Infection control in radiography clinic 20

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World Health Organization defins health as :

Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity . Most criticism of the who definition concerns the absoluteness of the word "complete" in relation to wellbeing .

The requirement for **complete health** would leave most of us unhealthy most of the time .

As human beings, our health and the health of those we care about is a matter of **daily concern regardless of our age, gender**, **socio-economic** or **ethnic background**, **we consider our health to be our most basic and essential asset**.

The health, on the other hand, can keep us from going to school or to work, from attending to our family responsibilities or from participating fully in the activities of our community .

Healthcare-associated infections are preventable through implementation of best infection prevention and control practices. This will facilitate the delivery of high quality health care for patients and a safe working environment for our healthcare worker.

The national guidelines are developed to provide a coordinated approach to the prevention and management of this. The guidelines are based on the best available current evidence .

An infection control program puts together various practices which, when used appropriately, restrict the spread of infection.

A breach in infection control practices facilitates transmission of infection from patients to health care workers, other patients and attendants.

Facilities, equipment, and procedures necessary to implement standardand additional (transmission-based) precautions for control of infections are·

1-Cleaning, disinfecting and reprocessing of reusable equipmentwaste management
2. Protection of health care workers from transmissible infections
3. Infection control practices in special situations.

Dentistry is predominantly a surgical discipline, **involving exposure to blood and saliva**.
A high standard of infection control practices are necessary in improving patient safety and reducing occupational exposures to bloodborne diseases.
Apart from bloodborne diseases such as **hepatitis b and c and HIV infections**, **dental health care workers are at risk of acquiring respiratory, sexually transmitted, and childhood diseases among others encountered in dentistry .**

Transmission of infectious agents among **patients** and **dental health care personnel in dental settings is rare**.
However reports suggest reporting of such infections.

Reported breakdowns in basic infection prevention procedures included unsafe injection practices, failure to heat sterilize dental hand pieces between patients.
Highlighting the need for comprehensive training to improve understanding of underlying principles, recommended practices, their implementation, and the conditions that have to be met for disease transmission summary of infection prevention practices in dental settings is warranted.

You cannot have good general health without good oral health" and "the mouth is part of the body are now considered obvious.

The oral cavity is also the intersection of dentistry and medicine, semi-independent professions that share the same common goal of improving the health and qualityof life of patients. at the heart of each profession is the basic concept that appropriate interventions within the framework of that discipline will have an overall positive impact on patients health, welfare, and quality of life.

All dental settings, regardless of the level of care provided, must make infection control a priority and should be equipped to observe standard precautions and other infection prevention recommendations. Implementing a universal infection control protocol in all dental departments ensures the prevention of infection transmission from within and outside the clinic assuming that all patients are carriers of one or other infectious diseases .

Various steps taken for obtaining total protection can include personnel training programmes,patient counselling, instrument sterilization, using proper disposable means, disinfection, enforcement of law pertaining to infection control.

Usually the radiologist are spared from all infection control and other such training programmes because they are overlooked. Radiographic examinations area complementary tool for diagnosing major diseases of the oral cavity.

They have increased in popularity with in the last few years of time. With the advent of digital radiography conventional mode is being rubbed away from the diagnostic strategy. **Reduced exposure is the main advantage of this mode**, which makes it a common mode for all practising dentist nowadays.

Few other advantages are easy storage, manipulation of the image, **electronic image transmission**, etc.the change in conventional to digital makes it more warren to use the infection protocol strictly, so as there is a chance to for cross contamination because of reuse of same image receptors. So implementation of standardized infection control and prevention practices is increasingly relevant and all personnel should abide to rules so that the modern radiology practice evolves into its more clinical role .Infectious diseases transmission in radiology dept.occurs in direct and indirect method.

The chance for cross-contamination in dental radiology is extremely high, especially when dark room procedures are carried out without necessary precautions. Even while exposing a radiograph could also give a chance for cross contamination. Since the personnel comes in contact with saliva, which is good medium for cross contamination.

Several studies have confirmed that cross-contamination occurs during the exposure and **processing of intraoral films**. the x-ray cone, the exposure control knob, the timer switch, the x-ray film placement area in the darkroom, the x-ray film feeding area in the automatic film processor, and the revolving door to the darkroom, became contaminated while taking radiographs,. As aids epidemic, an increased emphasis has been placed on medical and dental procedures to minimize blood borne pathogen exposure.
All body fluids, secretions, and excretions (except sweat) as potentially infectious, regardless of whether they contain blood. Infection control practices are designed to create and maintain a safe clinical environment to eliminate or minimize disease transmission during patient treatment.
Bacteria can survive in used dental radiographic developer and fixer for up to two weeks.
Wearing of gloves should be made mandatory for all personals in dental radiology while handling with films and patients. Hand washing should be madecompulsory for all staff in dept. and it should be remembered the hand washing is not an alternate or substitute for using gloves.
The lack of hand washing habit, which is in fact a simple and cheap measure, is responsible for more than 50% of hospital infections.
Hygienic hand washing alone is also enough to remove the temporary flora.Routine (hygienic) hand washing technique:

1. Accessories like jewels are to be removed.
2. The hands are wetted under running water.
3. The wrists, the palm and back of the hands, the tips and sides of fingers and nails are washed with soap scrubbing for at least 20 seconds.
4. The hands are thoroughly rinsed under water.
5. Hands are dried with paper towels beginning from the wrists.
6. The same paper towel is used to turn off the tap. Usually unpowered gloves are usedand these should be never reused, ordisinfected. It should be never reused for another patient .

Proper hand washing both before and **after wearing gloves is another important means for preventing cross infection**.

Another method is covering all exposed surface with thin biodegradable plastic sheet which can keep these surface clean and disinfected. This act as a barrier and prevents cross contamination and eliminate the disinfecting between each patient.
After each patient's treatment all surfaces and items contaminated with saliva should be thoroughly cleaned and disinfected using a suitable chemical germicide that provides intermediate level disinfection. Then all surface should be covered with such a barrier.

Gloves should be strictly used while removing such plastic barriers. All reusable instruments in radiology should be cleaned using high level disinfectant.

Another important step is disinfecting all instruments and accessories used in the department. All accessory instruments used in radiology department are a good medium for cross contamination, for e.g. the **holder** used is a good surface medium or the transfer of infection of any grade through the saliva sticked on to it. Because of the holder is made of plastic material which cannot be autoclavable ,thus providing a good surface for the transfer of infection .all such instruments should necessary be disinfected using appropriate solution .these instruments are classified as **semicrtical** and noncritical ..

All holders come under semicrtical type of instruments. These type instruments should be disinfected using high grade disinfectant which are capable of destroying all bacterial spores,as long as they are used in sufficient concentrations and with appropriate contact time.And this procedure should be carried between each patient. However disposable item if possible can be substituted for this type semi critical accessories between each patient which gives more hospitality and can win the patient confidence .noncritical items are different protective barriers like thyroid collar, lead apron,goggles etc. which requires only intermediate type of disinfection .because they do not come directly in saliva contact

The x-ray cone, exposure control, control panel etc.should be covered with appropriate barrier and disinfectedoccasionally or ona weekly basis.

Another important medium for cross contamination are the radiographic films . These are kept directly in the mouth which comes contactwithsaliva, and thus crosscontamination is possible. Before placing in to the indicated site these films should be covered with this transparent plastic cover which can be removed before the processing methods.

Transferring the exposed films should be done only in a paper glass to the processing area where it can be carefully removed from the plastic rapper using gloves .

In case where sensors are used in digital method then the sensors are first covered with plastic barrier then it is covered with gloves. Infection control practices during film exposure:

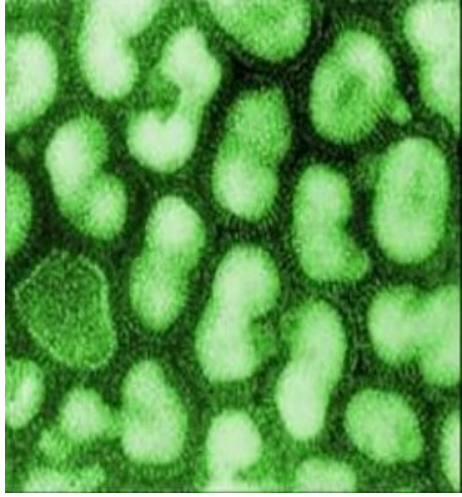
1. Dry each film with a paper towel after taking it from the patient's mouth to remove excess saliva.

2. Place the film in a disposable container such as a paper cup before transporting it to the processing area .

3. Do not touch the disposable container while wearing contaminated gloves.

4. During exposures, film-holders should be transferred to a protected by a surface barrier

Infection :



An invasion of Pathogens or Microorganisms into the body that are capable of producing Diseases.

Infection control in radiology is one of the main step to prevent infection as we receive different patients of all age group with different disease. Development of various imaging modalities has increased the procedures & patients flow increased. So infection control is vital in any radiology department

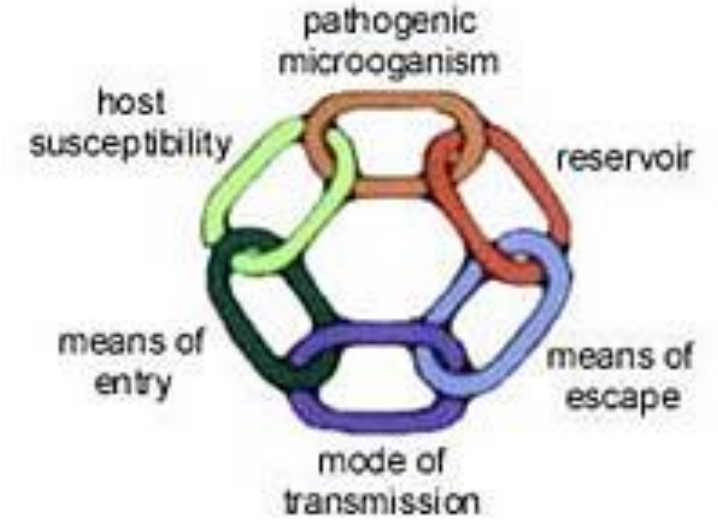
It includes all of the practices used to prevent the spread of micro organisms that could cause disease in a person.

Infection Control Practices help to protect clients and Healthcare providers from Disease by reducing or eliminating sources of Infection

Infection can spread

1-Through Indirect and Direct contact (Touching objects/persons), Sneezing or coughing Air borne particles, Saliva

Infection Control and the Dental Radiographer



Good practice dictates that all staff are aware of the standard procedures and precautions employed by the trust with regards to infection control.

Consider assessing some of the following areas specifically for infection control

- Hand and personal hygiene
- Personal protective gear
- Safe handling of sharps
- Decontamination and cleaning of equipment and rooms.
- The employment of proper infection control procedures in the dental office is necessary to prevent the spread of infectious agents.
- The potential for cross contamination between dental personnel and the patient is considerable when exposing intraoral radiographs.
- The dental office darkroom or daylight loader can also be a **potential contamination s**ource if good infection control measures are not followed.
- **By utilizing PPE, plastic barriers and disinfectants, DHCPs can minimize the likelihood of problems with contamination.**

Infectious diseases present a significant hazard in the **dental environment**

Infection control protocols are used in dentistry to minimize the potential for disease transmission may be transmitted from

Patient to dental professional,Dental professional to patient, Patient to patient

Infection control practices after film exposure:

1. Exposed radiograph should be transferred.

2 All accessoriesdevices should be kept in place for dissecting its surface.

3. All disposable contaminated items should be discarded in accordance with norms.

4. The gloves should be removed and hands washed once all contaminated items are removed and disposed.

5. Now the lead apron may be removed and the patient dismissed from the x-ray exposure area.

Infection control practices for film processing:

1. Prior to taking the films to the processing area, the gloves should be removed, the hands washed, the area cleaned up, and the patient dismissed.

2. The gloves, paper towels, and paper cups are necessary for film handling prior to processing.

3. A paper envelope or film mount is used to hold and store the film(s) after processing and should be labelled with the patient's name and date.

Infection control practices during extraoral radiographic procedures:

1. Prior to taking an extraoral radiograph, wash his or her hands. 2. The patient should rinse with a preprocedural mouthwash before the procedure. After the procedure, ask the patient to remove the barrier on the bite guide. 3. For hygienic purposes, the patient chin rest, head-positioning guides, and handgrips can be barrier-protected or cleaned after film exposure. 4. Since patient secretions normally donot contaminate extraoral cassettes, cassettes can be handled with ungloved hands. 5. No other infection control steps are necessary for processing.16 The importance of effective control of infection measures during dental radiography cannot be overemphasized.Inadequate infection control measures may put other/subsequent patients at risk from infection whether transmitted directly or indirectly

Infection Control Terminology

- Antiseptic
- Asepsis
- Bloodborne pathogen
- Disinfect
- Disinfection
- Exposure incident
- Infectious waste
- Occupational exposure
- Parenteral exposure
- Sharp
- Sterilize
- Sterilization
- Universal precautions

Guidelines for Infection Control Practices

Protective Attire and Barrier Techniques
Handwashing and Care of Hands
Sterilization and Disinfection of Instruments
Cleaning and Disinfection of Dental Unit and Environmental Surfaces

- Infection control procedures before expos
- Before bringing the patient into x-ray room clean and disinfect all surfaces you will touch including chair and counter
- Cover this surfaces with plastic wrap

Protective Attire and Barrier Techniques

- Protective clothing
- Gloves
- Masks
- Protective eyewear

What's missing?

Handwashing and Care of Hands

Handwashing
Care of hands

Infection Control in Dental Radiography:

Infection Control Procedures Used Before Exposure
Infection Control Procedures Used During Exposure
Infection Control Procedures Used After Exposure
Infection Control Procedures Used for Processing

Steps of infection control in the x-ray room :

Gloves should be worn at all times
Operators must wash hands when change gloves between patients
Operatory breakdown after taking radiographs
Leave the operatory neat and clean
Dismantle the instruments and place them in the containers provided
Dispose of other contaminated items in the red plastic bag
Wipe all contaminated surfaces with a disinfectant **do not spray**
Turn off x-ray unit and put tube head against the wall
Lead apron is cleaned and placed over the backside of the chair
Disinfect the gloves before go to the darkroom

Sterilization and Disinfection of Instruments

Cleaning and Disinfection of Dental Unit and Environmental Surfaces

Intermediate-level disinfectants

Low-level disinfectants

Cleaning and Disinfection of Dental Unit and Environmental Surfaces
Intermediate-level disinfectants
Low-level disinfectants

Infection Control Procedures:

Preparation of the treatment area

- X-ray machine
- Dental chair
- Work area
- Lead apron

Infection Control Procedures

Used Before Exposure

Preparation of supplies and equipment

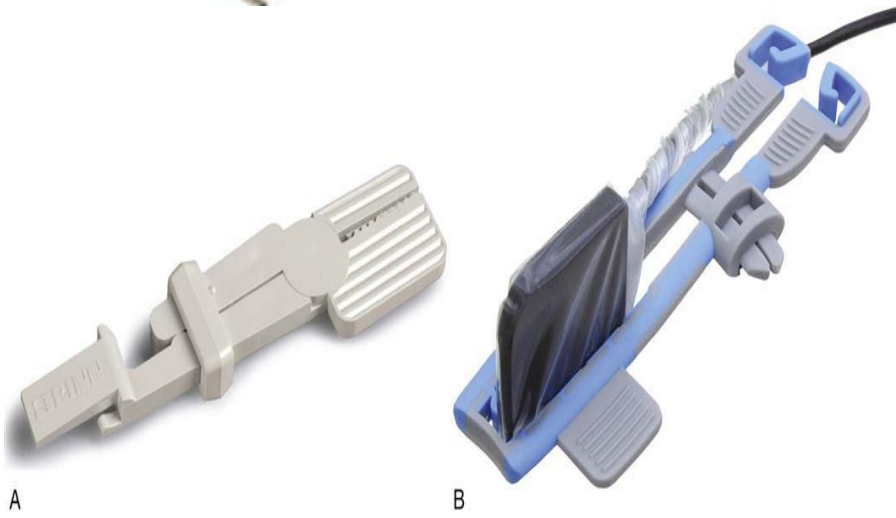
- Film
- Film-holding devices
- Miscellaneous items

Preparation of the patient

- Chair adjustment
- Headrest adjustment
- Lead apron
- Miscellaneous objects

Preparation of the dental radiographer

- Handwashing
- Gloves
- Mask and eyewear
- Film-holding devices



Infection Control Procedures

Used During Exposure

- Drying of exposed films
- Collection of exposed films
- Film-holding devices
- Interruptions during exposure

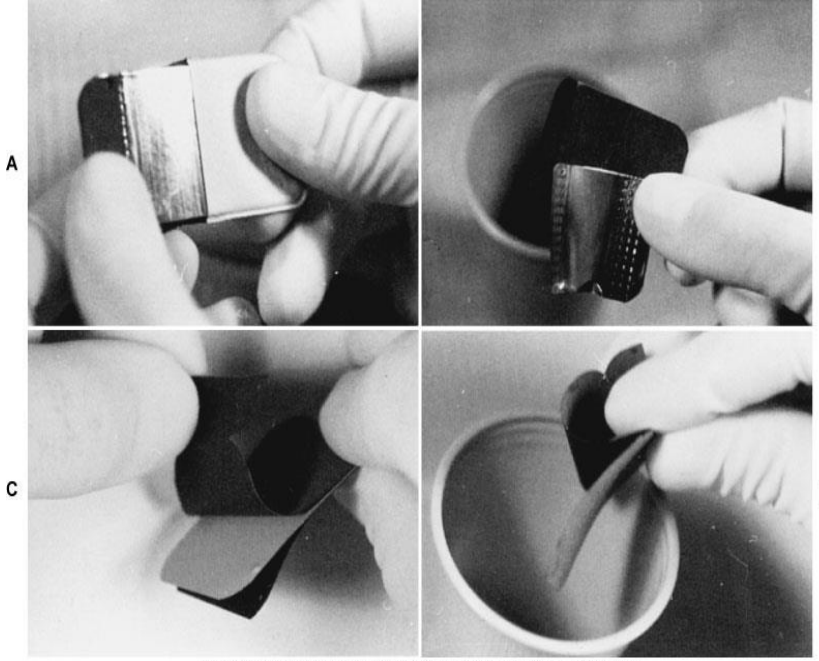
Infection Control Procedures

Used After Exposure
Disposal of contaminated items
Film-holding devices
Handwashing
Lead apron removal
Surface disinfection

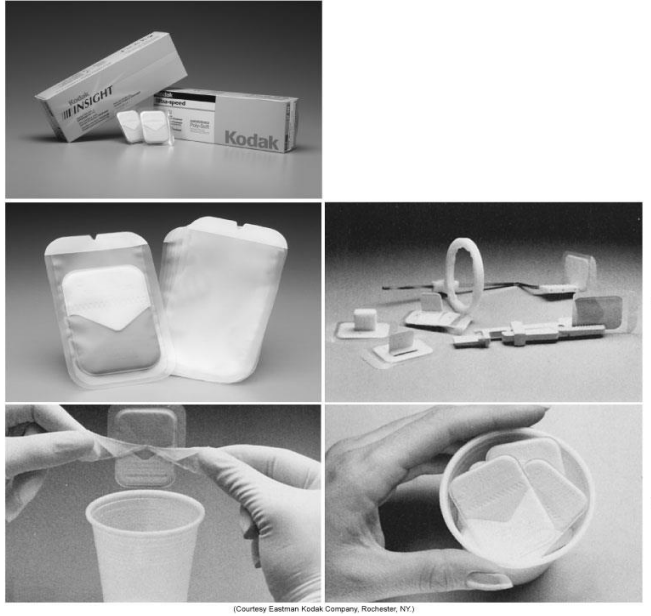
Infection Control Procedures

Used for Processing

- Film transport
- Darkroom supplies
- Film handling with barrier envelopes
- Film handing without barrier envelopes
- Disinfection of darkroom
- Daylight loader procedures – in lab



(From White SC, Pharoah MJ: Oral pathology: principles and interpretation, ed 5, St Louis, 2004, Mosby.)



(Courtesy Eastman Kodak Company, Rochester, NY.)

- Strip films from packets using gloves
- Open film packet over the clean paper towel
- Insert films in the processor with the gloves
- Films should be handled as little as possible, preferably by the edges.
- After all films are in the processors, remove the gloves and wash your hands
- Handle processed film with clean hands

Panoramic and lateral ceph infection control guidelines

- Use bite block baggie. Patient can remove the baggie when the x-raying is completed
- Before and after exposure wipe down the patient positioning area and handles of the panoramic unit and head- and ear- positioning devices on the lateral ceph unit .


Thank You !