S O L U T I O N S

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Also In This Issue:

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VOLUME 30

MRSA: A Challenge to Nursing Home Personnel

PROF. BJORG MARIT ANDERSEN, OSLO UNIVERSITY HOSPITAL, NORWAY

In spite of international guidelines for infection prevention and control, nursing homes in Europe and USA may have large reservoirs of Methicillin-resistant *Staphylococcus aureus* (MRSA), affecting patients and staff, and resulting in persistent carriage. The Norwegian MRSA Control Guideline recommends testing of HCW exposed to MRSA. Carriers are excluded from healthcare-related work until negative. On the other hand, persistent carriers among the patients may move freely in the nursing home without any restrictions, thereby exposing personnel and other patients.

MRSA is still increasing in Norway, especially in primary health care and also associated with imported cases and outbreaks in long-term care facilities, affecting both patients and personnel. In Oslo County, 10% of all MRSA cases were associated with healthcare personnel. Nearly 1% of the Norwegian population live in nursing homes with complex medical problems, and need assistance for daily living.

We undertook a study to describe the staff's personal experience and attitudes to challenges in nursing homes, associated with the control and treatment of MRSA patients. Forty two of 55 nursing homes in Oslo City participated, including 3,350 beds with a mean of 102 beds per institution. Only 19% of the staff were nurses, 70% were without specific training in infection control (students), and 32% had no formal healthcare education at all.

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Winter 2013 Virox Update

2013 Conference Update

February

February 13 - 4th Annual CHICA-TPIC-PHO Infection Prevention and Control Education Day

March

March 3-5 - CRFA Show (Canadian Restaurant and Foodservices Association)
March 11-14 - Cruise Shipping Convention
March 11-12 - APIC Clostridium difficile Educational and Consensus Conference

April

April 11-12 - PICNet Educational Conference
April 24-26 - CleanMed 2013
April 27-Theta Chapter 4th Annual Education Day
April 30 - May 1 - Can Clean 2013

May

May 1-4 - SHEA Spring 2013 Conference
May 26-28 - AIPI 2013 Conference
(May 26th - AIPI 2013 Pre-Conference Scientific Day sponsored by Virox)
May 28-30 - OHHA 2013 Pack Your Backpack Conference

June

June 2-5 - CHICA Canada National Conference
June 8-10 - APIC 2013 Conference
June 23-26 - 79th CIPHI Annual National Conference

Virox is very excited about participating in each of these conferences & education days. We wish the best to all of the various organizers and would like to thank them for their dedication and effort in organizing these very important educational opportunities. We look forward to attending and talking to all of the participants.

2013 CHICA Scholarship

The Virox Scholarship fund celebrates its 11th year. Since inception in 2003, more than 130 Infection Prevention and Control Professionals (ICPs) from across Canada have received scholarships to attend the annual CHICA conference. Virox Technologies will be contributing $20,000.00 towards the scholarship which will allow between 10 and 15 Canadians to attend the 2013 conference in Ottawa. The application deadline was January 31st, 2013. Good luck to those who applied!

AIPI 2013 Pre-Conference Scientific Day

Supporting and providing educational opportunities for the infection prevention and control community is a key philosophy for Virox. This year we have partnered with *L'Association des infirmières en prévention des infections* (AIPI) in Quebec to sponsor a full day pre-conference symposium for Cleaning, Disinfection and Sterilization on Sunday May 26th at the annual AIPI Conference near Montreal. The day promises to provide the most current information on trends in environmental surface disinfection and medical devices reprocessing. The breadth of subject matter is sure to lead to useful discussion on best practices and common misconceptions, and inspire all attendees to search for responses and suggestions to the challenges we face in our daily practice and research.

Bayer Launches a New AHP Disinfectant Product Line!

Bayer Inc. has recently launched a new line of Accelerated Hydrogen Peroxide® (AHP®) surface disinfectants under their brand name PEROXIGARD Plus. The new line includes ready-to-use, wipes and concentrate formats. PEROXIGARD Plus products are effective against bacteria, viruses (including parvovirus), fungi and mycobacteria in short and realistic contact times (RTU & Wipes in 3 minutes and the Concentrate in 5 minutes) while maintaining AHP's exceptional safety and environmental profile (EcoLogo certified under CCD-166).

Accel PREVention Soft Packs!

At Virox, we are very aware of the increasing importance of pandemic planning and the development of effective pandemic kits within health care facilities as well as within industry. Healthcare and Industry are trying to take a proactive role in protecting their staff and clients. The Accel PREVention Soft Pack has a 30-second sanitizing, and 3 minute bactericidal, general virucidal (non-enveloped viruses such as Noroviruses), fungicidal and mycobactericidal claims. Accel PREVention Soft Packs offer the ability for employees, physicians and nurses to carry personal wipes to clean and disinfect those non-critical devices and surfaces, such as stethoscopes, countertops, light switches, door knobs, elevator buttons etc., that may not be included in regular cleaning and disinfection practices. For more information, please visit our Accel Canada website www.viroxaccel.ca.

Virox's PTS Team Participates in ISSA Webinar

The PTS team is a resource that the Infection Prevention and Environmental Services communities can access for information pertaining to cleaning and disinfection of environmental surfaces, medical devices and hands. This expertise was brought to good use during the ISSA's "A Clean Approach to Flu Prevention" webinar. Nicole Kenny, Director of Professional and Technical Services, spoke about the Science behind cleaning with respect to flu prevention to the participants. The webinar can be accessed on the ISSA website in the Pandemic Planning Toolkit section. **http://ow.ly/hoKbz**

Virox Suppliers Support Infection Prevention and Control Research

Virox Technologies Inc is committed to furthering infection prevention and control research, especially as it pertains to cleaning and disinfection. To that end we are sponsoring a 12-month study investigating the correlation between hospital-associated infections and compliance with environmental hygiene, particularly involving the use of disposable disinfectant wipes. We are particularly pleased that Priority Plastics, our vendor for wipes canisters and substrates, is willing and able to support this study. Thanks to Priority for their interest in supporting original research.

2013 Teleclass Education Lecture Series

The Virox team is absolutely delighted to support the Teleclass Education initiative that was launched in 2001 by Prof. Syed A. Sattar, and Paul Webber. It has grown to become the single most widely accessed infection control education program in the world. The Teleclass Education web site is www.webbertraining.com.

January

24 - *The Patient Experience as a Catalyst for Change,* by Margaret Murphy
31 - *Infection Prevention and Social Change,* by Elaine Larson

February

6 - *Improving the Patient Safety Culture as a Successful Component of Infection Control Strategies,* by Benedetta Allegranzi
7 - *Why Evidence Should Have Biological Plausibility: The Story of Chlorhexidine and it's Role in Skin Antisepsis,* by Matthias Maiwald
12 - *Commissioning IPS Services in the New NHS,* by Debbie King
13 - *Hospital Design and Infection Prevention and Control,* by Massimo Giola
28 - *The Clinical and Business Case for Investing in Improved Environmental Hygiene,* by Mark Heller

March

6 - *Patient Participation in Hand Hygiene Promotion and Improvement,* by Yves Longtin
7 - *Rationale and Concepts in Dental Infection Control,* by Raghu Puttaiah
14 - *Update on "No Touch" Room Disinfection Systems,* by Dick Zoutman
21 - *Tuberculosis Infection Control in High HIV Burdened Countries,* by Virginia Lipke

April

9 - *Innovation and New Indicators in Hand Hygiene Monitoring,* by John Boyce
11 - *Utilizing Hospital-to-Hospital Partnerships to Strengthen IPC,* by Shamsuzzoha Babar
16 - *Review of the European Union Sharps Legislation,* by Jane Aston
17 - *Clostridium difficile in the Community: Food for Thought,* by Thomas Riley
18 - *Leadership in Infection Prevention and Control,* by Martin Kiernan
25 - *Role of Surfaces in Disease Transmission: Does Enhanced Disinfection Reduce Transmission,* by William Rutala

May

2 - *Improving Healthcare Quality,* by M. Rashad Massoud
6 - *Special Lecture for 5 May 2013,* by Didier Pittet
9 - *Surveillance of Healthcare Associated Infection in Acute Care Settings,* by Theresa Horan
16 - *What's New in Technologic Innovations for the Prevention of Intravascular Catheter Associated Bloodstream Infection,* by Mark Rupp
30 - *Preventing Catheter-Associated Urinary Tract Infections in Acute Care Settings,* by Laurie J. Conway

June

12 - *Quality and Safety and Infection Prevention and Control,* by Sally Roberts
20 - *Patient's Experience of MRSA Screening - What Can We Learn?,* by Carol Pellowe

July

3 - *Risk Assessment and Priority Setting in Infection Control in Low-to-Middle Income Countries,* by Nizam Damani
11 - *Severe Sepsis: Early Recognition and Management Saves Lives,* by Kathleen Vollman
25 - *Improving Hand Hygiene Behaviour: The Effects of Social Influence and Leadership,* by Anita Huis

August

7 - *Decontamination of High-Touch Environmental Surfaces in Healthcare: A Critical Look at Current Practices and Newer Technologies,* by Syed A. Sattar
22 - *The Infectious Disease Fallout Following Natural Disasters - The Hurricane Sandy Story,* by Michael Tapper

September

3 - *Preventing Central Line-Associated Bloodstream Infections: Matching Michigan Approach Applied in the USA and Other Countries,* by Peter Provonost
12 - *Things You Never Thought of Related to Hand Hygiene Performance and Compliance,* by William Jarvis
19 - *Norovirus Control in Health and Social Care Settings,* by Judy Potter
26 - *The Role of the Clinical Pharmacist in Hospital Protocols for Antimicrobial Rational Use,* by Silvana Maria de Almeida

October

9 - *Implementing Infection Control Through a Patient Safety Partnership Approach in Africa,* by Julie Storr
17 - *Ten tips for Incorporating Scientific Quality Improvement Into Everyday Work,* by Don Goldmann
24 - *Infection Control Concerning MRSA in a Low-Endemic Area,* by Bjørg Marit Andersen
30 - *Promoting Handwashing with Soap in the Indigenous Community Context,* by Liz McDonald

November

6 - *Antimicrobial Resistance Issues Worldwide and the W.H.O. Approach to Combat It,* by Carmen Lucia Pessoa da Silva
7 - *Occupational Infection Control in Correctional Settings,* by Robert Marton
14 - *Dental Unit Water Contamination - Health Risks and Methods of Control,* by Raghu Puttaiah

December

4 - *Control of Multi-Drug Resistant Organisms in the Nursing Home Setting,* by Andreas Voss
12 - *Lyme Disease: Knowledge, Beliefs, and Practices of Physicians in a Low-Endemic Area,* by Bonnie Henry
19 - *Is There Validity to VRE Testing and Screening?,* by Michelle Alfa

GREEN TEAM UPDATES

Continued from page 2

Meet Canada's FIRST LEED certified Chemical Manufacturing Facility!

We at Virox have long prided ourselves on developing and manufacturing cleaners and disinfectants that provided a safer and greener alternative for end users. Proof of this comes with several Green Seal and EcoLogo registered cleaners as well as Canada's first EcoLogo registered disinfectant-cleaner. In 2009, we established the Green Team and formalized our corporate green stance, "Virox is committed to innovating, developing and improving peroxide based environmentally sustainable cleaners and disinfectants that allow our affiliates to reduce their environmental impact when consuming such necessary products. A focus on health and environmental sustainability is a legacy we will pass on to future generations."

The challenge the Green Team set was to achieve LEED certification and not just for the office space but for the entire 42,000 sq ft building that encompasses our corporate offices, R&D, laboratory, manufacturing, chemical storage and warehousing. On January 24, 2013 we received the official word that WE DID IT!

So there it is, not only can we create and manufacturer certified green disinfectant cleaners, we can actually manufacturer our patented Accelerated Hydrogen Peroxide (AHP) products in a more sustainable and environmentally sensitive way than any other disinfectant manufacturer, and to a level previously thought unreachable.

Residual Viral and Bacterial Contamination of Surfaces After Cleaning and Disinfection

Environmental surfaces contaminated with pathogens can be sources of indirect transmission, and cleaning and disinfection are common interventions focused on reducing contamination levels. The authors of a recent study, Published in Applied Environmental Microbiology, November 2012, attempted to determine the efficacy of cleaning and disinfection procedures for reducing contamination by noroviruses, rotavirus, poliovirus, parechovirus, adenovirus, influenza virus, *Staphylococcus aureus*, and *Salmonella enterica* from artificially contaminated stainless steel surfaces.

After a single wipe with water, liquid soap, or disinfectant solution, the numbers of infective viruses and bacteria were reduced by 1 $\log_{10}$ for poliovirus (non-enveloped) and close to 4 $\log_{10}$ for influenza virus (enveloped). There was no significant difference in residual contamination levels after wiping with water, liquid soap, or disinfectant. When a single wipe with liquid soap was followed by a second wipe using disinfectant, an extra 1- to 3-$\log_{10}$ reduction was achieved.

A reduced correlation between reduction in PCR units (PCRU) and reduction in infectious particles suggests that at least part of the reduction achieved in the second step is due to inactivation instead of removal alone. The authors used data on infectious doses and transfer efficiencies to estimate a target level to which the residual contamination should be reduced and found that a single wipe with liquid soap followed by a wipe with the disinfectant solution was sufficient to reduce the residual contamination to below the target level for most of the pathogens tested.

The disinfectant used in this study was a 1000ppm chlorine solution, in common use in The Netherlands, where the study was undertaken. Although a strong oxidizer, diluted bleach lacks detergency abilities to aid in the physical detachment of microbes from the test surface.

For a copy of the original article, contact Nicole Kenny (nkenny@virox.com).

Are Gym Surfaces Reservoirs for *Staphylococcus aureus?*

NICOLE KENNY, VIROX TECHNOLOGIES INC

As I write this, in early January, I and many other New Years Resolutioners around the developed world, are swarming gymnasiums and fitness facilities. Undoubtedly most of us will grunt and groan through January and then abandon our resolve, but in the mean time it occurs to me that the workout equipment on which I labour is handled and sweated-upon by many others. What manner of contamination might be present on that equipment, and is it transmissible?

A recent article in the American Journal of Infection Control by Markley et al (2012 Dec;40(10):1008-9), did little to diminish that concern. The authors investigated the prevalence of *S. aureus* on inanimate objects in a university gymnasium shared by undergraduates, medical students, and medical center personnel.

Of course the authors were particularly on the look out for community-associated methicillin-resistant *Staphylococcus aureus* (CA-MRSA). Numerous studies have shown that many pathogens, including MRSA, can remain viable on common surfaces for extended periods. Transmission of MRSA occurs primarily via skin-to-skin contact; however it is hypothesized that transmission also may occur through contact with inanimate objects.

The connection between sports and CA-MRSA outbreaks is not new, and there is some concern that transmission may occur in common areas, such as fitness centers. Another recent study, by Ryan et al, concluded that gym surfaces are not a reservoir for *Staphylococcus aureus*, and that surface-to-skin contact in gymnasiums likely does not play a significant role in community transmission of methicillin-susceptible *S. aureus* (MSSA) or MRSA. That study had some significant shortcomings, and I was pleased to see that other research was undertaken as rebuttal.

The Markley study took 99 environmental surface cultures from surfaces in the gym including treadmills, steppers, elliptical machines, recumbent bikes, upright bikes, locker room benches, other locker room surfaces, free weights, workout benches, weight machines, hand grips, interchangeable hand grips, belts, mats, medicine balls, and stability balls.

Even though the patrons of this large, university fitness center were primarily healthcare workers and health profession students, no MRSA was detected in this point prevalence microbiologic survey. However, several strains of MSSA were isolated, 2 of which were possibly genetically related - the presence of genetically related strains on separate pieces of gym equipment could imply a point source transmission mechanism by a colonized gym user. In fact, approximately 10% of the surfaces tested revealed staphylococcal colonization.

In their conclusions, Markley et al discuss that their findings indicated that gymnasiums can serve as reservoirs for staphylococci and can be a significant source of staphylococcal exposure, leading to infection in the community. The actual frequency of infection from exposure to such reservoirs is not discussed, except to say that it is an area “requiring more research”. If MSSA can remain viable on gym surfaces, then it is biologically extremely plausible that MRSA could do the same.
So, with this knowledge in mind, will I continue to work out at my gym? Yes, particularly after the gastronomic excesses of the holiday season. But as has been my habit I will clean the machine with a disinfectant before I use it and not rely on the person who sweated there before me to have done a proper job.

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Leaders and personnel were asked about infection control routines and knowledge and practice concerning MRSA. The questions were about challenges like the quality of life of the MRSA-infected patient, the staffing situation, the need for extra cleaning, disinfection and decontamination, the functional standard of the buildings, the economic situation, and the need for information.

Problems identified by staff were associated with old building standards not suitable for modern infection control work with lack of isolates, single rooms and bathrooms, a low rate of professional healthcare staffing and education in infection control work, and increased workload associated with cleaning, disinfection, and decolonizing. In addition, half of the nursing homes in Oslo County were not suitable for modern care of patients, having no isolation facility.

Half of the nursing staff in our study worried about being excluded from work because of MRSA carriage, and the consequences for their social life, family, and income. The "twenty-first century lepers" because of MRSA carriage is already a problem and may be an even larger problem among personnel in healthcare.

Conclusion

Half of the staff in nursing homes in Oslo County worried about being infected by MRSA. The reason could be that half of the nursing homes were not built for modern patient care. A low staffing rate and high number of uneducated personnel increased the risk of transmission, as did problems with environmental hygiene and eradication of the MRSA status. In addition, persistent carriers moving freely in the nursing home would increase the transmission risk.

To control MRSA and other resistant microbes, it is mandatory to enhance building standards, including isolation and single rooms with bathrooms. Furthermore, prevention of MRSA is dependent on a good quality care by well-educated staff not working part time at several institutions. The infected patient should be decolonized and taken care of in the best ethical way, without risk for transmission to unprotected patients, visitors, and staff. In the future, MRSA infection in nursing homes should be defined as a "consumer empowered, rare, and unacceptable event."

The weakness and limitation of the study was that the data were self-reported and could not be controlled by direct observation or additional questions. Furthermore, our informants were selected, and personnel without health qualifications did not participate in this study.

Principles and Practice of Disinfection, Preservation and Sterilization
Fraise A, Maillard JY, Sattar S
February 2013 - ISBN 9781444333251 - 606 pages
$239.95 / £145.00 / €189.00

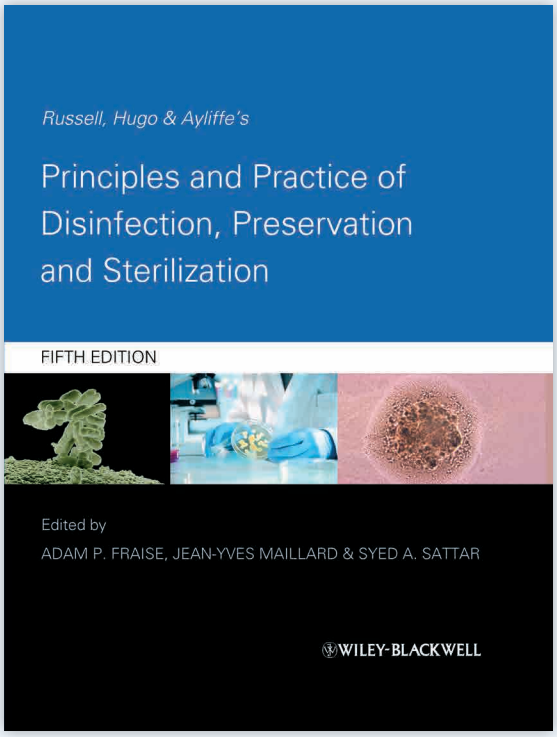
To purchase your own hard-copy of this book, contact Nicole Kenny (nkenny@virox.com) for a copy of the order form.

Principles and Practice of Disinfection, Preservation and Sterilization

The new edition of this established and highly respected text is THE definitive reference in its field. It details methods for the elimination or prevention/control of microbial growth, and features:

- New chapters on bioterrorism and community healthcare
- New chapters on microbicide regulations in the EU, USA and Canada
- Latest material on microbial resistance to microbicides
- Updated material on new and emerging technologies, focusing on special problems in hospitals, dentistry and pharmaceutical practice
- Practical advice on problems of disinfection and antiseptics in healthcare
- A systematic review of sterilization methods, with uses and advantages outlined for each
- Evaluation of disinfectants and their mechanisms of action with respect to current regulations

The differences between European and North American regulations are highlighted throughout, making this a truly global work, ideal for worldwide healthcare professionals working in infectious diseases and infection control.



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