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Report of the Just Clean Your Hands Symposium: Celebrating Five Years

November 18 and 19, 2013
Chestnut Conference Centre
89 Chestnut Street, Toronto, Ontario M5G 1R1

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Executive Summary

On November 18 and 19, 2013, an invitational symposium was held to mark the first five years of the Just Clean Your Hands (JCYH) program. Many programs and individuals have contributed greatly to the field of hand hygiene since that time.

The JCYH program was an early leader in the field of hand hygiene implementation in Canada. The Ministry of Health and Long-Term Care worked closely with hand hygiene leaders in the United Kingdom to develop the innovative components of the program. In addition, JCYH, along with other countries, contributed to the development of the World Health Organization hand hygiene program and adapted some of its elements for the Ontario program.

The November 2013 symposium gave Public Health Ontario an opportunity to invite thought leaders to share their insights with participants in the health care field. Speakers were invited from the United Kingdom, the United States, and Canada. Several of the speakers had been present at the inaugural hand hygiene symposium held by the Ministry of Health and Long-Term Care in 2006 and had a history with the program. As a result, both speakers and attendees were able to contribute significantly to the dialogue.

Since the launch of JCYH, the program has undergone a number of changes. The 2013 symposium gave JCYH an opportunity to reconnect with stakeholders and other hand hygiene experts; review the program's strengths; explore its challenges; and identify future directions. By inviting leaders in hand hygiene to participate, Public Health Ontario hoped to facilitate discussions on how to strengthen the JCYH program overall.

The goals of the symposium were as follows:

- To use the information and evidence gathered from speakers and participants to improve the implementation and sustainability of the JCYH program.
- To review the successes of the JCYH program and the lessons learned.
- To increase the network of key stakeholders (health care practitioners, government, and academics) at the provincial level, and potentially at the national level.
- To access, share, and disseminate the most current knowledge on hand hygiene practices.
- To identify innovative strategies that impact hand hygiene practices.

Over the two-day symposium, speakers reviewed the history of hand hygiene; described what we have learned since 2006; outlined the current status of initiatives in Ontario and across the world; and discussed factors that have contributed to the successes and challenges of hand hygiene initiatives. Participants gave feedback on the implementation of JCYH in their setting and advice on how the program could be improved.

Public Health Ontario is committed to using the information from this symposium to move forward with JCYH over the next five years. Four overarching themes were identified:

1. *Institutional culture:* Participants want more support to promote behavioural and cultural change and to increase accountability for hand hygiene performance. They also want assistance in finding more effective ways to engage senior management.

2. *Collaboration:* There is a need to improve collaboration with experts in behaviour change, human factors engineering, and implementation science.

3. *Education:* Educating front-line health care providers about hand hygiene is not sufficient. We need to incorporate information on hand hygiene in the curricula of all schools/facilities that provide health care programs. We also need to develop materials to engage the public. Participants need to share success stories and learn from each other.

4. *Auditing:* The current audit tool is challenging for many participants. It is labour-intensive and prone to errors in transcription. A more standardized process and a more user-friendly method of collecting data are needed. Not all organizations can adopt sophisticated electronic tools, due to a lack of financial resources.

Within these themes there are several areas for further discussion. The Infection Prevention and Control team will be addressing these areas in collaboration with the JCYH Advisory Committee and our stakeholders over the coming months.

Rationale

Many programs and individuals have contributed greatly to the field of hand hygiene. The Just Clean Your Hands (JCYH) program was an early leader in the field of hand hygiene implementation in Canada. The Ministry of Health and Long-Term Care (MOHLTC) worked closely with hand hygiene leaders in the United Kingdom (U.K.) to develop the innovative components of the program. In addition, JCYH, along with other countries, contributed to the development of the World Health Organization (WHO) hand hygiene program and adapted some of its elements for the Ontario program.

The November 2013 symposium gave Public Health Ontario (PHO) an opportunity to invite thought leaders to share their insights with participants in the health care field. Speakers were invited from the U.K., the United States, and Canada. Several of the speakers had been present at the inaugural hand hygiene symposium held by the MOHLTC in 2006 and had a history with the program. As a result, both speakers and attendees were able to contribute significantly to the dialogue.

Objectives

In 2013, we celebrated the fifth anniversary of the JCYH program in Ontario hospitals. Since the launch, the program has undergone a number of changes. The 2013 symposium gave JCYH an opportunity to reconnect with stakeholders and other hand hygiene experts; review the program's strengths; explore its challenges; and identify future directions. By inviting leaders in hand hygiene practice to participate (Appendix A), PHO hoped to facilitate discussions on how to strengthen the JCYH program overall.

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The First Five Years: Reflections from International, National, and Provincial Experiences

The symposium began by looking at the history of hand hygiene programs, as well as at some of the challenges they experience.

The introduction of modern hand hygiene began in 2000 when a study from Geneva was published in *The Lancet*.[1] In May 2004, the 57th World Health Assembly approved the creation of an international alliance to improve patient safety, and the World Alliance for Patient Safety was launched in October of the same year. In October 2005, the WHO's Clean Care Is Safer Care was launched as the first global patient safety challenge, a key component of which was hand hygiene. The wave of support for the WHO program built as advocacy efforts, ministerial pledges, national campaigns, and research interests blossomed. Today, over 48 countries have signed on to this campaign.

In 2009, a WHO core group of experts published the *WHO Guidelines on Hand Hygiene in Health Care.*[2] These guidelines built on previous WHO guidance from 2006, where the WHO multimodal hand hygiene improvement strategy was first identified. [3]

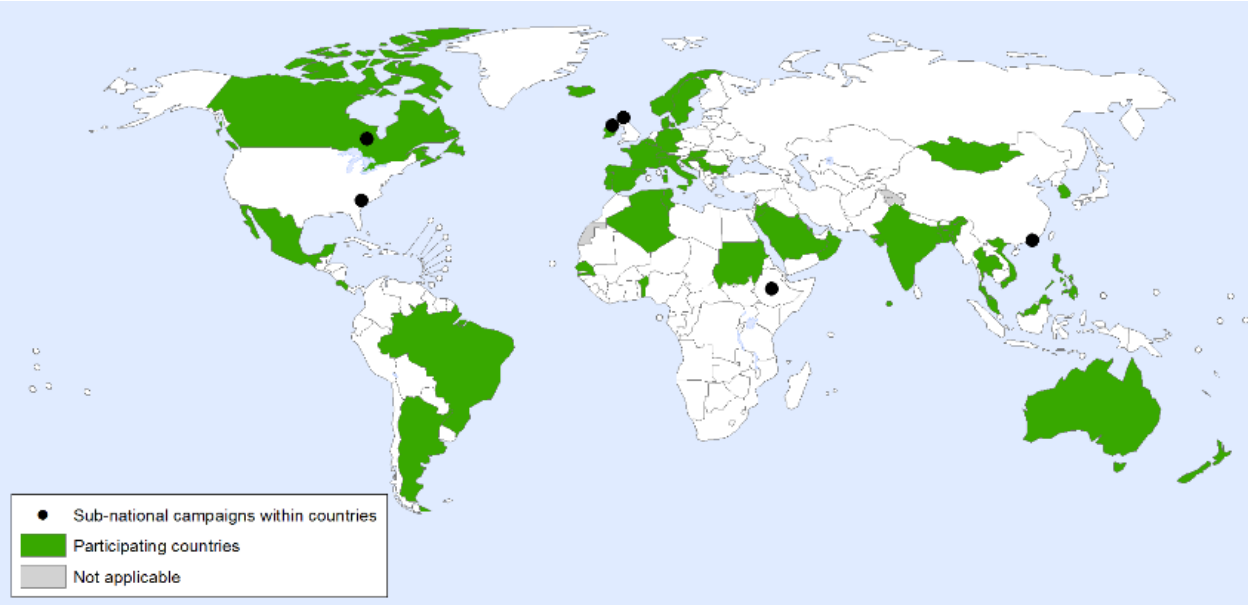
Also in 2009, WHO launched an annual campaign to improve hand hygiene called SAVE LIVES: Clean Your Hands. This campaign encourages individual organizations to improve hand hygiene and provides resources to assist them. In 2013, over 15,000 health care facilities participated in the campaign, which is marked annually on May 5.

The Geneva study was the catalyst for the U.K. National Patient Safety Agency's Cleanyourhands campaign.[1] The U.K. campaign made extensive use of social marketing to bring hand hygiene to health care providers throughout the country. It was one of the first national programs on hand hygiene and remained a cornerstone of the National Patient Safety Agency until 2010. At that time, the highly successful program ended and a Hand Hygiene Alliance formed to maintain awareness of the issue.

In addressing the symposium, Elaine Larson pointed out that between 2007 and 2009, only two high-quality studies assessed the short-term and longer-term impacts of strategies to improve hand hygiene.[4] Since 2010, over 30 multimodal interventions from 25 countries point to improved hand hygiene adherence.

The Canadian Patient Safety Institute (CPSI) signed on to the WHO Clean Care Is Safer Care challenge in 2007 and launched its program STOP! Clean Your Hands. CPSI worked with partners in the public and private sector, including the MOHLTC, to develop its program.

Figure 1: Countries Participating in the WHO Clean Care is Safer Care Campaign [5]



In Ontario, 2005 was a time of immense change in infection prevention and control. The experience with severe acute respiratory syndrome (SARS) had led to a review of infection prevention and control practices to identify necessary changes and protect the health and safety of health care providers and patients. In Operation Health Protection, the MOHLTC identified a number of areas needing improvement, and hand washing was one of them.

The MOHLTC held the first Hand Hygiene Consensus-Building Workshop on March 1 and 2, 2006. The meeting brought together participants from diverse disciplines to inform the development of models for hand hygiene initiatives. During this meeting, participants noted that addressing the issue of hand hygiene compliance needed to include non–health care disciplines to enable new and innovative approaches. Individuals with expertise in human factors engineering, communications, and social marketing were necessary to move the program forward.

The workshop strengthened connections between Ontario and programs under way in the U.K. and at the WHO. The U.K. program in particular became the model for JCYH. The steering committee formed after the workshop decided to develop a program first, and then conduct a study in a representative group of Ontario hospitals.

In 2007, the steering committee had finalized the elements of the program and developed a plan to conduct a pilot study at six hospital sites, but the study was expanded to include 10 hospitals when over 60 applications were received. The 10 sites were located throughout the province and included a mix of teaching, community, and small/rural hospitals. Each hospital was funded to hire a JCYH coordinator to oversee program implementation and collect data.

Ontario's pilot study revealed successes and challenges that needed to be addressed in the implementation plan.[6] Some program materials were revised based on the findings and some new materials were developed. The steering committee worked to complete these changes, and in 2008 the JCYH program was launched in partnership with the Ontario Hospital Association, and with educational

support from the Regional Infection Control Networks (RICNs). The MOHLTC and Ontario Hospital Association held workshops in each region, and 100 per cent of hospitals participated. The MOHLTC made resources available to all sites and collaborated with the CPSI to adapt the monitoring and measuring tools for the national program.

In 2009, the program expanded to include long-term care homes. Tools and resources for hospital settings were adapted and made available for long-term care. In the same year, the MOHLTC began to require that hospitals report hand hygiene compliance annually. This requirement was separate from the JCYH program, and it changed the focus of many hospitals from implementing the program to auditing and improving hand hygiene compliance rates.

In 2010, the RICNs led a coaching project on behalf of the MOHLTC to help long-term care homes implement JCYH.

In 2011, JCYH was expanded to include retirement homes. This was also the year that the program was transferred from the MOHLTC to PHO.

In 2012, a formal evaluation of the program was conducted, with participation from 71 per cent of hospitals and long-term care homes. Feedback on the current status of the program included the following.

1. The need to organize the program based on four distinct stages of implementation:
    a) *Installing:* Getting the program elements in place. Facilities in this phase require intensive support.
    b) *Using:* Bringing all staff on board and using all parts of the organization.
    c) *Maintaining/innovating:* Continuing with the program and adding innovative elements to engage staff.
    d) *Advancing:* Moving beyond JCYH to embed the program in the organizational culture (very rare).
2. The need to clarify the core messaging of JCYH. The existing materials did not resonate with front-line staff and facilities.
3. The need for increased relevance to different target audiences. Sector-specific material/information is needed for all sectors.
4. The need to refresh outdated materials and establish a regular review cycle. The current materials have not been refreshed since the program was established; these should be regularly reviewed and updated.
5. The need for improvements in the monitoring and observation of hand hygiene. This area of JCYH is challenging and time-consuming; it requires trained personnel and tools that are easy to use.

The results of the evaluation will inform future program plans, in combination with ongoing feedback from the symposium and stakeholders.

Where We Are Now

Current Challenges

There have been many successes and challenges since the pilot and expansion of the JCYH program. A major component of hand hygiene programs is their ability to track and record data on compliance rates via onsite personal auditors.

In their presentations, both Elaine Larson and Matthew Muller pointed out that observation audits are currently known as the gold standard, when they are, in fact, the *only* standard that can measure all of the "Four Moments" of hand hygiene. Their presentations noted a number of published studies, including the following:

- A study in an 820-bed tertiary care setting where college and graduate students conducted random observations. The cost for 2,074 hours of observation was $21,252.00, or $0.66/observation. [7]
- A 12-week study in a 40 bed medical-surgical intensive care unit in Brazil that compared direct observation of product dispensing to the measurement of hand hygiene compliance. The study showed no significant correlation between product use and observed practice. [8]
- A study of direct observation in two hospitals, where unit-based observers reported higher adherence rates than non–unit-based observers (79 per cent versus 58.6 per cent, p <0.001).[9]

Dr. Muller summarized the pros and cons of direct observation as follows.

- Pros:
    - Can distinguish between all Four Moments of hand hygiene.
    - Can assess all elements of hand hygiene (Moment, appropriate product, technique, duration).
    - Can distinguish between type of health care provider.
    - Can identify specific problem areas.
    - Includes intuitive interpretation of information by front-line users.
- Cons:
    - Requires trained observers.
    - Training is labour-intensive and expensive.
    - Inter-observer agreement may be poor or not measured.
    - Is subject to several biases: observer bias, observation bias (the Hawthorne Effect), and selection bias.
    - Is subject to errors in observation, transcription of data, and reporting.

Similarly, Dr. Muller summarized the pros and cons of product consumption as a measure of compliance:

- Pros:
    - Is less labour-intensive than direct observation.
    - Has no selection, observation, or observer bias.
    - Provides "big picture" data on whether or not hand hygiene efforts are working.
- Cons:
    - Does not measure actual compliance.
    - Use of purchasing data may be problematic.
    - May or may not respond rapidly to changes in health care worker compliance.
    - No differentiation between health care workers and non–health care workers.

There was consensus that at present there is no perfect way to measure hand hygiene compliance in all settings. This challenge will need to be addressed if we are to gather meaningful information.

Current Successes

The symposium also provided an opportunity to showcase organizations that have successfully implemented aspects of the JCYH program. The three organizations that presented, highlighted program implementation in the acute care sector.

Hand Hygiene in an Ambulatory Setting: Women's College Hospital

Sheila Le-Abuyen and Jessica Ng presented on Women's College Hospital's "patient as observer" approach. Women's College Hospital is an ambulatory facility. The program used a direct observer for auditing from 2008 to 2011, but the hospital encountered several challenges, including the physical environment, the type of care provided, the use of resources, and the Hawthorne Effect. To address these challenges, the site piloted a "patient as observer" approach. This approach had been successfully used in two centres in the United States to obtain feedback on hand hygiene compliance. A multidisciplinary working group was established to lead the pilot program, and staff members in the pilot area (the family practice health team) were engaged in the process. Volunteers were recruited to distribute surveys to patients and encourage participation. As part of the pilot program, data from the patient surveys were compared to rates from direct observation, and the two methods reported comparable compliance rates. The hospital's main challenges with the "patient as observer" approach were managing preconceived notions about hand hygiene auditing and dependence on volunteers.

Some of the lessons learned were:

- Patient observers are a viable alternative to the direct observer method.
- The approach was cost-effective; fewer human resources were needed.
- The multidisciplinary working group played a pivotal role in obtaining cooperation of staff.

- The patient-centred design maximized participation.
- Volunteers were used in non-traditional ways and enjoyed participating in the program.
- The "patient as observer approach" was a way to engage, educate, and empower patients.

The hospital will expand the program to the entire family practice department, with a gradual expansion to clinics and programs that express high interest and readiness. Women's College Hospital is also re-evaluating its hand hygiene auditing approach.

Providing Feedback on Hand Hygiene: North Bay Regional Health Centre

Laurie Boyer from North Bay Regional Health Centre presented on her centre's multifaceted approach to feedback on hand hygiene. Ms. Boyer touched on the centre's challenges with hand hygiene compliance and concern from the hospital board about why a supposedly straightforward and simple process like hand hygiene was such a challenge for staff. The infection prevention and control team presented to the board and received support for a series of focus groups to gauge staff perceptions of hand hygiene non-compliance. Staff members were encouraged to bring forward their ideas using a variety of modalities, including mind mapping. Findings from the focus groups included the following.

- Knowledge and/or introspection:
    - Many staff members did not know that they were being asked to change their behaviour.
    - Staff members did not know what they were being audited on (i.e., which Moment).
    - Staff members believed they were doing the right thing to keep patients safe and did not perceive a reason to change behaviour.
- Perceived lack of time to perform hand hygiene:
    - During times of high activity, hand hygiene at Moment 1 was one of the first tasks omitted.
    - There was a lack of role models who "walk the talk."
    - While health care workers believed that hand hygiene protected them and their patients, the link between low hand hygiene rates and increased spread of infection was not readily apparent using the facility's data.
- Visual triggers, product at point of care:
    - Alcohol-based hand rub (ABHR) was easily identified at the entry to rooms.
    - ABHR was needed on entry to each patient space.
    - Hand hygiene sinks were not being used appropriately.
    - Products were in the building, but not readily or conveniently available to staff.
    - Empty dispensers were not replenished.

The results of the staff engagement focus groups were presented to the hospital board, along with a plan to improve hand hygiene compliance. The plan was endorsed by the hospital board and supported by the centre's senior management team.

The infection prevention and control team made several changes based on the feedback from the focus groups:

- Personal-carry hand hygiene products were made available to staff and replenished systematically.
- A trial of dispensers at the foot of each patient's bed was conducted, but it was not successful.
- Skin care products were provided for staff and placed in areas where they were readily available.
- Flip flag indicators were placed on dispensers so that users could indicate when the product needed to be replenished.
- Sinks were dedicated for hand hygiene, and staff were trained on their use.
- Rewards and recognition were provided to staff members who demonstrated good hand hygiene practice.
- Current hand hygiene rates were posted on team bulletin boards so that staff knew how they were doing.
- An initiative to engage staff in product placement was undertaken to increase product accessibility.
- Hand hygiene compliance rates were included in a mini quality improvement plan.
- A Hand Hygiene Improvement Committee was formed.

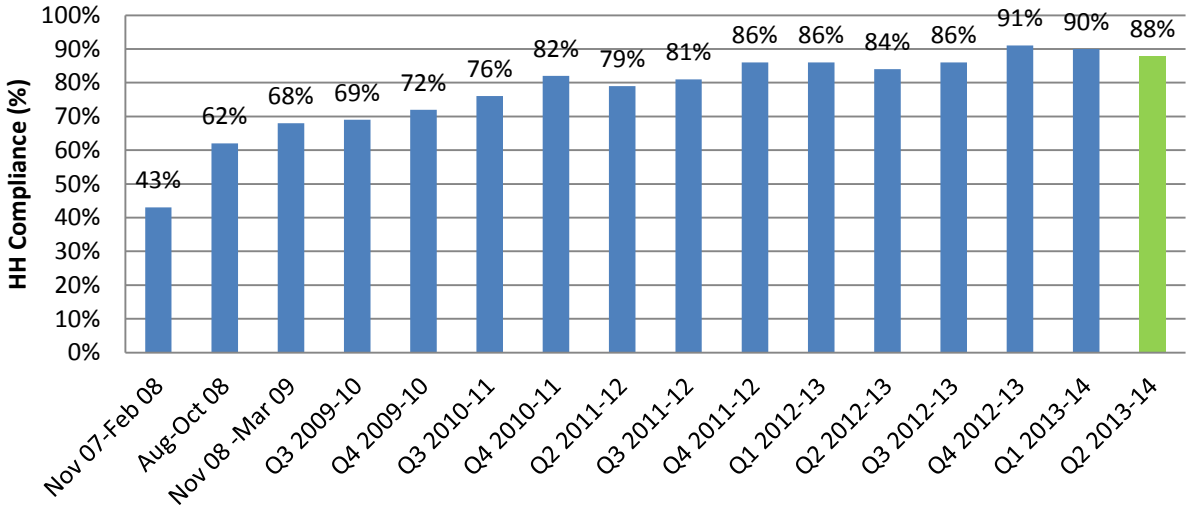
Next year, the organization's quality improvement plan will include goals and metrics developed by personnel who are dedicated to working on hand hygiene and seeing it become a success in the North Bay Regional Health Centre.

Hand Hygiene Programs Targeting Physicians: Sunnybrook Health Sciences Centre

Mary Vearncombe presented the work that Sunnybrook Health Sciences Centre has done to improve hand hygiene compliance among physicians. The initiative is supported by Sunnybrook's President and Chief Executive Officer, Barry McLellan, and he has made it the number-one priority on the hospital's quality improvement plan.

The premise for the program is twofold: physicians are powerful role models in hospitals, and have been documented to have poor compliance with hand hygiene. Dr. McLellan believes that if physicians can be persuaded to take ownership of a successful hand hygiene program, then the rest of the hospital staff will follow. The program will also help increase hand hygiene practice among physicians themselves.

Figure 2: Hand Hygiene Trends: Sunnybrook



Source: Sunnybrook Health Sciences Centre.

Some of the key components of the physician-focused program are:

- Identification of physician champions in each department.
- Creation of a physician champion working group, to which physicians in each department are accountable.
- Quarterly reports on physician hand hygiene compliance discussed at the Medical Advisory Committee.
- Quarterly reports on hand hygiene compliance specific to each medical program/area.
- Trained observers targeting physicians when auditing.
- Physician resident engagement initiatives.
- Social marketing campaigns with Sunnybrook physicians in the material.
- Pins and stickers for physicians to signal high performance.

The pins/stickers also act as a branding piece for Sunnybrook patients, bringing awareness and recognition of hand hygiene to the community. Anecdotal feedback suggests that patients and family members recognize the physicians in the social marketing material, bringing further awareness of the program.

Summary

The presentations on the first day of the symposium discussed elements that are critical for a successful hand hygiene program. In Table 1, those elements are listed and compared with the programs from the showcase sites above.

Table 1: Showcase Sites and Components of a Successful Hand Hygiene Program

Components of Successful Hand Hygiene Program	Women's College Hospital	Sunnybrook Health Sciences Centre	North Bay Regional Health Centre
Buy-in from Senior Levels of Hospitals	X	X	X
Senior Management Support /Engagement	X	X	X
Measuring Pre-program knowledge/Report	X	X	X
Changing Culture	X	X	X
Continued Measurement of Program	X	X	X
Champions in the Facility at All Levels	X	X	X
Performance Feedback	X	X	X
Positive Support from Leaders	X	X	X
Multifactorial Interventions	X	X	X

The Next Five Years

After reviewing the history and current status of hand hygiene, the symposium turned to the topic of how hand hygiene can move forward. The presentations started with macro-level changes to the health care system as it relates to hand hygiene, and then moved on to discuss theories of organizational change and individual behaviour change as they relate to hand hygiene programs.

Human Factors Engineering

Carla Alvarado provided an overview of human factors engineering and its use in establishing infection prevention and control systems. She defined human factors/systems engineering as "the study of how people interact physically and cognitively with the world around them, including environments, tools, processes, and procedures. It is matching the work system to the person."

Dr. Alvarado challenged participants to think about whether staff saw infection prevention measures such as hand hygiene as a distraction or an interruption to what they perceive as their actual task. Dr. Alvarado reminded participants that in infection prevention we are trained to break systems down into parts and focus on the parts. However, she noted that in complex systems like hand hygiene and health care delivery, the relationships between the parts are greater than the parts alone. She challenged participants to look at the relationships instead of continuing to use a traditional "anticipatory" model.

Physical Environment

We currently see the entire organization (personnel, work flow, technology, environment, etc.) as parts with their own working order rather than as components of a greater system. For infection prevention and control to move forward, practitioners have to develop systems that take into account how the physical environment shapes each person's work flow and how work can be engineered to be completed regardless of the challenges.

Work Flow Issues

Dr. Alvarado discussed the importance of a shared mental model, which recognizes that for success to occur, all individuals in a system must be wired to complete their jobs and/or tasks and ensure the community or system goal is achieved. She used the analogy of a termite hill to demonstrate this model. In a termite hill, she explained, there is no hierarchical structure; each termite intuitively knows its task and its place. If the termite hill is suddenly damaged, all of the termites immediately go into a "programmed" state to fix the hill. She explained that this same type of hard-wiring is needed to ensure hand hygiene is as successful as it can be.

Improved Sustainability (Participatory Ergonomics/Joint Optimization)

Dr. Alvarado also introduced participants to the term participatory ergonomics. Participatory ergonomics seeks to maximize the involvement of workers in a process, based on the understanding that the worker is an expert in his/her job. She also spoke about joint optimization, which recognizes

that social and technical elements must work together for tasks to be accomplished. Work systems produce both physical products and social/psychological outcomes. Work that is designed so that these two parts yield positive outcomes is referred to as *joint optimization*. Changes that are supported by efforts in both the social and technical areas are more likely to be sustained.

Participatory teams are very important to the success of a program, and teams should keep growing. To have effective joint optimization, front-line hospital staff in all areas (i.e., housekeeping, maintenance, bedside care providers, etc.) should be consulted for solutions and to find out where work and training can be implemented.

Dr. Alvarado emphasized that changes in human factors and care environments continue to evolve; as a result, the work to improve outcomes will have to evolve as well.

Culture Change

Liane Ginsburg discussed organizational behaviour change and its application to successful hand hygiene program implementation.

To determine how to effect cultural change with respect to hand hygiene, one first needs to know what the organizational culture is. Dr. Ginsburg described organizational culture as "how we do things around here." It is something experienced staff members know and new employees learn. Organizational culture indicates what behaviours are valued and rewarded. It is also what is experienced, and may differ from what is espoused by the organization.

In a strong organization, a positive patient safety culture is characterized as a priority over all others; it is pervasive among supervisory and senior leadership; it has open lines of communication; and it has an open approach to learning. Dr. Ginsburg pointed out that technical tools cannot independently solve behavioural challenges and noted that leaders in a professional setting can influence behaviours in junior positions. For example, if someone in a junior position regularly practices hand hygiene but sees someone more senior not doing it, the junior person will adopt the practice of the senior person, even if he or she knows it's wrong.

Dr. Ginsburg pointed to a 2009 paper that stated: "low hand hygiene rates are generally not a systems problem anymore; they are largely an accountability problem." The authors of this paper stated that once the systems issues have been addressed, individual accountability should be expected.[9] The same argument has also been applied to marking surgical sites and the practice of preoperative time-outs.

Dr. Ginsburg identified different models of change for hand hygiene that organizations can use:

1. A multifaceted approach focused on changes at the individual and organization/system levels.
2. Path models or behaviour motivation models.
3. Adaptation models (institutional theory and coercive force, in particular).
4. Radical models (e.g., punctuated equilibrium).

Individual Change

Kim Corace spoke about behaviour change and its impact on hand hygiene programs. Dr. Corace noted that hand hygiene is a complex behaviour, but that we tend to ignore behaviour theory when we try to change hand hygiene practices. Our focus is on education, when it should be on motivating and facilitating health behaviour change.

Dr. Corace pointed out that there are few articles describing the use of behaviour change theory as the basis for hand hygiene interventions. The internal factors that motivate health care worker practice play a role in hand hygiene, but we have not integrated these factors into our attempts to change practice.

Dr. Corace reviewed the Theory of Planned Behaviour model and illustrated how it can be applied in hand hygiene. The scientific evidence points out flaws in the way behaviour change and hand washing behaviour are measured. Approximately 10 scholarly articles on hand hygiene and behaviour change theory focused on post hoc analysis, predicting who would wash their hands based on a theory rather than using a theory to analyze hand hygiene practices and then analyzing the theory itself.

People are asked to change practices all the time—at work, in relationships, or in other situations. One predictor of behaviour is intention, which is made up of three factors: attitude (how positively or negatively the individual values something); subjective norms (perceived social pressure); and perceived behavioural control (the ability to change something). If all three are in place, it may be possible get the intention to practice hand hygiene.

Changing behaviour is a complex idea. It is not a simple question of whether someone goes from not practicing hand hygiene to practicing hand hygiene; interventions must be tailored for where the problem lies.

The Transtheoretical Model of Behaviour Change suggests that people go through five stages before they change a behaviour: pre-contemplation, contemplation, preparation, action, and maintenance.[11]

To motivate people to change, we have to match interventions with the stage they are in. Failing to do so may have detrimental effects, such as entrenching current positions. Dr. Corace spoke of the need to link the behaviour change we are striving for with the values held by the health care provider. We need to understand the motivations underlying hand hygiene practice when we design programs.

Dr. Corace emphasized that education alone has not translated to acceptable levels of hand hygiene compliance, and that motivation has not been considered in program design. We need to use theoretically driven approaches and research in our planned interventions. If we understand the motivation of the health care provider and incorporate that understanding into program design, we will be more successful in changing behaviour. We must recognize that change is difficult and relapse is part of the change cycle. Interventions must be geared to the stage health care providers are in, and program designs need to incorporate multiple strategies to target the different stages.

Technology

There have been significant technological improvements in monitoring and observing hand hygiene. Matthew Muller reviewed the various types of monitoring technology used to measure compliance with hand hygiene, including video monitoring, count systems, simple electronic monitoring systems (EMSs), and complex EMSs. Dr. Muller also spoke of the impact of public reporting on hand hygiene.

A study of video monitoring was published in *Clinical Infectious Diseases* in 2012.[12] This was a two-year study in an intensive care unit, where cameras were installed to watch hand hygiene product dispensers and monitor compliance. The video feed was transferred to an external reviewer and monitored continuously by trained observers. Health care providers were determined to have passed or failed based on whether they performed hand hygiene. Observations that did not include health care providers were discarded. Prior to this study, compliance via direct observation had been 60 per cent. During the baseline period of the study, compliance was 6.5 per cent, even though staff members were aware of the cameras and their purpose. Compliance rose to 88 per cent during the maintenance period, when feedback on performance was added. This study demonstrated that compliance is much lower than we believe, but the video monitoring system itself was labour-intensive and expensive.

Dr. Muller also spoke about count systems to monitor hand hygiene. These systems employ a device in the hand hygiene product dispenser that counts the number of activations. However, this method does not differentiate between health care providers and others, so it is difficult to extrapolate the compliance of different populations using this method. Most often, count systems have been used to evaluate the impact of hand hygiene interventions (i.e., does the count increase after an intervention is put into place).

The simple EMS involves the installation of electronic monitors in the care unit. Beams are triggered when an individual enters or exits the room, and the monitor is linked to an ABHR dispenser. If a person enters the room, does not use the ABHR, and then leaves the room, the EMS will identify this as a missed opportunity. In some studies, the use of a recorded voice prompt has been added to the system. However, like count systems, the simple EMS does not differentiate between health care providers and others.

The complex EMS tracks use of dispensers and links to health care workers in the system. The EMS uses a black box that incorporates an algorithm to define compliance. It employs a variety of technologies, including radiofrequency identification, WiFi, infrared, and ultrasound. In the complex EMS, health care providers wear a tag or transponder that communicates with monitors in the care zone and transceivers in the dispensers. This information can be used to identify when a health care provider enters or exits a room and whether or not they perform hand hygiene. The complex EMS allows for continuous monitoring and individualized or group-level feedback. However, it does not monitor all Four Moments, it is expensive to implement, and some health care providers have raised concerns about privacy.

Dr. Muller also spoke about the impact of public reporting on hand hygiene. In Ontario, public reporting has focused interest on hand hygiene, and the data appear to show increased compliance with hand hygiene in Ontario hospitals. However, these data have not been validated and may represent the

Hawthorne Effect, as well as implementation of indicator-based strategies. Moving forward, Dr. Muller suggested that the focus should be on correlating hand hygiene compliance with a reduction in health care–associated infections. We should incorporate a variety of technologies in our measurement to ensure that we meet the goal we are striving to achieve.

Advice from the Field/Feedback from Participants

Throughout the two days of the symposium, participants had opportunities to discuss issues and provide feedback on the presentations. Questions were posed to the participants to assist in obtaining this information (Appendix B).

The first series of questions asked participants to identify what factors contributed to the successes or challenges of the JCYH program. Participants emphasized the importance of having ABHR at the point of care and an engaged senior management team. Overall, they also felt that the multifaceted approach of the JCYH program and the availability of resources were also important factors in the program's success. Several stakeholders said observations and auditing were positive elements, because they can be used as teachable moments, assisting in the promotion of hand hygiene and obtaining staff buy-in. Almost all participants recognized the role of public reporting in creating an environment that reinforces the importance of hand hygiene.

When participants spoke about challenges with the program, they emphasized the need for more education of the public, patients, and health care providers in training. There is also a need to embed hand hygiene in college and university curricula and educate the public on expectations for hand hygiene in the health care setting. Many participants felt that competing priorities were leading to a decreased emphasis on hand hygiene, so that senior staff were less engaged and physical resources were diminishing. Within the JCYH program, participants asked for the current observation/audit tool to be improved and provided in an electronic format. Several participants suggested that the program build in a mechanism to correlate hand hygiene compliance with health care–associated infections to better strengthen this initiative.

Participants were then asked to describe how monitoring and observation had affected their organization—specifically, what practices they had adopted to support their organization's hand hygiene policy and what the impact of those practices was.

Most participants indicated that they used trained auditors and required a minimum number of audits in each month or quarter. Some facilities used their senior management team as auditors to demonstrate their support of the program. A number of organizations used immediate feedback to staff members and posted hand hygiene rates in the units or used other communication devices.

Participants felt that monitoring and observation had had a significant impact in their organization. A number indicated that it had led to positive culture change, and some correlated improved compliance rates with a decrease in antibiotic-resistant organisms in their setting. Overall, staff at all levels are aware of hand hygiene and interested in compliance rates for their area/department. Participants also thought patients were more knowledgeable about hand hygiene and its importance. Negative impacts

shared by participants included concerns about program fatigue and anxiety in areas where compliance rates are lower.

Finally, participants were asked to provide advice to PHO about regarding what actions the JCYH program should take over the next five years. This advice was provided in the form of a letter to PHO, indicating what the participant felt needed to be done, as well as how the participant could assist. Participants provided advice on education and marketing, and they suggested changes to the current auditing practice. Participants noted that they were willing to be engaged in making these changes and were committed to working with PHO as the program evolves.

At the end of the second day of the symposium, participants completed an evaluation feedback form, (Appendix C) which consisted of four questions pertaining to their professional background and experience in infection prevention and control.

Next Steps

Themes

Four overarching themes were identified at the symposium: institutional culture, collaboration, education and auditing.

Institutional Culture

Participants said that after five years of implementation, many organizations are battling hand hygiene fatigue. Front-line health care providers have many competing priorities and have discussed being tired of hearing about hand hygiene. This also extends to some senior management teams, where hand hygiene has been delegated to other positions with minimal involvement of senior leaders. PHO also heard that in organizations where the senior management team is engaged, positive culture change has led to positive change in other areas of the organization. In addition, patients have seen the commitment to hand hygiene and provided positive feedback to staff. Participants said that they needed more support to promote behaviour and culture change, and to increase accountability for hand hygiene performance. Mechanisms to engage senior leaders, patients, and family members are needed. The goal of culture change should be to empower front-line staff to participate fully in JCYH.

Collaboration

Participants identified a need to re-focus hand hygiene in their settings. Many of the challenges they experienced were related to implementation and the engagement of front-line health care providers and senior staff. Participants pointed to a lack of knowledge about behaviour change and human factors engineering and wanted to see this reflected in JCYH to help them implement JCYH. Collaboration with experts in the fields of behaviour change, human factors engineering, and implementation science would help embed understanding from these fields in the JCYH program.

Education

Participants provided a wealth of feedback on education needs in JCYH. They emphasized the need to embed education on hand hygiene in the curricula of all schools/training facilities with health care programs. They also recognized that messaging needs to be targeted to specific audiences, and that a "one size fits all" approach would be less likely to succeed. They expressed a need to make better use of social media to promote hand hygiene, because stakeholders are using social media more often. Participants also emphasized the need to learn from each other by sharing success stories, which can serve as catalysts to generate ideas and enhance the hand hygiene program. Education should be targeted at patients and the public, as well as at health care providers; an informed public will enhance JCYH.

Auditing

Mandatory public reporting of hand hygiene rates in acute care settings has had both positive and negative impacts on JCYH. While it has increased overall awareness of the importance of hand hygiene, the current audit tool is challenging for many participants; it is labour-intensive and prone to errors in transcription. Participants requested an auditing process that is more standardized and that incorporates activity indicators to outcome indicators. They suggested that correlating hand hygiene rates with health care–associated infection rates would provide meaningful data. Incorporating benchmarking with other similar organizations would also be helpful. Participants would like the JCYH program to provide a free electronic tool that observers could use to collect data and provide analysis of all Four Moments, using parameters that were meaningful to each organization.

Questions

Within the above themes there are many areas for further discussion. Before moving forward, the JCYH program needs to talk about existing program resources and find answers to the following questions:

- Are facilities still using the existing Excel analysis tool?
- Should we keep the current JCYH brand or go for a new look?
- Are we ready to engage patients and families in hand hygiene programs? If yes, what should this look like?
- How can we support sustainable improvement in our facilities to ensure that hand hygiene becomes part of the culture?

Public Health Ontario is committed to using the information obtained during this symposium to move forward with JCYH over the next five years. We will provide regular reports on the status of JCYH to our stakeholders as the program evolves.

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Appendix A: Agenda

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PARTNERS FOR HEALTH | PARTENAIRES POUR LA SANTÉ

November 18-19, 2013

Chestnut Conference Centre
89 Chestnut St. Toronto, Ontario M5G 1R1

Just Clean Your Hands Symposium
celebrating five years

Day 1: November 18, 2013

8:00	Registration & Breakfast
8:30	**Welcome & Introductions** Dr. Vivek Goel – President & CEO Public Health Ontario
8:45	**An International Perspective on Hand Hygiene Programs – Progress Over the Past Five Years** Julie Storr, Founder Member UK Hand Hygiene Alliance Dr. Elaine Larson, Associate Dean for Research Professor of Epidemiology Mailman School of Public Health, Columbia University
9:45	**Q&A**
10:15	Break
10:45	**The Canadian Experience in Hand Hygiene** Anne MacLaurin, Project Manager, Hand Hygiene Canadian Patient Safety Institute
11:05	**Just Clean Your Hands – Five Years Later** Liz Van Horne, Manager, IPAC Resources Public Health Ontario
11:30	**Q&A**
12:00	Lunch
12:45	**Group Discussion - On Success in Hand Hygiene**
1:15	**Showcase – Hand Hygiene in an Ambulatory Setting** Sheila Le-Abuyen, Practitioner, IPAC Women's College Hospital Jessica Ng, Manager, IPAC Women's College Hospital
1:45	**Monitoring and Observations** Dr. Matthew Muller, Medical Director, IPAC St. Michael's Hospital
2:45	Break
3:15	**Providing Feedback on Hand Hygiene** Laurie Boyer, Patient Safety Coordinator, Quality & Performance Excellence, North Bay Regional Health Centre
3:45	**Interactive Session on Providing Feedback**
4:15	**Wrap-up and Review of Ideas**

Day 2: November 19, 2013

8:00	Breakfast
8:30	**Opening Remarks – Review of Previous Day** Dr. George Pasut, Vice-President Science & Public Health, Public Health Ontario
8:45	**Human Factors and Hand Hygiene** Dr. Carla Alvarado, Research Scientist Emerita University of Wisconsin – Madison
9:30	**Strategies for Organizational Culture Change** Dr. Liane Ginsburg, Associate Professor School of Health Policy & Management, York University
10:15	Break
10:45	**Behaviour Change – Impact on Hand Hygiene Programs** Dr. Kim Corace, Clinical, Health, & Rehabilitation Psychologist, Division of Infectious Diseases, Department of Psychology, The Ottawa Hospital
11:30	**Panel Discussion – Q&A**
12:00	Lunch
12:45	**Interactive Discussion - The Next Five Years**
1:15	**Showcase – Hand Hygiene Programs Targeting Physicians** Dr. Mary Vearncombe, Medical Director of IPAC Sunnybrook Health Sciences Centre
1:45	**Power, Influence, and How to Use Social Marketing** Neil Seeman, CEO The RIWI Corporation
3:00	**Just Clean Your Hands – The Next Five Years** Public Health Ontario
3:15	**Closing Remarks**

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Appendix B: Summary of Discussion Sessions

I. Overview of All Discussion Sessions

Table A1: Just Clean Your Hands Symposium – Group Discussions (November 18 and 19, 2013)

Session	Context	Question(s)	Approach
Day 1 Group Discussion - On Success in Hand Hygiene (12:45)	Participants will have heard about success in hand hygiene at the international, national, and local levels. We want them to reflect on what they have heard and on their experience of what has worked.	• What are the key factors that have contributed to the success of the Just Clean Your Hands program in Ontario and beyond? • What are the most significant challenges we need to overcome to advance hand hygiene in Ontario?	This exercise will focus on engaging participants, creating an opportunity to interact, get up and move around the room. (2-4-8-16 exercise; large note cards)
Day 1 Interactive Session on Providing Feedback (3:45)	The second part of the day is dedicated to how monitoring and observation has had an impact on compliance with hand hygiene practices.	Please draw on your experience to describe how monitoring and observation have made an impact in your organization.	Group work will be focused in table discussions. Each table (5–8 people) will discuss and record responses. (Template developed to capture discussion. Public Health Ontario staff to be note takers at each table.)
Day 2 Interactive Discussion— The Next Five Years (12:45)	Participants will be challenged by ideas related to social and behaviour change and be encouraged to be in a forward-thinking mindset.	What advice can you offer Public Health Ontario as the steward of the Just Clean Your Hands Program over the next five years?	Letter to Public Health Ontario Dear Public Health Ontario: When we meet again in five years, we will see _____. *(what is the change we want to see?)* Here is how we will help: ____. (Template for letter to be prepared for each table.)

II. Main Points: On Success in Hand Hygiene

What are the key factors that have contributed to the success of the Just Clean Your Hands program in Ontario and beyond?

Discussion feedback from the first day about factors that have contributed to the success of hand hygiene programs encompassed several different topics, including resources, management, education, culture, the Just Clean Your Hands (JCYH) program, and auditing and observation.

- *Resources:* Increased availability of point-of-care alcohol-based hand rub (ABHR) and additional products such as hand moisturizers made significant positive changes in participants' institutions; programmatic resources such as the JCYH Service Ontario publications ordering website and print materials contributed to hospitals and long-term care homes executing a successful hand hygiene program.

- *Management:* Buy-in and support from senior management; incorporating incentives into the programming of hand hygiene; establishing accountability; ensuring that hand hygiene stays on the radar; enthusiasm, support, active participation; continued support from senior members of management.

- *Education:* Lessons learned from severe acute respiratory syndrome (SARS); educating the public; a better-informed staff (from housekeeping to physicians to senior management); externally directing education via the media; promoting hand hygiene messages via social marketing; having staff experience real-life examples of how poor hand hygiene can manifest.

- *Culture:* Buy-in from all staff; engaged senior staff (which trickles down to middle and junior staff); committing to staffing a position for hand hygiene; having champions in institutions; ensuring that products are always available; having staff feel engaged and empowered; incorporating fun into hand hygiene programming; having a non-punitive approach to auditing; open-minded staff being able to provide feedback and take feedback.

- *JCYH program:* Multifaceted approach; availability of resources; standardized auditing process; simplification of the Four Moments.

- *Auditing and observation:* Providing positive and negative feedback on audits; taking advantage of feedback opportunities and making them teachable moments; public reporting.

What are the most significant challenges we need to overcome to advance hand hygiene on Ontario?

The second part of the first discussion session asked participants to identify challenges that need to be overcome to advance hand hygiene. The five overarching themes were education, reporting/auditing/ observations, the health care system, culture, and funding.

- *Education:* Need to educate the public on health care workers and hand hygiene expectations; more inter-hospital education; a greater need for patient education; getting core curriculum into universities and colleges; education for nursing students and all health care students; education for providers.

- *Reporting/auditing/observations:* Need a free electronic audit tool—paper tool too difficult and time-consuming; improve current auditing tool—current tool requires additional time to input data and analyze data; mine deeper into data to extract truly important data; tie data to health care–associated infections (HAIs); realize that 100 per cent compliance may not be realistic.

- *Health care system:* Have staff more receptive; doctors need to change; units act in silos; competing demands of front-line staff; misconceptions about glove use; hand hygiene is no longer number-one priority; need to incorporate technology.

- *Culture:* Competing priorities; negative attitudes about water and ABHR; validation of monitoring; auditing; campaign fatigue; complacency from staff; lack of buy-in from external stakeholders.

- *Funding:* Need more physical resources; more people working in infection prevention and control (IPAC).

III. Main Points: Providing Feedback

Monitoring and observation practices to support hand hygiene efforts

- *Auditing/auditors/observation:* Having minimum number of audits per month/quarter, etc.; facility-trained auditors; patient as observer; independent observer; notification of low audit totals; quarterly unit-specific rates; immediate feedback given to person observed; stats posted in newsletter for staff to compare with each other; on-the-spot feedback.

- *Learning/education/training/teaching:* Mandatory e-learning; peer-to-peer monitoring; following best practices.

- *Management:* Recruit management and senior management to execute the audit process; managers' meetings; board members and senior management to do audits.

Impact on hand hygiene resulting from monitoring and observation

Participants declared major impacts in their institutions from monitoring and observations, including positive culture change (e.g., acceptance of multiple auditors, staff eager for hand hygiene reports, steady sustained improvement and adherence, a clearer understanding of the importance of hand hygiene, increased feedback on hand hygiene, involvement from board members and senior management).

- The positive culture change was manifest in a change in rates: increases in hand hygiene rates, more valid compliance rates, rates of methicillin-resistant *Staphylococcus aureus* declining in some Local Health Integration Networks. Interest in tracking and monitoring of institutional rates has also meant that facilities saw initial growth and then levelling-off of hand hygiene rates.

Participants realized they needed to spend a lot of time on hand hygiene to simply maintain the rates that had originally come so easily.

- There was an overall increase in awareness of hand hygiene: colleagues of various positions inquiring about unit metrics of hand hygiene compliance, wanting to know the breakdown of each health care provider unit; overall increase in staff and public awareness of hand hygiene initiatives; engagement of senior management and all levels of staff.
- Successful tracking of observations led senior management to add compliance rates to their institution's quality improvement plan.
- There was program fatigue, anxiety in underperforming facilities or units, and some staff completely circumvented the observation process by yelling "IPAC police!" when they saw a person walking the halls they knew was an auditor.
- There was positive feedback from patients; they seemed to show a better understanding of point-of-care practice, and greater understanding of the hand hygiene initiatives. This was particularly evident in institutions that had adopted the "patient as observer" approach.
- There were several instances of increased competition and increased measurement. Some participants were hoping to see a link between increased hand hygiene rates and a lowering of HAIs, but they had not yet seen clear examples of this.

IV. Main Points: The Next Five Years

When we meet again in five years, we will see (what is the change we want to see?)

- *Education/marketing:* Increase knowledge in the field by having professional health care schools/colleges embed hand hygiene education in their curriculum. In addition to improving education in professional settings, attendees want to see other important hospital staff have a strict understanding of and vigilant practice of hand hygiene. People also see value in a more educated public on hand hygiene matters and see one way of achieving this as more awareness via social media initiatives.
- *Culture:* There was a strong desire to have a more compatible culture in health care institutions. This would mean patients, staff, and family asking about hand hygiene; accountability from facilities and units that translates to more instinctive hand hygiene performance; ingraining hand hygiene in all staff; no stigma associated with reminding staff to engage in hand hygiene. Institutions are adopting research findings, behavioural and cultural change theories, and other theoretical applications. Have hand hygiene bundled into task procedures.
- *JCYH program:* Participants wanted to see the JCYH program monitor engagement with hand hygiene as well as compliance. Additionally, they wanted to see the program evolve to include addressing behaviour change needs of facilities, incorporate human factors engineering into the program, and provide information on culture change. They wanted a bundled strategy for infection

prevention and control with less focus on hand hygiene. There was mixed feedback on keeping public reporting or getting rid of it altogether, but some participants thought there would be value in public reporting if hand hygiene compliance was married to HAI data.

- *Auditing:* Participants wanted an auditing process that is more standardized than the current method, which incorporates activity indicators with outcome indicators. They also felt that a better way of collecting information was needed; the current practice is labour-intensive and prone to errors in data tracking.

- *Patients:* Hand hygiene should always occur in front of the patient before contact. Engaging families in discussion about the value and importance of hand hygiene should be initiated, in addition to empowering patients and families to speak up if they see hospital staff not washing their hands.

- *Senior management/management:* Behaviour change to have leadership recognize and prioritize hand hygiene as a basic need by all who work in health care facilities; simplify hand hygiene Four Moments and language, as front-line managers are now doing audits.

Here is how we will help (what contribution will we make to the change?)

- *Auditing/observation/data:* Participants wanted to compare hand hygiene rates to HAI rates. They also wanted to incorporate benchmarking with other institutions that have a proven successful hand hygiene program.

- *Healthcare staff:* Participants wanted to feel empowered to provide necessary feedback to staff when a missed opportunity happens. Participants also wanted to broker some of their knowledge to develop hand hygiene skills in other staff. Participants wanted to see changing practice in clinical settings that allowed young nurses and physicians to speak up to older, more established colleagues without criticism and/or fear of what reaction they might encounter.

- *Patients:* Promoting patient involvement and empowering patients on hand hygiene practice and awareness of HAI was an important next step for IPAC professionals.

- *Education/social marketing:* Participants' feedback was strong on the education front—they provided numerous suggestions for how to use education to move the hand hygiene agenda along:

    - Target messaging to all demographics.
    - Incorporating community educators.
    - Using social marketing tools for hand hygiene strategies for PHO staff and for stakeholders.
    - Providing hand hygiene education to professional colleges in nursing, medicine, social work, etc.
    - Lobbying for funding to support education early in staff.
    - Using storytelling to emphasize the importance of hand hygiene for minimizing infections.
    - Using social media as a way of promoting hand hygiene to anyone; everyone is a potential patient/resident/client.
    - Showcasing exceptional programs.
    - Partnering with academic institutions to incorporate hand hygiene in the curriculum.

- *JCYH program:* Participants believed that to achieve some growth in hand hygiene in the next five years, the JCYH program will need to implement some changes as well:

    - Adapting the Four Moments to the home care setting and family practice/clinical practice.
    - Coordinating events such as this symposium more often, with more representation from the field.
    - Have “best-placed” ABHR stations.
    - Keeping the topic of hand hygiene a priority by collaborating with leadership members in hand hygiene, IPAC, behaviour change, human factors engineering, technology, etc.
    - Increasing Regional Infection Control Network staff involvement in field; we have very little to do with them but could benefit from their support and resources.
    - Ensuring that necessary resources are available.
    - Continuing to share practices and information in as many formats as possible.
    - Having designated JCYH auditors by region.
    - Simplifying the Four Moments.
    - Engagement and participation in working groups within PHO and with external stakeholders.
    - Providing a toolkit on ideas and templates for hand hygiene promotion; no PHO posters/slogans.
    - Eliminating the time factor from hand hygiene and help staff with better time management.
    - Bringing players/contributors to the table who have traditionally been absent or overlooked.

- *Senior management/management:* Participants believed that to see fruitful gains in hand hygiene, senior management needed to empower staff to share ideas on how to improve compliance. They also needed to expand the program to front-line staff. Participant feedback also included senior management being more engaged in their institution’s hand hygiene program, rather than simply creating a program and mandating internal stakeholders to adapt to the policies without knowing whether the policy was proven or effective. Participants wanted to have a seat at senior decision tables to ensure that voices and concerns from all levels of staff were acknowledged.

Appendix C: Evaluation Feedback

Note: n=118 is the total number of symposium participants
n=23 is the total number of participants to complete evaluation

Figure A1: Attendee Sector (n=118)

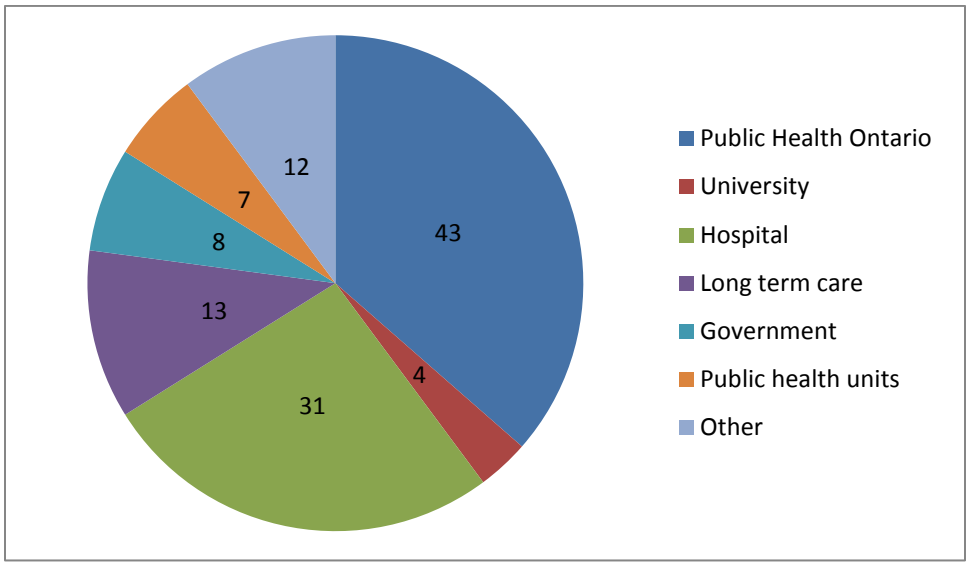


Figure A2: Attendee Job Title/Position (n=23)

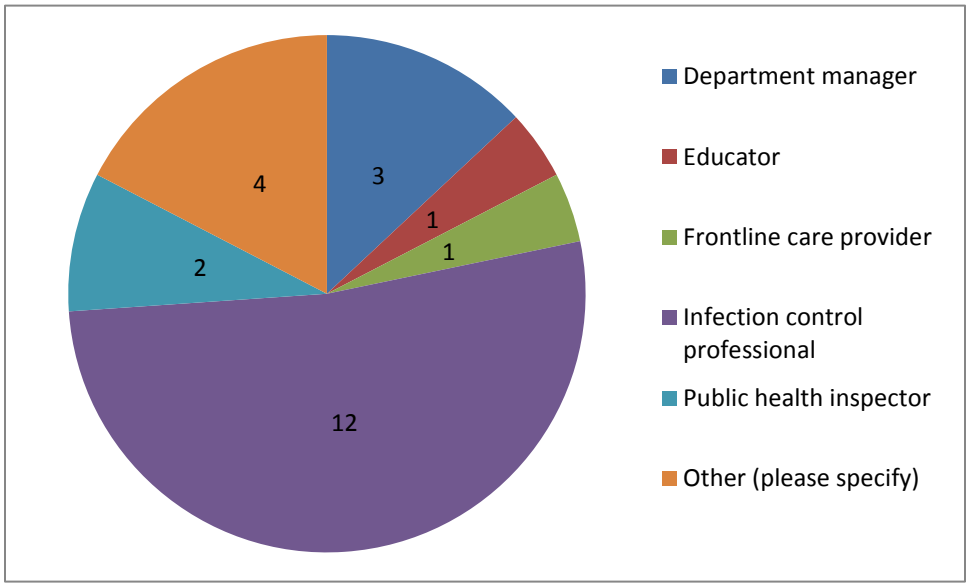


Figure A3: Attendee Area of Specialization (n=23)

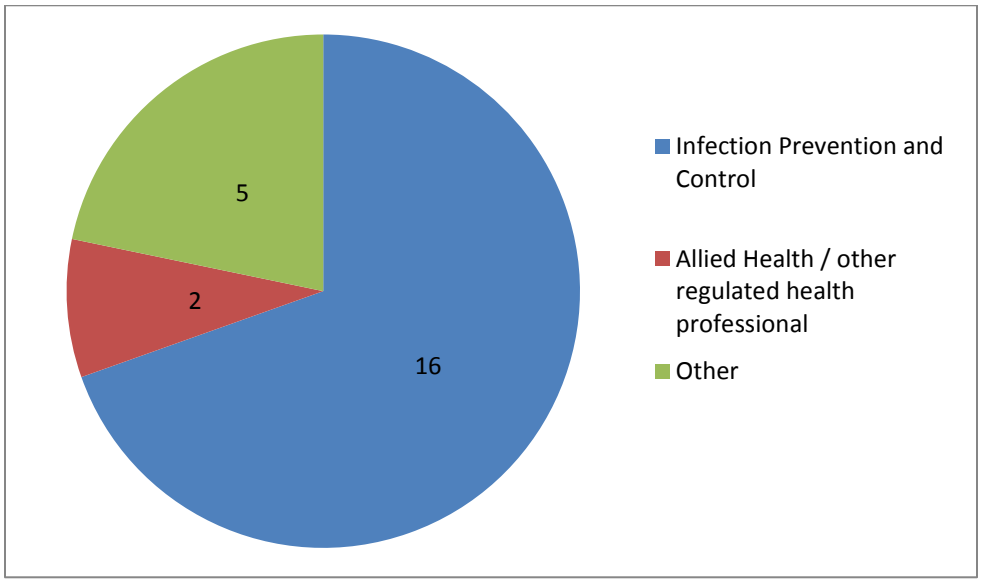


Figure A4: Attendee Duration Working in Infection Prevention and Control (n=23)

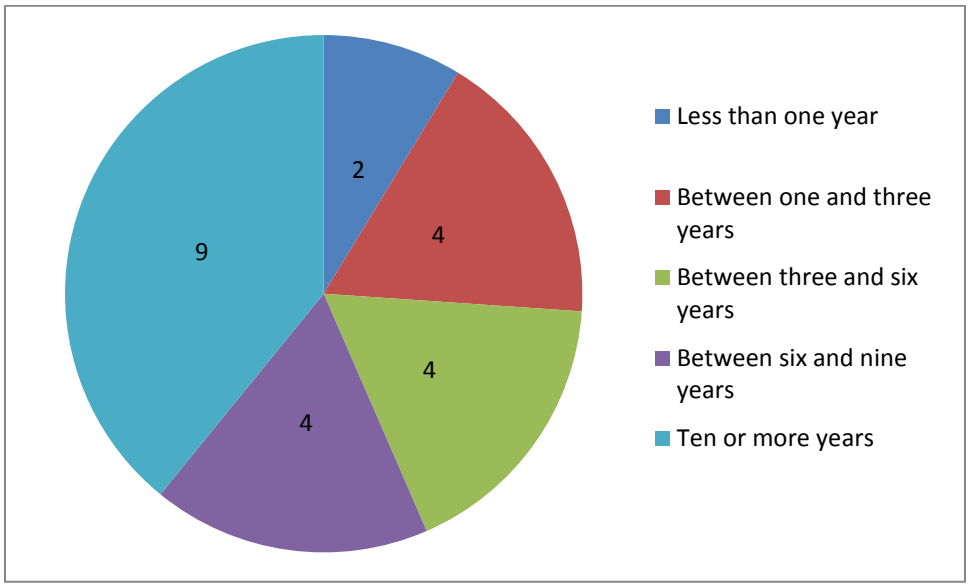
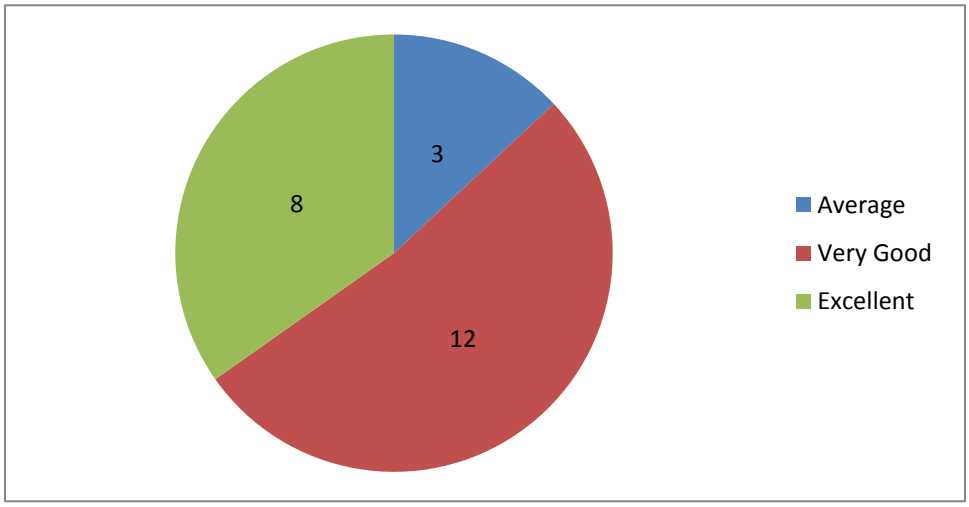


Figure A5: Overall Rating of the Just Clean Your Hands Symposium (n=23)



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