

**Report on the Visit of the Infection Control Resource Team to
 St. Joseph's Healthcare, Hamilton
 November 19, 2010**

Report Submitted:

Infection Control Resource Team Members:

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Staff Interviewed:

Dr. David Higgins – President
 Winnie Doyle – Vice President, Clinical Services & Chief Nursing Executive
 Ann Higgins – Quality and Patient Safety Consultant
 Romeo Cercone – Vice President, Quality Strategic Planning
 Dr. Hugh Fuller – Chief of Medical Staff, Chair, Medical Advisory Committee
 Heather Hoxby – Nursing Director
 Rick Badzioch – Nursing Director
 Kim Stephens- Woods – Nursing Director
 Jackie Barrett – Nursing Director
 Jane Loncke – Nursing Director
 Ida Porteous – Nursing Director
 Bobby Alexander – Director, Environmental Services, Food and Nutrition Services
 Carolyn Goss – Director, Pharmacy, Chair, Pharmacy and Therapeutics Committee
 Clyde Coventry – Manager, Environmental Services
 Craig MacPherson – Manager, Environmental Services
 Rob Laffier – Supervisor, Environmental Services
 Sheri Wiertel – Supervisor, Environmental Services
 Barry Buttersee - Supervisor, Environmental Services
 Frances Flynn - Supervisor, Environmental Services
 Darlene Kennedy – Nurse Manager, Cardiology
 Tara Coffin-Simpson, Nurse Manager CTU West
 Sherry Noseworthy, Nurse Manager 6GI
 Donna Johnson, Nurse Manager CTU Central
 Jennifer Anderson, Nurse Manager Emergency Department

Anne Howarth, Nurse Manager Nephrology
Stephanie Pust, Nurse Manager ALC
Angela Coxe, Acting Nurse Manager MSK
Lily Waugh, Nurse Manager ICU
Beverly Cole, Manager Rehab
May Griffiths-Turner – Interim Manager, Infection Prevention and Control
Michelle Baird – Hamilton Public Health Services Representative
Joanne De Jager – Infection Control Practitioner
Samira Kermanchi - Infection Control Practitioner
Andrew Iacurti - Infection Control Practitioner

Executive Summary

The Ontario Agency for Health Protection and Promotion received a request from St. Joseph's Healthcare Hamilton (SJHH) in conjunction with Hamilton Public Health Services to activate an Infection Control Resource Team (ICRT) to review the processes used in managing an outbreak of *Clostridium difficile* infection (CDI) at the Charlton site of SJHH.

On November 19, 2010, a full ICRT visit was made to the Charlton site. The visit included interviews with senior management, infection prevention and control, other key staff, as well as a tour of the facility. During the interviews, key informants shared pertinent information related to measures instituted to control CDI at SJHH.

The following is a summary of the recommendations made pursuant to the ICRT visit:

1. The ICRT supports the limitation of transfers for clinical reasons only; this should be enforced.
2. Patients on Contact precautions should be allowed to ambulate outside of their rooms. Individual cases should be assessed to ensure patient is able to follow instructions on personal hygiene.
3. SJHH is currently using a system of Personal Protective Equipment servers. This system is supported. To avoid contamination, access to the servers should be limited to the hallway.
4. The ICRT supports IPAC's approach to daily unit surveillance of confirmed and suspected CDI cases.

5. The ICRT recommends stronger visibility of ICPs on their respective units. Daily rounds will enhance relationships between infection control and the clinical unit.
6. Currently the Medical Director acts as a consultant. It is recommended that she meet with the IPAC team on a regular basis and become integrated into the program.
7. Establish clear guidelines and process to identify threshold for unit terminal cleaning based on the number of nosocomial CDI cases and the over all burden of CDI on a unit. The ICRT encourages a good working relationship with Hamilton Public Health Services.
8. Ensure IPAC education is provided and documented for all new employees including students. IPAC policies and principles should be reviewed annually.
9. The ICRT recommends the hand hygiene program be reinstituted as a corporate initiative.
10. The ICRT supports the use of alcohol based hand rub for all patients including those with CDI. While there is a theoretical concern that hand hygiene using alcohol based hand rub will not kill *C. difficile* spores, many facilities have been able to control *C. difficile* without requiring soap and water washing. Furthermore, requiring soap and water will have the unintended consequence of decreasing hand hygiene compliance.
11. An education component for all staff should be incorporated into the hand hygiene program.
12. Ensure consistency of auditing through the hand hygiene program.
13. During the facility tour, it was noted that computer keyboards did not have covers. To prevent them from getting contaminated, it is suggested that a keyboard skin be used or that ABHR be available next to all computers (taking into account fire safety regulations).
14. Spray wands that are in patient bathrooms should be removed to prevent them from being used to clean bedpans/commodos. Using spray wands to clean the commode or equipment will generate splashes that can contaminate the environment and, because of this, it is strongly recommended that they should be removed.
15. To prevent further splashing, the ICRT recommends barriers for all toilets located in open areas in patient rooms that currently do not have barriers.
16. Twice daily double cleaning of isolation rooms may be discontinued; a single cleaning twice daily is sufficient provided that a sporicidal agent is used.

17. A system needs to be implemented whereby the recommended 10 minute contact time of the sporicidal agent is consistently achieved. An alternative sporicidal agent should be considered for use in rooms of patients that are highly sensitive to the current product.

18. A 'terminal clean' of all units is recommended including all patient rooms, washrooms, common areas and high touch surfaces with a sporicidal agent. This may be repeated periodically as an ongoing preventative measure

19. All patient rooms on units with high rates of *C. difficile* should be cleaned with a sporicidal agent twice daily for the next 1-3 weeks (the actual duration will depend upon how the outbreak responds). As the outbreak abates, this policy can move to twice daily sporicidal cleaning of *C. difficile* patient rooms and washrooms as a standard practice. In the future, should additional cases appear on a unit, the policy can revert back to twice daily sporicidal cleaning of all patient care areas on that unit until no additional cases are found. This proactive, aggressive approach will likely prevent future outbreaks from developing.

20. A system should be developed to monitor mattress integrity and replacement of mattresses when necessary.

21. Consistent training and communication across all portering staff (including Operating Room and Diagnostic Imaging) should be provided.

22. The ICRT supports the trial of a dedicated decontamination room with 1 FTE ES staff for rolling equipment. The 4th floor trial of disinfecting and bagging clean shared-equipment prior to storage in a clean room and decontaminating commodes in the cart washer is also supported and applauded.

23. The ES policy currently states to clean from 'soiled to clean'. Cleaning should always be done from clean to dirty to decrease risk of transmission. Environmental cleaning is a specialty skill that requires extensive training. Training of ES staff is suggested for all new implementations.

24. The ICRT recommends dedicating part of an Infectious Diseases physician's time to the antibiotic stewardship program.

Report on the Visit of the Infection Control Resource Team to St. Joseph's Healthcare Hamilton on November 19th, 2010

Background

The Charlton site at St. Joseph's Healthcare Hamilton (SJHH) is a 672 bed acute care facility. The hospital provides services to Hamilton's community and surrounding areas. Services include general internal medicine, nephrology, cardiology, surgery, acute medical, ALC-LTC, intensive and coronary care, obstetrics including a neonatal ICU, rehabilitation, complex continuing care and acute and tertiary mental health. SJHH has the largest emergency department in the Hamilton area.

The Ontario Agency for Health Protection and Promotion received a request from St. Joseph's Healthcare Hamilton (SJHH) in conjunction with Hamilton Public Health Services to activate an Infection Control Resource Team (ICRT) to review the processes used in managing an outbreak of *Clostridium difficile* infection at the Charlton site of SJHH.

Process of the ICRT

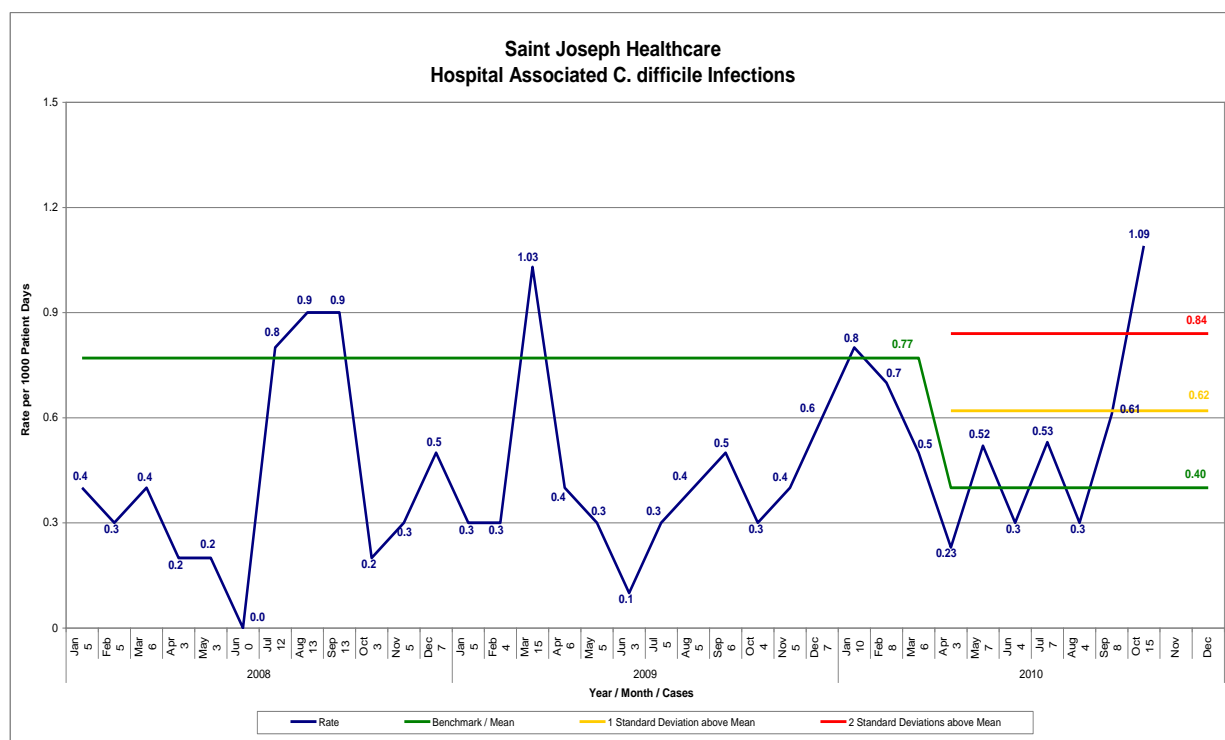
On November 19, 2010 a full ICRT visit was made to the Charlton site, which included interviews with senior management, the infection prevention and control team, other key staff, as well as a tour of the facility. During the interviews, key informants shared pertinent information related to measures instituted to control *Clostridium difficile* at SJHH.

PIDAC Best Practice Documents used to assess practices at St. Joseph's Healthcare Hamilton:

- *Best Practices for Infection Prevention and Control Programs in Ontario in All Health Care Settings (September 2008)*
- *Best Practices for Hand Hygiene in All Health Care Settings (January 2009)*
- *Best Practice for the Management of Clostridium difficile in All Health Care Settings (January 2009)*
- *Best Practices for Surveillance of Health Care Associated Infections in Patient and Resident Populations (June 2008)*
- *Best Practices for Environmental Cleaning for Prevention and Control of Infections (December 2009)*

Epidemiologic Summary

A sharp increase in the number of CDI cases for October 2010 was identified. There have been a total of 33 cases of hospital acquired CDI since October 1, 2010 until the time of the ICRT review. There were 5 deaths associated with the outbreak (1 directly attributed, 3 associated and 1 not associated). There were 20 cases of CDI in hospital at the time of the ICRT review, 13 of which were hospital acquired.



C. difficile Management

PIDAC's Best Practices Document for the Management of Clostridium difficile in All Health Care Settings recommends several control measures for *C. difficile*, including: initiation of contact precautions for any patient who is considered to be at risk for *C. difficile* at the onset of symptoms; meticulous hand hygiene; environmental cleaning; appropriate treatment; and education.

The response to the outbreak by the facility was prompt and should be commended. Hamilton Public Health Services was notified and an outbreak management team was formed. The control measures that were implemented include:

- Contact precautions for any patient presenting with diarrhea;
- Education provided to patients, their families and visitors about *C.difficile*;
- Screening of all patients daily for new onset of diarrhea;
- An outbreak management team was formed and were meeting daily; senior leadership is very engaged;
- Increased the number of commodes to allow dedication of commodes to symptomatic patients;
- Replaced EIA testing with PCR testing for *C.difficile* allowing for more accurate and faster turnaround times for results;
- Limited patient transfers between units for clinical reasons only;
- Transfers occur on clean stretchers/wheelchairs so that soiled beds are not travelling throughout the hospital;
- Shared patient equipment disinfected through cart washer;
- All inpatient bathrooms are cleaned using PCS 7500 on discharge;
- Inpatient rooms on Contact precautions receive twice daily, double cleans with PCS 7500;
- A pharmacist has been dedicated to antibiotic stewardship;
- Signage was placed at all entrances to the facility informing staff and visitors about the *C.difficile* outbreak;
- *C.difficile* outbreak was communicated to all staff by email on November 2nd as well as by intranet and website updates;
- Communication to the public through the media on November 2nd and regular updates thereafter;
- The hospital has made the creation of single rooms a priority since 2009, and this has been very helpful in controlling the outbreak.

CDI Management Recommendations

1. The ICRT supports the limitation of transfers for clinical reasons only; this should be enforced.
2. Patients on Contact precautions should be allowed to ambulate outside of their rooms. Individual cases should be assessed to ensure patient is able to follow instructions on personal hygiene.

3. SJHH is currently using a system of Personal Protective Equipment servers. This system is supported. To avoid contamination, access to the servers should be limited to the hallway.

Infection Prevention and Control (IPAC) Program

The PIDAC Best Practices for Infection Prevention and Control Programs in Ontario in All Health Care Settings recommends “ICP staffing levels must be appropriate to the size and complexity of care of the health care facility. Recommendations for staffing should not be based exclusively on bed numbers. The ratio of ICPs will vary according to the acuity and activity of the health care facility and the volume and complexity of the ICPs’ work. This includes high risk ambulatory care centres such as oncology and dialysis.

Recommendations for staffing include 1 FTE ICP for 100 occupied beds in health care facilities with high risk activities and 1 additional FTE ICP per 30 intensive care beds.

This document identifies the value of IPAC programs and states that “the responsibility for the infection prevention and control program in the health care setting lies primarily with senior administration of the organization”.

In addition the document states, “The ICPs should have direct access to the Senior Management individual who is accountable for the organization’s program and who can facilitate the actions required.”

The Infection Prevention and Control (IPAC) department has tremendous support from senior management. Senior leaders participated in the on-site review, showed evidence of being committed to the IPAC program and were actively involved in the management of the outbreak.

IPAC has a strong relationship with Environmental Services (ES). Daily communication takes place between the two departments which resulted in prompt recognition of the outbreak.

There are 6.3 FTEs for 672 inpatient beds, 1 FTE manager and 1 administrative assistant. This results in a ratio of approximately 1 ICP to 107 beds. This staffing compliment is in keeping with recommendations. IPAC hired a new manager starting November 22nd who has a strong background in infection prevention and control and outbreak management.

A Medical Director was recently appointed for IPAC. The role is currently on a consultant basis.

IPAC Recommendations

4. The ICRT supports IPAC's approach to daily unit surveillance of confirmed and suspected CDI cases.
5. The ICRT recommends stronger visibility of ICPs on their respective units. Daily rounds will enhance relationships between infection control and the clinical unit.
6. Currently the Medical Director acts as a consultant. It is recommended that she meet with the IPAC team on a regular basis and become integrated into the program.
7. Establish clear guidelines and process to identify threshold for unit terminal cleaning based on the number of nosocomial CDI cases and the over all burden of CDI on a unit. The ICRT encourages a good working relationship with Hamilton Public Health Services.
8. Ensure IPAC education is provided and documented for all new employees including students. IPAC policies and principles should be reviewed annually.

Hand Hygiene

A hand hygiene ambassador program was created two years ago and was led by a nurse manager and an infection control practitioner. Both individuals have since left the organization and the program has suffered.

It was noted that funding for 1 FTE hand hygiene auditor has been approved.

Staff found the hand hygiene moments too complex highlighting the need for more education.

Hand Hygiene Recommendations:

9. The ICRT recommends the hand hygiene program be reinstituted as a corporate initiative.
10. The ICRT supports the use of alcohol based hand rub for all patients including those with CDI. While there is a theoretical concern that hand hygiene using alcohol based hand rub will not kill *C. difficile* spores, many facilities have been able to control *C. difficile* without requiring soap and water washing. Furthermore, requiring soap and water will have the unintended consequence of decreasing hand hygiene compliance.
11. An education component for all staff should be incorporated into the hand hygiene program.

12. Ensure consistency of auditing through the hand hygiene program.

Environmental Services

The PIDAC Best Practices Document for the Management of Clostridium difficile in All Health Care Settings recommends “all horizontal surfaces in the room and all items within reach of patient with suspected or confirmed CDAD should be cleaned twice daily with a hospital-grade disinfectant.... Particular attention should be paid to high risk or high touch surfaces...and consideration of the use of new disinfectant products with in vitro evidence of sporicidal activity.”

The ICRT tour of St. Joseph's Healthcare revealed it to be extremely clean; environmental services staff are to be commended.

It was noted that ES staff feel supported by senior leadership and that ES has a sufficient staffing complement. ES is fully engaged in the outbreak management.

The Environmental Services Bedtracking System is connected to the hospital ADT system allowing ES staff to be notified promptly as patients are discharged or transferred. The default setting is an Isolation Terminal clean.

Communication between the Infection Prevention and Control team and Environmental Services was noted to be very strong. IPAC informs ES daily of all isolations therefore ES was able to react to the increased burden early. IPAC and ES recognized an increased burden on October 28th and brought in 'precautionary cleaners' to clean high touch surfaces at that time. There has been 45 additional in-house ES hours per day since November 1st.

Quality control is achieved qualitatively by visual audits and quantitatively by Glo-Germ audits. Unannounced audits by supervisors are done twice monthly per unit. If 85% compliance is not achieved, retraining is provided. Auditing measuring ATP (a way of identifying live bacterial growth on surfaces) was to commence November 22nd.

The Tower is serviced by a contracted ES and the rest of the facility is serviced by in-house ES. Both managers report to the same Director.

A sporicidal agent (PCS 7500) was used to clean all rooms of suspect and confirmed CDI patients twice daily during the outbreak. Following each PCS 7500 clean, a second clean using PCS 250 was done (so that in effect the room is cleaned 4 times in 24 hours). All discharges received the equivalent of an Isolation Terminal Clean. PCS products have been in use in the facility since April 2009. Product manufacturer recommends that surfaces remain wet for a 10-minute contact time. This contact time is being met in patient washrooms;

however, it is not being met in patient rooms. Secondly, this product cannot be used in a patient room if that patient has a respiratory condition due to fumes from the product (PCS 7500 is a hypochlorite-based disinfectant).

The facility does not have an automated system for management of human waste. Each isolation room had an attached patient bathroom where bedpans were emptied and stored. Bedpans are emptied into dedicated toilets and then rinsed with spray wands. Soiled bedpans are then placed in a Sani-bag and stored in a dedicated area in the dirty utility room until they are taken for reprocessing in SPD. In the ICU, toilets are located in open areas within patient rooms; these toilets do not have lids. Toilet brushes are dedicated to each bathroom. Toilet brushes are discarded as part of Isolation Terminal Cleans. Non-Isolation toilet brushes are discarded and replaced when visibly soiled.

The ICRT suggests that the ES team share their experiences with other members of the health care team and their peers at other facilities.

Environmental Services Recommendations:

13. During the facility tour, it was noted that computer keyboards did not have covers. To prevent them from getting contaminated, it is suggested that a keyboard skin be used or that ABHR be available next to all computers (taking into account fire safety regulations).
14. Spray wands that are in patient bathrooms should be removed to prevent them from being used to clean bedpans/commodes. Using spray wands to clean the commode or equipment will generate splashes that can contaminate the environment and, because of this, it is strongly recommended that they should be removed.
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Antibiotic Utilization

The PIDAC *Best Practices for Infection Prevention and Control of Resistant Staphylococci and Enterococci* identifies antibiotic use as a risk for the development and transmission of antibiotic resistant organisms. The document recommends "*Policies and procedures should be implemented to promote judicious antibiotic use, in order to limit the spread of antibiotic resistant microorganisms.*" The document also recommends "*Health care setting should institute formulary control of antibiotics and should conduct regular reviews of antibiotic utilization.*"

SJHS has implemented an Antibiotic Stewardship program focusing on restricted antibiotics.

The ICRT recognizes that implementing a successful antibiotic stewardship program is a long process; continue with your program.

Antibiotic Utilization Recommendations

24. The ICRT recommends dedicating part of an Infectious Diseases physician's time to the antibiotic stewardship program.

Laboratory Support

No specific recommendations are made regarding laboratory support. Testing turnaround times are appropriate and all microbiology results are reported directly to both IPAC and the clinical unit.

The microbiology department changed from EIA to PCR CDI testing yielding more accurate results and faster turnaround times.

Conclusion

SJHH should be recognized for its valiant efforts and commitment to reducing its rate of CDI. There is a growing awareness within SJHH regarding infection prevention and control, and a very encouraging interest in the role of culture change and possible engagement in Positive Deviance projects. The ICRT encourages SJHH to continue moving in this positive direction.

We welcome any questions you may have as you work towards implementing the recommendations found in this report.

Respectfully submitted by:

Dr. Michael Gardam
Liz Van Horne
Carly Rebelo
Bryan Morales
Dr. Pavani Das