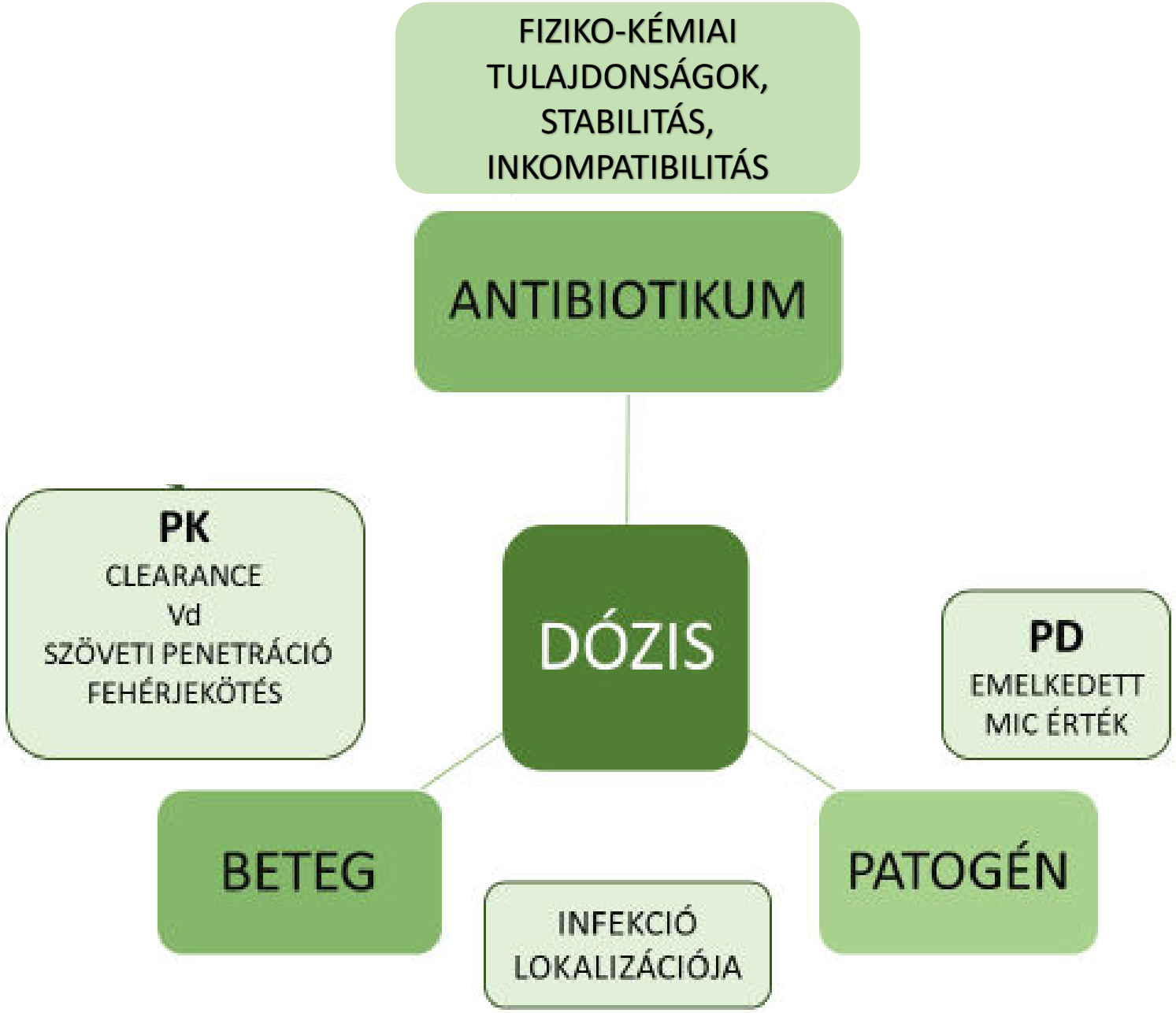
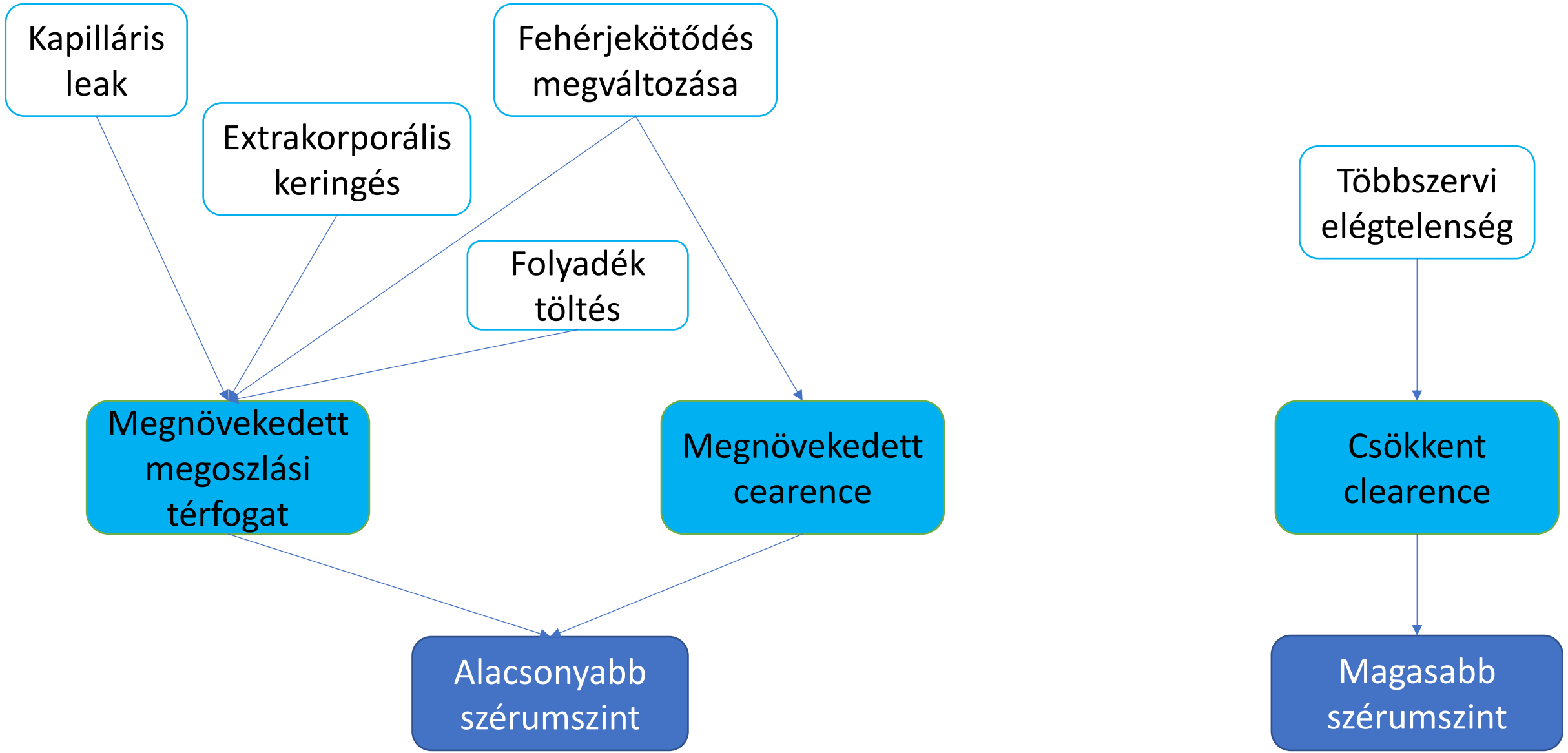
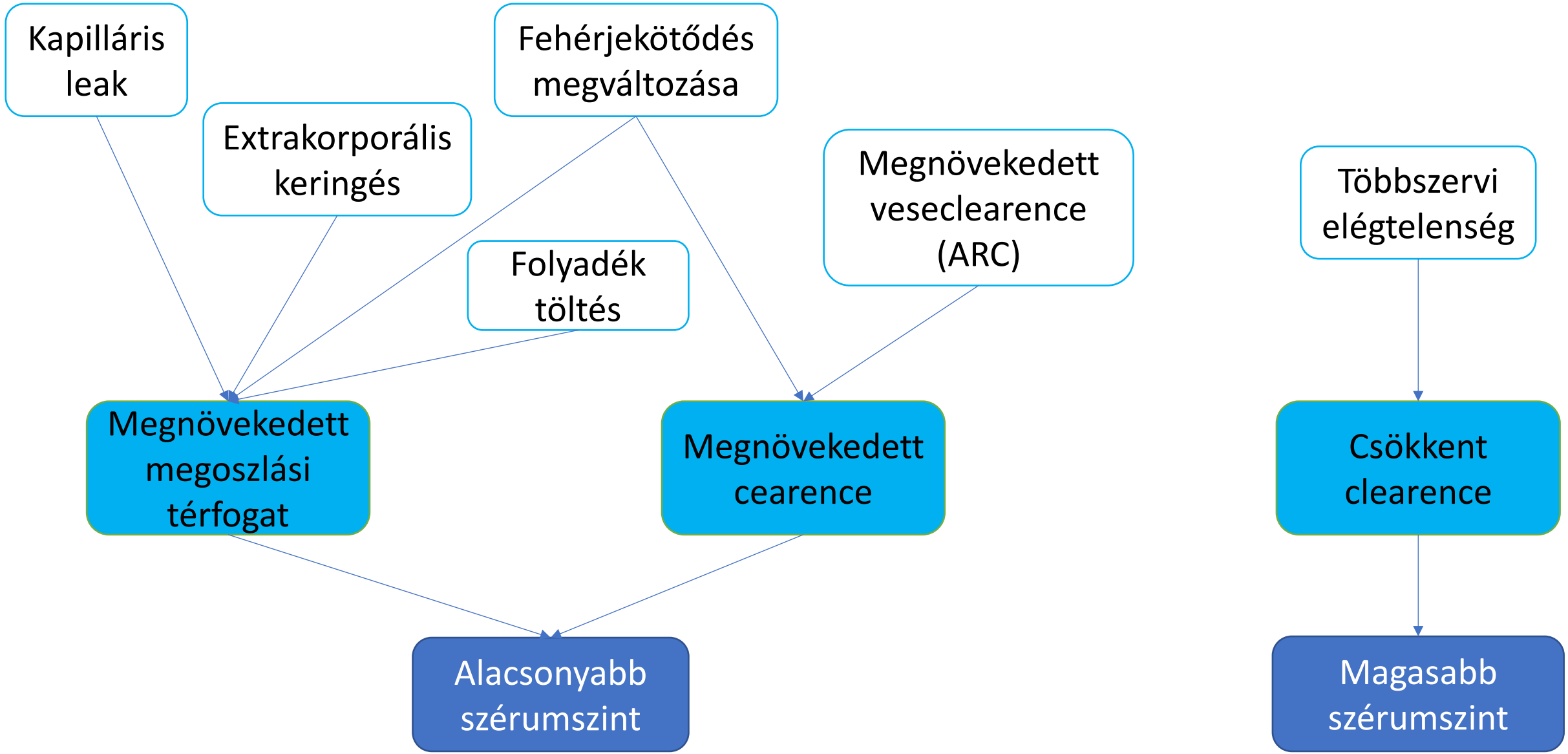
Antibiotikum TDM – mikor, miért, hogyan?

Holub Lili



PK = farmakokinetika, PD = farmakodinámia


Kapilláris leak
Extrakorporális keringés
Fehérjekötődés megváltozása
Folyadék töltés
Megnövekedett megoszlási térfogat
Megnövekedett cearence
Alacsonyabb szérumszint
Többszervi elégtelenség
Csökkent clearence
Magasabb szérumszint


Kapilláris leak
Extrakorporális keringés
Fehérjekötődés megváltozása
Folyadék töltés
Megnövekedett veseclearence (ARC)
Többszervi elégtelenség
Megnövekedett megoszlási térfogat
Megnövekedett cearence
Csökkent clearence
Alacsonyabb szérumszint
Magasabb szérumszint

Clin Infect Dis 2014; 58(8)

DALI: defining antibiotic levels in intensive care unit patients: are current β-lactam antibiotic doses sufficient for critically ill patients?

Jason A Roberts [1], Sanjoy K Paul, Murat Akova, Matteo Bassetti, Jan J De Waele, George Dimopoulos, Kirsi-Maija Kaukonen, Despoina Koulenti, Claude Martin, Philippe Montravers, Jordi Rello, Andrew Rhodes, Therese Starr, Steven C Wallis, Jeffrey Lipman; DALI Study

Results: We included 384 patients (361 evaluable patients) across 68 hospitals. The median age was 61 (interquartile range [IQR], 48-73) years, the median Acute Physiology and Chronic Health Evaluation II score was 18 (IQR, 14-24), and 65% of patients were male. Of the 248 patients treated for infection, 16% did not achieve 50% f T>MIC and these patients were 32% less likely to have a positive clinical outcome (odds ratio [OR], 0.68; P = .009). Positive clinical outcome was associated with increasing 50% f T>MIC and 100% f T>MIC ratios (OR, 1.02 and 1.56, respectively; P < .03), with significant interaction with sickness severity status.

Conclusions: Infected critically ill patients may have adverse outcomes as a result of inadeqaute antibiotic exposure; a paradigm change to more personalized antibiotic dosing may be necessary to improve outcomes for these most seriously ill patients.

Béta-laktám antibiotikumok terápiás gyógyszerszint-monitorozása kritikus állapotú felnőtt betegekben: egycentrumos, prospektív, obszervációs pilotvizsgálat

Závorszky Lőrinc dr.[1, 2, 4] ▪ Rádler Andrea dr.[1] ▪ Galgóczi Júlia dr.[1]
Tóth Bence dr.[1] ▪ Csomós Ákos dr.[1] ▪ Erőss Attila dr.[1]
Farkas Róbert dr.[3] ▪ Karvaly Gellért dr.[3] ▪ Holub Lili dr.[4]
Szabó Bálint Gergely dr.[4, 5, 6] ▪ Lakatos Botond dr.[4, 5, 6]

Antimicrobial Susceptibility Testing – EUCAST) definíciói alapján határoztuk meg. Elsődleges végpontként a terápiás szérumkoncentrációt el nem érő betegek arányát vizsgáltuk.

Eredmények: Vizsgálatunkban 28 beteg esetében összesen 60 antibiotikumszint-mérés történt. A betegek medián életkora 64,5 ± 28,7 év volt, 80,0%-uk (n = 22) férfi; 35,7%-uk (n = 10) belgyógyászati, 53,5%-uk (n = 15) sebészeti/traumatológiai okkal, míg 10,7%-uk (n = 3) égési sérülés miatt került intenzív osztályra. A betegek 39,3%-ánál (n = 11) volt detektálható a terápiás célt el nem érő antibiotikum-szérumkoncentráció. A meropenemkezelésben részesülő betegek közül 6 (66,6%), a piperacillin esetében 5 (41,6%), míg a ceftriaxon esetében 1 (12,5%) betegnél volt szubterápiás a mért koncentráció.

Megbeszélés: Kutatásunk alapján a béta-laktám antibiotikumokkal kezelt, kritikus állapotú felnőtt betegek releváns része nem érte el a kívánt farmakodinámiás célt, különösen a piperacillin és a meropenem esetében.

Crit Care Med; 2021

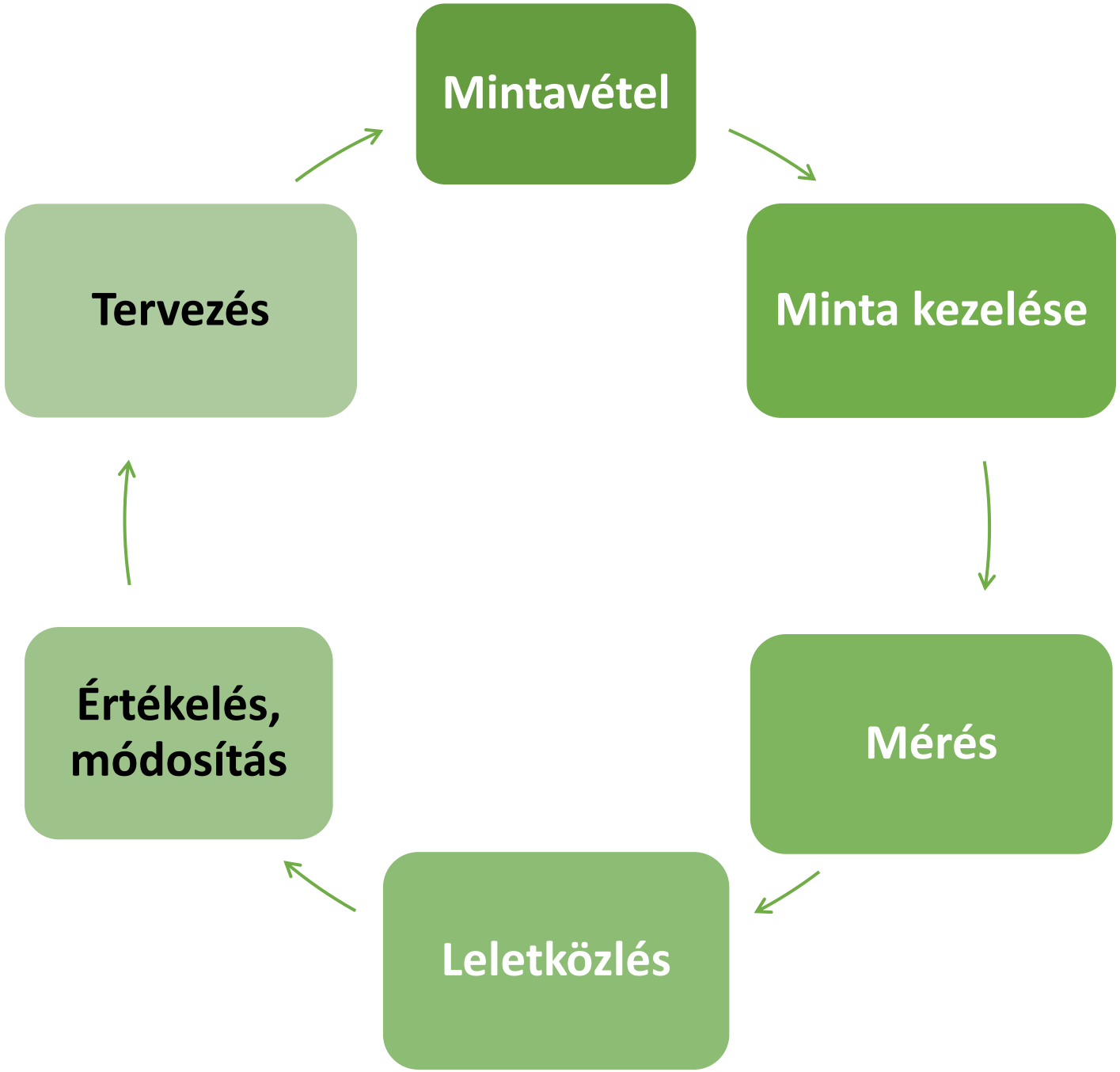
ONLINE SPECIAL ARTICLE

Surviving Sepsis Campaign: International Guidelines for Management of Sepsis and Septic Shock 2021

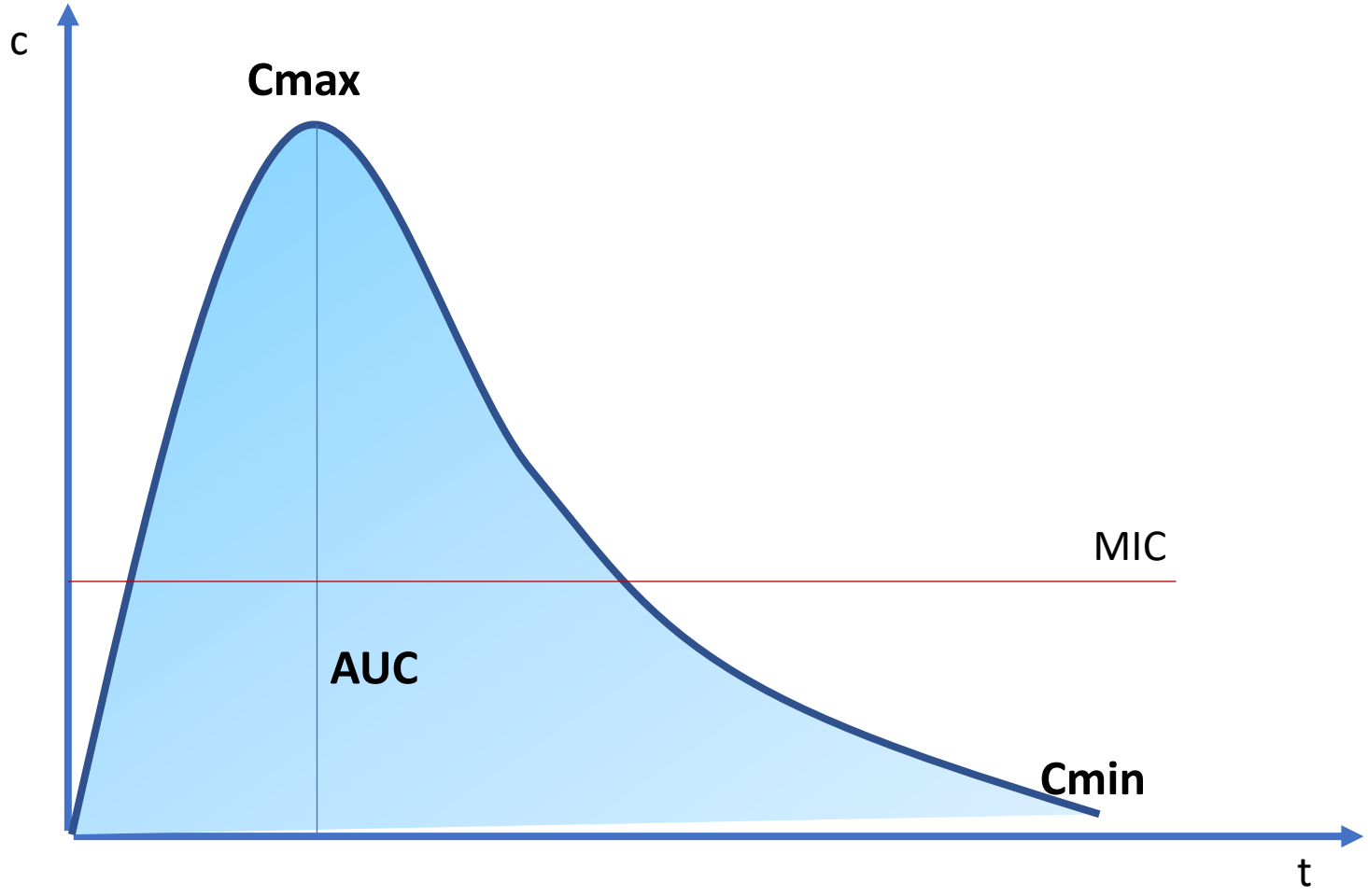
KEY WORDS: adults; evidence-based medicine; guidelines; sepsis; septic shock

Laura Evans[1]
Andrew Rhodes[2]
Waleed Alhazzani[3]

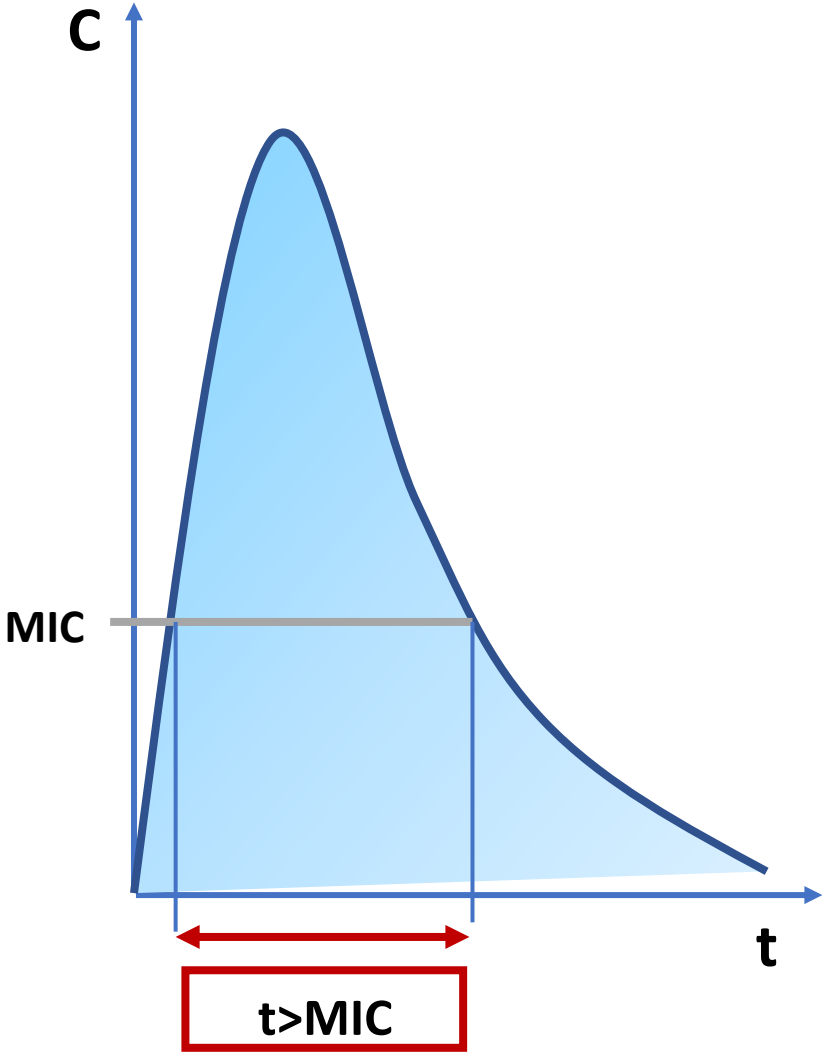
Applying a PK/PD approach to antibiotic dosing requires support from knowledgeable clinician team members (254), use of a patient population-specific guideline document (255), use of therapeutic drug monitoring (256), and/or use of dosing software (238, 248). Some of these potential approaches to application


Mintavétel
Minta kezelése
Mérés
Leletközlés
Értékelés, módosítás
Tervezés

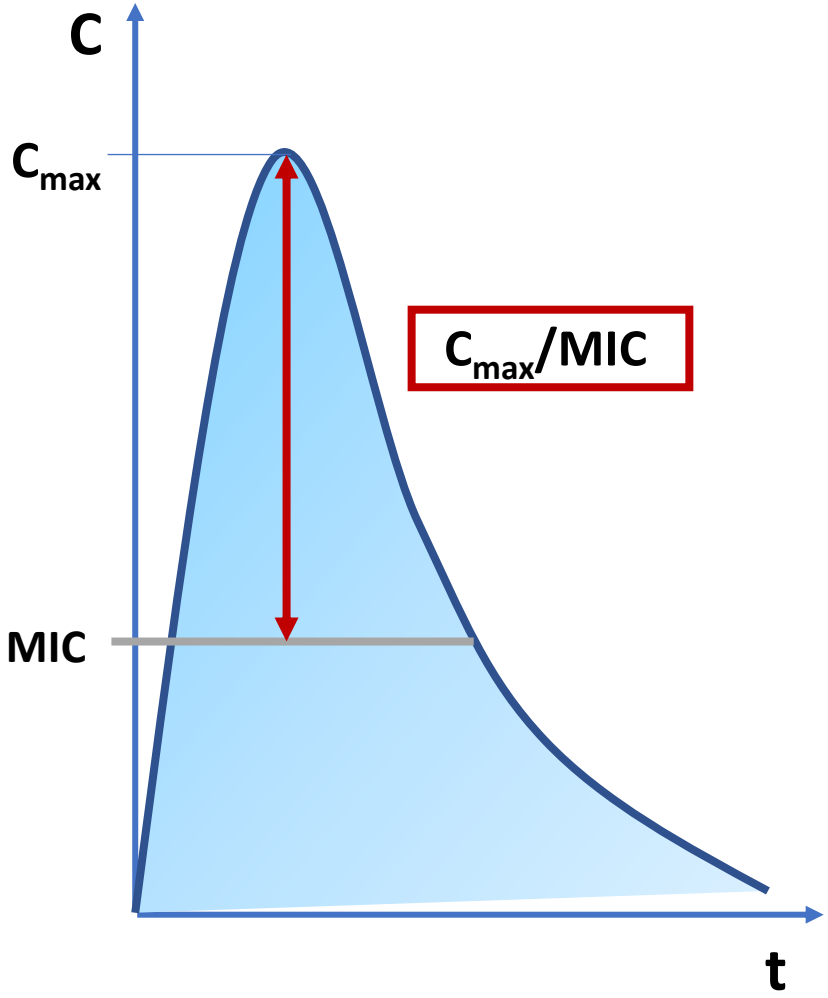
PK/PD



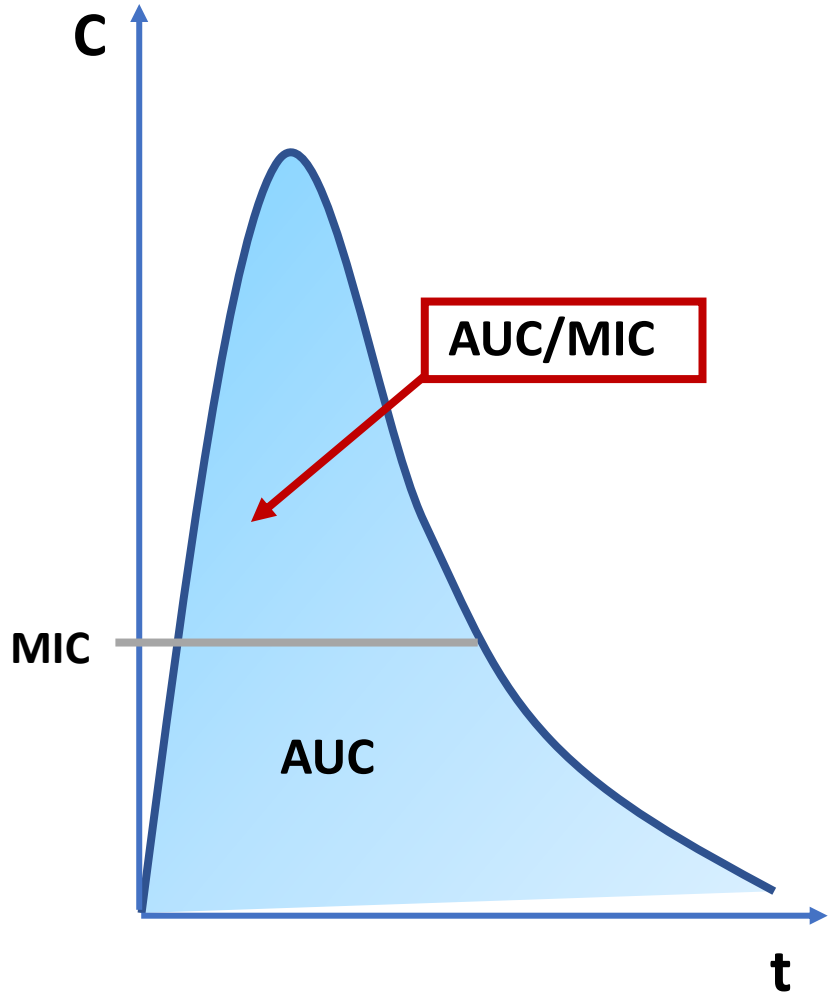
Időfüggő

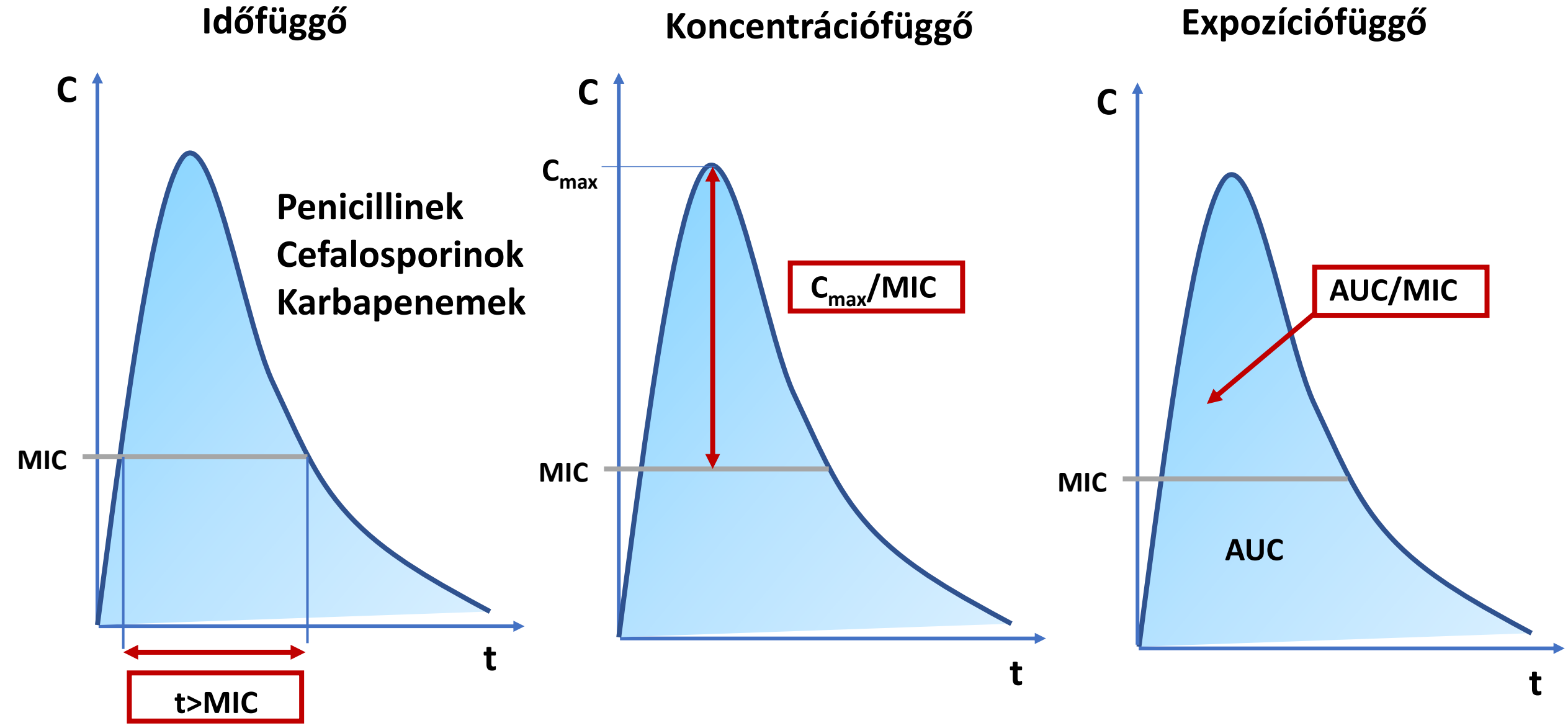


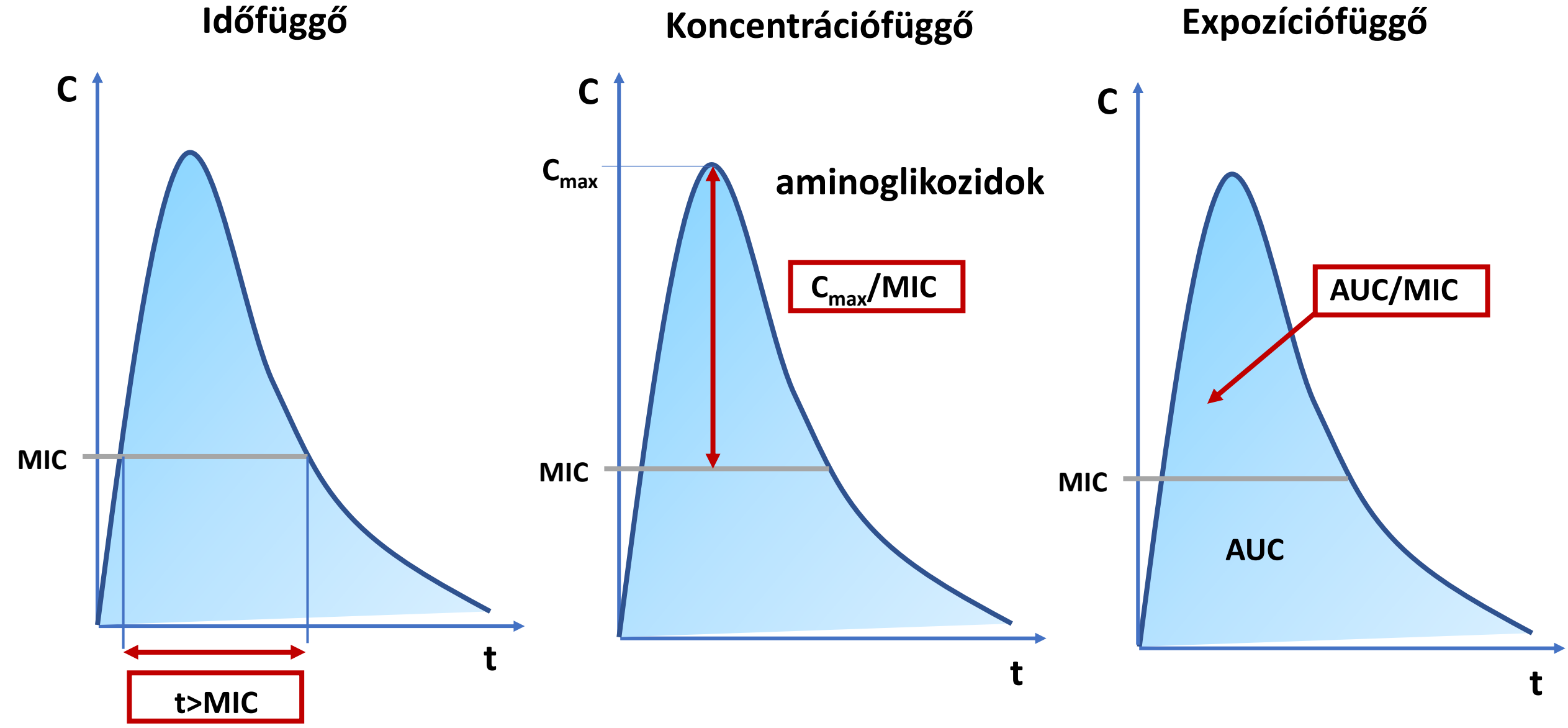
Koncentrációfüggő



Expozíciófüggő




Időfüggő
C
Penicillinek
Cefalosporinok
Karbapenemek
MIC
t
t>MIC
Koncentrációfüggő
C
C_{max}
C_{max}/MIC
MIC
t
Expozíciófüggő
C
AUC/MIC
MIC
AUC
t


Időfüggő
C
MIC
t
t>MIC
Koncentrációfüggő
C
C_{max}
aminoglikozidok
C_{max}/MIC
MIC
t
Expozíciófüggő
C
AUC/MIC
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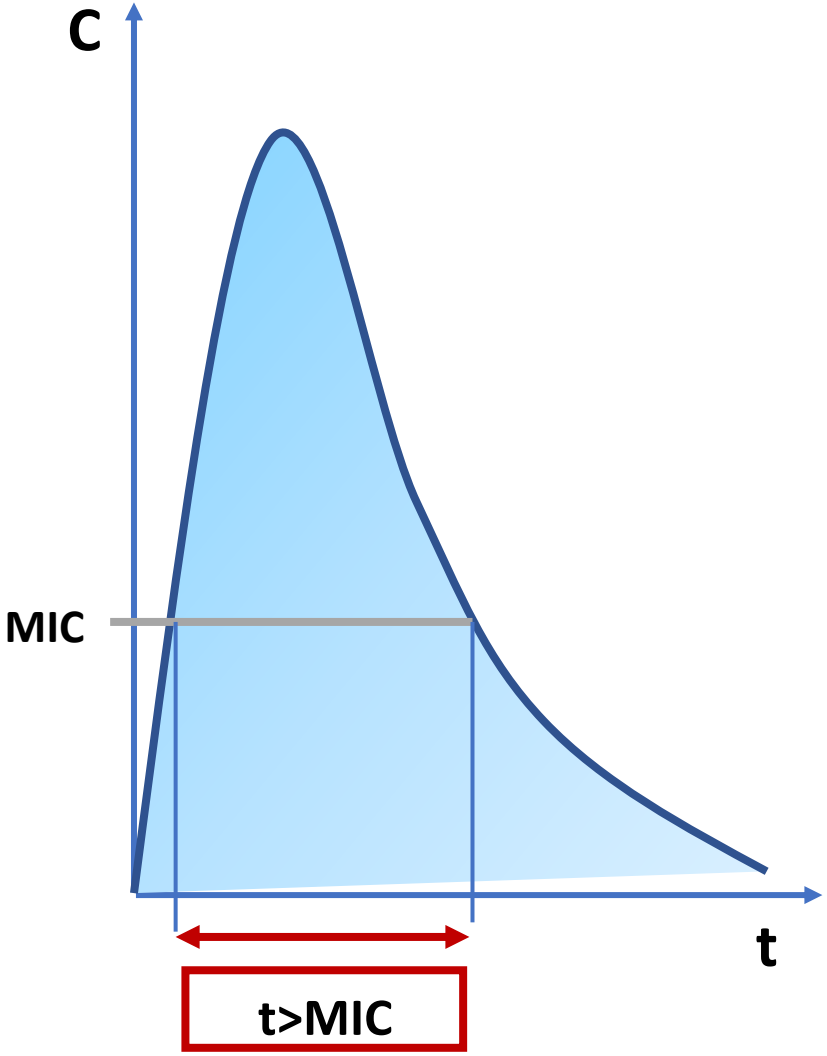
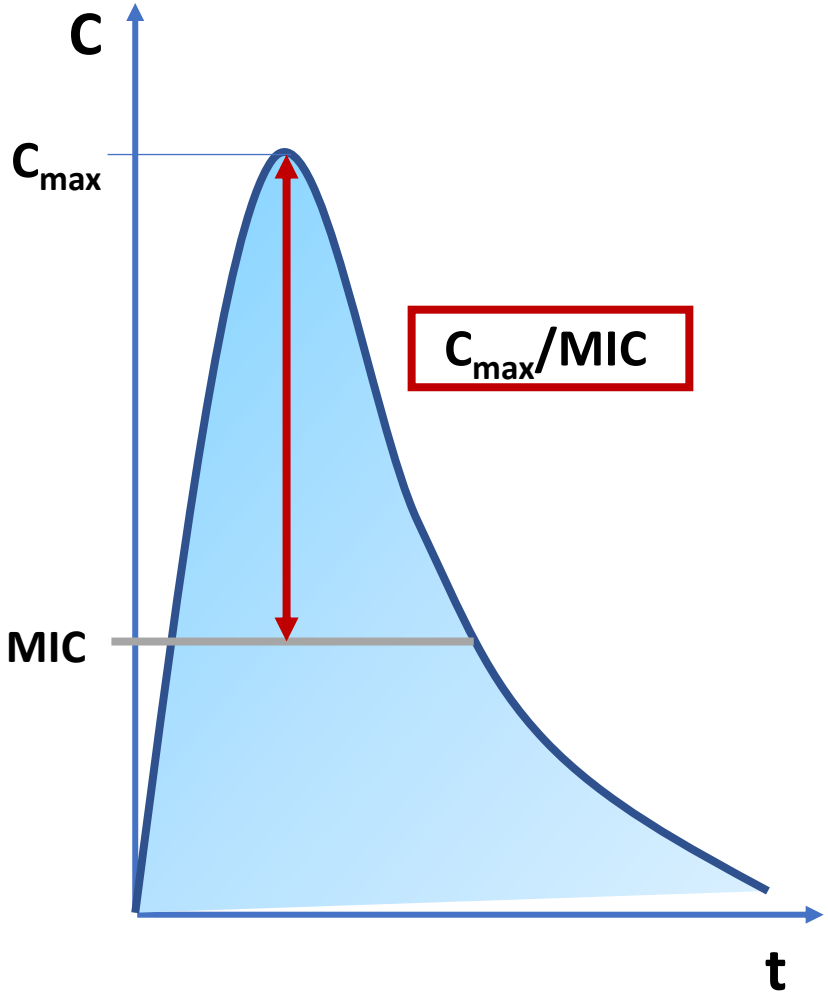
AUC
t

Időfüggő

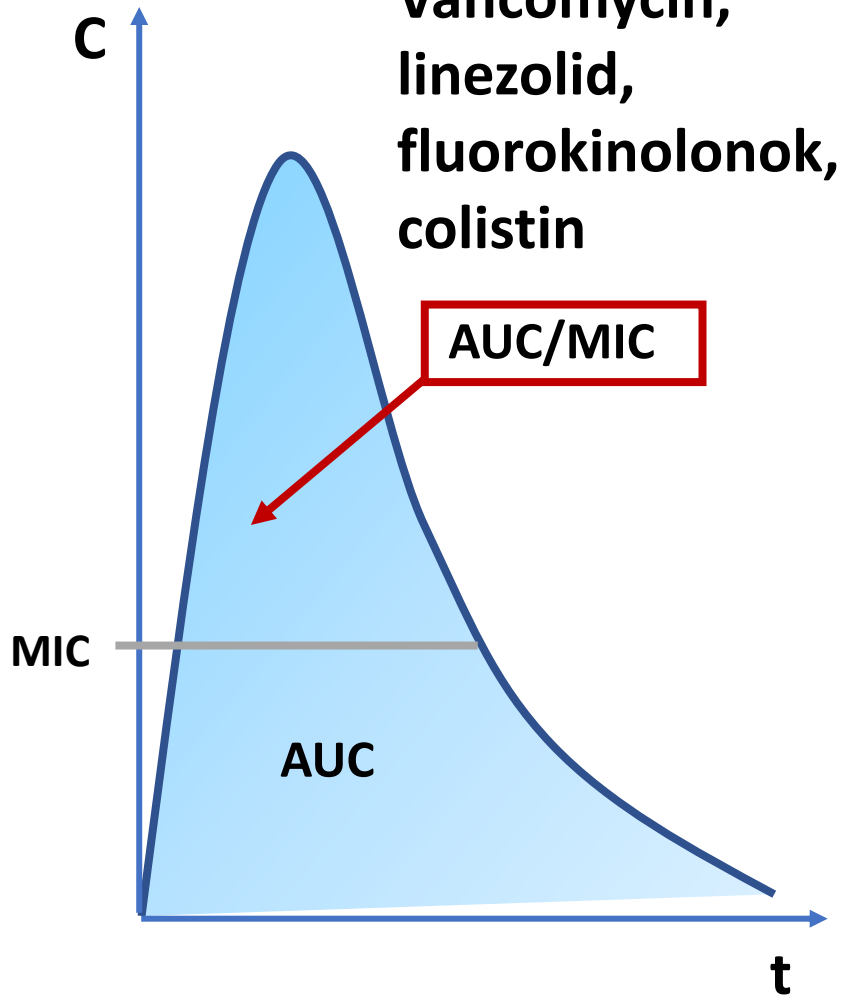


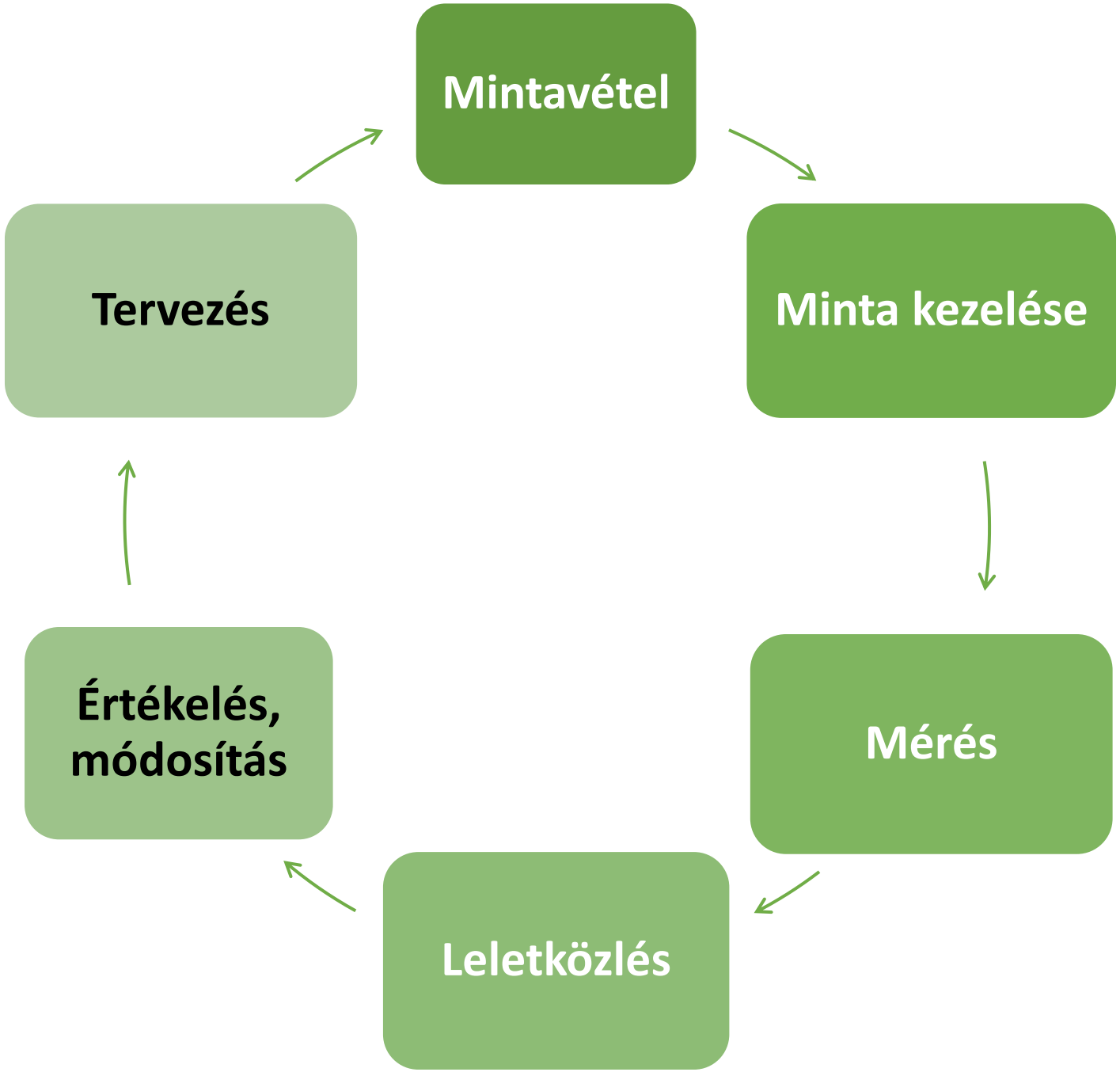
Koncentrációfüggő



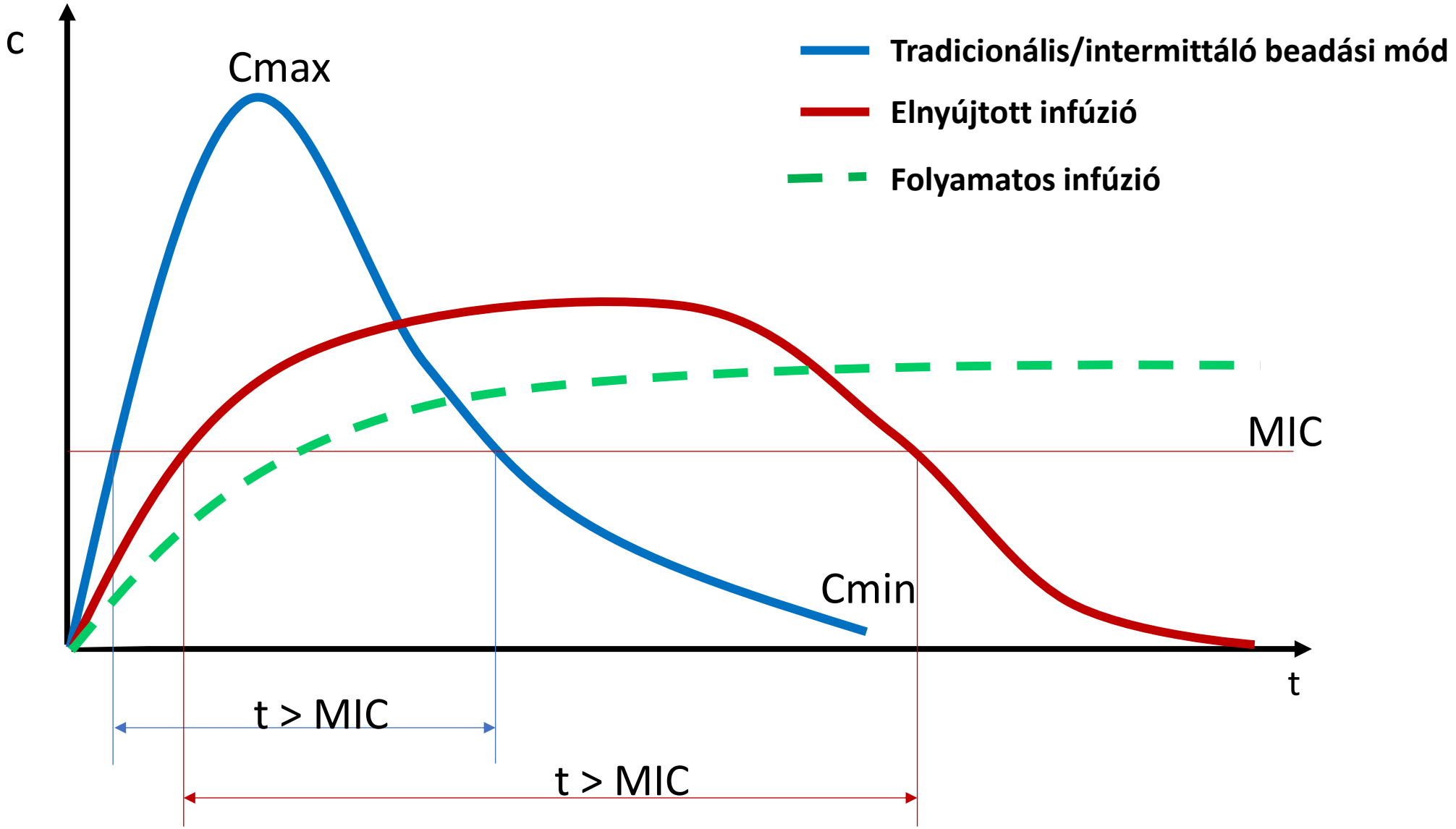
Expozíciófüggő

Vancomycin, linezolid, fluorokinolonok, colistin

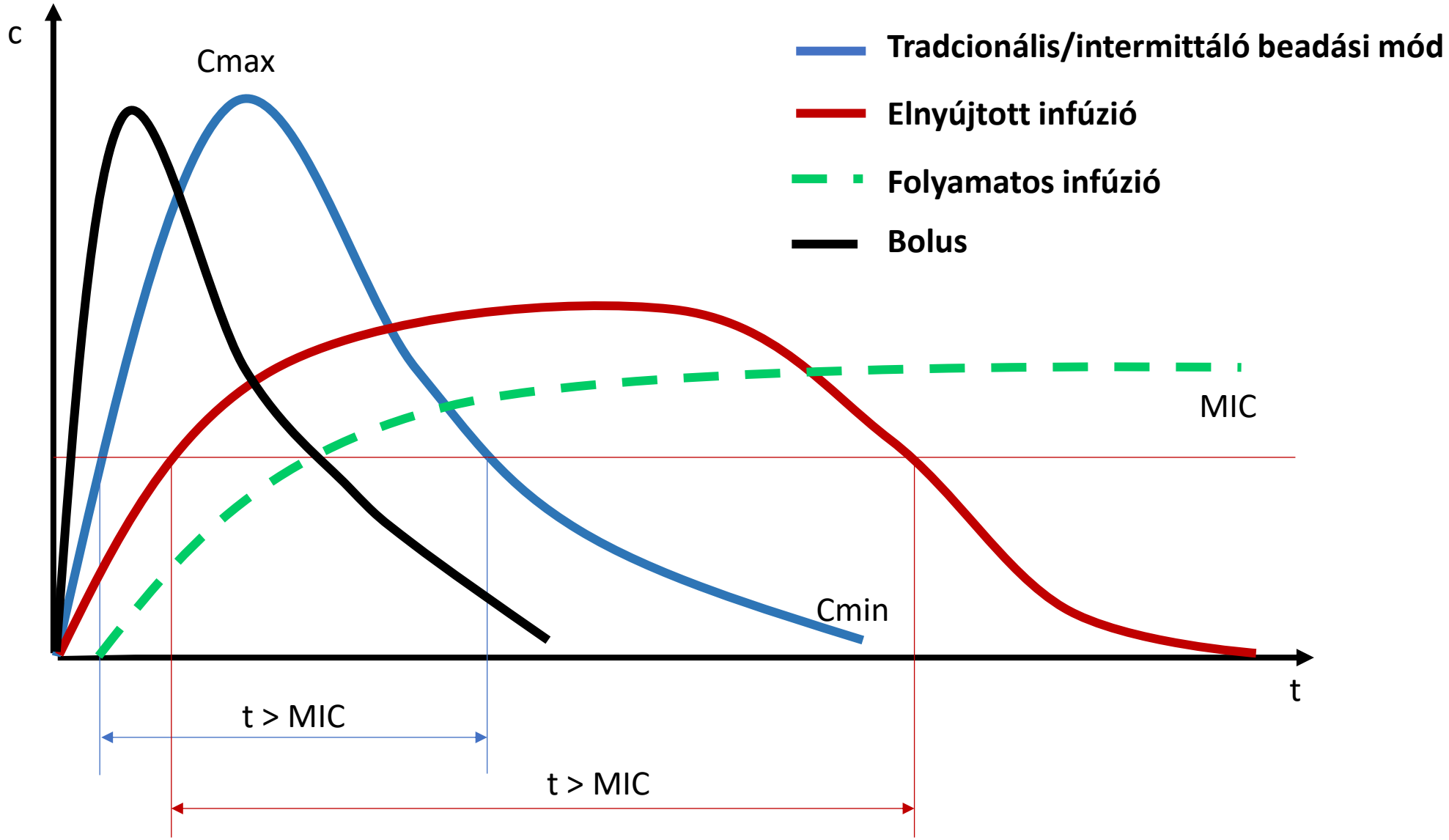



Mintavétel
Minta kezelése
Mérés
Leletközlés
Értékelés, módosítás
Tervezés

Béta-laktámok adagolási módjai



Béta-laktámok adagolási módjai



Loading dose and efficacy of continuous or extended infusion of beta-lactams compared with intermittent administration in patients with critical illnesses: A subgroup meta-analysis and meta-regression analysis

Chih-Chien Wu [1] [2], Yi-Chia Su [3] [4], Kuan-Sheng Wu [2] [5], Tung-Ho Wu [6], Ching-Shiang Yang [3]

Results and discussion: For CEI versus IA, the summary relative risk (RR) for overall mortality and clinical cure was 0.82 (95% confidence interval [CI]: 0.72-0.94) and 1.31 (95% CI: 1.15-1.49), respectively. Subgroup and meta-regression analyses of the loading dose revealed a significantly increased clinical cure rate in the loading-dose group (RR: 1.44, 95% CI: 1.22-1.69), which remained significant after adjustments for beta-lactam type, and association between clinical cure and loading dose for clinical cure (RR: 1.47, 95% CI: 1.20-1.80; p = .001). Subgroup analysis of administration type indicated that both groups had low mortality and high clinical cure rates; however, the heterogeneity analysis did not support an association across continuous infusion and extended infusion groups. Subgroup analysis of the Acute Physiology and Chronic Health Evaluation (APACHE) score was conducted; according to APACHE scores ≥ 16, overall mortality and clinical cure significantly differed between CEI and IA.

What is new and conclusion: CEIs with loading-dose treatment may significantly improve the clinical outcomes in critically ill sepsis or septic shock patients.

> Am J Health Syst Pharm. 2020 May 19;77(11):835-864. doi: 10.1093/ajhp/zxaa036.

Therapeutic monitoring of vancomycin for serious methicillin-resistant Staphylococcus aureus infections: A revised consensus guideline and review by the American Society of Health-System Pharmacists, the Infectious Diseases Society of America, the Pediatric Infectious Diseases Society, and the Society of Infectious Diseases Pharmacists

Michael J Rybak [1], Jennifer Le [2], Thomas P Lodise [3], Donald P Levine [4], John S Bradley [5], Catherine Liu [6], Bruce A Mueller [7], Manjunath P Pai [8], Annie Wong-Beringer [9], John C Rotschafer [9], Keith A Rodvold [10], Holly D Maples [11], Benjamin M Lomaestro [12]

> Ther Drug Monit. 2022 Feb 1;44(1):121-152. doi: 10.1097/FTD.0000000000000944.

Optimal Practice for Vancomycin Therapeutic Drug Monitoring: Position Statement From the Anti-infectives Committee of the International Association of Therapeutic Drug Monitoring and Clinical Toxicology

Stephane E Reuter [1], Sophie L Stocker [2, 3, 4], Jan-Willem C Alffenaar [2, 5, 6], Sara Baldelli [7], Dario Cattaneo [7], Graham Jones [8, 9], Birgit C P Koch [9], Danijela Kosic [4, 2], Sumith K Mathew [10], Maradelfina Molinaro [11], Michael Neely [12], Indy Sandaradura [8, 13, 14, 15], Deborah J E Marriott [4, 16]

Intensive Care Med (2020) 46:1127–1153
https://doi.org/10.1007/s00134-020-06050-1

frontiers | Frontiers in Public Health

Expert consensus statement on therapeutic drug monitoring and individualization of linezolid

Min Lin[1†], Yangmin Hu[2†], Ping Xu[1], Tao Xu[1], Chunyan Chen[1], Le He[1], Mi Zhou[1], Zhangzhang Chen[1], Chunhong Zhang[1], Xubiao Yu[1], Luo Fang[1], Junfang Zhu[1], Yanlan Ji[1], Gan Liu[1], Hongbin Cao[1], Youqin Dai[1], Xiaogan Lu[1], Changchang Shi[1], Li Li[1], Changjiang Wang[1], Xunrui Li[1], Qiangyan Feng[1], Jing Miao[1], Zhengyi Zhu[1], Guangyong Lin[1], Haichao Zhan[1], Shiwen Lv[1], Yidan Zhu[1], Xinjun Cai[1], Yin Ying[1], Meng Chen[1], Qiong Xu[1], Yiwen Zhang[1], Yubin Xu[1], Pea Federico[1,2], Saiping Jiang[1*] and Haibin Dai[1,2*] on behalf of the Division of Therapeutic Drug Monitoring of Zhejiang Pharmacological Society and the Infectious Diseases Pharmacist Group of the Society of Hospital Pharmacy of Zhejiang Pharmaceutical Association

Critical Care

REVIEW Open Access

Optimization of the treatment with beta-lactam antibiotics in critically ill patients—guidelines from the French Society of Pharmacology and Therapeutics (Société Française de Pharmacologie et Thérapeutique—SFPT) and the French Society of Anaesthesia and Intensive Care Medicine (Société Française d'Anesthésie et Réanimation—SFAR)

Romain Guilhaumou[1], Sihem Benaboud[2], Youssef Bennis[3], Claire Dahyot-Fizelier[4], Eric Dailly[5], Peggy Gandia[6], Sylvain Goutelle[7], Sandrine Lefeuvre[8], Nicolas Mongardon[9], Claire Roger[10], Julien Scala-Bertola[11], Florian Lemaitre[12] and Marc Gainnier[13*]

CONFERENCE REPORT AND EXPERT PANEL

Antimicrobial therapeutic drug monitoring in critically ill adult patients: a Position Paper#

Mohd H. Abdul-Aziz[1], Jan-Willem C. Alffenaar[2,3,4], Matteo Bassetti[5], Hendrik Bracht[6], George Dimopoulos[7], Deborah Marriott[8], Michael N. Neely[9,10], Jose-Artur Paiva[11,12], Federico Pea[13], Fredrik Sjovall[14], Joan F. Taccone[15,16], Andrew A. Udy[17,18], Sebastian G. Wicha[19], Markus Zeitlinger[20], Jan J. De Waele[21], Jason A. Roberts[1,22,23,24*] on behalf of the Infection Section of European Society of Intensive Care Medicine (ESICM), Pharmacokinetic/pharmacodynamic and Critically Ill Patient Study Groups of European Society of Clinical Microbiology and Infectious Diseases (ESCMID), Infectious Diseases Group of International Association of Therapeutic Drug Monitoring and Clinical Toxicology (IATDMCT) and Infections in the ICU and Sepsis Working Group of International Society of Antimicrobial Chemotherapy (ISAC)

Roger et al. Ann. Intensive Care (2021) 11:49
https://doi.org/10.1186/s13613-021-00834-x

Annals of Intensive Care

RESEARCH Open Access

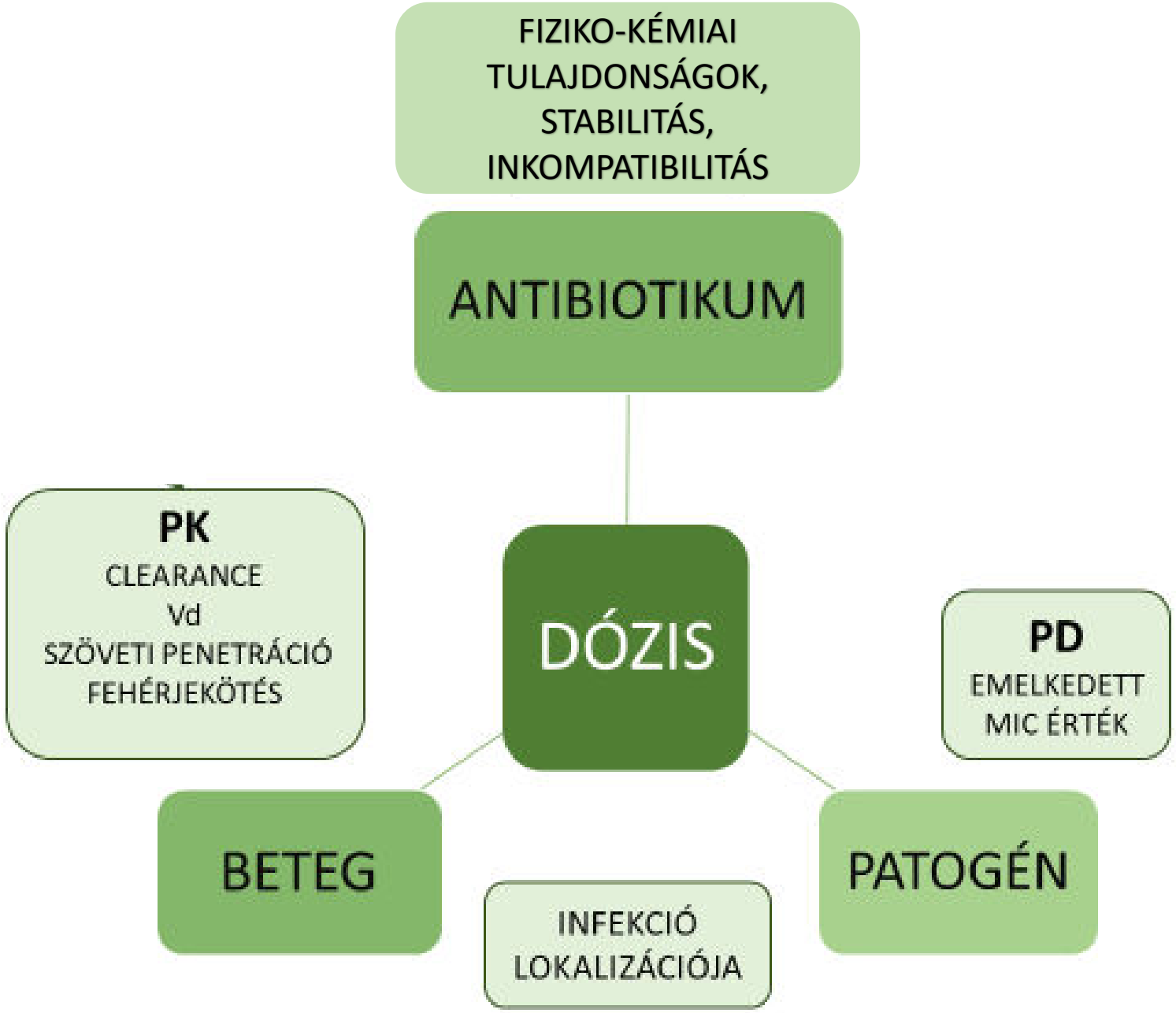
An international survey on aminoglycoside practices in critically ill patients: the AMINO III study

Claire Roger[1,2*], Benjamin Louart[1,2], Loubna Elotmani[1,2], Greg Barton[3], Leslie Escobar[4], Despoina Koulenti[5,6], Jeffrey Lipman[3,7,8], Marc Leone[1], Laurent Muller[1,2], Caroline Rouzin[1], Julien Amour[9], Iouri Bariaki[9], Joel Cousson[10], Jeremy Bourenne[11], Jean-Michel Constantin[12], Jacques Albanese[13], Jason A. Roberts[7,14,15] and Jean-Yves Lefrant[1,2] on behalf of The Azurea Network

Published in final edited form as:
Pharmacotherapy. 2009 January ; 29(1): 10–19. doi:10.1592/phco.29.1.10.

International Consensus Guidelines for the Optimal Use of the Polymyxins: Endorsed by the American College of Clinical Pharmacy (ACCP), European Society of Clinical Microbiology and Infectious Diseases (ESCMID), Infectious Diseases Society of America (IDSA), International Society for Anti-infective Pharmacology (ISAP), Society of Critical Care Medicine (SCCM), and Society of Infectious Diseases Pharmacists (SIDP)†

Brian T. Tsuji[1,*], Jason M. Pogue[2,3], Alexandre P. Zavascki[3,4], Micai Paul[5,6], George L. Daikos[7], Alan Forrest[8], Daniele R. Giacobbe[9,10], Claudio Viscoli[9,10], Helen Giamarellou[11], Ilias Karaiskos[11], Donald Kaye[12], Johan W. Mouton[13], Vincent H. Tam[14], Visanu Thamlikitkul[15], Richard G. Wunderink[16], Jian Li[17,3], Roger L. Nation[18,3], Keith S. Kaye[19,*,3]



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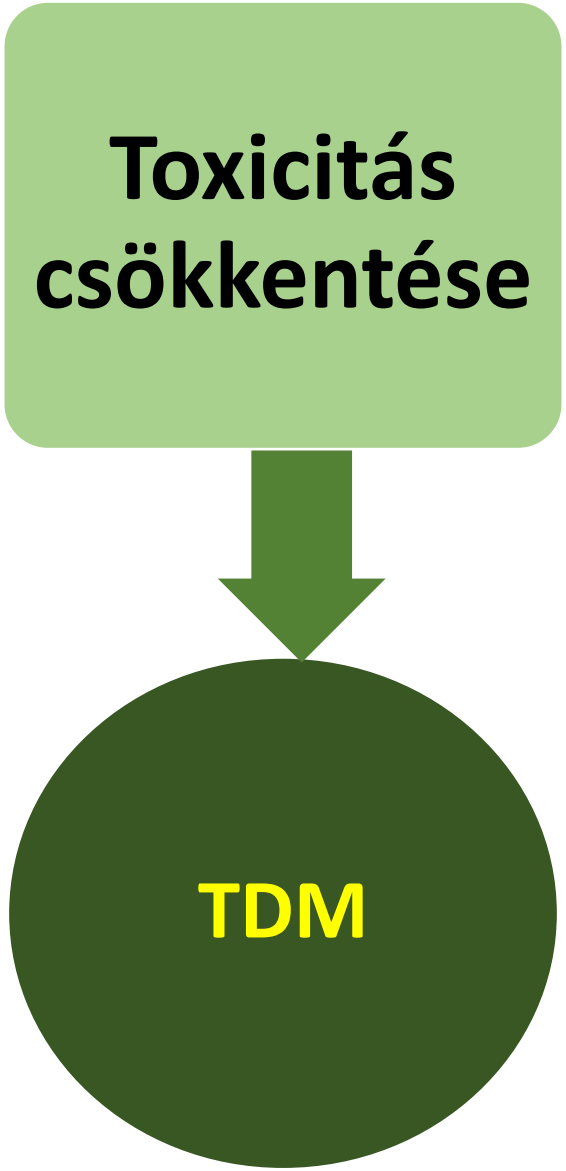
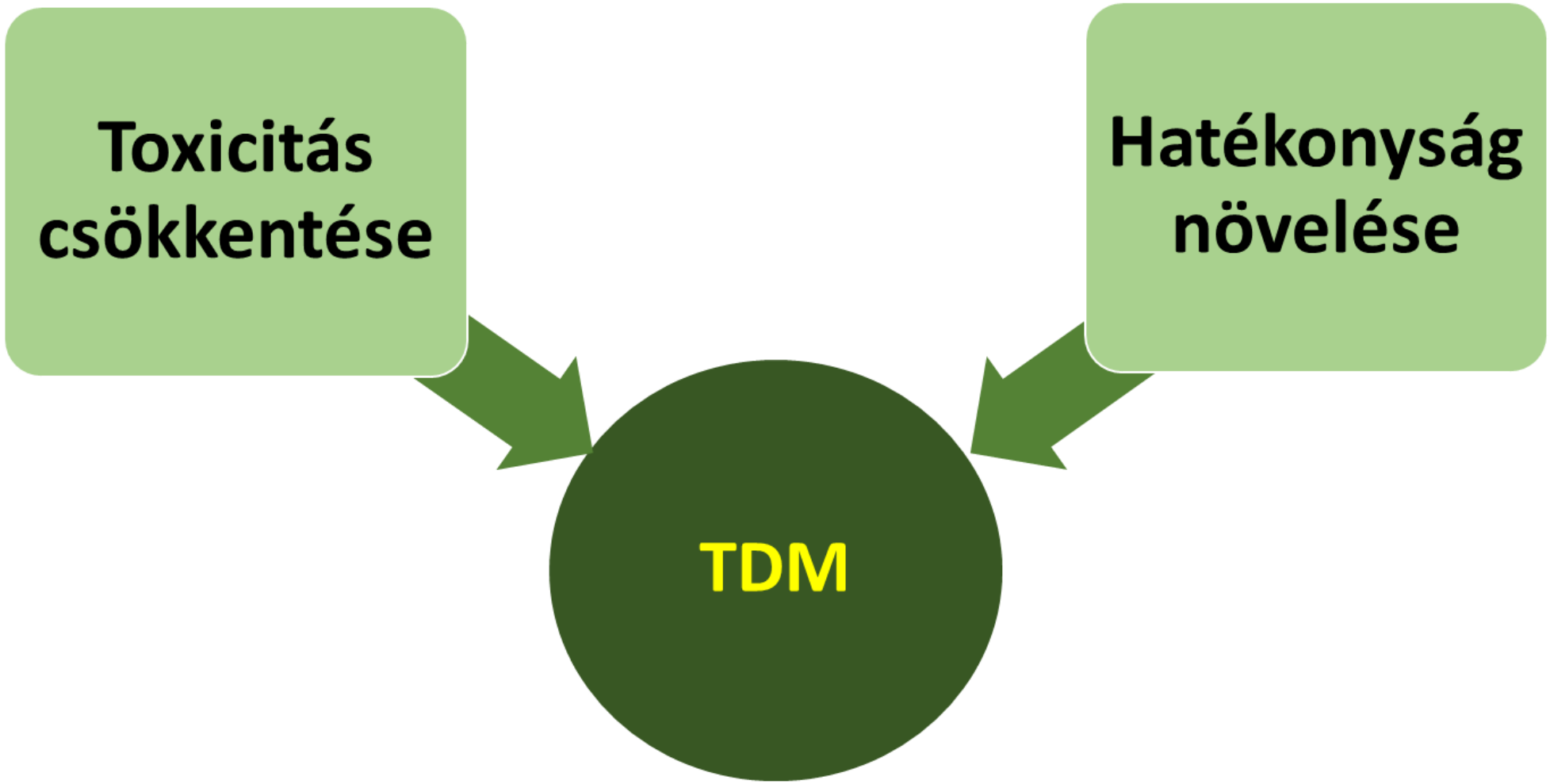
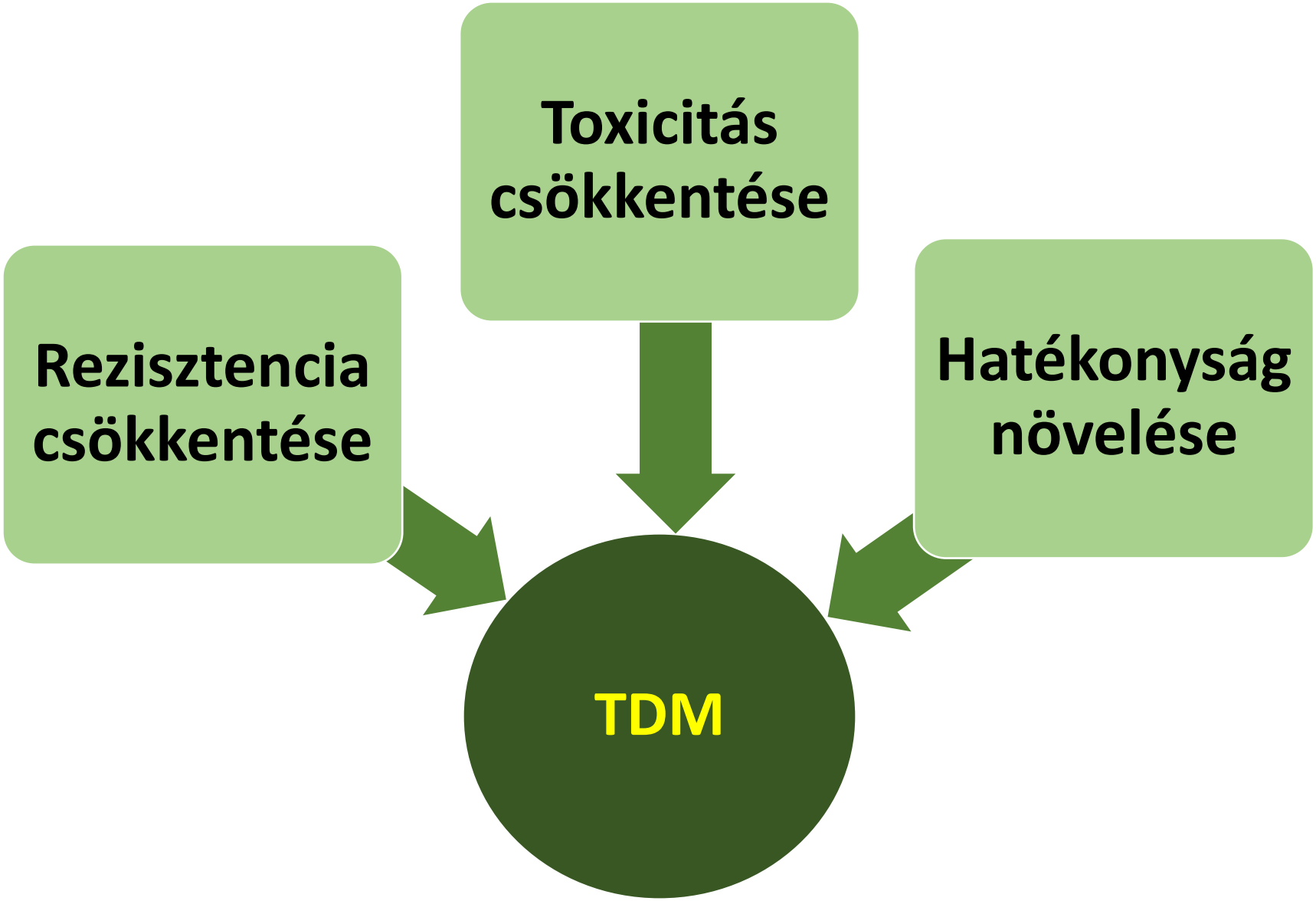

Toxicitás csökkentése
TDM


Toxicitás csökkentése
Hatékonyság növelése
TDM


Toxicitás csökkentése
Rezisztencia csökkentése
Hatékonyság növelése
TDM

Kinek?

- Kritikus állapotú, szeptikus betegek
- Nehezen kezelhető, súlyos infekciók
- Beszűkült vesefunkció
- Speciális betegcsoportok, kiszámíthatatlan farmakokinetika