Supplementary Material (for online publishing only)

**Description of the adaptation of the WHO multimodal strategy implemented by the Breakthrough Collaborative by the Hospital Federation of Vaud County, Switzerland.**

The improvement package that was implemented through the Breakthrough Collaborative was based on the WHO's multi-modal strategy for the promotion of hand hygiene, to which a complementary element was added: sustainability engineering. The detailed content of the improvement package, including the adaptation of the WHO core five components, as well as the additional element, is reported here.

System change (promoting the switch from soap and water handwashing to alcohol-based handrubbing)

Focus was placed on adapting the care environment so that alcohol-based handrub (ABHR) would be available at points of care, with minimal effort required. The Collaborative recommended one ABHR dispenser at every bedside at a time when one hospital only had dispensers in the hallways and when most of the participating hospitals had only one dispenser per room (often at the entrance), even in rooms of 2, 3 or 4 beds. The Collaborative also recommended staff to systematically wear an individual pocket-sized ABHR.

Training and education

Lack of compliance with hand hygiene was partly due to staff underestimating evidence of infection cross-transmission by hands, as well as to suboptimal knowledge of the five moments for hand hygiene1. The Collaborative therefore provided a generic training and education curriculum guide, to be adapted by all hospitals to their specific needs.

Two e-learning modules (one for nursing staff and one for medical staff) were produced by the Collaborative, in cooperation with the County's IPC Unit and with the University Hospital of Vaud County.

Evaluation and feedback

Measuring compliance with hand hygiene every 2 months in every ward during the 18 months of the Collaborative, with feedback to healthcare professionals, was considered by the organizing team as the engine for improvement. The process required to measure compliance involved training and sending observers for 4-hour visitations to each ward every 2 months (baseline + 9 observation periods from April 2014 to September 2015). The WHO observation grid was used. These grids were sent to the Federation, every two months. They were scanned and data were fed into a database, from which compliance indicators were produced. This information was then returned to the hospitals as feedback to the professionals.

Furthermore, a training video was produced to illustrate how a local leader could feed the compliance results back to his team. In this video, the first step consisted in showing the results and asking for questions and comments on performance data. The second step involved brainstorming ideas for improvement within the team. The third step involved selecting the best ideas within the team and setting a compliance goal for the next period. In the fourth step, the leader summarized the selected ideas and allocated tasks and responsibilities for implementation.

Reminders in the workplace

The Collaborative used reminders in the workplace both to reinforce education and to remind professionals about implementing hand hygiene "just-in-time" during the care process. Each team from each hospital was trained on the use and design of reminders. The Collaborative also provided a set of reminders, including two for each of the five indications, drawn by a cartoonist who also worked for the University of Geneva Hospitals campaign2.

The concept enabled hospitals with fewer resources to use the provided reminders, while others could use a communication agency to create their own design. Educational material relied on both the WHO[[1]](#footnote-1) and on the County's IPC Unit materials.

Institutional safety climate and leadership

The Collaborative briefed all participating teams on the importance of leadership engagement. It provided examples of how teams could suggest specific support and communication interventions from their leaders. The Collaborative also gathered the CEOs from all participating hospitals for half a day, with presentations on their role in promoting an institutional safety climate in general and with a particular emphasis on hand hygiene.

As a result of the half-day meeting, the executive boards of two hospitals decided that one of their members would visit all wards that reached the compliance goal (85%) for two consecutive observation periods with the purpose of congratulating the team and conducting a conversation about promoting hand hygiene.

A survey on staff perception of hand hygiene that was adapted from the WHO material[[2]](#footnote-2) was conducted. The survey produced numerous insights that helped steer the interventions (see Results section).

A recommendation on just culture, as defined by Reason3, was also created and disseminated to the participating hospitals. It advised the hospitals to start their interventions by tackling systems issues (e.g., setting up training, making the right infrastructure available, providing feedback on results). Once these issues were solved, it also promoted individual accountability, encouraging the hospitals executives not to allow disruptive behaviour towards hand hygiene, and to systematically engage in a conversation with individuals who did not adhere to the program, whatever their profession.

Sustainability engineering

Sustainability of intervention is implicit in the WHO strategy and was made explicit within the Collaborative. Sustainability concerns organization and management, more than content of the improvement package. From the beginning of the Collaborative, it was made clear that, hand hygiene compliance would first be assessed every two months for 18 months, then, in the follow-up phase, it would be measured every 6 months for the next 24 months and annually thereafter.

A sustainability checklist was provided to all participating teams who were briefed on its use. It included recommendations on management (including defining responsibilities for compliance measurement and observer training after the end of the Collaborative, identifying champions in each ward, having the hospital register with the WHO hand hygiene campaign for support, and integrating hand hygiene under the umbrella of Patient Safety) and recommendations within every mode of the WHO strategy (maintenance interventions, such as, for safety climate and leadership: integrating hand hygiene compliance levels within the board's dashboard and in the annual assessment of all leaders, safety walkrounds in all wards, defining and implementing a policy on professional grooming and attire, involving all staff in participatory ergonomics workshops, and setting a new stretch goal for compliance).

References

1. Hugonnet S, Pittet D. Hand hygiene—beliefs or science? *Clinical microbiology and infection.* 2000;6(7):348-354.

2. Pittet D, Hugonnet S, Harbarth S, et al. Effectiveness of a hospital-wide programme to improve compliance with hand hygiene. *The Lancet.* 2000;356(9238):1307-1312.

3. Reason J. Human error: models and management. *Western Journal of Medicine.* 2000;172(6):393.

1. www.who.int/gpsc/5may/tools/workplace\_reminders/en/ [↑](#footnote-ref-1)
2. www.who.int/gpsc/5may/tools/evaluation\_feedback/en/ [↑](#footnote-ref-2)