

Infection Control in Dental Practice

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Outline

- Why Infection control is important?
- What are hospital acquired infections related to dental practice?
- What are infection control measures?
 - Standard precautions
 - Disinfection and sterilization
 - Waste management
 - Infection control in HCW



Infection Control?



- Infection control is a series of procedures and guidelines to
 - **prevent health care associated infections (HAI)**
- **Provide a safe working environment**
 - For patients
 - For HCW



Health care associated infections (HAI)

- **Infections acquired during the course of receiving treatment for other conditions while in a hospital or health care facility**
- **An infection contracted by**
 - patient
 - Staff member
- **Also known as**
 - Nosocomial infections
 - Hospital acquired infections



Hepatitis scare



PHOTO BY STEVE MARCUS / LAS VEGAS SUN

Dr. Dipak Desai, majority owner of the Endoscopy Center of Southern Nevada, leaves Las Vegas City Hall on March 3. Desai has surrendered his medical license pending the outcome of a state investigation.

The largest hepatitis outbreak scare in the nation is playing out in Las Vegas, where 50,000 patients at an endoscopy center may have been exposed to infectious diseases because of unhygienic practices.

- **The largest hepatitis outbreak scare** in US in Las Vegas, where 50,000 patients at an endoscopy center may have been exposed to infectious diseases because of unhygienic practices
- So far, 114 patients have been identified by health authorities as having been potentially infected with hepatitis C at the clinic
- Criminal investigations are underway

Ongoing Threat to Patient Safety

- **Outbreaks associated with unsafe injections and other breakdowns in basic infection control**



Dental care associated with an outbreak of HIV infection among dialysis patients¹

Leonelo E. Bautista² and Myriam Oróstegui³

An outbreak of 14 cases of HIV infection

TRACT

An outbreak of 14 cases of human immunodeficiency virus (HIV) infection was discovered by chance in May 1993 among hemodialysis patients at a university hospital in Bucaramanga, Colombia. The outbreak occurred in 1992. Stored sera were used to establish the probable period of infection (PPI) for 10 of the 14 cases. A nested case-control study was carried out to evaluate possible transmission mechanisms. The health care experience of each HIV-positive patient during that patient's PPI was compared to the experience of time-matched controls. Only invasive dental procedures were significantly associated with the risk of infection. Patients upon whom invasive dental procedures were performed during their PPIs had an average risk of HIV infection 8.15 times greater than comparable controls ($P = 0.006$), and seven out of nine cases of HIV infection with known PPIs in 1992 had an invasive dental procedure performed one to six months before seroconversion. None of the dental care personnel were found to be infected. Based on the available evidence, it seems most likely that the infection was transmitted from patient to patient by contaminated dental instruments.

Patients in whom invasive dental procedures were performed during had an average risk of HIV infection 8.15 times greater than comparable controls

most likely that the infection was transmitted from patient to patient by contaminated dental instruments

Monday, March 1, 2010 As of 3:33 PM CST

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By Laura Landro

Sepsis and pneumonia, two infections that can often be prevented with tight infection control practices in hospitals, killed 48,000 patients and added \$8.1 billion to health care costs in 2006 alone, according to a [study published today](#) in the [Archives of Internal Medicine](#).



- 1.7 million health care associated infections annually
- 99,000 deaths annually
- Estimated that HAIs incur an estimated \$28 to \$33 billion in excess healthcare costs each year



Who is at risk?

- All dental health care personnel
 - Dental surgeons, OMF surgeons, Hygienists, School dental therapists, Nurses, Attendants/ minor staff, Laboratory personnel
 - The trainees /students of all professional groups
- Patients
- Community





How to prevent HAI?

- **Implementing infection Control Practices**
 - Need to practice by all HCW at all situations in every health care setting
 - Need polices and guidelines
 - National guideline on Infection control is in review
 - Training and education
 - Evaluation and feedback
 - Audits



Why infection control?

- All blood and body fluids including contaminated saliva are potentially infectious
- It is not always known whether a patient has a disease that can be transmitted
- All human blood and certain human body fluids should be treated as if known to be infectious
- All patients should be presumed infected so that standard infection control is followed

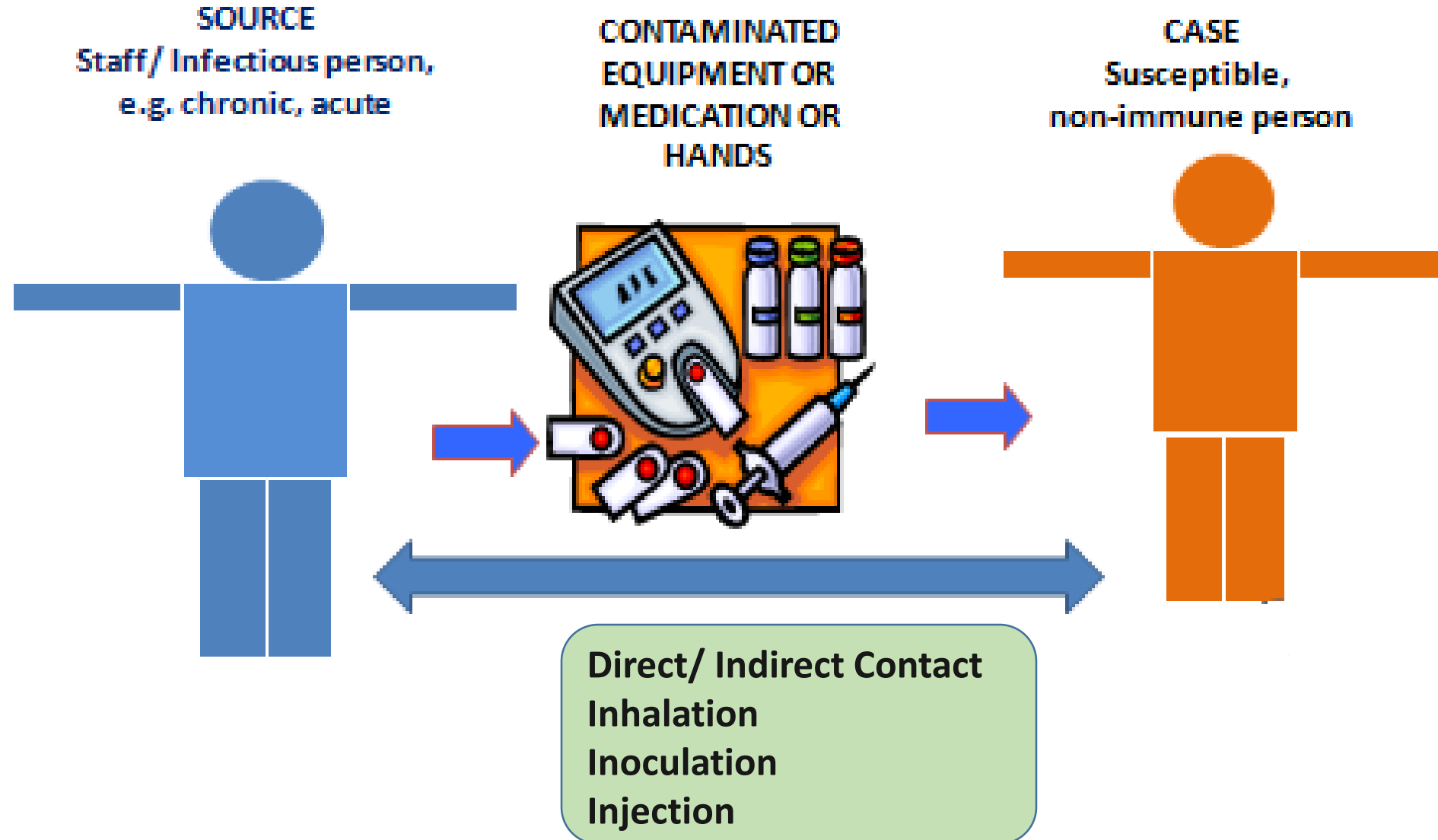


Which infections?

- Human Immunodeficiency Virus (HIV)
 - Hepatitis B Virus (HBV)
 - Hepatitis C Virus (HCV)
 - Cytomegalovirus (CMV)
 - Herpes simplex virus (HSV) types 1 and 2
 - *Mycobacterium tuberculosis*
 - Staphylococci and streptococci
 - Other viruses/ bacteria that colonize or infect the oral cavity and respiratory tract
- Blood and Body fluids
- Respiratory secretions



How HAIs are transmitted?



Patient exposure

- Occurs when patients.....
 - Mucous membranes (oral, eyes)
 - Blood
 - Body fluid
 - Skin
- Come into contact with...
 - Contaminated hands of health care workers
 - Contaminated instruments and equipment
 - Contaminated environmental surfaces /laundry



Patient exposure

- Iatrogenic transmission of HIV to 934 patients has been reported to occur primarily as a result of poor infection control

Ann Intern Med. 1992 May 15;116(10):798-805.

Transmission of human immunodeficiency virus in a dental practice.

Ciesielski C

- Five of the eight HIV-infected patients had no confirmed exposures to HIV other than the dental practice and were infected with HIV strains that were closely related to those of the dentist

Pan Am J Public Health 2(3), 1997

Dental care associated with an outbreak of HIV infection among dialysis patients

Leonelo E.



Patient exposure

Acute hepatitis B in patients in Britain related to previous operations and dental treatment.

S Polakoff

- Recent dental treatment was a significant risk factor for HBV infections among patients in Italy and Britain
- Before 1987, there were published reports of transmission from 14 surgeons and 9 dentists including an oral surgeon who transmitted HBV to 55 patients
- Between 2008 and 2011, a total of 31 outbreaks of viral hepatitis related to healthcare settings were reported to the CDC. HBV was involved in 19 of the 31 outbreaks (the other 12 were hepatitis C)



JAMA. 1984 Oct 19;252(15):2019-22.

An outbreak of herpes simplex virus gingivostomatitis in a dental hygiene practice.

Manzella JP



- An outbreak of HSV-I gingivostomatitis occurred in 20 of 46 patients treated by a dental hygienist with a herpetic whitlow who did not use gloves.
- The potential for transmission of herpes virus via dental handpieces has also been demonstrated.
- Reports of occupationally acquired HSV have become less frequent with the use of personal protective barriers



Occupational (DHP) exposure

- Occupational exposure occurs when your/DHP's ..
 - Skin
 - Eyes
 - Mucous membrane
 - Blood
- Come into contact with...
 - Blood or saliva/ respiratory droplets from a patient
 - Contaminated instruments or equipment
 - Environmental surfaces , laundry contaminated by blood or saliva from a patient

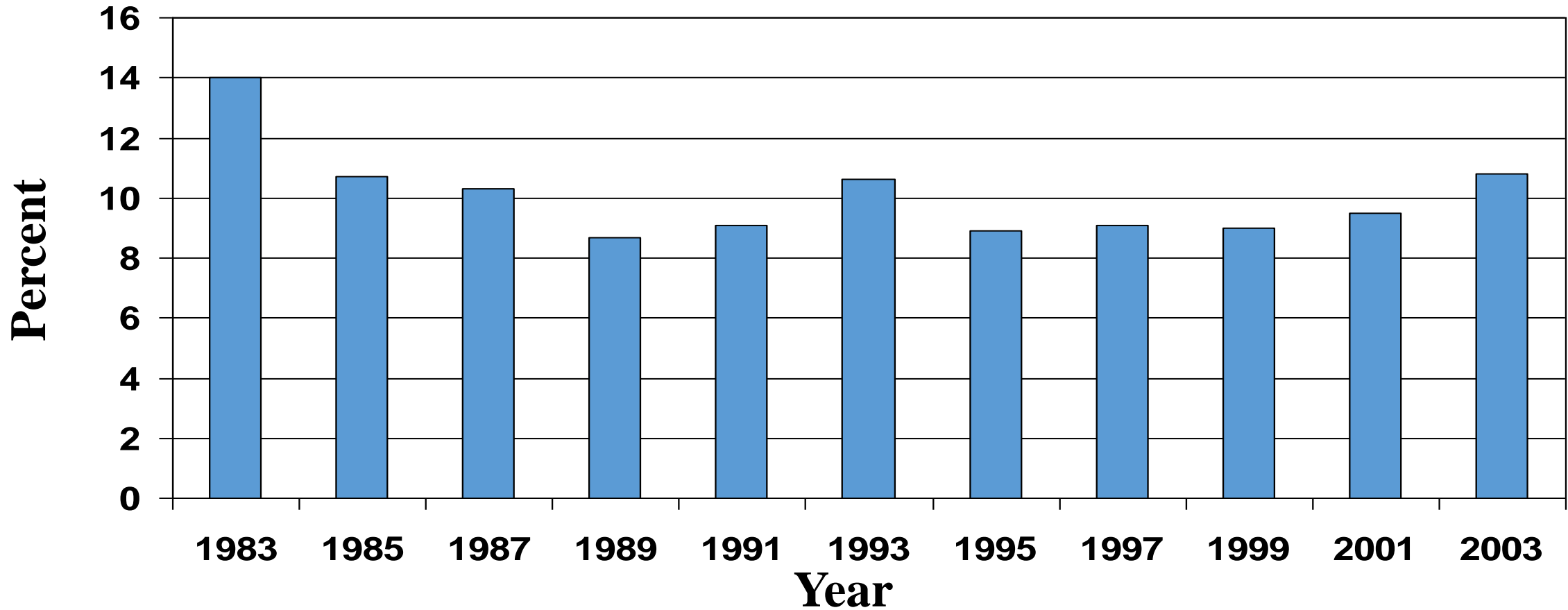


Occupational exposure

- There were 319 reports of occupationally acquired HIV among health care workers worldwide
 - Of the, 9 were dental workers
- It has been estimated that 6,800 nonvaccinated health care workers in the United States become infected with HBV every year, of these, approximately 100 will die from cirrhosis, liver cancer or fulminant hepatitis
- Three reports of HCV transmission from blood splash to the eye
- Report of simultaneous transmission of HIV and HCV after non-intact skin exposure
- Seroprevalence studies have shown a higher prevalence of antibodies to influenza A and B viruses, respiratory syncytial virus and adenovirus among dentists compared with controls
- There is also evidence of transmission of HSV to health care workers from patients



HBV Infection Among U.S. Dentists



Source: Cleveland et al., JADA 1996;127:1385-90.

Personal communication ADA, Chakwan Siew, PhD, 2005.

How to prevent HAIs?



- Standard Precautions
- Aseptic technique
- Surveillance of HAI
- Reporting and notification
- Education and training
- Policies and guidelines
- Audits and feedback



What are Infection control measures?

I. Standard precautions

- A set of guidelines to reduce the transmission of HAI through blood and body fluids
- Used by ALL health care workers at ALL times when attending to ALL patients
 - Designed to reduce the risk of transmission of microorganisms from both recognized and unrecognized sources of infection in hospitals
 - For practical purposes, standard precautions mean assuming that every person's blood and body fluids are infectious for HIV, HBV, and other blood borne pathogens.
 - Apply to all patients at all times by all HCW regardless of diagnosis or infectious status



To which body fluids do Standard Precautions apply?

- Blood - very important source for HIV, HBV, HCV
- Body fluids
 - Cerebrospinal fluid
 - Peritoneal fluid
 - Synovial fluid
 - Pleural fluid
- Mucous membranes – oral cavity, eyes etc..
- Secretions - saliva, sputum, tears, nasal, genital secretions
- Excretions- vomitus, faeces, sweat, urine
- Non-intact skin



What are included in Standard precautions?

1. Hand hygiene
2. Personal protection
 - Use of barriers / PPE (Gloves, gown, cap, mask)
 - Proper handling and discarding of sharps
3. Instrument sterilization and disinfection
4. Environmental infection control
 - Disinfection of environmental surfaces
 - Linen
 - Waste handling and disposal
5. Respiratory hygiene and cough etiquette



Standard precautions

WHO recommendation



World Health
Organization

1. Hand Hygiene
2. Gloves
3. Face protection
4. Gowns
5. Prevention of sharp injuries
6. Respiratory hygiene
7. Environmental cleaning
8. Linen
9. Waste disposal
10. Patient care equipment

Health-care facility recommendations for standard precautions

KEY ELEMENTS AT A GLANCE

1. Hand hygiene¹

Summary technique:

- Hand washing (40–60 sec): wet hands and apply soap; rub all surfaces; rinse hands and dry thoroughly with a single use towel; use towel to turn off faucet.
- Hand rubbing (20–30 sec): apply enough product to cover all areas of the hands; rub hands until dry.

Summary indications:

- Before and after any direct patient contact and between patients, whether or not gloves are worn.
- Immediately after gloves are removed.
- Before handling an invasive device.
- After touching blood, body fluids, secretions, excretions, non-intact skin, and contaminated items, even if gloves are worn.
- During patient care, when moving from a contaminated to a clean body site of the patient.
- After contact with inanimate objects in the immediate vicinity of the patient.

2. Gloves

- Wear when touching blood, body fluids, secretions, excretions, mucous membranes, nonintact skin.
- Change between tasks and procedures on the same patient after contact with potentially infectious material.
- Remove after use, before touching non-contaminated items and surfaces, and before going to another patient. Perform hand hygiene immediately after removal.

3. Facial protection (eyes, nose, and mouth)

- Wear (1) a surgical or procedure mask and eye protection (eye visor, goggles) or (2) a face shield to protect mucous membranes of the eyes, nose, and mouth during activities that are likely to generate splashes or sprays of blood, body fluids, secretions, and excretions.

4. Gown

- Wear to protect skin and prevent soiling of clothing during activities that are likely to generate splashes or sprays of blood, body fluids, secretions, or excretions.
- Remove soiled gown as soon as possible, and perform hand hygiene.

5. Prevention of needle stick and injuries from other sharp instruments²

Use care when:

- Handling needles, scalpels, and other sharp instruments or devices.
- Cleaning used instruments.
- Disposing of used needles and other sharp instruments.

6. Respiratory hygiene and cough etiquette

Persons with respiratory symptoms should apply source control measures:

- Cover their nose and mouth when coughing/sneezing with tissue or mask, dispose of used tissues and masks, and perform hand hygiene after contact with respiratory secretions.

Health-care facilities should:

- Place acute febrile respiratory symptomatic patients at least 1 metre (3 feet) away from others in common waiting areas, if possible.
- Post visual alerts at the entrance to health-care facilities instructing persons with respiratory symptoms to practise respiratory hygiene/cough etiquette.
- Consider making hand hygiene resources, tissues and masks available in common areas and areas used for the evaluation of patients with respiratory illnesses.

7. Environmental cleaning

- Use adequate procedures for the routine cleaning and disinfection of environmental and other frequently touched surfaces.

8. Linen

Handle, transport, and process used linen in a manner which:

- Prevents skin and mucous membrane exposures and contamination of clothing.
- Avoids transfer of pathogens to other patients and/or the environment.

9. Waste disposal

- Ensure safe waste management.
- Treat waste contaminated with blood, body fluids, secretions and excretions as clinical waste, in accordance with local regulations.
- Human tissues and laboratory waste that is directly associated with specimen processing should also be treated as clinical waste.
- Discard single use items properly.

10. Patient care equipment

- Handle equipment soiled with blood, body fluids, secretions, and excretions in a manner that prevents skin and mucous membrane exposures, contamination of clothing, and transfer of pathogens to other patients or the environment.
- Clean, disinfect, and reprocess reusable equipment appropriately before use with another patient.

¹ For more details, see: WHO Guidelines on Hand Hygiene in Health Care (Advanced draft), at: http://www.who.int/patientsafety/information_centre/ghad_download/en/index.html

² The SIGN Alliance at: http://www.who.int/injection_safety/sign/en/



Other IC measures

- Occupational health
 - Vaccination
 - Post-exposure prophylaxis
- Aseptic technique
- Surveillance of HAI
- Reporting and notification
- Education and training
- Policies and guidelines
- Audits and feedback

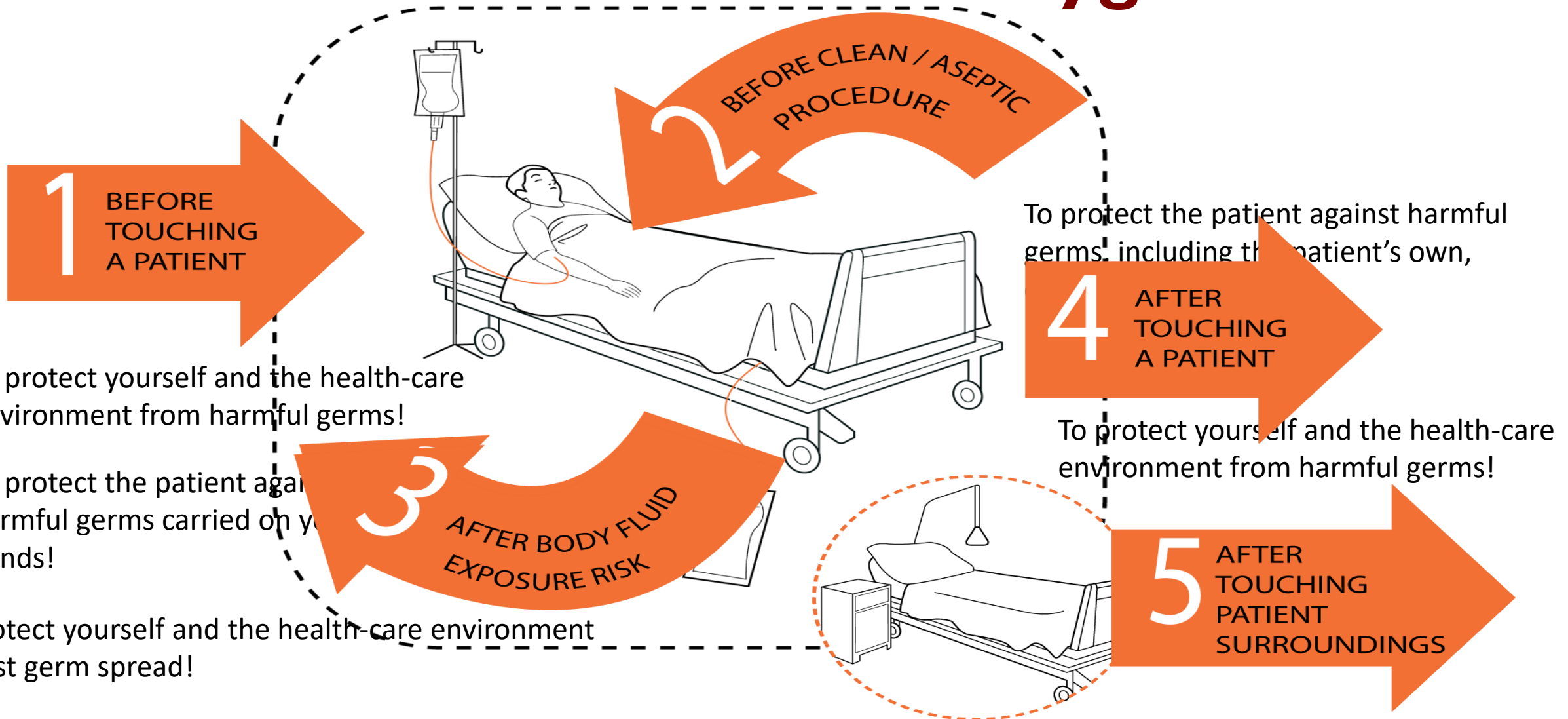


Hand washing

- Hands are the most common vehicle for microbial transmission
 - Reduces number of potential infectious agents on the hands
 - reduce the incidence of infectious agents in healthcare facilities
- Stepwise technique
- Wash all part of the hands with running water and soap and then dry
- Ensure availability of facilities – sink, water, soap, single-use towels, alcohol hand rub, poster
- Keep your finger nails short and natural



Your 5 Moments for Hand Hygiene





How to Handwash?

WASH HANDS WHEN VISIBLY SOILED! OTHERWISE, USE HANDRUB

0 Duration of the handwash (steps 2-7): 15-20 seconds

0 Duration of the entire procedure: 40-60 seconds



0 Wet hands with water;



1 Apply enough soap to cover all hand surfaces;



2 Rub hands palm to palm;



3 Right palm over left dorsum with interlaced fingers and vice versa;



4 Palm to palm with fingers interlaced;



5 Backs of fingers to opposing palms with fingers interlocked;



6 Rotational rubbing of left thumb clasped in right palm and vice versa;



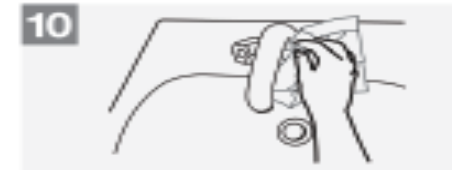
7 Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;



8 Rinse hands with water;



9 Dry hands thoroughly with a single use towel;



10 Use towel to turn off faucet;



11 Your hands are now safe.



Video link: https://www.youtube.com/watch?v=zCVu_1d9AJ8



Missed areas in hand washing



Alcohol hand rub

- can be used to disinfect the hands
- should not be used if hands are visibly soiled.
- Hand rubbing (20–30 sec): apply enough product to cover all areas of the hands; rub hands until dry.



How to Handrub?

RUB HANDS FOR HAND HYGIENE! WASH HANDS WHEN VISIBLY SOILED

⌚ Duration of the entire procedure: 20-30 seconds



Apply a palmful of the product in a cupped hand, covering all surfaces;

Rub hands palm to palm;



Right palm over left dorsum with interlaced fingers and vice versa;

Palm to palm with fingers interlaced;

Backs of fingers to opposing palms with fingers interlocked;



Rotational rubbing of left thumb clasped in right palm and vice versa;

Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;

Once dry, your hands are safe.



Key points in hand hygiene

- Indications for glove use do not modify any indication for hand hygiene
 - Glove use **should not replace** any hand hygiene action



≠



Hand washing facilities

- Use separate sinks for washing and rinsing purposes.
- Do not use the sink which is used for instrument cleaning
- Place towels next to the wash basin. (PREFEREBLY SINGLE USE TOWELS)
- Place the soap in a rack which does not retain water.



Personal protective equipment (PPE)

- These are gadgets/equipment designed to protect the skin and the mucous membranes of the eyes, nose, and mouth of oral health worker from exposure to blood or other potential infectious material
- Include
 - Gloves
 - Masks
 - Gowns/ coat/ apron
 - Eye shield/ goggles



Gloves

- Always wear gloves when touching mucous membrane, blood, saliva or other potentially infectious material, before touching non-contaminated items and surfaces, and before going to another patient
- Should be changed between patients or when they are torn or punctured and after contact with potentially infectious material.
- Gloves are not a substitute for hand washing
- Perform hand hygiene before wearing the gloves, after removing the gloves, between patients and before leaving the surgery



Gloves

- Hands must be checked for cuts or abrasions before putting on the gloves and lesions should be covered with a occlusive dressing
- Should consider double gloves for complex dental procedures (disimpaction and Inter Maxillary Fixation (IMF)).
- Always wear correct gloves for specific procedure to be performed (surgical gloves for surgical procedure, examination gloves for patient examination and heavy duty gloves for cleaning and disinfection).



Don'ts

- × Don't touch your face or adjust PPE with contaminated gloves
- × Don't touch environmental surfaces except as necessary during patient care
- × Never wash or reuse disposable gloves



Gown/ Apron

- Wear a gown to protect the skin and to prevent soiling of clothing during dental procedures to protect from splashes or sprays of blood, body fluids, secretions or excretions.
- change protective clothing when it becomes visibly soiled



Masks

- The mask should be a standard surgical splash proof mask and not a gauze mask.
- change the mask as frequent as needed(if it is wet or contaminated)
- The mask's outer surface can become contaminated with infectious droplets from spray of oral fluids or from touching the mask with contaminated hands



Goggles/ Eye shield

- Should be worn when there is risk of splash or spilling of blood or body fluids.



Sequence for Donning PPE

- ✓ Gown first
- ✓ Mask
- ✓ Goggles or face shield
- ✓ Gloves



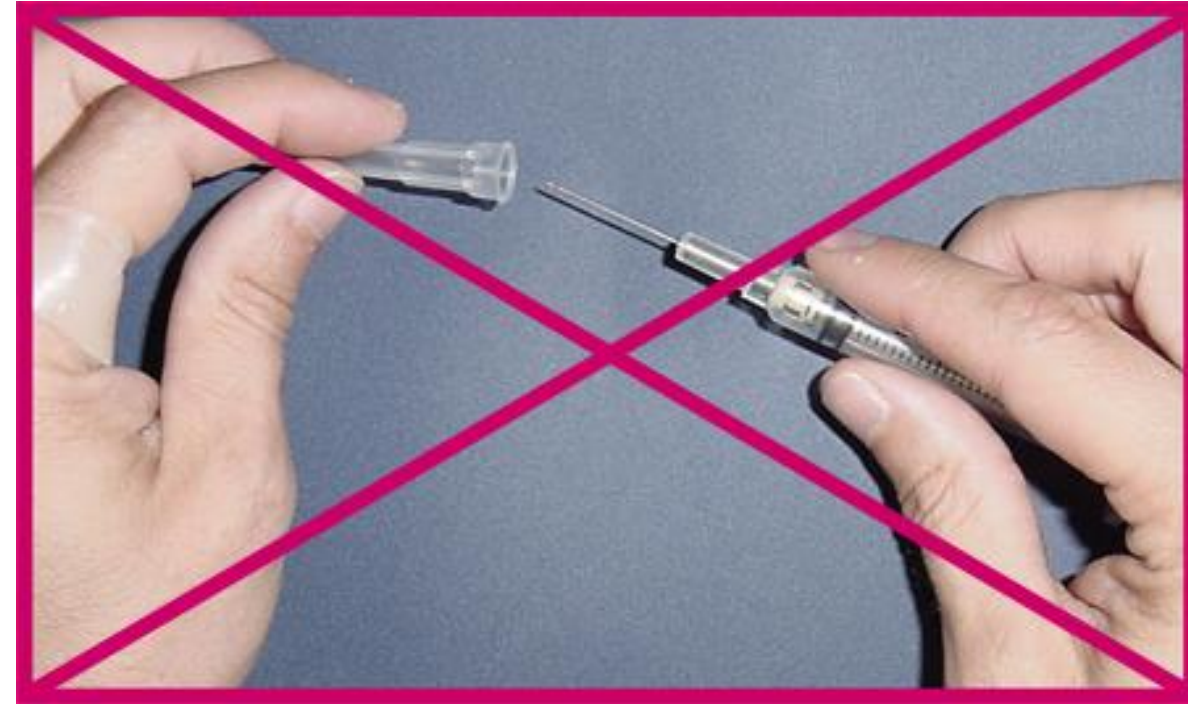
Sequence for Removing PPE

- ✓ Gloves
 - ✓ Hand hygiene
 - ✓ Face shield or goggles
 - ✓ Gown/ apron
 - ✓ Mask or respirator
 - ✓ Cap if worn
 - ✓ Hand hygiene
-
- All protective clothing should be removed before leaving the work area



Handling sharps

- Prevent injuries when using burs, needles, scalpels and other sharp instruments.
- If there is exposure, standard post exposure prophylaxis (PEP) protocol should be followed.
- Recapping should be avoided
- Using instruments instead of fingers to retract or palpate tissue
- Dispose of the sharp container when it is $\frac{3}{4}$ full.
- Never let the sharp bin fill up more than $\frac{3}{4}$ full.



Work practices that increase the risk of a sharps injury

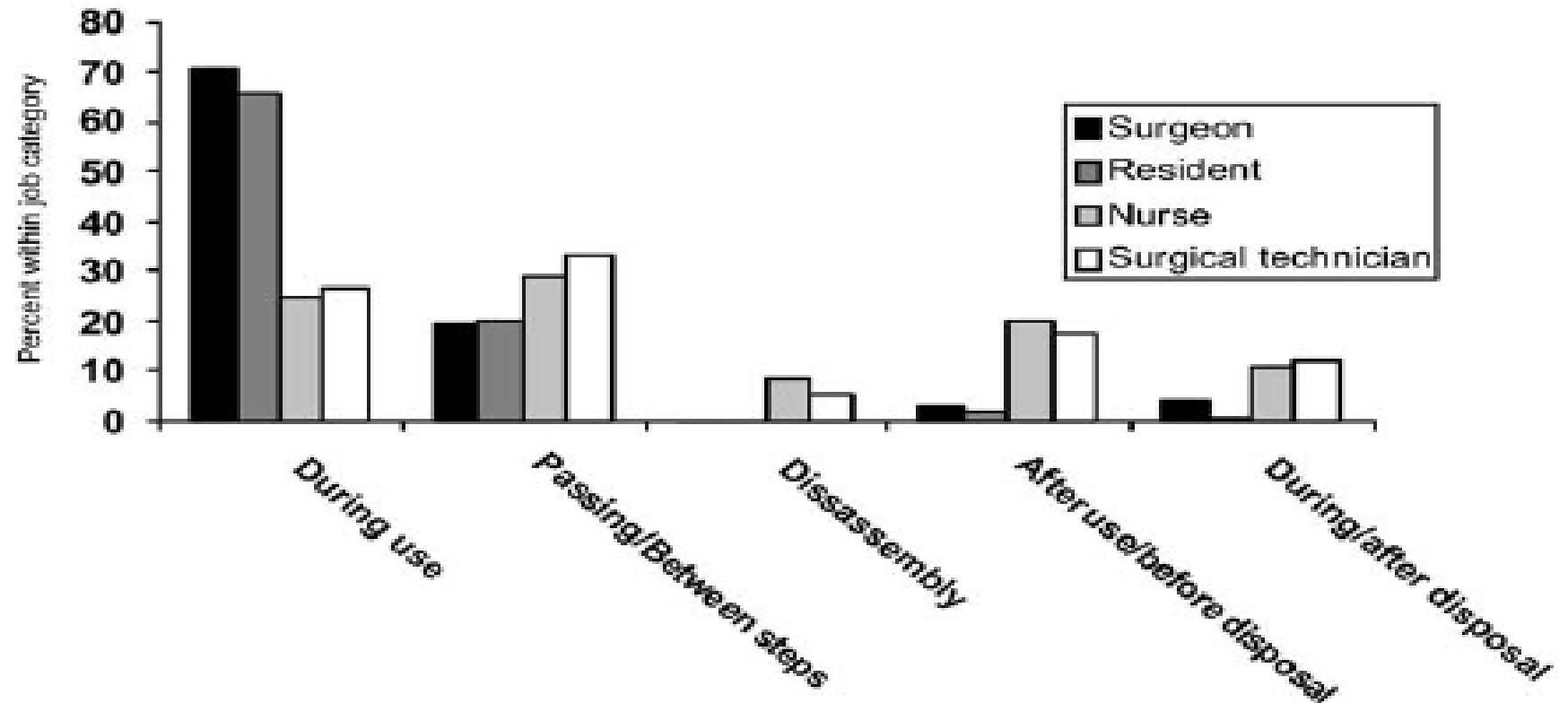
- Recapping needles
- Removing used needles from the dental syringe by hand
- Leaving used needles on the instrument tray
- Transferring a body fluid between containers
- Failing to dispose of used sharps properly in a puncture-proof sharps container



Increase in Sharps Injuries in Surgical Settings Versus Nonsurgical Settings after Passage of National Needlestick Legislation

Janine Jagger, MPH, PhD, Ramon Berguer, MD, FACS, Elayne Kornblatt Phillips, RN, MPH, PhD,

- An estimated 384,000 percutaneous injuries are reported by HCW in hospitals in the US each year



Vaccination of HCW

- Hep B vaccine
 - 3 doses
 - anti-HBs levels should be tested 1-2 months after completion of the 3 dose vaccination series
 - anti-HBs $>10\text{mIU/m}$ - responders
 - anti-HBs $<10\text{mIU/m}$ – another course (3 doses) → check Abs
- Other useful vaccines
 - Rubella vaccine
 - Chickenpox (VZV) vaccine
 - Influenza



Occupational Exposures

- Caused by burs, syringe needles, other sharps
- Allow the wound to bleed
- Wash wound and skin with soap and water
- Flush mucous membranes with water
- Irrigate eyes with clean water



Occupational Exposures

- Contact infection control unit for immediate treatment and counseling
- Hep B vaccination history and vaccine response
- Collect a baseline serum sample from HCW
 - Anti-HIV Ab
 - Anti-HBs Ab
- Documentation of the injury
 - Source blood tested for
 - HIV Abs (STD campaign)
 - Hep B surface antigen
 - Hepatitis C Ab



Occupational Exposure

- The risk of infection after percutaneous injury is approximately

Hepatitis B	30%
Hepatitis C	3%
HIV	0.3%



Post-exposure prophylaxis (PEP)

- HIV
 - Anti-HIV treatment
- Hep B
 - According to the immune status of the HCW
 - Type of source

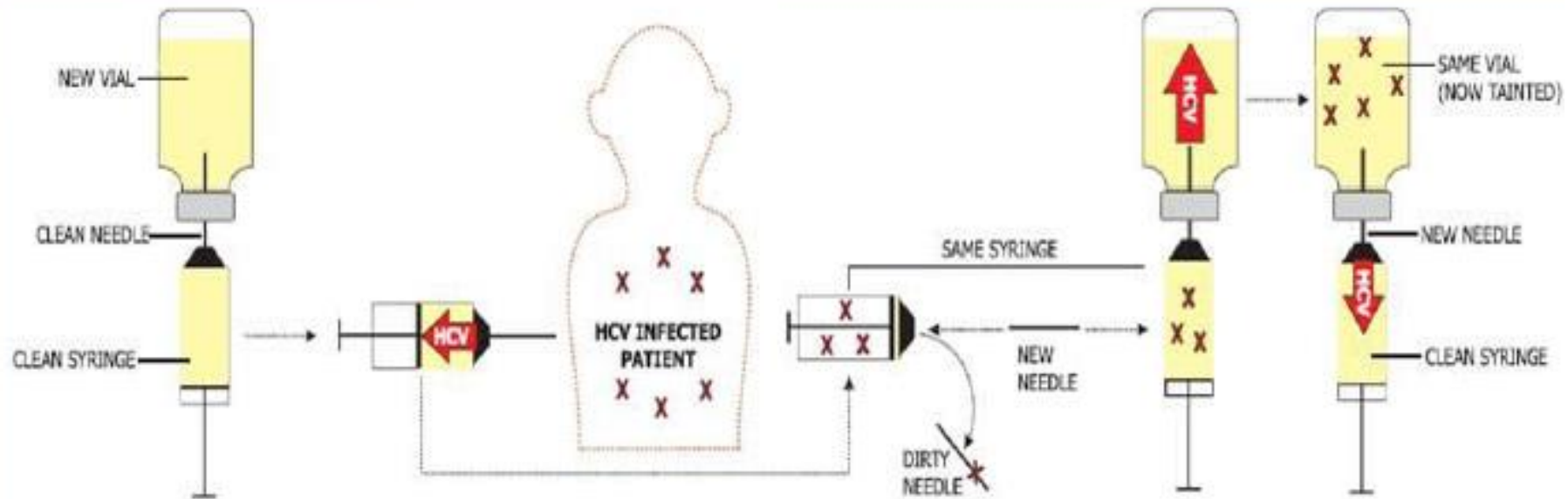


Safe injection practice



- Never administer medications from the same syringe to more than one patient, even if the needle is changed with a new needle
- Never enter a medication vial, bag, or bottle with a used syringe or needle
- Never use medications packaged as single-dose or single-use for more than one patient
 - this includes anesthetic ampoules
- Never use bags or bottles of intravenous solution as a common source of supply for more than one patient.
- Follow proper infection control practices during the preparation and administration of injected medications.
- Never combine the leftover contents of a syringe or single-use vials for later use.

The Las Vegas Outbreak: Mechanism



- **Two breaches contributed to transmission:**
 - Re-entering propofol vials with used syringes
 - Using contents from these single-dose vials on more than one patient

MMWR 2008 57(19);513-517



Hazardous Waste Management



- Biological/ chemical contamination
 - Infectious, pathological, sharps, chemicals
 - Although mercury in the form of dental amalgam is stable, it should be separated from other waste or infectious waste
 - Amalgam also should not be rinsed down the drain.
 - Excess amalgam filling material, empty amalgam capsule and extracted tooth with amalgam filling should be collected in a tight bottle or container and handed over to be disposed with other pharmaceutical items
- Management of waste
 - Each dental surgery must have a dust bin with a cover marked biohazard or disposable color coded refuse bag.
 - All blood contaminated waste should be disposed in red refuse bag.
 - The red refuse bag must be securely sealed.
 - The waste bag should be disposed every day before closing the surgery



Cleaning, Disinfection and Sterilization

- **Cleaning**
 - Physical removal of dirt, micro-organisms and protein material (ie, blood and tissue) using soap/ detergents and hot water
- **Disinfection**
 - Is the process of destruction of most pathogenic microorganisms (but not all) by physical or chemical means
- **Sterilization**
 - is the complete destruction of all microbial forms including resistant bacterial spores

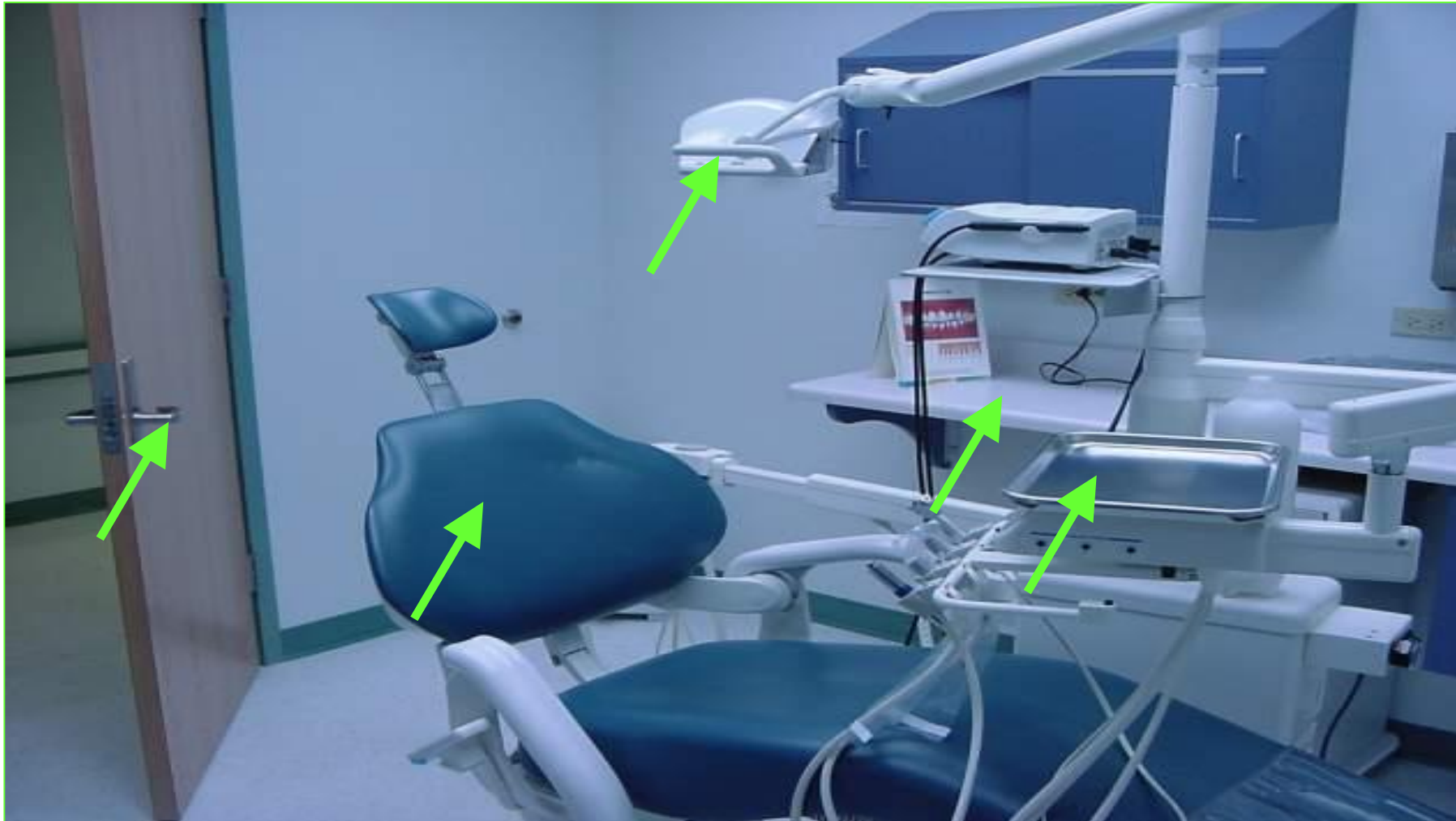


Categories of Environmental Surfaces

- Clinical contact surfaces
 - High potential for direct contamination from spray or spatter or by contact with DHCP's gloved hand
- Housekeeping surfaces
 - Do not come into contact with patients or devices
 - Limited risk of disease transmission



Clinical Contact Surfaces



Cleaning and disinfection of Clinical Contact Surfaces

- Disinfect all the clinical contact surfaces with 0.1% hypochlorite solution or alcohol 70% everyday in the morning and between patients.
 - light handle
 - Handle and switches on dental chair
 - Trolley table
 - Suction tube
 - hand piece tube and ultrasonic scaler
- Or use disposable covers. This cover must be changed after every patient.
- Before the session chair should be cleaned with 0.1% hypochlorite
- The metal surfaces can be cleaned with 70% alcohol.
- If there is visible dirt , contamination → clean after patient





Housekeeping Surfaces



Cleaning Housekeeping Surfaces

- Routinely clean with soap and water or detergent
- Clean mops and cloths and allow to dry thoroughly before re-using
- Prepare fresh cleaning and detergent solutions daily and per manufacturer recommendations



Classification of Instruments to be Sterilized

- Dental instruments are classified into three categories depending on their risk of transmitting infection and the level of sterilization needed
- **Critical**
 - Penetrate mucous membranes or contact bone, the bloodstream, or other normally sterile tissues
- **Semi-critical**
 - Contact mucous membranes but do not penetrate soft tissue
- **Non-critical**
 - Contact intact skin



Sterilization and disinfection of dental instruments

Category	Examples	Method
Critical	Surgical instruments, scalpel blades, periodontal scalers, and surgical dental burs	1.Heat Sterilization (Autoclave) 2.Single use, disposable
Semi-Critical	Dental mouth mirrors, amalgam condensers, impression trays and *dental handpieces	1.Heat Sterilization (Autoclave) 2. High-level disinfection - 2% Glutaraldehyde 0.26% Peracetic acid (Handpieces should always be autoclaved)
Non-Critical	X-ray heads, face bowls, pulse oximeter, blood pressure cuff	Low level disinfection (detergent/ phenole) If contaminated with blood intermediate level disinfectant (hypochlorite/ alcohol)





Special consideration : Dental Handpieces and Other Devices Attached to Air and Waterlines

- High-speed handpieces, prophylaxis angles, ultrasonic and sonic scaling tips, air abrasion devices, and air and water syringe tips
- Studies of high-speed handpieces have confirmed the potential for retracting oral fluids into internal compartments of the device indicating that retained patient material can be expelled intraorally during subsequent uses.
- Studies using laboratory models also indicate the possibility for retention of viral DNA and viable virus inside both high-speed handpieces and prophylaxis angles





Dental Handpieces

- Should be run to discharge water, air for minimum of 20--30 seconds after each patient to help physically flush out patient material that might have entered the turbine and air and waterlines
- It is difficult for chemical germicides to reach the internal parts of handpieces.
- For this reason, they should be heat sterilized using a steam autoclave
- Surface disinfection or Chemical disinfection is not acceptable
- Manufacturer's instructions for cleaning, lubrication, and sterilization should be followed closely to ensure both the effectiveness of the process and the longevity of handpieces



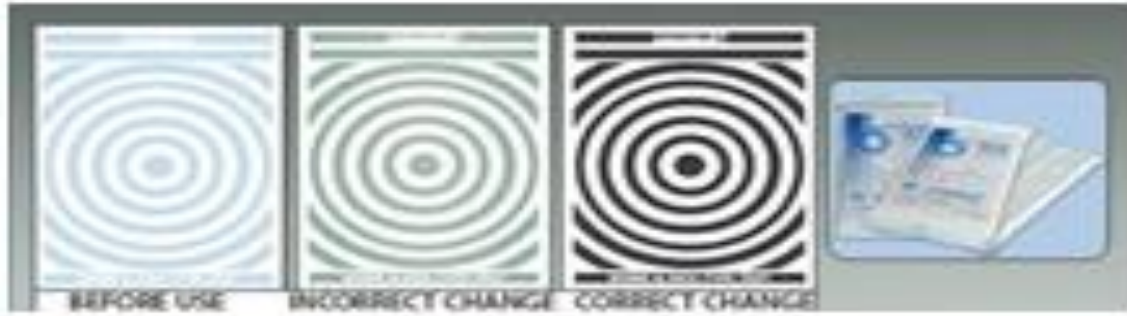
Monitoring of sterilization process

1. Physical indicators
 - Bowie Dick tapes
 - Time and temperature charts

2. Chemical indicators
 - Browne's tubes

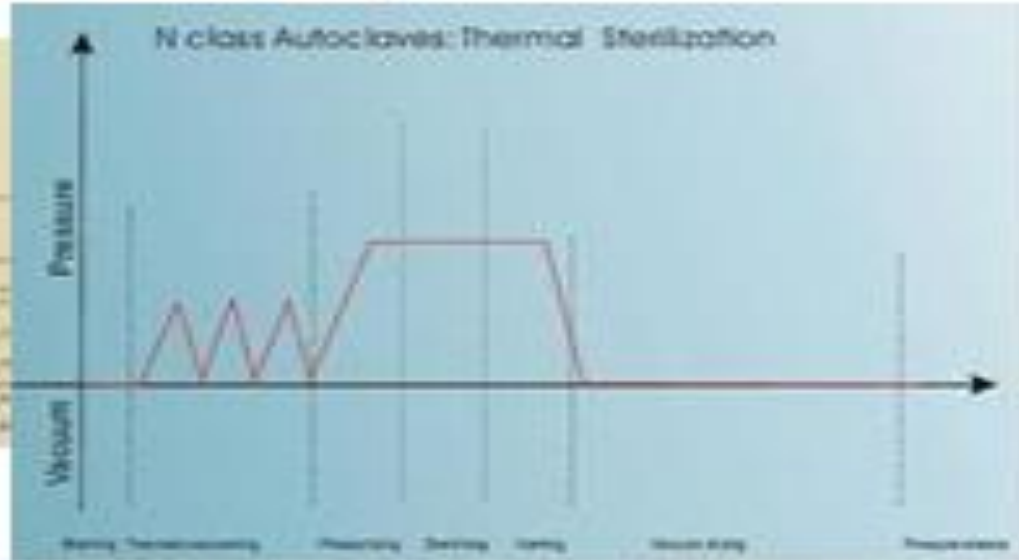
3. Biological indicators
 - Spores of *Bacillus stearothermophilus*





FOR DIRECTIONS SEE LEAFLET

	UNUSED	UNSAFE	TURNING POINT	EFFECTIVE TREATMENT		
APPROX. TIMES IN MINUTES TO PRODUCE THESE COLOURS AT						
Tubes Type 1 (Black Spore)	⊙	12	20	23	25 and over	115°
	⊙	8	13	15	16 - -	120°
	⊙	5	8	10	11 - -	125°
Tubes Type 2 (Yellow Spore)	⊙	2	3	3½	4 - -	130°
	⊙	1½	2½	2½-3	3 - -	135°



Instrument Processing Area

- Use a designated processing area to control quality and ensure safety
- Divide processing area into work areas
 - Receiving, cleaning, and decontamination
 - Pre sterilization cleaning
 - Preparation and packaging
 - Sterilization
 - Storage
 - Separate packs for individual pts
 - Store clean items in dry, closed, or covered containment
 - Store them away from the clinical area





Boiling

- Immersion of instruments in boiling water does not achieve sterilization as many of the bacterial spores can withstand boiling
- Cross infection from contaminated water containing bacterial spores not killed by boiling is also a possibility
- **It is not a method for sterilization of critical and semi-critical instruments**



Management of a spillage of blood and body fluids

- Wear heavy duty
- Soak up fluid using absorbent material (paper towels, gauze, wadding)
- Pour 1% hypochlorite solution till it is well soaked. Leave for at least 10 minutes
- Remove the absorbent material and discard as clinical waste
- Clean area with detergent and dry
- Discard gloves as clinical waste
- Wash hands



Risk of TB Transmission in Dentistry

- Risk in dental settings is low
- Only one documented case of transmission from dentist to patient
- Tuberculin skin test conversions among DHP are rare



Preventing Transmission of TB in Dental Settings

- Assess patients for history of TB
- Defer elective dental treatment
- If patient must be treated:
 - DHCP should wear face mask preferable N95 respirator
 - the patient should wear a surgical mask and be instructed to observe strict respiratory hygiene and cough etiquette procedures



Training and continuous education

- Every HCW needs education and training in infection control
- All oral health care professionals should keep their knowledge and skills current with regard to the diagnosis and management of those infectious diseases that may be transmissible in the clinical setting
- Conduct regular programmes to update knowledge



Program Evaluation and feedback

- Systematic way to improve (infection control) procedures
- Determine the effectiveness, usefulness, feasibility and accuracy of the procedures
 - Develop standard operating procedures
 - Ex: Hand washing, PEP protocol, disinfection and sterilization
 - Evaluate infection control practices
 - Document occupational exposures & work-related illnesses
 - Monitor health care-associated infections
 - Audit infection control practices



Education and training

System change

**Monitoring performance
+ feedback**

Reminders

**Maintain a safe dental
care setting**





Thank You

