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Značaj higijene ruku i higijene okoline u prevenciji širenja multirezistentnih bakterija

Martina Močenić,mag.med.techn

Pula, 7.studeni 2019

Infekcije povezane sa zdravstvenom skrbi

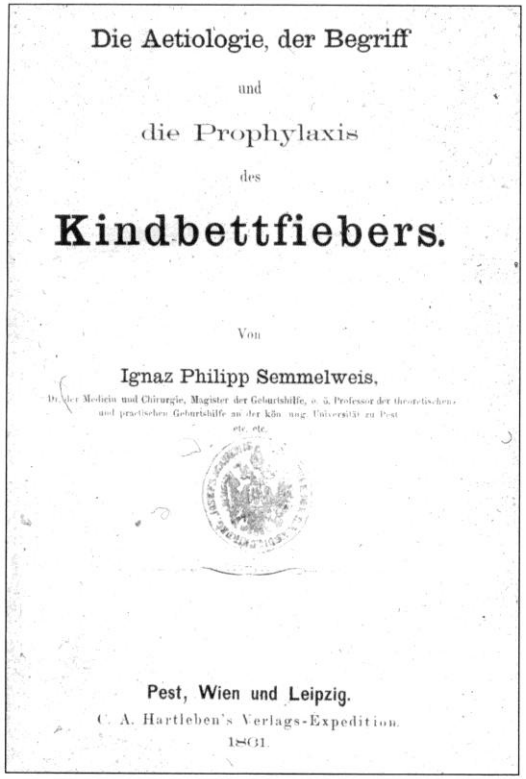
- Centar za prevenciju i kontrolu bolesti SAD (CDC)

  Procjena 2009.god. 1,7- 2 milijuna bolesnika bilo je inficirano u zdr.ustanovama,a ~ 90 000 je umrlo

- Europski centar za prevenciju bolesti (ECDC)

  Procjena 2013.god. svaki dan, ~80 000 bolesnika imalo barem jednu infekciju povezanu sa zdravstvenom skrbi, a najmanje je umrlo 37 000

Ignaz Philip Semmelweis



Die Aetiologie, der Begriff

und

die Prophylaxis

des

Kindbettfiebers.

Von

Ignaz Philipp Semmelweis,

Pest, Wien und Leipzig.

C. A. Hartleben's Verlags-Expedition.

1861.

Figure 4. Semmelweis' classic monograph Die Aetiologie, der Begriff und die Prophylaxis des Kindbettfiebers, *1861.*[22]

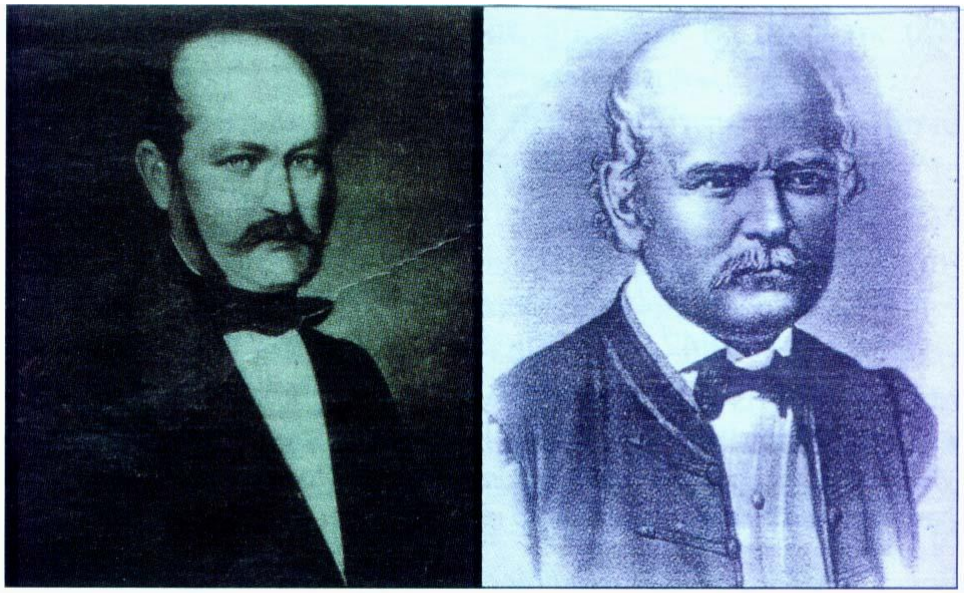


Figure 1. Ignaz Philipp Semmelweis, 1815–1865. Engravings made before (left) and after (right) Semmelweis insisted that students and doctors clean their hands with a chlorine solution between each patient.

Pittet D, Boyce JM. Hand hygiene and patient care: pursuing the Semmelweis legacy. Lancet Infectious Diseases 2001; April:9-20.

Higijena ruku

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   Bolon MK.
   Infect Dis Clin North Am. 2016 Sep;30(3):591-607. doi: 10.1016/j.idc.2016.04.007. Review.
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3. Approaches to **hand hygiene** monitoring: From low to high technology approaches.
   Masroor N, Doll M, Stevens M, Bearman G.
   Int J Infect Dis. 2017 Dec;65:101-104. doi: 10.1016/j.ijid.2017.09.031. Epub 2017 Oct 17. Review.
   PMID: 29054442 Free Article
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4. Interventions to Improve **Hand Hygiene** Compliance in the ICU: A Systematic Review.
   Lydon S, Power M, McSharry J, Byrne M, Madden C, Squires JE, O'Connor P.
   Crit Care Med. 2017 Nov;45(11):e1165-e1172. doi: 10.1097/CCM.0000000000002691. Review.
   PMID: 28857850
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5. **Hand hygiene**-related clinical trials reported since 2010: a systematic review.
   Kingston L, O'Connell NH, Dunne CP.
   J Hosp Infect. 2016 Apr;92(4):309-20. doi: 10.1016/j.jhin.2015.11.012. Epub 2015 Dec 17. Review.
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6. **Hand Hygiene** With Alcohol-Based **Hand** Rub: How Long Is Long Enough?
   Pires D, Soule H, Bellissimo-Rodrigues F, Gayet-Ageron A, Pittet D.
   Infect Control Hosp Epidemiol. 2017 May;38(5):547-552. doi: 10.1017/ice.2017.25. Epub 2017 Mar 7.
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   Gray J, Oppenheim B, Mahida N.
   J Hosp Infect. 2017 Jan;95(1):1-2. doi: 10.1016/j.jhin.2016.12.001. Epub 2016 Dec 8. No abstract available.
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3. Can intersectional innovations reduce **hospital infection**?
   Saint S.
   J Hosp Infect. 2017 Feb;95(2):129-134. doi: 10.1016/j.jhin.2016.11.013. Epub 2016 Nov 28.
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4. The Journal of **Hospital Infection** - a history of **infection** prevention and control in 100 volumes.
   Gray J, Oppenheim B, Mahida N.
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5. **Hospital**-associated infections in small animal practice.
   Stull JW, Weese JS.
   Vet Clin North Am Small Anim Pract. 2015 Mar;45(2):217-33, v. doi: 10.1016/j.cvsm.2014.11.009. Epub 2015 Jan 2. Review.
   PMID: 25559054
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6. Mopping up **hospital infection**.
   Dancer SJ.
   J Hosp Infect. 1999 Oct;43(2):85-100. Review.

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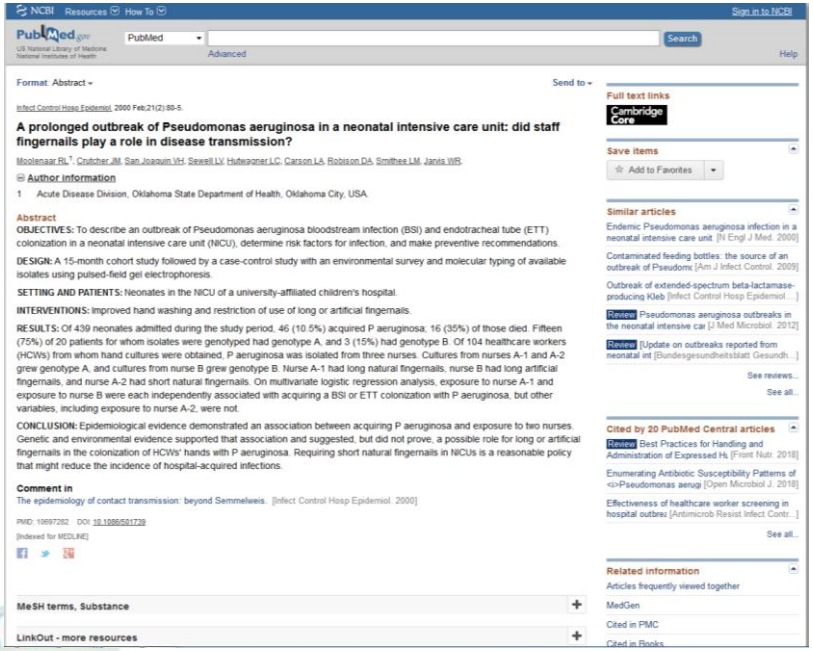


A prolonged outbreak of Pseudomonas aeruginosa in a neonatal intensive care unit: did staff fingernails play a role in disease transmission?

Author information

1 Acute Disease Division, Oklahoma State Department of Health, Oklahoma City, USA.

Abstract

OBJECTIVES: To describe an outbreak of Pseudomonas aeruginosa bloodstream infection (BSI) and endotracheal tube (ETT) colonization in a neonatal intensive care unit (NICU), determine risk factors for infection, and make preventive recommendations.

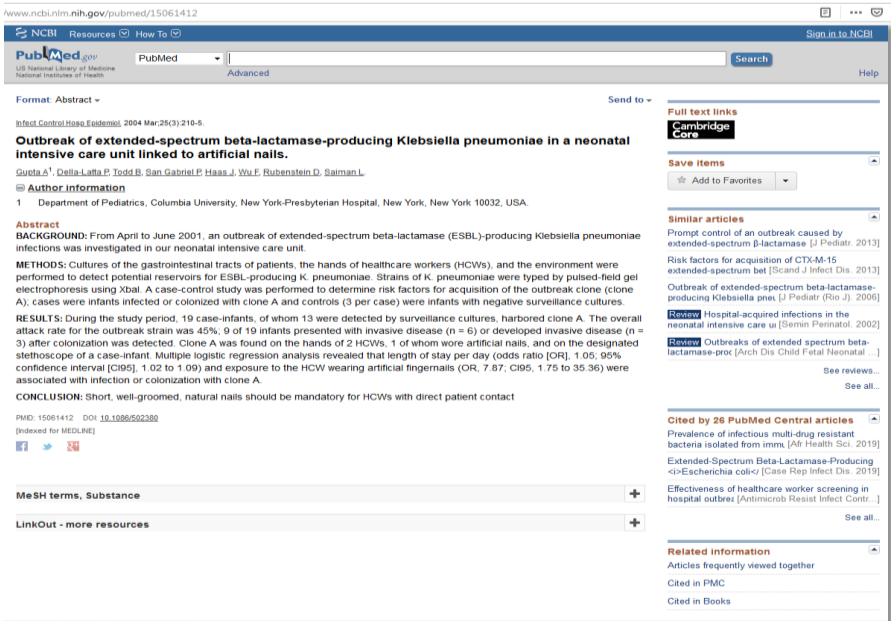
DESIGN: A 15-month cohort study followed by a case-control study with an environmental survey and molecular typing of available isolates using pulsed-field gel electrophoresis.

SETTING AND PATIENTS: Neonates in the NICU of a university-affiliated children's hospital.

INTERVENTIONS: Improved hand washing and restriction of use of long or artificial fingernails.

RESULTS: Of 439 neonates admitted during the study period, 46 (10.5%) acquired P aeruginosa; 16 (35%) of those died. Fifteen (75%) of 20 patients for whom isolates were genotyped had genotype A, and 3 (15%) had genotype B. Of 104 healthcare workers (HCWs) from whom hand cultures were obtained, P aeruginosa was isolated from three nurses. Cultures from nurses A-1 and A-2 grew genotype A, and cultures from nurse B grew genotype B. Nurse A-1 had long natural fingernails, nurse B had long artificial fingernails, and nurse A-2 had short natural fingernails. On multivariate logistic regression analysis, exposure to nurse A-1 and exposure to nurse B were each independently associated with acquiring a BSI or ETT colonization with P aeruginosa, but other variables, including exposure to nurse A-2, were not.

CONCLUSION: Epidemiological evidence demonstrated an association between acquiring P aeruginosa and exposure to two nurses. Genetic and environmental evidence supported that association and suggested, but did not prove, a possible role for long or artificial fingernails in the colonization of HCWs' hands with P aeruginosa. Requiring short natural fingernails in NICUs is a reasonable policy that might reduce the incidence of hospital-acquired infections.



Outbreak of extended-spectrum beta-lactamase-producing Klebsiella pneumoniae in a neonatal intensive care unit linked to artificial nails.

Author information

1 Department of Pediatrics, Columbia University, New York-Presbyterian Hospital, New York, New York 10032, USA.

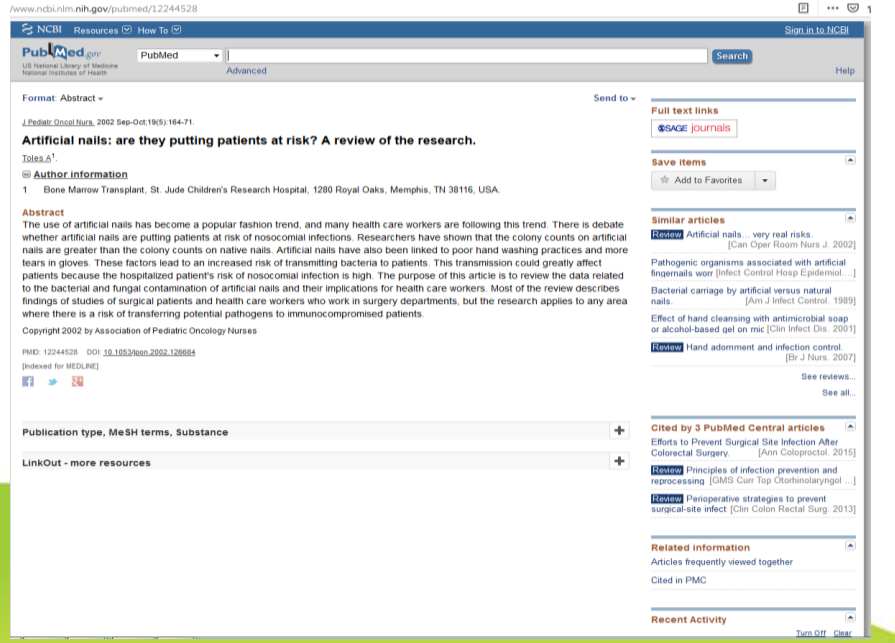
Abstract

BACKGROUND: From April to June 2001, an outbreak of extended-spectrum beta-lactamase (ESBL)-producing Klebsiella pneumoniae infections was investigated in our neonatal intensive care unit.

METHODS: Cultures of the gastrointestinal tracts of patients, the hands of healthcare workers (HCWs), and the environment were performed to detect potential reservoirs for ESBL-producing K. pneumoniae. Strains of K. pneumoniae were typed by pulsed-field gel electrophoresis using XbaI. A case-control study was performed to determine risk factors for acquisition of the outbreak clone (clone A); cases were infants infected or colonized with clone A and controls (3 per case) were infants with negative surveillance cultures.

RESULTS: During the study period, 19 case-infants, of whom 13 were detected by surveillance cultures, harbored clone A. The overall attack rate for the outbreak strain was 45%; 9 of 19 infants presented with invasive disease (n = 6) or developed invasive disease (n = 3) after colonization was detected. Clone A was found on the hands of 2 HCWs, 1 of whom wore artificial nails, and on the designated stethoscope of a case-infant. Multiple logistic regression analysis revealed that length of stay per day (odds ratio [OR], 1.05; 95% confidence interval [CI95], 1.02 to 1.09) and exposure to the HCW wearing artificial fingernails (OR, 7.87; CI95, 1.75 to 35.36) were associated with infection or colonization with clone A.

CONCLUSION: Short, well-groomed, natural nails should be mandatory for HCWs with direct patient contact



Artificial nails: are they putting patients at risk? A review of the research.

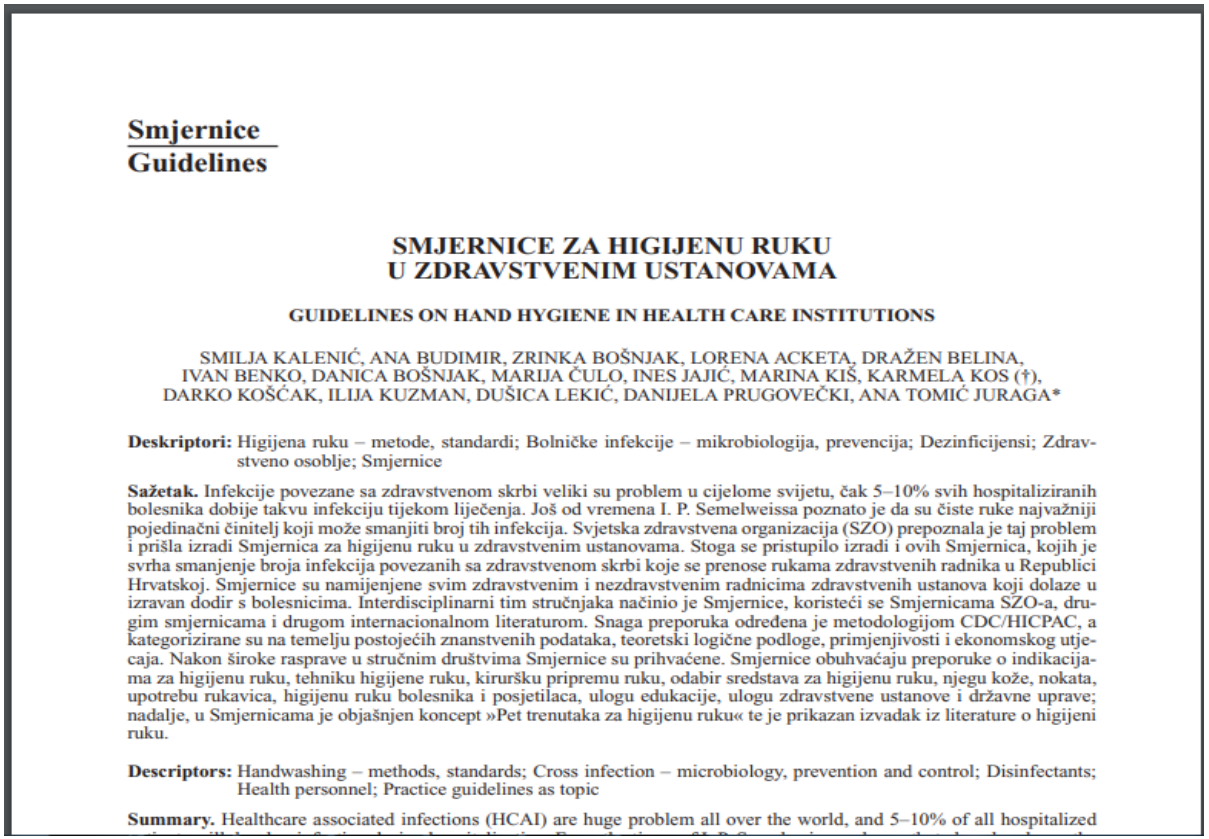
Author information

1 Bone Marrow Transplant, St. Jude Children's Research Hospital, 1280 Royal Oaks, Memphis, TN 38116, USA.

Abstract

The use of artificial nails has become a popular fashion trend, and many health care workers are following this trend. There is debate whether artificial nails are putting patients at risk of nosocomial infections. Researchers have shown that the colony counts on artificial nails are greater than the colony counts on native nails. Artificial nails have also been linked to poor hand washing practices and more tears in gloves. These factors lead to an increased risk of transmitting bacteria to patients. This transmission could greatly affect patients because the hospitalized patient's risk of nosocomial infection is high. The purpose of this article is to review the data related to the bacterial and fungal contamination of artificial nails and their implications for health care workers. Most of the review describes findings of studies of surgical patients and health care workers who work in surgery departments, but the research applies to any area where there is a risk of transferring potential pathogens to immunocompromised patients.

Higijena ruku: tko, kada, kako i zašto?



Smjernice
Guidelines

SMJERNICE ZA HIGIJENU RUKU U ZDRAVSTVENIM USTANOVAMA

GUIDELINES ON HAND HYGIENE IN HEALTH CARE INSTITUTIONS

SMILJA KALENIĆ, ANA BUDIMIR, ZRINKA BOŠNJAK, LORENA ACKETA, DRAŽEN BELINA, IVAN BENKO, DANICA BOŠNJAK, MARIJA ČULO, INES JAJIĆ, MARINA KIŠ, KARMELA KOS (†), DARKO KOŠĆAK, ILIJA KUZMAN, DUŠICA LEKIĆ, DANIJELA PRUGOVEČKI, ANA TOMIĆ JURAGA*

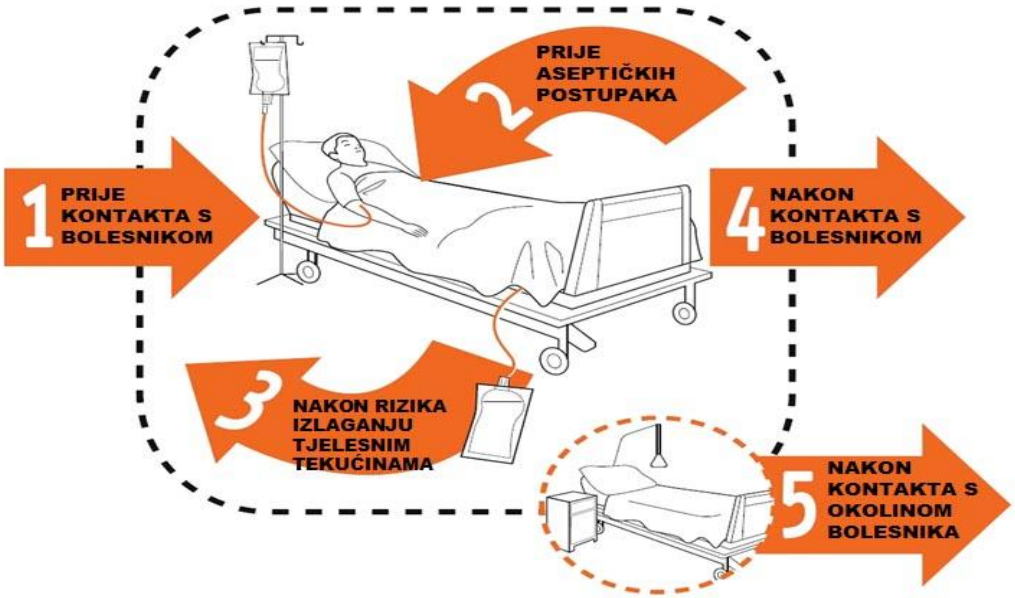
Deskriptori: Higijena ruku – metode, standardi; Bolničke infekcije – mikrobiologija, prevencija; Dezinficijensi; Zdravstveno osoblje; Smjernice

Sažetak. Infekcije povezane sa zdravstvenom skrbi veliki su problem u cijelome svijetu, čak 5–10% svih hospitaliziranih bolesnika dobije takvu infekciju tijekom liječenja. Još od vremena I. P. Semelweissa poznato je da su čiste ruke najvažniji pojedinačni činitelj koji može smanjiti broj tih infekcija. Svjetska zdravstvena organizacija (SZO) prepoznala je taj problem i prišla izradi Smjernica za higijenu ruku u zdravstvenim ustanovama. Stoga se pristupilo izradi i ovih Smjernica, kojih je svrha smanjenje broja infekcija povezanih sa zdravstvenom skrbi koje se prenose rukama zdravstvenih radnika u Republici Hrvatskoj. Smjernice su namijenjene svim zdravstvenim i nezdravstvenim radnicima zdravstvenih ustanova koji dolaze u izravan dodir s bolesnicima. Interdisciplinarni tim stručnjaka načinio je Smjernice, koristeći se Smjernicama SZO-a, drugim smjernicama i drugom internacionalnom literaturom. Snaga preporuka određena je metodologijom CDC/HICPAC, a kategorizirane su na temelju postojećih znanstvenih podataka, teoretski logične podloge, primjenjivosti i ekonomskog utjecaja. Nakon široke rasprave u stručnim društvima Smjernice su prihvaćene. Smjernice obuhvaćaju preporuke o indikacijama za higijenu ruku, tehniku higijene ruku, kiruršku pripremu ruku, odabir sredstava za higijenu ruku, njegu kože, nokata, upotrebu rukavica, higijenu ruku bolesnika i posjetilaca, ulogu edukacije, ulogu zdravstvene ustanove i državne uprave; nadalje, u Smjernicama je objašnjen koncept »Pet trenutaka za higijenu ruku« te je prikazan izvadak iz literature o higijeni ruku.

Descriptors: Handwashing – methods, standards; Cross infection – microbiology, prevention and control; Disinfectants; Health personnel; Practice guidelines as topic

Summary. Healthcare associated infections (HCAI) are huge problem all over the world, and 5–10% of all hospitalized

5 trenutaka za higijenu ruku

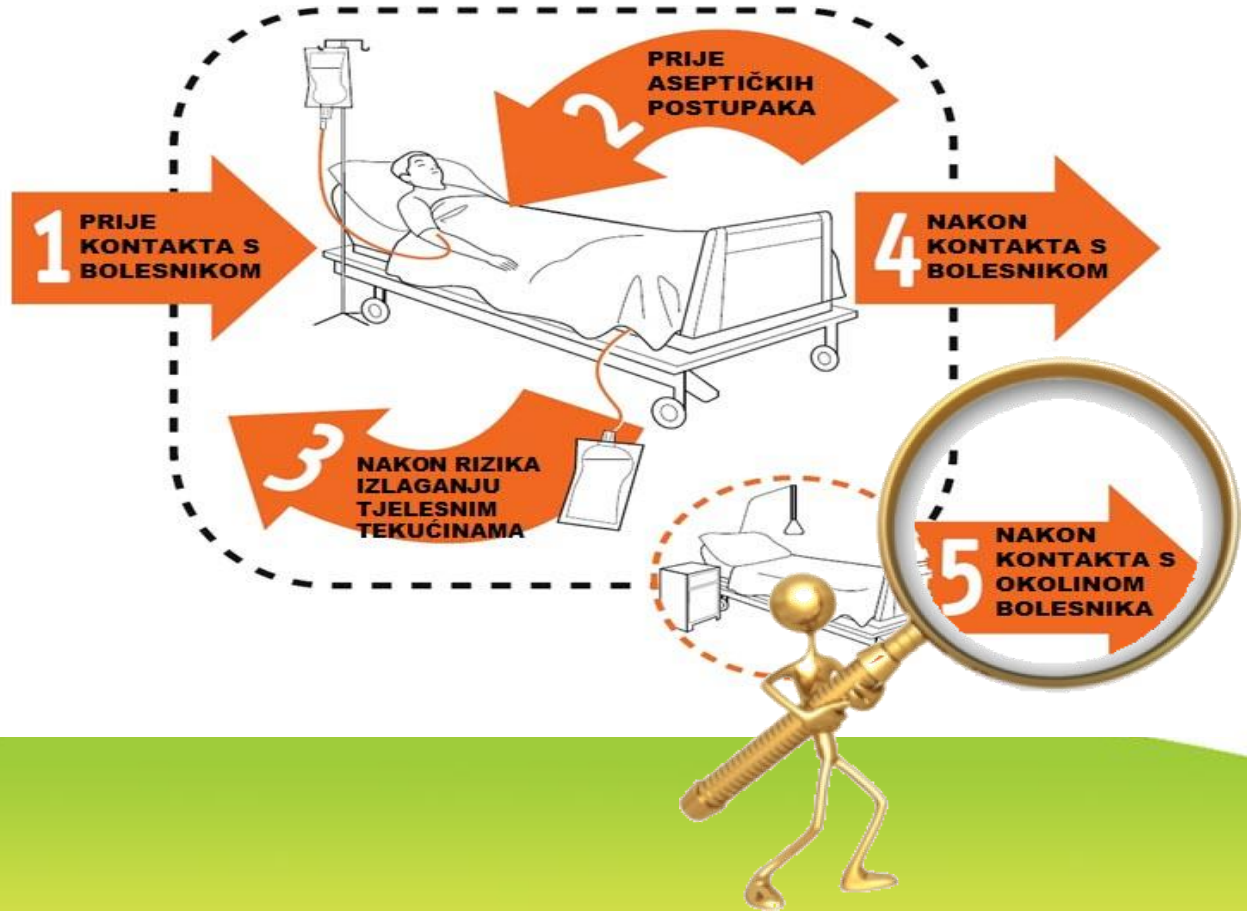


Higijena ruku

- Higijensko pranje

- Higijensko utrljavanje

Utjecaj okoline u prijenosu multirezsitsentnih patogena



Utjecaj okoline u prijenosu multirezistentnih patogena

- Površine s kojima ruke dolaze u minimalan kontakt
  (podovi, zidovi, stropovi)

- Površine s kojima ruke dolaze u čest kontakt

Što utječe na broj i tipove mikroorganizma?

- Broj osoba u okolini
- Količina aktivnosti
- Količina vlage
- Prisutnost materijala koji omogućuju rast
- Brzina kojom se uklanjaju mikroorganizmi u zraku
- Tip površine

Predstavlja li rizik kontaminirana okolina?

- Bolesnici primljeni u sobu u kojoj je prethodno bio bolesnik s MRSA,VRE, *Acinetobacter baumanii* su pod rizikom da akviriraju patogen iz okoline

TSICP 8 Huang, et al; *Arch Intern Med 2006; 166: 1945-1951 Hardy , et al; ICHE 2006; 27: 127-132 Sexton et al; JH 2006; 62: 187-194 Martinez, et al; Arch Intern Med 2003; 163: 1905-1912*

Aktiviranje MRSA iz okoline?

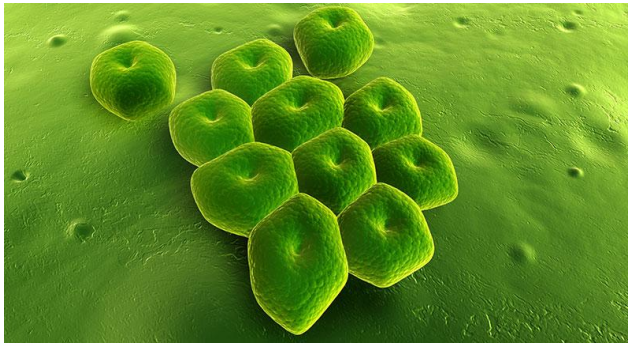
- 42% od 12 med. sestara kontaminira rukavice s MRSA u kontaktu s predmetima u bolesnikovoj sobi (MRSA u rani ili urinu)
- *BEZ KONTAKTA SA BOLESNIKOM*

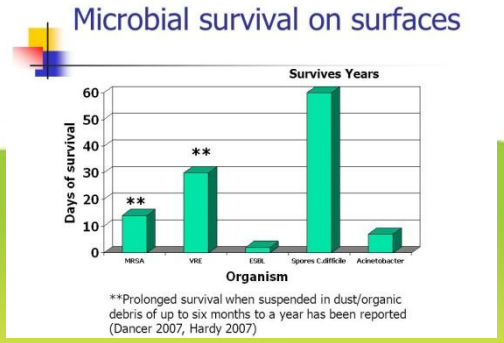
Izvori u okolini- EBSL epidemija

- Gel za pregled ultrazvukom (Gaillot, J Clin Microbiol 1998;36:1357)
- Bronhoskopi (Branger, J Hosp Infect 1997; 36:23)
- Staklo na termometru za mjerenje aksilarne temperature (Rouges, J Hosp Infect 2000; 45; 76)
- Žohari (Cotton, J Hosp Infect 2000; 44: 13)
- Umjetni nokti (Gupta, Infect Control hosp Epidemiol 2004; 25:210)
- Sapun (Szabo, J Clin Microbiol 1999; 37: 4167)
- Umivaonici (Hobson, J Hosp Infect 1996; 33:249)
- Kade za kupanje novorođenčadi (Eisen, J Clin Microbiol 1995; 33:713)

Preživljavanje mikroorganizama na površinama

- C. difficile > 5 mjeseci
- Staphylococci 7 mjeseci
- VRE 4 mjeseci
- Acinetobacter 5 mjeseci
- Norovirus 3 tjedna
- Adenovirus, Rotavirus 3 mjeseca
- SARS, HIV etc. dani-tjedni





Kako osigurati sigurnu bolničku okolinu?

- **Infrastrukturni preduvjeti**

1. Površine- glatke i nepropusne- zatvoreni ormari
2. Zidovi i stropovi- glatki i nepropusni, otporni na vodu
3. Podovi- glatki, nepropusni- nizak rizik za infekciju
4. Tepih- izbjegavati
5. Inventar i oprema, namještaj
6. Zavjese i rolete(okomite ne vodoravne)

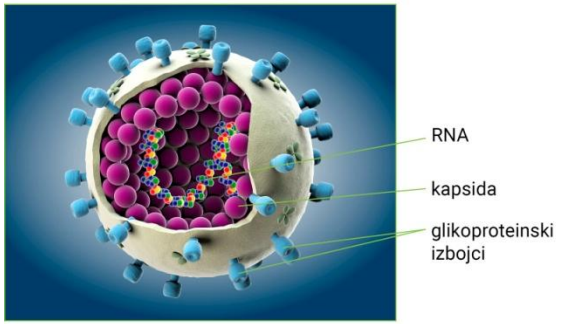
Kako osigurati sigurnu bolničku okolinu?

- **Odgovarajuća sredstva za mehaničko pranje i dezinfekciju površina i okoline**

1. Dezinficijens visokog stupnja djelotvornosti

Djelotvornost na skupine mikroorganizama(EN)

- ✓ **1 Baktericidna**
- ✓ **2a Limitirani virucid**
- ✓ **2b Potpuni virucid**
- ✓ **3a Djelotvornost na kvasce**
- ✓ **3b Djelotvornost na plijesni**
- ✓ **4a Mikrobaktercidna**
- ✓ **4b Tuberkolocidna**
- ✓ 5 Sporocidna p.p- u slučaju pozitivnog nalaza Clostridum difficile
- ✓ 6 Protozoe p.p
- ✓ 7 Prioni p.p



Kako osigurati sigurnu bolničku okolinu?

2. Detregenti dezinficijens visokog stupnja za površine i podove

Djelotvornosti EN 1, 2a, 2b, 3a, 4a, 4b

- ✓ **1 Baktericidna**
- ✓ **2a Limitirani virucid**
- ✓ **2b Potpuni virucid**
- ✓ **3a Djelotvornost na kvasce**
- ✓ **3b Djelotvornost na plijesni**
- ✓ **4a Mikrobaktercidna**
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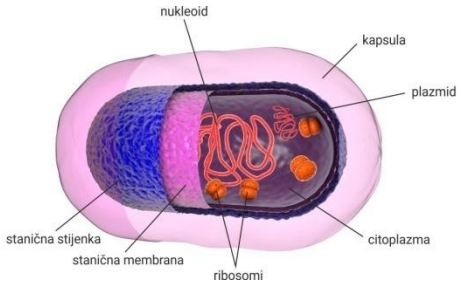

Kako osigurati sigurnu bolničku okolinu?

3. Strojna dekontaminacija prostora- vodikov peroksid, peroctena kiselina, ozon, uv lampa

(potpuna sporocidnost)

Kako osigurati sigurnu bolničku okolinu?

- **Educirano osoblje**

1. Redovno obnavljanje znanja na temu važnosti higijene ruku u zdravstvenim ustanovama
2. Poznavanje vrsta dezinficijensa i njihovu namjenu
3. Dezinfekcija površina i medicinskog pribora prema radnim uputama ustanove
4. Evidencija učinjenog

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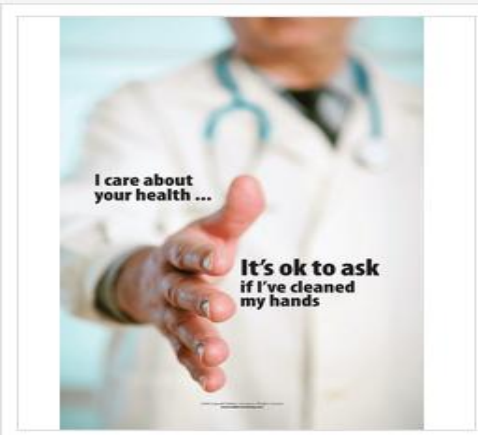

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