Intensive Care Med
https://doi.org/10.1007/s00134-025-08071-0

CORRECTION

Correction: Shortening antibiotic therapy duration for hospital-acquired bloodstream infections in critically ill patients: a causal inference model from the international EUROBACT-2 database

Lena Gajdos[1,2], Niccolo Buetti[2,3], Alexis Tabah[4,5,6], Stephane Ruckly[1,2], Murat Akova[7], Frederik Sjöval[8,9], Kostoula Arvaniti[10], Jan de Waele[11,12], Hendrik Bracht[13], Francois Barbier[14] and Jean-François Timsit[1,2,15*] on behalf of the EUROBACT-2 Study Group, the European Society of Intensive Care Medicine (ESICM), the European Society of Clinical Microbiology, the Infectious Diseases (ESCMID) Study Group for Infections in Critically Ill Patients (ESGCIP) and the OUTCOMEREA Network

© 2025 Springer-Verlag GmbH Germany, part of Springer Nature

Correction: Intensive Care Medicine (2025) 51:518–528
https://doi.org/10.1007/s00134-025-07857-6

When this article was first published it contained the following errors:

1. instead of "Kostoula Arvanti" the name of this co-author should be correctly "Kostoula Arvaniti"

2. The following sentence in the Statistical analysis section " Clinically relevant covariates included catheter as source, source control status …, best available therapy (BAT), Staphylococcus aureus BSI (SAB), immunocompromised status, SOFA score at baseline, Delta-SOFA …, and combination therapy …"

should correctly read:

"Clinically relevant covariates included catheter as source, source control status …, delay until adequate treatment, best available therapy (BAT), Staphylococcus aureus BSI (SAB), immunocompromised status, SOFA score at baseline, Delta-SOFA …, and combination therapy …"

3. In the Results section, the most frequent infection source was incorrectly reported as catheter-related. It should have been respiratory. The corrected sentence is: "The source of the HA-BSI was most often a respiratory infection (n = 180, 33%)."

4. Accordingly, in Table 1 and the abstract, "catheter", "respiratory" and "soft tissue" were mistakenly inverted. The corrected Table 1 is provided here.

5. The abstract should have stated: "The most common infection source was respiratory (33%), most common microorganisms were Enterobacterales (39%)."

The authors apologize for these errors and any inconvenience they may have caused.

The Original Article has been corrected.

*Correspondence: Jean-francois.timsit@aphp.fr
[1] OUTCOMEREA Research Group, Drancy, France
Full author information is available at the end of the article

The original article can be found online at https://doi.org/10.1007/s00134-025-07857-6.

Table 1 Patients characteristics

	Overall, $N = 550$[1]	Long treatment 14–21 days, $N = 337$[1]	Short treatment 7–10 days, $N = 213$[1]	p-value[2]
Demographic characteristics				
Age (years)	64 (50–73)	64 (49–74)	64 (52–72)	0.7
Male sex	351 (64%)	205 (61%)	146 (69%)	0.067
Chronic conditions				
Respiratory	84 (15%)	48 (14%)	36 (17%)	0.4
Cardiovascular	117 (21%)	78 (23%)	39 (18%)	0.2
Neurology	88 (16%)	58 (17%)	30 (14%)	0.3
Metabolic*	196 (36%)	120 (36%)	76 (36%)	> 0.9
Immunosuppression**	132 (24%)	80 (24%)	52 (24%)	0.9
Charlson comorbidity index	1.00 (0.00, -4.00)	1.00 (0.00- 4.00)	1.00 (0.00–3.00)	0.2
HA-BSI characteristics				
SOFA at HA-BSI diagnosis	8.0 (5.0, 10.0)	8.0 (5.0, 11.0)	7.0 (4.0, 10.0)	0.052
Septic shock at BSI diagnosis	262 (47.6%)	157 (40.1%)	105 (49.3%)	0.59
Source of HA-BSI				0.7
Primary	91 (17%)	50 (15%)	41 (19%)	
Abdominal	75 (14%)	43 (13%)	32 (15%)	
Catheter	138 (25%)	87 (26%)	51 (24%)	
Respiratory	180 (33%)	116 (34%)	64 (30%)	
Soft tissue	21 (3.8%)	14 (4.2%)	7 (3.3%)	
Urinary	45 (8.2%)	27 (8.0%)	18 (8.5%)	
Microorganism category				
Enterobacterales	212 (39%)	120 (36%)	92 (43%)	0.075
Non fermenting GN bacilli	112 (20%)	76 (23%)	36 (17%)	0.11
P. aeruginosa	43 (7.8%)	19 (5.6%)	24 (11.3%)	0.026
Anaerobic and other GN	17 (3.1%)	6 (1.8%)	11 (5.2%)	0.026
Staphylococcus aureus	50 (9.1%)	38 (11%)	12 (5.6%)	0.025
CoNS	49 (8.9%)	25 (7.4%)	24 (11%)	0.12
Streptococci, Enterococci***	69 (13%)	42 (12%)	27 (13%)	> 0.9
Polymicrobial	41 (7.5%)	30 (8.9%)	11 (5.2%)	0.10
DTR microorganisms**	94 (17%)	79 (23%)	15 (7.0%)	< 0.001
MDR-GNB***	201 (36.6%)	135 (40.1%)	66 (31.0%)	0.002
Source control				0.4
Not required	283 (51%)	167 (50%)	116 (54%)	
Required completed	249 (45%)	157 (47%)	92 (43%)	
Required not completed	18 (3.3%)	13 (3.9%)	5 (2.3%)	
Treatment characteristics				
Day 1 antibiotic therapy				
Aminoglycoside	59 (11%)	29 (8.6%)	30 (14%)	0.043
Carbapenem	169 (31%)	112 (33%)	57 (27%)	0.11
Ureidopenicillin******	115 (21%)	65 (19%)	50 (23%)	0.2
Glycopeptide	98 (18%)	68 (20%)	30 (14%)	0.069
Lipopeptide	7 (1.3%)	3 (0.9%)	4 (1.9%)	0.4
Treatment duration*****	14.0 (9.0, 16.0)	16.0 (15.0, 18.0)	8.0 (8.0, 9.0)	< 0.001
Initial combination therapy	218 (40%)	155 (46%)	63 (30%)	< 0.001
Adequate therapy on the 1st day	371 (67%)	237 (70%)	134 (63%)	0.071
Therapy adequation for the 94 DTR-BSIs				< 0.001
Adequate therapy	9 (10%)	7 (9%)	2 (13%)	
Best available therapy********	85 (90%)	72 (91%)	13 (87%)	
Evolution in ICU characteristics				

Table 1 (continued)

	Overall, $N = 550$[1]	Long treatment 14–21 days, $N = 337$[1]	Short treatment 7–10 days, $N = 213$[1]	p-value[2]
Day-7 SOFA	6.0 (3.0, 8.0)	6.0 (3.0, 9.0)	5.0 (2.0, 7.0)	0.002
Delta SOFA (D1-D7)	− 2.0 (− 4.0, 0.0)	− 2.0 (− 4.0, 0.0)	− 1.0 (− 4.0, 0.0)	0.2

In contrast, for BSIs caused by susceptible microorganisms, we included only patients who received at least one adequate antibiotic therapy. We excluded patients who did not receive appropriate treatment, as the susceptibility of the microorganism should have allowed for the administration of an effective antibiotic regimen

SOFA sepsis-related organ failure assessment, *ICU* intensive care unit, *GN* Gram-negative, *GP* Gram-positive, *CNS* Coagulase-negative *Staphylococci*, *HA-BSI* Hospital-acquired Bloodstream infection, *DTR* difficult-to-treat, *BMI* body mass index, *BC* blood culture

[1] Median (IQR); *n* (%)[2] Wilcoxon rank sum test; Pearson's Chi-squared test; Fisher's exact test

*Include: diabetes, renal disease and connective tissue disease

**Patients were considered immunocompromised if they presented any of the following conditions (organ transplant, IDS (not only HIV positivity, solid tumors, hematological malignancy (leukemia [acute of chronic] or lymphoma [any type]) or received any of the following treatments (steroids > 20 mg/day for at least 4 weeks or recent high dose steroids, chemotherapy / radiotherapy within 6 months, ongoing targeted cancer therapy), see more details in e-Table 2 in the ESM

***Streptococcus, Enterococcus and other GP

****DTR: a difficult to treat Gram negative is defined as due to a micro-organism Intermediate, or resistant to all reported agents in carbapenem, β-lactam, and fluoroquinolone categories (including additional agents when results available). For DTR A. baumanii, the strains should also be Intermediate or resistant to piperacillin-tazobactam and ampicillin-sulbactam. For other DTR than A. baumanii, the strain should be intermediate or resistant to aztreonam

*****MDR was defined as acquired non-susceptibility to at least one agent in three or more antimicrobial categories

******Piperacillin – Tazobactam

*******Durations were censored at day-28

********In cases of BSIs caused by DTR microorganisms, we included patients who received adequate treatment. Additionally, we included patients who received the best available therapy (BAT), defined as any antibiotic regimen administered, even if it was considered inadequate or of uncertain efficacy. This decision was justified by the following: (i) Some centers might lack access to the most recent broad-spectrum antibiotics or advanced susceptibility testing techniques. (ii) Certain therapies might still exhibit partial activity against DTR microorganisms as they are usually active, but MIC was not available (i.e. tigecyclin, Colistin) and/or the breakpoint not defined (i.e.tigecyclin)

Author details

[1] OUTCOMEREA Research Group, Drancy, France. [2] INSERM, IAME, U1137, Team DeSCID, Paris, France. [3] Infection Control Program and WHO Collaborating Centre, Faculty of Medicine, Service PCI, Geneva University Hospitals, Geneva, Switzerland. [4] Queensland University of Technology (QUT), Brisbane, Australia. [5] Faculty of Medicine, University of Queensland, Brisbane, Australia. [6] Intensive Care Unit, Redcliffe Hospital, Redcliffe, Australia. [7] Department of Infectious Diseases, Hacettepe University School of Medicine, Ankara, Turkey. [8] Department of Intensive and Perioperative Care, Skane University Hospital, Malmö, Sweden. [9] Department of Clinical Sciences, Lund University, Lund, Sweden. [10] Intensive Care Unit, Papageorgiou University Affiliated Hospital, Thessaloníki, Greece. [11] Department of Intensive Care Medicine, Ghent University Hospital, Ghent, Belgium. [12] Department of Internal Medicine and Pediatrics, Faculty of Medicine and Health Sciences, Ghent University, Ghent, Belgium. [13] Department of Anesthesiology, Intensive Care, Emergency Medicine, Transfusion Medicine, and Pain Therapy, University Hospital of Bielefeld, Campus Bielefeld-Bethel, Bielefeld, Germany. [14] Centre Hospitalier Régional d'Orléans, Tours, France. [15] APHP, Bichat Hospital, Medical and Infectious Diseases ICU, Paris, France.

Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Published online: 19 August 2025