

# Coronavirus Disease 2019 (COVID-19) Mitigation Efforts and Testing During an In-Person Training Event—Uganda, 12–29 October 2020

Rebecca L. Laws,<sup>1</sup> Sam Biraro,<sup>2</sup> Wilford Kirungi,<sup>3</sup> Brittany Gianetti,<sup>4</sup> Dorothy Aibo,<sup>2</sup> Anna C. Awor,<sup>4</sup> Christine West,<sup>1</sup> Karampreet K. Sachatp,<sup>5</sup> Herbert Kiyingi,<sup>4</sup> Jennifer Ward,<sup>4</sup> Christina Mwangi,<sup>4</sup> Peter Nkurunziza,<sup>2</sup> David Okimait,<sup>2</sup> Dustin Currie,<sup>1,6</sup> Aderonke Ajiboye,<sup>1</sup> Carole S. Moore,<sup>1</sup> Hetal Patel,<sup>1</sup> Sam Sendagala,<sup>4</sup> Mary Naluguza,<sup>4</sup> Veronica Mugisha,<sup>5</sup> Andrea Low,<sup>5</sup> Stephen Delgado,<sup>5</sup> David Hoos,<sup>5</sup> Kristin Brown,<sup>1</sup> Jennifer S. Galbraith,<sup>1</sup> Wolfgang Hladik,<sup>1</sup> Lisa Nelson,<sup>4</sup> Wafaa El-Sadr,<sup>5</sup> Joshua Musinguzi,<sup>3</sup> and Andrew C. Voetsch<sup>1</sup>

<sup>1</sup>Division of Global HIV and TB, Centers for Disease Control and Prevention, Atlanta, Georgia, USA; <sup>2</sup>ICAP at Columbia University, Kampala, Uganda; <sup>3</sup>Uganda Ministry of Health, Kampala, Uganda; <sup>4</sup>Division of Global HIV and TB, Centers for Disease Control and Prevention, Kampala, Uganda; <sup>5</sup>ICAP at Columbia University, New York, New York, USA; and <sup>6</sup>Epidemic Intelligence Service, Centers for Disease Control and Prevention, Atlanta, Georgia, USA

Large public-health training events may result in severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) transmission. Universal SARS-CoV-2 testing during trainings for the Uganda Population-based HIV Impact Assessment identified 28 of 475 (5.9%) individuals with coronavirus disease 2019 (COVID-19) among attendees; most (89.3%) were asymptomatic. Until COVID-19 vaccine is readily available for staff and participants, effective COVID-19 mitigation measures, along with SARS-CoV-2 testing, are recommended for in-person trainings, particularly when trainees will have subsequent contact with survey participants.

**Keywords.** SARS-CoV-2; COVID-19; mitigation; testing; trainings.

The Uganda Population-based HIV Impact Assessment (UPHIA) is a national human immunodeficiency virus (HIV)–focused household survey with approximately 25 000 participants. Data collection was initiated on 20 February 2020 and halted on 24 March 2020 before completion due to the coronavirus disease 2019 (COVID-19) pandemic. In October 2020, a decision was made to restart UPHIA activities based on initial data indicating relatively low COVID-19 case counts and mortality in Uganda [1] and approval from participating institutions and the Government of Uganda to resume survey activities with added safety precautions. In the absence of COVID-19 vaccine availability, comprehensive risk-management guidance and standard operating procedures (SOPs) to mitigate severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) transmission were developed by principal investigator institutions and implemented for use by survey teams during UPHIA training events, household-based data collection, and laboratory activities. Before restarting household-based data collection, all survey teams completed in-person UPHIA refresher trainings. Such trainings are difficult to implement remotely because of their hands-on nature, and as such may facilitate transmission of SARS-CoV-2, as hundreds of survey staff gather, usually in indoor venues [2, 3]. Here, we describe COVID-19 mitigation

efforts at the training events and SARS-CoV-2 universal testing results among unvaccinated training attendees.

## METHODS

During 12–29 October 2020, 3 separate 1-week refresher training events were held in large, outdoor, open tents at a hotel in Kampala, Uganda. Training attendees came from all over Uganda; there were 73 attendees during week 1 (12–15 October), 199 attendees during week 2 (19–22 October), and 205 attendees during week 3 (26–29 October). Trainees did not overlap from week to week, although most trainers and support staff were present for all 3 weeks. Specific COVID-19 mitigation measures included limiting the number of individuals per room/tent, social (physical) distancing including assigned seating more than 2 meters apart, use of masks, frequent hand hygiene, disinfection of frequently touched surfaces, staggering lunch and tea breaks, modifying the curriculum to avoid group activities, discouraging trainees from lodging together, asking trainees to limit interactions during off-hours, and daily symptom screening including temperature checks.

Additionally, the Ugandan Ministry of Health (MOH) required universal SARS-CoV-2 testing of UPHIA training attendees on the first day of each training event. At the end of the first day of training each week, nasopharyngeal specimens were collected from attendees at the outdoor training venue. Specimens were tested by the Uganda Central Public Health Laboratories for SARS-CoV-2 using real-time reverse transcription–polymerase chain reaction (RT-PCR), with most results returned 24 hours later, on day 2 of the respective training event.

Correspondence: R. L. Laws, Centers for Disease Control and Prevention, 1600 Clifton Road NE, Atlanta, GA 30333 (lxq2@cdc.gov).

Clinical Infectious Diseases® 2021;73(S1):S42–4

Published by Oxford University Press for the Infectious Diseases Society of America 2021. This work is written by (a) US Government employee(s) and is in the public domain in the US.

DOI: 10.1093/cid/ciab331

## RESULTS

Overall, 28 of 475 (5.9%) training attendees tested positive for SARS-CoV-2. All infections were among trainees; no trainers tested positive. The proportion of specimens that tested positive each week increased over time (week 1: 1/73 [1.4%]; week 2: 10/199 [5.0%]; week 3: 17/206 [8.3%]) (Table 1), coinciding with the increase in reported COVID-19 cases in Kampala over the 3-week period [1]. (Note that the number of specimens tested differs slightly from number of training attendees because 3 individuals were tested twice.)

All 28 individuals with laboratory-confirmed COVID-19 were immediately isolated, interviewed by survey staff using a standard case investigation form to obtain information on symptoms and to elicit information on close contacts among training attendees, and reported to the appropriate MOH District COVID-19 Task Force. Upon case investigation, 3 (10.7%) individuals who tested positive for SARS-CoV-2 reported symptoms at the time of testing: 1 reported mild headache and sore throat, 1 reported runny nose, and 1 reported mild influenza-like symptoms. Those who were asymptomatic (89.3%) at the time of testing did not subsequently report symptoms during the isolation period. All symptomatic individuals recovered without being hospitalized, and there were no deaths.

Because most participants' test results were returned at the end of day 2 of their respective training, there was potential for transmission for 2 days before infected individuals were identified and isolated. Per UPHIA SOPs, anyone within 2 meters of a person with laboratory-confirmed COVID-19 for a cumulative total of 15 minutes or more over a 24-hour period starting from 2 days before illness onset (or, for asymptomatic patients, 2 days before test specimen collection), irrespective of use of masks, was considered a close contact [4]. Contact tracing identified 15 close contacts among training attendees (week 1: 0; week 2: 13; week 3: 2). During week 2, 1 close contact shared lodging, 2 close contacts shared transportation to the training event, and 10 close contacts shared lunch with index cases. After identifying 13 close contacts during week 2, COVID-19 mitigation measures were evaluated, modified, and reinforced, and efforts were increased to maintain social distancing, including implementing stricter measures for seating and serving lunch and tea, discouraging any mingling during breaks, and appointing mask and social-distancing

monitors. During week 3, 2 close contacts shared transportation to the training event with index cases; no close contacts were identified during the training itself, including during lunch or tea breaks. All 15 close contacts completed a 14-day quarantine, and none reported symptoms. Close contacts were not tested for SARS-CoV-2, per in-country practice at that time. Individuals in isolation and quarantine attended the remainder of the training remotely. Field deployment plans were adjusted to account for survey staff in isolation and quarantine, with some teams delaying commencement of field data collection.

## DISCUSSION

In the absence of COVID-19 vaccine availability, universal SARS-CoV-2 testing during a large in-person training event in Uganda identified 28 participants with COVID-19, including a high proportion who were asymptomatic. Household surveys such as UPHIA provide data that are foundational to public health, and trainings of survey staff are essential for ensuring data quality and fidelity of implementation. These trainings require large numbers of survey staff to gather, posing a risk for SARS-CoV-2 transmission with the potential to become superspreading events [2, 3, 5, 6], as immediately following training, survey teams simultaneously deploy across the country for household data collection with participant contact. To conduct these training events safely during the COVID-19 pandemic, vaccination of all involved individuals is ideal. In the absence of vaccination, effective mitigation is needed, which requires meticulous planning and rigorous implementation procedures, including close liaising with MOH and other public health partners for appropriate follow-up.

The SARS-CoV-2 percent positivity (5.9%) among UPHIA refresher training attendees was similar to the 5.2% test positivity in the general Ugandan population as of 16 October 2020, although the context of testing differed in these populations [1]. In anticipation of detecting SARS-CoV-2 among training attendees, stringent COVID-19 mitigation measures were implemented at the training events, along with universal SARS-CoV-2 testing of training attendees. These mitigation measures limited the number of close contacts among training attendees, and reinforcement of these measures reduced the number of close contacts from week 2 to week 3. Given the evidence for presymptomatic and asymptomatic transmission of

**Table 1. SARS-CoV-2 Testing Among Study Staff Who Participated in Refresher Training Events for the Uganda Population-Based HIV Impact Assessment, Kampala, Uganda (12–29 October 2020)**

Training Week <sup>a</sup>	Date of Testing	Tested for SARS-CoV-2, <sup>b</sup> n	Tested Positive for SARS-CoV-2, n (%)	Symptomatic, <sup>c</sup> n (%)	Close contacts, n
Week 1	October 12	73	1 (1.4)	0 (0)	0
Week 2	October 19	199	10 (5.0)	2 (20.0)	13
Week 3	October 26	206	17 (8.3)	1 (5.9)	2
Total	...	478	28 (5.9)	3 (10.7)	15

Abbreviations: COVID-19, coronavirus disease 2019; HIV, human immunodeficiency virus; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2.

<sup>a</sup>There were 73 participants during week 1 (12–15 October), 199 participants during week 2 (19–22 October), and 205 participants during week 3 (26–29 October).

<sup>b</sup>The number of specimens tested differs slightly from number of training attendees (n = 475) because 3 individuals were tested twice.

<sup>c</sup>The denominator represents those who tested positive for COVID-19.

SARS-CoV-2 [7, 8], daily symptom screening alone was unlikely to be completely effective at detecting infectious individuals.

In the absence of vaccine availability, universal SARS-CoV-2 testing can be incorporated as part of a comprehensive strategy [9] to detect and isolate infectious individuals, potentially reducing transmission during large, in-person training events. This requires substantial preparation, resources, and a comprehensive plan and procedure to respond to the results, even if the expected percent positivity is low. If implemented, testing for SARS-CoV-2 and return of results should be performed before gathering on the first day of training. Although not logistically feasible for UPHIA, this approach would likely have eliminated the exposure of unvaccinated close contacts to SARS-CoV-2 in that setting. For national household surveys where COVID-19 vaccines are not yet available, baseline testing before gathering for training events, repeat testing of survey teams before field deployment, periodic testing during implementation, and testing of unvaccinated close contacts likely could reduce SARS-CoV-2 transmission among survey staff and subsequent exposure to survey participants. Considerations for implementing any testing strategy include feasibility of alternatively implementing a vaccination program, availability, cost, and capacity for SARS-CoV-2 screening testing, and levels of local community transmission.

The findings in this report are subject to several limitations. First, this was an observational report describing mitigation measures; prior to any COVID-19 vaccine availability we did not test the effectiveness of strategies across different groups. Second, testing was conducted at 1 time point only, and close contacts were not tested. An additional round of universal testing before field deployment and testing of close contacts might have detected additional infectious individuals and could have determined whether transmission occurred during the training and whether mitigation measures were effective. Third, some test results could have been false positive or false negative, which should be considered before testing a large proportion of asymptomatic individuals without known or suspected SARS-CoV-2 exposure [9]. Finally, some training attendees may have underreported symptoms during daily symptom screening, during case investigations, or during isolation or quarantine periods. However, all participants continued to receive their daily stipend during isolation and quarantine to encourage accurate disclosure of symptoms.

The UPHIA paused data collection during the December–January holiday season through the 14 January 2021 general elections, after which all UPHIA survey staff were re-tested before re-deploying to the field. As of 17 January 2021, Uganda had reported 38 485 laboratory-confirmed COVID-19 cases and 304 COVID-19-associated deaths [1], from a population of 42 million persons [10]. Using the UPHIA restart as a model, Population-based HIV Impact Assessment (PHIA) surveys in other African countries attempted to restart survey activities in early 2021. However, some PHIA remain paused, given the rapidly increasing COVID-19 incidence in Africa, high SARS-CoV-2 test positivity, emergence of the B.1351 variant [11], and overwhelmed health systems across the continent.

Effective COVID-19 prevention measures should be implemented during training activities involving large groups of in-person attendees, particularly when they will have subsequent contact with survey participants. Until vaccination is widely available and adopted by staff and participants, universal SARS-CoV-2 testing is a potential strategy to detect and isolate infectious individuals and identify and quarantine close contacts, likely preventing further spread among survey staff and into the community. Despite implementation of COVID-19 mitigation measures, there is an inherent risk of transmission among large numbers of people gathered for in-person training events, and vaccination remains a gold standard prevention strategy. Carefully weighing the benefits of public health training or data collection with the risks involved can help determine whether survey activities can be resumed safely.

## Notes

**Disclaimer.** The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the US Centers for Disease Control and Prevention/Agency for Toxic Substances and Disease Registry.

**Financial support.** This work was supported by the President's Emergency Plan for AIDS Relief (PEPFAR) through the Centers for Disease Control and Prevention (CDC) under the terms of contract NU2GGH002173. B. G. was supported by Cooperative Agreement NU2GGH002093-01-00 from the Centers for Disease Control and Prevention and the Public Health Institute.

**Supplement sponsorship.** This supplement is supported by the Infectious Diseases Society of America through Cooperative Agreement NU50CK000574 with the U.S. Centers for Disease Control and Prevention.

**Potential conflicts of interest.** All authors report no potential conflicts. All authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Conflicts that the editors consider relevant to the content of the manuscript have been disclosed.

## References

1. Ministry of Health, Government of Uganda. COVID-19 response info hub. Available at: <https://covid19.gou.go.ug/>. Accessed 1 February 2020.
2. Ghinai I, Woods S, Ritger KA, et al. Community transmission of SARS-CoV-2 at two family gatherings—Chicago, Illinois, February–March 2020. *MMWR* 2020; 69:446–50.
3. Mahale P, Rothfuss C, Bly S, et al. Multiple COVID-19 outbreaks linked to a wedding reception in rural Maine—August 7–September 14, 2020. *MMWR* 2020; 69:1686–90.
4. Centers for Disease Control and Prevention. Case investigation & contact tracing guidance, Appendix A—glossary of key terms. Available at: <https://www.cdc.gov/coronavirus/2019-ncov/php/contact-tracing/contact-tracing-plan/appendix.html#contact>. Accessed 2 March 2021.
5. Frieden TR, Lee CT. Identifying and interrupting superspreading events—implications for control of severe acute respiratory syndrome coronavirus 2. *Emerg Infect Dis* 2020; 26:1059–66.
6. Firestone MJ, Wienkes H, Garfin J, et al. COVID-19 outbreak associated with a 10-day motorcycle rally in a neighboring state—Minnesota, August–September 2020. *MMWR* 2020; 69:1771–6.
7. Kimball A, Hatfield KM, Arons M, et al; Public Health—Seattle & King County; CDC COVID-19 Investigation Team. Asymptomatic and presymptomatic SARS-CoV-2 infections in residents of a long-term care skilled nursing facility—King County, Washington, March 2020. *MMWR* 2020; 69:377–81.
8. Buitrago-Garcia D, Egli-Gany D, Counotte MJ, et al. Occurrence and transmission potential of asymptomatic and presymptomatic SARS-CoV-2 infections: a living systematic review and meta-analysis. *PLoS Med* 2020; 17:e1003346.
9. Centers for Disease Control and Prevention. SARS-CoV-2 testing strategy: considerations for non-healthcare workplaces. Available at: <https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/testing-non-healthcare-workplaces.html>. Accessed 2 March 2021.
10. Uganda Bureau of Statistics. Population clock. Available at: <https://www.ubos.org/>. Accessed 1 December 2020.
11. Centers for Disease Control and Prevention. Emerging SARS-CoV-2 variants. Available at: <https://www.cdc.gov/coronavirus/2019-ncov/more/science-and-research/scientific-brief-emerging-variants.html>. Accessed 2 March 2021.