

Memiş H, Çakır A, Pehlivanlı A, Başgut B. The definition, prevalence, and risk factors of augmented renal clearance in adult patients on antimicrobial therapy: A scoping review. *Infect Dis Clin Microbiol.* 2025;2:123-32.

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SUPPLEMENTARY MATERIAL

Table 1. Characteristics of included articles.

Publication year	n (%)
2023	5 (10.6)
2022	14 (29.8)
2021	9 (19.2)
2020	7 (14.9)
2019	12 (25.5)
Journals	
Antimicrobial Agents and Chemotherapy (1-6)	6 (12.8)
Antibiotics-Basel (7-10)	4 (8.5)
International Journal of Antimicrobial Agents (11-14)	4 (8.5)
Journal of Antimicrobial Chemotherapy (15-17)	3 (6.4)
Critical Care (18, 19)	2 (4.3)
Infection and Drug Resistance (20, 21)	2 (4.3)
Journal of Infection and Chemotherapy (22, 23)	2 (4.3)
Pharmaceutics (24, 25)	2 (4.3)
Acta Anaesthesiologica Scandinavica (26)	1 (2.1)
Antibiotics (27)	1 (2.1)
British Journal of Clinical Pharmacology (28)	1 (2.1)
Clinical Microbiology and Infection (29)	1 (2.1)
Drug Design, Development and Therapy (30)	1 (2.1)
European Journal of Clinical Pharmacology (31)	1 (2.1)
Frontiers in Pharmacology (32)	1 (2.1)
International Journal of Critical Illness and Injury Science (33)	1 (2.1)
International Journal of Infectious Diseases (34)	1 (2.1)
Jac-Antimicrobial Resistance (35)	1 (2.1)
Journal of Clinical Pharmacology (36)	1 (2.1)
Journal of Clinical Pharmacy and Therapeutics (37)	1 (2.1)
Journal of Critical Care (38)	1 (2.1)
Journal of Intensive Care (39)	1 (2.1)
Journal of Pharmacy Practice (40)	1 (2.1)
Journal of Trauma and Acute Care Surgery (41)	1 (2.1)
Medicina (Lithuania) (42)	1 (2.1)

Neurocritical Care (43)	1 (2.1)
Pharmacology Research and Perspectives (44)	1 (2.1)
Saudi Pharmaceutical Journal (45)	1 (2.1)
Surgical Infections (46)	1 (2.1)
Translational Andrology and Urology (47)	1 (2.1)
Study Type	
Retrospective observational	19 (40.4)
Prospective observational	13 (27.7)
Population pharmacokinetic	10 (21.3)
Randomized-controlled	3 (6.4)
Prospective pharmacokinetic	2 (4.3)
Study Population	
Critically ill	33 (70.2)
Hospital-acquired/Ventilator-associated pneumonia	3 (6.4)
Burn	3 (6.4)
Mixed	3 (6.4)
Cardiac surgery	1 (2.1)
Hemorrhagic stroke	1 (2.1)
Acute brain injury	1 (2.1)
Trauma	1 (2.1)
Sepsis	1 (2.1)
Patient Characteristics	
Total number of patients	6193 (100)
Median [IQR] number of patients per study	70 [32.5-167.5]
Range of number of patients per study	8-531
Male patients	3838 (62)
Female patients	2355 (38)
Range of mean/median age of the patients, years	29-88

ARTICLES

- 1) Aréchiga-Alvarado NA, Medellín-Garibay SE, Milán-Segovia RDC, Ortiz-Álvarez A, Magaña-Aquino M, Romano-Moreno S. Population pharmacokinetics of amikacin administered once daily in patients with different renal functions. *Antimicrob Agents Chemother.* 2020;64(5):e02178-19. [[CrossRef](#)]
- 2) Carrié C, Delzor F, Roure S, Dubuisson V, Petit L, Molimard M, et al. Population pharmacokinetic study of the suitability of standard dosing regimens of amikacin in critically ill patients with open-abdomen and negative-pressure wound therapy. *Antimicrob Agents Chemother.* 2020;64(4):e02098-19. [[CrossRef](#)]

- 3) Heffernan AJ, Sime FB, Kumta N, Wallis SC, McWhinney B, Ungerer J, et al. Multicenter population pharmacokinetic study of unbound ceftriaxone in critically ill patients. *Antimicrob Agents Chemother.* 2022;66(6):e0218921. [[CrossRef](#)]
- 4) Kumta N, Heffernan AJ, Cotta MO, Wallis SC, Livermore A, Starr T, et al. Plasma and cerebrospinal fluid population pharmacokinetics of meropenem in neurocritical care patients: a prospective two-center study. *Antimicrob Agents Chemother.* 2022;66(8):e0014222. [[CrossRef](#)]
- 5) Layios N, Visée C, Mistretta V, Denooz R, Maes N, Descy J, et al. Modelled target attainment after temocillin treatment in severe pneumonia: Systemic and epithelial lining fluid pharmacokinetics of continuous versus intermittent infusions. *Antimicrob Agents Chemother.* 2022;66(3):e0205221. [[CrossRef](#)]
- 6) Ollivier J, Carrié C, d'Houdain N, Djabarouti S, Petit L, Xuereb F, et al. Are Standard dosing regimens of ceftriaxone adapted for critically ill Patients with augmented creatinine clearance? *Antimicrob Agents Chemother.* 2019;63(3):e02134-18. [[CrossRef](#)]
- 7) Šantavý P, Šíma M, Zuščich O, Kubíčková V, Michaličková D, Slanař O, et al. Population pharmacokinetics of prophylactic cefazolin in cardiac surgery with standard and minimally invasive extracorporeal circulation. *antibiotics (Basel).* 2022;11(11):1582. [[CrossRef](#)]
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- 9) Zhao J, Fan Y, Yang M, Liang X, Wu J, Chen Y, et al. Association between augmented renal clearance and inadequate vancomycin pharmacokinetic/pharmacodynamic targets in Chinese adult patients: A prospective observational study. *Antibiotics (Basel).* 2022;11(7):837. [[CrossRef](#)]
- 10) Zhao S, He N, Zhang Y, Wang C, Zhai S, Zhang C. Population pharmacokinetic modeling and dose optimization of vancomycin in Chinese patients with augmented renal clearance. *Antibiotics (Basel).* 2021;10(10):1238. [[CrossRef](#)]
- 11) Nicolau DP, De Waele J, Kuti JL, Caro L, Larson KB, Yu B, et al. Pharmacokinetics and pharmacodynamics of ceftolozane/tazobactam in critically ill patients with augmented renal clearance. *Int J Antimicrob Agents.* 2021;57(4):106299. [[CrossRef](#)]

- 12) Tournayre S, Mathieu O, Villiet M, Besnard N, Brunot V, Daubin D, et al. Factors associated with meropenem pharmacokinetic/pharmacodynamic target attainment in septic critically ill patients treated with extended intermittent infusion or continuous infusion. *Int J Antimicrob Agents*. 2023;62(2):106868. [[CrossRef](#)]
- 13) Vu DH, Nguyen DA, Delattre IK, Ho TT, Do HG, Pham HN, et al. Determination of optimal loading and maintenance doses for continuous infusion of vancomycin in critically ill patients: Population pharmacokinetic modelling and simulations for improved dosing schemes. *Int J Antimicrob Agents*. 2019;54(6):702-8. [[CrossRef](#)]
- 14) Yu Z, Liu J, Yu H, Zhou L, Zhao Y, Zhong L, et al. Should the trough concentration of vancomycin be abandoned in therapeutic drug monitoring? A multicentre, retrospective study of critically ill patients without any form of dialysis. *Int J Antimicrob Agents*. 2023;61(6):106812. [[CrossRef](#)]
- 15) Chauzy A, Gregoire N, Ferrandière M, Lasocki S, Ashenoune K, Seguin P, et al. Population pharmacokinetic/pharmacodynamic study suggests continuous infusion of ceftaroline daily dose in ventilated critical care patients with early-onset pneumonia and augmented renal clearance. *J Antimicrob Chemother*. 2022;77(11):3173-9. [[CrossRef](#)]
- 16) Dreesen E, Gijssen M, Elkayal O, Annaert P, Debaveye Y, Wauters J, et al. Ceftriaxone dosing based on the predicted probability of augmented renal clearance in critically ill patients with pneumonia. *J Antimicrob Chemother*. 2022;77(9):2479-88. [[CrossRef](#)]
- 17) Fraton AJ, Mah JW, Nicolau DP, Kuti JL. Imipenem/cilastatin/relebactam pharmacokinetics in critically ill patients with augmented renal clearance. *J Antimicrob Chemother*. 2022;77(11):2992-9. [[CrossRef](#)]
- 18) Carrié C, Chadeaux G, Sauvage N, de Courson H, Petit L, Nouette-Gaulain K, et al. Increased β -Lactams dosing regimens improve clinical outcome in critically ill patients with augmented renal clearance treated for a first episode of hospital or ventilator-acquired pneumonia: a before and after study. *Crit Care*. 2019;23(1):379. [[CrossRef](#)]
- 19) Shorr AF, Bruno CJ, Zhang Z, Jensen E, Gao W, Feng HP, et al. Ceftolozane/tazobactam probability of target attainment and outcomes in participants with augmented renal clearance from the randomized phase 3 ASPECT-NP trial. *Crit Care*. 2021;25(1):354. [[CrossRef](#)]
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patients with preserved or increased renal function. *Infect Drug Resist.* 2022;15:53-62. [[CrossRef](#)]

- 21) Wu CC, Tai CH, Liao WY, Wang CC, Kuo CH, Lin SW, et al. Augmented renal clearance is associated with inadequate antibiotic pharmacokinetic/pharmacodynamic target in Asian ICU population: a prospective observational study. *Infect Drug Resist.* 2019;12:2531-41. [[CrossRef](#)]
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- 24) Lee DH, Kim HS, Park S, Kim HI, Lee SH, Kim YK. Population pharmacokinetics of meropenem in critically ill Korean patients and effects of extracorporeal membrane oxygenation. *Pharmaceutics.* 2021;13(11):1861. [[CrossRef](#)]
- 25) Troisi C, Cojutti PG, Rinaldi M, Laici C, Siniscalchi A, Viale P, et al. Measuring creatinine clearance is the most accurate way for calculating the proper continuous infusion meropenem dose for empirical treatment of severe Gram-negative infections among critically ill patients. *Pharmaceutics.* 2023;15(2):551. [[CrossRef](#)]
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- 38) Damen C, Dhaese S, Verstraete AG, Stove V, De Waele JJ. Subtherapeutic piperacillin concentrations in neurocritical patients. *J Crit Care.* 2019;54:48-51. [[CrossRef](#)]

- 39) Morbitzer KA, Rhoney DH, Dehne KA, Jordan JD. Enhanced renal clearance and impact on vancomycin pharmacokinetic parameters in patients with hemorrhagic stroke. *J Intensive Care*. 2019;7:51. [[CrossRef](#)]
- 40) Oswalt A, Joseph AC, Sima A, Kurczewski L. Evaluation of intravenous vancomycin pharmacokinetic parameters in patients with acute brain injury. *J Pharm Pract*. 2019;32(2):132-8. [[CrossRef](#)]
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- 42) Aitullina A, Krūmiņa A, Svirskis Š, Purviņa S. Colistin use in patients with extreme renal function: From dialysis to augmented clearance. *Medicina (Kaunas)*. 2019;55(2):33. [[CrossRef](#)]
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