

Surveillance System Design Principles as Applied to Antimicrobial Surveillance¹

Principle 1. The methods for public health surveillance at each governmental level should be based on the ethical purposes for which the data are being collected.

Corollary: Public health surveillance at each governmental level should collect only data necessary meet the purposes of decision making and action.

This principle and its corollary are based on minimizing the burden on data reporters and on public health agency staffs alike, and have both a pragmatic and ethical basis. A possible counterpoint to these precepts in the 21st century is that access to 'big data' may make it more efficient to collect large amounts of available data and extract the limited data needed for surveillance. The Taskforce can examine this approach, but it seems likely that most data necessary for ARS currently are not present or easily extractable from big data systems such as electronic health records (EHRs) by public health agencies. Specifically designed ARS systems such as NHSN and reportable disease surveillance systems likely will be the primary sources of ARS data in the near future. This in no way diminishes CSTE's or CDC's commitment to continue to work with states, clinicians and others to access EHR data for public health surveillance purposes. Accordingly, the Taskforce will work with partner efforts in electronic case reporting (RWJ, CDC, ASTHO), clinical decision support (ONC), and various CDC surveillance strategy initiatives.²

Principle 2. The roles and responsibilities of federal, state, and local public health agencies in ARS should be based on the purposes for surveillance at each level. To the extent possible, these efforts should be complementary, not duplicative, and should not place an undue burden on those providing data for surveillance purposes.

Principle 3. All ARS systems should use the same case definitions and other data definitions to the extent possible. This will assure the comparability of facility-based, enterprise-based, and population-based surveillance data.

Principle 4. Electronic reporting of ARS data to local and state health departments should be based on prevailing standards for such reporting, for example, HL7 standards.

Principle 5. To the extent that laboratory reporting is done electronically, the systems for electronic laboratory reporting (ELR) to the National Notifiable Disease Surveillance System and to the National Healthcare Safety Network should be complementary and not duplicative.

Principle 6. All clinical laboratory results, in general, and AR data in particular, generated by clinical laboratories should be available for public health surveillance, infection control, and antibiotic stewardship. This includes not only phenotypic and genomic test results, but also antimicrobial susceptibility testing results that currently may be forwarded from antimicrobial sensitivity test (AST) instruments or laboratory information systems (LIMs) for a variety of reasons, using electronic laboratory reporting systems and capacity.

Principle 7. Recent changes in clinical laboratory practices such as increased use of culture independent methods will result in AR data being less available. Such changes in practices will also impact surveillance for antimicrobial resistance in programs directed at the prevention and control of tuberculosis, STDs, and foodborne diseases.

Principle 8. Additional resources, based on the surveillance goals and data needs are necessary for robust ARS systems at the state and local level.

¹ Note: many of these principles are based on the 1996 blueprint for public health surveillance and the 2013 “blueprint version 2.0” that still guide CSTE’s stewardship of the list of nationally notifiable diseases (3, 4).

² <https://www.cdc.gov/surveillance/>

³ Meriwether, Rebecca A. Blueprint for a National Public Health Surveillance System for the 21st Century. *Journal of Public Health Management & Practice*. Fall 1996, 2(4):16-23.

⁴ Smith, Perry F.; Hadler, James L.; Stanbury, Martha, et al. Blueprint Version 2.0: Updating Public Health Surveillance for the 21st Century. *Journal of Public Health Management and Practice*. May/June 2013, 19(3):231-239.