Disinfection and Sterilization in Healthcare Facilities

Executive Summary
Introduction
Methods
Definition of Terms
Approach to Disinfection and Sterilization
- Critical Items
- Semicritical Items
- Noncritical Items
- Changes in Disinfection and Sterilization Since 1981

Disinfection of Healthcare Equipment
- Concerns with Implementing the Spaulding Scheme
- Reprocessing of Endoscopes
- Laparoscopes and Arthroscopes
- Tonometers, Cervical Diaphragm Fitting Rings, Cryosurgical Instruments, Endocavitary Probes
- Dental Instruments
- Disinfection of HBV, HCV, HIV or Tuberculosis-Contaminated Devices
- Disinfection in the Hemodialysis Unit
- Inactivation of *Clostridium difficile*
- OSHA Bloodborne Pathogen Standard
- Emerging Pathogens (*Cryptosporidium*, *Helicobacter pylori*, *E. coli* O157:H7, Rotavirus, Human Papilloma Virus, Norovirus, Severe Acute Respiratory Syndrome Coronavirus)
- Inactivation of Bioterrorist Agents
- Toxicological, Environmental, and Occupational Concerns
- Disinfection in Ambulatory Care, Home Care, and the Home
- Susceptibility of Antibiotic-Resistant Bacteria to Disinfectants
- Surface Disinfection: Should We Do It?
- Contact Time for Surface Disinfectants
- Air Disinfection
- Microbial Contamination of Disinfectants

Factors Affecting the Efficacy of Disinfection and Sterilization
- Number and Location of Microorganisms
- Innate Resistance of Microorganisms
- Concentration and Potency of Disinfectants
- Physical and Chemical Factors
- Organic and Inorganic Matter
- Duration of Exposure
- Biofilms

Cleaning
Disinfection
- Chemical Disinfectants
  - Alcohol
    - Overview
    - Mode of Action
    - Microbicidal Activity
    - Uses
  - Chlorine and Chlorine Compounds
    - Overview
    - Mode of Action
    - Microbicidal Activity

- Uses
- Formaldehyde
  - Overview
  - Mode of Action
  - Microbicidal Activity
  - Uses
- Glutaraldehyde
  - Overview
  - Mode of Action
  - Microbicidal Activity
  - Uses
- Hydrogen Peroxide
  - Overview
  - Mode of Action
  - Microbicidal Activity
  - Uses
- Iodophors
  - Overview
  - Mode of Action
  - Microbicidal Activity
  - Uses
- Ortho-phthalaldehyde
  - Overview
  - Mode of Action
  - Microbicidal Activity
  - Uses
- Peracetic Acid
  - Overview
  - Mode of Action
  - Microbicidal Activity
  - Uses
- Peracetic Acid and Hydrogen Peroxide
  - Overview
  - Mode of Action
  - Microbicidal Activity
  - Uses
- Phenolics
  - Overview
  - Mode of Action
  - Microbicidal Activity
  - Uses
- Quaternary Ammonium Compounds
  - Overview
  - Mode of Action
  - Microbicidal Activity
  - Uses

Miscellaneous Inactivating Agents
- Other Germicides
- Ultraviolet Radiation
- Pasteurization
- Flushing- and Washer-Disinfectors

Regulatory Framework for Disinfectants and Sterilants

Neutralization of Germicides

Sterilization
- Steam Sterilization
  - Overview
  - Mode of Action
  - Microbicidal Activity
  - Uses
- Flash Sterilization
  - Overview
  - Uses
- Low-Temperature Sterilization Technologies
- Ethylene Oxide “Gas” Sterilization
  - Overview
  - Mode of Action
  - Microbicidal Activity
  - Uses
- Hydrogen Peroxide Gas Plasma
  - Overview
  - Mode of Action
  - Microbicidal Activity
  - Uses
- Peracetic Acid Sterilization
  - Overview
  - Mode of Action
  - Microbicidal Activity
  - Uses
- Microbicidal Activity of Low-Temperature Sterilization Technology
- Bioburden of Surgical Devices
- Effect of Cleaning on Sterilization Efficacy
- Other Sterilization Methods
  - Ionizing Radiation
  - Dry-Heat Sterilizers
  - Liquid Chemicals
  - Performic Acid
  - Filtration
  - Microwave
  - Glass Bead “Sterilizer”
  - Vaporized Hydrogen Peroxide
  - Ozone
  - Formaldehyde Steam
  - Gaseous Chlorine Dioxide
  - Vaporized Peracetic Acid
  - Infrared radiation
- Sterilizing Practices
  - Overview
  - Sterilization Cycle Validation
  - Physical Facilities
  - Cleaning
  - Packaging
  - Loading
  - Storage
  - Monitoring (Mechanical, Chemical, Biological Indicators)

Reuse of Single-Use Medical Devices

Conclusion

Web-Based Disinfection and Sterilization Resources
Recommendations (Category IA, IB, IC, II)
Performance Indicators
Acknowledgements
Glossary
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References