

## Battling the Bugs & Winning! Infection Prevention in Diagnostic Imaging

24<sup>th</sup> Annual Diagnostic Imaging Symposium, April 14<sup>th</sup>, 2018



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### Three Objectives

Discuss the importance of hand hygiene in the prevention of disease transmission and regulatory requirements in the diagnostic imaging setting

Identify standard precautions and other types of precautions including prevention of aerosol transmissible diseases

Apply various methods of infection prevention in the diagnostic imaging setting

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### Importance of Infection Prevention

- Prevention of Healthcare-Acquired Infections (HAIs)
  - 1 in 25 patients (Haverstick, 2017)
  - 2.5 million HAIs annually
  - 90,000 preventable deaths
  - Cost \$4.5 billion

(Fox et al., 2015)

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## Importance of Infection Prevention Cont'd

- Patient safety and satisfaction
- Staff safety
- Regulatory agency requirements
- Centers for Medicare & Medicaid Services (CSM) **cease** reimbursements to treat UTIs, CAUTIs & surgical site infections
- The Joint Commission - national patient safety goal #7

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What is the single most important thing you can do to prevent the spread of infections?



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## Prevention of HAIs

- Hand hygiene compliance
- Patient notification, education and documentation
- Environmental cleaning/disinfection
- Healthcare workers (HCW) and member vaccination programs



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## Hand Hygiene Principles



15 seconds to germ-free

or



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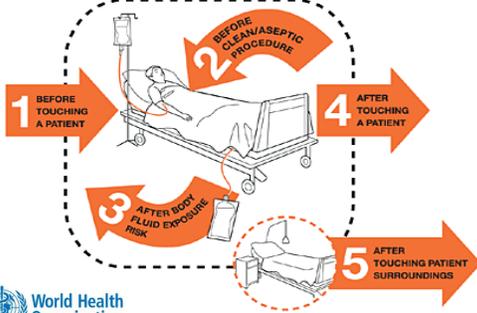
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## 5 Moments of Hand Hygiene



World Health Organization

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## Hand Hygiene Considerations

- Natural nails should be short
- Artificial nails, nail tips, and gel are prohibited for all HCW who provide direct patient care or touch the patient environment



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## Standard Precautions

Hand Hygiene	Respiratory Hygiene/Cough Etiquette	Safe Injection Practices
<ul style="list-style-type: none"> <li>Wash hands for at least 15 seconds</li> <li>Soap and water or Alcohol foam</li> <li>5 Moments of Hand Hygiene</li> </ul>	<ul style="list-style-type: none"> <li>Cover your cough</li> <li>Offer mask, tissues and hand sanitizer</li> <li>Hand Hygiene</li> <li>Wear Personal Protective Equipment (PPE)</li> </ul>	<ul style="list-style-type: none"> <li>Activate safety device</li> <li>Dispose in proper sharps container</li> <li>Do NOT recap needles</li> <li>Always handle sharps cautiously and safely</li> </ul>

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## Standard Precautions Cont'd

- Gloves** - whenever touching blood, body fluids, mucous membranes
- Mask** - when at risk to splashes of mouth or nose is anticipated and/or performing aseptic procedures
- Goggles or eye shield** - when splashes to eyes are anticipated.
- Gown** - when soiling of clothing or skin is anticipated.

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## Sequence for Donning PPE



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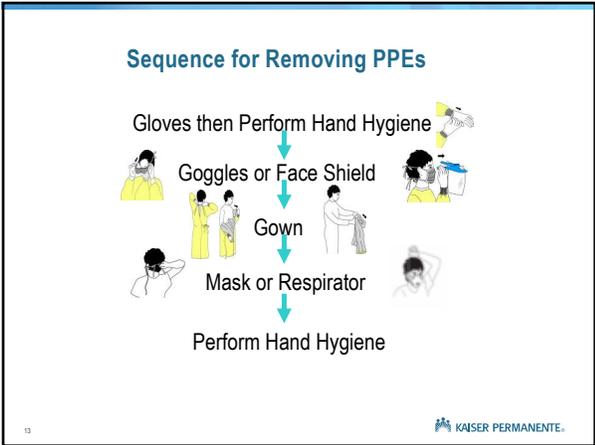
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- ### Respiratory Hygiene/Cough Etiquette
- Recommended for all individuals with symptoms of respiratory infection
  - Cover the nose/mouth when coughing or sneezing with a tissue or mask
  - Dispose of tissue in a receptacle
  - Perform Hand Hygiene!
  - Encourage coughing persons to sit or stand at least 3 feet away from others in common waiting areas
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- ### Aerosol Transmissible Diseases (ATD)
- A disease or pathogen that requires droplet or airborne precautions to prevent exposure.
    - ✓ **Droplets** are relatively large in size and can result from coughing, sneezing or talking
    - ✓ **Airborne** refers to relatively small particles, which can remain suspended in the air and travel great distances
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### Signs & Symptoms of ATDs

- Require further medical evaluation include:
  - ✓ Fever with rash
  - ✓ Fever with cough
  - ✓ Headache or neck stiffness or sensitivity to light

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### Equipment Cleaning & Disinfection

- Clean and disinfect multi-patient use equipment between patients
- Discard single use items (i.e. PPE, masks)
- Clean and disinfect the high touch areas (door knobs, keyboards, countertops, exposure buttons, overhead tube controls, gantry control buttons, CT contrast injector, etc.)
- Clean and disinfect with hospital approved disinfectant wipes
  - ❖ Allow wet surface to air dry according to manufacturer's guidelines

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## Methods to prevent exposure – Respiratory Protection

- **N95** or equivalent respirator with a known or suspected TB or other Airborne ATD patient when entering room of a patient on Airborne Isolation Precautions, or within an hour of when the room was occupied by patient.



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## Powered Air Purifying Respirator

- **(PAPR)** means an air-purifying respirator that uses a blower to force the ambient air through air-purifying filter to remove airborne contaminants and deliver filtered air to the user.



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## MRSA on imaging cassette

- Study conducted in Korea
- Performed surveillance cultures of the surfaces of X-ray cassettes to assess contamination with MRSA
- Presumed to occur through contact with a common reservoir of environmental contamination, including computer keyboards, faucets, door handles, bed linens, patient gowns, and blood pressure cuffs

(Kim et al., 2013)



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### Mobile phones



- Study of radiographers in Ireland
- Ideal breeding ground (hand & heat)
- MRSA & Acinetobacter species
- Hand hygiene decreases potential number of microbes

(Crofton & Foley, 2018)

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### VCUG (voiding cystourethrogram)

- Wear eye shield
- Use sterile technique to insert foley



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### MRI & CT scanner

- Make sure table pad is cleaned between patients
- Consider manufacturer's dwell time
- In MRI, clean the coils
- In CT, clean the velcro table immobilizer
- Clean front & back of gantries

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### Ultrasound



- Endocavity probes are disinfected in a Trophon unit using hydrogen peroxide cartridge to disinfect both the probe and handle
- Perform hand hygiene first

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### Breast Biopsy suite

- Opening sterile kit
- Drawing up local anesthetics using single needle
- Draping sterile trays on a mayo stand in advance



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### Interventional Radiology suite

- Sterile technique
- Sharps disposal
- Clean lead aprons & thyroid shields

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### No Food or Drinks in Patient Care Areas

- The **OSHA Bloodborne Pathogen Standard** prohibits food and drink in areas where contamination is likely.
- This regulation prohibits the consumption of food and drink in areas in which work involving exposure or potential exposure to blood or other potentially infectious material exists, or where the potential for contamination of work surfaces exists.
- The prohibition against eating and drinking in such work area is consistent with other OSHA standards and is good industrial hygiene practice.

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### Culture of Safety

- The safety culture of an organization is the product of individual and group values, attitudes, perceptions, competencies, and patterns of behavior that determine the organization's commitment to health and safety and the style and proficiency of its health and safety management.

(Siewert et al.,2013)

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