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What can the RICNs do for physicians?

Consult on issues relating to infection prevention and control provide you with educational opportunities and relevant information related to your practice setting

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Asymptomatic Bacteriuria by Dr. Ian Davis

Asymptomatic Bacteriuria (AB) is common in clinical practice. It is defined as bacteriuria in otherwise asymptomatic persons with > 10⁵ cfu/ml of the same bacterial strain, in 2 consecutive voided urine specimens in women, one clean-catch voided specimen in men, or 10² cfu/ml in catheterized persons³.



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Occurrence: Asymptomatic bacteriuria is most common in women and particularly associated with sexual activity with 4.6 % of premenopausal married women affected. It is rare in young healthy men but does increase with age in both men and women where > 20 % of women > 80 years and 6% to 15 % of men greater than 75 yrs have AB. Another common problem is bacteriuria associated with indwelling urethral catheters, occurring in 2% to 7 % per day for short term catheters and > 50 % per day in spinal cord injury patients managed by intermittent catheterization.

Treatment: is a common dilemma. Recent guidelines from IDSA (Infectious Diseases Society of America) give recommendations when and when not to treat.¹ Most cases of AB in adults do not require antibiotic treatment. There are exceptions to this however. In pregnancy, AB is associated with increased risk of pyelonephritis, prematurity and low birth weight which may be reduced if treated.² Screening for AB using a urine culture is recommended at least once during the pregnancy, usually in the 1st trimester, as pyuria alone has a low sensitivity (50 %).^{3,4} Urological procedures have been associated with an increased risk of bacteremia with AB and therefore screening for and treatment of AB, if present, prior to the procedure is indicated for transurethral resection of the prostate (TURP) or other urologic procedures likely to produce mucosal bleeding. There has been no benefit found in treating AB in catheterized, elderly, spinal cord injury or diabetic patients and therefore screening for AB is not indicated. Pyuria is commonly associated with AB and is not an indication for treatment. In addition, inappropriate antibiotic use can be associated with significant negative outcomes including increased antimicrobial resistance, drug reactions and side effects such as *Clostridium difficile* associated diarrhea.

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MRSA To Decolonize or Not?

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Decolonization is the use of topical agents (eg. Nasal antimicrobial cream or ointment and antiseptic body wash) and/or oral antibiotics to remove specific bacteria from a colonized individual. Decolonization has been used, along with other interventions, to help control MRSA in some centers. Theoretically, if the colonization pressure (ie; the number of MRSA colonized patients/residents) is reduced, the opportunity to spread MRSA to other patients/residents is decreased.

On the other hand, there are a number of concerns and limitations to MRSA decolonization. The efficacy of MRSA decolonization has been disappointing in studies with long-term follow up of patients/residents. A Cochrane Collaboration review concluded, "there is insufficient evidence to support use of topical or systemic antimicrobial therapy for eradicating MRSA. Further, widespread use of antimicrobials may lead to antimicrobial resistance and judicious use of antimicrobials, particularly mupirocin, is necessary to prevent further resistance in MRSA. Decolonization with topical antimicrobials alone is less likely to be effective and may promote mupirocin resistance.

Not all patients/residents will benefit from decolonization. It is usually unsuccessful in patients/residents with chronic skin lesions or skin ulcers or any indwelling medical device (ie urinary catheter, intravascular catheter etc) and is not recommended if any of these are present. In addition, systemic antimicrobial therapy may have adverse effects. Decolonization should not be attempted in patients/residents with active infec-



The decision to attempt decolonization of MRSA colonized patients/residents must be individualized and might be considered where MRSA transmission from the colonized individual is a particular concern. Where an MRSA colonized patient/resident is implicated in an outbreak, which is not controlled but other outbreak interventions, MRSA decolonization may be considered, in consultation with health care facility's Infection Prevention and Control professional. Decolonization of patients/residents with behavioral issues ie; wandering or aggressive individuals may assist in preventing transmission to other patients/residents. If decolonization therapy is used, attention should be given to cleaning the patient/resident's clothing and environment to decrease the risk of re-colonization. Follow-up cultures are necessary to document the success of decolonization and ongoing monitoring of the decolonized patient/resident for MRSA re-colonization should be done.

Consistent use of Routine Practices for all patients/residents in all health care settings will prevent the transmission of MRSA.

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CDAD—*Clostridium difficile* Associated Diarrhea

“Start Contact Precautions at the onset of diarrhea or as soon as CDAD is suspected.”

Clostridium difficile associated diarrhea (CDAD) is the most common infectious cause of hospital associated diarrhea. It is also common in long term care facilities and can be acquired in the community. It usually occurs in individuals treated recently with antibiotics but other risk factors include chemotherapy treatment, bowel surgery, and hospitalization. Most often the illness is relatively mild, but severe and life-threatening disease can occur especially in the elderly and in those with other compromising illnesses. Recently a more virulent strain has been found to be epidemic in Quebec (i.e. NAP1/027), and has been identified throughout North America and Europe.

Management of *Clostridium difficile* -Guidelines for the management of CDAD have been developed by the Provincial Infectious Diseases Advisory Committee (PIDAC) and should be used by healthcare facilities to manage Patients with CDAD.²

Whenever a case of CDAD is suspected in a healthcare facility, the individual should be managed using Contact Precautions. This includes a single room with private toileting facilities (i.e. private bathroom, commode), appropriate personal protective equipment (PPE— gown and gloves) for persons entering the room, careful management of faeces and environmental cleaning. Proper hand hygiene is critical to minimize the risk of further transmission. These precautions should be started at the onset of diarrhea and as soon as CDAD is suspected rather than waiting for confirmation of the diagnosis.

Diagnosis of CDAD- The diagnosis of CDAD is by toxin detection in the stool of a person with diarrhea. Most commonly this is done by an enzyme immunoassay (EIA) method but the sensitivity of this test is limited (sensitivity 65-85%). It may be improved by repeat testing.³ Additional testing that can be useful where the diagnosis is uncertain can include abdominal imaging (i.e. X-ray, CT) and endoscopy but this carries the increased risk of perforation especially in more severe disease.

Treatment of CDAD—It is important to avoid the use of motility agents such as loperamide as these can make the disease more severe. Other unnecessary antibiotics should be discontinued. CDAD is most commonly treated with metronidazole 500 mg PO tid or 250 mg PO qid if the tid regimen is not well tolerated. The alternative to this is vancomycin 125 mg PO qid which must be given orally as the IV route is ineffective. Use of metronidazole is less expensive and avoids the concern of developing vancomycin resistance in enterococci (VRE). However, there is evidence, that vancomycin is more effective in severe cases of CDAD. With more severe cases, a gastroenterology, surgical and /or infectious diseases consult may also be indicated. Severe disease is characterized by clinical presentation such as severe abdominal pain, signs of peritonitis, sepsis and ICU admission as well as laboratory evidence of WBC > 15- 2-, Albumin < 25, Creatinine >200. In these cases the patient may respond better with vancomycin.^{1,2,3}

Future use of antibiotics especially within the first few months increases the risk of relapse and should only be given after careful consideration of the risk and benefits of treatment. The role of acid reducing agents is controversial but may increase the risk of subsequent re-infection due to reducing the gastric barrier to infection and therefore should be discontinued if unnecessary.⁴ Recurrence of CDAD is common (10-30%) and generally can be treated the same as the initial episode. If multiple recurrences occur alternative treatments may include changing to vancomycin and considering pulse treatments or a longer tapering treatment often over the course of 6 weeks. The use of probiotics may be helpful for treatment of frequent relapses but is controversial and not supported in recent meta-analyses. In addition there have been cases of invasive infections associated with probiotics so these should be avoided in the immunocompromised and those with more severe disease. (References next page)

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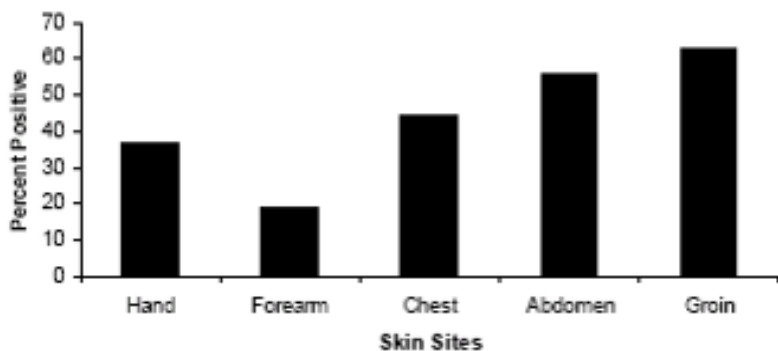
Clostridium difficile Skin Contamination

In a recent edition of Clinical Infectious Disease (CID 2008; 46(1 Feb): 447-50) Bobulsky et al., prospectively studied 27 patients with CDAD and frequently found multiple contaminated skin sites such as groin, chest, abdomen, forearms and hands, which was easily acquired on the investigator’s hands. Up to 60 % of the groin sites were affected (see graph). The photograph of the culture plate illustrates the glove contamination after touching a patient’s groin, one hour after the patient showered. Most striking in this study, was the finding that 50% of the patients continued to have skin contamination one week after resolution of diarrhea.

The second area of interest is, asymptomatic carriers of *C. difficile*, constitute a potential source of nosocomial transmission, since these asymptomatic carriers are neither screened nor isolated. Interestingly, these asymptomatic carriers do not have a higher risk of developing CDAD themselves and colonization seems to have a protective effect with decreased risk of symptomatic CDAD disease. There is very limited evidence (in 4 small studies) that treating asymptomatic carriers reduces the spread of *C. difficile*. Even when these carriers are treated with Vancomycin, the elimination of *C. difficile* carriage was temporary.



Figure 1.A. Skin contamination with *Clostridium difficile*



The issues of skin contamination and asymptomatic carriage raises concerns for infection prevention that need to be addressed in the future. This is especially true in outbreak settings where patients skin may be contaminated longer than initially thought and excretion of spores may occur in asymptomatic patients (both those that are

treated and now diarrhea free and those who never develop CDAD). Given these factors, more stringent and prolonged isolation may be required during an “unresolving” outbreak to control *C. difficile* in an institution.

By Dr. Rodger Sandre

Editors Note: The recognition that *C. difficile* may be carried asymptotically and be present on the skin emphasizes the importance of strict attention to hand hygiene and following Routine Practices for all patient interactions.

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Follow PIDAC guidelines found at www.pidac.ca

- Gloves and gown for persons entering room
- Careful management of faeces
- Strict environmental cleaning
- Hand hygiene
- Single room and private toileting facilities

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Infection Prevention and Control (IPAC) Public Reporting - What you need to know

By Dr. Ian Davis

In addition to Hand Hygiene there are 4 public reporting requirements by the MOHLTC. *Clostridium difficile* (CD) infection has been reported by all hospitals in Ontario monthly since September 2008. Nosocomial MRSA and VRE bacteremia was reported in December 2008 and will be reported quarterly. In addition to hand hygiene the next reportable indicators in April 2009 were ventilator associated pneumonia (VAP), central-line primary blood stream infection (CLI) and surgical site infection prevention (SSI). These are all important, potentially preventable, hospital associated infections. With the exception of CD these are not generally issues for long term care but as more complex patients are managed in these settings they may become more important in the future.

A national organization called Safer Healthcare Now in association with the Canadian Patient Safety Institute has developed 10 interventions aimed at quality improvement in both acute and long term care. Of these interventions, 4 are infection prevention related (ie. MRSA, CLI, VAP, SSI). These interventions include a comprehensive implementation plan to help institutions develop their individual programs and can be accessed on their website. Other infection control guidelines that can help in the development of these programs are available from the Provincial Infectious Diseases Advisory Committee (PIDAC) and include best practices for hand hygiene, *Clostridium difficile*, MRSA/VRE and surveillance of health care-associated infections. Long-term care can be a potential reservoir for multidrug resistant organisms. Incorporating these practices for those relevant to the individual setting will help improve patient care and safety.

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Doc Talks

In 1847, the Austrian-Hungarian physician Ignaz Semmelweis challenged current medical convention by advocating medical staff wash their hands in a chlorinated lime solution between performing autopsies and deliveries. In doing so, he reduced the incidence of puerperal fever among delivering mothers in his obstetrical clinic from 13-18% to 2%, winning the epithet "The Saviour of Mothers".

In 2007, hand-washing is still the cornerstone of infection prevention and control, though it has been joined by 160-years' worth of additional infectious disease theory and surveillance. In spite of everything we know however, the Community and Hospital Infection Control Association - CHICA Canada has determined that healthcare associated infections (HAI's) affect 250,000 people each year and directly or indirectly cause 8,000-12,000 deaths annually (2003). The steady emergence of antibiotic resistance including Community-acquired MRSA (CA-MRSA) clearly indicates that there is room for improvement in our infection control practices.

The Regional Infection Control Networks (RICNs) have been implemented by the Ministry of Health and Long-term Care (MOHLTC) to facilitate this improvement through maximizing coordination between all levels of infection prevention and control across the healthcare continuum - acute care, long-term care and community settings including physicians' offices.

Your local Regional Infection Control Network is one of the 14 Regional Infection Control Networks (RICN) in Ontario and operates within the same geographic boundaries as the Local Health Integrated Network (LHIN). The RICNs are guided by a Steering Committee with representation from all healthcare sectors, including acute, long-term and community care, public health, physicians and Emergency Medical Services. For more information about the office location or staff, see www.ricn.on.ca

Today, given our current world of interdependence and specialization, the integration of infection control principles into practice across all settings requires the cooperation and collective will of the many specialized sectors of the healthcare system. Today, Regional Infection Control Networks are available to assist with coordination of these practices and to facilitate standardization to best practice across the health care continuum.

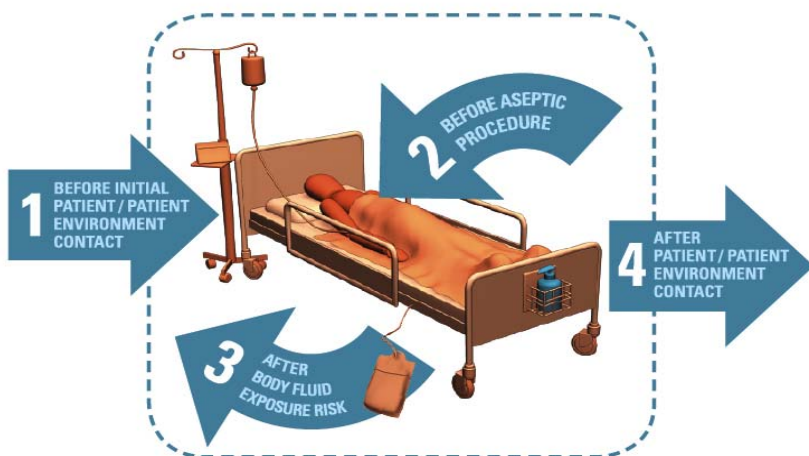
The Physicians' Role: Hand Hygiene Best Practices

By Dr. Ian Davis

As of April 30, 2009 hospitals are required to report compliance with hand hygiene by health care workers (HCW). This will be reported annually and involves measuring compliance through use of an audit tool developed by the ministry-sponsored program "Just Clean Your Hands" (www.justcleanyourhands.ca). The importance of proper hand hygiene cannot be overemphasized. It is estimated that only a 20% increase in hand hygiene adherence can reduce nosocomial infections by up to 40%. Guidelines for Hand Hygiene have been developed by the Provincial Infectious Diseases Advisory Committee (PIDAC) and should be followed in health care settings. Proper hand hygiene involves the "4 Moments for Hand Hygiene" including before and after contact with the patient or their environment and prior to performing clean or aseptic procedures (even if gloves are worn for the procedure) and after potential contact with body fluids. Alcohol hand rub (AHR) is the preferred method for hand hygiene and requires a 15 second rub to be effective. It is easier to perform, more effective and less likely to cause skin irritation than using soap and water. However, soap and water is necessary when there is visible soiling of the hands and is theoretically more effective in removing the spores of *Clostridium difficile*. The patient sink should not be used for hand washing as this may re-contaminate the HCW and therefore wash sinks should be dedicated to HCW. In the absence of a sink, when caring for patients with *Clostridium difficile* infection, AHR should be used.

Physician practices can have a strong influence on other health care worker's behavior and therefore we must set a strong example and advocate for improved hand hygiene.

Your 4 Moments for Hand Hygiene



“..... a 20% increase in hand hygiene adherence can reduce nosocomial infections by up to 40%.”

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This Newsletter is a Central East Infection Control Network Initiative



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*Giving Health
a Helping Hand*

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