



The Golden Hour of Antimicrobials in Sepsis

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No Financial Disclosures

Objectives

Early antimicrobials in sepsis

Appropriate antimicrobial in sepsis

Selection of antimicrobials in sepsis

Pneumonia

Meningitis

Urosepsis

Immunocompromised

Median door to needle time

STEMI

Sepsis

32 mins

183 mins

1. Door-to-needle time for administration of fibrinolytics in acute myocardial infarction in Cape Town. SAMJ. 2012
2. reduction of the door-to-needle time for administration of antibiotics in patients with a severe infection: a tailored intervention project. 2010

Mortality risk

STEMI

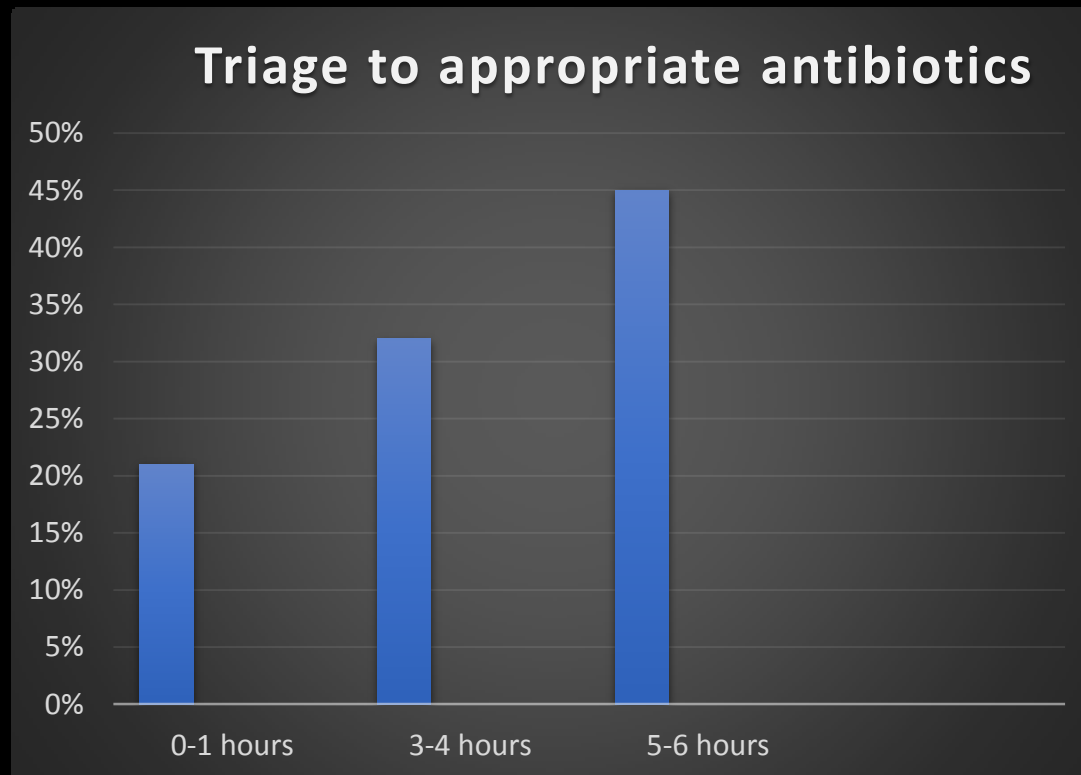
8.1%

Sepsis

10%

Time To Antibiotics

Mortality



Best timing

Less than 1 hour OR less than 3 hours

ARISE: 70 minutes

PROCESS: 3 hours

PROMISE: 2.5 hours

LATE

Mortality ↑ **7.6%** every 1 hour

Kumar A, Roberts D, Wood KE, et al. Duration of hypotension prior to initiation of effective antimicrobial therapy is the critical determinant of survival in human septic shock, Crit Care

Med . 2006

Inappropriate Antibiotics

Survived

14.6%

Did not survive

43.4%

Multi-drug resistance, inappropriate initial antibiotic therapy
and mortality in Gram-negative severe sepsis and septic shock:
a retrospective cohort study. Crit Care. 2014





Source?

Host?

Source

Cough (91%)

Fever (80%)

Sputum production (65%)

RR > 23 bpm (45%-70%)

Dyspnea (70%)

Chills (40%-50%)

Multi-drug resistant host?

Antibiotics in prior 90 days

Hospitalized within 90 days

Nursing home

Immunosuppressed

Hemodialysis

Septic shock

Which antibiotics?

CAP

Inpatient

Ceftriaxone + Azithro OR
Levofloxacin (For Pen allergic)

ICU

Ceftriaxone + Azithro
Ceftriaxone + Levofloxacin
Aztreonam + Levofloxacin (For Pen
allergic)

HAP/MDR

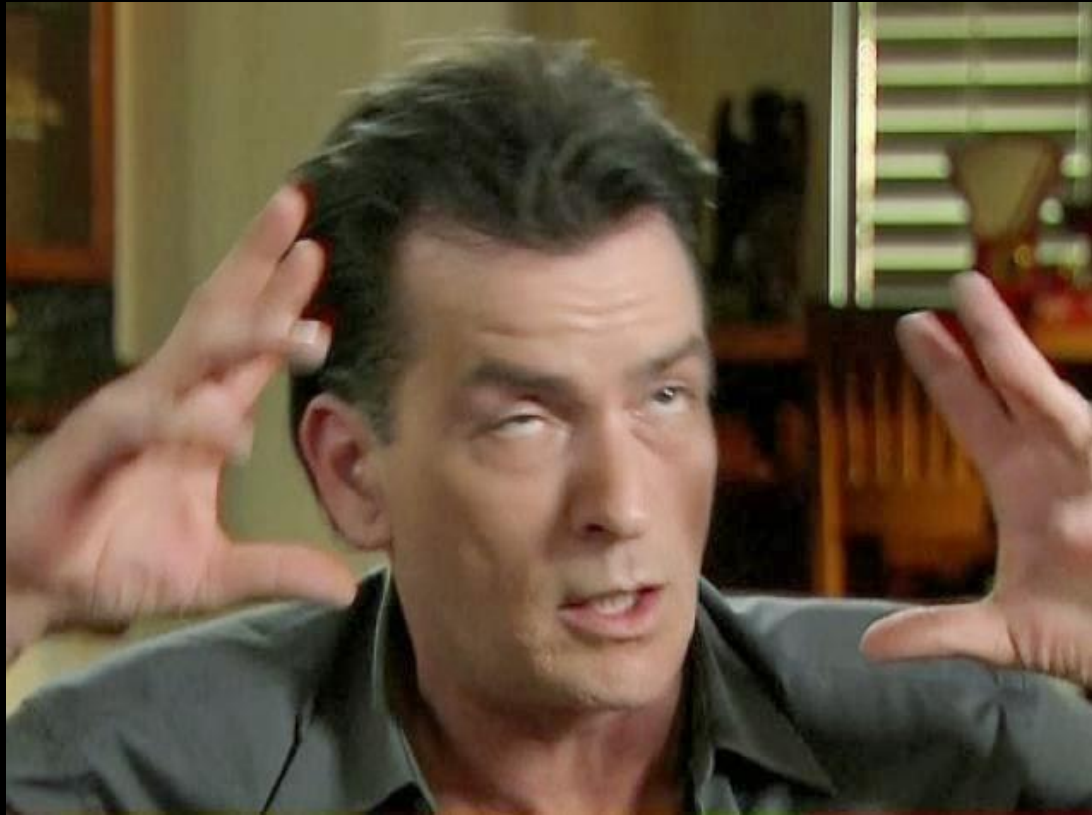
Pip-Tazo OR Cefepime

+

Levofloxacin

+

Vancomycin



HR: 128

RR: 26

T: 38.8

BP: 106/76

O₂: 97%

GCS: 13-14

Source?

Host?

Source

Fever (85%)

Neck stiffness (70%)

Altered Mental Status (67%)

Headache (50%)

Multi-drug resistant host?

CSF shunt

Intrathecal drug therapy

Deep brain stimulation hardware

Neurosurgical intervention

Vancomycin + 3rd Gen Cephalosporin +/- Ampicillin

Vancomycin + Cefepime (MDR)

Vancomycin + Aztreonam (Pen allergic)

Add Acyclovir?

Fever (90%)

Headache (80%)

Psychiatric symptoms (70%)

Seizures (67%)

CSF findings

Mortality is 70%



HR: 113

RR: 24

T: 38.4

BP: 98/65

O2: 97%

Source?

Host?

Source

Dysuria +LR 1.3

Frequency +LR 1.10

Hematuria +LR 1.72

Urgency +LR 1.22

Dysuria + Frequency +LR 24.6

+LE 72%-97% sensitive

+Nitrite 92%-100% specific

Complicated

Older than 60 years

Anatomical abnormalities

Impaired renal functions

Immunocompromised

Males

Recent hospitalization/antibiotic use

Indwelling catheter

Ceftriaxone

Levofloxacin (Pen allergic)

Cefepime

Pip-Tazo (if suspecting Enterococcal)



Neutropenic Fever

Temp > 38.3 C + Absolute Neutrophilic Count (ANC) < 1500 cells/umol

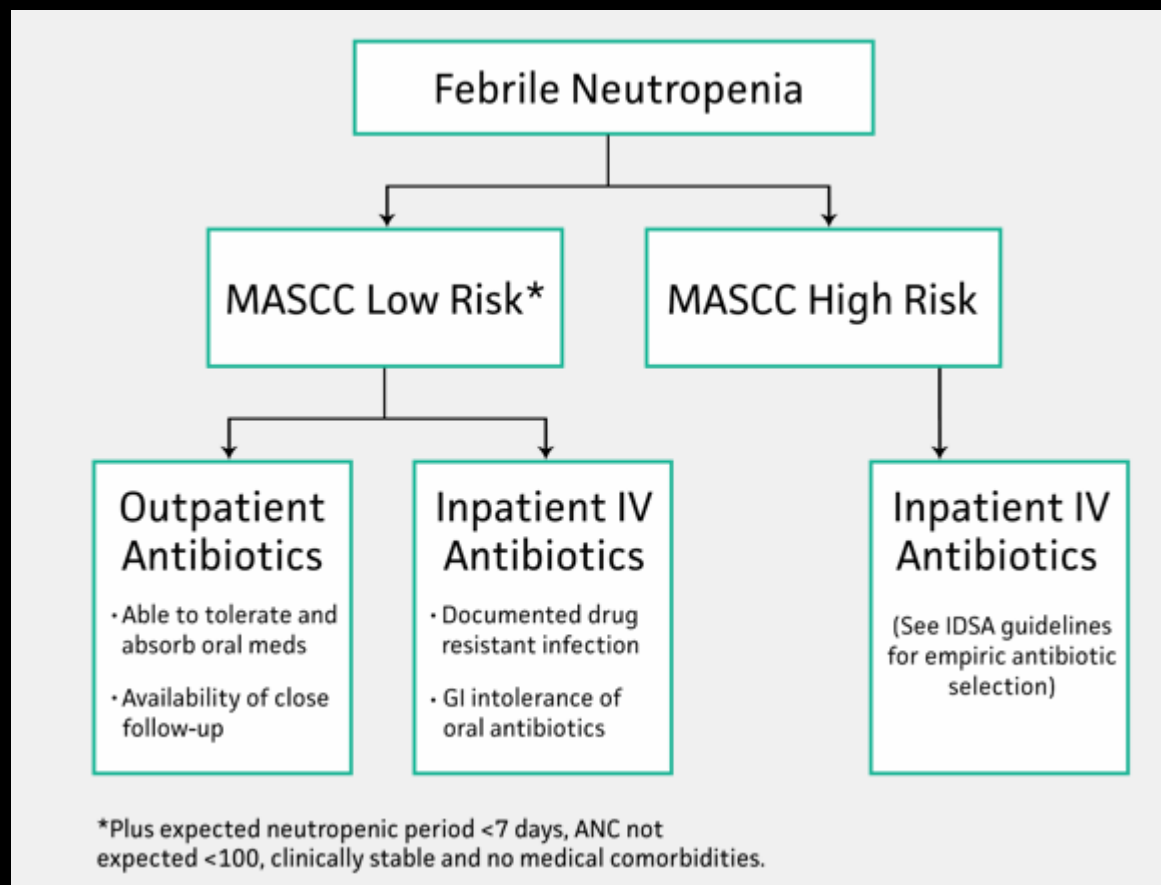
Risk stratification (MASSC Index score)

> 21 (Low-risk)

< 21 (High-risk)

Burden of illness (symptom severity) As determined by attending physician at presentation	None or mild +5	Moderate +3
	Severe 0	
Hypotension sBP <90 mmHg	No +5	Yes 0
Active COPD Active chronic bronchitis, emphysema, decreased FEV ₁ , or need for oxygen therapy, corticosteroids, and/or bronchodilators	No +4	Yes 0
Type of cancer	Solid tumor +4	
	Hematologic, no prior fungal infection	+4
	Hematologic, prior fungal infection	0
Dehydration requiring IV fluids	No +3	Yes 0
Status at onset of fever	Outpatient +3	Inpatient 0
Age (years)	<60 +2	≥60 0

Risk Stratification



Antimicrobial Selection

High-risk

Cefepime or Carbapenem

Aztreonam (Pen allergic)

Vancomycin? (shock, catheter-related infection, skin infection, PNA)

Low-risk

Ciprofloxacin + Amoxi-clav

Ciprofloxacin + Clindamycin (Pen allergic)

Summary

Hit early, hit hard

Follow local antibiogram/local resistance patterns

Antimicrobial selection Summary

