

# KONTROLA I PREVENCIJA KRVNO PRENOSIVIH BOLESTI U STOMATOLOGIJI



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# SADRŽAJ PREDAVANJA

- **Krvno prenosive infekcije u stomatologiji**
- **Transmisije krvno prenosivih patogena u stomatološkoj praksi**
- **Standardne mere prevencije**
- **Pranje instrumenata**
- **Sterilizacija**
- **Ekspozicija i mere profilakse**

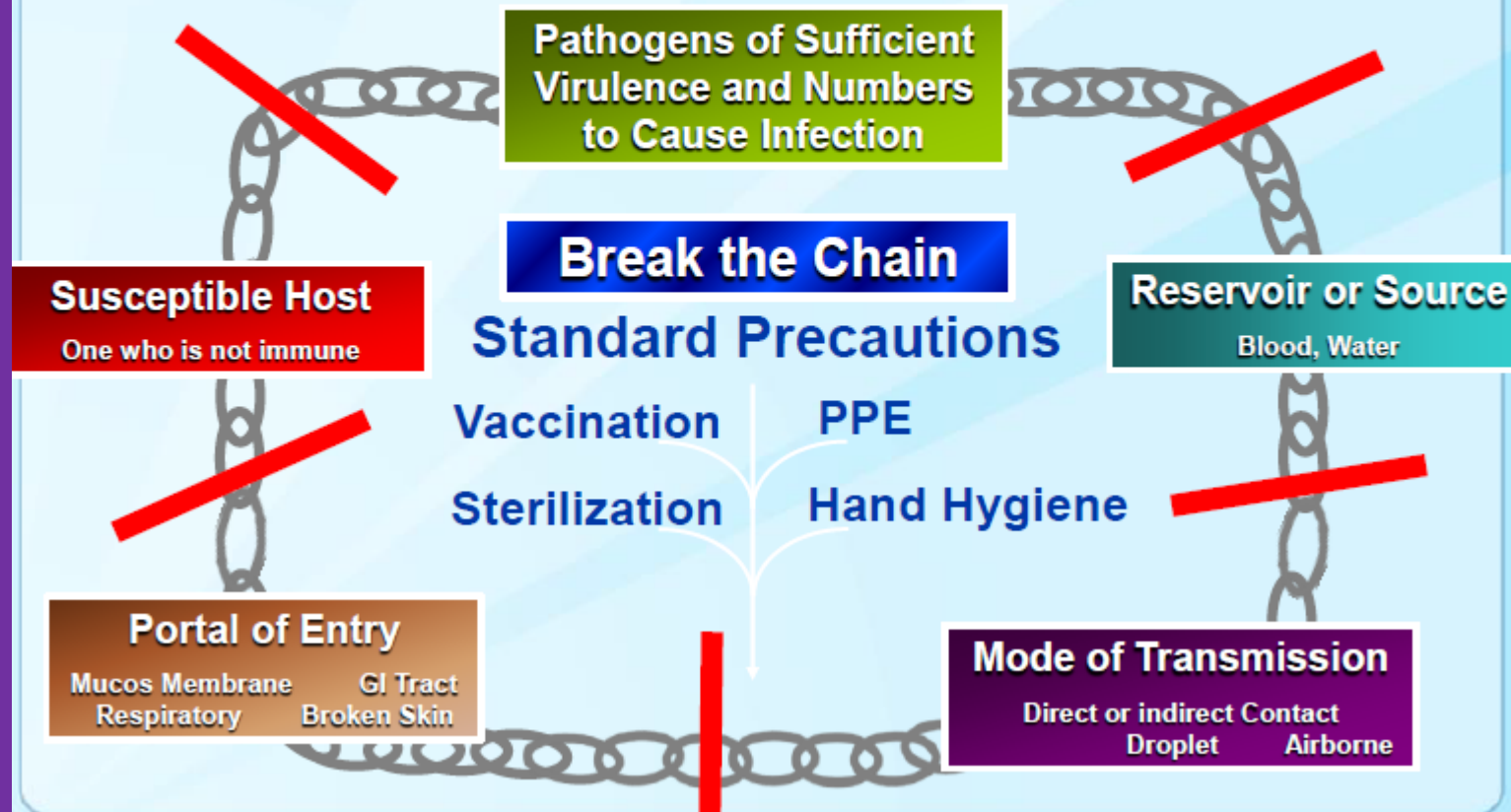
# **Krvno prenosive infekcije u stomatologiji**

- **virus hepatitisa B (HBV)**
- **virus hepatitisa C (HCV)**
- **virus humane imunodeficijencije (HIV virus).**

**!!!**

- **Iako se primenom opštih i specifičnih mera prevencije i postekspozicione profilakse ove infekcije među zaposlenima u zdravstvu mogu gotovo u potpunosti sprečiti, što je slučaj u razvijenim zemljama, infekcije krvno prenosivim virusima među radnicima u zdravstvu su i dalje prisutne u Srbiji.**

# Goal: Break the Chain of Infection



# Relative Transmission Efficiency of Bloodborne Viral Infections

	<u>HBV</u>	<u>HCV</u>	<u>HIV</u>
<b>Injection drug use</b>	+++	++++	++
<b>Sexual</b>	+++	+	++
<b>Perinatal</b>	++++	+	++
<b>Occupational</b>	+++	+/-	+/-

# Risk of Infection after Needlestick

<u>Source</u>	<u>Risk</u>	
<b>HBV</b>	<b>6.0-30.0%</b>	<b>1/3</b>
HBeAg+	22.0-30.0%	
HBeAg-	1.0-6.0%	
<b>HCV</b>	<b>1.8%</b>	<b>1/30</b>
<b>HIV</b>	<b>0.3%</b>	<b>1/300</b>

## ZAKONSKA REGULATIVA

U skladu sa Pravilnikom o imunizaciji i načinu zaštite lekovima (**Sl. Glasnik RS 11/06**) prema članu 34. obavezna imunizacija protiv akutnog virusnog hepatitisa se sprovodi kod svih nevakcinisanih i nepotpuno vakcinisanih lica u zdravstvenim ustanovama uključujući i **učenike i studente zdravstveno obrazovne struke, koji dolaze u neposredan kontakt sa infektivnim materijalom**



# **PREEKSPOZICIIONA PROFILAKSA**

**3 doze intramuskularnim davanjem hepatitis B  
vaccine po šemi 0,1 i 6 meseci u deltoidni mišić.  
(0,1,6)**

**Osobe koje nisu kompletno vakcinisane se  
smatraju nepotpuno zaštićenim i moraju završiti  
seriju vakcinacije od 3 doze.**

# PREEKSPOZICIONA PROFILAKSA

- **Imunodeficijencija, dijaliza – revakcinacija nakon 5 godina jedne doze**
- **više od 95% vakcinisanih osoba uzrasta do 40 godina će imati zaštitni titar anti HBs antitela ( $\geq 10$  mIU/mL) koji traje duže od 20 godina.**
- **U uzrastu preko 40 godina manje od 90% kompletno vakcinisanih osoba će razviti adekvatan imunitet prema HBV infekciji a kod starijih od 60 godina samo 75% će biti adekvatno zaštićeno.**
- **Osim uzrasta dodatni faktori koji utiču na slabiji imuni odgovor su pušenje, gojaznost, genetski faktori i imunosupresivna stanja.**

# PREVENCIJA KRVNOPRENOSIVIH INFEKCIJA U ZDRAVSTEVNIM USTANOVAMA

- Mere za kontrolu krvnopenosivih infekcija
- Standardne mere predostrožnosti

# STANDARDNE MERE PREVENCIJE

- Higijena ruku
- Korišćenje lične zaštitne opreme
- Pravilno rukovanje sa oštrim instrumentima
- Sterilizacija instrumenata i aparata
- Čišćenje/dezinfekcija okruženja bolesnika - radnih površina
- Upotreba zaštitne maske (tuberkuloza, influenza, herpes)

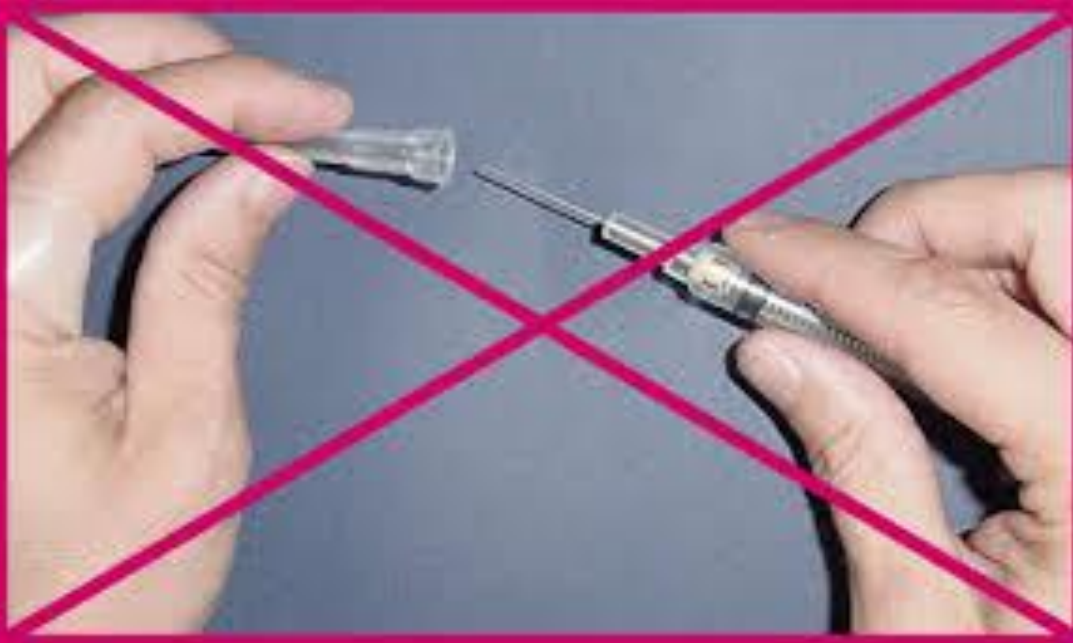
# STANDARDNE MERE PREVENCIJE

- Predmeti i oprema koji se koriste za lečenje i negu bolesnika
- Veš i posteljina
- Tanjiri, čaše, šolje i escajg
- Rutinsko čišćenje
- Mere povezane sa osobljem

- Pranje ruku u rukavicama kako bi se ponovo koristile je nedopustivo.
- Neskidanje i neodbacivanje rukavica odmah nakon kontakta sa pacijentom predstavlja rizik za širenje kontaminacije na površine i predmete i povećanje biološkog opterećenja okoline.
- Nemenjanje rukavica pre kontakta sa idućim pacijentom predstavlja stručnu grešku i samim tim je nedopustivo.



- Na igle nakon korišćenja **ne vraćati zaštitne kapice**. Odbaciti igle zajedno sa špricom u za to namenjene neprobojne i nepropusne kontejnere









**Korišćenje jednog šprica sa ili bez igle za administraciju leka u više pacijenata**

**Ponovna upotreba istog šprica, sa ili bez igle, za uzimanje leka ili rastvora (npr Fiziološkog rastvora) kako bi se obezbedila dodatna količina leka za istog pacijenta**

**Priprema medikamenta u neposrednoj blizini kontaminiranih instrumenata ili materijala**

**Istekli rokovi upotrebe**

**Neadekvatan monitoring i održavanja autoklava**

# Transmission of blood-borne pathogens in US dental health care settings

2016 Update

Jennifer L. Cleveland, DDS, MPH; Shellie Kolavic Gray, DMD, MPH; Jennifer A. Harte, DDS, MS; Valerie A. Robison, DDS, MPH, PhD; Anne C. Moorman, BSN, MPH; Barbara F. Gooch, DMD, MPH

**T**ransmissions of blood-borne pathogens (BBPs) in a dental health care setting have rarely been reported, particularly since routine hepatitis B virus (HBV) vaccina-

tion and the use of a combination of unsafe injection practices.

**Conclusions.** The authors found that reports describing the transmission of BBPs in dental settings since 2003 were rare. Failure to adhere to Centers for Disease Control and Prevention recommendations for infection control in dental settings likely led to disease transmission in these cases.

**Practical Implications.** The existence of these reports emphasizes the need to improve dental health care personnel's understanding of the basic principles and implementation of standard precautions through the use of checklists, policies, and practices.

## ABSTRACT

**Background.** During the past decade, investigators have reported rare transmissions of blood-borne pathogens (BBPs) in dental settings. In this article, the authors describe these transmissions and examine the lapses in infection prevention on the basis of the available information.

**Methods.** The authors reviewed the literature from 2003 to 2015 to identify reports of the transmission of BBPs in dental settings and related lapses in infection prevention e-

## Safe injection practices for dental health care settings.\*

- Prepare injections using aseptic technique in a clean area.
- Disinfect the rubber septum on a medication vial with alcohol before piercing.
- Do not use needles or syringes<sup>†</sup> for more than 1 patient (this includes manufactured prefilled syringes and other devices such as insulin pens).
- Enter medication containers (single-dose and multidose vials, ampules, and bags) with a new needle and new syringe, even when obtaining additional doses for the same patient.
- Use single-dose vials for parenteral medications when possible.
- Do not use single-dose medication vials, ampules, and bags or bottles of IV<sup>‡</sup> solution for more than 1 patient.
- Do not combine the leftover contents of single-dose vials for later use.
- Apply the following guidelines if using multidose vials:
  - Dedicate multidose vials to a single patient whenever possible.
  - If multidose vials will be used for more than 1 patient, restrict the multidose vial to a centralized medication area and do not allow it to enter the immediate patient treatment area (for example, dental operatory) to prevent inadvertent contamination.
  - If a multidose vial enters the immediate patient treatment area, ensure that it is dedicated for single-patient use and discarded immediately after use.
  - Date multidose vials when first opened, and discard the vial within 28 days, unless the manufacturer specifies a shorter or longer date for an opened vial.
- Do not use fluid infusion or administration sets (for example, IV bags, tubing, and connections) for more than 1 patient.

\* Modified from Centers for Disease Control and Prevention.<sup>21</sup>  
† A note about administering local dental anesthetic: When dental health care personnel use a dental cartridge syringe to administer local anesthetic, they should not use the needle or the anesthetic cartridge for more than 1 patient. They should ensure that the dental cartridge syringe is cleaned appropriately and heat-sterilized before using it with another patient.

# Transmission of Bloodborne Pathogens in Dental Settings, 2002-2014

- No confirmed reports of HIV transmission in dental settings or transmission of a BBP b/w a patient and DHCP

Setting	Year	Pathogen	No. Infected	Comments
OMS Practice	2002	HBV	1	<ul style="list-style-type: none"><li>• Pt-to-Pt</li></ul>
Portable Dental clinic in school gymnasium	2009	HBV	5	<ul style="list-style-type: none"><li>• Multiple procedural &amp; infection control breaches</li><li>• Of the 5 cases, 3 were patients &amp; 2 were non-professional volunteers</li></ul>
OMS Practice	2013	HCV	1	<ul style="list-style-type: none"><li>• Pt-to Pt</li><li>• Multiple breaches in injection safety documented</li></ul>

*Radcliffe RA et al. Hepatitis B virus transmissions associated with a portable dental clinic, West Virginia, 2009. J Am Dent Assoc 2013; 144(10):1110–1118.*

# Dental Transmissions, 2002-2014

## Patient-to-Patient Transmission of Hepatitis B Virus Associated with Oral Surgery

John T. Redd,<sup>1\*</sup> Joan Dauback,<sup>1</sup> William Kohn,<sup>1</sup> Oonma Nainan,<sup>1</sup> Marina Khristova,<sup>1</sup> and Ian Williams<sup>2</sup>

<sup>1</sup>Epidemic Intelligence Service and Divisions of "Oral Health and Viral Hepatitis, Centers for Disease Control and Prevention, Atlanta, Georgia; <sup>2</sup>Office of Epidemiology, New Mexico Department of Health, Santa Fe

(See the editorial commentaries by Hecht et al. on pages 127 Allos and Schaffner, on pages 1245-7; and the major article 1 et al. on pages 1259-9.)

We used molecular epidemiologic techniques to identify patient-to-patient transmission of hepatitis B virus among 161 outpatient oral surgery patients operated on 161

## Hepatitis B virus transmissions associated with a portable dental clinic, West Virginia, 2009

Rachel A. Radcliffe, DVM, MPH; Danae Bixler, MD, MPH; Anne Moorman, BSN, MPH; Vicki A. Hogan, MPH; Vickie S. Greenfield, RN, BSN; Diana M. Gaviria, MD; Priti R. Patel, MD, MPH; Melissa K. Schaefer, MD; Amy S. Collins, BS, BSN, MPH; Yury E. Khudyakov, PhD; Jan Drobeniuc, MD, PhD; Barbara F. Gooch, DMD, MPH; Jennifer L. Cleveland, DDS, MPH

**H**epatitis B virus (HBV) is a highly infectious and environmentally stable blood-borne pathogen<sup>1</sup> that can lead to serious long-term liver disease in people who develop chronic infection. Improving the early iden-

## ABSTRACT

**Background.** Although hepatitis B virus (HBV) transmission in dental settings is rare, in 2009 a cluster of acute HBV infections was reported among attendees of a two-day portable



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Health Officials Announce New Results of Harrington Investigation

Media Relations

(Oct. 17, 2013) The Oklahoma State Department of Health and Tulsa Health Department announced today that findings from genetic testing of HIV specimens from former patients of the W. Scott Harrington dental surgical practice have been deemed inconclusive for potential connection to the practice, according to the Centers for Disease Control and Prevention (CDC). Specimens from three of four Harrington patients testing positive for HIV were submitted to CDC for genetic analysis in an effort to determine if the source of infections was related to the clinic.

Video Communications

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# Site Assessment and Checklist for Dental Settings That Use Portable Dental Equipment

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**Portable/Mobile**



Safe delivery of oral care outside the dental office.

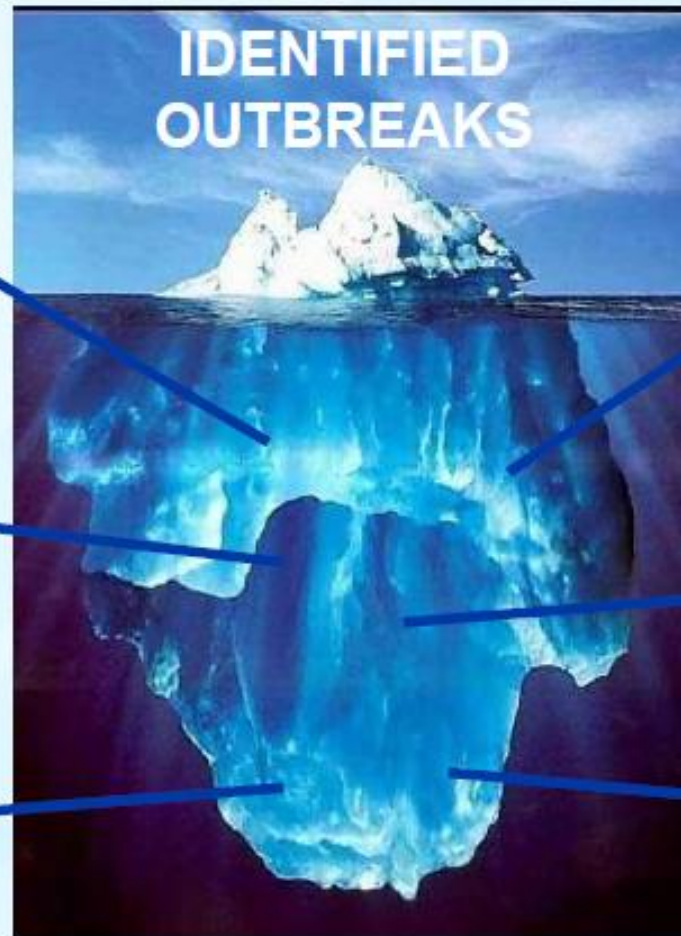
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# **ZAŠTO JE POTREBNO ISPITIVANJE INCIDENTA**

- Asistencija u utvrđivanju uzroka i nadajmo se otklanjanje istog**
- Predstavlja priliku da procenimo postojeće strategije prevencije i identifikujemo „rupe“-nepravilnosti**
- Omogućuje nam da opišemo nove bolesti i da naučimo više o poznatim bolestima**
- Doprinos novih informacija u identifikaciji rizika transmisije**

# What Are We Missing?



▶ Asymptomatic infection

▶ Under-reporting of cases

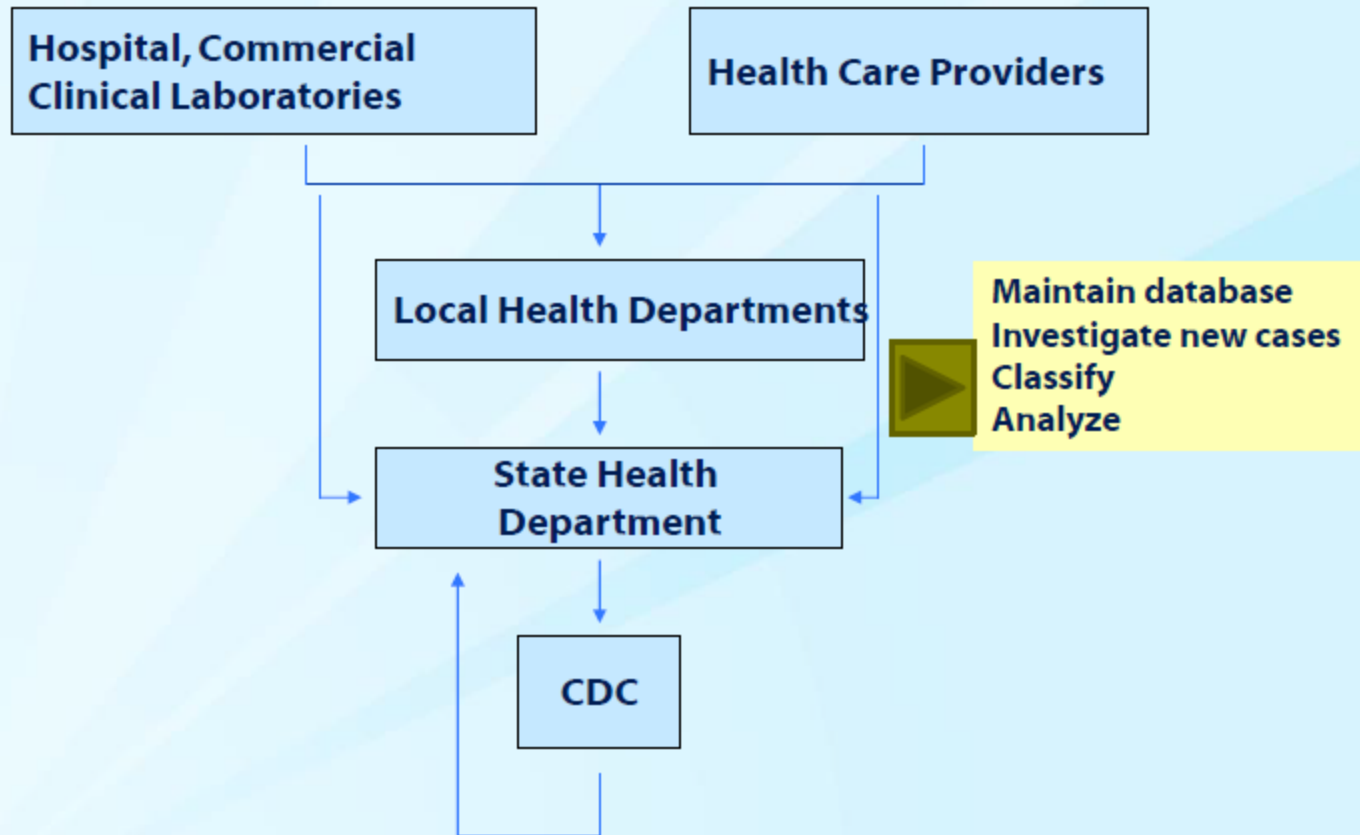
▶ Under-recognition of healthcare as risk

▶ Difficulty identifying single healthcare exposure

▶ Barriers to investigation

▶ Resource constraints

# Flow of Information for Surveillance





# PRANJE INSTRUMENATA

- **Manuelno**
- **Mehaničko pranje instrumenata u ultrazvučnim kadama**
- **Pranje instrumenata u mašinama za pranje i dezinfekciju**

*Canadian Standards Association. CAN/CSA-Z314.3-09. Effective sterilization in health care facilities by the steam process. Rexdale, Ont.: Canadian Standards Association, 2009*

# PRANJE INSTRUMENTATA

- Mehaničko pranje instrumenata u ultrazvučnim kadama



# PRANJE INSTRUMENATA

- **Pranje instrumenata u mašinama za pranje i dezinfekciju**



**DS mašina**







```

T= 60°C    t= 180 s    t= 180 s
(T1= 60.5°C) (T2= 60.2°C)

-> 5: Drain
T1= 61.7°C    T2= 61.6°C    h: 09:37

-> 6: Washing
T1= 63.6°C    T2= 63.5°C    h: 09:38
programmed    executed
Water=2
  20 L        20 L
T= 6°C        t= 30 s    t= 30 s
(T1= 61.9°C) (T2= 61.9°C)

-> 7: Drain
T1= 62.9°C    T2= 63.8°C    h: 09:38

-> 8: treatment
T1= 61.3°C    T2= 61.3°C    h: 09:44
programmed    executed
Water=2
  20 L        20 L
Product= OK
  6 mL        7 mL
T= 58°C        h= 60 s    t= 60 s
(C1= 58.5°C) (T2= 58.8°C)
AP(1)= 1147  AP(2)= 1185

-> 9: Drain
T1= 58.6°C    T2= 58.7°C    h: 09:44

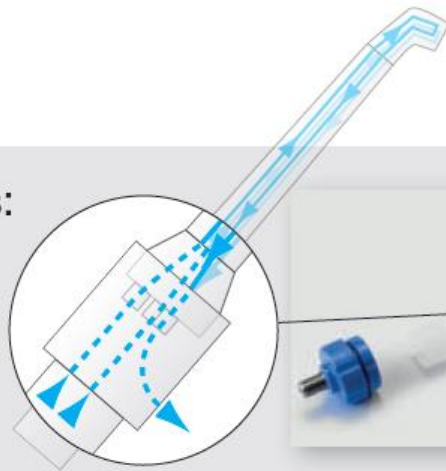
-> 10: drying
T1= 77.6°C    T2= 80.1°C    h: 09:59
Inox= 144.8°C
  
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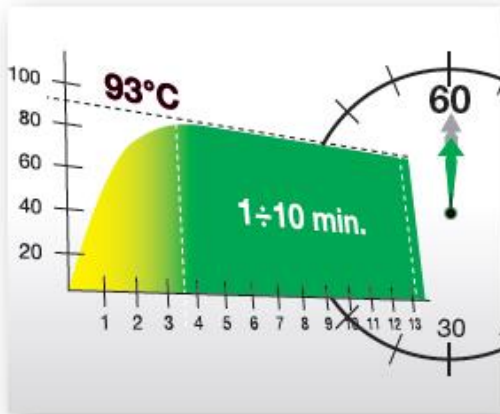


## Smart accessories:

The adaptor allows a thorough cleaning of the internal channels thanks to the water circulation.

Adaptors are available for all hand pieces brands.





## Treatment of dental instruments and accessories:

Thermal disinfection is the most efficient method for the treatment of reusable medical devices recommended by 15883

Steelco machines are designed to reprocess all kind of dental instruments and provide dedicated programs also for turbines, straights and angular hand pieces.



# VERIFIKACIJA ČIŠĆENJA I KONTROLA KVALITETA

Figure 11. Cleaning circle: all factors are essential<sup>18</sup>













## PREPARATION FOR CLEANING OF MEDICAL DEVICES

### Summary of recommendations

- Disposable sharps shall be disposed of in an appropriate, puncture-resistant, sharps' container at the point of use prior to transportation.
- Soiled medical devices shall be handled in a manner that reduces the risk of exposure and/or injury to staff/visitors/patients/residents or contamination of environmental surfaces.
- Contaminated devices shall not be transported through areas designated for the storage of clean or sterile supplies, visitor/patient/resident care areas or high-traffic areas.
- Sterile and soiled devices should not be transported together.
- Reusable medical devices must be thoroughly cleaned before disinfection or sterilization.
- If cleaning cannot be done immediately, the medical device should be pre-treated to prevent organic matter from drying on it.
- The process for cleaning (decontamination) shall include written protocols for disassembly, sorting, pre-treatment, physical removal of organic material, rinsing and drying.

**Figure 19. Descending order of resistance to germicidal activity of chemical disinfectants against various microorganisms**

MICRO-ORGANISMS	EXAMPLES	LEVEL OF DISINFECTION
PRIONS ↓	 Agents for Creutzfeldt-Jakob disease	PRION REPROCESSING
BACTERIAL SPORES ↓	 <i>Bacillus subtilis</i> , <i>Clostridium sporogenes</i> , <i>Clostridium difficile</i> , etc.	STERILIZATION
COCCIDIA ↓	 <i>Cryptosporidium</i>	
MYCOBACTERIA ↓	 <i>Mycobacterium tuberculosis</i>	HIGH LEVEL DISINFECTION
NONLIPID OR SMALL VIRUSES ↓	 Poliovirus, Coxsackie virus, Rhinovirus, etc.	INTERMEDIATE LEVEL DISINFECTION
FUNGI ↓	 <i>Trichophyton</i> spp., <i>Cryptococcus</i> spp., <i>Candida</i> spp., etc.	
VEGETATIVE BACTERIA ↓	 <i>Pseudomonas aeruginosa</i> , <i>E. coli</i> , <i>Staph. aureus</i> , <i>Salmonella</i> spp., <i>Neisseria meningitidis</i> , <i>Enterococci</i> , etc.	LOW LEVEL DISINFECTION
LIPID OR MEDIUM-SIZED VIRUSES ↓	 Herpes simplex, Cytomegalovirus, Respiratory syncytial, Hepatitis B, Human Immunodeficiency Virus (HIV), etc.	

## Antimicrobial activity and summary of properties of disinfectants

**Table 11. Summary of the antimicrobial activity of commonly-used disinfectants and their recommended concentrations and properties**

Disinfectant	ANTIMICROBIAL ACTIVITY					OTHER PROPERTIES			
	Bacteria	Mycobacteria	Spores	Viruses		Stability	Inactivation by organic matter	Corrosive/damaging	Irritant/sensitizing
				Enveloped	Non-enveloped				
Alcohol 60–70% (ethanol or isopropanol)	+++	+++	–	++	++	Yes (in closed container)	Yes (fixative)	Slight (lens cements)	No
Chlorine-releasing agents (0.5–1% available chlorine)	+++	+++	+++	+++	+++	No  No (<1 day)	Yes	Yes	Yes
Clear soluble Phenolics (1–2%)	+++	++	–	++	+	Yes	No	Slight	Yes
Glutaraldehyde (2%)	+++	+++	+++	+++	+++	Moderate (14–28 days)	No (fixative)	No	Yes
Peracetic acid (0.2–0.35%)	+++	+++	+++	+++	+++	No (<1 day)	No	Slight	Slight
Peroxygen compounds* (3–6%)	+++	±	±	+++	±	Moderate (7 days)	Yes	Slight	No

Activity: +++ = Good; ++ = Moderate; ± = Variable; – = no activity or insufficient activity.

\*Activity varies with concentration.

# Decontamination and Reprocessing of Medical Devices for Health-care Facilities



# PAKOVANJE INSTRUMENTATA

Figure 12. Assembly and packing with computerized traceability

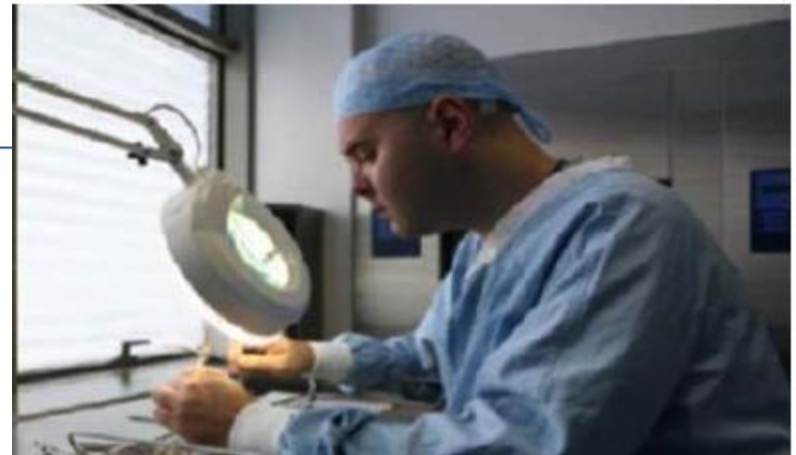


## 13. Inspection of cleaned medical devices\*

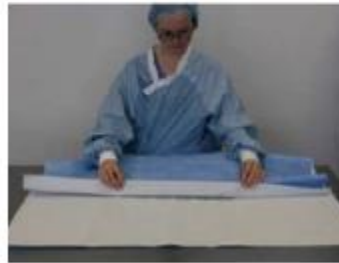
### INSPECTION

#### Post-cleaning inspection and function test area

- Equipment
- Procedure
- Documentation on post-automated cleaning
- Inspection and function testing



# PAKOVANJE INSTRUMENTATA

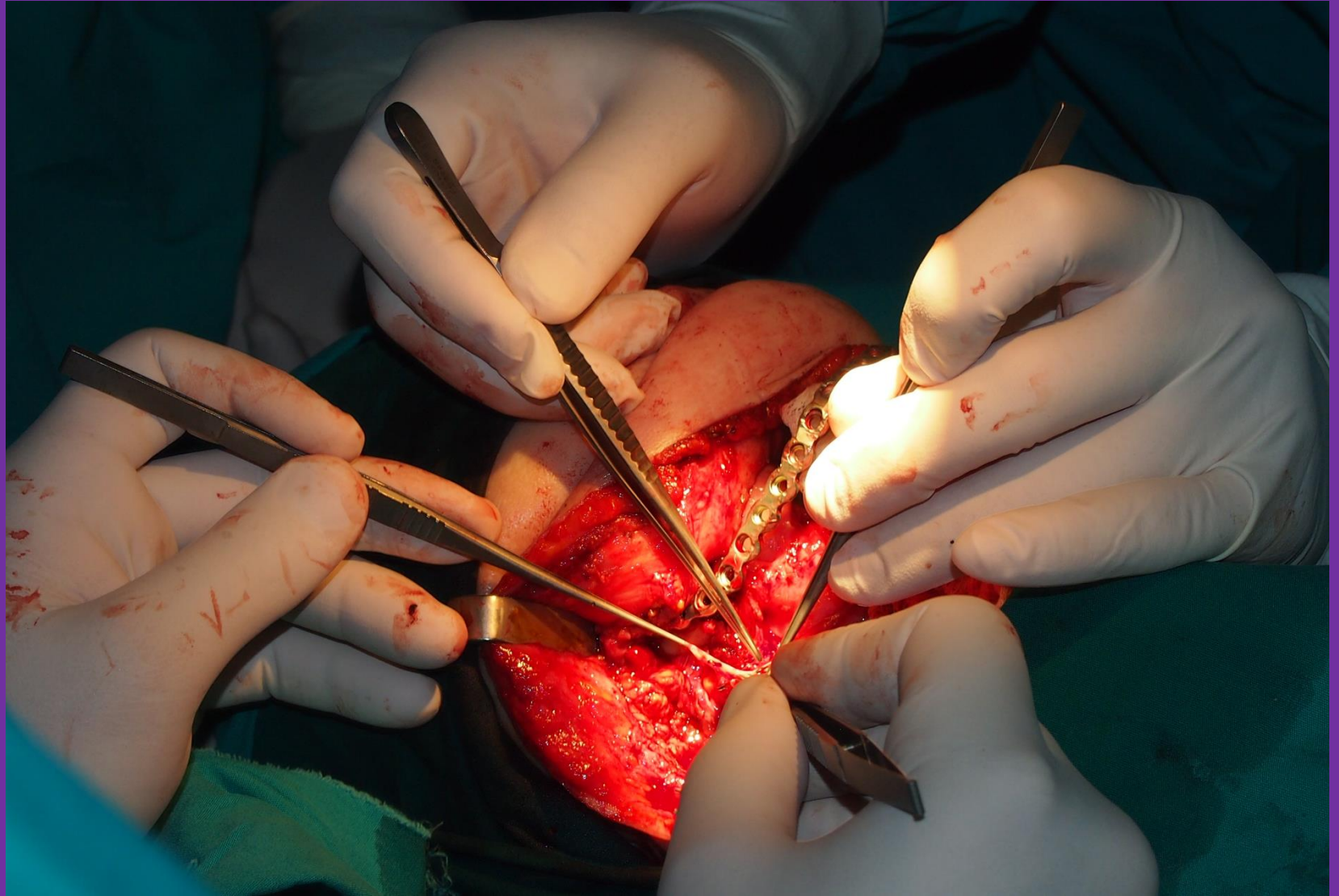


# STERILIZACIJA

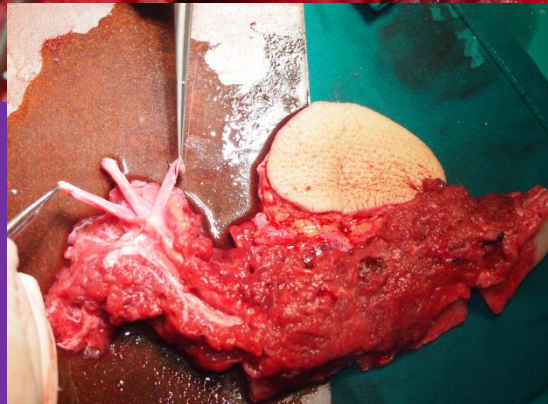
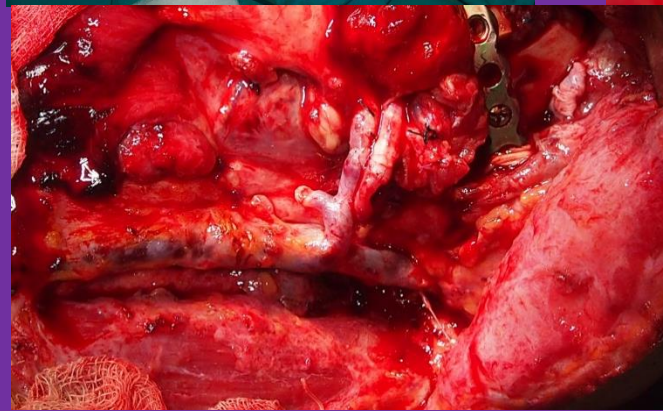
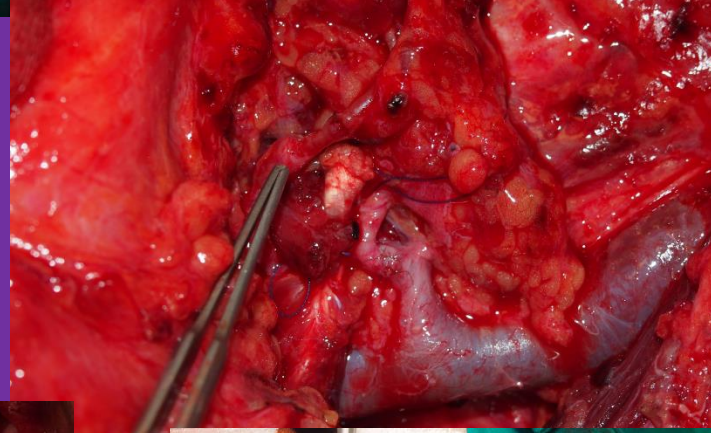
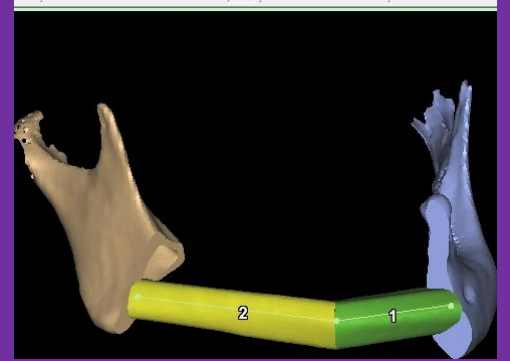
***Sterilizacija stomatoloških instrumenata u autoklavu*** podrazumeva proces uvođenja vodene pare pod pritiskom. Zasićena vodena para je veoma efikasan prenosilac toplotne energije, višestruko efikasnija od suvog vazduha. Čisti instrumenti se izlažu pari pod pritiskom od 1 bar-a na temperaturi od 121 C u periodu od 30 minuta, ili pod pritiskom od 2 bar-a na temperaturi od 134 C u vremenu trajanja 15 minuta.

**Ovakav način sterilizacije ujedno je pogodniji za očuvanje kvaliteta instrumenata koji se sterilišu.**

# STERILIZACIJA







# University College London Hospitals



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## Prevention:

- Risk assess all tasks for possible exposure to blood & body fluids
- Wear eye protection if there is a chance of splash/spray
- Dispose of sharps safely and at point of use

## First Aid:

- For a sharp injury, squeeze blood from site immediately
- Wash with soap & warm running water
- Cover with waterproof dressing

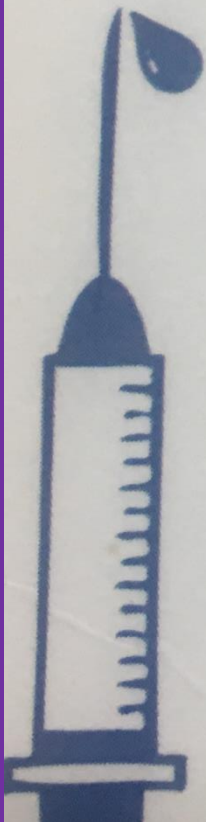
For blood or body fluid splashes into the eyes, mouth or onto broken skin, wash immediately with copious amounts of saline or water.



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1. In the event of a **Body Fluid Exposure** report immediately to a senior member of staff in your area i.e. senior nurse or doctor
2. Report incident to OH on **0203 447 5474** or internally on ext. **75474** (08.30 – 16.15 Mon – Fri exc. Public hols) by telephone or outside of these times **go** to UCH A&E
3. Complete trust online incident form (DATIX)
4. If consent obtained for testing of donor blood, request Hepatitis B, Hepatitis C, HIV and Syphilis

See "Sharps and other Occupational Exposure to Blood and Body Fluid policy" on **Insight** for further details.

**Izloženost, potencijalno infektivni materijal, radnik u zdravstvu, rizik za transmisiju,**

**Rezervoar, lokalni koordinator, rukovodilac službe, nadležna epidemiološka služba,**

**Centar za kontrolu i prevenciju bolesti, infektivna klinika**

**Postupak** **Tretiranje mesta izlaganja – Prvi postupak nakon izlaganja krvi ili telesnim tečnostima je detaljno pranje izloženog dela tela vodom i sapunom, kao i ispiranje izloženih sluzokoža velikom količinom vode. Ne postoje dokazi da upotreba antiseptika ili istiskanje tečnosti iz rane može da smanji rizik od HIV, HBV i HCV, mada upotreba antiseptika nije kontraindikovana.**

**Primena kaustičnih sredstava ili injiciranje antiseptika ili dezinfekcionih sredstava u ranu se ne preporučuje.**

**Prijava profesionalne izloženosti – Izloženi zdravstveni radnik odmah nakon izloženosti usmeno prijavljuje izloženost lokalnom koordinatoru ili njegovom zameniku.**

**TABELA 1. SHEMA PRAĆENJA OSOBE IZLOŽENO POTENCIJALNOJ INFEKCIJI HBV, HCV I HIV**

<b>Agens</b>		<b>Period praćenja</b>
<b>a</b>	<b>HBV</b>	1. nulto testiranje (HBsAg, anti-HBs prema indikacijama), 2. nakon 4-6 meseci
<b>b</b>	<b>HCV</b>	1. nulto testiranje, 2. nakon 4-6 meseci (HCV RNK prema indikacijama)
<b>c</b>	<b>HIV</b>	1. nulto testiranje, 2. nakon 6 nedelja, 3. nakon 12 nedelja, 4. nakon 6 meseci, 5. nakon 12 meseci (prema indikacijama)

**TABELA 2. PREPORUČENA POSTEKSPOZICIONA PROFILAKSA ZA OSOBE IZLOŽENE HEPATITIS B VIRUSU**

Vakcinalni status zdravstvenog randika		Status rezervoara		
		HBsAg-pozitivan	HBsAg-negativan	HBV status nepoznat
<b>Nevakcinisan</b>		HBIG 0,06 ml/kg, započeti seriju vakcinacije po shemi 0,1,2,12	Započeti seriju vakcinacije po shemi 0,1,6	Započeti seriju vakcinacije po shemi 0,1,2,12
<b>Prethodno vakcinisan</b>				
<b>a</b>	<b>anti-HBs <math>\geq</math> 10 mIJ/ml</b>	Nije potrebna PEP	Nije potrebna PEP	Nije potrebna PEP
<b>b</b>	<b>anti-HBs &lt; 10 mIJ/ml</b>	HBIG 0,06 ml/kg, započeti seriju vakcinacije po shemi 0,1,2,12	Započeti seriju vakcinacije po shemi 0,1,6	Započeti seriju vakcinacije po shemi 0,1,6
<b>c</b>	<b>anti HBs status nepoznat</b>	Uraditi anti-HBs, pa postupiti u skladu sa nalazom	Uraditi anti-HBs, pa postupiti u skladu sa nalazom	Uraditi anti-HBs, pa ukoliko je $\geq$ 10 mIJ/ml nije potrebna PEP, a ako je < 10 mIJ/ml dati buster dozu i ponoviti anti-HBs nakon 1-2 meseca

# POSTEKSPOZICIIONA ZAŠTITA

U skladu sa članom 36. Pravilnika o imunizaciji i načinu zaštite lekovima (Sl. Glasnik RS 11/06) kod nevakcinisanih i nepotpuno vakcinisanih lica u zdravstvenim ustanovama koja su imala akcident sa infektivnim materijalom, obavezna zaštita se sprovodi **aplikovanjem vakcine u 4 doze po šemi 0,1,2 i 12** meseci uz obavezno intramuskularno aplikovanje HBIGa odmah po akcidentu ( prema uputstvu proizvođača), a najkasnije do 12 sati od momenta akcidenta sa prvom dozom vakcine, aplikovanjem u suprotni ekstremitet.

# **POSTEKSPOZICIIONA PROFILAKSA (PEP) ZA HCV**

**za HCV u ovom momentu ne postoji.**

Iako su postojali radovi o tome da primena interferona alfa 2b doprinosi izlečenju od akutnog hepatitisa C, činjenica jeste da oko 25% osoba koje razviju akutni hepatitis C spontano prezdravi, te se postavlja pitanje opravdanosti ovakve intervencije.

- **potrebno je uraditi test na anti-HCV odmah nakon izlaganja, kao i ponoviti test nakon 4-6 meseci, uključujući i test na ALT.**
- **Ukoliko je neophodno sprovesti ranu dijagnostiku HCV infekcije (rezervoar HCV pozitivan), potrebno je uraditi HCV RNA test u 4-6 nedelji. Sve anti-HCV rezultate potrebno je potvrditi dodatnim anti-HCV testom iz drugog uzorka**



# POSTEKSPOZICIIONA PROFILAKSA HIV INFEKCIJE

- **Odmah ,najduže 36 sati nakon povrede.**
- **U izuzetnim situacijama kada je rizik visok a imamo dodatne informacije i ima medicinske logike početi ga do 72h od povrede.**
- **Uvek kada smo u nedoumici bolje je započeti bar bazični režim nego odgoditi PEP. U narednim danima PEP se može proširiti ako je potrebno.**

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# POSTEKSPOZICIJA PROFILAKSA HIV INFEKCIJE

PEP se započinje u svakom slučaju kada se ustanovi da je rezervoar HIV pozitivan.

Ukoliko je rezervoar HIV negativan (uzeti u obzir period prozora) PEP se ne primenjuje. Ukoliko se HIV status rezervoara nepoznat, PEP se ne primenjuje kod izloženosti kože i sluzokože, dok je kod perkutanih izloženosti potrebno razmotriti rizik od HIV na osnovu podataka o rizičnog ponašanju poznatog rezervoara nepoznatog HIV statusa ili učestalosti HIV infekcija na odeljenju/zdravstvenoj stanici kod nepoznatog rezervoara.

# POSTEKSPOZICIJNA PROFILAKSA HIV INFEKCIJE

Izbor lekova za PEP se vrši na osnovu vodiča za lečenje koji utvrđuje stručni tim infektologa. U odabiru lekova rukovodi se pre svega načinom ekspozicije prema tabelama 1 i 2, potencijalnom toksičnošću ART lekova i njihovom efikasnošću, posebno ukoliko je u pitanju rezistentan virus. Bazični režimi dovoljni su za najveći deo povreda i lakše se podnose, dok su prošireni režimi veće antiviralne aktivnosti ali i sa više nuspojava.

**TABELA 4. PEP HIV PERKUTANE POVREDE**

TIP IZLAGANJA	Infektivni status izvora povrede-pacijenta				
	HIV + Klasa 1	HIV+ Klasa 2	Nepoznati status	Nepoznati izvor	HIV negativan
	*asimptomatski HIV status * vL < 1500 kopija/ml	*simptomatski HIV *AIDS *akutna serokonverzija * poznat visok vL	*pacijent odbija testiranje * nedostupan pacijent	*igle iz kontejnera	
<b>MANJE TEŠKE POVREDE</b> igla za šivenje *površna povreda	<b>BAZIČNI PEP 2 NIRT</b>	<b>PROŠIRENI PEP 2 NIRT + PI ev.NNIRT</b>	Generalno PEP nije neophodan *razmotriti istoriju pacijenta i ev. BAZIČNI PEP	Generalno PEP nije neophodan razmotriti odeljenja sa visokim procentom HIV+ bolesnika BAZIČNI PEP	PEP nije potreban
<b>TEŠKE POVREDE</b> *igle sa velikim lumenom *duboke ubodne rane *vidljiva krv na opremi * arterijske ili venske linije	<b>PROŠIRENI PEP 2 NIRT + PI ev.NNIRT</b>	<b>PROŠIRENI PEP 2 NIRT + PI ev.NNIRT</b>	Generalno PEP nije neophodan *razmotriti istoriju pacijenta i ev. BAZIČNI PEP	Generalno PEP nije neophodan razmotriti odeljenja sa visokim procentom HIV+ bolesnika BAZIČNI PEP	PEP nije potreban

**TABELA 5. PEP HIV POVREDE PREKO SLUZOKOŽE ILI NEINTAKTNE KOŽE**

TIP IZLAGANJA	Infektivni status izvora povrede-pacijenta				
	HIV + Klasa 1	HIV+ Klasa 2	Nepoznati status	Nepoznati izvor	HIV negativan
	*asimptomatski HIV status * vL < 1500 kopija/ml	*simptomatski HIV *AIDS *akutna serokonverzija * poznat visok vL	*pacijent odbija testiranje * nedostupan pacijent	*igle iz kontejnera	
<b>MALI VOLUMEN</b> * nekoliko kapi	<b>BAZIČNI PEP 2 NIRT</b>	<b>BAZIČNI PEP 2 NIRT</b>	Generalno PEP nije neophodan	Generalno PEP nije neophodan	PEP nije potreban
<b>VELIKI VOLUMEN</b> * prskanje velike količine krvi	<b>BAZIČNI PEP 2 NIRT</b>	<b>PROŠIRENI PEP 2 NIRT + PI ev.NNIRT</b>	Generalno PEP nije neophodan *razmotriti istoriju pacijenta i ev. BAZIČNI PEP	Generalno PEP nije neophodan *razmotriti odeljenja sa visokim procentom HIV+ bolesnika BAZIČNI PEP	PEP nije potreban

**TABELA 6. PREPORUČENE KOMBINACIJE LEKOVA ZA PEP**

<b>NIRT BAZIČNI PEP</b>	<b>PI ili NNIRT PROŠIRENI PEP</b>
AZT +3TC (Zidovudin plus lamivudin)	Nelfinavir <i>Viracept</i> 2x 5 tbl a 250mg odnosno 2x1.250mg
1. Combivir 2x1 tbl.- fiksna kombinacija (2x 300mg AZT i 150mg Lamivudina)	Lopinavir/r <i>Kaletra</i> 2x3 caps
2. Retrovir 2x1 tbl. a 250mg plus Epivir 2x 150mg ili 1x300mg	Indinavir <i>Crixivan</i> 3x2 caps a 400mg, odnosno 3x800mg
3. Zidosan (AZT –Slaviamed) 2x 3caps. a 100mg plus Epivir (Lamivudin) 2x 150mg	Efavirenz <i>Stocrin</i> 1x1 tbl a 600mg
<p>4. Zidovudin+ Lamivudin ili Emtricitabine</p> <p>5. Tenofovir+Lamivudin ili emtricitabine</p> <p>ALTERNATIVE</p> <p>6. Stavudine+Lamivudine ili emtricitabine</p> <p>6. Didanosine+Lamivudine ili emtricitabine</p>	<p>Lopinavir/r Kaletra</p> <p>PLUS</p> <p>ALTERNATIVE</p> <p>Atazanavir/r</p> <p>Fosaprenavir/r</p> <p>Indinavir/r</p> <p>Saquinavir/r</p> <p>Nelfinavir</p> <p>Efavirenz</p>
<p><b>LEKOVI KOJI NISU REGISTROVANI U SRBIJI A TAKODJE SE PREPORUČUJU ZA PEP</b></p>	

# **„MESSAGE TO TAKE HOME“**

- **Transmisija infektivnog agensa putem krvi u stomatološkoj praksi je veoma retka**
- **Prevenција infekcije mora biti prioritet u svim vrstama stomatoloških ordinacija-klinika**

# **„MESSAGE TO TAKE HOME“**

- **Uprkos mogućnostima savremene specifične zaštite zdravstveni radnici su pod povećanim rizikom od izloženosti infektivnim bolestima koje se prenose putem krvi i drugim telesnim tečnostima. Prevencija ekspozicije je i dalje primarna strategija za smanjenje profesionalno nastalih infekcija.**