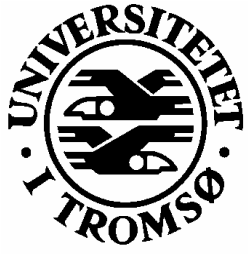

A comparative analysis of two cross-sectional surveys of healthcare workers' hand hygiene knowledge, intentions, access and product preferences between two university hospitals, one in Norway and one in Canada

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SAMMENDRAG

Formål: En sammenlikning mellom Vancouver General Hospital (VGH) og Universitetssykehuset Nord-Norge (UNN-Tromsø) av selv-rapporterte forskjeller i nivåer av kunnskap og intensjoner med å oppfylle håndhygiene retningslinjer.

Materiale og metode: En ***tverrsnitts kvalitetssikring medarbeider undersøkelse*** ble gjort tilgjengelig i VGH, (15nde nov. til 14nde des. 2005), og i UNN- Tromsø (14nde feb til 7nde mars, 2008). Undersøkelser ble gjort tilgjengelig i trykt og elektronisk format.

Resultater: 1230 av de 10,000 fulltidsansatte i helsesektoren (HCWs) (12%) svarte på undersøkelsen. UNN-Tromsø HCWs ble funnet å være mindre fornøyd med skånsomhet av såpe og vann enn VGH HCWs. De som svarte på undersøkelsen ved UNN-Tromsø rapporterte større tilgang til både såpe og vann og hånd gel enn det som var funnet på VGH.

Profilering av samsvar var signifikant korrelert med tilgang (.446-.539) for VGH. For UNN-Tromsø var samsvar med retningslinjene påvirket av tilgjengelighet (.379 -.600) og skånsomme produkter (.337 -.493). Av de tre produktene, preferanse for såpe og vann var høyest ved 89.0 % - 97.9 %. Tromsø preferanse for såpe og vann var størst for de som ikke ga direkte pasienter oppfølging, sammenlignet med dem som ga direkte pasienter oppfølging som foretrakk hånd gel.

De som ga direkte pasienter oppfølging rapportert mer sikkerhet i sine kunnskaper om hand hygiene retningslinjene. HCWs i VGH oppnåde høyere gjennomsnitt gjennomsnitt i målsetningen med å følge retningslinjene for håndhygiene (VGH; M= 51.287 og UNN-Tromsø; M= 48.398).

Fortolkning: Håndhygieneprodukter som ble oppfattet som skånsomme for hendene og lett tilgjengelige var positivt relaterte til retningslinjene for håndhygiene. Videre viser resultatene at kunnskaper om håndhygiene er viktige for å fremme samsvar med retningslinjene.

ABSTRACT:

Objective: Vancouver General Hospital (VGH) and The University Hospital of Northern Norway in Tromsø (UNN-Tromsø) were compared for self-reported differences in level of knowledge and intentions to comply with the hand hygiene guidelines. Hand hygiene products were also assessed for preference of use, access, gentleness and promotion of hand hygiene compliance.

Methods: A ***cross-sectional quality assurance staff survey*** was made available in VGH (Nov. 15 to Dec. 14, 2005) and in UNN-Tromsø (Feb. 14 to Mar. 7, 2008). Surveys were made available in print and in electronic format.

Results: A total of 1230 of the 10,000 full time health care workers (HCWs) (12%) responded to the survey. UNN-Tromsø HCWs were found to be less satisfied with the gentleness of soap

and water than were VGH HCWs. UNN-Tromsø study respondents reported greater access to both soap and water and hand gel than that reported by HCWs at VGH.

Promoting compliance was significantly correlated to access (.446 to .539) for VGH, whereas for UNN-Tromsø, promoting compliance was influenced by both access (.379 to .600) and gentleness of product (.337 to .493). Of the three hand hygiene products, most (89.0% to 97.9%) reported that they preferred soap and water.

Those who provide direct patient care reported more confidence in their knowledge of hand hygiene guidelines. The HCWs at VGH had higher mean scores on intention to comply with hand hygiene guidelines (VGH; M= 51.287 and UNN-Tromsø; M= 48.398).

Conclusion: Hand hygiene products that were perceived to be gentle to the hand and readily accessible were associated with compliance to the hand hygiene guidelines. Further, knowledge of hand hygiene guidelines was positively associated with compliance.

KEYWORDS: knowledge of hand hygiene guidelines, compliance, soap and water, personal hand gel, alcohol hand rubs, access, gentle

BACKGROUND:

Hand hygiene is the most important factor in the prevention of transmission and spread of communicable illnesses

within hospitals and within communities. Methicillin resistant *Staphylococcus aureus* (MRSA) is frequently used as an indicator of the effectiveness of hand hygiene as an infection control measure. Globally, MRSA is on the rise, with considerable variation in rates across hospitals within developed countries.[1, 2] Numerous studies have shown a positive correlation between increased compliance with hand hygiene and reduced hospital infections.[3] The problem is of such large scope that recently, the World Health Organization (WHO) has initiated the First Global Patient Safety Challenge of the World Alliance for Patient Safety to address the issues that lead to inadequate hand hygiene among healthcare workers.[4]

The need for improved hand hygiene practices was controversial when Ignaz Semmelweis made his assertion that physicians and nurses who washed their hands with an antiseptic prior to attending a patient, would not spread infection from one patient to the next.[5] As a result of his work towards preventing the spread of infection Semmelweis was given the moniker 'the father of infection control'.[5] He was the first to demonstrate that hand hygiene was an effective infection control measure.

In 1958, Ravenholt reported concern for the numerous illnesses and deaths caused by staphylococcal infections, a rate that could only be reduced by careful 'application of current knowledge and *technics'*, of which, '**good aseptic** (hand hygiene) ***technic'***, was considered an important element, 'to provide a

thoroughly sanitary hospital environment'. [1, 6, 7] Yet, more than 150 years after Semmelweis brought about his obligatory hand hygiene policy, and 50 years after the Ravenholt article, compliance to hand hygiene guidelines still remains suboptimal within the healthcare setting. [8-10]

The cornerstone of infection prevention within healthcare institutions is hand hygiene compliance.[9, 11] Preventing healthcare associated infections has been shown to have multi-factorial causes. Factors such as isolation of patients in single rooms, protective clothing usage by healthcare workers, adequate staff education, improvements in infection control compliance with hand hygiene guidelines, enforced usage of barrier precautions and an adequate number of infection control practitioners all contribute to limiting the spread of infection within healthcare environments.[9]

The intent to comply with hand hygiene guidelines is essential, but insufficient for successful engagement in hand hygiene behaviour. Access to adequately stocked, and appropriately located hand hygiene stations as well as appropriate administrative support are necessary to ensure control of the spread of infection. [6, 12] Many healthcare workers (HCWs) feel that workloads are heavy and are a hindrance towards compliance of hand hygiene policies. An atmosphere of safety must be present so that HCWs can take the necessary time to foster good hand hygiene practice. Hand hygiene is frequently viewed as a

low priority function and therefore readily omitted when other duties take priority, but the meticulous practice of this activity is probably the most significant factor contributing to infection prevention and control. [13]

In the fall of 2005, Vancouver Coastal Health (VCH) launched a regional hand hygiene campaign "*Clean Hands for Life™*" that focused on HCWs. As part of the evaluation process ***quality assurance staff surveys*** (baseline, mid-campaign and post-campaign) were conducted. The baseline survey was made available from January - February of 2006 in all VCH directly funded facilities, including Vancouver General Hospital, (VGH). The same baseline ***quality assurance staff survey*** was translated into Norwegian and given in February – March of 2008 in University Hospital of Northern Norway in Tromsø (UNN-Tromsø). A measurement of HCWs intentions to comply with hand hygiene guidelines and the perceived outcomes was a significant component of the quality assurance staff surveys.

OBJECTIVES, RESEARCH DESIGN AND METHODOLOGY:

Of the 36 facilities included in the campaign in VCH, Vancouver General Hospital (VGH) was selected as comparable to The University Hospital of Northern Norway in Tromsø (UNN-Tromsø) in terms of the number of acute care beds and the patient care services offered. The data from VCH was selected out from the total dataset for Vancouver Coastal Health for use in

the comparative study. The VCH baseline survey was translated (see Appendix 2) and provided to staff of UNN-Tromso to gather comparative data from this site.

Purpose and Objectives:

The ***purpose*** of the study was to measure whether there are differences in hand hygiene knowledge and intentions as well as differences in self-reported access to hand hygiene products and preferences between HCWs from VGH and UNN-Tromsø as well as between those who provide direct patient care and those who do not.

The ***objectives*** of the study were to compare the two hospitals and to look for differences between those that provide direct patient care and those that do not on a number of factors: (1) level of confidence with hand hygiene guidelines, (2) level of knowledge of the hand hygiene guidelines and intent to comply with those guidelines (3) perceived effectiveness of hand hygiene posters in communicating the importance of hand hygiene, (4) assessment of the products used to support good hand hygiene in terms of access, gentleness and promotion of hand hygiene compliance, and (5) HCW preferences of three hand hygiene products – soap and water, personal hand gel and wall-mounted alcohol hand rub.

Study Population:

All HCWs employed at UNN–Tromsø and in VGH, including part-time staff were eligible to participate in the

research study. There were approximately 4700 fulltime equivalent employees and an additional 300 part-time employees in Norway and about 5130 employees in VGH at the time the study was carried out. A total of 394 employees from UNN-Tromsø and 836 from VGH responded to the survey for a total sample of 1230.

Data Collection:

A cross-sectional quality assurance staff survey was made available for four weeks (November 15 to December 14, 2005) at VGH, and for three weeks (February 14 to March 7, 2008) in UNN-Tromsø. The items on knowledge and intentions to hand wash were derived from the Handwashing Assessment Inventory (HAI) which was previously validated by O'Boyle et al.[13]

RESULTS:

Quantitative analyses were performed using SPSS 15 predictive analytical software (SPSS Inc., Chicago Illinois, 2007, to analyse the variables created from the ***quality assurance survey.***

Demographics:

Between the two hospitals, there were approximately 10,000 staff members who were eligible for participation, whereof 1230 (12%) responded to the survey. Of the 836 respondents from VGH, 587 responded to the ***quality assurance staff survey*** placed on the VGH intranet and another 249 responded by filling in and returning a printed copy. The

remaining 394 study participants responded to an identical survey, offered in both Norwegian and English on the UNN-Tromsø intranet.

Table 1 shows that six percent of the combined sample were physicians, 50% were nursing staff, nurses, 5% were allied health employees, 8% were technicians, and the remaining 31% held other positions within the hospital setting. The sample was categorized into direct patient care (N=703) and non-direct patient care groups (N=515) for analysis.

A total of 79% of the study population were female and 21% were male. There were no significant differences in proportions between the two hospitals on age group or gender (Table 2).

Significant differences were found between the two hospital sites for hours worked for those working 20-30 and 31-40 hours per week. A significantly larger proportion of VGH employees reported working 21-30 hours than UNN-Tromso; the reverse was true for 31-40 hours (Table 3).

Chi-Square test for difference in proportions for having been asked about hand cleaning (VGH cohort versus UNN cohort):

As part of the survey, respondents with direct patient care were asked "**In the last week has a patient/resident or visitor asked you if you cleaned your hands before providing them (or their loved one) direct care?"** Fisher's Exact chi-square analysis showed a non-significant association ($p = 0.531$)

between having been asked if he/she had washed his/her hands and hospital of employment.

The questionnaire also, included the question; "**In the last week has a patient/resident or visitor asked you for information on hand cleaning?"** There was a significant association between the hospital of employment and having been asked for information; χ^2 (1) = 6.197, p = 0.014. Employees at VGH were significantly more likely to have been asked for information than employees at UNN-Tromsø. The model, however, only explained 0.58 % of the effect (ϕ = -.076)

Hand Hygiene Product Usage:

***Access, gentleness and promotion of compliance to guidelines for hand hygiene products*:**

Multivariate Analyses of Variance (MANOVAs) were conducted to test for differences between hospitals and patient contact (direct versus non-direct) on perceived access, gentleness and contribution towards compliance with hand hygiene guidelines. Evaluation of assumptions for MANOVA revealed the influence of multiple outliers on the dependent variables, access to soap and water, access to wall mounted hand rub, gentleness of wall mounted hand rub, compliance to soap and water guidelines and compliance to wall mounted hand rub guidelines, (i.e., standardized residuals of greater than $\pm$3.00). MANOVA is sensitive to outliers and therefore, these cases were excluded from analysis.

Soap and Water

For the model access/ compliance/ gentle, for soap and water a multivariate test of overall differences between the two hospitals was statistically significant ($F_{(3,1036)}$ = 9.361, p<.001) (Table 6). Analysis of the univariate tests revealed that the results were significant on all three dependent variables.

Gentleness on the hands with use of soap and water was significant for hospital (p=.007) and for direct patient care (p<.001), with VGH scoring higher for both direct patient care and non-direct patient care cohorts (M= 4.2 and M= 4.7) respectively, (Table 7) whereas UNN-Tromsø means were M= 4.0 (direct patient care) and M= 4.3 (not direct patient care) indicating that at VGH soap and water had a higher perception of being gentle to the hands than at UNN-Tromsø. Compliance was found to be significant at p =.004, with higher differences in means for VGH (M= 6.0) than for UNN-Tromsø (M= 5.7 for non-direct patient care and M= 5.9 for non-direct patient care). Access was significant at p = .026 for hospital but not for level of patient care (M= 6.5 for UNN-Tromsø and M= 6.4 for VGH).

Personal Hand Gel

Similarly the model access/ compliance/ gentle for personal hand gel was also, statistically significant ($F_{(3,965)}$ = 12.416, p<.001) for differences between the two hospitals. Statistical distinction was also, present between those with direct patient care and those without ($F_{(3,965)}$ = 6.496, p<.001). Of the

three variables, only gentleness and access were significant. For gentleness means of M= 4.3 for VGH and M= 3.8 for UNN-Tromsø were seen for direct patient care. For non-direct patient care the means were M= 4.1 for VGH and M= 3.9 at UNN-Tromsø. Significant interaction between hospital and direct patient care influenced the results for gentleness.

VGH revealed greater access to personal hand gel with means of M= 4.5 for HCWs with direct patient care duties and M= 3.9 for HCWs without. The means for UNN-Tromsø were M= 4.2 for patient caregivers and M= 3.6 for those without.

Fixed Alcohol Hand Rub

The model access/ compliance/ gentle for fixed alcohol hand rub revealed a significant interaction between hospital and patient care ($F_{(3, 1017)} = 4.045$, $p<.001$). Further examination of the univariate between-subjects tests showed that 'hospital' was significantly associated with access (p=<.001, M= 6.0 for those with direct patient care for VGH and M= 6.4 for UNN-Tromsø) with significant interaction with hospital and direct patient care (p=.040). Those who did not provide direct patient care had much lower means for access to fixed hand gel (VGH M= 5.5, UNN-Tromsø M= 6.3) indicating that access to hand hygiene products were viewed as poorer at VGH for all study respondents.

Those who did have direct patient care responded more positively that the product at UNN-Tromsø was gentle on the hands (M= 4.7) than for those at VGH (M= 3.8), though the

dissimilarities between hospitals was moderated by differences for those providing (M= 4.9) and those not providing direct patient care (M= 3.6).

Promotion of hand hygiene associated with the use of alcohol hand rub showed statistically significant differences for those that provide direct patient care as opposed to those that do not (p=.015). Examination of the means showed that those with direct patient care had a mean of M= 6.1 compared to those that do not provide direct patient care (M= 5.75), signifying that the those that provide direct patient care believed that alcohol hand rub encouraged compliance with the hospital's hand hygiene guidelines (Tables 6 and 7).

***Pearson correlations between compliance and hand hygiene products*:**

Pearson correlations were computed between compliance with a given product (soap & water, personal portable gel, and alcohol hand rub) and access and gentleness of that product. The results revealed interesting differences between the two hospitals, (Table 9). Specifically, promoting compliance was significantly correlated to access (correlations ranged from .446 to .539) for VGH, with lower relationships to gentleness to hands for each product (correlations ranging from .152 to .170). When the same associations were examined for UNN-Tromsø, promoting compliance was similarly influenced by access to the different hand hygiene products (correlations ranging from .379 to .600)

and the gentleness of the products to the hands (correlations ranging from .337 to .493).

Hand hygiene product preferences:

Survey respondents were asked to rank order the three hand hygiene products in terms of preference. The results showed that for VGH, there was very little difference in product preferences between those providing direct patient care versus those not (Table 5). Preferences were highest for soap and water and lowest for personal hand gel.

In contrast, greater variation between patient care types was observed for UNN-Tromsø. Preference for soap and water was highest for non-direct patient care employees whereas employees providing direct patient care ranked alcohol hand rub over soap and water. Preference for personal hand gel was low for both direct patient care and non-patient care employees.

Table 5 also shows the percentage of the respondents who used each of the three hand hygiene products in the last week. For both soap and water and portable hand gel there was little difference seen between all employees of UNN-Tromsø and VGH with the proportion using soap and water in the previous week ranging from 89.0% to 97.9%. The range for portable hand gel was lower with employees in direct patient care at 42.0% to 45.2%. Non-patient care employees were less frequent users of portable hand gel (25.7% to 26.7%). Wall-mounted alcohol hand rub was used most frequently in the previous week by VGH

direct-patient care employees at 77.5% with a 51.2% for non-patient care employees in VGH. UNN-Tromsø employees used personal hand gel and wall-mounted-alcohol hand-rub equally (42.1% with responsibility for direct patient care and users of portable hand gel 25.7% non-patient care).

Confidence in Hand Hygiene Guidelines:

The level of confidence in knowledge of hand hygiene guidelines was measured with the question, "How confident are you in your knowledge of the unit's/hospital's hand hygiene guidelines for when and how to clean your hands?". A between-subjects ANOVA was used to test for differences between hospital and direct patient care. The results showed a significant, but small, (η^2 = .012) main effect from being employed in direct patient care on having confidence in hand hygiene guidelines, ($p < .001$), modified by a significant interaction with hospital of employment (p= .018). Hospital of employment was not significant for confidence in hand hygiene guidelines, (p = .158).

Those who provide direct patient care reported greater confidence in their knowledge of hand hygiene guidelines (M = 5.35 VGH and M = 5.24 for UNN) whereas those who do not provide direct patient care at (M= 4.63) showed the lowest confidence in their knowledge of the hand hygiene guidelines (Table 8). The mean for those with non-direct patient care at UNN-Tromsø was higher than the mean for VGH non direct patient care group, but not as high as for hospital groups

employed in direct patient care (M = 5.07) indicating that having direct patient care was linked to confidence in knowledge of each hospital's respective hand hygiene guidelines.

Intentions Regarding Hand Hygiene:

The *knowledge/ intentions/effect* model results from the multivariate analysis of overall differences between hospitals was statistically significant ($p<.001$). The effect size of this relationship was moderate as indicated by $\eta^2 = .092$.

A series of eight questions were asked under the subtitle, "We are interested in what you think about hand hygiene and outcomes that might occur when you follow your unit's/hospital's guidelines for how and when to clean your hands" (refer to Appendix 2). The questions were measured on a 7-point Likert scale and composite variables were formed. Univariate between-subjects tests showed that knowledge of the hospitals guidelines was significant (<.001). When the means were investigated it was seen that the mean for VGH (M=44.509) was higher than the mean for UNN-Tromsø (M=42.723) indicating that those involved with patient care at VGH compared to those at UNN-Tromsø, were more sure that hand hygiene was a positive protective measure used against infection in patients, their families and in HCWs. The result also reflected confidence that hand hygiene would not lead to cracked, red and dry hands and that the time used in hand cleaning would not prevent the performance of all assigned duties.

The intentions composite was formed from a series of eight questions under the subtitle, "We are interested in your intention to follow the unit's/hospital's guidelines for when and how to clean your hands." Again the questions were scored on a 7-point Likert scale. Questions asked whether the HCW would follow the guidelines in every situation, even though s/he was pressed for time, in a crisis situation or when following normal routines. The univariate between-subjects tests were significantly different for intentions to comply with the hospitals guidelines (<.001). The HCWs at VGH attained higher means, indicating that intent to comply with hand hygiene guidelines was stronger for VGH (M= 51.287) than for UNN-Tromsø (M= 48.398).

Perceived Effectiveness of Hand Hygiene Posters:

The survey contained several questions aimed at measuring the perceived effectiveness of hand hygiene posters. There were seven questions in this section and each question was also scored from one to seven. Specifically questions asked if the posters were effective in educating staff, patients, residents and visitors on the importance of hand hygiene, as well as if they were effective in motivating them, making them think or reminding them to clean their hands. A composite "effect" score was calculated by summing the scores on each of the seven items.

Multivariate analysis of variance (MANOVA) revealed a significant effect for hospital (See Table 9). Mean scores for VGH (M= 26.465) were significantly higher than UNN-Tromsø,

(M= 24.857) indicating that HCWs at VGH deem that posters are more effective in promoting hand hygiene compliance than HCWs at UNN-Tromsø believe.

DISCUSSION:

Knowledge and intentions:

This study found a significant difference between HCW's in Tromsø-UNN and in VGH in knowledge of the hand hygiene guidelines. For HCWs involved with patient care at VGH, more so than for HCWs at UNN-Tromsø, hand hygiene was considered to be a positive protective measure against infection in patients, their families and in HCWs.

Determinants of hand washing behaviour, according to Whitby, et al, are established in childhood, probably at the time the child is toilet trained, and is 'ritualized' to act as a protective measure against infection and motivated by the emotional perception of 'dirtiness' and 'cleanliness'. Hand hygiene activity varies between HCWs depending on the individual's perception of a singular clinical situation and will never be stable between healthcare facilities. This concept has been shown to be consistent across diverse communities and cultures.[14]

Whitby, et al, further classifies the driving force behind hand hygiene into at least two categories, inherent hand hygiene practice and elective hand hygiene practice. Inherent hand hygiene is learned in childhood. Elective hand hygiene behaviour is driven, within the healthcare setting, by behaviours that are

commonly considered social, such as hand shaking or contact gestures prompted by caring, to prevent the spread of infection and are, therefore, most probable to be omitted. [14]

Significant differences were found between individual healthcare workers within the same hospital or unit in the Whitby, et al. study, with regard to hand hygiene performance, leading us to understand that both individual and community influences are factors contributing to compliance with this behaviour.[15]

In the present study, questions asked whether the HCW would follow the guidelines in every circumstance, even though s/he was pressed for time, during emergency situations or during adherence to normal routines. Self reported responses to the questions may reflect expression of workload burdens within the hospital as well as consideration for the time used in hand cleaning as not preventing the performance of all allocated obligations, as was found in a study by O'Boyle, et al. These responses are not necessarily indicative of hand hygiene behaviours within the workplace.[13]

HCWs in UNN-Tromsø may feel that MRSA and other infections are a lesser threat than is seen in VGH due to a low incidence of MRSA occurrences within UNN-Tromsø. (cp. Tables 10-13) Therefore, there may be less pressure to become comfortable with the hand hygiene guidelines and to put them to use as a protective measure against infections.[16] It may be interesting to pursue further studies in this area to determine the

impact of perceived threat from nosocomial infection on compliance with hand hygiene guidelines.

Further study would be needed to uncover whether workloads were perceived as heavier in UNN-Tromsø than they were perceived to be in VGH. Workload has been significantly and negatively associated with observed hand hygiene compliance.[14, 17]

Variations between knowledge of the guidelines and intentions to follow those guidelines may be culturally based but, identifying these differences is beyond the scope of this study. Further research may be needed to bring to light social differences between the two health care facilities in areas that are classified as elective hand hygiene behaviour. Such research may serve to shed light on different factors in the individual and within the community that contribute toward or are detrimental towards favourable hand hygiene behaviour.

Effectiveness of posters:

Posters are an effective means for educating staff, patients, residents and visitors on the importance of hand hygiene according to Whitby et al.[15] Jenner et al, goes further in asserting that gain-framed posters are effective in motivating HCWs, making them think and reminding them to clean their hands.[18] HCWs in both UNN-Tromsø and VGH, perceived posters as an effective method of communicating the importance

of hand hygiene, though the belief was stronger among HCW's at VGH than at UNN- Tromsø.

Hand hygiene products preferences:

Consistent with the findings of Larson, et al, the preferences for hand hygiene products were most probably, not based on informed decision making. Soap and water should be preferably, used when hands are visibly soiled, and before and after patient contact. According to the Association for Professionals in Infection Control and Epidemiology (APIC)'s guidelines, hand gels should be the agent of choice when an invasive procedure is performed or when reduced microbial activity on the skin is desired. [19] The preference for hand gel and personal hand rub was found to be much lower than the preference for soap and water, though, gels and hand rubs are much quicker to use and contain emollients that are less irritating to the skin. Both skin irritation and workload issues are frequently reported to be barriers to hand hygiene.

Confidence in Hand Hygiene Guidelines:

Self-reported confidence in their knowledge of hand hygiene guidelines was higher for the survey respondents who had direct patient care, reflecting a probable and expected higher level of knowledge of each hospital's respective hand hygiene guidelines. All hospital employees, should, however, ideally be well versed in knowledge and understanding of the hand hygiene guidelines.

Soap and Water

For the study respondents at VGH soap and water had a higher perception of being gentle to the hands than was perceived at UNN-Tromsø. Compliance for UNN-Tromsø was equally correlated to access and to gentleness of product. To promote hand hygiene compliance, soap and water needs to be perceived as gentle to the skin and needs to be readily accessible.

For VGH compliance was highly correlated to access. VGH respondents perceived soap and water as having greater accessibility and therefore, there was a higher association for compliance with the hand hygiene guidelines for this product.

Unmedicated or medicated soap and water may cause skin irritation and dryness, which is known to be a deterrent to compliance for hospital personnel. Several studies have shown that alcohol-based hand rubs and gels containing emollients may cause less dermatitis than hand cleaning with soap and water. Gels and hand rubs are known for their antimicrobial properties.[12] Most ARPAC hospitals have reported insufficient compliance, with causal factors hindering compliance tied to lack of accessibility and to skin cleansers that were perceived as damaging or harmful to the skin.[20]

Personal Hand Gel

Personal hand gel was the only hand hygiene product that was perceived as having greater accessibility for VGH HCWs than for HCWs in UNN-Tromsø.

Statistical significance was seen for gentleness on the hands for personal hand gel between the two hospitals within the study, as well as between patient caregivers and those who do not have patient care duties. The reasons behind theses differences may be similar to the variations found for gentleness of product for soap and water and for fixed alcohol hand rub.

Fixed Alcohol Hand Rub

UNN-Tromsø study respondents reported greater access to both soap and water and to wall mounted hand rub than was available for personal hand gel. Fixed hand gel was available at every bedside at UNN, whereas similar access to hand gel was not found at the time of the study in VGH, which may account for the differences. Finding a sink to clean the hands with soap and water requires more time than using a waterless hand gel, compromising hand hygiene opportunities. [12, 21] Point-of-care, hand gel containers offer quick-access solutions during high-risk or crisis situations. They are useful in every situation when carrying for patients and have been proven to show improvements for hand hygiene compliance. [15]

For all hand hygiene products perceived access was significantly higher for those who provided direct patient care. Caregivers with high workloads require the practicability for hand hygiene that good access affords, with an alcoholic rinse or gel (or similar product) positioned near each patient's bed as well as in other convenient locations. **[12]**

Those who did have direct patient care responded more positively that the product at UNN-Tromsø was gentle on the hands than those at VGH. Lack of gentleness in hand hygiene products is counterproductive to compliance, as is born out in the study by O'Boyle et al. [13]

Promotion of hand hygiene associated with the use of alcohol hand rub showed statistically significant differences for those that provide direct patient care as opposed to those that do not. Those who provided direct patient care believed that alcohol hand rub encouraged compliance with the hospital's hand hygiene guidelines. The findings of Pittet et al concur, that work conditions as well as cognitive factors work together to encourage hand hygiene adherence. [6]

For both VGH and UNN-Tromsø compliance was correlated with access. Larson et al. found similarly, that without readily accessible hand hygiene products, HCW compliance to the guidelines was reduced.[22] It is of note, that in the Shimakura, et al. study, HCWs who reported high levels of compliance with hand hygiene guidelines had a higher probability of setting a high value on protecting themselves from bloodborne infections. [21]

Questioned regarding hand hygiene:

There is a significant relationship between hospital site and being asked for information on hand hygiene. Employees at VGH were significantly more likely to be asked for information

than employees at UNN-Tromsø. With increased media attention focusing on hand hygiene, knowledge of hand hygiene recommendations is enhanced. It is now recommended in the USA, that patients demand that their doctors clean their hands prior to an examination.[23]

Limitations:

A limitation of this study is that the sample size is not necessarily representative of the HCW population of the two hospitals. The study was, in addition, deficient in objective measures of compliance to the hand hygiene regulations. Actual rates for health care associated infections were also, lacking in the study. Another limitation of the study is that responses are self-reported, leading to overestimation of good hand hygiene behaviours and underestimation of problem areas.

MRSA:

All regional Vancouver MRSA data is epidemiological, (Tables 10 and 11),[16] whereas the Troms County data is determined through laboratory methods (Table 13). Differences were also, seen in surveillance protocols within the two facilities. Further, the number of cases in Troms County is far too small for associations with hand hygiene compliance to be of value. Therefore, use of the Vancouver area data and the Troms County data as indicators of the effectiveness of hand hygiene was not possible.

The total incidence of all MRSA for the period April 2007 to April 2008 was n=19 in Troms, (information thanks to Andreas Christensen, Chief Medical Microbiologist, St. Olav's Hospital, Trondheim), though information was not available for UNN-Tromsø alone. The incidence for VGH was much higher at n=485.[16] Norwegian hospital facilities are known to have a low incidence of MRSA (Table 12). In Troms the incidences MRSA was found to be n=19 (Table 11).

The "Guidelines for the Prevention and Management of Community-associated Methicillin-Resistant Staphylococcus aureus: A Perspective for Canadian Health Care Practitioners" warns that the *mec* resistance gene is present in 75% of isolates of *Staphylococcus aureus* in some United States communities. With the emergence of community associated MRSA (CA-MRSA) the threat for nosocomial staphylococcal infection is increasing. CA-MRSA differs from heath care associated MRSA (HA-MRSA) in that it is not healthcare associated, but it can spread with a greater rapidity than HA-MRSA through a healthcare facility.

In all cases, the most important measure available to attenuate or control both HA- and CA- MRSA is meticulous attention to hand hygiene.[24] Multi-component interventions for the prevention of the transmission of CA -MRSA in the hospital facility as well as within the community include increasing focus on heightening awareness of risk behaviours with an added emphasis on good hygienic routines.[25]

CONCLUSIONS:

Several factors were found to be significant in motivating compliance in hand hygiene. This study found a significant overall difference between HCWs in Tromsø-UNN and in VGH in knowledge of the hand hygiene guidelines. For HCWs involved with patient care at VGH, more so than for HCWs at UNN-Tromsø, hand hygiene was considered to be a positive protective measure against infection in patients, in their families and in HCWs,. Similarly HCWs in direct patient care at VGH were more likely to follow the guidelines in every circumstance, even though s/he was pressed for time, during emergency situations or during adherence to normal routines. Overall, as might be expected, knowledge of the hand hygiene guidelines was higher for patient caregivers than for other hospital employees.

Environmental factors played a role in compliance to the hand hygiene guidelines. Hand hygiene products must be gentle in order to promote compliance. Those who did have direct patient care, responded more positively, that the products at UNN-Tromsø were gentle on the hands, than did direct patient care HCWs at VGH. Those who provided direct patient care believed that alcohol hand rub encouraged compliance with the hospital's hand hygiene guidelines.

Perceived access to gentle hand hygiene products was greater for UNN-Tromsø, than for VGH. In VGH self-reported

compliance to the hand hygiene guidelines was significantly greater when hand hygiene products were more readily accessible as compared to UNN-Tromsø where accessibility had less impact. Access to fixed hand gel was not as high as it was for soap and water, for HCWs at UNN-Tromsø. In all cases access for all products was higher for those with direct caregiver duties.

Variations specific to hospital as well as to level of caregiver duties were seen. Overall differences between hospitals may be due to dissimilarity in training for health care workers. The perceived threat of transmitting or acquiring a nosocomial infection is also probably different possibly due to dissimilar prevalence rates of MRSA. HCWs do have a high level of knowledge of the importance of hand hygiene in protecting themselves and those they care for. However, more study should be directed to those who do not provide direct patient care to increase their knowledge and awareness for the hand hygiene guidelines.

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APPENDIX 1: TABLES

TABLE 1: Occupational groups in study

Subgroup for Occupation	Occupation	Total (n) VGH	Total (n) UNN	*Total (n)*
Physician	**Subtotal each hospital**	**26**	**50**	**76**
	Anesthesiologist	1	0	1
	Attending staff/consulting	18	35	53
	Intern/resident/fellow	7	5	12
	Psychiatrist	0	1	1
	Radiology physician	0	8	8
	Surgeon	0	1	1
Nursing staff	**Subtotal each hospital**	**342**	**269**	**611**
	Licensed practical nurse	4	2	6
	Midwife	0	1	1
	Registered care aid	6	18	24
	Registered nurse	314	248	562
	Respiratory therapist	18	0	18
Allied Health	**Subtotal each hospital**	**51**	**5**	**56**
	Audiologist	0	2	2
	Dietician	2	1	3
	Occupational Therapist	15	0	15
	Pharmacist	11	0	11
	Physiotherapist	18	0	18
	Rehab assistent	1	0	1
	Social worker	4	2	6
Technologist	**Subtotal each hospital**	**55**	**49**	**104**
	Lab technologist/technician	46	36	82
	Radiology technician	9	13	22
Other	**Subtotal each hospital**	**362**	**21**	**383**
	Admitting Clerk	2	0	2
	Nursing Unit Clerk	11	3	14
	Food Services	3	4	7
	Housekeeping	18	1	19
	Laundry	5	0	5
	Office personnel	146	1	147
	Other	168	2	170
	Patient Services Coordinator	1	1	2
	Porter	1	1	2
	Purchaser	0	1	1
	Security	1	1	2
	Stores	0	1	1
	Student	5	0	5
	Supervisor	1	1	2
	Trades	0	4	5
Direct Care	Yes	449	254	703
	No	375	140	515
For patients	Missing	12	0	12
Total	**All participants**	**836**	**394**	**1230**

TABLE 2: Age and gender of study population

Hospital		VGH			UNN-Tromsø		
		n	%	95% CI	n	%	95% CI
AGE	**(19-29)**	144	17.2	14.70-19.84	80	20.3	16.33-24.27
	(30-39)	242	28.9	25.94-32.10	123	31.2	26.64-35.80
	(40-49)	260	31.1	28.04-34.32	117	29.7	25.19-34.21
	(50-59)	166	19.9	17.19-22.61	65	16.5	12.83-20.17
	(60-69)	22	2.6	1.55 - 3.73	9	2.3	3.31 – 7.85
	Total	**834***	**100.0**		**394**	**100.0**	
GENDER	**Female**	669	80.6	77.91-83.29	302	76.6	72.47-80.83
	Male	161	19.4	16.71-22.09	92	23.4	19.17-27.53
	Total	**830***	**100.0**		**394**	**100.0**	

TABLE 3: Hours Normally Worked for study population

Hours worked per week	VGH			UNN-Tromsø		
	n	%	CI (95 %)	n	%	CI (95 %)
10 - 20 hours	32	3.8	2.54 - 5.14	11	2.8	1.16 - 4.42
21 - 30 hours	88	10.6	8.47 - 12.65	21	5.3	3.11 - 7.55
31 - 40 hours	483	57.9	54.63 - 61.33	275	69.8	65.27 - 74.33
41 - 50 hours	182	21.9	19.04 - 24.66	63	16.0	12.37 - 19.61
51 - 60 hours	29	3.5	2.24 - 4.72	13	3.3	1.54 - 5.06
Less than 10 hours	5	0.6	0.08 - 1.12	5	1.3	0.16 - 2.38
More than 60 hours	14	1.7	0.81 - 2.55	6	1.5	0.31 - 2.73
Total	**833***	**100**		**394**	**100**	

TABLE 4: Pearson Correlations between compliance on access and gentleness

Sample	Access			*Gentleness*		
	Soap and Water	*Personal Portable*	*Hand rub*	*Soap and Water*	*Personal Portable*	*Hand rub*
Compliance VGH						
-Soap and Water	.446**	.180**	.207**	.152**	.021	.014
-Personal Portable	.116**	.535**	.132**	.068	.170**	.080*
-Hand rub	.177**	.152**	.539**	.118**	.156**	.167**
Compliance UNN-Tromsø						
-Soap and Water	.379**	.014	.238**	.337**	.099	.221**
-Personal Portable	.113*	.600**	.144**	-.007	.493**	.090
-*Hand rub*	.266**	.118*	.511**	.048	.217**	.430**

*Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

TABLE 5: Proportional preferences for soap and water, personal portable gel or stationary alcohol hand rub

		Soap and Water			*Personal portable*			*Wall mounted hand gel*		
		n	***Proportion %***	***Confidence interval (95%)***	***n***	***Proportion %***	***Confidence interval (95%)***	***n***	***Proportion %***	***Confidence interval (95%)***
VGH										
Most Preferred	*patient care*	344	76.61	72.69-80.53	18	4.01	2.20-5.82	56	12.47	9.41-15.53
	non patient care	270	72.00	67.46-76.54	23	6.13	3.70-8.56	47	12.53	9.18-15.88
Second best preferred	*patient care*	74	16.48	13.05-19.91	204	45.43	40.82-50.04	276	61.47	56.97-65.97
	non patient care	82	21.87	17.69-26.05	188	50.13	45.07-55.19	228	60.18	55.86-65.74
Least preferred	*patient care*	31	6.90	4.56-9.24	227	50.56	45.94-55.18	117	26.06	22.00-30.12
	non patient care	23	6.13	3.70-8.56	164	43.75	38.71-48.75	100	26.67	22.19-31.15
Used last week	*patient care*	416	92.65	90.24-95.06	203	45.21	40.61-49.81	348	77.51	73.65-81.37
	non patient care	334	89.07	85.91-92.23	100	26.67	22.19-31.15	192	51.20	46.14-56.26
UNN-Tromsø										
Most Preferred	*patient care*	96	37.80	31.84-43.76	57	22.44	17.31-27.57	116	45.67	39.54-51.80
	non patient care	83	59.29	51.15-67.43	27	19.29	12.75-25.83	47	33.57	25.75-41.39
Second best preferred	*patient care*	97	38.19	32.21-44.17	53	20.87	15.87-25.87	72	28.35	22.81-33.89
	non patient care	32	22.86	15.90-29.82	26	18.57	12.13-25.01	50	35.71	27.77-43.65
Least preferred	*patient care*	58	22.83	17.67-27.99	126	49.61	43.46-55.76	64	25.20	19.86-30.54
	non patient care	23	16.43	10.29-22.57	70	50.00	41.72-58.28	42	30.00	22.41-37.59
Used last week	*patient care*	240	94.49	91.68-97.30	107	42.13	36.06-48.20	107	42.13	36.06-48.20
	non patient care	137	97.86	95.46-100.26	36	25.71	18.47-32.95	36	25.71	18.47-32.95

TABLE 6: Manova for differences in hand hygiene products

Factor	Multi variate F-Ratio	Df	F-Value	Univariate Variables	Univariate F-ratio	*p-value*
Hospital:						
Soap & water	9.361	3, 1036	.026			<.001
				Access	4.962	.026
				Gentle	7.374	.007
				Comply	8.261	.004
Personal hand gel (portable)	12.416	3, 965	.037			<.001
				Access	3.768	.052
				Gentle	25.290	<.001
				Comply	2.986	.084
Alcohol hand rub (fixed)	4.045	3, 1017	.122			<.001
				Access	53.814	<.001
				Gentle	86.993	<.001
				Comply	3.417	.065
Direct Patient Care:						
Soap & water	4.024	3, 1036	.012			.007
				Access	.082	.775
				Gentle	11.356	.001
				Comply	.635	.426
Personal hand gel (portable)	6.496	3, 965	.020			<.001
				Access	19.239	<.001
				Gentle	.032	.858
				Comply	3.532	.060
Alcohol hand rub (fixed)	4.045	3, 1017	.012			.007
				Access	10.741	.001
				Gentle	.007	.935
				Comply	5.049	.015
Hospital * DPC Interaction:						
Soap & Water	1.715	3, 1036	.005			.162
				Access	.029	.864
				Gentle	1.338	.248
				Comply	3.630	.100
Personal hand gel (portable)	2.734	3, 965	.008			.054
				Access	.005	.946
				Gentle	6.795	.009
				Comply	3.767	.274
Alcohol hand rub (fixed)	4.707	3, 1017	.003			.003
				Access	5.049	.249
				Gentle	4.227	.040
				Comply	1.328	.249

TABLE 7: Univariate means for hand hygiene products

Dependent Variables	VGH				UNN-Tromsø			
	DPC		Not DPC		DPC		Not DPC	
	Mean	+/- *SD*	Mean	+/- *SD*	Mean	+/- *SD*	Mean	+/- *SD*
Access to soap and water	**6.4**	*0.9*	**6.4**	*1.0*	**6.5**	*0.8*	**6.5**	*0.8*
Soap and water gentle on hands	**4.2**	*1.9*	**4.7**	*1.6*	**4.0**	*1.6*	**4.3**	*1.6*
Compliance with guidelines re: soap and water	**6.0**	*1.2*	**6.0**	*1.2*	**5.7**	*1.2*	**5.9**	*1.2*
Access to personal hand gel	**4.5**	*2.1*	**3.9**	*2.1*	**4.2**	*2.2*	**3.6**	*2.3*
Personal hand gel gentle on hands	**4.3**	*1.7*	**4.1**	*1.8*	**3.8**	*1.8*	**3.9**	*1.7*
Compliance with guidelines re: personal hand gel	**5.1**	*1.7*	**5.0**	*1.7*	**5.0**	*1.8*	**4.7**	*1.9*
Access to wall mounted alcohol hand rub	**6.0**	*1.2*	**5.5**	*1.4*	**6.4**	*0.9*	**6.3**	*1.1*
Alcohol hand rub gentle on hands	**3.6**	*1.7*	**3.8**	*1.7*	**4.9**	*1.6*	**4.7**	*1.5*
Compliance with guidelines re: alcohol hand rub	**6.0**	*1.1*	**5.6**	*1.1*	**6.2**	*1.0*	**5.9**	*1.1*

TABLE 8: Confidence in knowledge of hand hygiene guidelines

Dependent Variable	Mean Square	F	p	η^2	Mean	95% Confidence Interval
Direct patient care	48.930	14.345	<.001	.012		
Hospital	6.820	1.999	.158	.002		
Interaction DPC*Hospital	19.320	5.659	.018	.005		
No –DPC VGH					4.63	4.44-4.82
UNN-Tromsø					5.07	4.77-5.38
Yes-DPC VGH					5.35	5.18-5.38
UNN-Tromsø					5.24	5.01-5.46

TABLE 9: Mean and Effect for 'hospital' on knowledge, intentions and effect

Model	Multi variate F-Ratio	Df	F-Value	p-value	Univariate F-ratio	VGH		*UNN-Tromsø*	
						Mean	S.D.	Mean	S.D.
Knowledge/ Intentions/ Effect	19.266	3, 569	.092	<.001					
Knowledge composite				<.001	22.980	44.509	4.140	42.723	4.701
Intentions composite				<.001	46.926	51.287	4.337	48.398	5.741
Effect composite				.001	10.308	26.465	6.051	24.857	5.928

TABLE 10: *Nosocomial* MRSA*:* Distribution by Where acquired

MRSA Status	Acquired within an acute care facility - n (%)	*Community Acquired - n (%)*
Infected	224 (56)	177 (73)
Colonized	172 (43)	65 (27)
Unknown	1 (0.3)	1 (0.4)
Total	**397**	**243**

TABLE 11: HA MRSA Status: Distribution by Where Acquired[11]

Where Acquired	*Total - n (%)*
An Acute Care Facility within VCH	397 (82.0)
Another Acute Care Facility prior to admittance	82 (17.0)
Rehab/Other Facility	2 (0.4)
Other/Unknown	4 (0.8)
Total	**485 (100.0)**

TABLE 12: MRSA status in Norway (*data incomplete*)(26)

MRSA status	**All counties in Norway**		*Troms County*	
Year	***2007 (n)***	***Jan - March 2008 (n)***	***2007 (n)***	***Jan - March 2008 (n)***
Infected	340	102	11	0
Colonized	250	98	6	0
Total (n)	590	200	17	0

Table 13: MRSA isolates collected at two UNN hospitals in Troms January 2007- April 2008

MRSA *Spa*-type	n (%)
t 690	1 (5)
t 002	3 (15)
t 017	1 (5)
t 019	1 (5)
t 032	3 (15)
t 044	1 (5)
t 076	1 (5)
t 1202	2 (10)
t 1219	2 (10)
t 127	1 (5)
t 160	1 (5)
t 219	1 (5)
t 2384	1 (5)
t 437	1 (5)
Total	19 (100)

APPENDIX 2: Quality Assurance Staff Survey

1. <u>Norwegian Version Used in UNN-Tromsø:</u>

Spørreskjema for ansatte på UNN I Tromsø

Personalia:

1. Kjønn: Kvinne Mann

2. Alder: 19-29 30-39 40-49 50-59 60-69

3. Hvilken jobb har du nå? (*merk en*)

Autorisert sykepleier
Offentlig godkjent
Autorisert hjelpepleier
Røntgenlege
Anestesiologist
Laboratorie tekniker/ bioingeniør
M.D (kandidat/bosatt/medlem)
M.D (behandlende/personale/rådgivning)
Husholdning
Ergo Terapeut
Fysioterapeut
Pharmasøyt/ apotek
Student
Kontor
Frivillig
Sikkerhet, dekning
Kjøkken ansatte
Annet _____

4. Hva er din normalarbeidstid per uke, inkludert overtid:

Mindre en 10 timer
10 – 20 timer
21-30 timer
31-40 timer
41-50 timer
51-60 timer
mer en 60 timer

5. Hvor sikker er du med de retningslinjer enheten/sykehuset har for sine ansatte, i forhold til når og hvordan man skal vaske hendene?

ikke sikker	1	2	3	4	5	6	7	veldig sikker

6. Har du direkte kontakt (fysisk berøring med hånden) med pasienter eller beboere?

Ja Nei

HVIS JA:

7. Har pasienter/beboere eller besøkende i løpet av siste uke, spurt om du har vasket hendene dine før du steller dem (eller dine pårørende)?

Ja Nei Husker ikke

8. Har noen pasienter/beboere eller besøkende i løpet av den siste uken bedt deg om informasjon vedrørende håndvask?

Ja Nei Husker ikke

Dine tanker rundt resultatet:

Vi ønsker å finne ut hva du mener om håndhygiene og resultatet det kan medføre om du følger din avdeling/ditt sykehus sine retningslinjer for hvordan og når du skal vaske hendene. For hvert spørsmål under, vær snill og klikk på tallet som best beskriver din mening.

Når jeg følger enhetens/sykehusets retningslinjer for når og hvordan vaske mine hender:

1. Pasienter/beboere vil få færre sykehusinfeksjoner.

Usannsynlig	1	2	3	4	5	6	7	Mest sannsynlig

2. Jeg vil ikke være i stand til å utføre alle mine pålagte plikter i tide.

Usannsynlig	1	2	3	4	5	6	7	Mest sannsynlig

3. Mine hender vil bli tørre, sprekke opp og bli rødlig.

Usannsynlig	1	2	3	4	5	6	7	Mest sannsynlig

4. Jeg vil beskytte meg selv mot infeksjoner (for eksempel influensa).

Usannsynlig	1	2	3	4	5	6	7	Mest sannsynlig

5. Jeg vil beskytte min familie og/eller personer jeg bor sammen med, mot infeksjoner som pasienter/beboere er bærere av.

Usannsynlig	1	2	3	4	5	6	7	Mest sannsynlig

1. Jeg vil ha en følelse av tilfredshet, fordi håndhygienen beskytter pasienter/beboere mot infeksjoner.

Usannsynlig	1	2	3	4	5	6	7	Mest sannsynlig

2. Jeg vil påvirke mine medarbeidere, ved å ha gode rutiner for når jeg vasker hendene.

Usannsynlig	1	2	3	4	5	6	7	Mest sannsynlig

3. Jeg vil oppfylle de forventninger pasienter/beboere har til håndhygiene.

Usannsynlig	1	2	3	4	5	6	7	Mest sannsynlig

Vi er interessert i <u>din mening</u> om det å følge enhetens/sykehusets retningslinjer for når og hvordan vaske hendene. For hvert spørsmål under, vær snill å klikk på den verdien som best beskriver din mening.

Jeg vil følge enhetens/sykehusets retningslinjer for når og hvordan vaske hendene…

1. I hver situasjon hvor det er nødvendig.

Usannsynlig	1	2	3	4	5	6	7	Mest sannsynlig

2. Når jeg blir spurt av pasienter/beboere eller deres familie.

Usannsynlig	1	2	3	4	5	6	7	Mest sannsynlig

3. Når en pasient/beboer har en infeksjon.

Usannsynlig	1	2	3	4	5	6	7	Mest sannsynlig

4. Når jeg får påminnelse fra smittevernet

Usannsynlig	1	2	3	4	5	6	7	Mest sannsynlig

5. Når det er nok tid.

Usannsynlig	1	2	3	4	5	6	7	Mest sannsynlig

6. Når mine hender er såre eller sprukket.

Usannsynlig	1	2	3	4	5	6	7	Mest sannsynlig

7. Når det er en krisesituasjon for pasient/beboer.

Usannsynlig	1	2	3	4	5	6	7	Mest sannsynlig

8. Når en pasient/beboer er isolert.

Usannsynlig	1	2	3	4	5	6	7	Mest sannsynlig

Plakater er ofte brukt til å vise ansatte, pasientene/ beboere og besøkende hvor viktig håndhygiene er. Vi er interessert i å vite <u>din mening</u> om hvor effektivt plakatene formidler informasjon om håndhygiene.

1. *Har du lagt merke til plakater?*

   Ja *Nei* *Ikke sikker*

   HVIS JA:

2. *Hvor ofte tror du at plakatene er byttet?*

   Hver 2. uke *hver måned* *hver 3. måned*
   Hver 6. måned *hvert år* *har ikke lagt merke til*

3. *Hvor viktig tro du plakater er <u>som læremidler for ansatte</u> i håndhygiene?*

Ikke effektivt	1	2	3	4	5	6	7	Meget effektivt

4. *Hvor viktig tro du plakater er <u>som læremidler for pasienter/beboere og besøkende</u> i håndhygiene?*

Ikke effektivt	1	2	3	4	5	6	7	Meget effektivt

5. *Hvor effektivt tror du plakatene <u>påvirker dine tanker</u> om din egen håndhygiene?*

Ikke effektivt	1	2	3	4	5	6	7	Meget effektivt

6. *Hvor effektivt <u>motiverer plakatene deg</u> til din egen håndhygiene?*

Ikke effektivt	1	2	3	4	5	6	7	Meget effektivt

7. *Hvor effektivt <u>påminner plakatene deg</u> om din egen håndhygiene?*

Ikke effektivt	1	2	3	4	5	6	7	Meget effektivt

Håndhygiene produkter:

Sykehus og avdelinger bruker forskjellige produkter for håndhygiene, og vi er interessert i din vurdering av slike produkter.

1. Hvilke håndhygiene produkter har du brukt den siste uken? (*merk alle som du har brukt*)

   Såpe og vann
   Sprit håndvask (flaske –egen)

   Sprit håndvask (vegg dispenser)

2. Hvordan vil du rangere håndhygiene produktene under hvor 1 er mest foretrukket og 3 er minst foretrukket?

   ____ *Såpe og vann*
   ____ *Sprit håndvask (flaske –egen)*

   ____ Sprit håndvask (vegg dispenser)

3. Hvor tilgjengelig er avdelingens/sykehusets håndhygiene produkter?

Såpe og vann

Lite tilgjengelig	1	2	3	4	5	6	7	Meget godt tilgjengelig

Sprit håndvask (flaske –egen)

Lite tilgjengelig	1	2	3	4	5	6	7	Meget godt tilgjengelig

Sprit håndvask (vegg dispenser)

Lite tilgjengelig	1	2	3	4	5	6	7	Meget godt tilgjengelig

4. Med hensyn til prosedyrene som regulerer håndhygiene, hvor bra er de produktene som er i bruk i avdelingen din?

Såpe og vann

Ikke effektivt	1	2	3	4	5	6	7	Meget effektivt

Sprit håndvask (flaske –egen)

Ikke effektivt	1	2	3	4	5	6	7	Meget effektivt

Sprit håndvask (flaske –egen)

Ikke effektivt	1	2	3	4	5	6	7	Meget effektivt

5. Hvor skånsom er din avdelings håndhygiene produkter på huden?

Såpe og vann

Ikke skånsom	1	2	3	4	5	6	7	Meget skånsom

Sprit håndvask (flaske –egen)

Ikke skånsom	1	2	3	4	5	6	7	Meget skånsom

Sprit håndvask (flaske –egen)

Ikke skånsom	1	2	3	4	5	6	7	Meget skånsom

Er det noe du vil kommentere til slutt, kan du skrive dette inn i feltet under:

_____

_____

_____

_____

Takk for oppmerksomheten!

2. English version used in UNN-Tromsø:

Staff Survey
UNN I Tromsø
"Hand Hygiene Survey"

1. What is your gender? Female Male

2. How old are you? 19-29 30-39 40-49
   50-59 60-69

3. What is your present occupation (*check one*)

Registered Nurse	Occupational Therapist
Licensed Practical Nurse	Physiotherapist
Registered Care Aid	Pharmacist
Radiology Technician	Volunteer
Lab Technologist/Technician	
Anesthesiologist	
M.D. (intern/resident/fellow)	Student
M.D. (attending/staff/consulting)	Office personnel
Housekeeping	
Security	Other
Food Services	

4. How many hours do you <u>normally</u> work per week, including overtime (*check one*)

Less than 10 hours	41-50 hours
10 – 20 hours	51-60 hours
21-30 hours	More than 60 hours
31-40 hours	

5. How confident are you in your knowledge of the unit's/hospital's hand hygiene guidelines for when and how to clean your hands?

very unconfident	1	2	3	4	5	6	7	very confident

6. Do you have direct (hands-on) patient/resident contact?

Yes No

IF YES,

7. In the last week has a patient/resident or visitor asked you if you cleaned your hands before providing them (or their loved one) direct care?

Yes No

8. In the last week has a patient/resident or visitor asked you for information on hand cleaning?

Yes No

We are interested in what you think about hand hygiene and outcomes that might occur when you follow your unit's/hospital's guidelines for how and when to clean your hands. For each of the items below, **please circle** the number that best describes your thoughts.

When I follow the unit's/hospital's guidelines for when and how to clean your hands:

1. Patients/residents will get fewer health care related infections

very unlikely	1	2	3	4	5	6	7	very likely

2. I will not be able to perform all of my assigned duties on time

very unlikely	1	2	3	4	5	6	7	very likely

3. My hands will become dry, cracked and reddened

very unlikely	1	2	3	4	5	6	7	very likely

4. I will protect myself from getting infections (e.g. flu)

very unlikely	1	2	3	4	5	6	7	very likely

5. I will protect my family and/or persons I live with from many of the infections carried by patients/residents

very unlikely	1	2	3	4	5	6	7	very likely

6. I will feel a sense of satisfaction about my activities to protect patients/residents from infections

very unlikely	1	2	3	4	5	6	7	very likely

7. I will influence the hand cleaning behaviour of other staff

very unlikely	1	2	3	4	5	6	7	very likely

8. I will be meeting the expectations of patients/residents

very unlikely	1	2	3	4	5	6	7	very likely

We are interested in <u>your intention</u> to follow the unit's/hospital's guidelines for when and how to clean your hands. For each of the items below, ***please circle*** *the number that most closely describes your intentions.*

I intend to follow the unit's/hospital's guidelines for when and how to clean your hands

1. In every situation where it is recommended

very unlikely	1	2	3	4	5	6	7	very likely

2. When asked by a patient/resident or their family

very unlikely	1	2	3	4	5	6	7	very likely

3. When a patient/resident has an infection

very unlikely	1	2	3	4	5	6	7	very likely

4. When reminded by Infection Control

very unlikely	1	2	3	4	5	6	7	very likely

5. When there is enough time

very unlikely	1	2	3	4	5	6	7	very likely

6. When my hands are sore or chapped

very unlikely	1	2	3	4	5	6	7	very likely

7. When there is a patient/resident crisis situation

very unlikely	1	2	3	4	5	6	7	very likely

8. When the patient/resident is in isolation

very unlikely	1	2	3	4	5	6	7	very likely

Posters are commonly used to communicate the importance of hand hygiene to staff, patients/residents and visitors. We are interested in <u>your assessment</u> as to the effectiveness of the posters in communicating this message.

1. *Have you noticed hand hygiene posters?*

   Yes *No* *Not sure*

   IF YES,

2. *How often do you think that the posters are changed?*

   Every 2 weeks *Monthly*
   Every 3 months
   Every 6 months *Yearly* *Have not noticed*

3. *How effective are the posters in <u>educating staff</u> on the importance of hand hygiene?*

not effective	1	2	3	4	5	6	7	very effective

4. *How effective are the posters in <u>educating patients/residents and visitors</u> on the importance of hand hygiene?*

not effective	1	2	3	4	5	6	7	very effective

5. *How effective are the posters in <u>making you think</u> about your own hand cleaning?*

not effective	1	2	3	4	5	6	7	very effective

6. *How effective are the posters in <u>motivating you</u> to clean your hands?*

not effective	1	2	3	4	5	6	7	very effective

7. *How effective are the posters in <u>reminding you</u> to clean your hands?*

not effective	1	2	3	4	5	6	7	very effective

Units and hospitals make available different products to support good hand hygiene. We are interested in <u>your assessment</u> of these products.

1. Which hand cleaning products have you used in the last week at work? **(*Check all that apply*)**

   Soap and water
   Alcohol hand rub (portable - personal)
   Alcohol hand rub (wall dispensers)

2. Please **rank** your preference for each of the hand cleaning products with "1" being your most preferred and "3" being least preferred.

   _____ Soap and water
   ____ Alcohol hand rub (portable – personal)
   ____ Alcohol hand rub (wall dispensers)

3. How <u>accessible</u> are the unit's/hospital's hand cleaning products?

Soap and Water

very inaccessible	1	2	3	4	5	6	7	very accessible

Alcohol hand rub (portable - personal)

very inaccessible	1	2	3	4	5	6	7	very accessible

Alcohol hand rub (wall dispensers)

very inaccessible	1	2	3	4	5	6	7	very accessible

4. *How <u>well</u> do the unit's/hospital's hand cleaning products promote compliance with hand cleaning guidelines?*

Soap and Water

very ineffective	1	2	3	4	5	6	7	very effective

Alcohol hand rub (portable - personal)

very ineffective	1	2	3	4	5	6	7	very effective

Alcohol hand rub (wall dispensers)

very ineffective	1	2	3	4	5	6	7	very effective

How <u>gentle</u> on the hands are the unit's/hospital's hand cleaning products

Soap and Water

not gentle	1	2	3	4	5	6	7	very gentle

Alcohol hand rub (portable – personal)

not gentle	1	2	3	4	5	6	7	very gentle

Alcohol hand rub (wall dispensers)

not gentle	1	2	3	4	5	6	7	very gentle

Do you have any comments?

_____

_____

_____

_____

Thank you for your time.

3. Version used in VGH:

Staff Survey

On October 13th, Vancouver Coastal Health Infection Control, in collaboration with Bayer Healthcare (Canada), launched a year-long hand hygiene campaign entitled **"Clean Hands for Life"**. The goal of the campaign is to increase awareness and compliance with proper hand cleaning. One of the ways we are assessing the success of the **"Clean Hands for Life"** campaign is by conducting staff surveys for quality assurance purposes.
The Staff Survey takes approximately 5-7 minutes to complete. All staff that complete the survey by **5:00 pm on Wednesday, December 14, 2005** will be entered into a draw for **one of five $100 prizes**.

The Infection Control team thanks you in advance for your time.

1. What is your gender? Female Male

2. How old are you? 19-29 30-39 40-49
   50-59 60-69

3. What is your present occupation (*check one*)

Registered Nurse	Occupational Therapist
Licensed Practical Nurse	Physiotherapist
Registered Care Aid	Pharmacist

Radiology Technician	Volunteer
Lab Technologist/Technician	
Anesthesiologist	
M.D. (intern/resident/fellow)	Student
M.D. (attending/staff/consulting)	Office
personnel	
Housekeeping	
Security	Other
Food Services	

4. How many hours do you <u>normally</u> work per week, including overtime (*check one*)

Less than 10 hours	41-50 hours
10 – 20 hours	51-60 hours
21-30 hours	More than 60 hours
31-40 hours	

5. How confident are you in your knowledge of the unit's/hospital's hand hygiene guidelines for when and how to clean your hands?

very unconfident	1	2	3	4	5	6	7	very confident

6. Do you have direct (hands-on) patient/resident contact?
   Yes No

   IF YES,

7. <u>In the last week</u> has a patient/resident or visitor asked you if you cleaned your hands before providing them (or their loved one) direct care? Yes No

8. <u>In the last week</u> has a patient/resident or visitor asked you for information on hand cleaning?
   Yes No

We are interested in <u>what you think about hand hygiene and outcomes</u> that might occur when you follow your unit's/hospital's guidelines for how and when to clean your hands. For each of the items below, **please circle** the number that best describes your thoughts.

When I follow the unit's/hospital's guidelines for when and how to clean your hands:

9. Patients/residents will get fewer health care related infections

very unlikely	1	2	3	4	5	6	7	very likely

10. I will <u>not</u> be able to perform all of my assigned duties on time

very unlikely	1	2	3	4	5	6	7	very likely

11. My hands will become dry, cracked and reddened

very unlikely	1	2	3	4	5	6	7	very likely

12. I will protect myself from getting infections (e.g. flu)

very unlikely	1	2	3	4	5	6	7	very likely

13. I will protect my family and/or persons I live with from many of the infections carried by patients/residents

very unlikely	1	2	3	4	5	6	7	very likely

14. I will feel a sense of satisfaction about my activities to protect patients/residents from infections

very unlikely	1	2	3	4	5	6	7	very likely

15. I will influence the hand cleaning behaviour of other staff

very unlikely	1	2	3	4	5	6	7	very likely

16. I will be meeting the expectations of patients/residents

very unlikely	1	2	3	4	5	6	7	very likely

We are interested in <u>your intention</u> to follow the unit's/hospital's guidelines for when and how to clean your hands. For each of the items below, ***please circle*** *the number that most closely describes your intentions.*

I intend to follow the unit's/hospital's guidelines for when and how to clean your hands

9. In every situation where it is recommended

very unlikely	1	2	3	4	5	6	7	very likely

10. When asked by a patient/resident or their family

very unlikely	1	2	3	4	5	6	7	very likely

11. When a patient/resident has an infection

very unlikely	1	2	3	4	5	6	7	very likely

12. When reminded by Infection Control

very unlikely	1	2	3	4	5	6	7	very likely

13. When there is enough time

very unlikely	1	2	3	4	5	6	7	very likely

14. When my hands are sore or chapped

very unlikely	1	2	3	4	5	6	7	very likely

15. When there is a patient/resident crisis situation

very unlikely	1	2	3	4	5	6	7	very likely

16. When the patient/resident is in isolation

very unlikely	1	2	3	4	5	6	7	very likely

Posters are commonly used to communicate the importance of hand hygiene to staff, patients/residents and visitors. We are interested in <u>your assessment</u> as to the effectiveness of the posters in communicating this message.

8. *Have you noticed hand hygiene posters?*

Yes *No* *Not sure*

IF YES,

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Every 2 weeks *Monthly*
Every 3 months
Every 6 months *Yearly* *Have not noticed*

10. *How effective are the posters in <u>educating staff</u> on the importance of hand hygiene?*

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11. *How effective are the posters in <u>educating patients/residents and visitors</u> on the importance of hand hygiene?*

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12. *How effective are the posters in <u>making you think</u> about your own hand cleaning?*

not effective	1	2	3	4	5	6	7	very effective

13. *How effective are the posters in <u>motivating you</u> to clean your hands?*

not effective	1	2	3	4	5	6	7	very effective

14. *How effective are the posters in <u>reminding you</u> to clean your hands?*

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Units and hospitals make available different products to support good hand hygiene. We are interested in <u>your assessment</u> of these products.

5. Which hand cleaning products have you used in the last week at work? (***Check all that apply***)

Soap and water

Alcohol hand rub (portable - personal)

Alcohol hand rub (wall dispensers)

6. Please **rank** your preference for each of the hand cleaning products with "1" being your most preferred and "3" being least preferred.

_____ *Soap and water*
_____ *Alcohol hand rub (portable – personal)*

____ Alcohol hand rub (wall dispensers)

7. How <u>accessible</u> are the unit's/hospital's hand cleaning products?

Soap and Water

very inaccessible	1	2	3	4	5	6	7	very accessible

Alcohol hand rub (portable - personal)

very inaccessible	1	2	3	4	5	6	7	very accessible

Alcohol hand rub (wall dispensers)

very inaccessible	1	2	3	4	5	6	7	very accessible

8. *How <u>well</u> do the unit's/hospital's hand cleaning products promote compliance with hand cleaning guidelines?*

Soap and Water

very ineffective	1	2	3	4	5	6	7	very effective

Alcohol hand rub (portable - personal)

very ineffective	1	2	3	4	5	6	7	very effective

Alcohol hand rub (wall dispensers)

very ineffective	1	2	3	4	5	6	7	very effective

9. *How <u>gentle</u> on the hands are the unit's/hospital's hand cleaning products*

Soap and Water

not gentle	1	2	3	4	5	6	7	very gentle

Alcohol hand rub (portable – personal)

not gentle	1	2	3	4	5	6	7	very gentle

Alcohol hand rub (wall dispensers)

not gentle	1	2	3	4	5	6	7	very gentle

Do you have any comments?

_____

_____

_____

_____

We thank you for your time.