In the field
- Blade lancets, NOT needle lancets, are used to obtain sufficient blood volume.
- The hand is set against a hard surface to ensure a deeper stick with the lancet. (photo 1a)
- Each circle on the collection card is completely filled with blood specimen; During collection, one circle should be completely filled with blood before moving onto the next circle and the blood should not be layered within each circle; the finger should not touch the card. (photos 1b-d)
- DBS are dried horizontally at ambient temperature avoiding contact of the blood to any surface. (photo 2)
- Dried DBS are packaged within a minimum of 4 to a maximum of 24 hours of collection.
- Packaging is done in specimen storage bags with a humidity indicator card and at least 10 desiccants are placed in -20° C freezer for long-term storage at CDC.

In the lab
- Laboratory staff check the quality of each specimen and provide feedback to field staff.
- Acceptance of DBS collection by participants was high among PWID (2012: 93%; 2015: 97%) and MSM (2014: 91%; 2017: 94%).
- DBS are shipped via regular mail at ambient temperature to CDC within 10 days of collection.
- The Abbott RealTime HIV-1 RNA and Bio-Rad Avidity assays were validated for DBS for viral load and recency testing. The Abbott assay is less sensitive with DBS than with plasma (LOQ 2.92 vs. 1.6 log (copies/mL)).

RESULTS
The collection of DBS proved to be feasible to expand HIV testing across multiple cities and recruitment settings.
- Acceptance of DBS collection by participants was high among PWID (2012: 93%; 2015: 97%) and MSM (2014: 91%; 2017: 94%).
- DBS were rarely deemed insufficient for testing. At least 3 full circles were deemed sufficient and measured by obtaining 4 6mm hole punches from each circle. (photos 4 and 5)
- To date, 5160 MSM DBS and 1668 PWID DBS have been tested at CDC for HIV recency or viral load.1 3

LESSONS LEARNED
- Proper training, practice and the use of blade lancets (photo 6) allows for sufficient blood volume for DBS collection.
- Even with blade lancets, the finger must be placed on a hard, flat surface to ensure a deeper stick; it is important for field staff to distinguish between the blade lancets needed for DBS collection vs. needle lancets that are sometimes used for rapid HIV testing, which requires a smaller volume of blood.
- While collecting, handling, and storing DBS in the field is simple, following standard procedures is key to specimen integrity and standardization across settings.
- Avoiding long-term exposure to humidity and storage at minus 20° C or lower is recommended to preserve integrity of the specimens.
- DBS testing can be further expanded to monitor other HIV prevention efforts such as uptake of PrEP and adherence to antiretroviral medication.

REFERENCES

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