

JUST CLEAN YOUR HANDS¹

David House wrote this case under the supervision of Elizabeth M. A. Grasby solely to provide material for class discussion. The authors do not intend to illustrate either effective or ineffective handling of a managerial situation. The authors may have disguised certain names and other identifying information to protect confidentiality.

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In early 2011, Sarah Noble, a fourth-year science student at Western University Canada in London, Ontario, was reviewing her recommendations to improve the hand-cleaning compliance of the London Health Science Centre's (LHSC) medical and support staff. Noble's research and report was created for the manager of Infection Prevention and Control and constituted one of her assignments for her co-operative placement. It was well known that cleaning hands was an effective measure to reduce hospital-acquired infections. In 2007, LHSC had been part of a pilot project called "Just Clean Your Hands," and although hand-washing conformance had been improving since its launch, hand-hygiene compliance rates were not meeting the targets set by the Province's Ministry of Health and Long-Term Care.

Changing the culture and behaviour of the staff was turning out to be a tremendous challenge that required a thorough understanding of organizational behaviour. Noble needed to provide her recommendations to the hospital administration within the week so that an effective plan of action could be put in place. She sighed. It was going to be a long week.

BACKGROUND

History²

The medical community's understanding of the importance of proper hand-washing was thought to date from the 1840s. At that time, nearly 25 per cent of women in Europe died from what was commonly called "childbed fever"³ when delivering babies in hospitals. Dr. Ignaz Semmelweis, an assistant in the maternity ward at a hospital in Vienna, Austria, observed that the mortality rate in women delivering babies with the assistance of medical students was almost three times higher than women who delivered babies with midwives. Dr. Semmelweis noted that the medical students were entering the delivery room directly from the autopsy room. He reasoned that the students may be carrying infection from their

¹ This case has been written on the basis of published sources only. Consequently, the interpretation and perspectives presented in this case are not necessarily those of London Health Science Centre or any of its employees.

² "Hygenius – The History of Hand-washing," <http://www.hygenius.com/history>, accessed August 22, 2011.

³ Childbed fever was caused by *streptococcus pyogenes* bacteria.

dissections to the women in the delivery room. He ordered all doctors and medical students to wash their hands with a chlorinated solution prior to examining women in labour. This change in procedure resulted in a drop in the mortality rate to less than one per cent.

Although the benefits of hand-washing remained contentious within the medical community for many years, modern scientific studies had proven conclusively that proper hand hygiene was effective at reducing infection. The Centers for Disease Control and Prevention in the United States had stated that hand-washing was “the single most important means of preventing the spread of infection.”

Health-Care Associated Infection

Patients in health-care settings often became sick due to infections acquired at the hospital. These were called health-care associated infections (HAI). The hands of health-care providers were the most common means of transmitting the micro-organisms that caused these infections. As health-care providers moved from patient to patient, they carried with them certain infectious organisms, which could live as long as 60 minutes on the surface of the hands. These pathogens came from patients with infected wounds and from colonized areas of healthy skin. The same micro-organisms had also been transferred to inanimate objects that were subsequently touched by other staff members who later may have touched a patient.

The problem was severe. In Canada, approximately 250,000 patients each year picked up infections in hospitals while being treated for something else, a number that equated to one in nine patients admitted to hospitals. Almost 8,000 of these patients died each year from such infections. Exacerbating the problem were antibiotic-resistant organisms⁴ that had cost the Canadian health-care system as much as \$50 million annually to treat.

Ontario Health Care⁵ and LHSC

Hospitals in Ontario were publicly funded and accountable to the Province’s Ministry of Health and Long-Term Care. There were 227 hospitals in the province. The London Health Sciences Centre was a large regional hospital with an annual budget of approximately \$1 billion. It admitted more than 41,000 patients each year. There were several different employee groups working at LHSC, including physicians, nurses, clerical staff and volunteers. In total, 14,295 people worked at LHSC in various capacities at one or more of its three campuses: University Hospital, Victoria Hospital and South Street Hospital. Many of these groups had contact with patients. Although most of these groups were employees of the hospital, physicians generally were not employees and, instead, charged a fee for their services to the Ontario Health Insurance Plan⁶ (see Exhibit 1 for a complete list of employee classifications at LHSC). Health-care staff came into contact with patients through a range of tasks, from helping patients become comfortable in bed to taking a patient’s pulse. These activities had the potential to transfer many thousands of micro-organisms to the hands of a health-care staff member or to a patient.

⁴ Primarily bacteria that were able to survive medications that had been developed to kill these organisms, generally believed to be due to over-use of antibiotics.

⁵ Ontario Ministry of Health and Long-Term Care, <http://www.health.gov.on.ca>.

⁶ The Ontario Health Insurance Plan (OHIP) was the government’s public health insurance, which covered all residents of Ontario and was funded through tax revenue.

HANDWASHING⁷

The Ministry of Health and Long-Term Care had developed a detailed hand-washing training program for hospital staff throughout the province. The program was called “Just Clean Your Hands.” A person who would be coming into contact with a patient was required to follow the hand-washing protocols. The list included physicians, nurses and other health-care professionals, such as physical therapists and dieticians, housekeeping staff members and the patient’s visitors.

When to Clean Hands⁸

Health-care experts had determined that there were four situations when hospital staff needed to clean their hands. Referred to as “the *four moments* of care,” these moments were:

- *Moment 1* — Before initial contact with a patient or with the patient’s environment, including furniture, clothing, medical devices, telephones and any personal items. This step was to protect the patient from harmful micro-organisms carried on a staff member’s hands.
- *Moment 2* — Before aseptic procedures.⁹ This step helped prevent germs that were on the health-care worker or on the patient from entering the patient’s body.
- *Moment 3* — After body fluid exposure risk. This step included glove removal and ensured that the medical staff member was protected against harmful bacteria and viruses.
- *Moment 4* — After contact with a patient or with the patient’s environment.

How to Clean Hands

Hand washing to prevent HAI required the use of soap and water or an alcohol-based rub. As well, fingernails needed to be clipped short because long nails could harbour more micro-organisms, and nail polish could not be used since it could increase the number of micro-organisms in the nails. Rings, bracelets and watches could not be worn by staff who came in direct contact with patients.

When using soap, staff members were to wet their hands with warm water, apply liquid soap and vigorously lather for at least 15 seconds. The soap had to be removed thoroughly by rinsing their hands well. Their hands needed to be dried with a paper towel and the taps turned off using paper towel to prevent recontamination of their hands.

If an alcohol-based hand rub was used, the staff member’s hands had to be visibly clean. Hands soiled with food, dirt, or other contaminants could not be cleaned using alcohol rubs. Instead, staff were to apply one or two pumps of solution to their hands and then spread the solution over the entire surface of their hands, rubbing for at least 15 seconds or until their hands were dry.

⁷ Information in this section comes mainly from *Best Practices For Hand Hygiene In All Health Care Settings*, Provincial Infectious Diseases Advisory Committee, Ministry of Health and Long-Term Care, May 2008.

⁸ *Best Practices For Hand Hygiene In All Health Care Settings*, Provincial Infectious Diseases Advisory Committee, Ministry of Health and Long-Term Care, May 2008.

⁹ Aseptic procedures need to be sterile or free from micro-organisms. Surgery is an example of an aseptic procedure.

COMPLIANCE DATA

The Rates

Historically, LHSC had very poor hand-washing compliance rates. However, the rate of compliance had been improving since the launch of the “Just Clean Your Hands” pilot project in 2007 as the organization focused on the problem.

In some locations, tremendous improvements had been made. For example, LHSC’s Victoria campus had moved from 13 per cent in 2008 to 74 per cent in 2010 for Moment 1 compliance. However, across all of its campuses, LHSC still had between 20 per cent and 30 per cent non-compliance. This data was particularly troubling, since it was gathered using observers who were trained to follow staff and record hand-cleaning conformance; consequently, the staff would usually be aware that the observer was present and could alter their behaviour while being observed. The Ministry of Health and Long-Term Care required that these rates be published. Exhibit 2 summarizes compliance rates for LHSC. Exhibit 3 lists compliance rates at selected Ontario health-care organizations. Although LHSC was doing relatively well compared to other organizations in the province, it wanted to improve compliance towards 100 per cent.

Ineffective hand cleaning (such as not scrubbing long enough) continued to be an issue affecting overall compliance. The Vancouver Island Health Authority in British Columbia had found that nurses, for example, attempted to comply with hygiene requirements 50 per cent of the time, but because their hand washing was not done properly due to the wearing of rings, bracelets and nail polish, actual compliance was reduced to 33 per cent. Hand-washing compliance also tended to vary by profession. Physicians had different compliance levels than housekeeping staff, for example. Exhibit 4 provides a summary of hand-washing compliance by profession.

Factors Leading to Non-Compliance

There were several reasons for poor hand-hygiene compliance:

1. Workload was one of the primary problems. Compliance of 100 per cent to the four moments could take a significant amount of time, and hospital staff was often very busy. If staff members were in a hurry or rushed, proper hand cleaning was sometimes rushed or skipped altogether.
2. Proper conformance to requirements could necessitate hand cleaning many dozens of times each day. This could cause irritation or dryness to the staff’s hands.
3. The location of sinks or alcohol rub dispensers was inconvenient. To address this, many dispensers had been installed throughout the sites in patients’ rooms, on stretchers and on wheel chairs.
4. Staff members were generally hesitant to speak up if they observed others not conforming to hand-cleaning procedures and often preferred to avoid such confrontations.
5. Some religious beliefs had prevented the use of alcohol-based rubs.
6. Medical practitioners and support staff had established behaviours that were difficult to change. It was thought that some individuals perceived that the infection risk linked to hand hygiene was not serious enough to warrant the inconvenience of proper conformance. This attitude was somewhat analogous to a driver’s use of a cell phone while driving a car. Although drivers were generally aware that this distracting activity was dangerous to oneself and to others, it was still frequently done; that is, the driver perceived the risk to be minimal relative to the inconvenience of not using the device.

7. Visitors were often unaware of proper hand-cleaning procedures or chose to not follow the procedures.
8. There was no mechanism for the discipline of physicians and other staff for failure to follow hand-hygiene procedures. Many members of LHSC's staff were unionized and, because the physicians were not employees but contractors, discipline was a difficult issue. The discipline of physicians, viewed as highly trained professionals and specialists in their fields, for an issue like hand hygiene had never been a part of this professional group's culture and would likely be viewed with disdain.

GOING FORWARD

Noble turned on her iPad and started reviewing her analysis to this point. She needed a plan to reinforce the change in behaviour and culture that had started with the Just Clean Your Hands program and to overcome the obstacles that she knew reduced hand-hygiene compliance rates. How could the staff be motivated to continue to do better? There were so many employee groups, each with different subcultures and compliance issues. What needed to be communicated? Who needed to get the message, and who needed to deliver it? What sort of leadership style and approach would be most effective?

In terms of data collection, how should the compliance rates be monitored? In the past, LHSC had hired and trained students to do the hand-hygiene audits. How much, if at all, did their presence change the results? Noble had read that a hospital in the United States had tested the use of a "compliance checking chip." This device, worn by health-care practitioners, collected hand-hygiene data for each wearer and could be used to coach or discipline employees who did not comply with hand-cleaning procedures. She wondered about the implications of using such a device at LHSC.

The manager of Infection and Prevention Control had been clear to Noble that LHSC was on a fixed budget, and any new initiative would need to be cost-effective and well justified. With these thoughts in mind, she began to work in earnest on her proposal.

Exhibit 1

GROUPS WORKING AT LHSC

Category	Number Working
Nurse	3,249
Clerical	2,255
Service	1,208
Research	967
Technicians and Labs	885
Volunteers	840
Student Nurses	801
Residents and Fellows	783
Physicians, Dentists, Midwives	763
Non-medical Students	572
Allied Health	528
Management	303
Medical Students	286
Other	855

Source: London Health Sciences Centre 2011 Annual Report.

Exhibit 2

LHSC HAND HYGIENE COMPLIANCE

YEAR	MOMENT	LOCATION	COMPLIANCE
2010	1	University Hospital	65%
	1	Victoria Hospital	74%
	4	University Hospital	81%
	4	Victoria Hospital	86%
2009	1	University Hospital	52%
	1	Victoria Hospital	58%
	4	University Hospital	83%
	4	Victoria Hospital	80%
2008	1	University Hospital	27%
	1	Victoria Hospital	13%
	4	University Hospital	63%
	4	Victoria Hospital	39%

Source: London Health Sciences Centre 2011 Annual Report.

Exhibit 3

RECENT HAND-CLEANING COMPLIANCE NON-LHSC

Bluewater Health, Milton Street Site - Sarnia ¹	Moment 1	45%
Charlotte Eleanor Englehart Hospital, Petrolia, Ontario	Moment 1	57%
Waypoint Centre for Mental Health Care, Penetanguishene ²	Moment 1	70%
St. Thomas Elgin General Hospital ³	Moment 1	65%
St. Thomas Elgin General Hospital	Moment 4	79%
Bluewater Health, Norman Street Site – Sarnia, Ontario	Moment 4	78%
Waypoint Centre for Mental Health Care, Penetanguishene	Moment 4	70%
Charlotte Eleanor Englehart Hospital, Petrolia, Ontario	Moment 4	72%

Exhibit 4

VANCOUVER ISLAND HEALTH AUTHORITY HAND-WASHING COMPLIANCE BY OCCUPATION⁴

<u>Occupation</u>	<u>Full Compliance Rate</u>	<u>Would be Compliance Rate⁵</u>
Nurse	33%	50%
Other ⁶	30%	40%
Physician	18%	29%

¹ Sarnia and Petrolia data from "Hospital Hand washing Rate Improves," *The Sarnia Observer*, Article ID 3101982, May 2011.

² Waypoint data from "Hand Hygiene at Waypoint 2011 Audit Results," www.waypointcentre.ca.

³ St Thomas data from "Hand Hygiene Compliance," March 2011, www.stegh.on.ca.

⁴ Hand Hygiene Compliance 2010, Vancouver Island Health Authority, www.viha.ca.

⁵ Would-be Compliance includes hand-washing that did not follow proper procedures, such as wearing jewellery or nail polish.

⁶ The "Other" category includes health professionals such as therapists, dieticians and housekeeping.