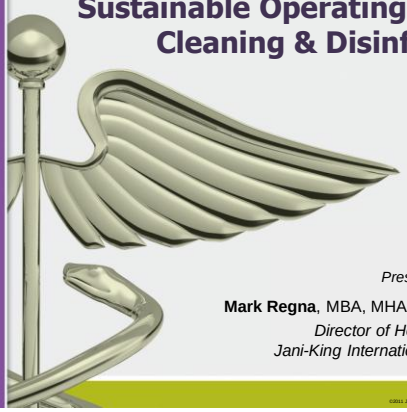
Healthcare Services

Sustainable Operating Room Cleaning & Disinfection



Presented by:

Mark Regna, MBA, MHA, CHESP
Director of Healthcare
Jani-King International, Inc.

Foundation and Principles of Environmental Services

Maintaining the built environment of a healthcare facility or an environment where healthcare services are delivered is driven largely by regulations set forth by:

1. OSHA
2. The Joint Commission
3. CDC – Centers for Disease Control and Prevention
4. United States Environmental Protection Agency
5. APIC
6. AORN
7. AHE – Association for the Healthcare Environment

Cleaning/Disinfection Terminology

Antiseptic = substance that tends to inhibit the growth and reproduction of micro-organisms in or on humans or animals

Clean = removal of all visible dust, soil and any other foreign material

Decontaminate = remove disease producing microbes rendering safe for handling

Disinfectant = kills or destroys nearly all disease-producing organisms, except spores (used on inanimate objects)

Cleaning/Disinfection Terminology

Germicide = an agent capable of killing microorganisms (germs). Applies to compounds used both on living tissue and inanimate objects

Sanitize = reduce microbes on surfaces to a safe or relatively safe level

Sterilize = all organic and inorganic soils, micro-organisms and spores are destroyed

Vegetative = the stage of a cell that is not replicating or forming spores

The Chemistry of Cleaning

- The first and most important step in infection prevention and control is cleaning
- Microbes hide in soil
- Often simple cleaning will remove soil and the microbes along with it
- Cleaning ensures that your disinfectant cleaner will be able to reach the microscopic contamination underneath and destroy microbes
- You can't kill microbes if you don't clean first!

The Chemistry of Cleaning

A detergent is a liquid or solid chemical that can do one or more of the following:

•Wet or penetrate soil

•Break apart the soil

•Surround and emulsify greasy soils

•Suspend the soil in the scrubbing water

The Chemistry of Cleaning

- The surface-active agent or surfactant is the active ingredient in a detergent
- The surfactant increases the wetting power of scrub water by reducing its surface tension, helping water spread out and better penetrate the soil
- A detergent molecule has two distinct ends, each with a special job- hydrophobic and hydrophilic

The Factors of Cleaning Success - T.A.C.T.

- **T**ime or labor involved
- **A**gitation
- **C**oncentration of the chemical
- **T**emperature of the cleaning solution

Chemical Cleaning

There are 5 basic elements involved in cleaning with chemicals:

1. **Contact time**
2. **Temperature**
3. **Concentration**
4. **Mechanical action**
5. **pH (potential hydrogen)**

Tools and Equipment for Cleaning

- Using the proper tool or equipment with the proper chemical products is the most effective and productive method of cleaning
- Factors to consider:
  - ✓ Initial price (acquisition cost)
  - ✓ Useful life
  - ✓ Suitable for the task
  - ✓ Labor cost to use the item

The Cleaning Process

- Environmental Services should approach cleaning in a methodical fashion
- Clockwise or counter clockwise
- Working from top to bottom
- Cleanest to the dirtiest

The Chemistry of Cleaning

- One can clean without disinfecting, but one can not disinfect without cleaning
- It may not be a failure of the cleaning and disinfecting agents but rather a failure to completely follow the cleaning and disinfecting process

Environmental Services

Sustainable SURFACE CLEANING AND DISINFECTING

USING THE 5 R'S

What are the 5 R's Environmental Surface Disinfection?

- Right Staff
- Right Training
- Right Equipment
- Right Chemical
- Right Time

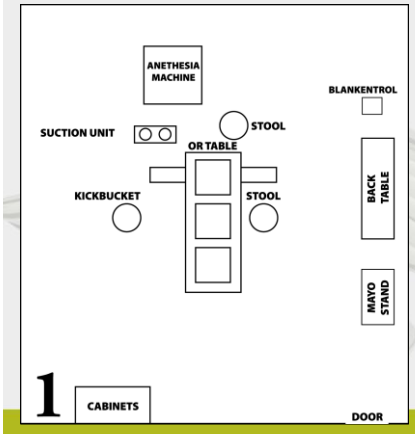
Right Staff

- Do they understand the role they play in reducing infections in the facility?
- Is the Staff committed to the success of the organization?
- Has the staff received proper training and the training documented
- Does the staff understand the use of all chemicals?
- Does the staff understand the use of a color coded microfiber system?

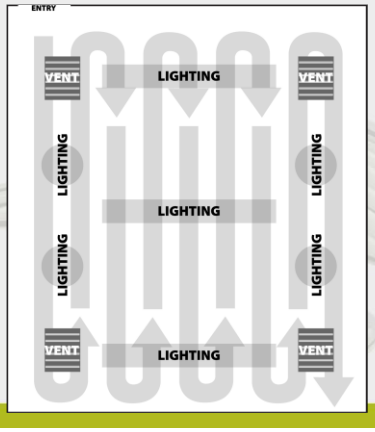
Right Training

- The right training provides knowledge on proper cleaning and disinfecting technique.
- Training on the use of the right chemical and equipment will reduce waste and over use of chemicals
- Staff training also ensures that the staff can protect them self and the environment from poor practices.
- Formal training, job analysis, checklist and diagrams will assist the staff in performing the same task properly each and every time.

CDDS11-0028

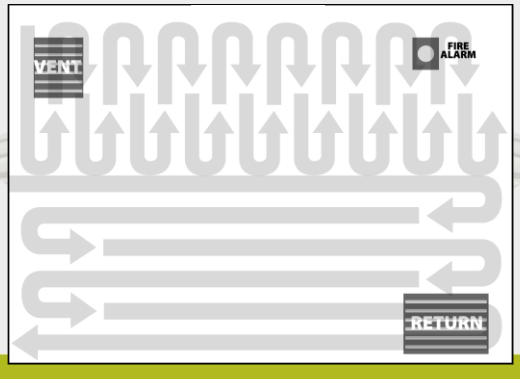


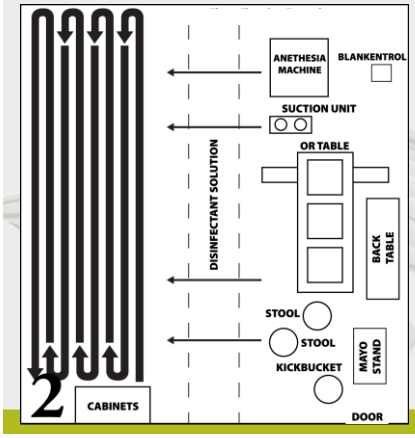
OR Set-up Example Prior to Cleaning



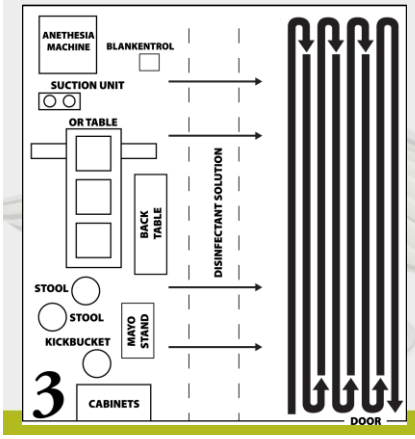
Ceiling Cleaning Procedure

Wall Cleaning Procedure

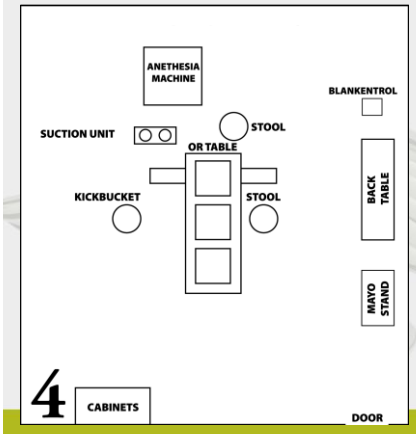




Floor Cleaning Procedures



Floor Cleaning Procedures



OR Set-up Example After Cleaning

Rubbermaid Commercial Products

Operating Room Cleaning
TERMINAL, CHECKLIST

Name: _____
Room: _____
Time: _____
Date: _____

Preparation and Set Up:

- ☐ Prepare equipment and load cleaning cart with everything needed for the job
- ☐ Prepare yourself by dressing in the appropriate attire and personal protective equipment (PPE)

Cleaning Process:

- ☐ Remove all soiled linen
- ☐ Remove medical waste & reline containers
- ☐ Pick up trash and large debris with Lobby Pro Wet/Dry Dust Pan and Lobby Pro Wand
- ☐ Remove all other waste & reline containers
- ☐ Dry/damp dust all booms and attachment points for lights and equipment suspended from the ceiling with Flexible Wand and Extension Handle

Cleaning Process:

- ☐ Dry/damp dust on top of all cabinets and shelving with the Flexible Wand or Flexi Frame and Extension handle
- ☐ Clean overhead light with Green Rubbermaid HYGEN™ microfiber cloth
- ☐ Thoroughly clean OR Table with Red Rubbermaid HYGEN™ microfiber cloth and a disinfectant
- ☐ Clean Mayo Stands and tray tables with a Green Rubbermaid HYGEN™ microfiber cloth and a disinfectant approved by your supervisor
- ☐ Damp clean entire ceiling with 18" Rubbermaid HYGEN™ Damp Mop on extension handle using Charging Bucket
- ☐ Damp clean all walls with 18" Rubbermaid HYGEN™ Damp Mop on extension handle using Charging Bucket
- ☐ Move all OR equipment and tables to one side of the room and clean floors with an auto scrubber
- ☐ Wipe down casters on all tables and equipment with Green HYGEN™ microfiber cloth
- ☐ Move all OR equipment and tables to opposite side of room and clean floor, rolling casters in disinfectant solution on the floor
- ☐ Return all tables and equipment to their original positions
- ☐ Inspect cleaning & review checklist
- ☐ Remove personal protective equipment (PPE) and thoroughly wash hands, being careful to avoid self contamination

NOTE: This Checklist is a recommendation of best practices within the industry. We also recommend referencing AORN's Perioperative Standards and Recommended Practices and OSHA Guidelines. Always use the cleaning chemical(s) specified by your supervisor and follow the chemical manufacturers use directions.

The AORN Seal of Recognition has been awarded to Rubbermaid HYGEN™ and does not imply that AORN approves or endorses any product or service mentioned in any presentation, format or content. The AORN Recognition program is separate from the AORN, ANCC Accredited Provider Unit and therefore does not include any CE credit for programs.

Rubbermaid Commercial Products HYGEN SYSTEM

Rubbermaid Commercial Products

Operating Room Cleaning
BETWEEN CASES, CHECKLIST

Name: _____
Room: _____
Time: _____
Date: _____

Preparation and Set Up:

- ☐ Prepare equipment and load cleaning cart for the number of operating rooms to be cleaned
- ☐ Roll cart to outside OR and await circulator's direction to enter and begin cleaning process
- ☐ Prepare yourself by dressing in the appropriate attire and personal protective equipment (PPE).

  For the most up to date recommendations, consult the most recent printing of the AORN publication, Perioperative Standards and Recommended Practices.

Cleaning Process:

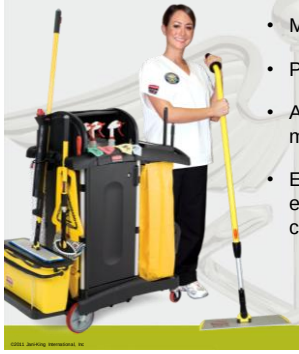
- ☐ Remove all soiled linen
- ☐ Remove medical waste and reline containers
- ☐ Pick up trash and large debris with Lobby Pro Wet/Dry Dust Pan and Lobby Pro Wand
- ☐ Remove all other waste and reline containers
- ☐ Clean overhead light with Green Rubbermaid HYGEN™ microfiber cloth
- ☐ Clean Mayo Stands and tray tables with Green Rubbermaid HYGEN™ microfiber cloth
- ☐ Clean OR Table with Red Rubbermaid HYGEN™ microfiber cloth
- ☐ Place wet floor sign in doorway
- ☐ Clean entire operating room floor with a Rubbermaid Pulse™ mop, Rubbermaid HYGEN™ microfiber damp mop pad and a disinfectant approved by your supervisor for this application.
- ☐ Inspect for cleaning errors & review checklist
- ☐ Remove wet floor sign when floor is dry
- ☐ Notify circulator that OR is ready for the next case
- ☐ Remove all personal protective equipment (PPE) and thoroughly wash hands, being careful to avoid self contamination.

NOTE: This Checklist is a recommendation of best practices within the industry. We also recommend referencing AORN's Perioperative Standards and Recommended Practices and OSHA Guidelines. Always use the cleaning chemical(s) specified by your supervisor and follow the chemical manufacturers use directions.

The AORN Seal of Recognition has been awarded to Rubbermaid HYGEN™ and does not imply that AORN approves or endorses any product or service mentioned in any presentation, format or content. The AORN Recognition program is separate from the AORN, ANCC Accredited Provider Unit and therefore does not include any CE credit for programs.

Rubbermaid Commercial Products HYGEN SYSTEM

Right Equipment



- Microfiber
- Proper electrical equipment.
- Approved floor care maintenance products
- Equipment must be new to ensure infection control compliance is adhered too.

Right Equipment (cont)

- Ensure that all electrical safety requirements are in place on electrical equipment.
- The has been reviewed to ensure risk issues are mitigated and to reassure the client of a successful program.
- Storage areas maintained
- Lastly equipment is standardized for simplicity of training, and operations.

Use of Microfiber in Surface Cleaning Disinfection

- The us of microfiber mopping system and microfiber cloths eliminates the use of a traditional mop-and-bucket system and cotton clothes that spread organisms around the surface. After selecting the product dilution level on the bottle or canister, environmental services dip method and apply cleaning and disinfection solution directly on surfaces and then wipe or mop the area. With some novel microfiber mopping systems and clothes, the product is applied directly onto the floor through a canister connected to the mopping tool that dispenses cleaning solution to the floor.

Use of Microfiber in Surface Cleaning Disinfection

- This system of applying the product eliminates the need for EVS Staff to stop and change the bucket solution between cleaning tasks or areas. Staff carry lightweight microfiber mop heads and cloths with them and change the mop head or cleaning cloth in between areas.

How is Microfiber Green?

- Microfiber recognized by LEED as an essential part of a sustainability program
  - Now required for LEED certification

Compared to Traditional Textiles, Rubbermaid HYGEN™ Microfiber:

- Lasts Over 6x Longer for a 90% cost savings
- Reduces Chemical Usage 95%
- Reduces Water Usage 90%

There are Different Types of Microfiber

GOOD

Monofilament Microfiber:
Cannot be split, one material (usually polyester), larger size 20-40 microns

BETTER

Unsplit Blended Microfiber:
Blend of nylon and polyester, medium size 15-20 microns

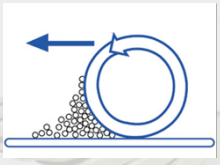
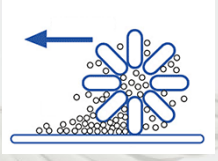
BEST

Split Blended Microfiber:
Blend of 2 materials that are mechanically and chemically split 16x to create ultra fine 3-5 micron filaments- Smaller IS better and this microfiber is the smallest in the industry!

The Split Microfiber Cleaning Advantage

Hook feature on **split** microfiber traps dirt, bacteria and mold spores- the fibers get into microscopic crevices in the surface being cleaned

Split Microfiber Cleaning Advantage

Traditional Mop Fiber	Split Blended Microfiber
	
• Thick cotton and rayon fibers tend to push the dirt around • No hooks or pores available to pick up dust, bacteria & mold spores • *Unsplit microfiber may also perform this way!*	• Spaces around split microfiber strands trap dirt and bacteria • Hooks trap and retain dust, bacteria & mold spores • Superior cleaning performance!

Split End Microfiber Advantage

RCP Microfiber Removes Dangerous Bacteria & Viruses with NO CHEMICALS!

✓3rd Party independent lab testing
✓Results specific to RCP microfiber
✓Surface contaminated with bacteria or virus mixed with soil and allowed to dry
✓Surface wiped with 5 strokes, 1 per second

% of Bacteria & Viruses Removed with **water only** (no disinfectant)

	Staph (MRSA) Staphylococcus aureus	E-Coli Escherichia coli	Salmonella Salmonella cholerasuis	Norovirus Feline Calcivirus
Microfiber Cloth on Stainless Steel	99.54%[1]	99.85%[1]	>99.99%[1]	89.4%[2]
Traditional Cotton Cloth on Stainless Steel	30%[3]			23.4%[2]

(1) NOVA Biologicals, Paul J. Pierce, PhD 05-Ge... (Req. M20375; 2) Disinfection, Sterilization and Preservation, 5th ... Maria A. Rutala, PhD, MPH, 2007 ; 3) UC Davis ... Newsnews letter, June 23, 2006

Rubbermaid HYGEN™

Microfiber Removes Microbes

Always follow CDC guidelines when cleaning a health care facility.

- 3rd Party independent clinical test (real world)

	% of Microbes Removed with **Detergent Cleaner**	% of Microbes Removed with **Quat Disinfectant**
Microfiber Damp Mop	**94.5%**	**95.31%**
Traditional Mop Bucket and Cotton String Mop	**67.75%**	**94.84%**

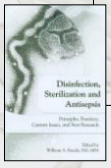
Sources: Disinfection, Sterilization and Antisepsis, Editor William A. Rutala, PhD, MPH, 2007

CDS011-0028

Split End Microfiber Advantage

Other Key Dr. Rutala Findings To Share:

- Post laundering, microfiber found free of microbial contamination
- When microfiber system used, the use of disinfectant does not significantly improve removal of microorganisms compared with the use of a detergent cleaner



Dr. William A. Rutala
Uni. of North Carolina

Sources: Disinfection, Sterilization and Antisepsis, Editor William A. Rutala, PhD, MPH, 2007

CDS011-0028

Why Bleach Tolerance Is Important

A chlorine bleach (hypochlorite based) solution is the only CDC (Centers for Disease Control) recognized disinfectant for use in areas where Clostridium difficile (*C. diff*) may be present[1].

– In a survey of EVS directors at the 2008 ASHES conference, preventing *C. diff.* outbreaks was one of their top, undressed concerns of C. diff. outbreaks.

C. Difficile spore

[1] Sehulster L.M. et.al. *Guidelines for Environmental Infection Control in Health care Facilities. Recommendations from CDC and the Healthcare Infection Control Practices Advisory Committee* (HICPAC). 2004. pp. 84-85

CDS011-0028

Microfiber Easily Disinfected During Laundering

- CDC Requires either hot water or bleach in health care facilities[1]
  - >160ºF water for >25 minutes –OR-
  - Chlorine Bleach
- Microfiber that meets both hot water and bleach requirements

Source: 1) "CDC Morbidity & Mortality Report", June 6, 2003, Volume 52

Microfiber Cloths

- Cleans 25% better than our previous generation, industry leading, microfiber cloths
- Compatible with bleach based cleaning solutions- the only CDC recommended chemical for cleaning *c. Difficile* rooms in health care

Right Equipment (cont)

Right Chemical

- EPA Registered Hospital Disinfectant and the correct cleaning Products
- Standardization for training and risk management
- Meets all EPA and OSHA guidelines
- Storage areas maintained

HAI's and Surface Disinfection

- When deciding what disinfectant to use, first consider what organisms are likely sources of an HAI and how they can be transferred.
- For example, small, non-enveloped viruses such as norovirus and rhinovirus can be the source of an HAI and are communicable through environmental surfaces that are not properly disinfected.
- Therefore, use of disinfectants that can kill these pathogens is best practice. Many facilities use disinfectants not capable of killing these small non-enveloped viruses, which doesn't address the risk from the surfaces.

HAI's and Surface Disinfection

- Other intermediate-level pathogens, such as TB, are not transmittable through surface contact, so it is not necessary to use disinfectants with this kill claim.

HAI's and Surface Disinfection

- Another step to developing a successful surface-level disinfection program is using products with an appropriate contact time. Follow the manufactures recommendation on dwell time

HAI's and Surface Disinfection

- However, the pressure of enhanced throughput limits the amount of time an EVS worker is able to spend in the room, so it is beneficial to use a disinfectant with a contact time of 5 minutes or less, so that the surface stays wet for the entire dwell time, thus ensuring the disinfectant is used in compliance and that the surface is properly disinfected.

Efficacy of Disinfectants

- Many disinfectants are used alone or in combinations (e.g., hydrogen peroxide and peracetic acid) in the health-care setting. These include alcohols, chlorine and chlorine compounds, formaldehyde, glutaraldehyde, *ortho-phthalaldehyde, hydrogen peroxide, iodophors, peracetic acid, phenolics, and quaternary ammonium compounds. Commercial formulations based on these chemicals are considered unique products and must be registered with EPA or cleared by FDA.*

Efficacy of Disinfectants

- *In most instances, a given product is designed for a specific purpose and is to be used in a certain manner. Therefore, users should read labels carefully to ensure the correct product is selected for the intended use and applied efficiently.*

Right Time

- Using the other 4 R's will achieve the Right Time.
- Providing time for the daily, weekly, monthly and annual project schedule.
- Following the allotted time to provide the proper surface disinfection.
- Using the correct production rates to achieve the Right Time

Healthcare Services

QUESTIONS