

Ministering to the Community in a Time of Crisis



Disinfecting Surfaces

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- These PowerPoint Presentations are written and provided to prepare the Body of Christ for disasters such as the current pandemic
- These trainings are meant to enable people to safely care for themselves and minister to their neighbors
- By being properly equipped we are then able to bring the gospel of our Lord, Jesus Christ into the situation
- For more information, please visit outrunningthehorses.com

Disinfecting Surfaces

- Person-to-person transmission is the primary way COVID-19 infects people; however, individuals can acquire a virus, bacteria, or other microorganism by touching a contaminated object then touching a mucous membrane such as their eyes, nose, or mouth

Disinfecting Surfaces

- It is still unclear how long COVID-19 or other viruses survive on surfaces, however it is determined that they can survive on different materials for various amounts of time

Disinfecting Surfaces

- Second to wearing personal protective equipment (PPE) when caring for a patient with COVID-19 or influenza is keeping all surfaces clean from the infectious agent
- This is crucial to preventing the spread of the disease

Disinfecting Surfaces

- This presentation will focus on the two viruses that cause most concern; SARS-CoV-2 virus that causes COVID-19, and seasonal influenza
- The term virus or viruses throughout this document will include:
 - COVID-19
 - Seasonal Influenza

Disinfecting Surfaces

- Although there are existing viruses that still pose a threat to the world population, until one has mutated and become human-to-human transmissible, it is impossible to determine how it will conduct itself once loosed on people

Disinfecting Surfaces

- Items to be discussed
 - The Longevity of a Virus on Various Surfaces
 - Methods of Disinfecting Surfaces
 - Proper Precautions
 - Proper Cleaning of Objects
 - Proper Disinfecting of Objects
 - Laundry
 - Using Bleach

Disinfecting Surfaces

The Longevity of a Virus on a Surface

- The Longevity of a Virus on a Surface
 - The longevity of a virus is dependent on several factors such as humidity, temperature, and porosity of the surface
 - Viruses tend to survive longer on surfaces in cooler temperatures and lower humidity

Disinfecting Surfaces

The Longevity of a Virus on a Surface

- The Longevity of a Virus on a Surface
 - Studies show a virus can survive on different materials anywhere between a few hours to several days
 - RNA from COVID-19 were found on the Princess Cruise ship up to 17 days after the passengers disembarked

Disinfecting Surfaces

The Longevity of a Virus on a Surface

- According to studies COVID-19 can live on the following surfaces :
 - Cardboard – eight to 24 hours
 - Packages received in the mail
 - Items purchased from store
 - Plastic – up to 72 hours (3 days)
 - Cell phones
 - Computers
 - Remote Controls
 - Elevator buttons
 - Milk containers
 - Bus seats

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The Longevity of a Virus on a Surface

- COVID-19 can live on the following surfaces :
 - Stainless steel – up to 72 hours
 - Kitchen appliances
 - Faucets
 - Door knobs
 - Paper – a few minutes
 - Mail
 - Items from store

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The Longevity of a Virus on a Surface

- COVID-19 can live on the following surfaces :
 - Glass – 96 to 120 hours (4-5 days)
 - Glassware
 - Windows
 - Mirrors
 - Items from store
 - Wood – up to 96 hours (4 days)
 - Furniture
 - Decking

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The Longevity of a Virus on a Surface

- COVID-19 can live on the following surfaces :
 - Fabric (room temperature) – Up to 48 hours (2 days)
 - Clothing
 - Furniture
 - Linens
 - Skin – up to 9 hours

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Methods of Disinfecting Surfaces

- Removing and killing an infectious agent on a surface effectively must be performed properly and methodically
- There are several methods of performing this action; all following the steps of cleaning, disinfecting, and sterilizing

Disinfecting Surfaces

Methods of Disinfecting Surfaces

■ Methods

- Cleaning – is the removal of visible soil from an object
- Disinfection – eliminates many but not all pathogenic microorganisms
- Sterilization – kills all microorganisms

Disinfecting Surfaces

Methods of Disinfecting Surfaces

■ Methods

- Although sterilization would be the goal, this process is carried out in health care facilities
- Examples of sterilization methods:
 - Steam under pressure
 - Dry heat
 - Ethylene oxide gas
 - hydrogen peroxide gas plasma
 - Liquid chemicals

Disinfecting Surfaces

Methods of Disinfecting Surfaces

■ Methods

- This presentation will focus on proper ways of cleaning and disinfecting surfaces outside of the healthcare setting

Disinfecting Surfaces

Proper Precautions

- Proper Precautions should be taken
 - Donning proper PPE:
 - Wear gloves, either disposable or rubber
 - Wear a surgical mask in accordance with droplet precautions
 - Use a respirator when airborne precautions are warranted by the circumstances

Disinfecting Surfaces

Proper Precautions

- Proper Precautions should be taken
 - Donning proper PPE:
 - Gown - if your clothes may be become exposed to the patient's bodily fluids
 - Face and eye protection - if the patient is coughing.



Disinfecting Surfaces

Proper Precautions

- Proper Precautions should be taken
 - Keep unnecessary objects at least six feet away from the patient.
 - Consider covering objects that are not necessary, and not easily removed.
 - Cleaning and disinfection should be performed on a daily basis

Disinfecting Surfaces

Using Chemical Disinfectants

- When using chemical disinfectants:
 - Always read and follow the directions on the label
 - Wear gloves and consider glasses or goggles for potential splash hazards to eyes
 - Ensure adequate ventilation (for example, open windows)
 - Use only the amount recommended on the label
 - Use water at room temperature for dilution (unless stated otherwise on the label)

Disinfecting Surfaces

Using Chemical Disinfectants

- When using chemical disinfectants:
 - Always read and follow the directions on the label
 - Label diluted cleaning solutions
 - Store and use chemicals out of the reach of children and pets
 - Do not mix products or chemicals
 - Do not eat, drink, breathe, or inject cleaning and disinfection products into your body or apply directly to your skin as they can cause serious harm

Disinfecting Surfaces

Using Chemical Disinfectants

- When using chemical disinfectants:
 - Always read and follow the directions on the label
 - Do not wipe or bathe pets with any cleaning and disinfection products
 - Special considerations should be made for people with asthma. Some cleaning and disinfection products can trigger asthma

Disinfecting Surfaces

Cleaning the Object

- Cleaning the object thoroughly is the first step to disinfection
 - Obvious particles must be removed so not to hinder the disinfecting process
 - Can be done by using soap and water with wiping and rubbing to wash soil away
 - Methods other than routine cleansing are not necessary

Disinfecting Surfaces

Cleaning the Object

- Cleaning the object thoroughly is the first step to disinfection
 - Soap can be a simple detergent or an enzymatic solution
 - The temperature of the water should be what is recommended on the label



Disinfecting Surfaces

Cleaning the Object

- Some disinfectants are also disinfectant cleaners
 - If the disinfectant contains a detergent that allows it to penetrate soil, then the cleaning and disinfectant process can be completed in one step



Disinfecting Surfaces

The Correct Disinfectant

- Choose the correct disinfectant
 - Healthcare facilities use germicidal agents that include both antiseptics and disinfectants
 - Antiseptics are for use on skin
 - disinfectants are used on surfaces
 - These are not interchangeable

Disinfecting Surfaces

The Correct Disinfectant

- Choose the correct disinfectant
 - These agents may have the suffix cide or cidal in the name
 - Virucide, fungicide, bactericide, sporicide, and tuberculocide can kill the type of microorganism identified by the prefix
 - For example, a bactericide is an agent that kills bacteria (not viruses)

Disinfecting Surfaces

The Correct Disinfectant

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 - For example, a bactericide is an agent that kills bacteria (not viruses)

Disinfecting Surfaces

The Correct Disinfectant

- Choose the correct disinfectant
 - Read the labels and strictly follow instructions
 - For example, some disinfectants are only effective after being left on the surface for more than one minute and even up to twenty or more minutes

Disinfecting Surfaces

The Correct Disinfectant

- Influenza viruses can be eliminated by basic or intermediate level disinfectants containing any of the following ingredients:
 - Chlorine or hypochlorite
 - Aldehydes
 - Quaternary ammonium compounds [quats]
 - Phenolics
 - Alcohols
 - Peroxygen compounds

Disinfecting Surfaces

The Correct Disinfectant

- Use of disinfectants registered by the U.S. Environmental Protection Agency (EPA) is recommended whenever these are available.
 - Lists of all registered disinfectants can be found at www.epa.gov/oppad001/chemregindex.htm

Disinfecting Surfaces Using Bleach

- In non-health care settings, the World Health Organization (WHO) recommends sodium hypochlorite (bleach / chlorine)
 - May be used at a concentration of 0.1% or 1,000ppm (1 part of 5% strength household bleach to 49 parts of water)
- Alcohol at 70-90% can also be used for surface disinfection
 - Surfaces must be cleaned first to remove dirt, followed by disinfection

Disinfecting Surfaces Using Bleach

- The Centers for Diseases Control (CDC) states that bleach solutions can be used and will be effective against coronaviruses when properly diluted
 - Most household bleach contains 5%–9% sodium hypochlorite
 - Do not use a bleach product if the percentage is not in this range or is not specified

Disinfecting Surfaces Using Bleach

- Using Bleach
 - Follow the manufacturer's instructions for the surface application
 - This will ensure efficacy as well as prevent ill effects
 - Pay attention to concentration, temperature, and the time the product needs to remain on the surface to be effective

Disinfecting Surfaces Using Bleach

- Using Bleach - Disadvantages
 - Although bleach is cheap and readily available, there are disadvantages which include:
 - It has no detergent agent; therefore, it cannot penetrate soils – surfaces must first be cleaned
 - It is inactivated when in contact with organic matter such as blood, tissue, and saliva
 - It is very caustic – it can burn skin and eyes

Disinfecting Surfaces Using Bleach

- Using Bleach - Disadvantages continued
 - It is poisonous if ingested
 - Fumes can be irritating and even toxic.
 - It is corrosive
 - It discolors colored items such as materials, carpets, countertops and floors
 - It can create toxic fumes when mixed with other chemicals
 - Fumes can move to other areas of the building

Disinfecting Surfaces Using Bleach

- Using Bleach - Cautions
 - Wear PPE such as gloves, mask, and eye protection.
 - Be sure the concentration is 5.25% active sodium hypochlorite.
 - Use a new bottle of bleach if possible
 - Bleach loses its efficacy if it sits on the shelf for a long period of time
 - It should smell strongly of chlorine for it to be effective.

Disinfecting Surfaces Using Bleach

- Using Bleach - Cautions continued
 - Thick bleach solutions such as toilet bowl should not be used in dilution
 - Use plain bleach; do not use scented versions, as there are other additives that may affect the solution
 - Do not mix bleach with other chemicals as this can cause a reaction that can produce toxic fumes

Disinfecting Surfaces Using Bleach

- Using Bleach - Cautions continued
 - Thick bleach solutions such as toilet bowl should not be used in dilution
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Disinfecting Surfaces Using Bleach

- Using Bleach - Cautions continued
 - Surfaces must first be cleaned with a detergent before disinfecting with bleach
 - Apply solution to a surface with a moistened cloth
 - Allow it to remain on the surface for at least three to five minutes and even up to ten minutes
 - After time allowed, wipe again with another clean wet cloth

Disinfecting Surfaces Using Bleach

- Using Bleach - Cautions continued
 - The chlorine must be wiped away from metal objects with a more dilute solution to prevent corrosion
 - This can be done with clean water or 70% alcohol
 - Set apart cloths just for this purpose

Disinfecting Surfaces Using Bleach

- Using Bleach - Cautions continued
 - If bleach gets into the eyes, immediately rinse with water for at least fifteen minutes and seek medical attention



Disinfecting Surfaces

Using Bleach

- Using Bleach - Cautions continued
 - Bleach is not intended as a disinfectant for hands
 - The principal means for disinfecting hands is washing with soap and water, coupled with the use of a commercial hand sanitizer with alcohol

Disinfecting Surfaces

Preparing Bleach Solutions

- Preparing Bleach Solutions (continued)
 - CDC recommends use 0.1% (1,000ppm) (1:10) chlorine solution to disinfect frequently touched surfaces and items
 - Make new 0.1% (1:10) chlorine solution every day
 - Throw away any leftover solution from the day before

Disinfecting Surfaces

Preparing Bleach Solutions

- Preparing Bleach Solutions
 - Differing solution strengths are used for different purposes
 - A strong 1:10 bleach solution is used to disinfect items exposed to:
 - Blood
 - urine or fecal material
 - surfaces exposed to corpses

Disinfecting Surfaces

Preparing Bleach Solutions

- Preparing Bleach Solutions (continued)
 - Differing solution strengths are used for different purposes
 - A weaker 1:100 bleach solution is used to:
 - disinfect surfaces
 - medical equipment
 - objects close to the patient
 - bedding and other laundry

Disinfecting Surfaces

Preparing Bleach Solutions

- Preparing Bleach Solutions (continued)
 - Ensure proper ventilation during and after application (for example, open windows)
 - Never mix household bleach (or any disinfectants) with any other cleaners or disinfectants
 - This can release vapors that may be very dangerous

Disinfecting Surfaces

Preparing Bleach Solutions

- Preparing Bleach Solutions (continued)
 - Make a new diluted bleach solution daily. Bleach solutions will not be as effective after being mixed with water for over 24 hours
 - If a strong smell of chlorine is not present, it has lost its efficacy

Disinfecting Surfaces

Preparing Bleach Solutions

- Preparing Bleach Solutions (continued)
 - Use plastic containers because metal containers can corrode easily.
 - Wear PPE, avoid direct contact with skin and eyes.
 - Start with household bleach that contain 5% sodium hypochlorite

Disinfecting Surfaces

Preparing Bleach Solutions

- Preparing Bleach Solutions (continued)
 - Gather the necessary supplies:
 - One container that holds ten measures (for example, ten cups) to make the base 1:10 bleach solution
 - One large or several smaller containers (One for each station) with covers or lids to hold the 1:100 bleach solutions
 - These containers should be labeled clearly of the different solutions

Disinfecting Surfaces

Preparing Bleach Solutions

- Preparing Bleach Solutions (continued)
 - Gather the necessary supplies (continued):
 - Five-gallon buckets – example containers:
 - Cat litter buckets
 - Large dog and cat dry food buckets
 - Home Depot buckets
 - Chlorine bleach containing 5.25% active sodium hypochlorite

Disinfecting Surfaces

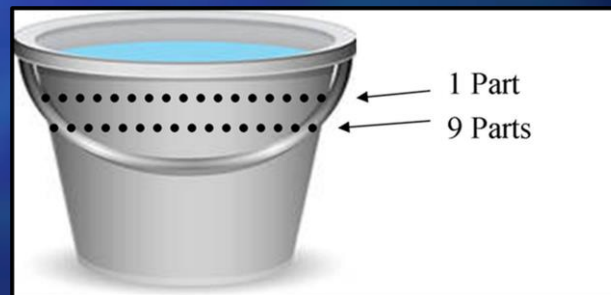
Preparing Bleach Solutions

- Preparing Bleach Solution
 - Gather the necessary supplies (continued):
 - Use clean water
 - Do not use dirty or used water because organic matter destroys chlorine
 - A measuring cup or other container
 - A bottle or jar marked with one cup or one liter can be used

Disinfecting Surfaces

Preparing Bleach Solutions

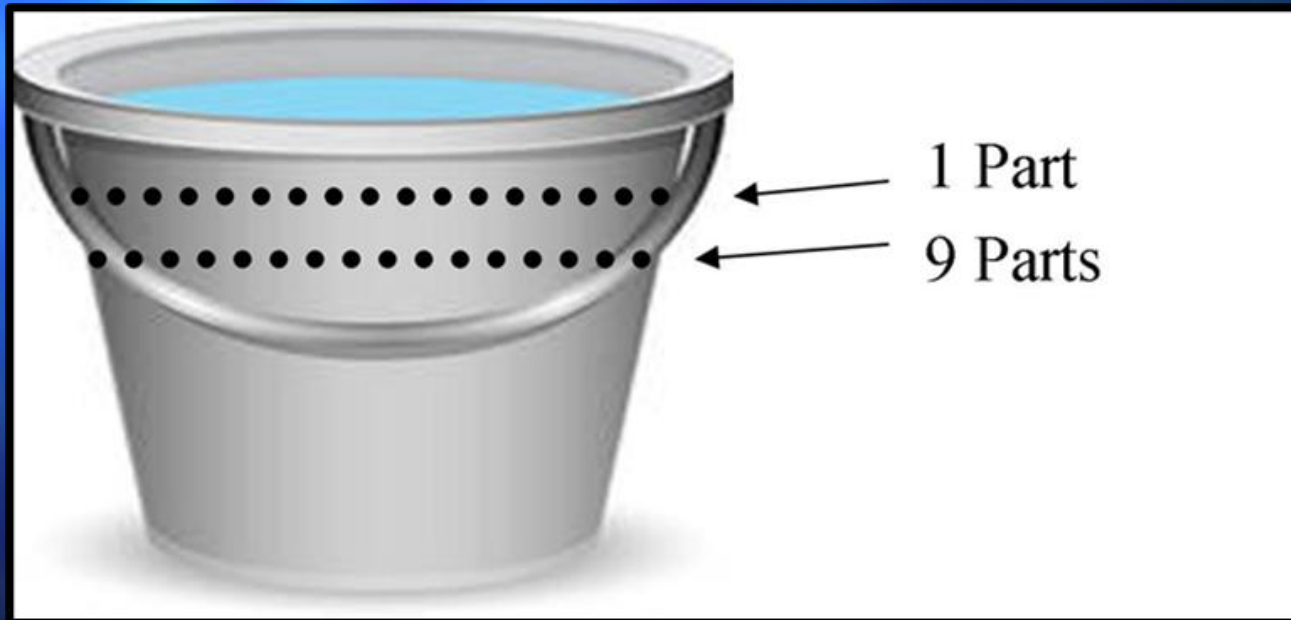
- To prepare 1:10 bleach solution
 - Pour nine measures of water into the container then mark the outside
 - Use a permanent sharpie or scratch the plastic
 - Add one measure of bleach to the first nine parts then again mark a line at the total ten parts volume



Disinfecting Surfaces

Preparing Bleach Solutions

- Marking the container will shorten the process for future solutions

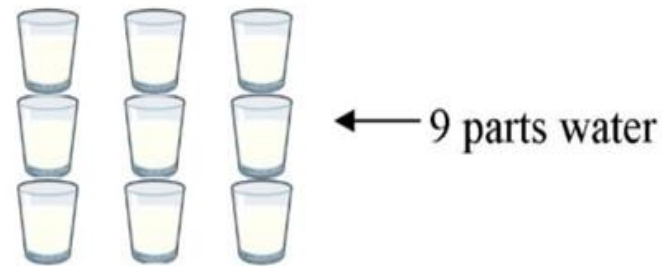


Disinfecting Surfaces

Preparing Bleach Solutions

- To prepare 1:100 bleach solution:
 - Measure and pour nine parts of water into another large container
 - Then measure and pour one part of 1:10 bleach solution into the water to make a 1:100 bleach solution

Preparing Bleach Solutions



Label Container
← 1:10 Bleach



Label Container
← 1:100 Bleach

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Preparing Bleach Solutions

- Distribute a container of each solution to each station with clean cloths
- Be sure to label each container properly



Disinfecting Surfaces

Cleaning and Disinfecting Surfaces

- Using Bleach continued
 - If instructions are not available, leave the diluted bleach solution on the surface for at least 1 minute before removing or wiping
 - This is known as the “contact time” for disinfection
 - The surface should remain visibly wet during the contact time

Disinfecting Surfaces

Preparing Bleach Solutions

- Use the 1:10 bleach solution to clean after contamination with body fluids
- Use the 1:100 bleach solution to clean surface areas and laundry
- When there is a large outbreak, make larger quantities

Disinfecting Surfaces

Cleaning and Disinfecting Surfaces

- Cleaning and Disinfecting Surfaces
 - Apply bleach solution to the surface with a clean rag or sponge
 - Allow it to sit on surface for five minutes
 - Always follow product label's instruction
 - Rinse the surface with warm water
 - Allow to air dry

Disinfecting Surfaces

Cleaning and Disinfecting Surfaces

- Cleaning and Disinfecting Surfaces
 - Use any EPA-registered detergent-disinfectant
 - Be sure to include surfaces such as:
 - Door knobs
 - Light switches
 - TV controls
 - Telephones
 - Bathroom surfaces
 - Kitchen counter tops
 - Dresser tops
 - Items used for direct care of the patient for example a blood pressure cuff

Disinfecting Surfaces

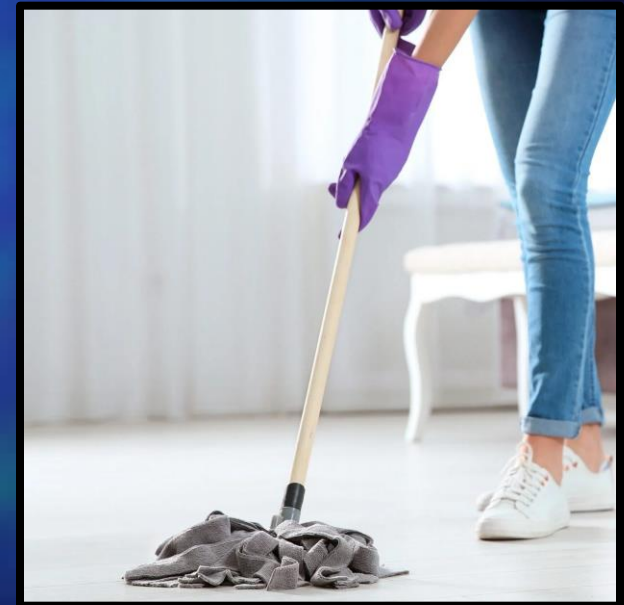
Cleaning and Disinfecting Surfaces

- Cleaning and Disinfecting Floors and Walls
 - Not generally involved in disease transmission
 - However, if either become visibly soiled clean as follows:
 - Wash the floor or wall with a detergent to remove any visible dirt
 - Use a sprayer or mop to wash the walls with 1:100 bleach solution

Disinfecting Surfaces

Cleaning and Disinfecting Surfaces

- Cleaning and Disinfecting Floors and Walls
 - Wipe the walls with a clean cloth
 - Rinse the mop in a fresh supply of 1:100 bleach solution
 - If using a sprayer, apply the spray close to the surface to minimize splashing and aerosols



Disinfecting Surfaces

Laundry

- Although viruses do not survive as easily on materials such as sheets, towels, and clothing – laundry should still be handled with similar care as other items
- There may be wet or dry bodily secretions or fluids, including respiratory droplets on the bedding and pajamas



Disinfecting Surfaces

Laundry

- Use the following precautions when handling laundry:
 - Wear gloves and a mask when handling the laundry of a sick person.
 - Place the dirty laundry into a laundry bag that is kept in the patient's room
 - Keep bag closed when taking to the laundry room
 - Don't carry unpackaged soiled linens out of the sick room into a clean room

Disinfecting Surfaces

Laundry

- Use the following precautions when handling laundry:
 - Keep soiled linen at arm's length
 - Don't hold laundry close to your body, or face
 - Make every effort to not shake or agitate the linens
 - This will keep any dried matter that has attached from unsettling
 - This will prevent contaminated particles from becoming airborne

Disinfecting Surfaces

Laundry

- Use the following precautions when handling laundry:
 - Place laundry of sick person directly into washer from laundry bag
 - Don't place uncovered laundry in a basket for common use.
 - Soak in 1:100 bleach solution for thirty minutes
Be sure all items are completely soaked
 - Set the washer and dryer controls to hot

Disinfecting Surfaces

Laundry

- Use the following precautions when handling laundry:
 - Wash items in soapy water
 - Items may be line dried if necessary
 - After handling soiled laundry, remove gloves and perform hand hygiene

Disinfecting Surfaces

Conclusion

- While person-to-person interaction is the primary way COVID-19 spreads, the virus can still be spread by touching contaminated surfaces
- Health care professionals are still unsure how long COVID-19 can live on surfaces
 - It is believed the virus can survive on different materials anywhere between a few hours to several days

Disinfecting Surfaces

Conclusion

- Removing and killing an infectious agent on a surface effectively must be performed properly and methodically
 - Cleaning then disinfecting
 - Bleach is one of many EPA approved chemicals that are effective to kill the influenza and corona viruses

Disinfecting Surfaces

Conclusion

- Second to wearing PPE when caring for a patient with a pathogen causing a pandemic, is keeping all surfaces clean from the infectious agent
 - This is crucial to preventing the spread of the disease



Questions?

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