SETTING NEW STANDARDS FOR BIOBEHAVIORAL SURVEYS IN POPULATIONS AT RISK FOR HIV

OVERVIEW

Key populations (KPs) – marginalized and stigmatized populations including men who have sex with men (MSM), sex workers, people who inject drugs, and transgendered women – bear not only the brunt of the HIV epidemics worldwide, but also suffer impeded access to HIV testing and treatment. Because KPs are socially hidden, sampling frames are non-existent, making it difficult to conduct surveys to examine their burden of disease and level of access to HIV services. Complex sampling designs are needed to overcome this challenge and provide population-level estimates for the burden of HIV, risk factors for HIV infection, as well as for the uptake of services among these populations.

The *Behavioral Surveillance Survey Guidelines* issued in 2000 have been the most often used resource for KP surveys to date; however, new data needs, methods, and technologies warranted a thorough update of the *Guidelines*. The U.S. Centers for Disease Control and Prevention (CDC), in collaboration with several partners including the World Health Organization (WHO), UNAIDS, and FHI 360 (a nonprofit human development organization), published the *Guidelines for Biobehavioral Surveys in Populations at Risk for HIV* (referred to as the *Blue Book*) in 2017, which outlines the latest approaches and methodologies for planning and conducting biobehavioral surveys (BBS) among KPs.

What are the *Guidelines for Biobehavioral Surveys in Populations at Risk for HIV*?
The new *BBS Guidelines (Blue Book)* is a comprehensive resource covering all survey aspects, from survey conceptualization to report dissemination and data use. The ultimate goal of these *Guidelines* is to facilitate the collection of high-quality survey data to inform public health action. The new *Guidelines* aim to:

- Update the overall approach and methodology of BBS guidelines in light of advances made during the past two decades.
- Improve the quality of BBS by providing comprehensive guidance, particularly for sampling methods and the collection of interview and biomarker data.
- Increase the relevance of survey data for public health programming by ensuring the collection of representative and actionable data.
- Promote the use of survey findings to improve service delivery, monitoring and evaluation, and policy development.

What is new in the *Blue Book*?
The *Blue Book* includes several new features including chapters on formative assessment, respondent-driven sampling, and biomarkers; data collection instruments; and indicators.

- Formative assessments include the initial collection of information about a population to inform how best to conduct a BBS.
- Respondent-driven sampling, a peer-driven chain-referral sampling method that is particularly useful for hard-to-sample populations, is currently viewed as the most suitable probability-based sampling design.
- The biomarkers chapter is completely new and covers the entire range of biological measurements from HIV serology (the presence of HIV in the body) to viral load (the amount of HIV virus in the body), HIV recency (to determine if an infection is recent), as well as markers of other sexually transmitted infections. The *Blue Book* emphasizes the potential of population-level, aggregate viral load metrics, including the proportion of HIV-infected target population members with suppressed viral load and the prevalence of unsuppressed viral load (viremia).
- The *Blue Book* also includes a completely revised suite of questionnaire modules covering a wide range of topics. This includes a section on exposure to and uptake of HIV related services, and questions to determine reasons why persons may avoid such services. CDC has developed electronic ready-to-use questionnaires for both Android- and Windows-based devices for all questionnaire modules.
- As part of its annex, the *Blue Book* also lists standard and newly-proposed indicators for data and biomarker-related metrics.

Population-size estimation as part of BBS
Population-size estimates of hard-to-count populations are difficult to obtain and no gold standard exists. Various techniques to estimate population size are used. Some are based on empirical data and others are more qualitative in nature. Investigators should always attempt to estimate population size using multiple techniques, based on sound statistical concepts, and use data triangulation to derive the most plausible estimates. BBS provides an opportunity to estimate population size and therefore should always include suitable size estimation techniques. The *Blue Book* provides advice on estimation methods in conjunction with BBS implementation, including multiplier and capture-recapture methods.

In addition, BBS can provide estimates of social visibility needed to adjust population size estimates derived from the Network Scale-Up Method – a size estimation method –incorporated into general population household-based surveys.

Strengthening capacity for BBS
To further promote the survey standards that the *Blue Book* suggests, CDC has developed several training packages including 1) planning and implementing BBS, 2) implementing respondent-driven sampling, and 3) analyzing respondent-driven sampling data. Moreover, training packages are also in development for 4) estimating population size (often part of a BBS), and 5) implementing and analyzing time location sampling surveys and 6) scientific writing. The training workshops provide practical, hands-on training to facilitate high-quality data collection and data analysis, especially among university and non-governmental organization staff, and local ministries of health. The first workshop was held in 2016 with additional sessions held in all regions supported by the U.S. President's Emergency Plan for AIDS Relief (PEPFAR).

CDC'S ROLE

CDC, in collaboration with FHI 360, UNAIDS, WHO, and individual consultants, developed the new *BBS Guidelines (Blue Book)* for policymakers, organizations, and technical staff for planning and conducting BBS among key and other high-risk populations. It can be downloaded in English at http://www.who.int/hiv/pub/guidelines/biobehavioral-hiv-survey/en/, in French at http://www.who.int/hiv/pub/guidelines/biobehavioral-hiv-survey/fr/ and in Spanish at http://apps.who.int/iris/bitstream/handle/10665/275541/9789243513010-spa.pdf

ACCOMPLISHMENTS / RESULTS

Since the release of the *Blue Book* guidelines in 2017, formal BBS capacity strengthening training workshops have been conducted in eight countries including, China, the Democratic Republic of Congo, Ethiopia, Senegal, South Africa, Uganda, Ukraine, and Thailand. These workshops supplement the ongoing technical assistance to BBS provided to the field by CDC at headquarters in Atlanta.

In September 2018, an expert consultation meeting was convened in Atlanta on advancing methods for BBS. This consultation discussed innovative methods for BBS of key populations, including probability based sampling approaches, survey biomarkers, and advanced survey analytics. Outcomes from the meeting will inform future *Blue Book* revisions while advancing BBS implemented with PEPFAR support. Production of a summary report of the consultation meeting is presently underway.

FUTURE EFFORTS

A series of country-specific and regional training workshops is planned for all PEPFAR-supported regions to strengthen capacity reflecting contents of the *BBS Guidelines*. CDC expects the BBS questionnaires to be a suite of living documents, which will be reviewed periodically and updated to reflect the latest standards for data measures and instruments. These documents, tools, and instruments will be updated to reflect methodological advances to BBS.

BENEFITS OF WORK

The *Blue Book* serves as a one-stop resource for survey planning, implementation, and dissemination of findings. The guidelines will improve the quality of survey data through better survey design and collection of high-quality data, including biomarkers. CDC's electronic data instruments also facilitate paperless data collection. The *Blue Book* promotes the standardization of data measures to make survey data more comparable. Furthermore, the guidelines make it easier to plan and conduct BBS. By providing sample documents and guidance on every step of the process, these guidelines strengthen the capacity of public health workers to collect the information they need in a timely and effective manner to strategically respond to and control the HIV epidemic.