Duration of antimicrobial therapy

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Benefits and risks of short treatment

BENEFITS

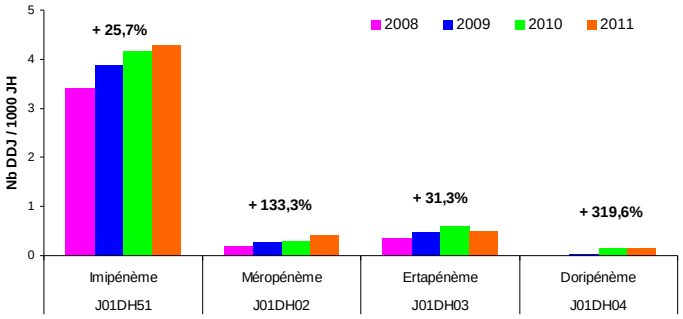
↓ Spread of MDRO
↓ adverse effects
↓ costs
↓ MDRO superinfections
↓ C difficile

RISKS

Failure
Relapses

Carbapenems use in French hospitals- ATB-RAISIN, 2011

DDJ / 1000 hosp. Days in a cohort of 614 hospitals (2008 to 2011)



SPA-CARB 2011
Survey in 2338 patients in 207 facilities in France
IMIPENEM 88% ERTAPENEM 8%

- 34% of the prescription for community acquired infections
- Internal medicine 34% ICUs 27%, and Surg. units 20%

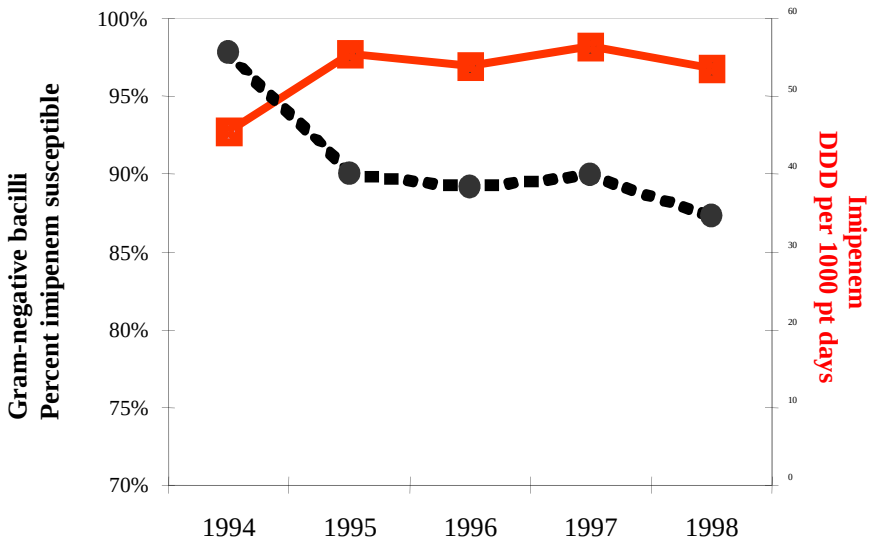
EXTENSIVE USAGE
- Source UTI is the first cause!!! (27% of the prescriptions)

OVER-USE
- Documented ESBL only 1/5…
  and potential alternative in 2/3 of the cases…

FEW DEESCALATION
- Very few deescalation :
  59/397 (14,9%) GNB susceptible to at least one B lactam of FQ
  Treatment median duration 8 days

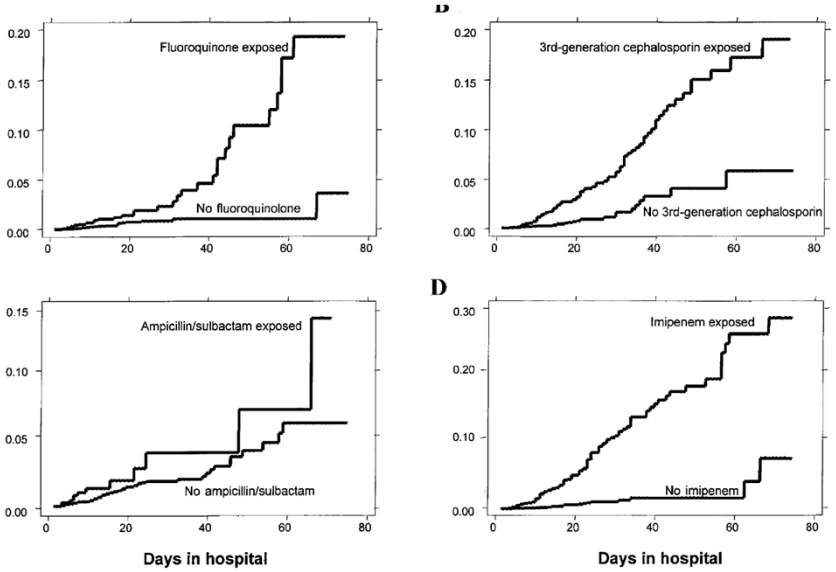
NO SHORT TREATMENT
> 10 days in 31.4 % of the cases
50% of the carbapenems were stopped at the end of treatment

Gauzit R et al - Int J Antimicrob Agents. 2015 Sep 30



Harbarth, et al. Clin Infect Dis 2001; 33: 1462-68

Probability of resistance according to time of Abx exposure



CID 2001:33 (1 November) • Harbarth et al.

Emergence of Imipenem-Resistant Gram-Negative Bacilli in Intestinal Flora of Intensive Care Patients - *Armand-Lefèvre L et al – AAC 2013;1488-95*

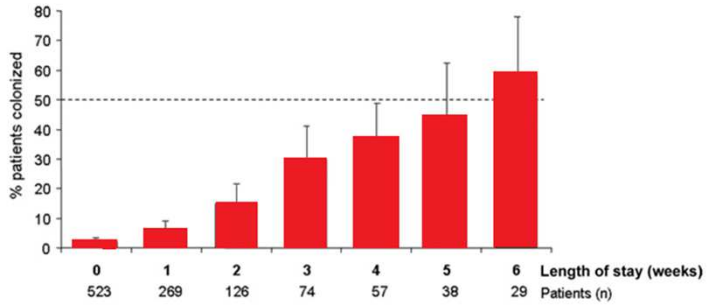


FIG 1 Rates of intestinal colonization by imipenem-resistant gram-negative bacilli in intensive care patients. Bars indicate observed rates ± standard deviation (SD) (error bars).

Days of imipenem exposure[a]	% R	% S	OR	Adj OR	
0	8 (22.2)	22 (61.1)	1.0	1.0	<0.01
1 to 3	10 (27.8)	6 (16.7)	4.4 (1.1–20.5)	5.9 (1.5–25.7)	
4 to 21	18 (50.0)	8 (22.2)	6.0 (1.7–23.3)	7.8 (2.4–29.8)	

Impact of a Reduction in the Use of High-Risk Antibiotics on the Course of an Epidemic of *Clostridium difficile*–Associated Disease Caused by the Hypervirulent NAP1/027 Strain

638 lits

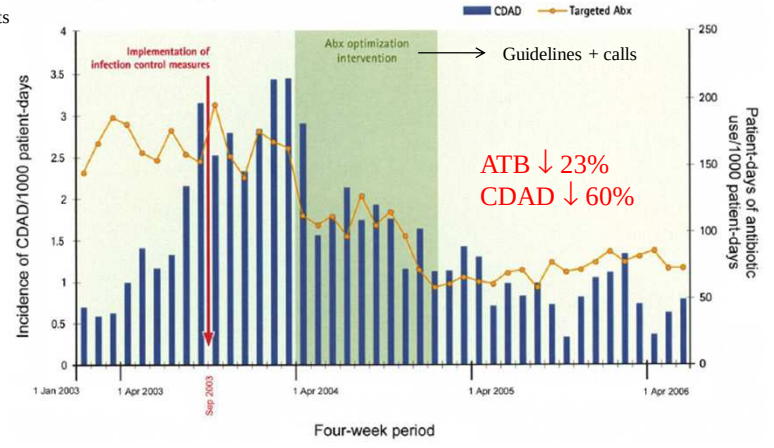
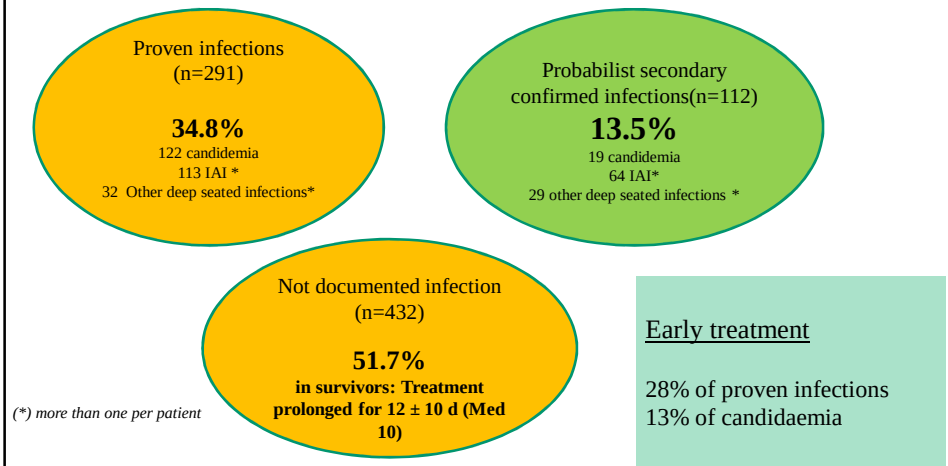


Figure 2. Targeted antibiotic (Abx) consumption and nosocomial *Clostridium difficile*–associated disease (CDAD) incidence per 1000 patient-days of hospitalization.

Valiquette L, Clin Infect Dis 2007

We are helpless and confused…

AMARCAND 2 study: Oct. 2012 to Oct. 2013
835 patients (87 ICUs) treated for proven or suspected candidiasis
Exclusion: neutropenia/ transplant



(*) more than one per patient

Leroy et al – Ann Intens care submitted
Bailly et al – intens care med 2015; 1931

Early treatment

28% of proven infections
13% of candidaemia

13.5% of AFT

Duration of antibiotic prophylaxis and emergence of resistance

- Of the 166 (6%) strains recovered post operatively:
  - » 4% VRE
  - » 23% Enterobacteriaceae 3GC R
  - » 97% Enterobacteriaceae 1GC R

TABLE 2. Multivariable Model for Isolation of Acquired Resistant Enterobacteriaceae and Enterococci After CABG, Matched by Calendar Time and the Prophylactic Antibiotic Agents Used

	Patients With Positive Cultures (n=426)		
Variable	OR	*P*	95% CI
Prolonged prophylaxis (>48 h)	1.6	0.027	1.1–2.6
Age >65 y	1.3	0.022	1.0–1.6
Combined CABG/valve surgery	2.7	0.002	1.4–5.1
Antibiotic therapy after CABG	1.8	0.054	1.0–3.3

Harbarth et al, *Circulation 2000*

Low Dosage and Long Treatment Duration of β-Lactam

Risk Factors for Carriage of Penicillin-Resistant *Streptococcus pneumoniae*

Didier Guillemot, MD; Claude Carbon, MD; Beverley Balkau, PhD; Pierre Geslin, MD; Hervé Lecoeur, MD; Françoise Vauzelle-Kervroëdan, MD; Gilles Bouvenot, MD; Eveline Eschwège, MD

Feb 1998

Table 6.—Odds Ratios for Penicillin-Resistant *Streptococcus pneumoniae* (PR*Sp*) Carriage According to Daily Dose and Duration of the Last Antibiotic Used During the Previous 30 Days*

Variable	No. of Children	No. of PR*Sp* Carriers	Unadjusted OR (95% CI)	*P* Value	Adjusted OR (95% CI)	*P* Value
Last β-lactam						
Daily dose						
No use†	780	10	1.0		1.0	
Low†	84	6	5.9 (2.1-16.7)	.002	7.5 (2.5-22.8)	<.001
High	54	0	NA	.9	NI	
Missing‡	23	0	NA	.9	NI	
Duration of treatment						
No use†	780	10	1.0		1.0	
Long†	138	6	3.5 (1.3-9.8)	.02	3.9 (1.4-11.2)	.01

→ High initial dose and a short duration

Kollef *et al. Critical Care* 2012, **16**:R218
http://ccforum.com/content/16/6/R218

CRITICAL CARE

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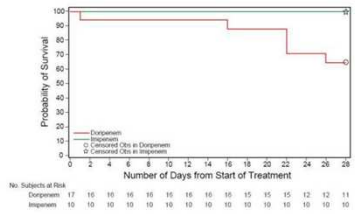
A randomized trial of 7-day doripenem versus 10-day imipenem-cilastatin for ventilator-associated pneumonia

	IMI 10 d	DORI 7 d	95%CI
Clinical cure	41.2% (7/17)	60.0% (6/10)	-57.2 to 19.5%
d28 death (MITT)	14.8% (13/88)	21.5% (17/79)	-5.0 to 18.5%
D28 Death PA only	0.0% (0/10);	35.3% (6/17)	12.6 to 58.0%



Creatinine Clearance		
Supra Normal (≥150 ml/min)	8/18	20/28
Normal (≤ 80-<150 ml/min)	15/31	19/37
Mild Renal Failure (>50-<80 ml/min)	12/23	9/18
Moderate Renal Failure (>30-≤ 50 ml/min)	0/5	1/2
Severe Renal Failure (≤ 30 ml/min)	1/2	1/3

Shortening duration of treatment may be harmful in case of initial underdosage

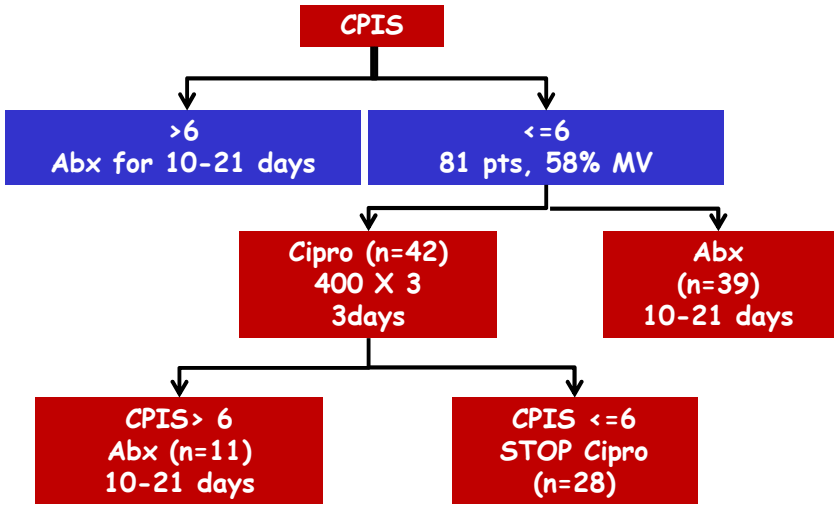
Antibiotic duration at the bedside

- **Short ?**
  - **No comorbid cond.**
  - **Source control**
  - **Low MICs, high bactericidal titers**
  - **easy PK and tissue diffusion**
  - **No foreign material**
  - **Rapid clinical improvement**
- **Long ?**
  - **Immune depression**
  - **No source control**
  - **MDR , XDR bacterias**
  - **Low bactericidal titers**
  - **Poor PK and tissue diffusion**
  - **Foreign materials**
  - **Slow, partial clinical response**

How to decrease treatment duration?

- Early stop of useless treatment
- RCTs
- Guidelines and ID specialist
- Stopping rules based on biomarkers

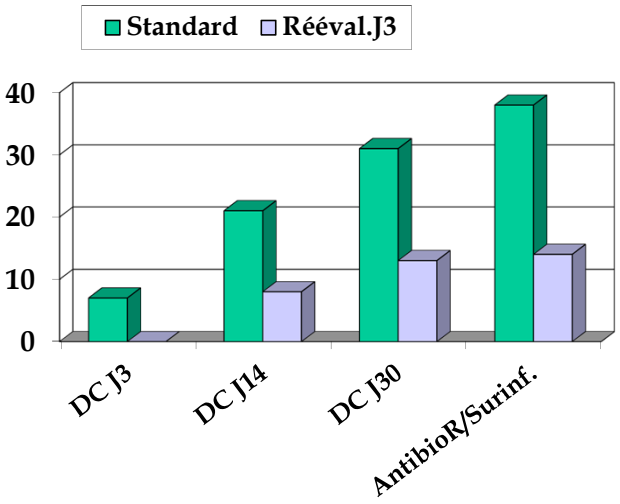
Early stopping rules for suspected mild VAP



Singh et al – AJRCCM 2000; 505

Early stopping rules for VAP

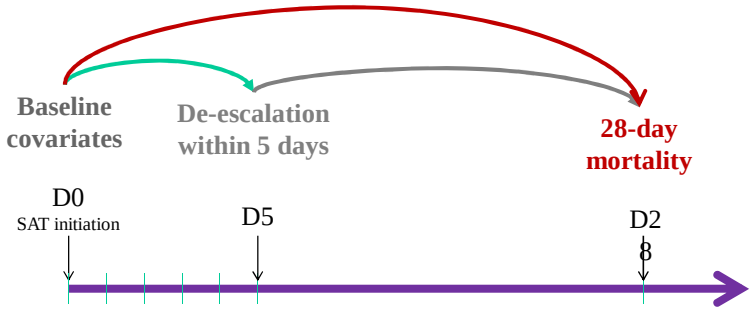
Singh et al – AJRCCM 2000; 505



Duration of Abx: 9 vs 4 days, p=0.04

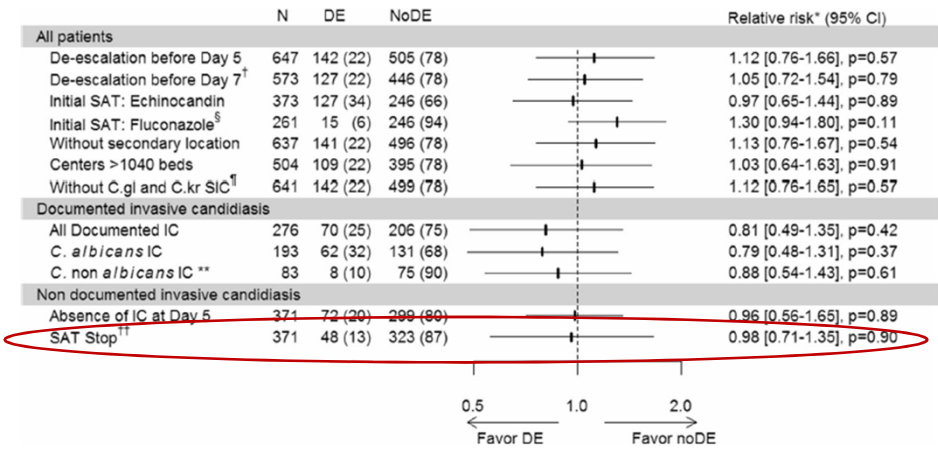
Introduction – Objective – **Method** – Results – Conclusion

Causal inference**: double robust IPTW estimator**



IPTW : inverse probability of treatment weigthed estimator

Bailly S et al – Intens care med 2015; 41:1931



Bailly S et al – Intens Care Med 2015; 41:1931

De-escalation leads to a significant decrease in the antifungal consumption

Characteristics	Systemic antifungal therapy (SAT) group: De-escalation N=142	Systemic antifungal therapy (SAT) group: No De-escalation N=505	p-value
SOFA score at D7 after initial SAT	5 [3 ; 9]	5 [2 ; 9]	0.90
Delta SOFA score from SAT to D7	2 [-1 ; 4]	2 [0 ; 4]	0.46
Length of ICU stay after initial SAT (days)	**14 [9 ; 27]**	**19 [11 ; 35]**	**<.01**
Length of SAT administration (days)	**12 [5 ; 16]**	**14 [8 ; 21]**	**<.01**
Number of days alive without SAT at D28	**13 [5 ; 23]**	**10 [1 ; 17]**	**<.01**
Number of days alive outside the ICU at D28	**3.5 [0 ; 17]**	**0 [0 ; 13]**	**0.03**
Median SAT cost	1,743 €	2,835 €	**<.01**
[IQR]	[1,134 ; 2,382]	[171 ; 7,371]	

Duration of treatment should be reduced in…

- UTI, Pyelonephritis (<6-7d)
- CAP (<7d)
- Meningitis (5d)
- Peritonitis (5d) → 4d if adequate source control
- CR-BSI (5-7d)

Marschall J et al - BMJ. 2013 Jun 11;346:f3147
Eliakim-Raz N et al -J Antimicrob Chemother. 2013 Oct;68(10):2183-91.
Pinzone MR et al ScientificWorld Journal. 2014 Jan 21;2014:759138
Sawyer RG et al - N Engl J Med 2015;372:1996-2005
Molyneux E et al. Lancet 2011; 377:1837
Ann Fr Anesth Reanim 2001;20:suppl 2; 350-367

CAP

528 moderate or severe

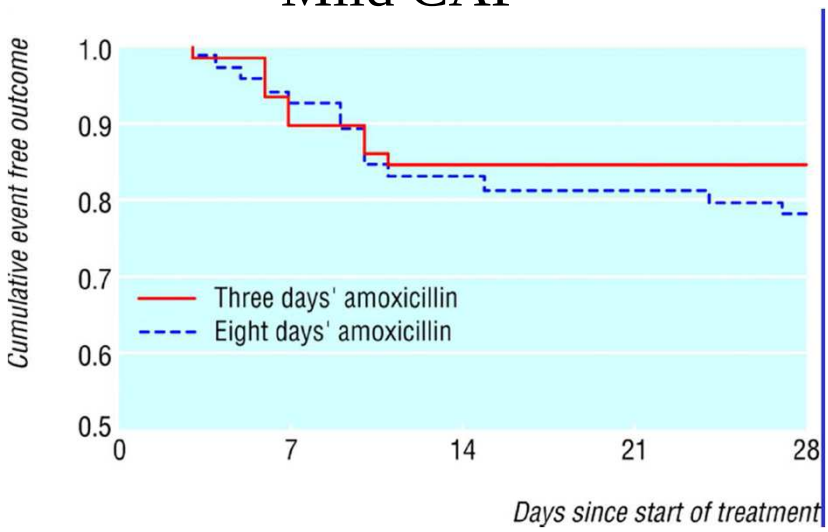
Stratification according to Fine score

• Levofloxacin	750 mg/d 5 dys*	vs	500 mg/days 10 dys*
• Clinical success	183/198 (92%)	vs	175/190 (91%)
• Eradication	96/103 (93%)	vs	85/92 (92%)

- IV or oral

Dunbar et al – Clin Infect Dis 2003; 37:752

Mild CAP



Molecular techniques + biomarkers to avoid antimicrobials?

Al Moussaoui et al – BMJ 2006

Havey *et al. Critical Care* 2011, **15**:R267

Thomas C Havey[1], Robert A Fowler[1,2] and Nick Daneman[1,3*]

CRITICAL CARE

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Duration of antibiotic therapy for bacteremia: a systematic review and meta-analysis

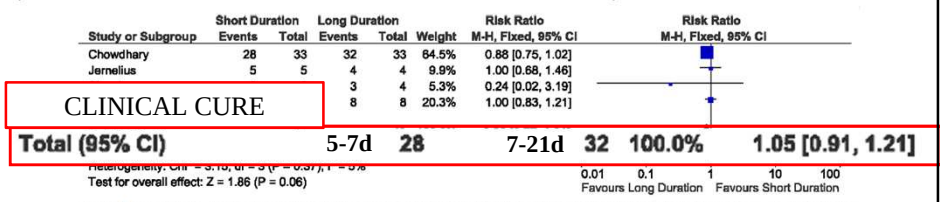


Figure 2 Forest plot for outcome of clinical cure among bacteremic subgroups of randomized trials of shorter versus longer antibiotic treatment. CI, confidence interval; df, degrees of freedom; M-H, Mantel-Haenszel.

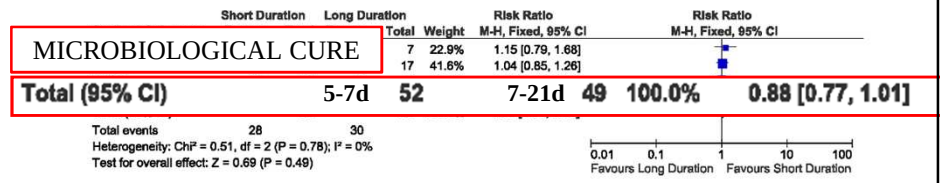


Figure 3 Forest plot for outcome of microbiologic cure among bacteremic subgroups of randomized trials of shorter versus longer antibiotic treatment. CI, confidence interval; df, degrees of freedom; M-H, Mantel-Haenszel.

OPEN ACCESS Freely available online

PLOS ONE

Early-Onset Ventilator-Associated Pneumonia in Adults Randomized Clinical Trial: Comparison of 8 versus 15 Days of Antibiotic Treatment

Gilles Capellier[1,2]*, Hélène Mockly[3], Claire Charpentier[5], Djillali Annane[6], Gilles Blasco[7], Thibault Desmettre[1,2], Antoine Roch[8,9], Christophe Faisy[10], Joel Cousson[11], Samuel Limat[3,4], Mariette Mercier[12,13], Laurent Papazian[8,9]

	8 days	15 days	OR	IC95%
Cure d21	99/116 (85)	92/109 (84)	0,929	-8,4-10,3
Death d 21	10/116 (8,6)	9/109 (8,3)		
Relapses	6*	2		

(*) the number of days of antibiotic treatment remained lower in the 8 day cohort

PLoS One. 2012;7(8):e41290

CARING FOR THE CRITICALLY ILL PATIENT

Comparison of 8 vs 15 Days of Antibiotic Therapy for Ventilator-Associated Pneumonia in Adults

Chastre J et al – JAMA 2003 Nov 19;290(19):2588-98

1171 Patients Assessed for Eligibility

386 Ineligible on Day 1
180 Had Early-Onset Pneumonia
79 Had SAPS II >65
54 Were Immunocompromised
31 Were Younger Than 18 y
23 Were Neutropenic
19 Had DNR Orders

383 Ineligible on Day 3
79 Had Inappropriate Empirical Treatment
77 Had Been Enrolled in Other Studies
75 Had Concomitant Extrapulmonary Infections
70 Died Before Day 3
61 Were Excluded for Other Reasons
21 Refused Consent

402 Randomized

197 Assigned to 8-Day Antibiotic Regimen

205 Assigned to 15-Day Antibiotic Regimen

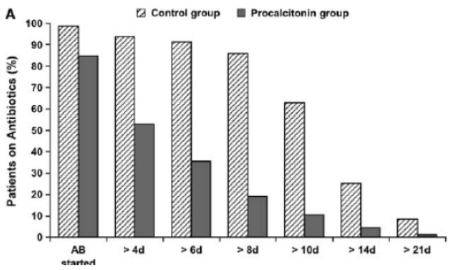
Event	No./Total (%) 8-Day Regimen (n = 197)	15-Day Regimen (n = 204)	Between-Group Risk Difference (90% CI), %
Death from all causes*			
All patients	37/197 (18.8)	35/204 (17.2)	1.6 (–3.7 to 6.9)
Nonfermenting GNB†	15/64 (23.4)	19/63 (30.2)	–6.7 (–17.5 to 4.1)
MRSA	6/21 (28.6)	5/21 (23.8)	4.8 (–13.9 to 23.4)
Other bacteria	16/112 (14.3)	11/120 (9.2)	5.1 (–0.7 to 10.9)
Pulmonary infection recurrence*			
All patients	57/197 (28.9)	53/204 (26.0)	2.9 (–3.2 to 9.1)
Superinfection‡	39/197 (19.8)	38/204 (18.6)	1.2 (–4.3 to 6.6)
Relapse‡	33/197 (16.8)	23/204 (11.3)	5.5 (0.7 to 10.3)
Nonfermenting GNB†	26/64 (40.6)	16/63 (25.4)	15.2 (3.9 to 26.6)
Superinfection‡	13/64 (20.3)	8/63 (12.7)	7.6 (1.1 to 14.2)
Relapse‡	21/64 (32.8)	12/63 (19.0)	13.8 (7.8 to 19.7)
	Mean (SD)		Mean Difference (95% CI), %
No. of antibiotic-free days*			
All patients	13.1 (7.4)	8.7 (5.2)	4.4 (3.1 to 5.6)

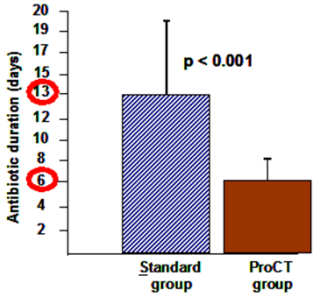
-4.4 days

Procalcitonin Guidance of Antibiotic Therapy in Community-acquired Pneumonia

A Randomized Trial

Mirjam Christ-Crain, Daiana Stolz, Roland Bingisser, Christian Müller, David Miedinger, Peter R. Huber, Werner Zimmerli, Stephan Harbarth, Michael Tamm, and Beat Müller





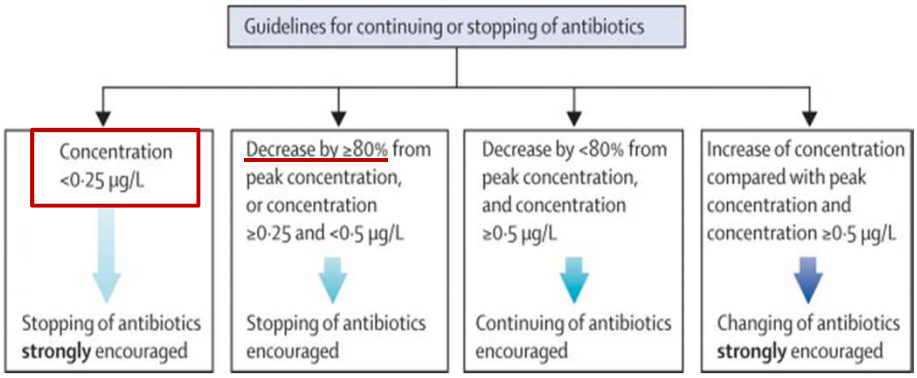
Strongly discouraged: PCT <0.1 microg/L;
Discouraged PCT <0.25 microg/L;
Encouraged PCT > 0.25 microg/L
Strongly encouraged PCT > 0.5 microg/L

NB: PSI IV or V in 2/3 cases

Christ-Crain et al, *AJRCCM 2006*

Use of Procalcitonin to Shorten Antibiotic Exposure in ICU Patients: *The ProRata Trial*

Bouadma et al. Lancet 2010;375:463-74



Use of Procalcitonin to Shorten Antibiotic Exposure in ICU Patients: *The ProRata Trial*

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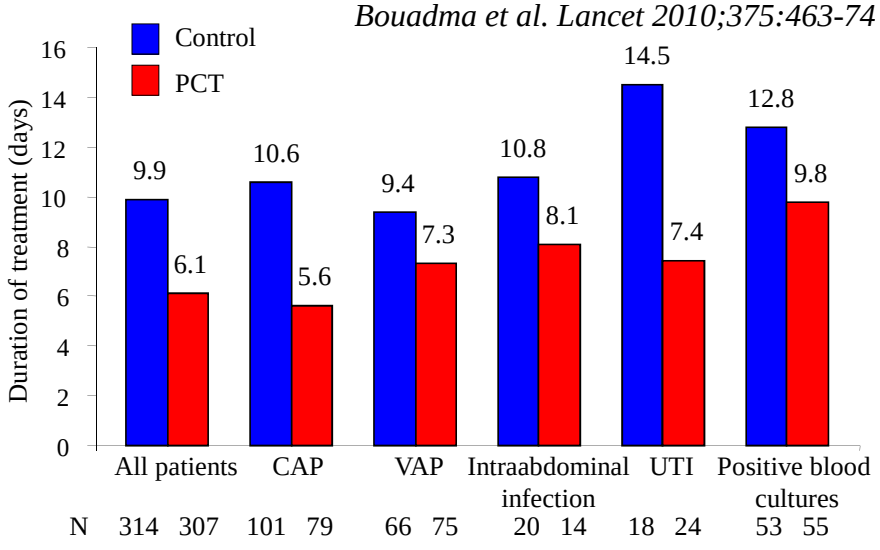
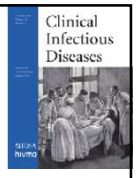


Impact of an Antimicrobial Stewardship Intervention on Shortening the Duration of Therapy for Community-Acquired Pneumonia

Edina Avdic,[1] Lisa A. Cushinotto,[4] Andrew H. Hughes,[2] Amanda R. Hansen,[5] Leigh E. Efird,[1] John G. Bartlett,[2,3] and Sara E. Cosgrove[2,3]



Control period

Vs

Education and prospective feedback to teams regarding antibiotic choice and duration

Variable	Preintervention (2008) (n = 56)[a]	Intervention (2010) (n = 63)[a]	P
Length of stay, median, days	4 days	5 days	
Duration of antibiotic therapy, median (IQR), days	10 (8–13)	7 (7–8)	<.001
Duration of antibiotic therapy, No.			
≤5 days	1	8	<.001
6–7 days	7	28	
8–10 days	24	18	
11–14 days	15	9	
>14 days	9	0	
Excess antibiotic days, total, days	241	93	
Excess antibiotic days, median (IQR), days	4 (2–6)	1 (0–3)	<.001
30-day readmissions, No. (%)[b]	9 (14.5)[c]	5 (7.7)[d]	.22
Clostridium difficile infections, No. (%)[e]	3 (4.8)[c]	1 (1.5)[d]	.28

Clin Infect Dis 2012;54:1581

Before-after
Sweden
ID audits 2X weeks
Individual feedback

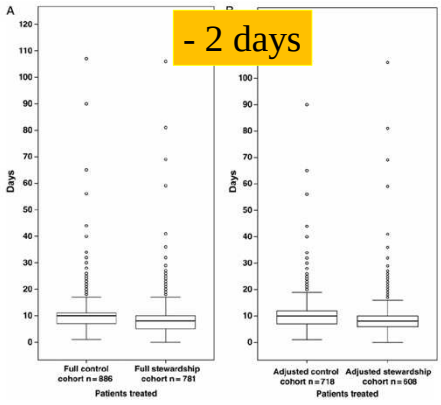


Table 3. Patient Outcomes

Outcome Variable	Full Control Cohort (*n* = 886)	Full Stewardship Cohort (*n* = 781)	*P* Value	Adjusted Control Cohort (*n* = 718)	Adjusted Stewardship Cohort (*n* = 608)	*P* Value
Mortality within 28 d. No. (%)	117 (13)	108 (14)	.71	100 (14)	89 (15)	.71
Mortality related to infection. No. (%)	64 (7)	63 (8)	nc[a]	55 (8)	51 (8)	nc[a]
Readmission within 28 d. No. (%)	203 (23)	180 (22)	.58	166 (23)	138 (23)	.86
Readmission due to incomplete resolving of infection No. (%)	64 (7.2)	38 (4.9)	.048	54 (7.5)	32 (5.3)	.07
Length of stay in hospital Median days (range)	7 (1–44)	7 (1–91)	.08[b]	8 (4–44)	8 (4–91)	.53
Adverse events. No. (%)	19 (2.1)	16 (2.0)	nc	17 (2.4)	14 (2.3)	nc

Impact of an antimicrobial stewardship-led intervention for *Staphylococcus aureus* bacteraemia: a quasi-experimental study

Cynthia T. Nguyen[1], Tejal Gandhi[2], Carol Chenoweth[2], Jessica Lassiter[1], Jenny Dela Pena[3], Gregory Eschenauer[1,3] and Jerod L. Nagel[1]*

J Antimicrob Chemother 2015; 70: 3390–3396

Table 1. Bundle endpoints

	Bundle endpoint
1	empirical antibiotics within 24 h of Gram's stain
2	intravenous β-lactam therapy for MSSA bacteraemia[a]
3	duration of therapy uncomplicated bacteraemia: at least 2 weeks complicated bacteraemia: at least 4 weeks complicated bacteraemia with endocarditis: at least 6 weeks complicated bacteraemia with osteomyelitis: at least 8 weeks
4	repeat blood cultures at least every 48 h from positive Gram's stain until clearance is documented
5	therapeutic vancomycin level of at least 10 mg/L for uncomplicated bacteraemia or at least 15 mg/L for complicated bacteraemia[b]
6	echocardiogram for complicated bacteraemia
7	eliminate or debride foci of infection[c]

+ education
+ follow-up

Adherence Pre: 56.1% vs Intervention: 84.1%

Med time to start Abx:	1 vs 2 h, P=0.051
30 day mortality:	19.5% vs11.4%, P=0.2
Med LOS:	9 vs 9 dys, P=0.474
Persistent BSI	13.4% vs 9.1%,P=0.47

But higher rate of CRBSI…: 29,9% vs 15.9%

Post-prescription review improves in-hospital antibiotic use: A multicenter randomized controlled trial

Lesprit P et al- Clin Microbiol Infect 2015; 21: 180.e1–180.e7

4 hôpitaux/ 3 services
Cluster de 15 jours; Wash out 6 mois
53.2% documentation
ID visit J1 et J3-4

Characteristic	Usual care (*n* = 123)	Intervention (*n* = 123)
Age (years)	70 (54.5–79)	65 (55–78)
Hospital		
A	17 (13.8)	14 (11.4)
B	38 (30.9)	35 (28.4)
C	50 (40.7)	53 (43.1)
D	18 (14.6)	21 (17.1)
Ward		
Surgical	20 (16.3)	17 (13.8)
Medical	103 (83.7)	106 (86.2)
Charlson score	2 (0–3)	2 (0.5–3)
Immunosuppression*	20 (16.3)	17 (13.8)
Acquisition of infection		
Community acquired	64 (52.0)	57 (46.3)
Healthcare associated	12 (9.8)	19 (15.4)
Hospital acquired	47 (38.2)	47 (38.2)
Clinical source of infection		
Urinary tract	39 (31.7)	29 (23.6)
Lower respiratory tract	19 (15.4)	14 (11.4)
Digestive tract	18 (14.6)	20 (16.3)
None	19 (15.4)	28 (22.7)
Severe sepsis or septic shock	4 (3.3)	5 (4.1)
Bacteremia		
Microbiologic documentation at day 3–4		
Total number of pathogens		
Streptococcus spp.		
Staphylococcus spp.		
Enterobacteriaceae		
Others		
Polymicrobial infection		

Variable	Usual care (*n* = 123)	Intervention (*n* = 123)	p
Main outcome criteria*	35 (28.5)	55 (44.7)	0.008
Secondary outcome criteria			
Day 1			
Antibiotic indicated or adequately stopped	96 (78.0)	89 (72.4)	0.30
Optimal drug	62/96 (64.6)	61/89 (69.5)	0.57
Two criteria above	62 (50.4)	61 (49.6)	0.9
Optimal administration	87/96 (90.6)	81/89 (91.0)	0.93
Optimal dosing	78/96 (81.2)	68/89 (76.4)	0.42
Day 3–4			
Antibiotic indicated or adequately stopped	97 (78.9)	109 (88.6)	0.04
Optimal drug	61/99 (61.6)	82/105 (78.1)	0.01
Two criteria above	60/120 (50.0)	81/118 (68.6)	0.003
Optimal administration	79/87 (90.8)	77/81 (95.1)	0.28
Optimal dosing	77/87 (88.5)	74/81 (91.4)	0.54
Optimal duration	55 (44.7)	72 (58.5)	0.03
Duration (days)	10 (7–16)	7 (3–14)	0.003

RCT: external rules for VAP treatment discontinuation (vs treating physicians)

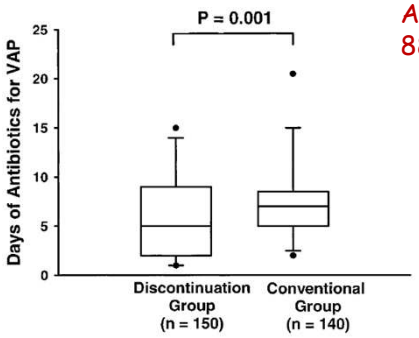


FIGURE 2. Box plots for the days of antibiotic treatment for VAP in each study group. The boxes represent the 25th and 75th percentiles, with the 50th percentile (solid lines) shown within the boxes. The 10th and 19th percentiles are shown as capped bars, with circles marking the 5th and 95th percentiles.

Adherence to recommendations 88.7%

Table 4—*Clinical Outcome Measures

Outcomes	Discontinuation Group (n = 150)	Conventional Group (n = 140)	p Value
Hospital mortality	48 (32.0)	52 (37.1)	0.357
Hospital length of stay, d	15.7 ± 18.2	15.4 ± 15.9	0.865
ICU length of stay, d	6.8 ± 6.1	7.0 ± 7.3	0.798
Duration of ventilation, d	5.4 ± 5.7	5.7 ± 7.1	0.649
Subsequent infection	56 (37.3)	46 (32.9)	0.425

*Data are presented as No. (%) or mean ± SD.

ID driven external rules vs PCT driven stopping rules???

Micek et al- CHEST 2004; 125:1791–1799

Factors associated with appropriate aminoglycosides treatment duration

Variable	Observational audit (*n* = 100)	Intervention audit (*n* = 100)	*P* value
Aminoglycoside use justified, *n* (%)	93 (93)	92 (92)	0.788
Correct drug prescribed, *n* (%)	98 (98)	93 (93)	0.170
Appropriate administration mode, *n* (%)	68 (68)	66 (66)	0.764
single-daily dose	28 (41)	31 (47)	0.642
twice-daily dose	26 (38)	19 (29)	0.236
other	14 (21)	16 (24)	0.692
Correct treatment duration	56 (56)	73 (73)	0.012
Treatment duration, days	6 (4–8)	4 (3–6)	0.0002
Drug level assay performed, *n* (%)	37 (37)	39 (39)	0.811
Correct monitoring modalities, *n* (%)	23 (40)	23 (61)	0.054
median delay, days[a]	2 (1–3)	2 (1–3)	0.290
peak sampled	26 (46)	24 (60)	0.163
trough sampled	56 (98)	39 (100)	>0.999
correct peak value	10 (38)	15 (60)	0.124
correct trough value	27 (48)	28 (72)	0.022

→ ICU

OR, 4.46 (1.6–12.5)

→ Polymicrobial infection

OR, 3.97 (1.3–11.9)

→ Antibiotic control team intervention

OR, 2.49 (1.27–4.87)

Zahar JR et al - Journal of Antimicrobial Chemotherapy (2006) 58, 651–656

5. Comment réévaluer et diminuer la durée des traitements antibiotiques ?

►Lorsque l'antibiothérapie initiale est adaptée, pour une pneumonie associée à la ventilation chez les patients non immunodéprimés, il faut limiter la durée totale de l'antibiothérapie à 8 jours quelle(s) que soi(en)t la(les) bactérie(s) responsable(s). (Accord faible)
► En dehors de situations cliniques particulières, il faut probablement limiter à 5-7 jours le traitement pour une infection communautaire. (Accord fort)
►En dehors d'une bactériémie à *S. aureus*, ou d'une bactériémie compliquée de métastases infectieuses, il faut probablement limiter à 5-7 jours le traitement d'une bactériémie liée au cathéter si les hémocultures se négativent dans les trois premiers jours du traitement et que le cathéter a été retiré. (Accord fort)
►Il faut probablement mettre en place une concertation pluridisciplinaire afin d'améliorer l'adéquation des antibiothérapies, d'augmenter le taux de désescalade et de limiter leur consommation.(Accord fort)
► Il faut probablement mettre en place des protocoles d'antibiothérapie pour améliorer le pronostic des patients et pour limiter l'émergence de résistances aux antibiotiques. (Accord fort)

35

Bretonniere et al – RFE- Intensive Care Med (2015) 41:1181–1196

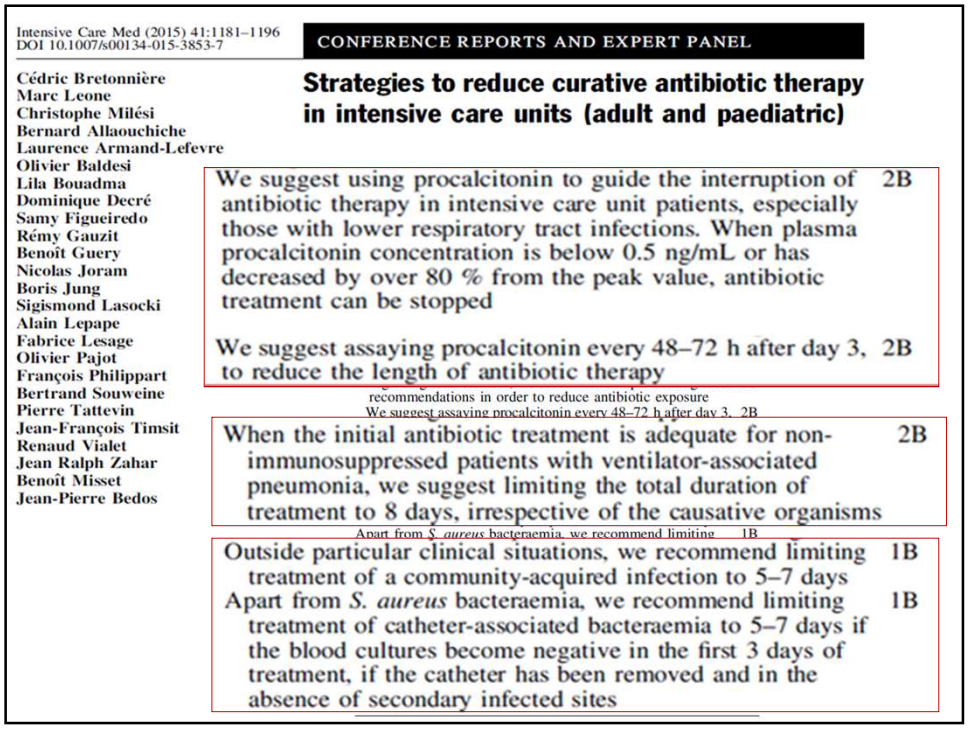
5. Comment réévaluer et diminuer la durée des traitements antibiotiques ?

Réévaluation et durée des traitements antibiotiques
1- Il faut une réévaluation de l'antibiothérapie chez tous les patients de réanimation au plus tard à 48-72h et faire une désescalade en fonction de la situation clinique et des données microbiologiques (Accord fort).
2- Concernant la PCT :
· Il faut probablement utiliser la procalcitonine pour guider l'interruption des antibiotiques au cours des infections chez les patients de réanimation, notamment au cours des infections respiratoires basses. Lorsque la procalcitonine plasmatique est inférieure à 0.5 ng/ml ou que la procalcitonine plasmatique a diminué de plus de 80% par rapport à la valeur maximale, l'antibiothérapie peut être arrêtée (Accord faible).
· Il faut probablement mettre en place des recommandations locales structurant cette réévaluation afin de réduire l'exposition des patients aux antibiotiques en réanimation (Accord fort).
· Il faut probablement doser la PCT toutes les 48h à 72h au-delà de J3 afin de réduire la durée de l'antibiothérapie (Accord faible).

Bretonniere et al – RFE Intensive Care Med (2015) 41:1181–1196

Key rules

- AVOID starting antimicrobials if useless
- USE HIGH DOSE for initial treatment if antimicrobials are started
- STOP early preemptive treatment
  - Maximal effort for diagnosing infection BEFORE treatment
- Duration of treatment
  - Should be shorter than originally stated
    - Bacterial killing
    - Tissue diffusion / half life
  - PCT or ID driven approaches, both?
- Cautiously
  - Inadequate initial treatment
  - Immunocompromized patients
  - Devices and foreign materials
  - MDR/XDR organisms



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Strategies to reduce curative antibiotic therapy in intensive care units (adult and paediatric)

We suggest using procalcitonin to guide the interruption of antibiotic therapy in intensive care unit patients, especially those with lower respiratory tract infections. When plasma procalcitonin concentration is below 0.5 ng/mL or has decreased by over 80 % from the peak value, antibiotic treatment can be stopped — 2B

We suggest assaying procalcitonin every 48–72 h after day 3, to reduce the length of antibiotic therapy — 2B

recommendations in order to reduce antibiotic exposure
We suggest assaying procalcitonin every 48–72 h after day 3, 2B

When the initial antibiotic treatment is adequate for non-immunosuppressed patients with ventilator-associated pneumonia, we suggest limiting the total duration of treatment to 8 days, irrespective of the causative organisms — 2B

Apart from *S. aureus* bacteraemia, we recommend limiting 1B

Outside particular clinical situations, we recommend limiting treatment of a community-acquired infection to 5–7 days — 1B

Apart from *S. aureus* bacteraemia, we recommend limiting treatment of catheter-associated bacteraemia to 5–7 days if the blood cultures become negative in the first 3 days of treatment, if the catheter has been removed and in the absence of secondary infected sites — 1B