Hand hygiene in Africa: A personal journey to scaling up in Uganda through the MIKONO study

Dr.Hiroki Saito

Department of Infectious Diseases, Keio University School of Medicine, Tokyo, Japan

Hand hygiene is a cornerstone of infection prevention and control (IPC) and is essential to quality universal health coverage (UHC), which is a target of the Sustainable Development Goals (SDGs). Yet one in four healthcare facilities globally and nearly half in sub-Saharan Africa are reported to lack basic water services. This underscores the global challenge of ensuring access to basic infrastructure and an enabling environment for hand hygiene.

In the early 2000s, I served as a Japan International Cooperation Agency (JICA) volunteer in Uganda, and my assignment was community-based HIV control. I was based at a district hospital that had been upgraded from a health center following receipt of a JICA grant aid for facility renovations. Both healthcare delivery and everyday life were challenging for someone who had grown up and been trained in Japan. During my two years of volunteer service, I lived next to the hospital and collected water for daily use from the nearest well. Because fetching water was tiring and time-consuming, I tried to conserve as much of it as possible. A friend made me an improvised shower from a plastic bottle: I poured water into the top, and it flowed through holes in the bottom. Some areas of the hospital had running water supplied from a storage tank, but performing hand-washing in accordance with the WHO's "My 5 Moments for Hand Hygiene" using soap and water alone was not practical. I never saw alcohol-based handrub (ABHR) on the wards. After completing my volunteer service, I moved to the United States to study public health, which I believed was fundamental to improving the lives of people in such settings.

Around 2013 or 2014, a former fellow JICA volunteer in Uganda emailed me. He had since joined SARAYA Uganda, which had started manufacturing ABHR from locally grown sugarcane in the early 2010s. At the time, I was still in the US, where I was obtaining training in infectious diseases. His proposal was compelling: he wanted to evaluate the effects of locally produced ABHR in Ugandan healthcare facilities. Together with Ugandan and international collaborators, we developed a protocol and conducted the WardGel study.[1] Following the provision of ABHR and hand hygiene education, the performance of hand hygiene improved, accompanied by reductions in healthcare-associated infections and sepsis. However, the study was conducted at a single regional referral hospital that was relatively well resourced. It lasted only six months, with three-month baseline and intervention phases, and a simple before-and-after design was used.

I first met Professor Didier Pittet in 2014 or 2015 after having been introduced to him at a conference in the US. His plenary presentation was as energetic as those he gives today. He invited me to join his team in Geneva, which I did in 2017. Soon after, I presented the idea of a follow-up to the WardGel study to his team at Geneva University Hospitals. Following a few visits to Uganda as a team, during which we toured several healthcare facilities and met with Ministry of Health (MoH) officials, we developed a protocol. The study would cover eastern Uganda under a single referral system and introduce the WHO multimodal hand hygiene improvement strategy (MMIS) in eight healthcare facilities across four districts. The facilities included a regional referral hospital, district hospitals, and health centers and represented both the public and private sectors. We designed a stepped-wedge cluster-randomized trial in which the intervention was introduced sequentially by district. We named the study MIKONO, meaning "hands" in Swahili and the languages spoken locally.[2]

The MIKONO study was conducted from November 2020 to July 2024 amid the COVID-19 pandemic, which complicated study operations. Before the pandemic, however, we had trained several Ugandan colleagues in hand hygiene in Switzerland and Japan, and they made major contributions to the project. As in the WardGel study, locally manufactured ABHR (Alsoft V) was supplied during the intervention to support system change, the first and foundational element of the WHO MMIS. Study stickers were placed on wall-mounted dispensers, and "My 5 Moments for Hand Hygiene" posters were displayed on the wards as reminders (Photos 1 and 2). In 2023, we also conducted Uganda's first Train-the-Trainers (TTT) course on hand hygiene (Photos 3 and 4). [3] MoH officials and IPC focal persons from most of the regional referral hospitals and the study sites attended to help build national momentum for IPC and hand hygiene. Overall, the MIKONO study demonstrated an improvement of more than 50% in hand hygiene compliance, and this improvement was sustained during follow-up after the active intervention ended (Figure 1).



Photo 1: The MIKONO study logo



Photo 2: An alcohol-based handrub dispenser with the MIKONO study logo

What worked well in this implementation study? First, local ownership grew throughout the study. The COVID-19 pandemic strengthened local relationships: the Ugandan research team communicated frequently with each facility's IPC focal persons to keep everyone aligned, provided practical guidance on hand hygiene and IPC monitoring during site visits, and during the intervention



Photo 3:
Simulation training of Train-the-Trainers in Hand Hygiene



Photo 4:
Train-the-Trainers group photo

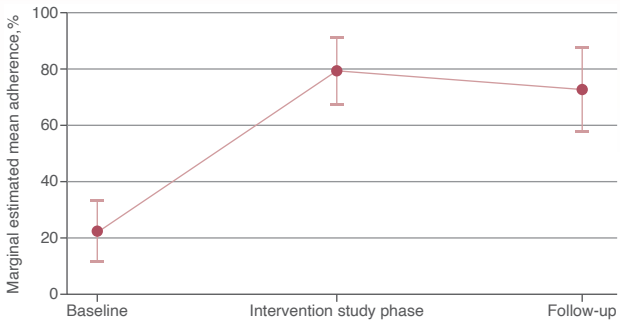


Figure 1: Trend of hand hygiene compliance in the MIKONO study

phase, applied an established TTT model. The research team trained the IPC focal persons, who in turn trained the healthcare workers at their facilities (Photos 5 and 6). Second, long-term commitment mattered. Although the gains observed during the WardGel study were not sustained at the regional referral hospital, the improvement following the MIKONO intervention was greater. This suggests that repeated exposure to hand hygiene promotion may have strengthened institutional readiness and capacity, which are integral to the "institutional safety climate," the fifth element of the WHO MMIS. For more than a decade, we have worked in Uganda in collaboration with SARAYA. This long-term partnership, which includes investment in local ABHR production and hand hygiene promotion, has supported social enterprise and progress toward quality UHC.



Photo 5:
Hand hygiene observation by an IPC focal persons



Photo 6:
Training of IPC focal persons during the COVID-19 pandemic

What comes next? From WardGel to MIKONO, the promotion of hand hygiene has expanded from a single facility to a regional level in eastern Uganda. However, our recent review found that local ABHR production remains difficult to sustain globally, which threatens reliable access to hand hygiene in resource-limited settings. The next step is to adapt and disseminate the WHO MMIS within local healthcare contexts, as demonstrated by MIKONO; to integrate hand hygiene into national IPC programs; and to extend these efforts to other countries in Africa. Our journey continues.

Acknowledgments:
I extend my sincere gratitude to Professor Didier Pittet and Mr. Kazumasa Miyamoto for their invaluable contributions to the MIKONO and WardGel studies.

References

1.Saito H, Inoue K, Ditai J, et al. Alcohol-based hand rub and incidence of healthcare associated infections in a rural regional referral and teaching hospital in Uganda ('WardGel' study). Antimicrobial Resistance & Infection Control. 2017;6:129. doi:10.1186/s13756-017-0287-8
2.Nyawere E, Saito H, Ajok R, Aber B, Owori F, Pittet D. World Health Organization multimodal improvement strategy for hand hygiene: a stepped-wedge cluster randomized trial. JAMA Network Open. 2026;9(7):e2625250. doi:10.1001/jamanetworkopen.2026.25250
3.Aber B, Nyawere E, Owori F, et al. First train-the-trainers in hand hygiene in Uganda: a multilevel evaluation. Journal of Hospital Infection. 2026;171:171–173. doi:10.1016/j.jhin.2025.11.029

日本語要約

手指衛生は感染対策の基本であり、質の高いユニバーサル・ヘルス・カバレッジ（UHC）の実現に不可欠であるが、特にサハラ以南のアフリカなど、多くの医療施設では水や水道設備が不足しています。

著者は2000年代初頭にJICAボランティアとしてウガンダで活動し、WHOが推奨する手洗いの実践が難しく、アルコール手指消毒剤（ABHR）もほとんど利用されていない現状を経験しました。

その後、現地製造されたABHRの有効性を検証する「WardGel研究」に参加し、手指衛生教育とABHRの導入によって手指衛生遵守率が向上し、医療関連感染や敗血症の減少が確認できました。この成果を発展させるため、2017年以降、WHO手指衛生多角的戦略を活用した大規模研究「MIKONO study」を東部ウガンダ8施設で実施しました。

COVID-19が流行したという困難な状況にもかかわらず、現地製造ABHRの供給、啓発活動、指導者養成研修などを通じて、手指衛生遵守率は50%以上改善し、その効果は介入後も維持されました。成功の要因として、現地関係者の主体的な参加と10年以上にわたる継続的な協力体制が挙げられています。

一方で、資源の限られた国々ではABHRの現地生産を維持することが依然として課題です。今後はMIKONO studyで示された手法を各国の医療環境に適応させながら普及し、手指衛生を国家レベルの感染対策プログラムに組み込むことで、アフリカ地域全体への活動を拡大していくことが期待されています。