REVIEW

Hand hygiene compliance in healthcare workers

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Summary  The 'clean-your-hands' campaign has now been introduced into hospitals in England but it was initially piloted in six acute trusts. The campaign was multi-modal and aimed to improve hand hygiene compliance. This review reports the findings from one of the trusts involved in the pilot. The campaign consisted of a toolkit that included placing alcohol hand rub beside patients, along with posters and supporting marketing materials. A guide to implementation and a strategy aimed at increasing patient information and empowerment was also initiated. In order to assess the success of the campaign, audits of hand hygiene in healthcare workers were conducted over a six-month period. Additionally, data were obtained from staff surveys, patient surveys, usage levels of alcohol hand rub and interviews with the on-site lead. The local campaign indicated that a multi-modal campaign induced a marked increase in hand hygiene compliance (from 32% to 63%), with 74% of staff reporting increased compliance throughout the campaign. Usage of alcohol hand rub increased by 184%. The majority of patients indicated that the public should be actively involved in helping healthcare staff to improve their hand hygiene. © 2006 The Hospital Infection Society. Published by Elsevier Ltd. All rights reserved.

Hand hygiene compliance

Hand hygiene is considered to be the most effective strategy to combat hospital-associated infection, with a reduction in infection rates reported after improved compliance with hand hygiene.1–8 Although hand hygiene is the single most efficient preventive measure, compliance with hand hygiene remains low.3,9–11 Factors associated with poor compliance include heavy workloads, performing activities with cross-transmission, glove use and involvement in technical specialities.12,13 Lack of compliance with hand hygiene appears to be part of a larger picture, where many staff have generally poor compliance with good infection control practices.14,15

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Pittet et al.'s work has been fundamental in changing hand hygiene compliance rates, with the implementation of a multi-modal campaign resulting in a sustained increase in compliance.\textsuperscript{12} Observational surveys of compliance with hand hygiene were conducted before and during implementation of a hand hygiene campaign, and performance feedback was provided to healthcare workers (HCWs). Healthcare-associated infection rates, attack rates of meticillin-resistant \textit{Staphylococcus aureus} (MRSA) cross-transmission and consumption of hand rub were measured. Across the three years, hand compliance rose from 48% to 66% (\(P < 0.001\)), alcohol-based hand disinfection increased three-fold (\(P < 0.001\)), and healthcare-associated infection and MRSA transmission rates decreased (\(P < 0.05\)). The findings from this longitudinal research study along with practice information from the Oxford Radcliffe Hospitals National Health Service (NHS) Trust and University Hospitals Lewisham underpinned the 'clean-your-hands' campaign.\textsuperscript{16,17}

The 'clean-your-hands' campaign

Six acute trusts in England were involved in the large 'clean-your-hands' campaign co-ordinated by the National Patient Safety Agency. Each trust identified two wards on which the multi-modal campaign was implemented and evaluated. The wards were selected by the campaign manager and the local on-site lead to ensure that the project was tested in a range of settings. At a local level, the initiative was performance managed by a local working group accountable to the hospital infection control committee.

A multi-modal campaign consisting of previously successful strategies was used in order to increase compliance.\textsuperscript{12,16,17} These included the introduction of near-patient alcohol hand rubs (NPAHs) and a series of posters and supporting marketing materials such as aprons and badges, aimed at patients, carers and staff. The campaign also provided patients with leaflets that encouraged them to ask staff about cleaning their hands.

An observational survey of HCWs' compliance with hand hygiene was undertaken using a previously validated tool, widely used for hand hygiene audits in the UK.\textsuperscript{17} This tool was part of the campaign toolkit and the campaign project manager trained all pilot site teams in its use. Locally, observations were conducted by the on-site lead or a nominated infection control nurse who had been trained in the use of the tool, which helped to increase the reliability of observation reporting.

Three sets of observations were taken at the start, middle and end of the six-month period. In total, each pilot ward was observed on 28 occasions for 20 min (i.e. 56 20-min observation periods). In those periods, a total of 493 'care activities' were observed in which hand hygiene should have taken place. It is important to emphasize that all ward activity was observed from the vantage point taken, rather than observing a single individual. Frequencies of scores were used with '0' being scored for a hand hygiene opportunity (i.e. 'O' for opportunity) and '1' being scored for an observation of hand hygiene actually taking place. Hand hygiene practice was assessed against local trust policy, which is based on national guidance. Opportunities for hand hygiene were stratified into three categories: high, medium and low risk. After completion of the observation period, feedback was provided to the ward manager and senior nurse. After the six-month pilot period, the campaign was implemented across the entire trust.

Product usage (NPAH) was also monitored, with baseline information being collected prior to the launch of the campaign and again at the start and end of the campaign. The assumption was made that product usage was a consequence of cleaning hands rather than it being used for any other activity.

A survey was sent to all HCWs (\(N = 127\)) on the pilot wards and also to a convenience sample of patients and their carers (\(N = 43\)). The survey consisted of closed questions, but respondents were invited to write additional comments that were analysed thematically by the project manager. Both surveys asked questions about HCWs’ compliance with hand hygiene, perceptions about the campaign, and user involvement. The staff survey was distributed two months after the campaign started (Phase 1) and again six months from the start (Phase 2) to all staff on the pilot wards. The staff survey had a response rate of 45% in Phase 1 and 38% in Phase 2, with an overall response rate of 42%. The same sample was targeted in both phases, without turnover or movement of staff. There was no noticeable difference in the mix of staff responding to the surveys. Respondents were predominantly medical and nursing staff (86%), and the majority (57%) had been working in their current role for more than five years.

The on-site lead was interviewed in order to gain practical insight into the local implementation of the campaign, and to learn lessons in order to inform the national roll-out. A semi-structured interview guide was used to elicit answers around the implementation strategy. The project manager conducted all interviews towards the end of the
campaign. Interviews were taped and data were analysed thematically by the project manager and verified by the on-site lead.

The multi-centre research and ethics committee granted permission for the evaluation part of the campaign to proceed. All staff on the pilot wards were informed by mail about the upcoming study and that they were eligible for inclusion. Anonymity was guaranteed for all participants. The observation of hand hygiene compliance was used as part of the trust's audit, so ethical approval was not required for this aspect of the evaluation.

Following the success of the pilot, the campaign was rolled out across the trust. To assess the longer-term impact of the campaign, further compliance audits were undertaken on an additional eight wards that were chosen at random.

**Evaluating the campaign**

For the pilot wards, the rate of compliance increased from 32% at the start of the six-month study period to 41% mid way and 63% at the end. Over the six months, NPAH usage increased by 184%. This increase in product usage was supported by staff responses in the survey questionnaire, with over 70% of nurses and 60% of doctors agreeing that the presence of NPAH encouraged them to clean their hands.

Responses to questions in the staff survey showed that staff felt the campaign posters were highly visible during the campaign (97% in Phase 1 and 99% in Phase 2) and made staff think about their hand hygiene (76% in Phase 1 and 84% in Phase 2), with staff reporting that they cleaned their hands more frequently (74% in Phase 1 and 74% in Phase 2). Sixty-four percent of registered nurses and healthcare assistants (HCAs) reported being asked about their hand hygiene. In Phase 1, 31% had been asked about their hand hygiene by patients, with this increasing to 39% in Phase 2. Nearly all (97%) of the staff who had been asked about their hand hygiene felt comfortable with this type of patient questioning. Whilst the correlation between self-reporting of hand hygiene and observed behaviour tends to be inaccurate due to overestimation by staff who over report, in this instance, the self-reported compliance figures were broadly in line with those from the observations of actual behaviour.18

Findings from the staff survey indicated that staff were positive about the campaign. Some staff expressed dissatisfaction with the quality of the NPAH in that it left a residue and was sticky. Comments relating to patient involvement were broadly supportive, with some caution relating to how this is introduced.

All but one respondent in the patient survey had witnessed healthcare staff cleaning their hands in the last 24 h. Forty patients and carers thought that the public should be involved in helping staff to improve their hand hygiene, and over half of them stated that they would ask staff if they had cleaned their hands. When asked if they had ever asked staff to clean their hands, there were 16 respondents. Patients felt that if they did ask, it would require courage, might cause offence and may impact negatively on the care they received. Thirty-five respondents found the posters, aprons, stickers and leaflets useful. Findings indicated that the campaign resulted in patients generally feeling more confident in their care as they witnessed staff cleaning their hands, and they felt that focus was also on the general cleanliness of the ward and hospital environment.

Data obtained from the on-site lead found that the framework for implementation was helpful and the major issue for success of the campaign was the NPAH. Training needs of staff were considered to be crucial to hand hygiene compliance, and preparation of staff to receive questions from patients was considered important as patients need to know when and how hand hygiene should occur. It was felt locally that key staff members who are responsible for product replacement and sustaining the campaign were vital. Similarly, support from influential individuals in the organization, such as the chief executive and the director of nursing, was important for the campaign’s success.

After the successful pilot and implementation across the trust, further observational studies were completed six months into the campaign on 10 wards including the pilot wards. The additional data from the 10 wards showed overall compliance rates similar to those reported by Pittet et al. at this stage of a multi-modal campaign (50%).12

When combining all ward results, hand hygiene was noted to have occurred 458 times out of 924 opportunities. Individual ward results illustrated a wide range of compliance (29–66%). The two highest results were from wards used in the pilot, which are now two years into the campaign. Additional compliance data were further broken down into different staff groups. These were: (1) nurses including students (49%); (2) medics including students (26%); (3) HCAs (64%); and (4) others, i.e. physiotherapists, occupational therapists, phlebotomists, dieticians, etc. (46%). Performance feedback was seen as essential, especially on under-performing wards.
The success of the ‘clean-your-hands’ campaign

It has already been established that a multi-modal campaign can produce a sustained improvement in hand hygiene compliance, with reduced rates of nosocomial infections and MRSA transmission. The results from this local campaign and the wider ‘clean-your-hands’ campaign supported the first premise, with hand hygiene compliance being improved and sustained over a period of time. However, for hand hygiene improvements to have an impact upon the reduction of infection, it is necessary to achieve a sustained improvement over a longitudinal period and it is acknowledged that this study was not designed to illustrate this. A four-year project funded by the Patient Safety Research Programme of the Department of Health will address this over the long term.

In the local evaluation of the campaign, HCAs showed the highest rates of observed compliance. However, there are inconsistencies when trying to determine which healthcare group is most compliant in hand hygiene. Responses from the staff survey indicated that some complained that the NPAH was not new. Patients were targeted and encouraged to participate by the use of posters and aprons with the slogan, ‘it’s okay to ask’. Patient involvement in the NHS is a relatively new concept in terms of NHS policy; however, patient empowerment, involvement and participation characterize the new NHS. A small-scale study indicated that patient involvement in hand hygiene is a complex issue and that hand hygiene is ultimately the responsibility of the HCW.

Conclusion

The evidence from this local campaign supports previous work which indicates that it is the multi-modal nature of strategies that is crucial to success in increasing hand hygiene compliance, both in the short and the long term. It was considered that the interplay of all related facets of the campaign resulted in a change in the way that staff perceived the practice of hand hygiene from low priority to a core element of daily practice that could be achieved easily. This local campaign was small scale, but other pilot sites found the same trends. It is impossible to estimate the relative efficacy of the different components of the intervention, and a Hawthorne effect to explain the improvements in compliance cannot be ruled out. Those conducting the observational component, however, did not believe this to be a significant factor.

References


