ^{*}Statistically significant difference.

References

1. Metlay, J.P.; Waterer, G.W.; Long, A.C.; Anzueto, A.; Brozek, J.; Crothers, K.; et al. Diagnosis and Treatment of Adults with Community-acquired Pneumonia. An Official Clinical Practice Guideline of the American Thoracic Society and Infectious Diseases Society of America. *Am. J. Respir. Crit. Care Med.* **2019**, 200(7), e45-e67.