Metode nadzorovane rabe protimikrobnih zdravil

prof. dr. Bojana Beović, dr. med.


Datoteka Uredi Pogled Zgodovina Zaznamki Orodja Pomoč
Stewardship | Definition of Ste
https://www.merriam-webster.com/dictionary/stewardship
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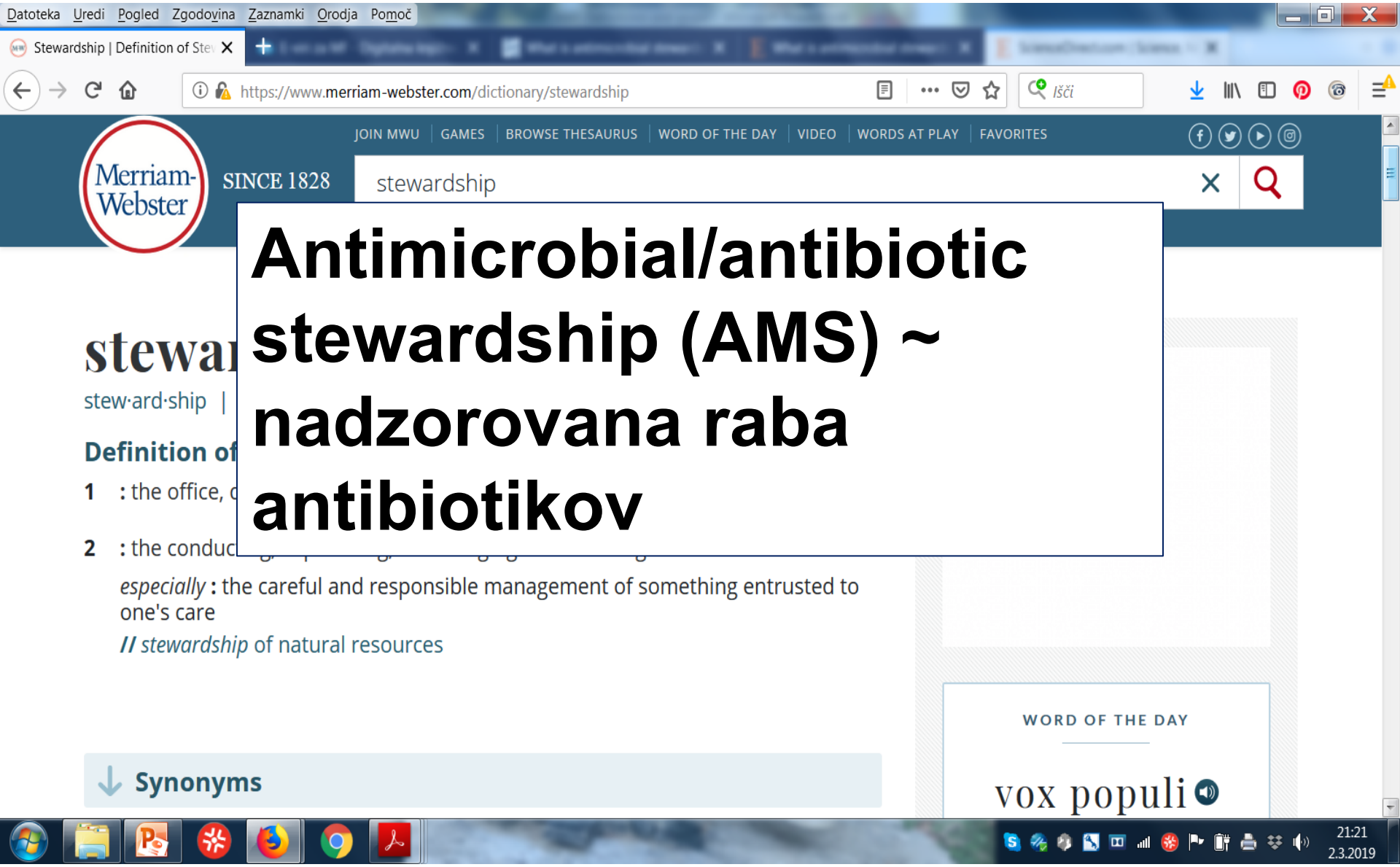
JOIN MWU | GAMES | BROWSE THESAURUS | WORD OF THE DAY | VIDEO | WORDS AT PLAY | FAVORITES
Merriam-Webster
SINCE 1828
stewardship
DICTIONARY
THESAURUS
stewardship noun
stew·ard·ship | \ ˈstü-ərd-ˌship , ˈstyü-; ˈst(y)u̇rd-\
Definition of stewardship
1 : the office, duties, and obligations of a steward
2 : the conducting, supervising, or managing of something
especially : the careful and responsible management of something entrusted to one's care
// stewardship of natural resources
Synonyms
WORD OF THE DAY
vox populi
21:21
2.3.2019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Merriam-Webster
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stewardship
Antimicrobial/antibiotic stewardship (AMS) ~ nadzorovana raba antibiotikov
stewar
stew·ard·ship |
Definition of
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2 : the conduc
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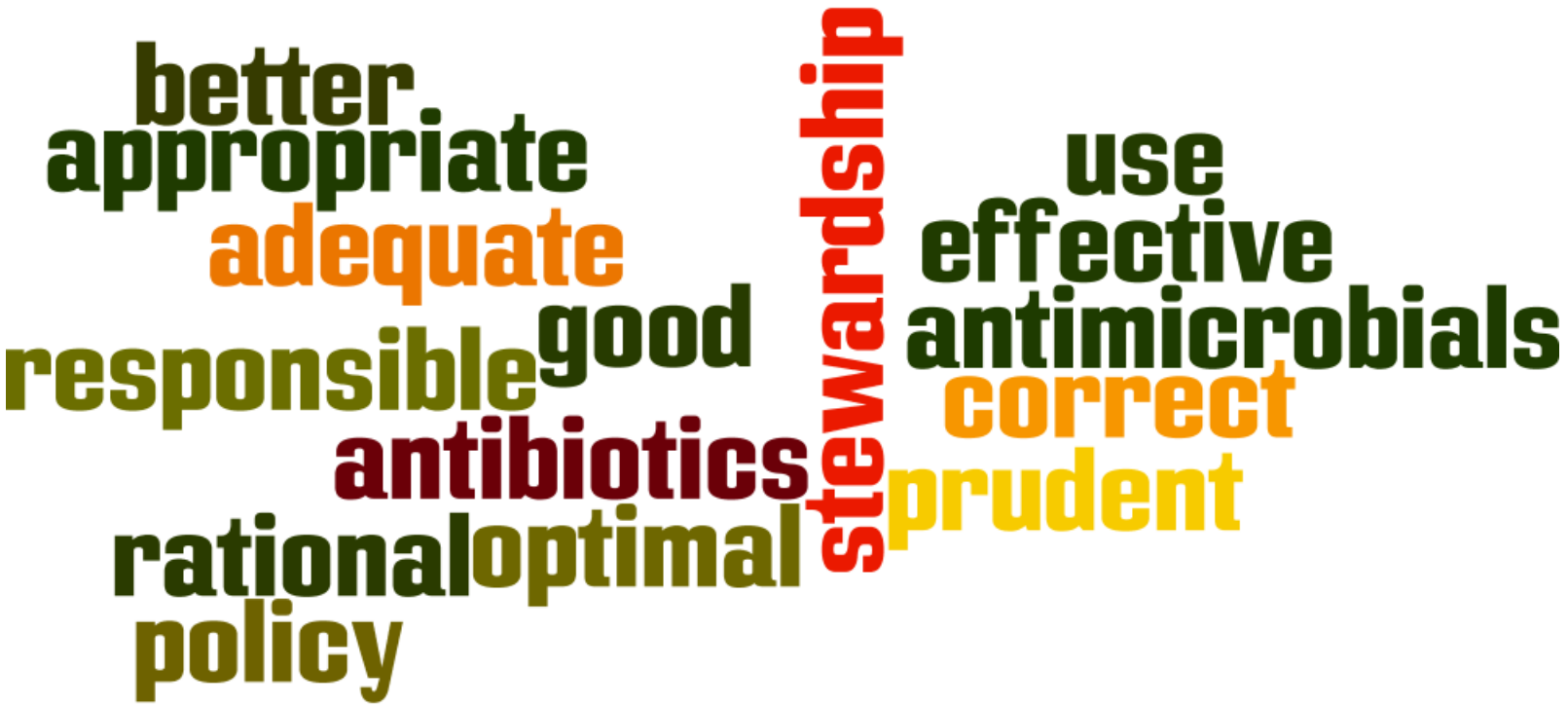

better
appropriate
adequate
responsible
good
antibiotics
rational
optimal
policy
stewardship
use
effective
antimicrobials
correct
prudent

Zakaj

Kaj

Kako

Kdo

Zakaj potrebujemo nadzorovano rabo protimikrobnih zdravil?
(in ne govorimo o nadzorovani rabi drugih zdravil?)

Nekaj preprostih dejstev

- Antibiotiki (protimikrobna zdravila) povzročajo mikrobno odpornost
- Mikrobna odpornost zmanjšuje učinkovitost antibiotikov
- Ni novih antibiotikov, ki bi delovali na zelo odporne bakterije
- Antibiotike predpisujejo vse zdravniške specialnosti
- Izobraževanje o predpisovanju antibiotikov je nezadostno

Global Action Plan on Antimicrobial Resistance. World Health Organization 2015 http://www.who.int/antimicrobial-resistance/publications/global-action-plan/en/
Pulcini C, Gyssens IC. Virulence; 2013:4(2):192–202

„Navzkrižje interesov“: ohraniti učinkovitost antibiotikov vs ozdraviti bolnika?

The diagnosis and treatment of infections is more complex than many other conditions. The initiation of antibiotics often takes place empirically with minimum information about the pathogen.

Non-compliance with the expectations of an antibiotic stewardship intervention or program is not always tantamount to poor treatment of the patient.

We are increasingly able to treat sicker patients whose therapeutic and clinical needs often drive antibiotic decision-making for individual clinicians.

The challenge remains to harmonize the long-term goals of antibiotic stewardship with the short-term goals of clinicians.

Charani E and Holmes A. *Antibiotics*. 2019;8(1):7.

Ključni dejavniki, ki pripomorejo k napačni rabi antibiotikov

Lipsky B, *et al. J Antimicrob Chemother*. 2016;71(11):3026–35.

Diagnostična negotovost

Is there a bacterial infection in this wound?

Neznanje

When to treat with antibiotics

Strah

Of failing to treat properly, or of having a bad outcome

Zahteve bolnikov

For unnecessary antibiotic therapy

Kaj še lahko storimo?

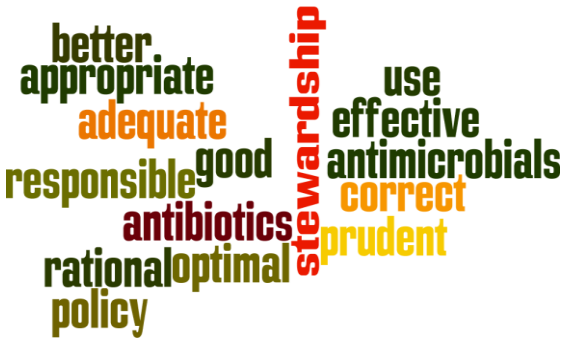
- cepiva, monoklonska ali poliklonska protitelesa
- bakteriofagi
- hemoperfuzijska sredstva
- zaviralci „quorum sensing“
- zaviralci citotoksinov
- neimunska toleranca za bolezen
- vpliv na mikrobiom (probiotiki)
- .....

Opal SM. Critical Care (2016) 20:397. DOI 10.1186/s13054-016-1549-1

Več energije ali njena smotrna raba?

Definicije AMS: 1997–2018

IDSA/SHEA 1997: *Appropriate antimicrobial stewardship includes optimal selection, dose and duration as well as control of antibiotic use.*



ESGAP 2017: *A set of actions or a programme aimed at ensuring responsible antibiotic use.*

IDSA/SHEA 2016: *Coordinated interventions designed to improve and measure the appropriate use of antimicrobials by promoting the selection of the optimal antimicrobial drug regimen, dose, duration of therapy, and route of administration.*

WHO 2018: ***Interventions designed to optimise use of antibiotics.***

Shlaes D, et al. Clin Infect Dis. 1997;25:584–99. ;Dyar OJ, et al. Clin Microbiol Infect. 2017;23(11):793–98.; Fischer N, et al. Infect Control Hosp Epidemiol. 2012;33(4):322–27.; Van Dijck C, et al. Bull World Health Organ. 2018;96:266–80

Definicije AMS: 1997–2018

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Kaj?

Kako?

administration.

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Shlaes D, et al. Clin Infect Dis. 1997;25:584–99. ;Dyar OJ, et al. Clin Microbiol Infect. 2017;23(11):793–98.; Fischer N, et al. Infect Control Hosp Epidemiol. 2012;33(4):322–27.; Van Dijck C, et al. Bull World Health Organ. 2018;96:266–80

Izboljšani rezultati bolnikov v študijah o intervencijah nadzorovane rabe antibiotikov

Akpan MR, et al. Antibiotics 2016, 5, 5; doi:10.3390/antibiotics5010005
Schuts EC, et al. Lancet Infect Dis 2016 Jul;16(7):847-56.

- **Zmanjšanje umrljivosti/smrtnosti (povezano z okužbo)**
- **Zmanjšanje stopnje okužbe (z odpornimi bakterijami)**
- **Povečanje stopnje klinične uspešnosti (opredelitev je odvisna od vrste okužbe)**
- **Zmanjšana toksičnost**
- **Zmanjšanje dolžine bivanja**
- **Skrajšanje dolžine bivanja/sprejema na intenzivni enoti**
- **Znižanje stopnje ponovnega sprejema**
- **Zmanjšanje okužb s Clostridium difficile**

OECD Health Policy Studies

Embracing a One Health Framework to Fight Antimicrobial Resistance

OECD (2023), Embracing a One Health Framework to Fight Antimicrobial Resistance, OECD Health Policy Studies, OECD Publishing, Paris, https://doi.org/10.1787/ce44c755-en.

Average per year for the period 2020-50,* 34 countries included in the analysis

Interventions and packages	DALYs gained per year (per 100 000 population)	Health expenditure saved per year (per capita USD PPP)	Additional full-time workers per year (in thousands of workers), total	Return on investment (USD PPP)
Enhance farm biosecurity	897	0.001	1 414	1.0
Improve PVV23 coverage	2 927	0.033	1 316	2.4
Enhance food handling practices	3 096	0.004	4 427	5.2
Financial incentives	33 264	0.617	15 255	0.5
Improve prescriber education and training	40 021	0.688	17 066	4.5
Mass media campaigns	42 598	0.771	19 321	2.8
Improve hand hygiene	78 153	1.054	26 843	24.6
Enhance environmental hygiene	83 030	1.206	29 213	5.0
Scale up the use of RDTs	133 648	2.484	54 299	4.0
Delayed prescription	141 488	2.642	57 311	17.2
Strengthen antimicrobial stewardship	178 894	2.854	66 580	2.3
Community-based package	308 780	2.241	129 912	2.5
Mixed package	556 795	5.913	222 916	5.0
Hospital-based package	618 875	7.871	242 694	4.7

OECD Health Policy Studies

Embracing a One Health Framework to Fight Antimicrobial Resistance

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Average per year for the period 2020-50,* 34 countries included in the analysis

Ukrepi nadzorovane rabe antibiotikov so najučinkovitejša modelirana intervencija za preprečevanje odpornih okužb.

Interventions and packages	DALYs gained per year (per 100 000 population)	Health expenditure saved per year	Additional full-time workers per year	Return on investment (USD PPP)
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Neželeni učinki, součinkovanja…

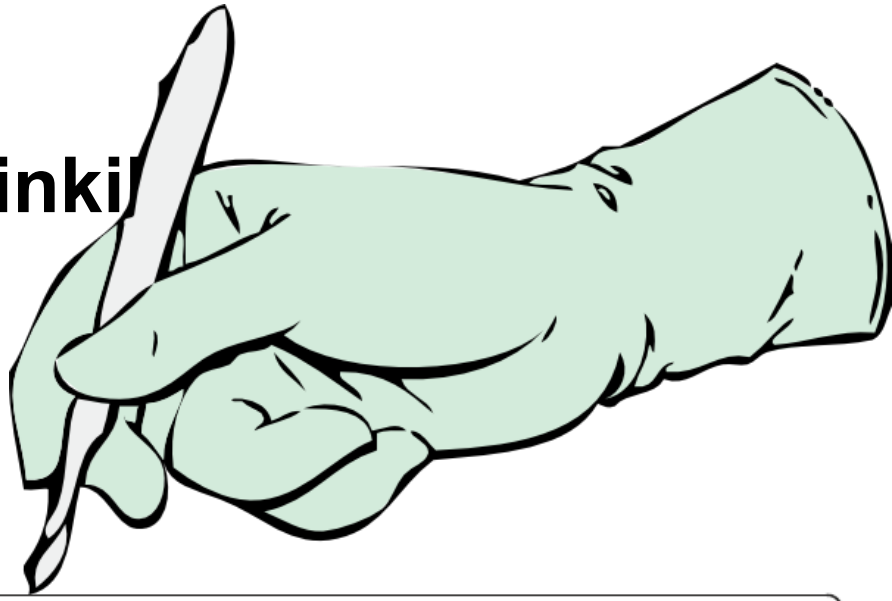
Npr:

V psihiatričnih bolnišnicah dobivajo antibiotike bolniki, ki prejemajo psihotropna zdravila:

Součinkovanje skupine D po Lexicompu (klinično pomembno součinkovanje, pretehtati zamenjavo zdravila) ugotovljeno pri 22,9% psihiatričnih bolnikov, ki prejemajo antibiotike.

Beovic B, et al.. Infection Control & Hospital Epidemiology, Available on CJO 2015 doi:10.1017/ice.2015.268

Novejše ugotovitve o učinkih antibiotikov



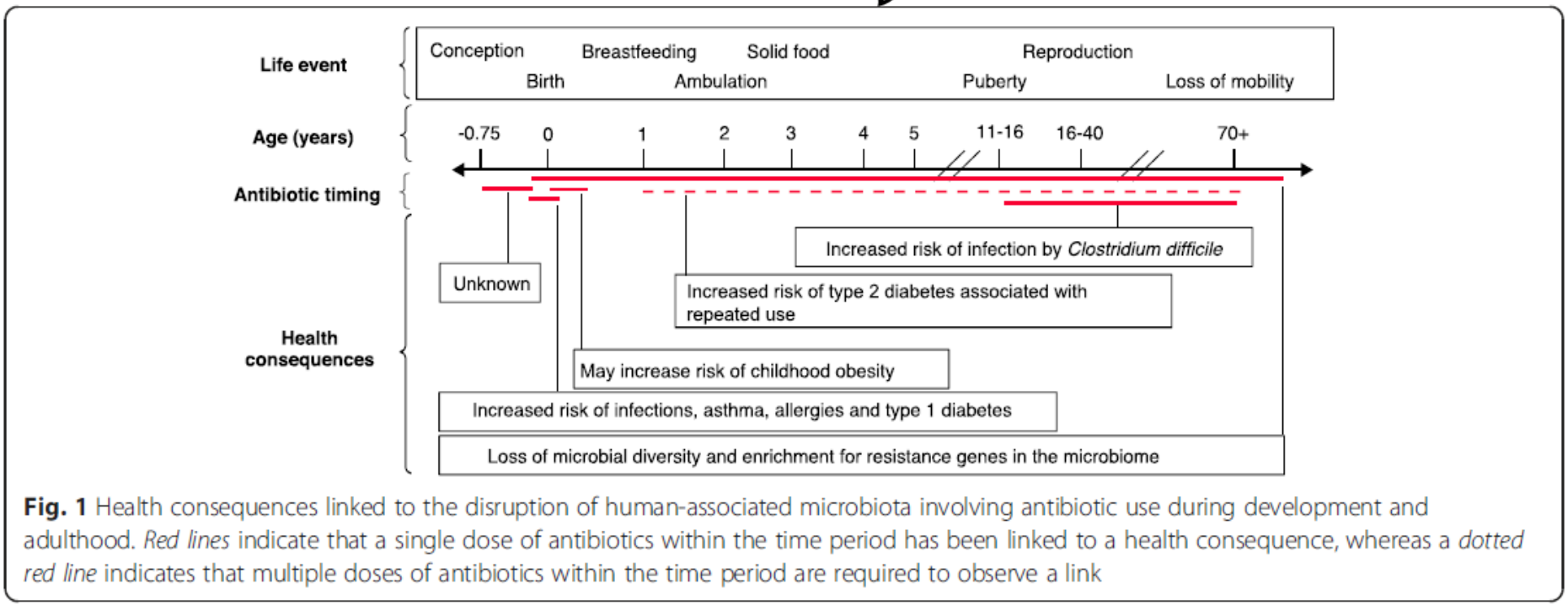


Fig. 1 Health consequences linked to the disruption of human-associated microbiota involving antibiotic use during development and adulthood. *Red lines* indicate that a single dose of antibiotics within the time period has been linked to a health consequence, whereas a *dotted red line* indicates that multiple doses of antibiotics within the time period are required to observe a link

Langdon A, et al. Genome Med 2016; 8:39, http://www.clipartpanda.com/clipart_images/hand-with-scalpel-clip-art-28811504

Kaj: nekaj nedavnih namigov

Antibiotik-Izbira

Čas

Doza

Pot

Trajanje

Smernice

Izbira antibiotikov

INFECTIOUS DISEASES,
2021; VOL. 53,
NO. 8, 619–621

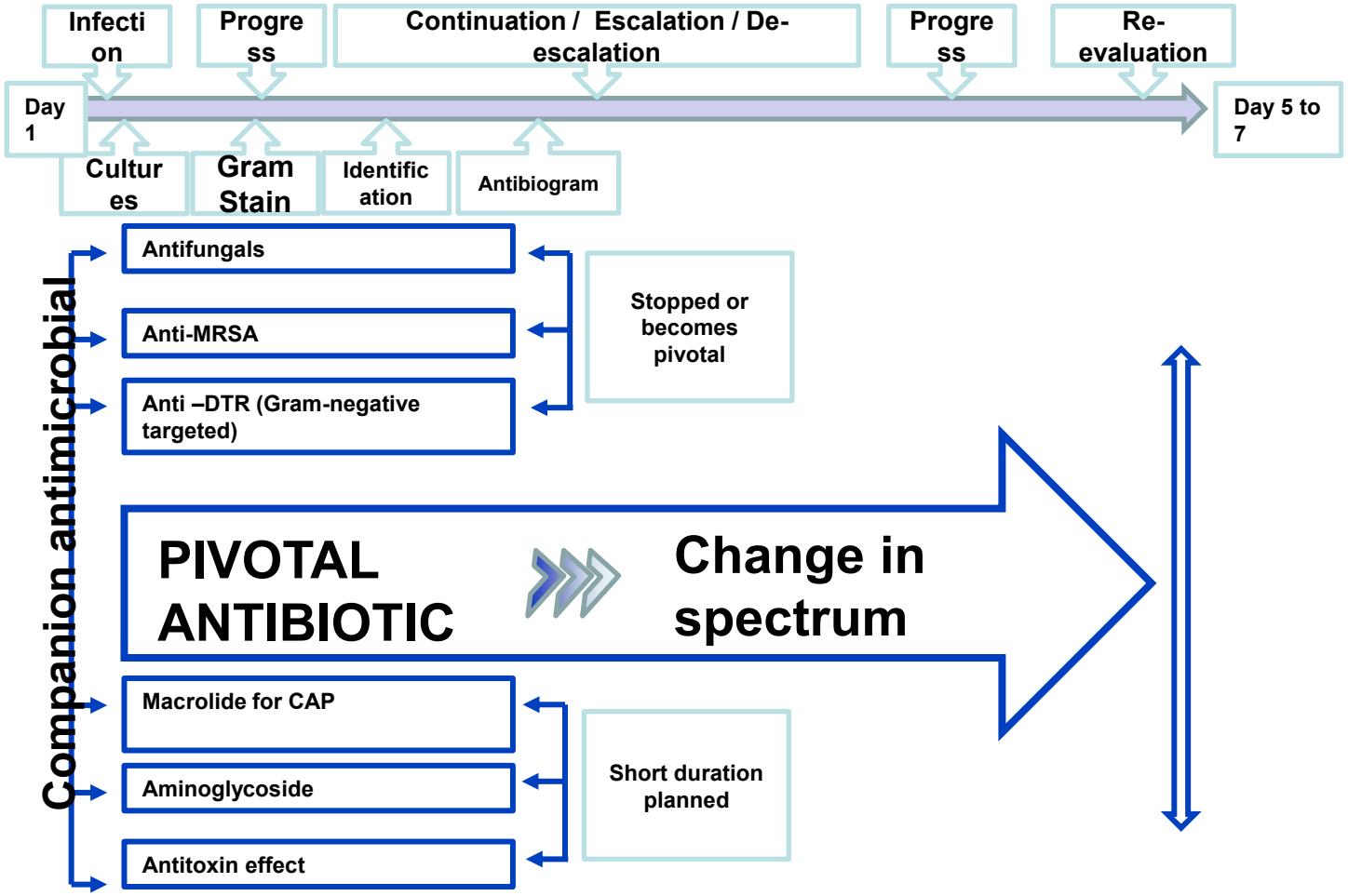
https://doi.org/10.1080/23744235.2021.1910340

EDITORIAL COMMENTARY

Surveillance: a prerequisite for effective antimicrobial stewardship

Podatki o lokalnem nadzoru so predpogoj za priporočilo o empirični antibiotični terapiji!

Ten Oever J. Infect Dis 2021: 53:619-21.



Adapted from De Waele Jan J, Schouten J, Beović B, Tabah A, Leone M. Intensive Care Med 2020 Feb;46(2):236-244.

Clinical Infectious Diseases

MAJOR ARTICLE

The Penicillin Allergy Delabeling Program: A Multicenter Whole-of-Hospital Health Services Intervention and Comparative Effectiveness Study

Kyra Y. L. Chua,[1] Sara Vogrin,[2] Susan Bury,[1,3] Abby Douglas,[4] Natasha E. Holmes,[1] Nixon Tan,[1] Natasha K. Brusco,[5,6] Rebecca Hall,[1] Belinda Lambros,[4] Jacinta Lean,[4] Wendy Stevenson,[1] Misha Devchand,[1,3] Kent Garrett,[3] Karin Thursky,[4,7,8] M. Lindsay Grayson,[1,9] Monica A. Slavin,[4,8] Elizabeth J. Phillips,[10,11] and Jason A. Trubiano[1,4,9]

1125 bolnikov z anamnezo alergije na penicilin: 355 bolnikov ni bilo preobčutljivih

Alergija na penicilin je povezana z:
uporabo restriktivnejših antibiotikov,
daljše bivanjev bolnišnici
višji stroški antibiotikov,
več kolonizacije MRSA,
neprimerno zdravljenje

Chua KYL, et al. Clin Infect Dis 2021;73(3):487–96

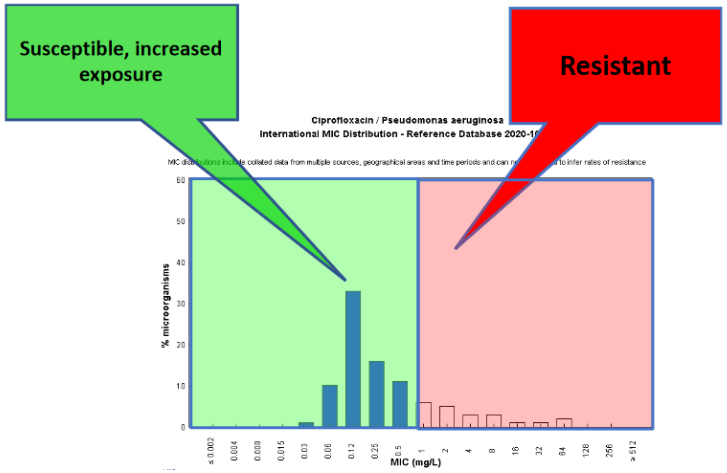
Odmerek

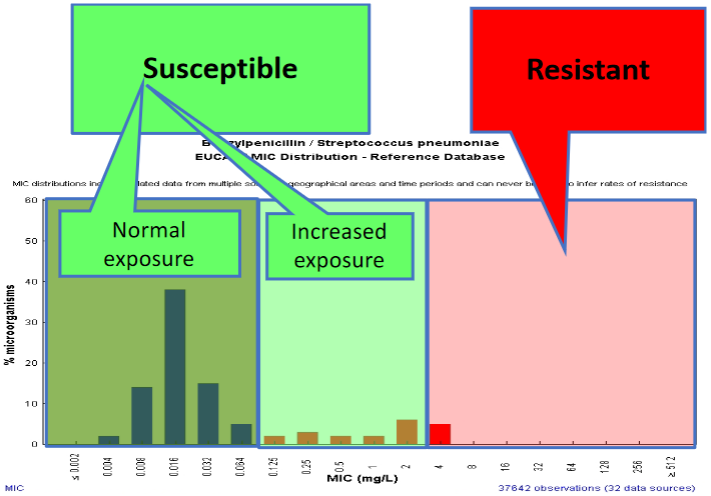
EUCAST EUROPEAN COMMITTEE ON ANTIMICROBIAL SUSCEPTIBILITY TESTING

European Society of Clinical Microbiology and Infectious Diseases

To clinical colleagues:
On recent changes in clinical microbiology susceptibility reports - new interpretation of susceptibility categories S, I and R.

- **S - Susceptible, standard dosing regimen**: A microorganism is categorised as "Susceptible, standard dosing regimen", when there is a high likelihood of therapeutic success using a standard dosing regimen of the agent.
- **I - Susceptible, increased exposure**: A microorganism is categorised as "Susceptible, Increased exposure*" when there is a high likelihood of therapeutic success because exposure to the agent is increased by adjusting the dosing regimen or by its concentration at the site of infection.
- **R - Resistant:** A microorganism is categorised as "Resistant" when there is a high likelihood of therapeutic failure even when there is increased exposure.





https://www.eucast.org/fileadmin/src/media/PDFs/EUCAST_files/Guidance_documents/To_clinical_colleagues_on_recent_changes_in_clinical_microbiology_susceptibility_reports_9_July2021.pdf

Odmerek

- **aminoglycosides** (Barlam T, et al. Clin infect Dis 2016.)
- **vancomycin** (Lodise TP, Drusano G. Clin Infect Dis . 2021 May 4;72(9):1497-1501.)
- **azole antifungals** (Gomez-Lopez A. Clin Microbiol Infect 2020 Nov;26(11):1481-1487.)

Terapevtsko spremljanje beta-laktamskih antibiotikov

- ***Klinični scenariji, v katerih je treba upoštevati TDM β-laktamskih antibiotikov***
- ***Oslabljen ali povečan ledvični očistek***
- ***Okužbe s patogeni z visokim MIK***
- ***Sum toksičnosti β-laktamskih antibiotikov***
- ***Sum na klinični neuspeh pri bolnikih s sepso/septičnim šokom***
- ***Negotovost glede zadostne penetracije β-laktamskih antibiotikov***

Dhaese S, Van Vooren S, Boelens J, De Waele J. Expert Review of Anti-infective Therapy 2020;18:11, 1155-1164.

Pot aplikacije

Preklopite na peroralno

Krajše bivanje v bolnišnici
Manj zapletov, povezanih z žilnim dostopom
Manj bolnišničnih okužb
Večja kakovost oskrbe

Iversen, K.; Ihlemann, N.; Gill, S.U.; Madsen, T.; Elming, H.; Jensen, K.T.; Bruun, N.E.; Høfsten, D.E.; Fursted, K.; Christensen, J.J.; et al. Partial Oral versus intravenous antibiotic treatment of endocarditis. N. Engl. J. Med. 2019, 380, 415–424.

Li, H.-K.; Rombach, I.; Zambellas, R.; Walker, A.S.; McNally, M.A.; Atkins, B.L.; Lipsky, B.A.; Hughes, H.C.; Bose, D.; Kümin, M.; et al. Oral versus intravenous antibiotics for bone and joint infection. N. Engl. J. Med. 2019, 380, 425–436.

Kakšna je razlika med intravenskim in peroralnim zdravljenjem s sredstvom z dobro peroralno biološko uporabnostjo pri bolniku z normalno delujočim GIT in brez interakcij med zdravili, ki bi zmanjšale peroralno absorpcijo?

Trajanje

- ✓ Prekinite zdravljenje z antibiotiki, če ni okužbe
- ✓ Prenehajte jemati antibiotike, ki so odvečni (na primer: vankomicin empirično in kulture ne kažejo nobenega mikroorganizma, ki bi ga moral pokriti vankomicin)
- ✓ Prekinite zdravljenje z antibiotiki po kratkem tečaju, ki se je izkazal za zadostnega

Trajanje antibiotične terapije: nekaj primerov

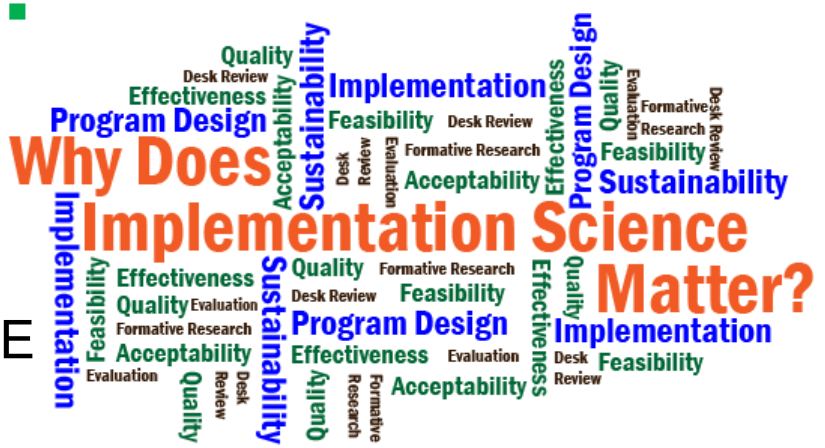
Syndrome	Guidelines	Recommended duration*	Strength of recommendation, level of evidence
HAP, VAP	IDSA guidelines 2016	7 days	VAP: strong recommendation, moderate-quality evidence HAP: strong recommendation, very low quality evidence
HAP, VAP	ESCMID 2017	7-8 days	Weak recommendation, moderate quality of evidence.
CAP: mild to moderate	German/Swiss/ Austrian 2021	5 days	Strong recommendation, high level evidence
CAP: severe		7 days	
Pyelonephritis	Swiss 2023	7 (prompt answer or fluoroquinolone therapy) - 14 days	
Acute cholecystitis, appendicitis	WSES/GAIS/SIS-E/WSIS/AAST 2021	4 days (if source control)	

***majority of patients, longer treatment in some patients subgroups**

https://ssi.guidelines.ch/guideline/2981/de/11523, Sartelli M, et al. World J Emerg Surg 2021;16, 49. Kalil AC, et al. Clin Infect Dis 2016. Torres A, et al. Clin Microbiol Infect 2017. Ewig S, et al. Pneumologie 2021; 75:665-729.

Kako?

Kako?



- Upravljanje z antibiotiki je IZVAJANJE terapevtskih smernic in drugih načel, ki temeljijo na dokazih.
-
- Upravljanje antibiotikov je prinesti načela odgovorne uporabe antibiotikov vsakemu bolniku in zdravniku, ki predpisuje antibiotike.

Pri nadzorovani rabi protimikrobnih zdravil gre za izvajanje smernic in drugih načel dobre klinične prakse.

Izvajanje načel nadzorovane rabe protimikrobnih zdravil mora doseči vse predpisovalce.

Zakaj zdravniki ne upoštevamo smernic?

ZNANJE	ODNOS	VEDENJE
Nepoznavanje vsebine smernic	Nestrinjanje s smernicami	Prepričanje, da zdravljenje po smernicah ni učinkovito
Nezavedanje obstoja smernic	Načelno nestrinjanje s smernicami	Pomanjkanje samozaupanja: nezmožnost upoštevanja smernic
		Pomanjkanje motivacije

VEDENJE
Nezmožnost uskladiti bolnikova pričakovanja s smernicami
Pomanjkanje časa, financiranja, sredstev, strah pred tožbo
Nasprotujoče si ali nerazumljive smernice

Prirejeno po Cabana MD, et al. JAMA 1999; 282: 1458-65

Kaj vpliva na predpisovanje antibiotikov v bolnišnicah: „Predpisovalna etiketa“

- **Hierarhična organizacija**

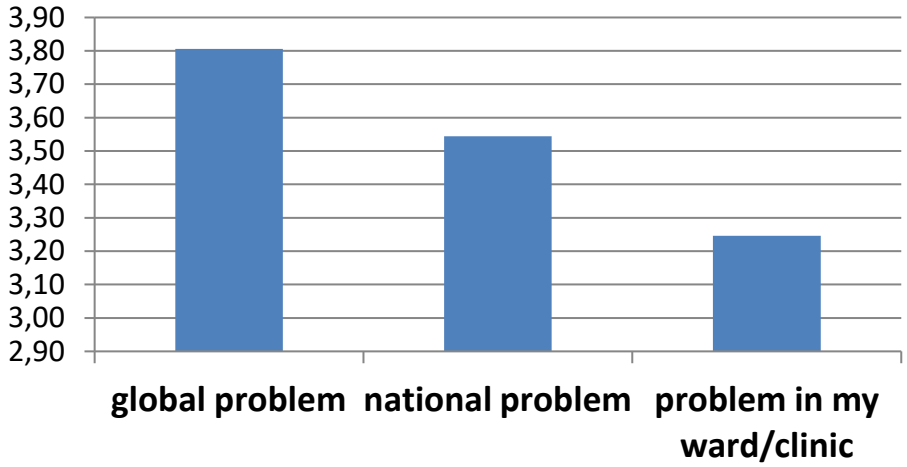
- **Avtonomni položaj starejših zdravnikov, ki dajo več na svoje izkušnje kot na smernice**

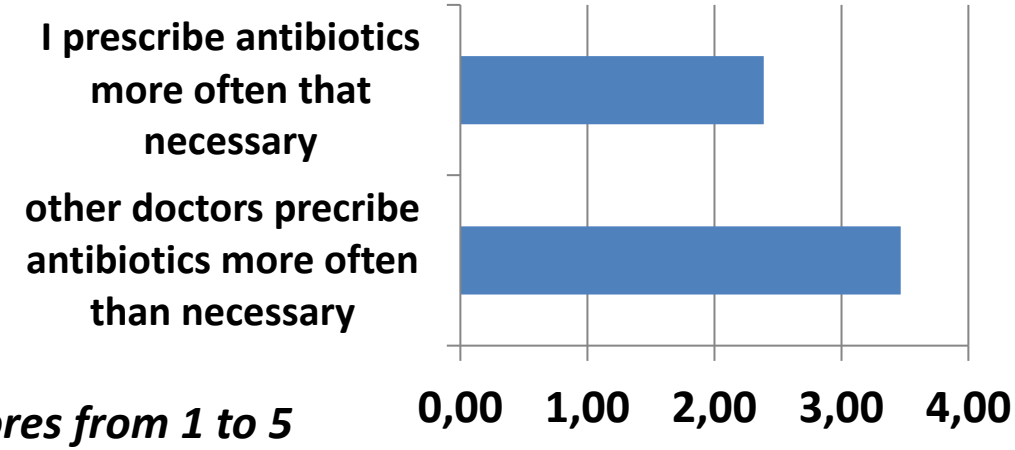
- **Kultura nevmešavanja v odločitev drugih**

Charani E, et al. Clin Infect Dis 2013;57:188–96.

Oh no, not me… I never lost control…

Resistance is a ….





Scores from 1 to 5

Young doctors‘ perspective on antimicrobial resistance and prescribing (YPAR) study, N=2898, unpublished.

How?

Interventions to improve antibiotic prescribing practices for hospital inpatients (Review)

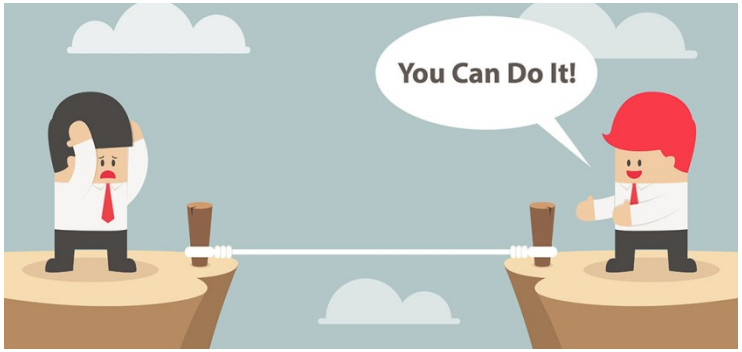
Davey P, Brown E, Charani E, Fenelon L, Gould IM, Holmes A, Ramsay CR, Wiffen PJ, Wilcox M

- **PREPRIČEVALNE INTERVENCIJE: distribucija izobraževalnega gradiva; izobraževalna srečanja; lokalni procesi soglasja; izobraževalni obiski; lokalni voditelji javnega mnenja; ustne, na papirju ali računalniku; revizija in povratne informacije.**
-
- **OMEJEVALNI POSEGI: selektivno poročanje o laboratorijski dovzetnosti, omejitev formule, zahteva predhodno odobritev receptov s strani zdravnikov nalezljivih bolezni, mikrobiologov, farmacevtov itd., terapevtske nadomestke, samodejne prekinitve in strategije spreminjanja antibiotične politike, vključno s kolesarjenjem, rotacijo in navzkrižnimi študijami.**
-
- **STRUKTURNO: prehod s papirnih unalniške zapise, hitro laboratorijsko testiranje, računalniški sistemi za podporo odločanju in uvedba ali organizacija mehanizmov za spremljanje kakovosti.**

Citation: Davey P, Brown E, Charani E, Fenelon L, Gould IM, Holmes A, Ramsay CR, Wiffen PJ, Wilcox M. Interventions to improve antibiotic prescribing practices for hospital inpatients. *Cochrane Database of Systematic Reviews* 2013, Issue 4. Art. No.: CD003543. DOI: 10.1002/14651858.CD003543.pub3.

Prepričevalni…

- **Delitev izobraževalnih materialov**
- **Izobraževalni sestanki**
- **Lokalni usklajevalni sestanki**
- **Vizite s poučevanjem**
- **Lokalni mnenjski voditelji**
- **Opozorila verbalno, pisno ali v računalniku**
- **Nadzor s povratno informacijo**



Davey P, Brown E, Charani E, Fenelon L,Gould IM,Holmes A, Ramsay CR,Wiffen PJ,WilcoxM. Interventions to improve antibiotic prescribing practices for hospital inpatients. Cochrane Database of Systematic Reviews 2013, Issue 4. Art. No.: CD003543.

Omejevalni ukrepi…

- **Selektivno poročanje občutljivosti**
- **Omejen seznam zdravil v bolnišnici**
- **Obvezna odobritev določenih zdravil**
- **Avtomatična zamenjava zdravil**
- **Avtomatična zaustavitev zdravljenja**
- **Različne sheme zamenjav zdravil**

Davey P, Brown E, Charani E, Fenelon L,Gould IM,Holmes A, Ramsay CR,Wiffen PJ,WilcoxM. Interventions to improve antibiotic prescribing practices for hospital inpatients. Cochrane Database of Systematic Reviews 2013, Issue 4. Art. No.: CD003543

Strukturni ukrepi

- **Zamenjava papirnatih popisov z elektronskimi vključno s predpisovanjem zdravil**
- **Hitre laboratorijske metode**
- **Informacijsko podprto odločanje**
- **Vpeljava mehanizmov za nadzor kakovosti**

Davey P, Brown E, Charani E, Fenelon L,Gould IM,Holmes A, Ramsay CR,Wiffen PJ,WilcoxM. Interventions to improve antibiotic prescribing practices for hospital inpatients. Cochrane Database of Systematic Reviews 2013, Issue 4. Art. No.: CD003543

Current evidence on hospital antimicrobial stewardship objectives: a systematic review and meta-analysis

Emelie C Schuts, Marlies E J L Hulscher, Johan W Mouton, Cees M Verduin, James W T Cohen Stuart, Hans W P M Overdiek, Paul D van der Linden, Stephanie Natsch, Cees M P M Hertogh, Tom F W Wolfs, Jeroen A Schouten, Bart Jan Kullberg, Jan M Prins

Lancet ID 2016; 16: 847-56.

Učinkovitost v doseganju vsaj enega od ciljev nadzorovane rabe antibiotikov (izid zdravljenja, varnost bolnika, stroški, protimikrobna odpornost) je bil ugotovljen za naslednje pristope:

- **sledenje smernicam**
- **de-eskalacija**
- **terapevtsko spremljanje koncentracij zdravil**
- **preklop na peroralno zdravljenje**
- **konzultacije ob bolniški postelji**
- **seznam antibiotikov z omejeno rabo**

Clinical Infectious Diseases

IDSA GUIDELINE

Barlam TF, et al. Clin Infect Dis 2016;62(10):e51–e77

Implementing an Antibiotic Stewardship Program: Guidelines by the Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America

Infection
DOI 10.1007/s15010-016-0885-z

GUIDELINE

Strategies to enhance rational use of antibiotics in hospital: a guideline by the German Society for Infectious Diseases

K. de With[1] · F. Allerberger[2] · S. Amann[3] · P. Apfalter[4] · H.-R. Brodt[5] · T. Eckmanns[6] · M. Fellhauer[7] · H. K. Geiss[8] · O. Janata[9] · R. Krause[10] · S. Lemmen[11] · E. Meyer[12] · H. Mittermayer[4] · U. Porsche[13] · E. Presterl[14] · S. Reuter[15] · B. Sinha[16] · R. Strauß[17] · A. Wechsler-Fördös[18] · C. Wenisch[19] · W. V. Kern[20]

Current evidence on hospital antimicrobial stewardship objectives: a systematic review and meta-analysis

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Lancet Infect Dis 2016; 16: 847–56

Review > Int J Antimicrob Agents. 2018 Jan;51(1):65-70. doi: 10.1016/j.ijantimicag.2017.06.020. Epub 2017 Jul 10.

Use of evidence-based recommendations in an antibiotic care bundle for the intensive care unit

Nico T Mutters [1], Giulia De Angelis [2], Giovanni Restuccia [3], Francesca Di Muzio [4], Jeroen Schouten [5], Marlies Hulscher [6], Massimo Antonelli [3], Evelina Tacconelli [7]

Contents lists available at ScienceDirect

Clinical Microbiology and Infection

journal homepage: www.clinicalmicrobiologyandinfection.com

Position paper

Pulcini C, *et al. Clin Microbiol Infect.* 2019;25:20–5.

Developing core elements and checklist items for global hospital antimicrobial stewardship programmes: a consensus approach

Clinical Infectious Diseases
IDSA GUIDELINE

Implementing an Antibiotic Stewardship Program: Guidelines by the Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America

Močno priporočeni posegi:

- Predpredpisne omejitve
- prospektivni pregled in povratne informacije

Barlam TF, et al. Clin Infect Dis 2016;62(10):e51–e77

Predpredpisne omejitve ali prospektivni pregled in povratne informacije

Fig. 4. Schematic of workflow for prior authorization

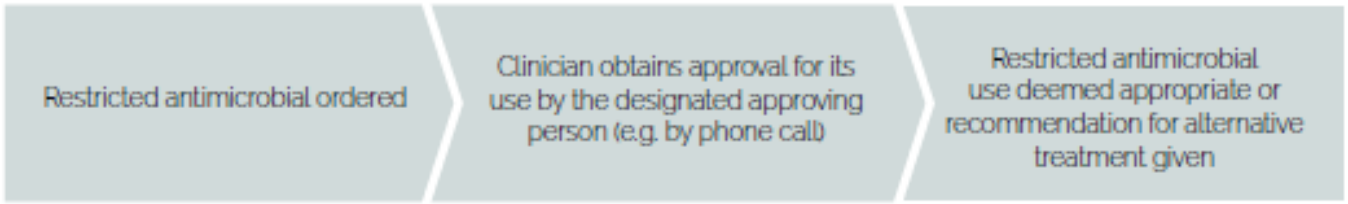
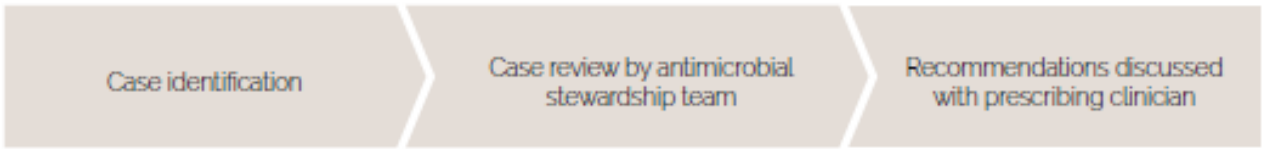


Fig. 6. Schematic of workflow for prospective audit and feedback



Teoretični koncept deeskalacije

Pravočasna uvedba širokospektralnega antibiotika

Osamitev povzročitelja
Izključitev določenih povzročiteljev

Antibiotik ožjega spektra, prilagojen občutljivosti povzročitelja

Uspešno obvladamo okužbo

Zmanjšamo selekcijski pritisk širokospektralne antibiotične terapije

Dobrobit posameznega bolnika

Socialna dobrobit: ohranjamo učinkovitost širokospektralnih antibiotikov, ki jih uporabljamo izkustveno, za druge bolnike

Praktični nasveti za varno (in učinkovito) deeskalacijo

- **Razmislite o deeskalaciji, kadar obstaja velik vpliv empirične obravnave in velika potreba po ohranitvi njene učinkovitosti.**
- **Razmislite o deeskalaciji, ko je na voljo druga antibiotična terapija z manjšim potencialom izbire odpornosti glede na okolje.**
- **Naredite pravilno klinično diagnozo okužbe.**
- **Zagotovite ustrezno mikrobiološko diagnostiko.**
- **Uporabite hitro diagnostiko, da pospešite deeskalacijo in skrajšate izpostavljenost prvemu antibiotiku.**
- **Drugo antibiotično zdravljenje je treba dati v odmerku, ki doseže cilj PK/PD in terapevtsko koncentracijo v tkivu.**
- **Če je mogoče: prekinitev zdravljenja z antibiotikom je učinkovitejša od deeskalacije.**

Giantsou E, et al. Intensive Care Med 2007; 33:1533–40., Tabah A, et al. Clin Infect Dis 2016;62:1009–17., Paul M, et al. Clin Microbiol Infect 2016;22:960e967, Xiao B, et al. Exper Ther Med 2017;13:1485-89, Carlier M, et al. Antimicrob Agents Chemother 59:4689 –94

A Highly Effective Rounding-based Antimicrobial Optimization Service

Amanda L. Hurst, PharmD, Jason Child, PharmD,* Kelly Pearce, BA,† Claire Palmer, MS,‡ James K. Todd, MD,†‡§ and Sarah K. Parker, MD†‡§*

(*Pediatr Infect Dis J* 2016;35:1104–1110)

- **Pomanjkanje omejitev in predhodne odobritve**
- **farmacevtsko-zdravniški pregled vseh protimikrobnih zdravil**
- **osebni pristop k povratnim informacijam, ki temelji na zaokroževanju, ki ga izvaja ekipa farmacevta in zdravnika.**

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The participants identified two emerging approaches to antibiotic stewardship that go beyond current guidelines and strengthen established practices:

- The first calls for regular in person engagement with health care providers and the facility's stewardship team about their antibiotic prescribing. This model, frequently referred to as "**handshake stewardship**," fosters a much more collaborative relationship between the stewardship team and the front-line providers than traditional approaches.
- The second, known as "**diagnostic stewardship**," focuses on ensuring appropriate

https://www.jointcommission.org/resources/news-and-multimedia/blogs/improvement-insights/2019/08/improving-hospital-antibiotic-stewardship-programs

RESEARCH Open Access

Development of a patient-centred intervention to improve knowledge and understanding of antibiotic therapy in secondary care

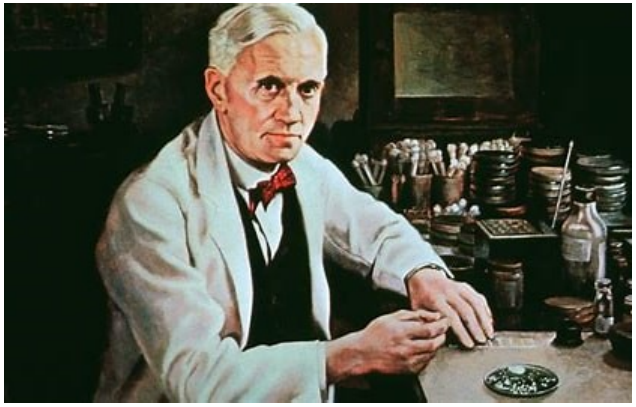
Individualized practical information

Increased understanding of infection and antibiotic management

Rawson TM, et al. Antimicrobial Resistance and Infection Control (2018) 7:43

Razvoj mikrobne odpornosti kot moralni problem

Zdravljenje s premajhnimi odmerki povzroča mikrobno odpornost. Oseba, ki tako nepremišljeno uporablja penicilin, je moralno odgovorna za smrt bolnika, ki bo podlegel okužbi z odporno bakterijo.



Alexander Fleming

Jambrozik E, Heriot GS. British Medical Bulletin, 2022, 141:4–14

Mikrobna odpornost kot tragedija skupnega?

- Dobrobit antibiotika (danega po nepotrebnem ali preveč širokega spektra) za posameznika ni vedno prepričljiva: diagnostična negotovost, terapevtska negotovost, negotov povzročitelj.
- Antibiotiki imajo pogoste neželene učinke.
- Največ okužb z odpornimi bakterijami utrpijo bolniki, ki so bili nedavno zdravljeni z antibiotiki.
- Odporne bakterije ogrozijo tudi bolnike, ki niso prejemali antibiotikov.

Prekomerna raba antibiotikov ne koristi nikomur!

Jambrozik E, Heriot GS. British Medical Bulletin, 2022, 14:4–14