

A 72H INTERVENTION IMPROVES RATE OF OPTIMAL ANTIBIOTIC THERAPY IN PATIENTS WITH SEPSIS

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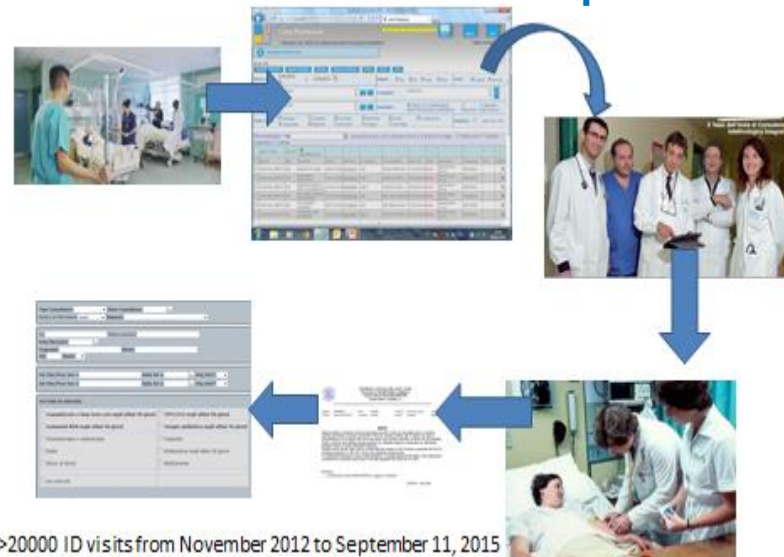
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Rapidly starting an empiric antibiotic in patients with sepsis is correlated to improved survival. Few studies investigated the efficacy of interventions for optimization of therapy after the start of antibiotics. **Objective of the study** was to evaluate whether re-evaluation at 72h from starting therapy of patients with positive blood cultures can improve the treatment optimization, reduce hospitalization length and improve survival

Material/methods: Prospective, monocenter, cohort study. A bedside antibiotic stewardship team (AST) was implemented in Nov 2012 in a 1100-bed university hospital in Rome. ICU and haematology department were not included in this study. Results are shown at Nov 2015.

Interventions were grouped in: 1) De-escalation (restriction of antibacterial spectrum) or discontinuation and 2) Escalation (increase of antibacterial spectrum)

Antibiotic stewardship team



>20000 ID visits from November 2012 to September 11, 2015

STUDY GROUPS:

- 1) AST was called by ward physician for patients with positive blood cultures (**standard AST**)
- 2) AST was called by microbiologist immediately after a pathogen was isolated from blood cultures (**AST + call**)
- 3) AST was called by microbiologist immediately after a pathogen was identified from blood cultures and all cases were re-evaluated after 72h from starting antibiotic therapy to optimize therapy (**AST + call +72hR**).

Characteristics of the study group (n=743)

	Total (N=743)	standard AST (N=197)	AST+ call (N=233)	AST + call + 72H (N=313)	p
Age, mean, years (SD)	66.5 (17.9)	66.4 (18.6)	66.1 (17.9)	66.7 (17.5)	0.91
Males (%)	430 (57.9)	115 (58.4)	127 (54.5)	188 (60.1)	0.42
N. of comorbidities	1.2 (1.0)	1.4 (1.1)	1.2 (0.9)	1.2 (0.9)	0.03
Ward					
- Medicine	478 (66.0)	123 (64.4)	149 (65.1)	206 (67.8)	0.48
- Surgery	171 (23.6)	44 (23.0)	61 (26.6)	66 (21.7)	
- Surgery specialties	75 (10.4)	24 (12.6)	19 (8.3)	32 (10.5)	
CVC at diagnosis	315 (47.5)	94 (51.1)	112 (55.2)	142 (51.4)	0.65
Time to CVC removal, mean, days (SD)	5.8 (6.1)	5.5 (6.6)	6.2 (6.1)	5.7 (5.8)	0.81
APACHE II, mean (SD)	12.1 (6.0)	11.6 (5.4)	12.2 (6.0)	12.6 (6.3)	0.01
Severity of sepsis (%)					
- SIRS	507 (68.2)	132 (67.0)	159 (68.2)	216 (69.0)	0.93
- Severe sepsis	194 (26.1)	52 (26.4)	60 (25.8)	82 (26.2)	
- Septic shock	42 (5.7)	13 (6.6)	14 (6.0)	15 (4.8)	
Polymicrobial (%)	153 (20.6)	36 (18.3)	46 (19.7)	71 (22.7)	0.45
Fungi (%)	128 (17.2)	37 (18.8)	43 (18.5)	48 (15.3)	0.51
Multidrug resistant (%)*	179 (24.1)	34 (17.3)	47 (20.2)	98 (31.3)	<0.001

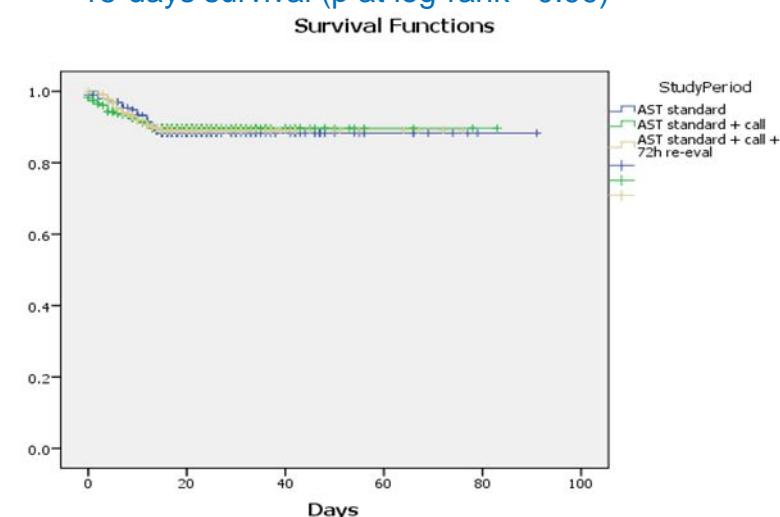
Interventions in the study period

	Total N=743	AST standard N=197	AST standard + call N=233	AST standard + call + 72h re-evaluation N=313	p
INTERVENTION (%)	400 (53.8)	79 (40.1)	82 (35.2)	239 (76.3)	<0.001
- De-Escalation or Discontinuation (%)	295 (39.9)	63 (32.0)	63 (27.2)	169 (54.3)	
- Escalation (%)	105 (14.2)	16 (8.1)	19 (8.2)	70 (22.5)	
NO FEASIBLE INTERVENTION (%)	220 (29.6)	66 (33.5)	72 (30.9)	72 (23.0)	<0.001
- Clinically not recommended (%)	55 (7.4)	10 (5.1)	12 (5.2)	33 (10.6)	
- Already optimal therapy (%)	165 (22.3)	56 (28.4)	70 (30.2)	39 (12.5)	
NO INTERVENTION (%)	120 (16.2)	52 (26.4)	68 (29.3)	0 (0)	<0.001

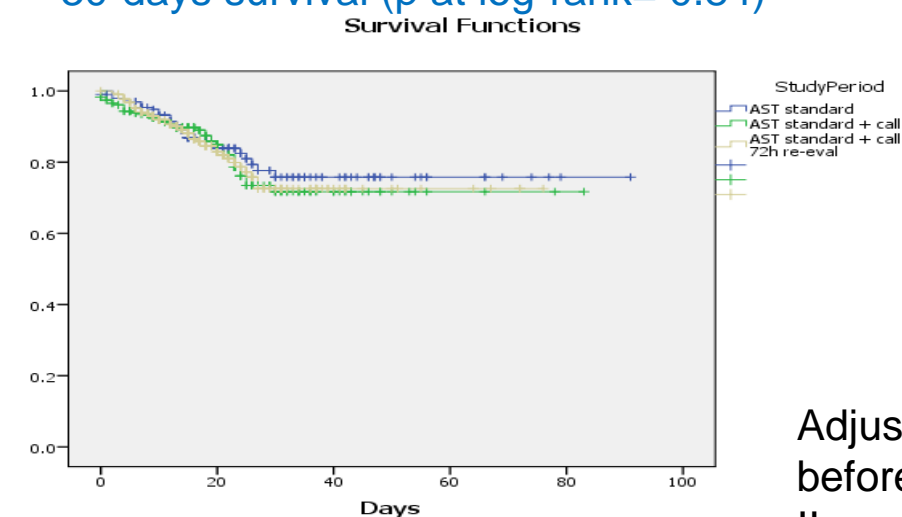
Outcomes of the study

	Total N=743	Standard AST N=197	AST + call N=233	AST + call + 72h N=313	p
Time to start antibiotic therapy, mean, days (SD)	0.70 (1.4)	0.92 (1.7)	0.71 (1.4)	0.55 (1.1)	0.01
Percentage of effective therapy (SD)	92.6 (18.2)	93.9 (19.0)	91.4 (21.1)	91.6 (15.2)	0.37
Percentage of optimal therapy (SD)	62.2 (38.9)	59.0 (42.0)	51.9 (43.0)	71.9 (30.6)	<0.001
Percentage of people starting antibiotic therapy <24h (%)	464 (62.4)	125 (63.4)	143 (61.4)	196 (62.6)	0.51
Percentage of people starting optimal therapy <24h (%)	155 (20.9)	35 (17.8)	45 (19.3)	75 (24.0)	<0.001
Duration of antibiotic therapy, mean, days (SD)	19.3 (13.3)	21.9 (15.4)	19.3 (13.3)	17.7 (11.5)	0.002
Length of hospitalization stay, mean, days (SD)	26.5 (24.5)	29.7 (29.3)	26.8 (24.7)	24.2 (20.7)	0.04
N. of patients died at 15 days (%)	73 (9.8)	21 (10.6)	22 (9.4)	30 (9.6)	0.90
N. of patients died at 30 days (%)	118 (15.9)	31 (15.7)	39 (16.7)	48 (15.3)	0.90

15-days survival (p at log-rank= 0.99)



30-days survival (p at log-rank= 0.84)



Variables correlated to length of stay (linear regression; stepwise forward)

	HR	IC 95%	p
Number of comorbidities	-2.29	-4.18; -0.41	0.017
Medicine ward	5.71	1.87; 9.54	0.004
AST+call and AST+call+72h	-4.61	-4.18; -0.41	0.023

Adjusted for age, gender, previous hospitalization (within 90 days before), sepsis severity (SIRS, Severe sepsis, septic shock), APACHE II

Conclusions: A 72h re-evaluation was correlated to a more timely start of antibiotic treatment, a higher rate of optimal therapy, a shorter duration of total therapy and a shorter length of hospitalization. The immediate call by microbiologist to AST and the 72h re-evaluation are associated with shorter length of hospitalization