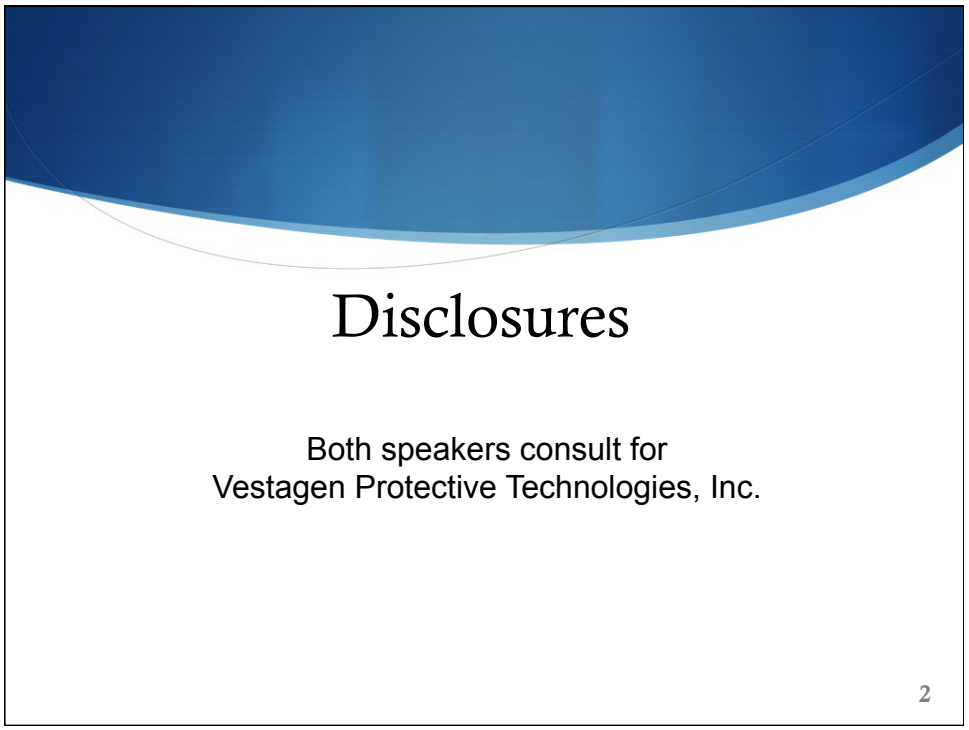
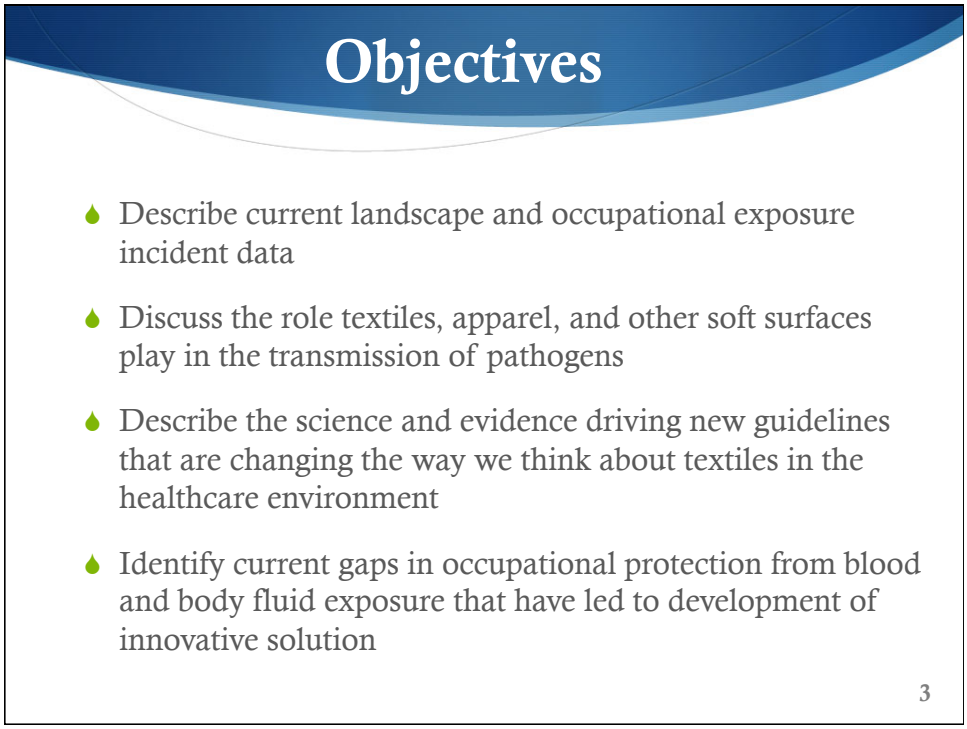
Exploring the Role of Environmental Surfaces in Occupational Infection Prevention
Barbara DeBaun, Cynosure Health, and Dr. Amber Hogan Mitchell, International Safety Center
A Webber Training Teleclass



Hosted by Dr. Lynne Sehulster, CDC, Atlanta
www.webbertraining.com


Objectives
Describe current landscape and occupational exposure incident data
Discuss the role textiles, apparel, and other soft surfaces play in the transmission of pathogens
Describe the science and evidence driving new guidelines that are changing the way we think about textiles in the healthcare environment
Identify current gaps in occupational protection from blood and body fluid exposure that have led to development of innovative solution
3


Current Landscape

"No, it's not a line of Jackson Pollock designs. It's an arterial spray from Bob Barnes in room 12."

5

"Protecting Our Healthcare Workers Now"

"From the first moment a patient comes through a hospital's doors to the time that healthcare staff identify the need for exposure protection, a large window is left open—leaving a sizable gap in safety. As any healthcare worker can attest, body fluid splashes and splatters of blood, urine, vomit and so on can occur when least expected. These are not only unpleasant events; these body fluid splashes can carry pathogenic organisms."

Modern Healthcare, Nov 2014

6

"A catalytic event like the Ebola outbreak can draw our attention to a longtime problem. If nothing else, the Ebola crisis has shown us that healthcare workers have not hesitated to care for patients under the most dire of circumstances—they have given their all to meet the responsibility of their profession."

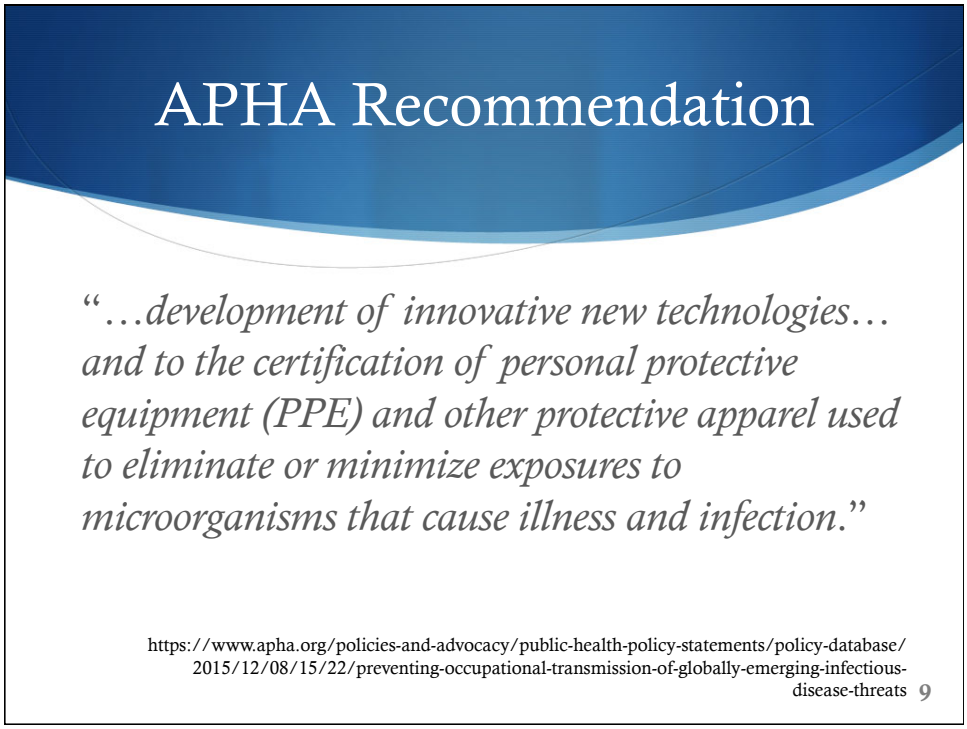
http://www.modernhealthcare.com/article/20141121/NEWS/141129998

7

APHA Policy Statement

"The cases of Ebola virus disease (EVD) in the United States remind us that infectious disease threats continue to challenge our public health's, health system's and communities' capacities to adequately protect the population from exposure to microorganisms (bacteria, viruses, and spores) that may cause illness or infection and generate stigma and fear."

8


APHA Recommendation
"…development of innovative new technologies… and to the certification of personal protective equipment (PPE) and other protective apparel used to eliminate or minimize exposures to microorganisms that cause illness and infection."
https://www.apha.org/policies-and-advocacy/public-health-policy-statements/policy-database/2015/12/08/15/22/preventing-occupational-transmission-of-globally-emerging-infectious-disease-threats
9


Infectious & Biological Threats are More Prevalent than Ever… and More People are Accessing Healthcare Systems Around the World
10

PATHOGENS TRANSMITTED THROUGH OCCUPATIONAL EXPOSURE

- Blastomycosis dermatitidis
- Brucellosis abortus
- Corynebacterium diphteriae
- Creutzfeldt-Jakob disease
- Cryptococcosis neoformans
- Dengue virus
- Ebola
- Hepatitis B
- Hepatitis C
- Hepatitis G
- Herpes Simplex virus
- Herpes Zoster virus
- HIV
- Leptospira icterohaemorrhaglae
- Malaria
- Mycobacterioum marinum
- Mycobacterium tuberculosis
- Mycoplasma caviae
- Necrotizing casciitis
- Plasmodium falciparum
- Rickettsia rickettsii
- Sporotrichum schenkii
- Streptococcus pyogenes
- Staphylococcus aureus
- Syphilis
- Treponema pallidum
- Toxoplasma gondii
- Tuberculosis

11

Hepatitis B

Globally:

2 BILLION People

3 MILLION Refugees

Thanks for Slides from Elise Handelman & Elayne Phillips. BD & McKesson

12

Hepatitis C

"CDC Warns on Rising Cases of Hepatitis C"

WSJ, May 8, 2015

13

"Hepatitis C killed almost 20,000 Americans in 2013. More of us died from hepatitis C than from 60 other infectious diseases combined, including HIV and TB, with 'baby boomers' at greatest risk."

Summary source: Preidt, R. Hepatitis C Now Leading Infectious Disease Killer in U.S. HealthDay; 2016 May 4
Available from: https://www.nlm.nih.gov/medlineplus/news/fullstory_158651.html

14

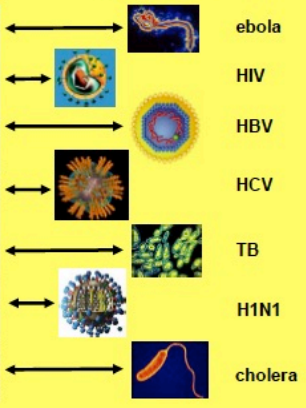
HIV

- Today, 1.2 Million People in the US are living with HIV.
- 1 in 5 don't know they are infected and can pass the virus to others.

CDC 2011

15

Healthcare Workers
frontline engagement with human pathogens



16

Emerging and Re-emerging Pathogens

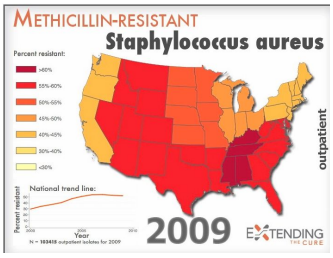
- Ebola
- Zika
- Diseases in Conflict Countries
- Measles
  - New occupational cases depending on level of immunity
- Co-Morbidities with Multidrug Resistant Organisms like MRSA
  - Patients with now chronic disease like HCV, HIV with increased prevalence of MRSA
  - Healthcare worker colonization

17

MRSA Colonization

- *S.aureus* carriage has been known to be one of the most strongly associated risk factors for subsequent infection
- Presence of MRSA nasal colonization can provide an indication of higher risk for subsequent infection

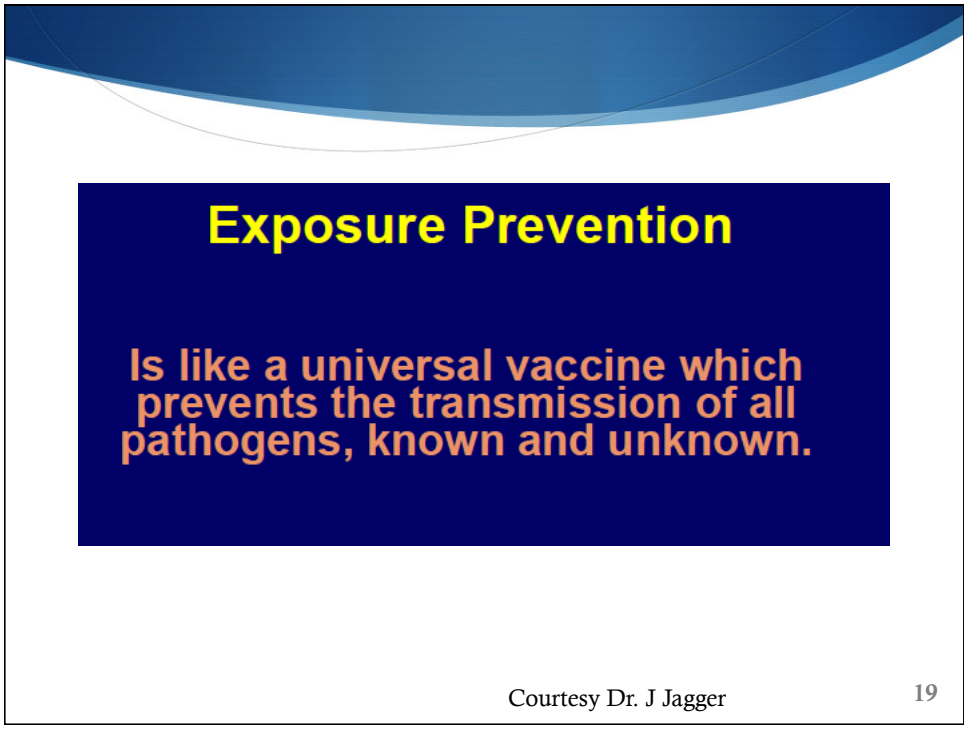
Prevalence for Nasal Carriage		
General Population:	**First Responders:**	**Healthcare Workers:**
0.8%- <2%	EMS personnel[1]: 4.6%	Hospital: 4.6%
	Firefighters[2]: 22.5%	Non-hospital: 3.4%
Source: Mainous *et al.*, 2006,Gorwitz RJ *et al.*, 2008	Sources: 1. Stevenson *et al.* 2010 2. Roberts et al., 2011	Source: Albrich & Harabarth, 2008



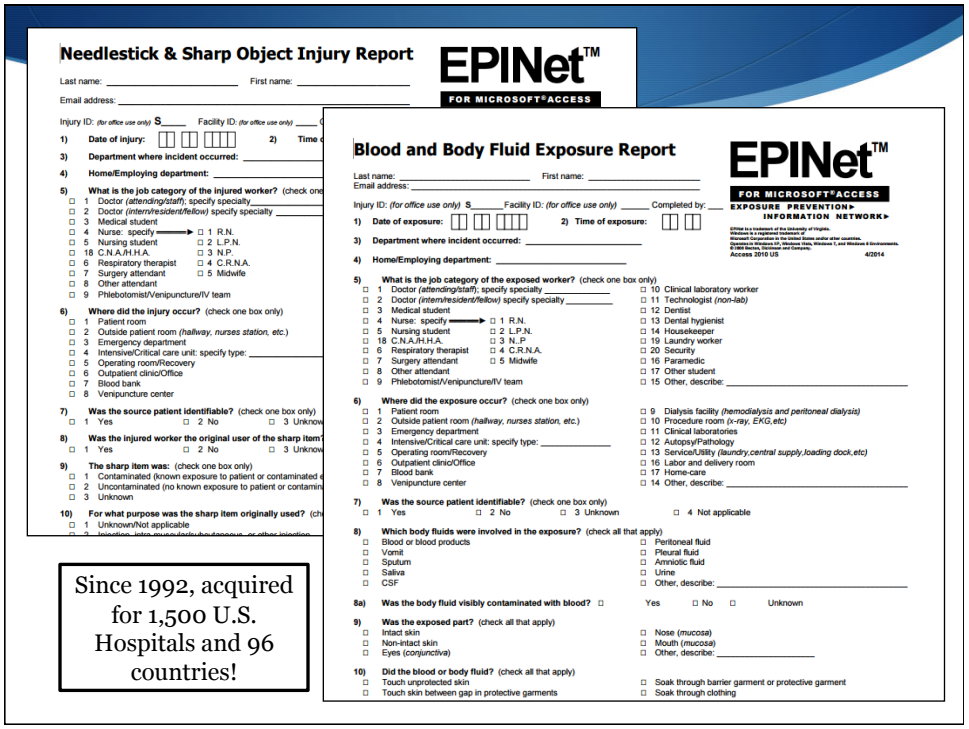
THE UNIVERSITY OF ARIZONA | MEL AND ENID ZUCKERMAN COLLEGE OF PUBLIC HEALTH

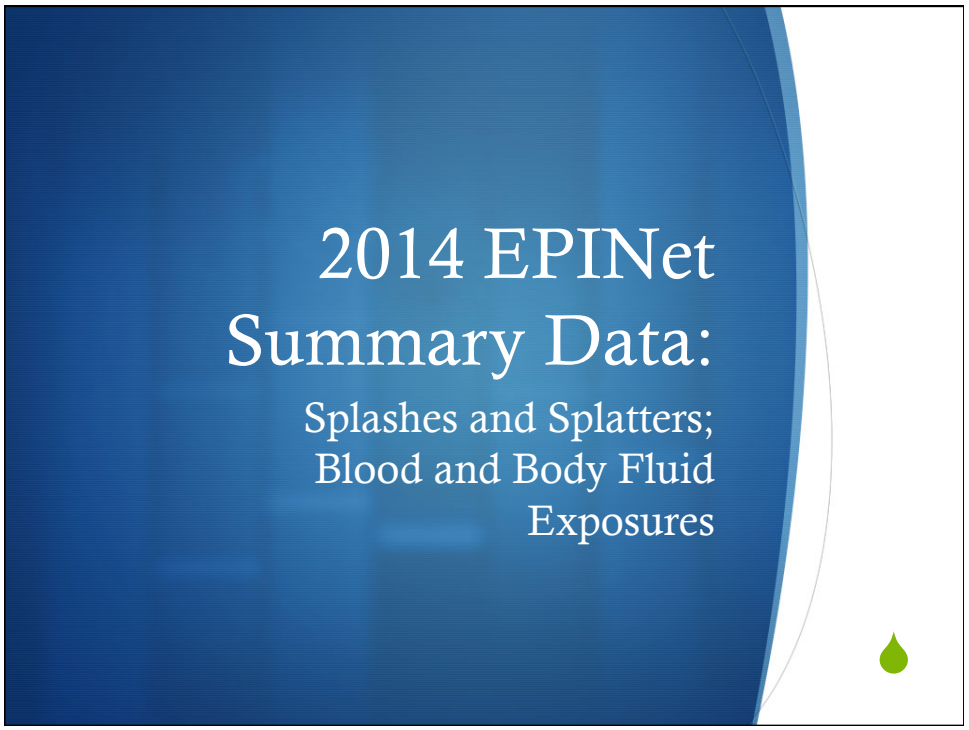
Thank you, Dr. K Reynolds

18


Exposure Prevention
Is like a universal vaccine which prevents the transmission of all pathogens, known and unknown.
Courtesy Dr. J Jagger
19


Occupational Incident Data
2014


Needlestick & Sharp Object Injury Report
EPINet™
FOR MICROSOFT® ACCESS
Blood and Body Fluid Exposure Report
EPINet™
FOR MICROSOFT® ACCESS
EXPOSURE PREVENTION INFORMATION NETWORK
Since 1992, acquired for 1,500 U.S. Hospitals and 96 countries!


2014 EPINet
Summary Data:
Splashes and Splatters;
Blood and Body Fluid
Exposures

2014 Exposure Rate / Ratios

- 8.9 incidents reported per 100 Average Daily Census
- 9.4 / 100 ADC Teaching Facilities
- 8.1 / 100 ADC Non-Teaching Facilities

23

Job Category

What is the job category of the exposed worker?

1	Doctor (attending.staff) specialty	19	8.9%
2	Doctor (intern/resident/fellow) specialty	9	4.2%
3	Medical student	4	1.9%
4	Nurse	115	54.0%
6	Respiratory therapist	5	2.3%
7	Surgery attendant	4	1.9%
8	Other attendant	2	0.9%
9	Phlebotomist/ Venipuncture/ IV team	2	0.9%
10	Clinical laboratory worker	3	1.4%
11	Technologist (non lab)	9	4.2%
15	Other, describe	26	12.2%
16	Paramedic	3	1.4%
18	C.N.A./H.H.A.	10	4.7%
20	Security	2	0.9%

l records: 213

INTERNATIONAL SAFETY CENTER

24

Location of Incident

6. Where did the exposure occur?

1	Patient room/ward	86	40.4%
2	Outside patient room	4	1.9%
3	Emergency department	16	7.5%
4	Intensive/Critical care unit	19	8.9%
5	Operating room/Recovery	36	16.9%
6	Outpatient clinic/Office	11	5.2%
10	Procedure room	6	2.8%
11	Clinical laboratories	4	1.9%
14	Other, describe	20	9.4%
16	Labor and delivery room	10	4.7%
17	Home-care	1	0.5%

Total records: 213

52.6% from Direct Patient Contact
22.4% "Other"
- wound irrigation, vent tube, trach tube, syringe / blood collection splash

25

Exposed Part

9. Was the exposed part?

Intact skin	50	23.1%
Non-intact skin	29	13.4%
Eyes (conjunctiva)	142	65.7%
Nose (mucosa)	8	3.7%
Mouth (mucosa)	17	7.9%
Other exposed parts	22	10.2%

Total records: 216

10. Did the blood or body fluid?

Touch unprotected skin	176	81.5%
Touch skin between gap in protective garment	12	5.6%
Soaked through protective garment	4	1.9%
Soaked through clothing	3	1.4%

Total records: 216

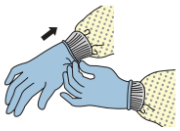
26

Total PPE & Barrier Garment Worn

11. Which barrier garments were worn at the time of exposure?

Single pair of gloves	145	67.1%
Double pair of gloves	20	9.3%
Goggles	3	1.4%
Eyeglasses, (not protective)	8	3.7%
Eyeglasses with sideshields	0	0.0%
Faceshield	3	1.4%
Surgical mask	24	11.1%
Surgical gown	32	14.8%
Plastic apron	1	0.5%
Labcoat, cloth, (not protective)	4	1.9%
Labcoat, other	2	0.9%
Other	36	16.7%

Total records: 216



47% indicated only wearing uniform / scrubs

27

Splash/Splatter Year Comparison

	2012	2013	2014
Total Incidents	174	141	213
Doctor	13.8%	14.9%	13.1%
Nurse	47.7	49.6	54
Eyes (Conjunctiva)	60.0	64.5	65.7
Goggles/Faceshield	7.4	8.5	2.8
Touched Skin	93.1	90.8	87.1
Wore Gown	14.9	18.4	14.8
Patient Room	33.7	28.1	40.4
OR	20.0	20.9	16.9
ED	18.3	14.4	7.5

Increasing Risk for Nurses at Bedside?

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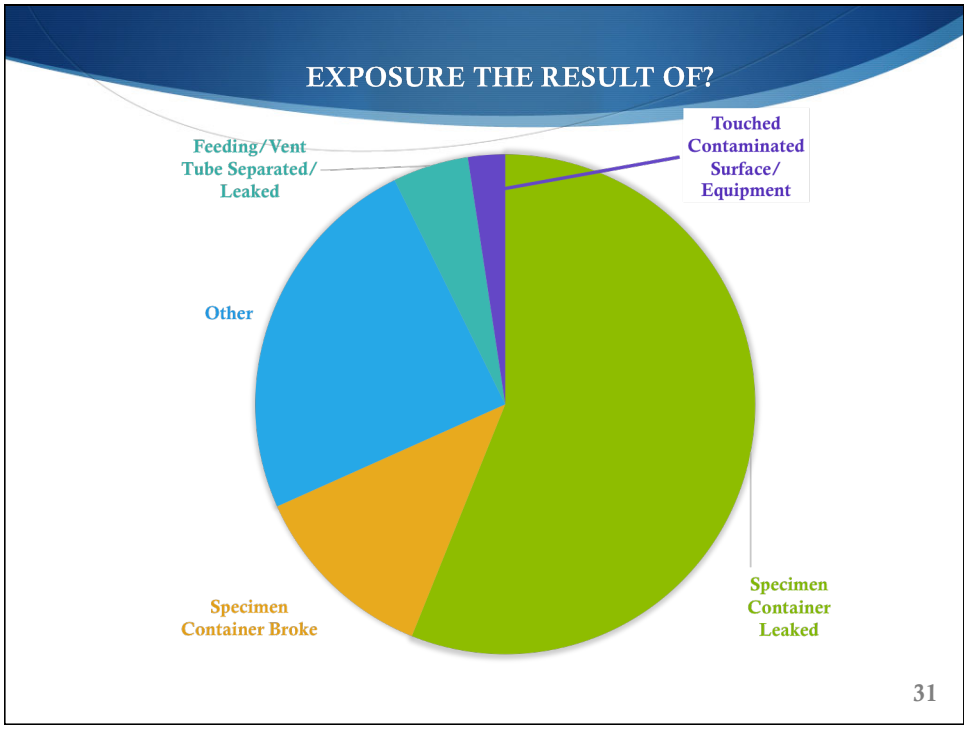
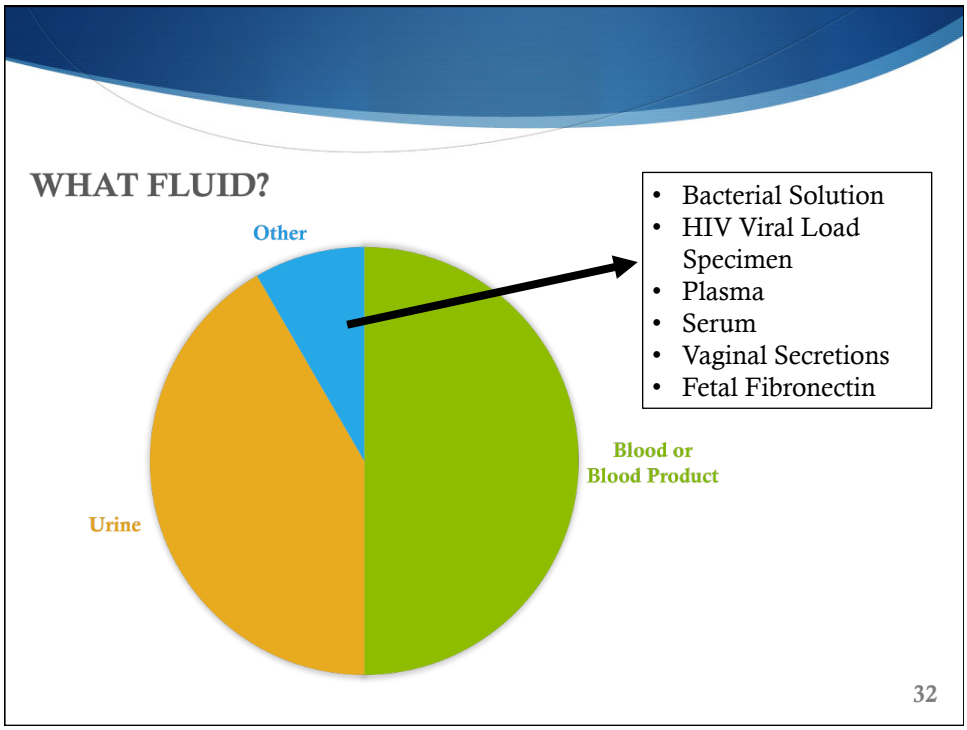
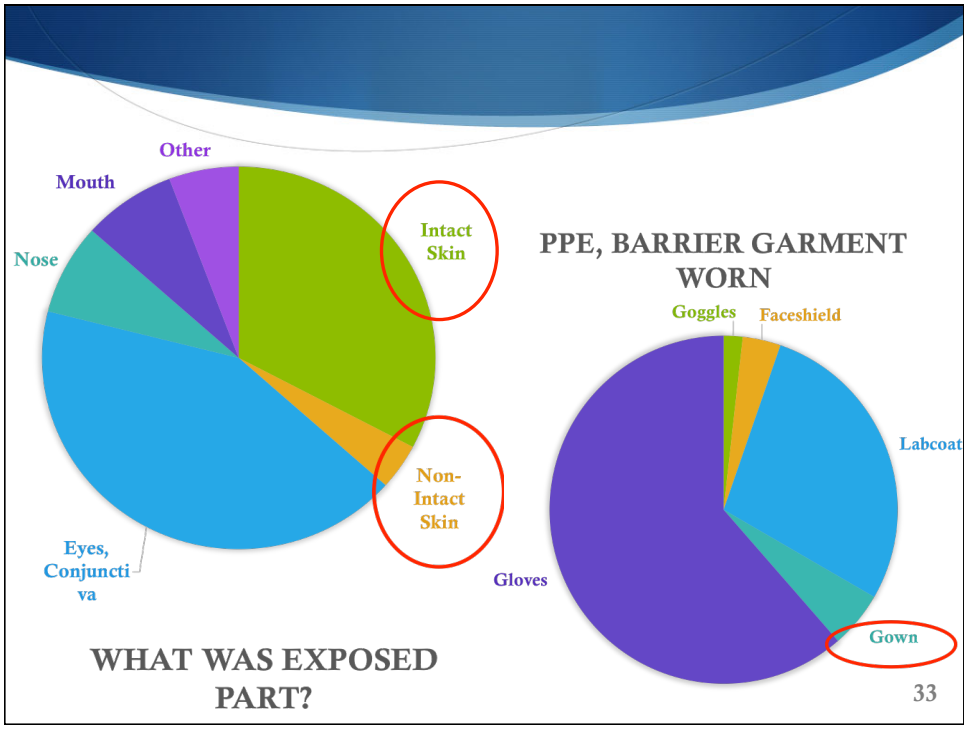
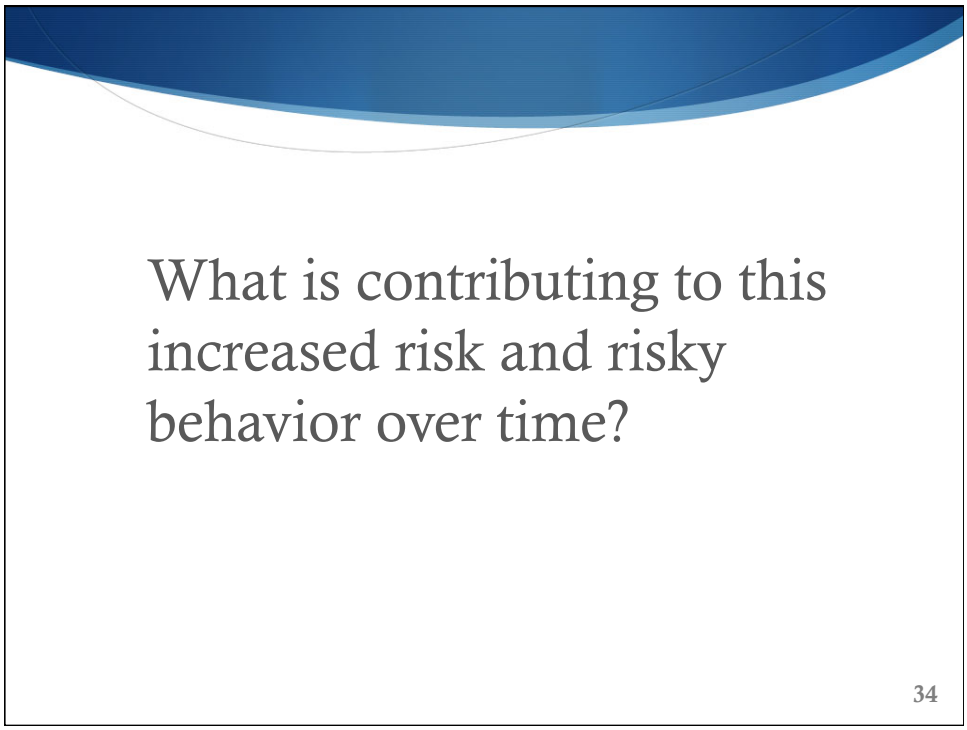
This isn't just bedside care…

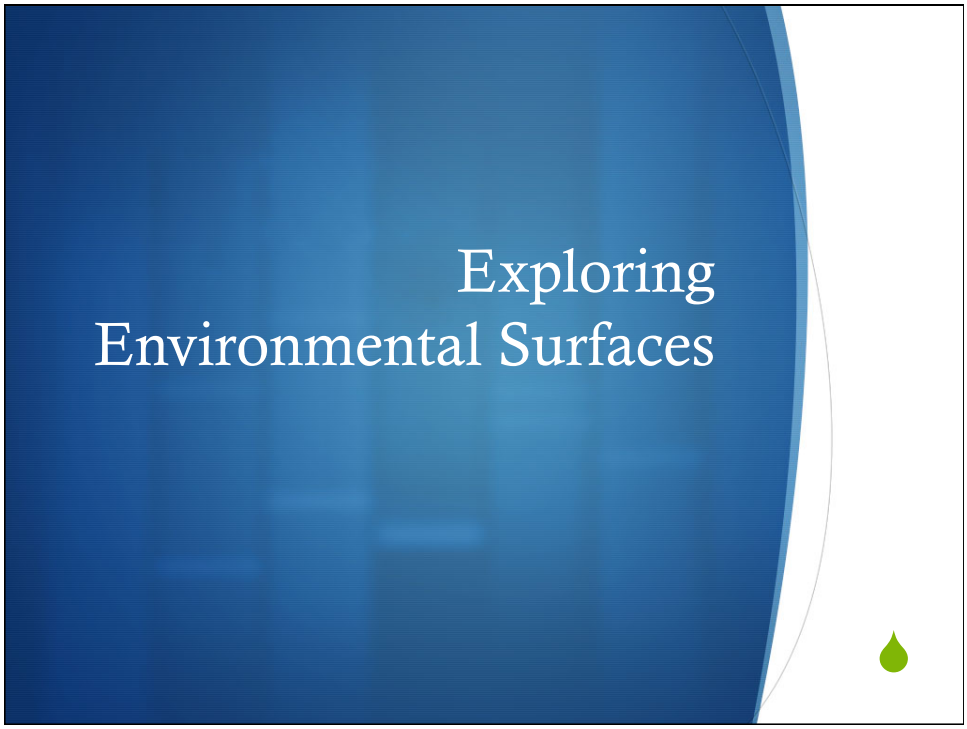

Clinical Lab
Blood & Body Fluid
Splash / Splatter
Incident Data


EXPOSURE THE RESULT OF?
Touched Contaminated Surface/ Equipment
Feeding/Vent Tube Separated/ Leaked
Other
Specimen Container Broke
Specimen Container Leaked
31

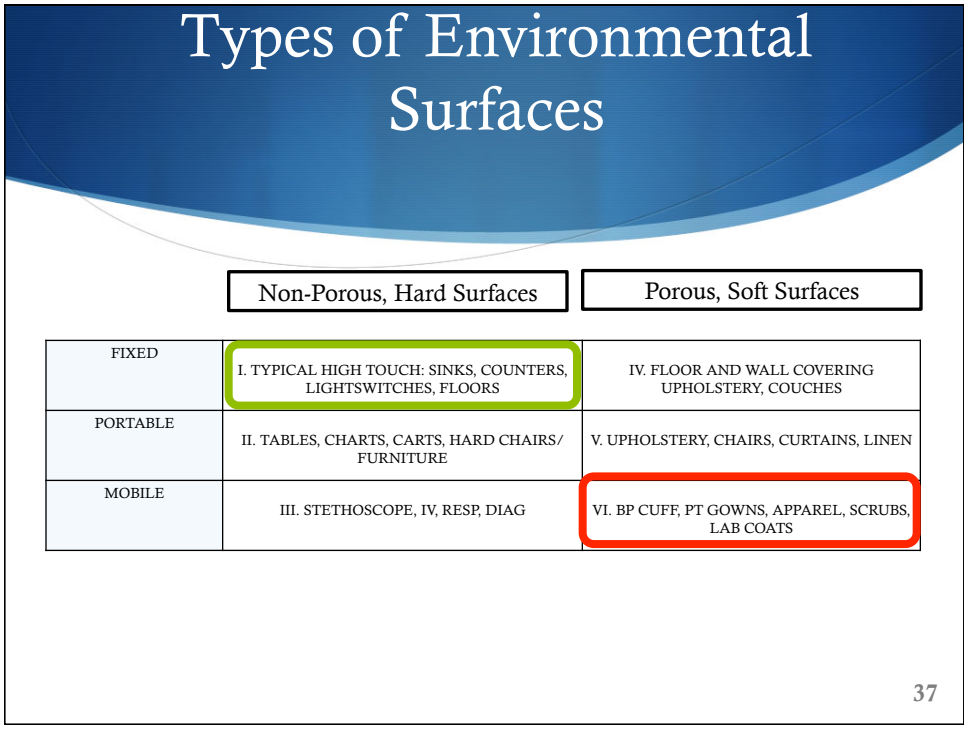

WHAT FLUID?
Other
• Bacterial Solution
• HIV Viral Load Specimen
• Plasma
• Serum
• Vaginal Secretions
• Fetal Fibronectin
Blood or Blood Product
Urine
32

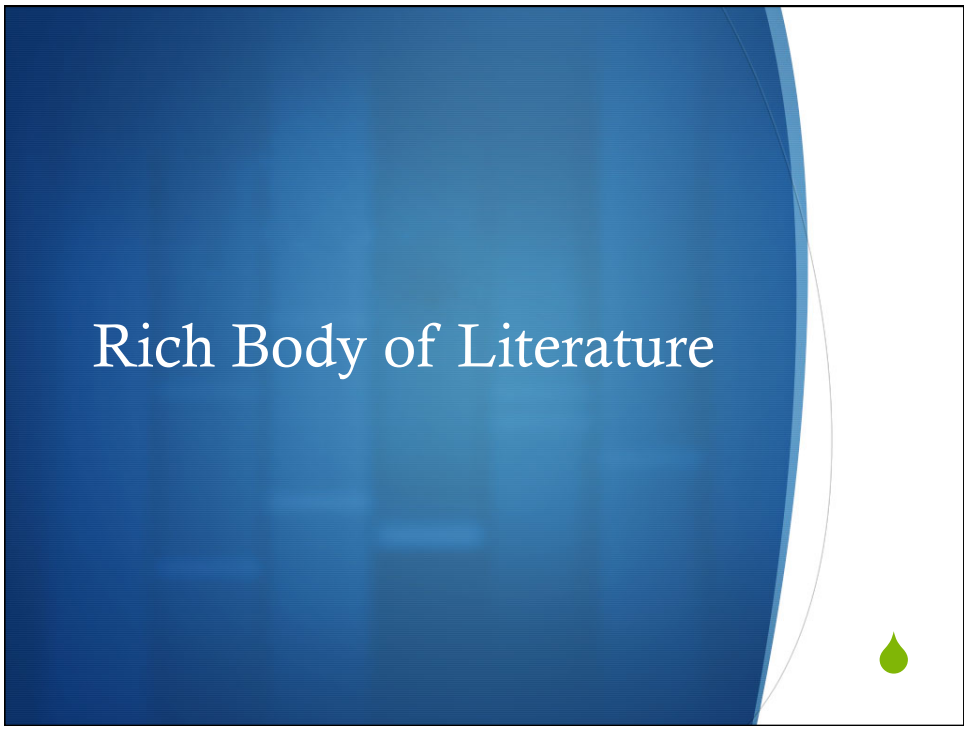

Other
Mouth
Nose
Intact Skin
Non-Intact Skin
Eyes, Conjunctiva
WHAT WAS EXPOSED PART?
PPE, BARRIER GARMENT WORN
Goggles
Faceshield
Labcoat
Gloves
Gown
33


What is contributing to this increased risk and risky behavior over time?
34


Exploring
Environmental Surfaces


Contaminated surfaces increase cross-transmission. Hayden M, ICAAC, 2001
36


Types of Environmental Surfaces
Non-Porous, Hard Surfaces
Porous, Soft Surfaces
FIXED
I. TYPICAL HIGH TOUCH: SINKS, COUNTERS, LIGHTSWITCHES, FLOORS
IV. FLOOR AND WALL COVERING UPHOLSTERY, COUCHES
PORTABLE
II. TABLES, CHARTS, CARTS, HARD CHAIRS/ FURNITURE
V. UPHOLSTERY, CHAIRS, CURTAINS, LINEN
MOBILE
III. STETHOSCOPE, IV, RESP, DIAG
VI. BP CUFF, PT GOWNS, APPAREL, SCRUBS, LAB COATS
37


Rich Body of Literature

Literature: Environmental Soft Surface Type

I. Fixed	9	Creamer 2008, Gould 1993, Langford 2006, Malik 2006, Ndawula 1991, Noskin 2000
i. Furniture		Das 2002, Klakus 2008, Ohl 2012, Palmer 1999, Schweizer 2012, Trillis 2008
II. Portable	6	Barrie 1994, Boyce 1997, Hochmuth 2002, Fijan 2012, Kniehl 2005, Neely 2000, Neely 2001, Nicas 2006, Sasahara 2011, Shiomori 2002, Thomas 1987
i. Privacy Curtains		
ii. Textiles	11	
III. Laundering	6	Blaser 1984, Jacob 2007, Lakdawala 2011, Patel 2006, Scott 2011, Wright 2012
IV. Mobile		
i. HCW Attire	27	Babb 1983, Bearman 2012, Burden 2011, Burden 2013, Butler 2010, Callaghan 1998, Ditchburne 2006, Gaspard 2009, Hsieh 1986, Krueger 2012, Loh 2000, Lopez 2009, Loveday 2014, Morgan 2012, Munoz-Price 2012, Osawa 2003, Pandey 2010, Perry 2001, Pilonetto 2004, Sattar 2001, Snyder 2008, Speers 1969, Steinlechner 2002, Treakle 2009, Uneke 2010, Weiner-Wall 2011, Wong 1991

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Recent Published Studies: Uniforms Can Play a Role in Transmission

- Clothing can play a significant role in the spread of infectious materials.
  - Contamination of Clothing with MRSA and *C.difficile*
  - Survival of Bacteria on Clothing
  - Transfer of Bacteria to Hands
  - Clothing as Possible Cause of Cases / Outbreaks
- Transmission via clothing plays an important part in the spread of *S. aureus* (and MRSA) infections.

40

Healthcare Worker Uniforms

- At the end of a work shift, *C. difficile* and MRSA were recovered from the surface of nurses' uniforms at counts exceeding 500 CFU
- 23% of lab coats were contaminated with MSSA and 18% with MRSA
- 60% of hospital staff uniforms were culture positive for MDROs based on samples taken from the sleeves, waists, and pockets of over 100 physicians' and nurses' work apparel
- Healthcare-associated pathogens were isolated from 63% of the uniforms
- Laundered and unworn scrubs harbored normal skin flora on Residents' uniforms

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INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY DECEMBER 2012, VOL. 33, NO. 12

CONCISE COMMUNICATION

Gordonia bronchialis Sternal Wound Infection in 3 Patients following Open Heart Surgery: Intraoperative Transmission from a Healthcare Worker

Shaneka N. Wright, RN, BSN, MHSc, CIC;[1] Joanna S. Gerry, DNP, ARNP;[2] Mary T. Busowski, MD;[3] Alena Y. Klochko, MD;[3] Steven G. McNulty, BS;[4] Scott A. Brown, RN, MBA, CIC;[1] Barry E. Sieger, MD;[3] P. Ken Michaels, DO;[5] Mark R. Wallace, MD[3]

We describe an investigation of 3 postoperative *Gordonia bronchialis* sternal infections. A nurse anesthetist was identified as the source of the outbreak, her scrubs likely becoming contaminated by her home washing machine. The outbreak ended after disposal of the implicated washing machine. Domestic laundering of surgical scrubs may need reevaluation.

Infect Control Hosp Epidemiol 2012;33(12):000-000

obtained from the nurse anesthetist, her roommate, all case patients, and the nurse anesthetist's dogs were plated in 5% sheep blood agar and chocolate II agar and incubated at 35°C, 5% CO_2, for 4–5 days. *Gordonia* isolates were submitted for DNA strain typing by pulsed-field gel electrophoresis (PFGE). The isolates were identified by polymerase chain reaction restriction enzyme analysis of the 441 base pairs (Telenti segment) of the *hsp65* gene as *Gordonia* species.[4] Species identification was achieved by 16S ribosomal RNA gene sequence analysis using the MicroSeq (Applied Biosystems) for 500 base-pair analysis.[5] Typing was performed by PFGE using the restriction endonucleases *XbaI* and *AseI*.[6]

RESULTS

Description of cases. Three patients were readmitted 3 weeks to 8 months postoperatively with deep sternal infections caused by *G. bronchialis*. The patients (all male) ranged from 56 to 80 years old; 2 were diabetic. All had undergone CABG with multiple grafts. No early postoperative complications had occurred. The mean interval between surgery and the

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Contaminated Textiles: Microbes and Outbreaks

Table 3. Reports on hospital textiles as possible source of infection of patients.

Microorganism	Hospital textile	Reference
Streptococcus pyogenes	Babies' vests (contamination of dryers)	Brunton, 1995 [8]
Bacillus cereus	Cleaned hospital linen	Barrie *et al.* 1994 [29]
	Cleaned hospital linen	Barrie *et al.* 1992 [30]
	Cleaned infants' nappies	Birch *et al.* 1981 [31]
	Reused towels	Dohmae *et al.* 2008 [32]
	Towels and bedsheets	Sasahara *et al.* 2011 [33]
MRSA	Bed linen	Creamer & Humphreys, 2008 [34]
	Linen	Shiomori *et al.* 2002 [35]
Pseudomonas aeruginosa	Patients' clothes, bed linen	Panagea *et al.* 2005 [36]
VRE	Drawsheet	Bonten *et al.* 1996 [37]
Staphylococcus aureus	Mattress	Ndawula & Brown, 1991 [38]
Antibiotic resistant coliform bacilli	Blankets, mattresses	Kirby *et al.* 1956 [39]
Trichophyton interdigitale	Contaminated socks	English *et al.* 1967 [40]

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Int. J. Environ. Res. Public Health **2012**, *9*, 3330-3343; doi:10.3390/ijerph9093330

Table 4. Reports on hospital textiles as possible source of infection of hospital workers.

Microorganism	Source	Employee	Reference
Sarcoptes scabiei	Handling unclean hospital linen	Hospital laundry personnel	Thomas *et al.* 1987 [41]
Microsporum canis	Handling contaminated laundry	Hospital staff	Shah *et al.* 1988 [42]
Salmonella typhimurium	Handling unclean hospital sheets	Hospital laundry personnel	Datta & Pridie, 1960 [43]
Salmonella hadar	Handling unclean hospital linen	Hospital laundry personnel	Standaert *et al.* 1994 [44]
Hepatitis A virus	Handling unclean hospital linen	Hospital laundry personnel and nurses' aids	Borg & Portelli, 1999 [45] Keeffe, 2004 [46]

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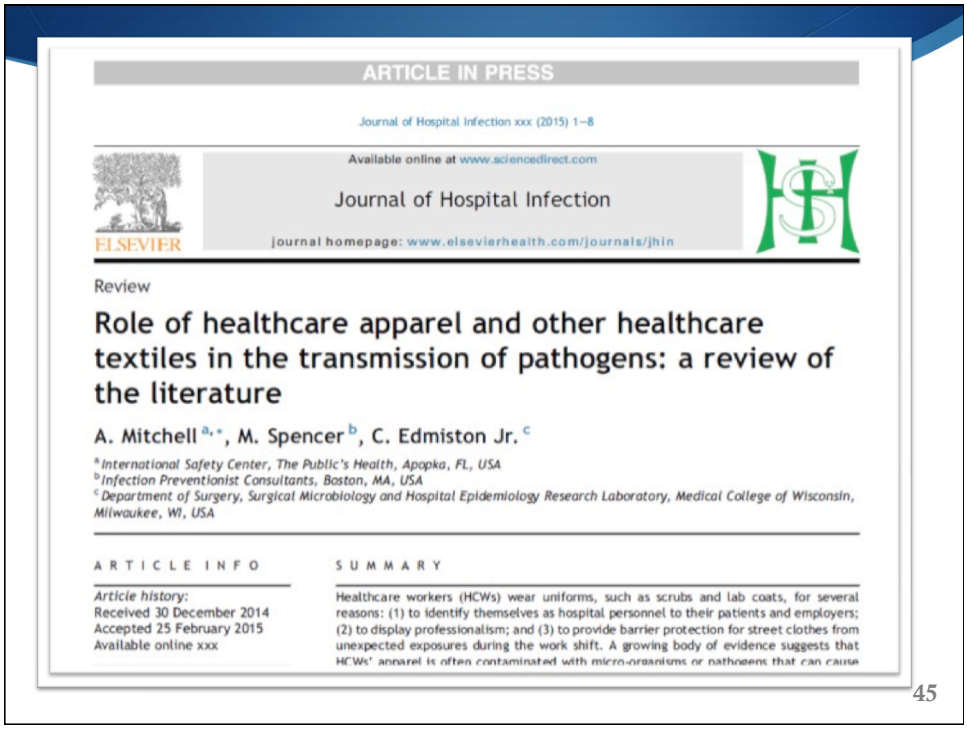

ARTICLE IN PRESS

Journal of Hospital Infection xxx (2015) 1–8

Available online at www.sciencedirect.com

Journal of Hospital Infection

journal homepage: www.elsevierhealth.com/journals/jhin

Review

Role of healthcare apparel and other healthcare textiles in the transmission of pathogens: a review of the literature

A. Mitchell [a,*], M. Spencer [b], C. Edmiston Jr. [c]

[a] International Safety Center, The Public's Health, Apopka, FL, USA
[b] Infection Preventionist Consultants, Boston, MA, USA
[c] Department of Surgery, Surgical Microbiology and Hospital Epidemiology Research Laboratory, Medical College of Wisconsin, Milwaukee, WI, USA

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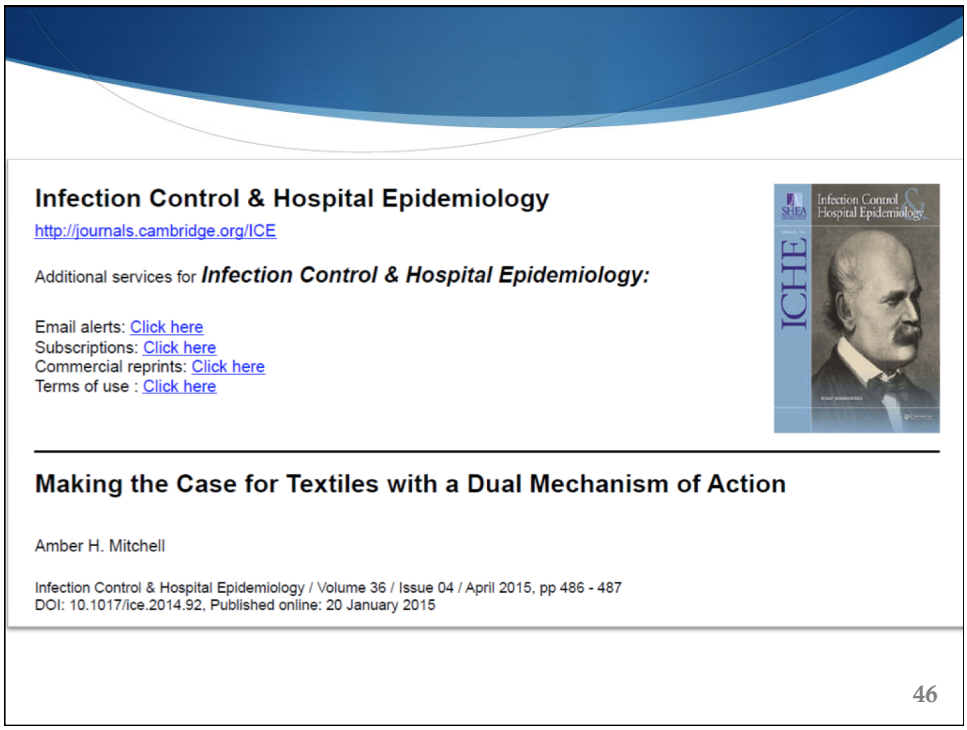
SUMMARY

Healthcare workers (HCWs) wear uniforms, such as scrubs and lab coats, for several reasons: (1) to identify themselves as hospital personnel to their patients and employers; (2) to display professionalism; and (3) to provide barrier protection for street clothes from unexpected exposures during the work shift. A growing body of evidence suggests that HCWs' apparel is often contaminated with micro-organisms or pathogens that can cause

45



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Making the Case for Textiles with a Dual Mechanism of Action

Amber H. Mitchell

Infection Control & Hospital Epidemiology / Volume 36 / Issue 04 / April 2015, pp 486 - 487
DOI: 10.1017/ice.2014.92, Published online: 20 January 2015

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National Landscape

APIC 10 Ways to Protect your Patients from Infection

APIC Spreading knowledge. Preventing infection.
Association for Professionals in Infection Control and Epidemiology

1. Wash or clean your hands before and after you provide care to a patient.
2. Use gloves the right way.
3. Get your shots– including your annual flu shot– and make sure everyone in your family does too.
4. Follow the rules of isolation for the patient's protection, your protection, and everyone else's protection.
5. Follow safe injection practices – remember One needle. One syringe. Only one time.
6. Make patient identification a priority: right drug, right time, right dose.
7. Keep the patient's room and equipment clean.
8. Know when antibiotics are appropriate . . . and when they are NOT.
9. What you wear matters! Make sure your attire does not become a source of infection.
10. Know about the infection preventionist.

9. What you wear matters

Make sure your attire does not become a source of infection.

Clothing can be a virtual conveyor belt for infections. Studies have shown that when doctors and nurses lean over a patient with MRSA, their coats and uniforms pick up bacteria 65 percent of the time. Additional studies have shown that ties worn by doctors and other medical staff had bacteria that could cause illness.

What's more, improper use and removal of personal protective equipment (for example—gowns, gloves, masks) can have negative health consequences to the healthcare worker.

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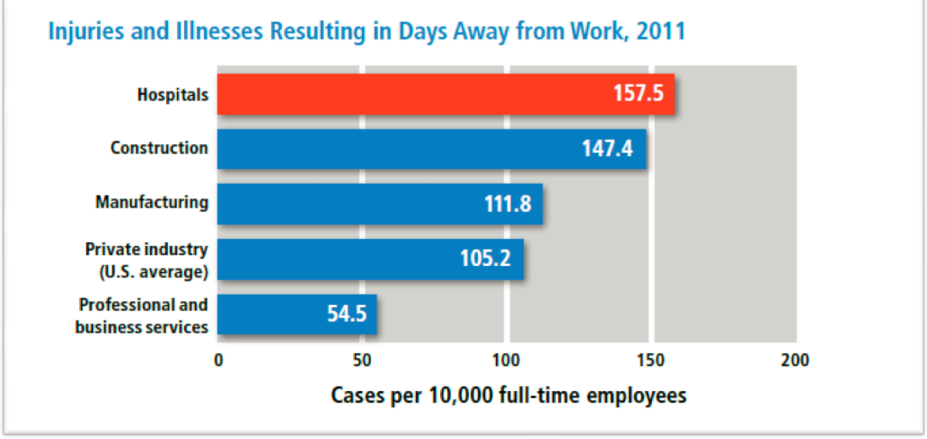
OSHA Worker Safety in Hospitals



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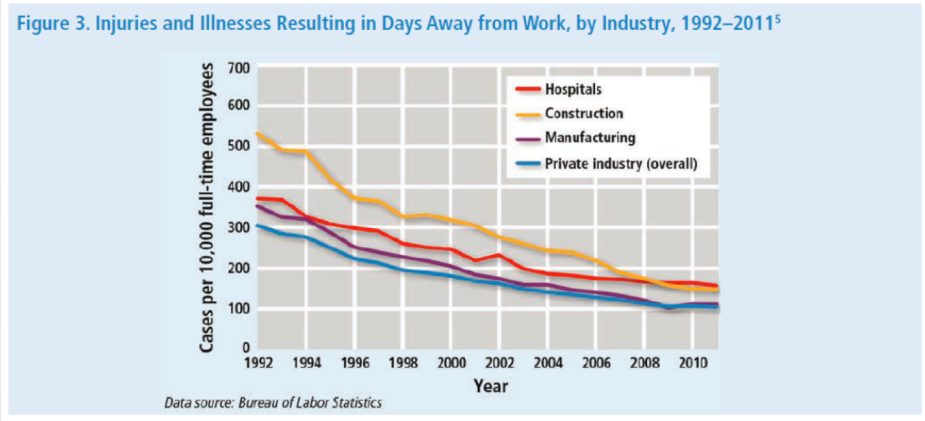
OSHA Worker Safety in Hospitals



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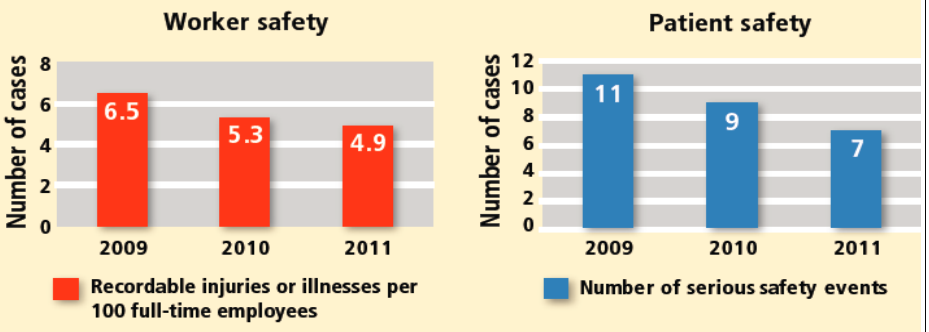
OSHA Worker Safety in Hospitals

Safety Improvements at UMC Brackenridge



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OSHA Infectious Disease Standard

- For non-Bloodborne Pathogens
- CalOSHA Aerosol Transmissible Disease Standard
- Occupational exposure during "direct patient care"
- Worker Infection Control Plan
  - Infectious Agent Hazard Analysis

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Comparing the Whole Healthcare Environment to the OR

AORN Recommended Practices for Surgical Attire

Perioperative Standards and Recommended Practices

For Inpatient and Ambulatory Settings

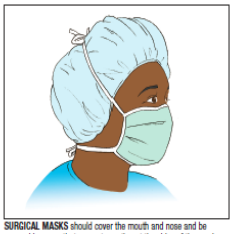
AORN

Leslie Bourdon
Managing Editor

The updated "Recommended practices for surgical attire," which will be electronically released Nov. 15, provide guidance for surgical attire, including scrub attire, shoes, jewelry, head coverings, and masks worn in semi-restricted and restricted areas of the perioperative setting. In addition, the recommended practices (RP) document provides guidance for personal items (e.g., stethoscopes, backpacks, briefcases, cell phones) brought into the perioperative setting. Although research related to surgical attire is limited and no randomized controlled trials or systematic reviews show a direct causal relationship between surgical attire and surgical site infections (SSIs), increased numbers of microorganisms in the perioperative setting increase the patient's risk of SSI. Thus, health care workers should make efforts to reduce the patient's exposure to microorganisms by following the RP for surgical attire.

Wearing surgical attire

The RP states that clean surgical attire should be worn in semi-restricted and restricted areas of the perioperative setting.[1] Wearing clean surgical attire may reduce microorganisms present in the perioperative environment, and as a result, may reduce the patient's risk of developing an SSI and the potential for health care workers to transport microorganisms between the health care facility and the home or community. The RP states that fabrics used for scrub attire should be "tightly woven, low linting, stain resistant, and durable"[1] and that scrub attire may be made of antimicrobial fabric. The RP cites emerging evidence on the use



SURGICAL MASKS should cover the mouth and nose and be secured in a way that prevents venting at the sides of the mask. Reprinted from *Perioperative Standards and Recommended Practices* Copyright© 2014, AORN, Inc.

of fabrics with antimicrobials incorporated into yarns during processing or finishing to prevent bacteria and fungi from adhering to the fabric and states that incorporating this technology into scrub attire may help protect patients from SSIs.[1]

According to evidence cited in the RP, health care providers' skin provides the primary source of bacteria dispersed into the air in the OR or procedure room.[2] Thus, the RP recommends health care providers don clean scrub attire daily in a designated dressing area before entering semi-restricted or restricted areas from outside. The RP also states that all nonscrubbed personnel should completely cover their arms with a long-sleeved scrub top or jacket when in restricted areas to help contain the shedding of skin

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Recommendation I: Clean surgical attire should be worn in the semi-restricted and restricted areas of the perioperative setting

- Attire has been laundered in a healthcare accredited laundry facility
- Has not been previously worn

55

Fabrics used for scrub attire (Moderate Evidence)

- Tightly woven
- Low linting
- Stain resistant
- Durable

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Tightly woven material

- Superior to other types of scrub attire in decreasing bacterial contamination of the air (AORN ref 6-9)
- Significant reduction of >50% of bacterial load in the air (AORN)
- Median CFUs dropped significantly when peri-op team wore tightly woven scrub attire (AOR ref 5, 8-10)

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Lint-free, stain-resistant and durable

- Prevent lint particles from disseminating into environment where bacteria may attach to them and settle into surgical sites
- Promoting professional appearance
- Able to withstand rigorous laundering necessary to maintain a high level of cleanliness

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Pathogens can live from hours to months

- Gram-positive
  - MRSA survived 20 days on cotton; 40 days on polyester (1)
  - VRE survived more than 80 days on both cotton and polyester (1)
- Viruses
  - Influenza A and B survived 12 hours on cloth, paper and tissue (2)

(1) Deeley et al 2001
(2) Baker et al 2001

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Changing to street clothes (Moderate Evidence)

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Cover apparel (Moderate Evidence)

- Should be clean/single use
- Evidence does not support wearing of cover apparel to protect scrub attire from contamination
- Evidence that cover apparel can be contaminated with large numbers of pathogens (AORN ref 30-34)
- Current laundering practices are questionable

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Cover apparel (Moderate Evidence)

- Lab coats worn by 100 physicians
- *S. aureus* isolated from 25
- Cuffs and pockets of coats most contaminated (AORN ref 36)
- Other study (AORN ref 32) showed Staph and Acinetobacter
- Laundering practices poor (AORN ref 31)

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Scrub attire may be made of antimicrobial fabric (Moderate Evidence)

• Emerging evidence that fabric with antimicrobials incorporated into yarns during processing or during finishing to prevent pathogens from adhering to the fabric	AORN ref 13-19
• Incorporating this technology into the material used for scrub attire may help to protect the patient from the risk of SSIs	AORN ref 13-19

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"…scrub attire may be made of antimicrobial fabric… incorporating this technology into scrub attire may help protect patients from SSIs."

Standards including textile technologies being considered by OSHA and ASTM

AORN Connections

YOUR SOURCE FOR PERIOPERATIVE NEWS

RP First Look: New recommended practices for surgical attire

Leslie Beurton
Managing Editor

The updated "Recommended practices for surgical attire," which will be electronically released Nov. 15, provide guidance for surgical attire, including scrub attire, shoes, jewelry, head coverings, and masks worn in semi-restricted and restricted areas of the perioperative setting. In addition, the recommended practices (RP) document provides guidance for personal items (e.g., stethoscopes, backpacks, briefcases, cell phones) brought into the perioperative setting. Although research related to surgical attire is limited and no randomized controlled trials or systematic reviews show a direct causal relationship between surgical attire and surgical site infections (SSIs), increased numbers of microorganisms in the perioperative setting increase the patient's risk of SSI. Thus, health care workers should make efforts to reduce the patient's exposure to microorganisms by following the RP for surgical attire.

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SURGICAL ATTIRE RP Continued on C3

http://dx.doi.org/10.1016/S0001-2092(14)60101-6

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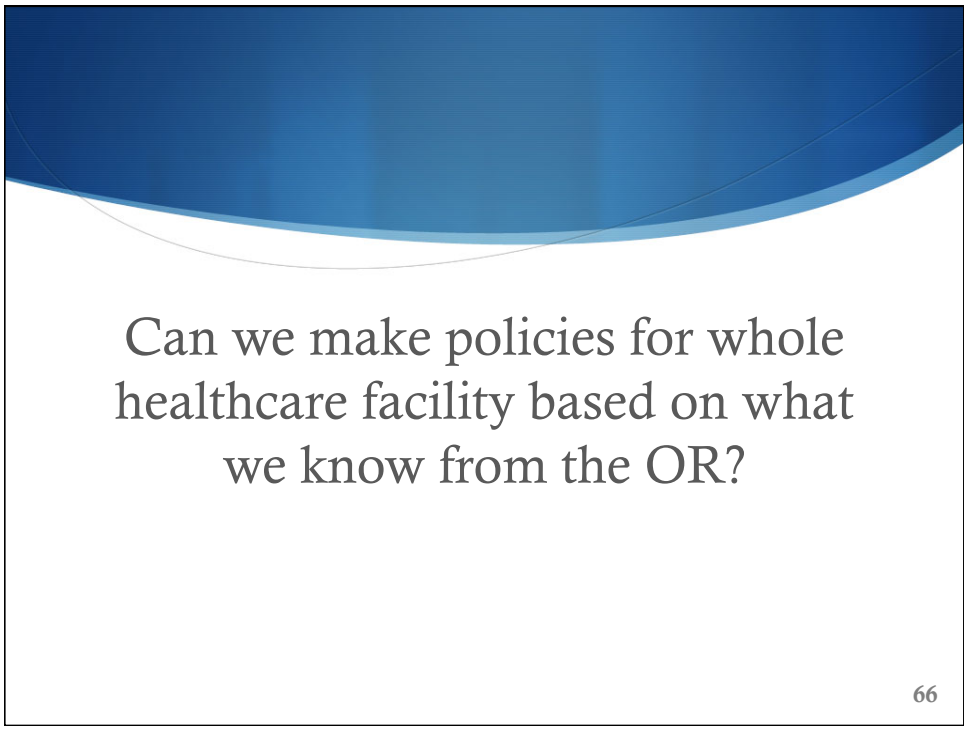
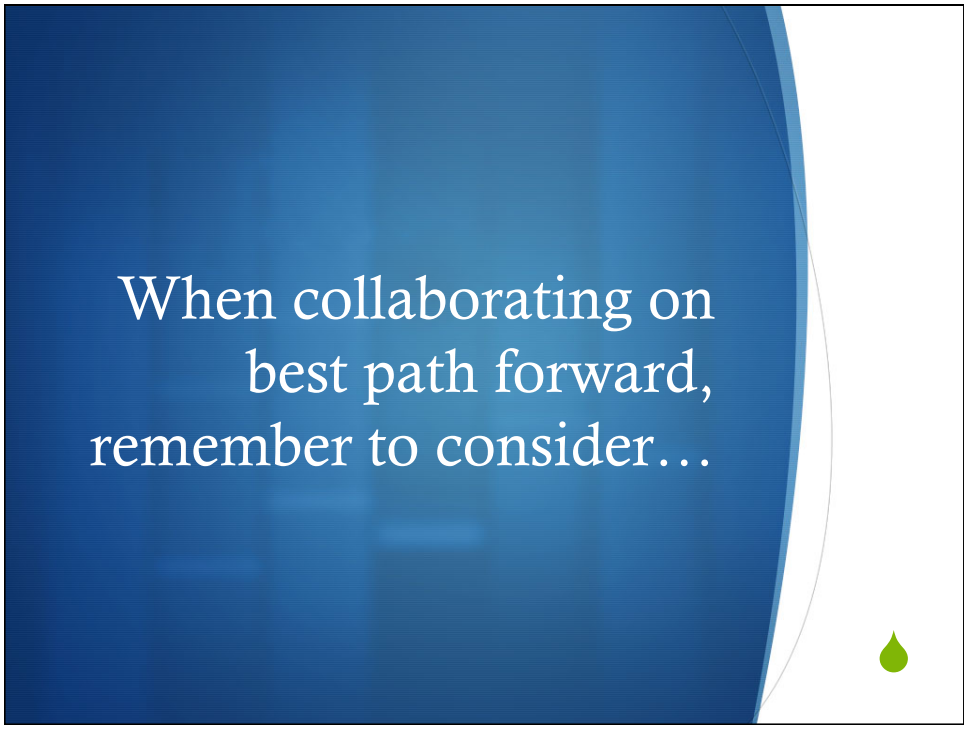
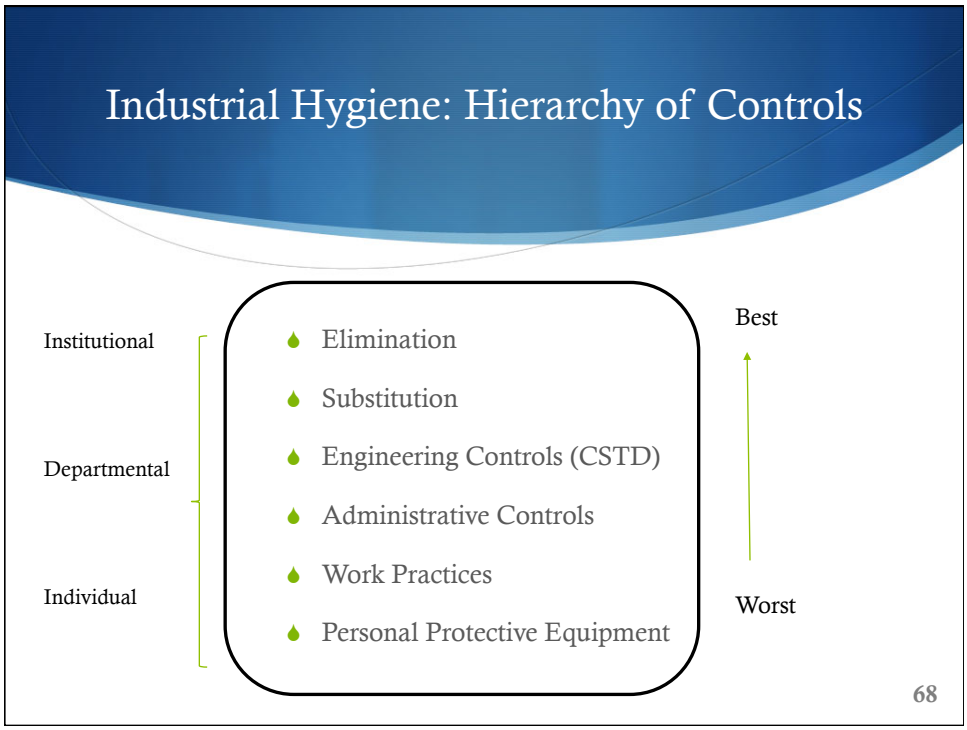
Textile Technologies
Fluid Barrier: Repellent / Resistant
Particle Barrier: Weave, Fabric Type
Microbial Barrier: Antimicrobial / Antibacterial
Metal Ions; e.g. silver, copper
Quats
Post Market: Sprays, Treatments
65


Can we make policies for whole healthcare facility based on what we know from the OR?
66


When collaborating on best path forward, remember to consider…


Industrial Hygiene: Hierarchy of Controls
Institutional
Departmental
Individual
Elimination
Substitution
Engineering Controls (CSTD)
Administrative Controls
Work Practices
Personal Protective Equipment
Best
Worst
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Healthcare is Unprepared

- No nationalized surveillance system in place, therefore EPINet may serve as only benchmark
- When skin exposures occur, PPE is being worn in small % of incidents
- Rich body of literature related to environmental contamination of surfaces
- Small, yet growing literature on impact of patient outbreaks and occupational illness
- Standards specific to uniform type already exist in OR
- Textile technologies may offer additional degree of protection for unexpected exposures

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Recommendations

- Since environmental surfaces play a role in transmission of microbes, include it as a focus area along with hand hygiene and other infection prevention initiatives
- Do not ignore soft surfaces, uniforms, bedding
- Improve State-Wide Surveillance of Worker Incidence & Patient Outbreaks Related to Contaminated Textiles
- Improve PPE and Barrier Garment Access, Use, and Compliance
- Consider Textile Technologies to Bridge the Gap
- Take Models from other Departments or Countries
- Stay informed, Read the Literature

Decreasing Incidence = Worker + Patient Safety

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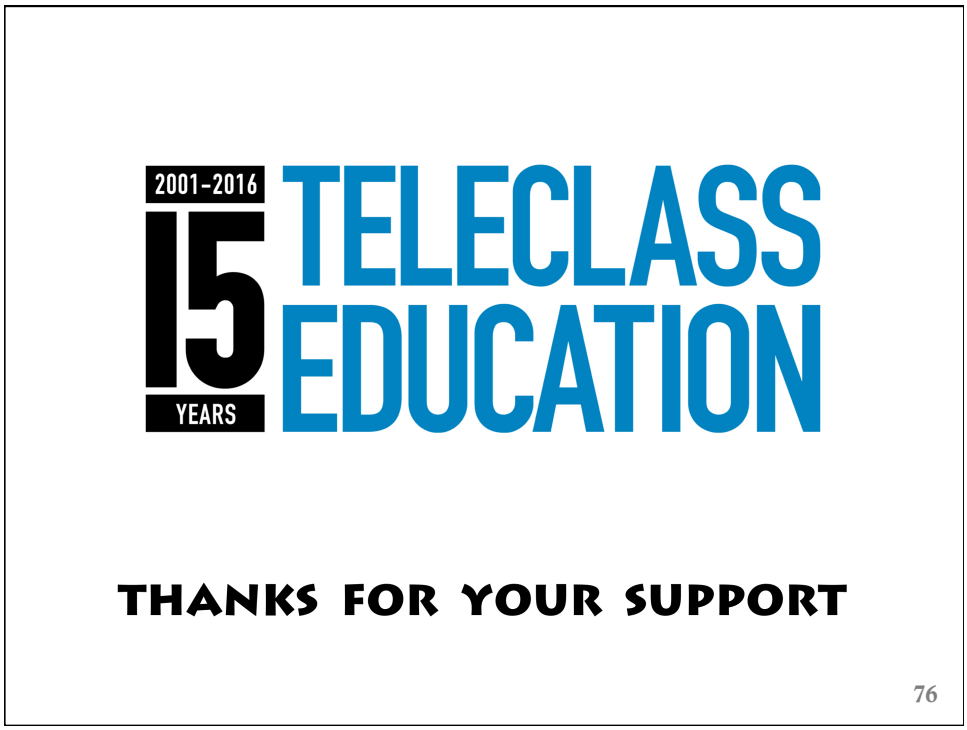
Exploring the Role of Environmental Surfaces in Occupational Infection Prevention
Barbara DeBaun, Cynosure Health, and Dr. Amber Hogan Mitchell, International Safety Center
A Webber Training Teleclass



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