

Infection Control in Collegiate Wrestling Part I

This presentation was developed
with a grant from the NCAA by:

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Ringworm

Impetigo

SOUND FAMILIAR?

Herpes Gladiatorum

Staph Infections

Reduce the Risks of
Disease Transmission through....

PREVENTION

The Prevention Program Includes...

- **Education on Infection Control**
- **Encouraging good Hygiene Practices among student athletes**
- **Proper Cleaning & Disinfection of athletic equipment**
- **Proper Handling of Blood and Other Potentially Infectious Materials (OPIM)**

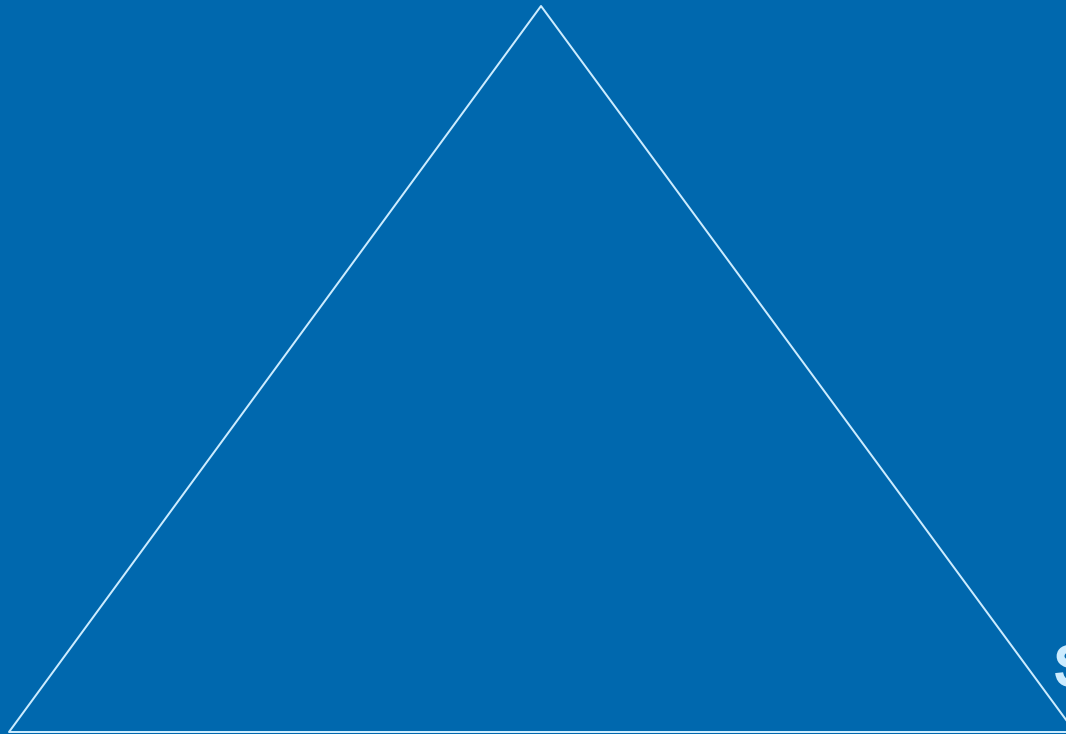
Infection Control

“Getting Back to the Basics”

Epidemiologic Triangle

Environmental

Wrestling Mats/Athletic Equipment, Locker Rooms, Showers,
Whirlpool Tubs, & Wrestlers Wrestling with Infections



Causal Agent

Ringworm, Staph,
Herpes Gladiatorum

Susceptible Host

Wrestlers, Coaches,
Athletic Trainer

Causative Agent

☀ A causal agent is biological, physical or chemical entity capable of causing disease.

Bacteria – Ex: Staph Infections (MRSA)

*Antibiotics

Virus – Ex: Herpes Gladiatorum

*Antiviral Medication

Fungus – Ex: Ringworm

*Antifungal Medication

Environment

- **The environment is all of the external conditions that affect the life, development and survival of the causal agent.**
- **Ex: Wrestling Mats/Athletic Equipment, Locker Rooms, Showers, Whirlpool Tubs, & Wrestlers Continuing to Wrestle with Infections**

Susceptible Host

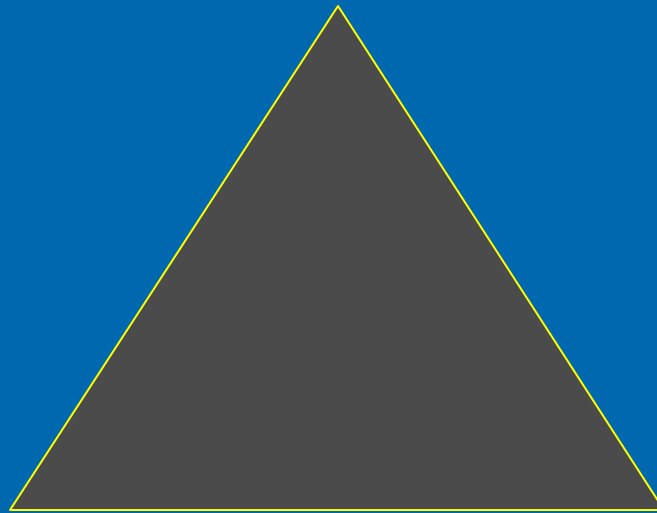
A person or animal, lacking an effective resistance to a particular pathogenic agent.

“One Who Gets Kicked While They Are Down”



By altering one component of the triangle, one or more of the other components may be changed.

Wrestling Mats/Athletic Equipment, Locker Rooms, Showers,
Whirlpool Tubs, & Wrestlers Wrestling with Infections



Herpes, Ringworm
Staph Infections

Wrestlers, Coaches
Athletic Trainer

Alter the Environment

Student Athlete Hygiene Practices

HAND HYGIENE

Inspect Student Athletes

- ✿ **Inspect athlete's skin for potential skin infections prior to practice or competition**
- ✿ **Athletes with rashes or other potentially infectious skin infections seek medical attention**
- ✿ **No wrestling with skin infections**

Educate Student Athletes

☀️ Not to:

Pick, Squeeze, or Scratch

scabs, abrasions, bumps or
rashes

Additionally....

- ✿ **Show**er after practice or competition
- ✿ Refrain from sharing wrestling gear, towels, razors, water bottles
- ✿ Wash wrestling gear daily
- ✿ Hepatitis B vaccination
- ✿ **NEVER** allow chemicals for cleaning or disinfection to be used on the skin

Infection Control
in
Collegiate Wrestling
Part II

Cleaning and Disinfection of Equipment & Environmental Surfaces

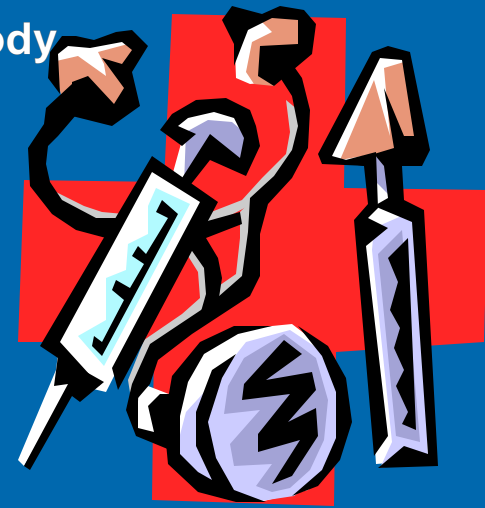
Choose the Right Chemical

Spaulding's Classification System

Instruments, Medical Device-Equipment are divided into three categories for disinfection or sterilization.

✿ Critical Instruments or Devices

- Instruments or objects directly introduced into the body
- Examples : Needles, Scalpels
- MUST BE STERILIZED



✿ Semi-critical Items

- Instruments or objects that may come in contact with mucous membranes, but do not penetrate body surfaces.
- Examples: Respiratory equipment, Endoscopes, Vaginal Specula
- SHOULD BE STERILIZED, MINIMUM HIGH LEVEL DISINFECTION (HLD)

Non-critical Items

- ✿ Not normally in contact with individuals, if they do, it is with intact skin.

Examples: Wrestling Mats

- ✿ Disinfection with an INTERMEDIATE OR LOW-LEVEL DISINFECTANT is appropriate and recommended.

DESCENDING ORDER OF RESISTANCE TO GERMICIDAL CHEMICALS

Sterilization

BACTERIAL SPORES

Bacillus Subtilis
Clostridium Sporogenes

HLD High Level Disinfection

MYCOBACTERIA

Mycobacterium Tuberculosis Var. Bovis
'TB'

ILD Intermediate Level

NONLIPID OR SMALL VIRUSES

Poliovirus
Coxsackie Virus
Hepatitis A Virus
Rhinovirus 'Common Cold'

FUNGI

Trichophyton Spp. 'Nail Fungus'
Cryptococcus Spp.
Candida Spp. 'Yeast'

LLD Low Level

VEGETATIVE BACTERIA

Pseudomonas Aeruginosa
Staphylococcus Aureus 'Staph'
Salmonella Choleraesuis 'Gastroenteritis'

LIPID OR MEDIUM-SIZED VIRUSES

Herpes Simplex Virus 'Cold Sores'
Cytomegalovirus 'CMV'
Respiratory Syncytial Virus 'RSV'
Hepatitis B Virus 'HBV'
Human Immunodeficiency Virus 'HIV'

Two Levels of Disinfection for Environmental Services

Intermediate Disinfection (ILD) – Inactivate Mycobacterium Tuberculosis var. Bovis in addition to all other organisms below it.

ex. 3% Hydrogen Peroxide, 70% Isopropyl, Phenolics, Iodophors, and the other ready to use tuberculocidal solutions

Low-Level Disinfection (LLD) – Inactivate most forms of bacteria, some fungi, some viruses.

ex. Quaternary Ammonium Solutions

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(3) Factors that can influence the disinfection process

Soil and the Chemical can combine





CAUTION



Rubbermaid

Soil can precipitate out active
chemical components

Hard Water

Calcium and Magnesium

Follow Instructions for Chemical Use

- **All Chemical Germicides and Bleach Solutions**
- **MIX Appropriately**
- **USE Appropriately**
- **READ and FOLLOW LABELS**

Soil coats organism preventing
chemical from getting to the
organism

EX: Blood Coats organisms
such as HIV/HBV making it
more difficult for disinfectants to
kill the organism

CLEANING

Relation to Environmental Services

- ✿ **2 types of disinfectants:**
Intermediate and Low-Level
- ✿ **Utilize TUBERCULOCIDAL solutions if potential for bloodborne pathogens exist**
- ✿ **Bleach solutions diluted 1:10 may be appropriate solutions on a pre cleaned surface**

LYSOL[®] Brand II IC[™] Disinfectant Spray

example



- Effective against HIV-1 (AIDS Virus) and hydrophilic viruses such as Poliovirus Type 1 and Hepatitis A
- Kills 99.9% of Staphylococcus aureus and Klebsiella pneumoniae in 30 seconds and eliminates odors on hard, nonporous surfaces
- Formula is **Tuberculocidal**, Virucidal, Fungicidal and Bactericidal
- Prevents odors and growth of damaging mold and mildew
- Meets the requirements of the OSHA Bloodborne Pathogens Standard for Decontamination
- EPA Registration No. 777-72-675

Bacteria		Viruses
Salmonella enteritidis Salmonella choleraesuis Salmonella paratyphi Salmonella schottmuelleri Shigella dysenteriae Enterobacter aerogenes Escherichia coli Proteus vulgaris Pseudomonas aeruginosa Klebsiella pneumoniae Neisseria elongata Serratia marcescens Staphylococcus aureus Streptococcus epidermidis Streptococcus salivarius Streptococcus pyogenes Streptococcus faecalis	Corynebacterium diphtheriae Mycobacterium tuberculosis var bovis Listeria Monocytogenes Campylobacter jejuni Staphylococcus aureus (Gentamicin & Methicillin resistant - MRSA) Proteus mirabilis Pseudomonas cepacia Pseudomonas putida Enterococcus faecalis <p style="text-align: center;">Fungi</p> Candida albicans Trichophyton mentagrophytes Aspergillus niger	Herpes Simplex Type 1 Herpes Simplex Type 2 Adenovirus Type 2 Influenza A2/Japan/305/57 Influenza Type B/Hong Kong/5/72 Vaccinia Rhinovirus Type 39 HIV-1 (AIDS virus) Rotavirus Poliovirus Type 1 Respiratory Syncytial Virus Echovirus Type 12 Cytomegalovirus Hepatitis A

LYSOL® Brand IC™ Quaternary Disinfectant Cleaner (Concentrate)

example



- Effective cleaner and disinfectant that kills odor-causing bacteria.
- Highly concentrated, cost-effective formula dilutes at 1:256.
- Virucidal, Fungicidal and Bactericidal***.
- Effective against HIV-1, VRE, MRSA and other gram-positive as well as gram-negative microorganisms.
- Neutral pH in use.
- EPA Registration No. 47371-129-675

* In the presence of 5% organic matter

Bacteria		Viruses
Salmonella choleraesuis	Fusobacterium necrophorum	Herpes Simplex Type 1
Salmonella enteritidis	Pseudomonas aeruginosa	Herpes Simplex Type 2
Staphylococcus aureus	Listeria monocytogenes	Vaccinia
Acinetobacter calcoaceticus	Klebsiella pneumoniae	Influenza A/Hong Kong
Salmonella typhi	Pasteurella multocida	HIV-1 (AIDS virus)
Serratia marcescens	Pseudomonas aeruginosa	Adenovirus type 4
Salmonella typhimurium	Proteus mirabilis	Respiratory Syncytial Virus (RSV)
Streptococcus pyogenes	Staphylococcus aureus	Transmissible Gastroenteritis Virus (TGE)
Shigella flexneri	Shigella sonnei	Rubella (German Measles)
Streptococcus faecalis	Staphylococcus aureus	Infectious Bronchitis (Avian IBV)
Enterobacter aerogenes	Staphylococcus epidermidis	
Streptococcus faecalis		
Proteus vulgaris		
Chlamydia psittaci	Fungi	Animal Viruses
Enterococcus faecalis	Candida albicans	Canine Distemper
Bordetella bronchispetica	Aspergillus niger	Feline Leukemia
Escherichia coli	Trichophyton mentagrophytes	Infectious Bovine Rhinotracheitis
Enterobacter cloacae		Feline Picornavirus
		Pseudorabies
		Rabies

LYSOL[®] Brand IC[™] Ready to Use Disinfectant Cleaner

example



- Kills 99.9% of bacteria in 30 seconds on hard nonporous surfaces
- Meets the requirements of the OSHA Bloodborne Pathogens Standard
- Effective against **Tuberculosis** (TB), Poliovirus, and Human Immunodeficiency Virus Type 1 (HIV-1) (Aids-Virus)
- Contains no bleach, phenol, alcohol, or harsh abrasives
- EPA Registration No. 675-55

Bacteria

Salmonella choleraesuis
Staphylococcus aureus
Pseudomonas aeruginosa
Enterococcus (Streptococcus) faecalis
Escherichia coli
Mycobacterium tuberculosis var bovis BCG
Enterococcus faecium
Streptococcus pyogenes
Campylobacter jejuni

Fungi

Trichophyton mentagrophytes

Viruses

Influenza A2 (Japan)
Herpes Simplex Type 1
Herpes Simplex Type 2
Rhinovirus Type 39
Rotavirus
Respiratory Syncytial Virus (RSV)
HIV-1 (AIDS Virus)
Poliovirus Type 1
Echovirus 12
Adenovirus Type 2
Hepatitis A Virus
Parinfluenza

Choosing A Disinfectant...

- ✿ **Based upon “What it Does,” not by Brand Name or Title**
- ✿ **Factors to Consider:**
 - **Use**
 - **Efficacy**
 - **Acceptability**
 - **Safety**
 - **Cost**

Routine Cleaning & Disinfection of Mats & Equipment

- Follow a written procedure

- *Mop mats prior to use

- *Clean from the back of the mat toward the front using a clean, laundered mop

- Educate all individuals responsible for cleaning & disinfecting mats and equipment

Routine Cleaning & Disinfection Cont...

☀ Use a Low Level Disinfectant

Virucidal, Fungicidal and Bactericidal

*Follow instructions for use

*MSDS sheets on chemical germicides

*Label all secondary chemical bottles

☀ Laundry Mops & Cleaning Cloths Daily

☀ Use additional measures to prevent mat contamination i.e., limit street shoes on mats, limit food/drink in wrestling room, disinfection of wrestling shoes prior to walking on mats

Clean up of Blood and OPIM

“Other Potentially Infectious Materials”

Observe Standard Precautions

Combination of Universal Precautions and Body Substance Isolation

Wear personal protective equipment in accordance with OSHA's standards, and facility recommendations:

Gloves are minimum protection

*Latex Free Gloves may be used to avoid latex allergy

*Goggles, Mask, Fluid Resistant Gown if chance of splash or splatter

Blood & OPIM cont.

- Follow a written procedure
- Educate all individuals responsible for cleaning up Blood & OPIM
- Hepatitis B vaccine available to individuals exposed to blood



Never Spray Wrestlers with Chemical Germicides

Blood & OPIM cont.

- ✿ Antiseptics or chemicals intended for use on the skin, should be used to remove blood or OPIM from intact skin

***NEVER SPRAY ATHLETES WITH CHEMICAL DISINFECTANTS**

***Wipe blood from intact skin during competition with antimicrobial wipes and encourage athlete to wash with soap and water after competition**

Blood & OPIM cont.

- ☀ Surfaces must be cleaned before they can be disinfected

- ☀ Use a 1:10 Bleach or Tuberculocidal solution for disinfection

Note - “OSHA standards states that EPA-registered disinfectants that are labeled as effective against HIV and HBV would be considered appropriate disinfectants for bloodborne pathogens, “provided such surfaces have not become contaminated with agent(s) or volumes of or concentrations of agent(s) for which higher level disinfection is recommended.” Thus, when bloodborne pathogens other than HBV or HIV are of concern, OSHA continues to require the use of EPA-registered tuberculocidal disinfectants or 1:10 or 1:100 bleach solutions.”

Edens,1997

- ☀ Infectious waste should be handled according to with state and local regulations

See also OSHA's Bloodborne Pathogens Standard #29CFR1910.1030

? Chemical, bottle not labeled

No antiseptic

No gloves

Improper container for contaminated waste

No Absorbent towels



? Chemical, bottle not labeled



No antiseptic



No gloves

No container for contaminated waste



Procedure For Cleaning up Blood and OPIM

Gloves

Absorbent Towels

Tuberculocidal Solution

Biohazard Bag

Hand Sanitizer

Antiseptic Wipes



Conclusion.....

Developing an infection control program providing education, improving hygiene practices among athletes, utilizing recommended practices for cleaning/disinfection & handling of Blood/OPIM will reduce the risks of disease transmission among student athletes.

Selected References

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- U. S. Department of Labor Occupational Safety & Health Administration (OSHA). (2001). *Bloodborne pathogens and needlestick prevention*. Retrieved October 29, 2003, from <http://www.osha.gov/SLTC/bloodbornepathogens/index.html>