

## IMPLEMENTATION PROJECT

# Health care worker hand hygiene in the pediatric special care unit at Mulago National Referral Hospital in Uganda: a best practice implementation project

Christine Muhumuza MHSR,<sup>a</sup> Judith Streak Gomersall PhD,<sup>b</sup> Makumbi E. Fredrick PhD,<sup>a</sup> Lynn Atuyambe PhD,<sup>a</sup> Christopher Okiira MHSR,<sup>a</sup> Aggrey Mukose MD, MHSR<sup>a</sup> and John Ssempebwa PhD<sup>a</sup>

<sup>a</sup>School of Public Health, Makerere University College of Health Sciences, Kampala, Uganda, <sup>b</sup>NHMRC Centre of Research Excellence for Aboriginal Chronic Disease Knowledge Translation and Exchange, School of Translational Science, Faculty of Health Sciences, University of Adelaide, Australia

## ABSTRACT

**Introduction:** The hands of a health care worker are a common vehicle of pathogen transmission in hospital settings. Health care worker hand hygiene is therefore critical for patients' well being. Whilst failure of health care workers to comply with the best hand hygiene practice is a problem in all health care settings, issues of lack of access to adequate cleaning equipment and in some cases even running water make practicing good hand hygiene particularly difficult in low-resource developing country settings. This study reports an audit and feedback project that focused on the hand hygiene of the health care worker in the pediatric special care unit of the Mulago National Referral Hospital, which is a low-resource setting in Uganda.

**Objective:** To improve hand hygiene among health care workers in the pediatric special care unit and thereby contribute to reducing transmission of health care worker-associated pathogens.

**Methods:** The Joanna Briggs Institute three-phase Practical Application of Clinical Evidence System audit and feedback tool for promoting evidence utilization and change in health care was used. In phase one of the project, stakeholders were engaged and seven evidence-based audit criteria were developed. A baseline audit was then conducted. In phase two, barriers underpinning areas of noncompliance found in the baseline audit were identified and three strategies – education, reminders and provision of hand cleaning equipment – were implemented to overcome them. In phase three, a follow-up audit was conducted.

**Results:** Compliance with best practice hygiene was found to be poor in the baseline audit for all but one of the audit criteria. Following the implementation of the strategies, hand hygiene improved. The compliance rate increased substantially across all criteria. Staff education achieved 100%, whilst criteria 4 increased to 70%. However, use of alcohol-based hand-rub for hand hygiene only improved to 66%, and for six of the seven audit criteria, compliance remained below 74%.

**Conclusion:** The project provides another example of how audit can be used as a tool to improve health practice, even in a low-resource setting. At the same time, it showed how difficult it is to achieve compliance with best hand hygiene practice in a low-resource hospital. The project highlights the importance of continued education/awareness raising on the importance of good hand hygiene practice as well as investment in infrastructure and cleaning supplies for achieving and sustaining good hand hygiene among workers in a low-resource hospital setting. A key contribution of the project was the legacy it left in the form of knowledge about how to use audit and feedback as a tool to promote the best practice. A similar project has been implemented in the maternity ward at the hospital and further audits are planned.

**Key words:** clinical audit, developing country, evidence-based practice, evidence implementation, hand hygiene, pediatric ward

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*Correspondence:* Judith C. Gomersall, Doctor of Philosophy, Public Management & Development, University of Adelaide, Adelaide, South Australia, Australia. E-mail: judith.gomersall@adelaide.edu.au

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## Background

Globally, nearly 1.4 million patients are affected by health care-associated infection (HAI) at any one time.<sup>1</sup> HAI is defined as an infection occurring in a patient during the process of care in a hospital or health facility, which was not present or was incubating at the time of admission.<sup>2</sup> The prevalence of HAI in Ugandan health facilities is high – 28% in Lacor Hospital in a 2011 study.<sup>3</sup> Whilst HAI is an issue in all countries, it is far more so in the developing countries in Africa, with research indicating that the prevalence of HAIs in Africa is as much as 20% higher than in the developed countries.<sup>4</sup> HAI in the pediatric special care units (SCUs) is higher than in the SCUs treating adults,<sup>2</sup> largely due to the disease profile of patients admitted to the pediatric units. HAI is known to be higher among infants in SCUs than in adults in general units.<sup>5</sup> The high level of HAI in the pediatric SCUs is a concern not only because it results in long hospital stays and puts pressure on stretched health budgets but also because it may impact negatively on child development.<sup>6</sup> Childhood diseases such as diarrhea, dysentery, malaria, respiratory tract infections, and measles present a high risk of cross-contamination and pose a significant risk to infant patients as well as health care workers (HCWs), visitors and attendants.<sup>7</sup>

The hands of the HCW are the most common vehicle for transmission of HCW-associated pathogens within the health care environment.<sup>8</sup> Therefore, improving compliance with hand hygiene among HCWs is vital for preventing HAIs<sup>9</sup> and cross-infections in these settings.<sup>10</sup>

In Africa, HAI has been associated with increased mortality and morbidity, especially among infants and children. Mothers and caretakers of hospitalized neonates and post-partum mothers are two population groups that face particularly high risk of HAIs in developing countries. Although health care is a right, minimal attention is given to hospital safety,<sup>3</sup> compared to other areas such as drugs. Although the importance of cleanliness and infection control in hospitals is emphasized, most hospitals in Uganda suffer from overcrowding and shortage of basic supplies such as alcohol hand-rubs (doctors often buy their own), gloves (patients or their families often have to supply them), running water (may run out), single-use hand towels or clean linen. This makes practicing best practice hand hygiene difficult for HCWs and puts patients and HCWs at increased risk of HAIs.

The limited evidence that exists on the prevalence of HAIs in hospitals in Uganda clarifies that it is high. For example, a study conducted in 2011 in the Lacor Hospital

in Northern Uganda found a 28% overall HAI prevalence rate within the hospital.<sup>11</sup>

The study site – Mulago National Referral Hospital (MNRH) – is a national referral and teaching hospital for Makerere University College of Health Sciences in Kampala City, Uganda. MNRH provides both primary and specialized health care. It serves urban, periurban and village populations. The pediatric department admits over 20 000 children annually, and is open daily. Pediatric patients average 400 per week and are aged 1 day to 12 years. The unit in which the project was conducted has 2 doctors, 4 nurses and 10 student doctors. The most common reasons for admission are diarrhea, dysentery, malaria, respiratory tract infections, measles, and injuries.

No research study has estimated the prevalence of HAIs in the MNRH hospital or the pediatric unit in the hospital. However, it may be assumed not to vary significantly from that in the Lacor Hospital as both hospitals struggle with overcrowding, shortage of HCWs and limited resources available for hospital equipment and infrastructure.<sup>12</sup> The MNRH hospital has a functioning flush toilet facility and hand-washing facilities in all the wards; however, sometimes water runs out. If hands are washed they are often not washed with soap because there is none.

Whilst the Ugandan health education curriculum includes hand hygiene at the place of work, compliance in practice is known to be low and there is a dearth of an ongoing training/awareness raising on the issue. Raising awareness/education in HCWs is therefore an essential part of what is needed to improve hand hygiene practice compliance and control HAIs in hospitals in Uganda.<sup>13</sup>

A rapid review of the literature on best hand hygiene practice was undertaken to define the audit criteria used in the project. The WHO's 'five moments for hand hygiene' approach emerged as a useful evidence-based standard for HCW hand hygiene practice and informed the audit criteria. The five moments approach is an evidence-based, field-tested, user-centered approach designed to be easy to learn, logical and applicable in a wide range of settings. The five moments approach recommends HCWs clean their hands: before touching a patient; before clean/aseptic procedures; after body fluid exposure/risk; after touching a patient; and after touching the patient surroundings.<sup>17</sup> The WHO emphasizes the importance of educating HCWs about the best hand hygiene practice to reduce HAIs.

The literature identified the following principles as a key for effective HCW hand hygiene practice and they also shaped the audit criteria.

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- (1) HCWs should practice effective hand decontamination immediately before and after each episode of direct patient contact and activity that potentially results in hands being contaminated.<sup>14–15</sup>
- (2) HCWs should use an alcohol-based cleaning agent routinely unless their hands are visibly soiled<sup>16,17</sup> (reduction of both transient microorganisms and substantial reduction in resident flora occurs with alcohol-based hand-rubs).<sup>15</sup>
- (3) If the hands of an HCW are soiled, soap and water should be used.<sup>14,17</sup>
- (4) Irritation may occur with the frequent use of soap and less frequently alcohol-based hand-rubs,<sup>15</sup> and hence it is important for HCWs to be provided with emollient hand creams and lotions to maintain skin integrity and prevent skin irritation.<sup>14,16</sup>

### Aim

The primary aim of the project was to improve HCW hand hygiene practice in the pediatric SCUs at MNRH in Uganda. More specific objectives of the project were as follows:

- (1) To establish the extent and nature of the gap between hand hygiene practice and best practice among HCWs in clinical areas of the pediatric SCU
- (2) To educate HCWs in the MNRH pediatric SCUs on how to perform hand hygiene practice according to the WHO five moments of hand hygiene
- (3) To implement a program that would improve hand hygiene compliance levels among HCWs in clinical areas of the pediatric SCUs in MNRH
- (4) To increase HCWs' knowledge about evidence-based practice and the power of evidence-based audit and feedback as a tool to improve and change practice.

### Methods

The project used the Joanna Briggs Institute – the Practical Application of Clinical Evidence System (JBI PACES). The JBI PACES is an online tool for health professionals and/or researchers to conduct efficient audits in small or large health care settings. PACES has been designed to facilitate audits being used to promote evidence-informed health practice and includes a Getting Research into Practice (GRiP) framework that guides stakeholders through a process of identifying factors underpinning gaps between practice and best practice, and strategies to overcome them. The project's three consecutive activity phases are described directly below

followed by the presentation of the project's results and a discussion.

### Phase 1: project team establishment, audit criteria definition and baseline audit

A first step in the project was that the project leader, the first author of this article, who is a researcher from the Makerere University College of Health Sciences who undertook the project as part of the requirements for completing the JBI clinical fellowship, established a project team. The project team included clinicians from MNRH who were essential to engage to facilitate successful implementation, as well as researchers from the Makerere University College. Researcher from the JBI conducted the evidence review and worked with the project leader on the definition of audit criteria, and a second researcher from JBI assisted with the write-up of this report.

The seven evidence-based audit criteria used in the baseline and follow-up audits are presented in Table 1. The criteria were informed by the best practice described in the 'Introduction' section above, as well as the WHO's World Alliance for Patient Safety guidelines.<sup>18</sup> These guidelines cover the four aspects of hand hygiene in hospitals such as when to observe hand hygiene, what to use for hand hygiene, how to conduct hand hygiene, and education about hand hygiene. Table 1 also presents the sample sizes in the audits and explains how compliance was measured for each audit criterion.

The baseline audit was conducted over a 2-week period during July 2012. Two student nurses from a different hospital conducted both the audits. The HCWs were not told that an audit of hand hygiene practice was being conducted. The staff could see the nurses collecting data, but as there are often student nurses working in the hospital ward, it is likely that the data collectors were perceived as nursing students watching and learning on the ward. The two student nurses administered the questionnaires and conducted the observations in the wards. The observation method was used for measuring compliance for criteria 1–6 as it has been identified by the WHO as the gold standard.<sup>19</sup> Observations were made during the day for 10 h (8:00 a.m.–5:00 p.m. East African time) during the HCWs day working from Monday to Friday of each week.

### Phase 2: implementation of best practice

Following the baseline audit, the project team reflected on the results, and guided by the JBI PACES GRiP tool, identified reasons behind the noncompliance and strategies to overcome them. The GRiP is a framework that encourages audit teams to identify, for each audit

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**Table 1. Audit criteria, sample and measurement of compliance**

| Criteria   | Sample                        |                               | Measurement of compliance   |
|--|-------------------------------|-------------------------------|---|
|  | Baseline                      | Follow-up                     |   |
| Alcohol-based hand-rub is routinely used to clean hands unless hands are visibly soiled. WHO HH moments 1 and 2  | 95 hand hygiene opportunities | 95 hand hygiene opportunities | Direct observation. Compliance rate (%) = no. hand hygiene opportunities correctly performed/no. hand hygiene opportunities over 2-week period. |
| Hands decontaminated immediately before each episode of direct patient contact or care, and/or all inanimate objects. WHO HH moments 1 and 2                             | 95 hand hygiene opportunities | 94 hand hygiene opportunities | As above.   |
| Hands decontaminated immediately after contact with each individual patient and/or all inanimate objects. WHO HH moments 3, 4, and 5                                     | 75 hand hygiene opportunities | 75 hand hygiene opportunities | As above.   |
| Hands decontaminated with an alcohol-based hand-rub (unless visibly soiled) between different care activities for same patient. WHO HH moments 1, 2 and 5                | 95 hand hygiene opportunities | 95 hand hygiene opportunities | As above.   |
| Hands washed using an effective hand washing technique involving 3 stages. WHO HH moments 1, 2, 3, 4 and 5   | 80 hand hygiene opportunities | 84 hand hygiene opportunities | As above.   |
| Hands that are visibly soiled, or potentially grossly contaminated with dirt or organic material, are washed with liquid soap and water. WHO HH moments 1, 2, 3, 4 and 5 | 40 hand hygiene opportunities | 40 hand hygiene opportunities | As above.   |
| Members of staff have received education about hand hygiene.   | 18 HCWs                       | 20 HCWs                       | Questionnaire. Compliance if HCW received training in last 12 months.   |

HCW, health care workers; HH, hand hygiene.

criterion, where compliance is found to be poor barriers behind the noncompliance and then brainstorm strategies and resources to improve the compliance outcomes. The GRIP results are presented in the 'Results' section below.

The strategies implemented to improve hand hygiene practice were as follows:

- (1) Strategy 1: Education/raising awareness about best practice and infection potential – two 30-min education sessions were conducted on HAI control with a focus on hand hygiene. In the first training session, there were 18 HCWs from the pediatric SCUs (4 doctors, 11 nurses and 3 student nurses). The second training session included an additional one doctor and one nurse. The training was done once a week for the 2 weeks of the project implementation period. The training sessions were run by the infection control staff/nurses and supported by members of the project audit team including the project leader/author.

- (2) Strategy 2: Distribution of materials describing best hygiene practice – during the training, WHO brochures and posters on hand hygiene were given to the HCW participants. In addition, posters describing hand hygiene practice and reminding HCWs to clean hands were posted on the walls in the ward. The intention of these was to create interest and motivation in the project, as well as a reminder to the HCWs on when, how, what to use and for what purpose, for hand hygiene. During the training, the HCWs were also provided with feedback on the findings of the baseline audit.

- (3) Strategy 3: Equipment distribution – alcohol-based hand-rub/gel was provided next to the trolleys, located at beds, in the bathrooms and in other areas identified as strategic for performance of the five hand hygiene moments. Liquid soap, running water and disposable paper towels for drying the hands after washing was provided in the unit. All these supplies were provided after the training from 2nd to 14th August 2012.

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### Phase 3: follow up audit

The second audit began 2 weeks after completion of the implementation phase and was conducted from 6th to 17th September 2012.

### Ethics

The project was conducted in accordance with the principles of clinical audit and quality improvement. Permission to carry out the project was sought from Uganda National Council for Science and Technology through Makerere University School of Public Health (MakSPH) Higher Degrees Research and Ethics Committee and Mulago Hospital Ethical Committee. The auditor conducted the audit among HCWs and without any patient contact. Any information obtained during the course of this audit was treated confidentially and did not lead to any identification or contact with an individual patient.

### Results

The percentage compliance with best practice for each of the audit criteria in the baseline and follow-up audits are presented in Table 2 and illustrated in Fig. 1. Directly below, the primary findings of the baseline audit, GRiP and follow-up audit are discussed in turn.

### Phase 1: baseline audit results

As may be seen from the results presented in Table 2 and Fig. 1, the assessment of hand hygiene practice in the baseline audit revealed poor practice and large gaps for each of the audit criteria between best and actual hand

hygiene practice. For two of the audit criteria, percentage compliance was extremely poor at less than 10%. These were audit criterion 2 – ‘hands decontaminated immediately after contact with patient or equipment/object’ (8% compliance); and criterion 4 – ‘hands decontaminated with alcohol if soiled’ (5% compliance). For four criteria, compliance was greater than 10%, but less than 20%. These were criteria 1 – ‘routine use of alcohol to wash hands unless visibly soiled’ (19% compliance); 3 – ‘hands decontaminated immediately before contact with patient or equipment/object’ (16%); 5 – ‘hands washed using three stage effective hand washing technique’ (15%); and 6 – ‘hands soiled with dirt or potentially grossly contaminated with dirt or organic material washed with liquid soap or water’ (13%). The best performer, which still had a low compliance rate, was criterion 7, on staff education/knowledge (56%).

The baseline audit results confirmed the project leader's suspicion that hand hygiene practice in the pediatric SCUs at the hospital was not congruent with the best practice, and strategies were urgently needed to improve hand hygiene.

### Phase 2: Getting Research into Practice results

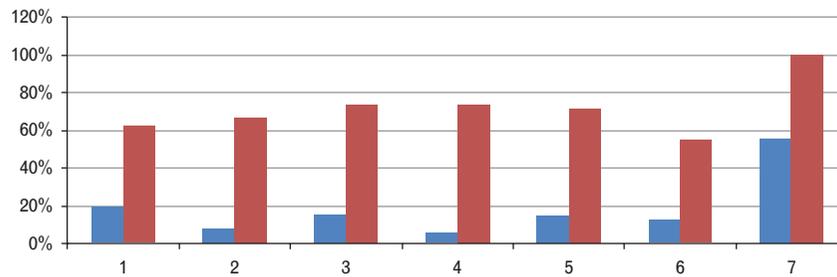
The results from the project team's analysis of the baseline audit results and brainstorming focused on identifying barriers underpinning poor practice, and strategies to overcome them are presented in Table 3. The three strategies that were implemented are shown in bold print.

**Table 2. Compliance with audit criteria in baseline and post strategy implementation audits**

| Audit criteria  | Baseline audit                       | Follow-up audit                     | % Change in compliance |
|---|--------------------------------------|-------------------------------------|------------------------|
| Alcohol-based hand-rub are routinely used for hand hygiene unless hands are visibly soiled  | 19% (18 yes, 77 no, total 95)        | 62% (59 yes, 30 no, NA 6, total 95) | 43%                    |
| Hands are decontaminated immediately after contact with individual patient contact and/or all inanimate objects including equipment                   | 8 % (6 yes, 69 no, total 75)         | 67% (50 yes, 23 no, 2 NA, total 75) | 59%                    |
| Hands are decontaminated immediately before each and every episode of direct patient contact or care and/or all inanimate objects including equipment | 16% (15 yes, 67 no, 13 NA, total 95) | 73% (69 yes, 25 no, 1 NA, total 94) | 57%                    |
| Hands are decontaminated with an alcohol-based hand-rub unless hands are visibly soiled between different care activities for the same patient        | 5% (5 yes, 87 no, 3 NA, total 95)    | 74% (70 yes, 20 no, 5 NA, total 95) | 69%                    |
| Hands are washed using an effective hand washing technique involving three stages   | 15% (12 yes, 68 no, total 80)        | 71% (60 yes, 24 no, total 84)       | 56%                    |
| Hands that are visibly soiled or potentially grossly contaminated with dirt or organic material are washed with liquid soap and water                 | 13% (5 yes, 35 no, total 40)         | 55% (22 yes, 26 no, NA 2, total 40) | 42%                    |
| Staff have received education about hand hygiene  | 56% (10 yes, 8 no, total 18)         | 100% (20 yes, 0 no, total 20)       | 44%                    |

NA, not available.

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**Figure 1.** Percentage compliance for audit criteria in baseline and follow-up audit.

### Phase 3: follow-up audit results

The follow-up audit showed improvements in HCW hand hygiene practice in the pediatric SCUs. The compliance rate improved for all audit criteria (see Table 2 and Fig. 1). The percentage increases in the compliance rate were relatively large – over 40% for all criteria. The greatest increase was in audit criteria for criterion 4 which asked whether HCW hands are decontaminated with an alcohol-based hand-rub unless visibly soiled between different care activities for the same patient (69%), and criterion 2 asking whether HCW hands are decontaminated immediately after contact with individual patient contact and/or all inanimate objects including equipment (59%).

However, whilst there was improvement in all aspects of hand hygiene assessed in the audit, the performance in the follow-up audit was, with the exception of criterion 7, which asked about HCW education/knowledge about good hand hygiene, disappointing. For criteria 1–6, percentage compliance with the criteria was below 75%. The relatively low compliance rate (55%) for

criterion 5, which asked whether HCW hands that are visibly soiled or potentially grossly contaminated with dirt or organic material are washed with liquid soap and water, was particularly disappointing and a concern. At the end of the project, there was, therefore, still a need for further strategies to be developed and implemented to enable best hand hygiene practice in the pediatric ward in this low-resource setting.

### Discussion

This was the first hand hygiene audit project in the hospital. Prior to its implementation, the author/project leader was aware that most HCWs in the pediatric SCUs were not familiar with ‘evidence-based practice’ and that due partly to the environment (lack of easy access to clean water and inadequate cleaning equipment) HCW hand hygiene was poor. In reflecting on the results of the project, it is important to bear in mind the context in which the project was implemented. Changing health care practice is difficult in all resource settings. In the context of limited priority afforded to educating staff

**Table 3. Getting Research into Practice results**

| Barrier  | Strategy   | Resources  | Outcomes  |
|--|--|--|---|
| Workload and overcrowding                                | Limitations on number of visitors<br>Increase staff to patient ratio   | Additional staff/personal  | Reduce crowding and reduced contamination in ward.<br>More time to allocate to hand hygiene among workers.  |
| Staff attitude and lack of education/knowledge           | Staff sensitization/reminders, e.g. through posters/distribution of materials<br><br>Education/awareness raising about best practice hand hygiene and risk of infection. | Staff time<br><br>Venue for training<br>Training materials<br>Pamphlets and poster materials | Increased awareness about the danger of not washing hands and poor hand hygiene practice among workers<br><br>Increased compliance with hand hygiene practice |
| Insufficient hand hygiene equipment/resource limitations | Provision of infection control materials, e.g. hand gel, additional liquid soap and paper towels   | Alcohol hand gel<br>Liquid soap<br>Disposable paper towels for drying the hands              | Increased use of soap and alcohol due to availability and hence greater compliance with best practice hand hygiene and in turn reduction in HAIs              |

HAI, health care-associated infection.

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about the importance of hand hygiene, high patient to HCW ratios and limited access to the infrastructure and equipment required for cleaning, promoting good hand hygiene practice is all the more difficult.

In reflecting on the project's impact, it is also important to consider whether the HCWs observed in the follow-up audit were aware that they were being watched and that the follow-up audit was being conducted. As explained above, in this project, it was unlikely that the workers were aware they were being observed.

Gaining buy in for the project was a key to successful implementation of the project. After attaining ethical approval, the researcher approached the infection control department who together agreed on the composition of the audit team. This was a dedicated team that met occasionally to discuss the project progress. The input of all team members was critical to ensuring the success of the evidence implementation project.

The project was a success in that in the second audit there were improvements in compliance across all the audit criteria. However, all the levels of compliance remained a cause for concern for all except one – staff education – at the end of the audit cycle. The low level of compliance for the criterion, which asked about washing of hands that are soiled, was particularly concerning. Reflecting on the reasons for the failure to achieve higher compliance, the reasons may have been because some of the HCWs who were observed missed being trained and some of the trained ones had been rotated to other pediatric wards. The improved knowledge and awareness of the staff about the importance of hand hygiene and effective hand hygiene practice was a major contribution of the project. All the HCWs interviewed at baseline received education on hand hygiene in the ward.

Reflecting on the challenges and limitations of the project, the short time frame for implementation of the strategies was a challenge, as was engaging stakeholders. The implementation period was 2 weeks. This was short a time to provide adequate education to all HCWs and engage all the key stakeholders. Staff turnover was another challenge. After the training period, some HCWs were rotated and new ones brought on ward who were observed for all the audit criteria, yet had not received any training. The lack of a sustainability plan in the project was a limitation. Hand hygiene compliance was not built into regular staff activities and performance development processes to ensure ongoing attention to these activities. However the project team did encourage the infection control department to develop this and promoted ongoing monitoring.

The author now feels she has the means to continue and sustain this initiative and to improve compliance even further with commitment of the infection control department team.

### Conclusion

This evidence implementation project provides another example of how evidence-based audit and feedback can be used as a powerful tool to change health practice. Hand hygiene practice in the pediatric SCUs of MNRH in Uganda improved substantially after strategies were implemented to improve the availability of supplies needed for good practice, education about what practices are required and the posting of reminders on the walls of the hospital. However, at the end of the project, even after strategies were implemented to ensure best hand hygiene was practiced, gaps between practice and best practice remained.

The projects' success in education/raising awareness about best hygiene practice relative to the actual practice suggests that in the area of hand hygiene, it is not only knowledge about best practice that is important but also motivation. The HCWs need to be reminded to do the right thing. This raises the importance not only of education and providing the necessary resources (money and equipment) to facilitate best practice hand hygiene into the future, but also educating patients about what best practice hygiene among HCWs is, and about their right to demand that HCWs practice it. The project also highlighted the necessity of building adequate infrastructure and ensuring supplies of adequate cleaning equipment to facilitate good HCW hand hygiene.

Perhaps, the most significant contribution of the project was the knowledge it built about evidence-based practice, and how to use evidence-based audit and feedback as a tool to improve health care at the hospital. Evidence of this is that following on from this project, the author has implemented a similar project in the maternity ward at the hospital.

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team, the respondents and my research assistants who helped in collecting the data. To God be all the glory and honor.

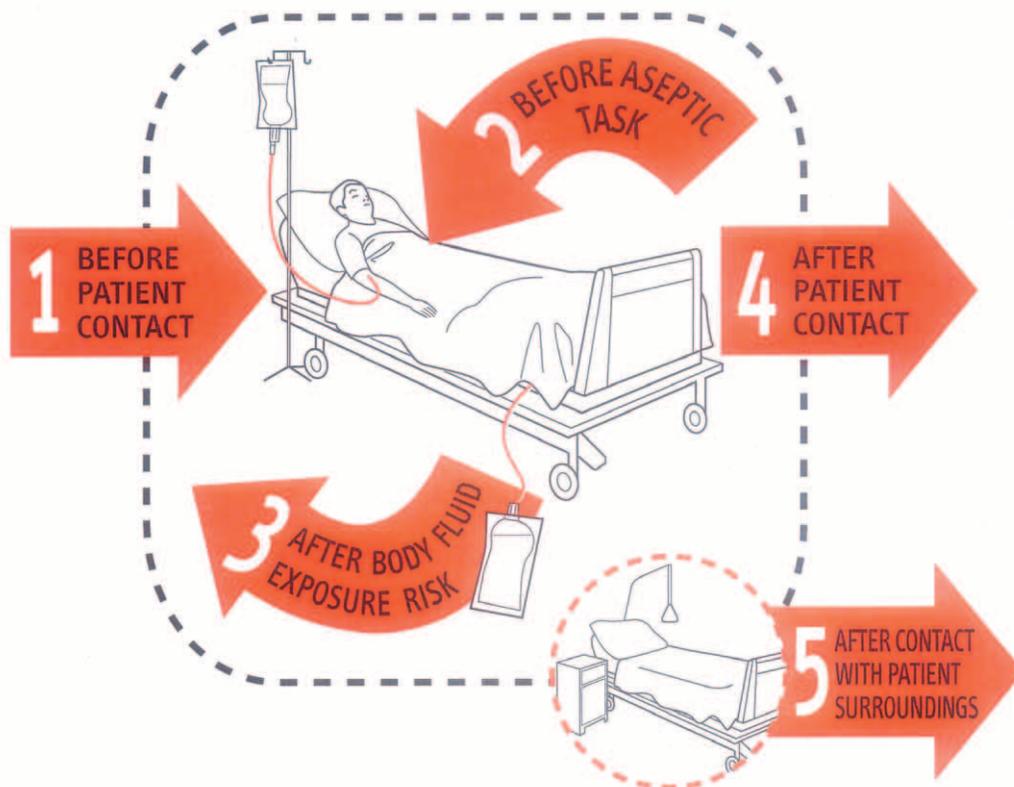
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Appendix 1: Poster on best practice hand hygiene disseminated during implementation

# Your 5 moments for HAND HYGIENE



|  |  |
|--|--|
| <b>1</b> BEFORE PATIENT CONTACT                  | <b>WHEN?</b> Clean your hands before touching a patient when approaching him or her<br><b>WHY?</b> To protect the patient against harmful germs carried on your hands  |
| <b>2</b> BEFORE AN ASEPTIC TASK                  | <b>WHEN?</b> Clean your hands immediately before any aseptic task<br><b>WHY?</b> To protect the patient against harmful germs, including the patient's own germs, entering his or her body   |
| <b>3</b> AFTER BODY FLUID EXPOSURE RISK          | <b>WHEN?</b> Clean your hands immediately after an exposure risk to body fluids (and after glove removal)<br><b>WHY?</b> To protect yourself and the health-care environment from harmful patient germs  |
| <b>4</b> AFTER PATIENT CONTACT                   | <b>WHEN?</b> Clean your hands after touching a patient and his or her immediate surroundings when leaving<br><b>WHY?</b> To protect yourself and the health-care environment from harmful patient germs  |
| <b>5</b> AFTER CONTACT WITH PATIENT SURROUNDINGS | <b>WHEN?</b> Clean your hands after touching any object or furniture in the patient's immediate surroundings, when leaving - even without touching the patient<br><b>WHY?</b> To protect yourself and the health-care environment from harmful patient germs |



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