Disinfection

EPIC Fact Sheet

Cleaning and disinfecting spaces to reduce pathogen load

Regular disinfection of common contact surfaces is a key element of infection control. The most common contact surfaces and contact items are:

- Doorknobs
- Sink faucets and knobs
- Light switches
- Phones
- Computers
- Table surfaces
- Dining chairs (seat, back and arms)
- Kitchen counters
- Bathroom counters
- Toilets (seat and handle)
- TV remote controls
- Game controllers
- Board games and Toys

Important Considerations:

- Disinfectants are usually broad-spectrum, but some pathogens require special disinfection regimes.
    - Endospore forming bacteria (C-Diff, Anthrax) require sporicidal disinfectants.
    - Yeasts (Candida) resist quaternary-ammonia (Quads), but are killed with peroxide, sporicidals.
- EPA Registered disinfectants should be chosen for confirmed effectiveness and liability protection.
- Know the difference between these key terms:
    - **Cleaning:** Cleaning refers to the removal of soil. Cleaning actually removes much of the pathogen load on its own. Disinfectants react with dirt, dust, body oils, bacteria, etc. Cleaning surfaces maximizes the effectiveness of disinfectants.
    - **Disinfection:** Disinfection refers to the neutralizing and / or destruction of pathogenic microbes. Disinfection does not necessarily remove the microbe residuals, so disinfected surfaces may still contain allergens. Disinfection products and processes require time to kill pathogens; this time is refered to as “dwell time”, “contact time”, or “exposure time.”

- **Fogging:** Disinfectant can be sprayed as a fine mist that clings to surfaces, referred to as "electrostatic spraying" or "fogging". Disinfection by fogging still requires pre-cleaning to be most effective. Fogging methods are not recommended unless it is continuously performed during the entire exposure time due to how rapidly the fine mist evaporates.
- **Autoclaving:** Autoclaving is a high-pressure steam approach to disinfection. A proper autoclave protocol will kill virtually all microorganisms. Autoclaving is typically used for medical instruments and glassware, but larger systems exist for sterilizing garments and bedding.
- **Laundering:** Laundering is actually a combination of cleaning and disinfection. Washing fabrics is the cleaning step, and drying in high heat is a form of disinfection. Antimicrobial additives help disinfect during the washing phase, and autoclaves can be used to kill heat and arid resistant microbes.

Recommendations:

- Planning for routine disinfection
  - The frequency of routine surface disinfection is typically based on:
    - The frequency that people touch a common contact surface.
    - The number of unique people that may touch a surface.
  - Cleaners and disinfectants must be checked for potential cross-reactions.
    - Example: Chlorine reacts with ammonia, alcohols, and acids
    - Check each disinfectant's Safety Data Sheet (SDS) for safe use and possible reactions.
  - All staff who apply disinfectants require training on proper handling requirements.
  - Each disinfectant has listed target organisms. Use the right disinfectant for the pathogens of concern.
- Preparing disinfectant
  - Disinfectants usually must be mixed and/or stored in opaque containers to assure their potency/effectiveness is maintained.
  - Some disinfectants that are manually mixed require an activation time before they can be used.
  - Disinfectants must be prepared to the dilution specified by the manufacturer's instructions.
    - Using a higher than recommended concentration does not make a product a better disinfectant! Disinfectants are formulated to be most effective at the concentration recommended by the manufacturer.
  - If you prepare and store any chemical in your own containers, the containers must be labeled as required by OSHA.
- Pre-cleaning surfaces
  - Disinfection is most effective on surfaces free of soil. For most products, pre-cleaning is required prior to applying disinfectant.
  - If possible, wipe away excess liquid to reduce the chance of reactions between the cleaner and the disinfectant.

    - Pay attention to your cleaning technique; use “Karate Kid: side to side, paint the fence” movements with overlapping swipes for thorough cleaning. Random cleaning patterns often leave behind untouched areas.
- Disinfecting surfaces
    - Follow the manufacturer’s instructions for safe handling and application of the disinfectant.
    - Disinfection doesn’t happen instantly; all disinfectants have a “dwell time”, which is the time required to kill most microorganisms. This may also be called, “contact time” or “exposure time”. Surfaces must remain wet for the required dwell time.
        - If surfaces dry out before the dwell time is met, reapply the disinfectant. Reapplication does not reset the clock; just keep the surfaces wet for the required dwell time.
    - Ensure thorough coverage of the disinfectant. Wiping with soaked rags, “Swiffer” style pads, Hudson pump sprayers, or electrostatic sprayers, with no gaps in the coverage.
        - Fine mist spraying must still be heavy enough to keep surfaces wet for the required dwell time!
    - After the dwell time is met, the surfaces can be wiped down to prevent spotting, but the cloth should be lightly soaked in disinfectant to prevent re-contamination.

Resources to Learn More:

- CDC cleaning and disinfection guidance
    - https://www.cdc.gov/infectioncontrol/guidelines/disinfection/disinfection-methods/chemical.html
- List of EPA registered disinfectants
    - https://www.epa.gov/pesticide-registration/selected-epa-registered-disinfectants
- Link to EPIC resources (videos, FAQs, Helpline email and phone number)
    - EPIC Helpline
        - Helpline email is EPIC@AZHCA.org
        - Helpline phone number is 602-241-4644
        - www.EPIC.DisasterReadyaz.org