

Clinical Outcomes of Early Consultation with Infectious Disease Physicians in Emergency Department Patients with Suspicion of Sepsis or Septic Shock

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**Background** Sepsis and septic shock are major causes of morbidity and mortality worldwide. Early consultation with infectious disease (ID) physicians has been associated with improved antimicrobial stewardship and potentially better patient outcomes.

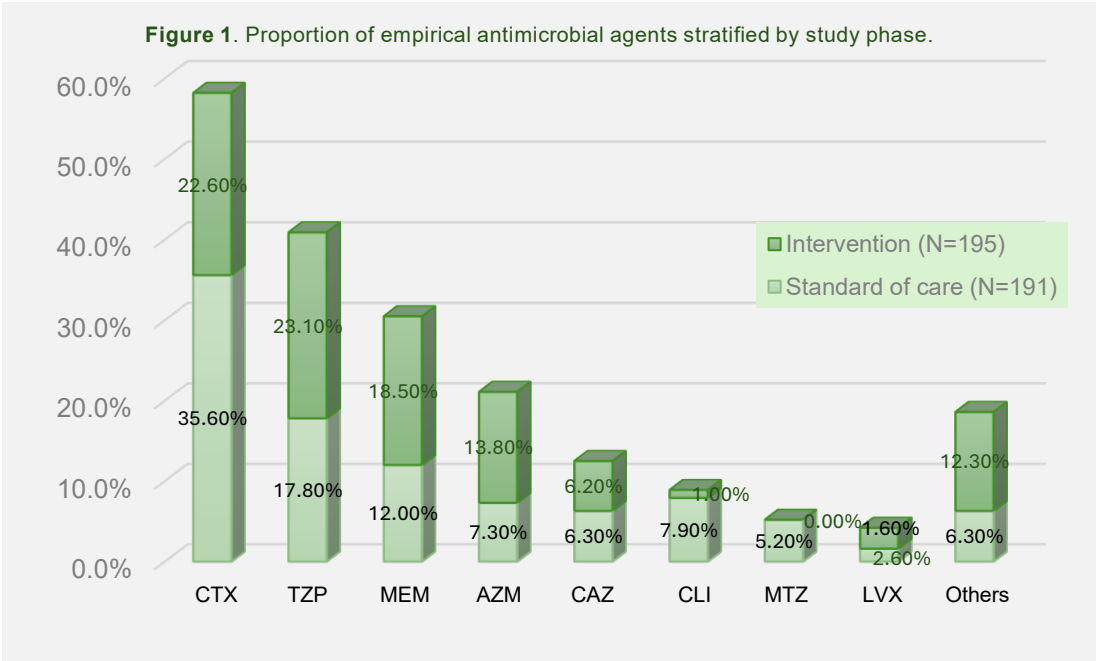
**Methods** This quasi-experimental study at Srinagarind Hospital, Khon Kaen University, Thailand, enrolled adults (≥18 years) with suspected sepsis or septic shock presenting to the emergency department (ED). Two phases were compared: usual care (control) and mandatory early infectious disease consultation (intervention). The primary outcome was 30-day mortality; secondary outcomes included appropriateness of empirical antibiotics, antibiotic modification within 24 hours, antibiotic consumption, and hospitalization costs.

Results (Table 1,2 and Figure 1)

Table 1 Baseline Characteristics of Patients in the Standard of Care vs. Intervention Groups

Characteristics	Standard of care (N=150)	Intervention (N=150)	P-value
Male sex, no. (%)	70 (46.7)	77 (51.3)	.419
Age (years, median (IQR))	63.0 (21)	73.5 (17)	<.001
Underlying disease, no. (%)			
DM	51 (34.0)	50 (33.3)	.905
Solid organ malignancy	29 (19.3)	24 (16.0)	.449
Renal diseases	28 (18.7)	37 (24.7)	.207
Cerebrovascular disease	14 (9.3)	31 (24.7)	<.001
Liver disease	12 (8.0)	21 (14.0)	.097
Chronic airway disease	12 (8.0)	16 (10.7)	.427
Clinical status			
BT (°C, median (IQR))	38.0 (1.7)	38.0 (1.8)	.787
SBP (mmHg, mean (SD))	132.2 (25.7)	130.0 (27.3)	.692
Required vasopressor (%)	11 (7.3)	11 (7.3)	1.000
Required mechanical ventilator support (%)	13 (8.7)	40 (26.7)	<.001
SOFA score (median (range))	2 (0-10)	3 (0-14)	.470
Source of infection (%)			
Intra-abdominal	42 (30.4)	22 (15.0)	<.001
Urinary tract	30 (21.7)	36 (24.5)	
Lower respiratory tract	26 (18.8)	54 (36.7)	
Skin and soft tissue	23 (16.7)	10 (6.8)	
Healthcare-associated history (%)	54 (36.0)	92 (61.3)	<.001

**Discussion** Patients in the intervention group were older, required more mechanical ventilation, and were more frequently admitted to the ICU, suggesting greater baseline severity. Despite this, early ID physician consultation significantly improved appropriateness of empirical antibiotics and reduced antibiotic modification within 24 hours. Mortality and length of stay were not significantly different, indicating that ID input may help optimize antibiotic use even among more severely ill patients.



Abbreviations: CTX, ceftriaxone; TZP, piperacillin/tazobactam; MEM, meropenem; AZM, azithromycin; CAZ, ceftazidime; CLI, clindamycin; MTZ, metronidazole; LVX, levofloxacin

Table 2 Comparison of Standard Care and Intervention: Antibiotic Appropriateness, Outcomes, and Costs

Outcomes	Standard of care (N=150)	Intervention (N=150)	P-value
Appropriate empirical ATB(s)(%)	62 (41.3)	94 (62.7)	<.001
Inappropriate			
• Unnecessary broad spectrum	66 (44.0)	46 (30.7)	
• Inadequate	22 (14.7)	10 (6.7)	
Time to effective antibiotic (minute, median (IQR))	114.5 (313.5)	118.5 (189.0)	.226
ATB change within 24 hours of admission (%)	30 (20.0)	9 (6.0)	<.001
Hospital LOS (day, median (IQR))	7 (6.0)	8 (7.0)	.254
Discharge alive (%)	143 (95.3)	147 (98.0)	.198
30-day survival (%)	145 (96.7)	147 (98.0)	.227
Cost in admission (Baht, median (IQR))	38,767.5 (54,596)	38,562.0 (46,842)	.523
ATB cost in admission (Baht, median (IQR))	1,625.5 (2,380)	1,912.5 (2,684)	.447
Define daily dose	11.5 (11.3)	10.5 (10.9)	.430
Day of therapy	10.0 (9.3)	9.0 (8.0)	.555

Limitations

- The study was not an RCT; therefore, baseline characteristics between groups were not fully balanced.
- It was a single-center study, and the local epidemiology may differ from other regions.
- The study did not assess outcomes related to acquired multidrug-resistant infections.

**Conclusion** Early consultation with an infectious disease physician in the ED for patients with suspected sepsis or septic shock was significantly improved appropriateness of empiric antimicrobial therapy without adverse impact on patient outcomes.