3B: Potential Implementation Outcome Measures

New data linkage projects may consider using indicators from the tables below to evaluate progress during and after implementation. Although it is resource intensive, quarterly monitoring of selected indicators is recommended to benefit from data-informed quality improvement cycles. You can read more on why and how to use data-informed quality improvement cycles in this resource from the Agency for Healthcare Research Quality (AHRQ).

New projects should consider collecting **two quarters** of initial data (which can serve as a 'baseline', or initial point of comparison), followed by **two quarters** of 'start up' data during the period of project start up (data limitations are expected during this time), before collecting comparison evaluation data over **multiple quarters**. Because data linkage projects are complex and take time to achieve system changes, the full evaluation timeline should ideally stretch over **several years** of implementation.A suggested process for selecting indicators as outcome measures includes several steps.

This module suggests a process for selecting implementation outcome measures and indicators:

1. Select measures topics
2. Select project implementation measures
3. Create indicator definitions
4. Collect indicator data

Step-by-step guidance for this process is provided below, with examples from the Enhancing Linkage evaluation.

1. Select measures topics: First, select measures topics that are critical to your project's goals. Topics should include both process measures that focus on performance of the systems involved with the linkage, as well as outcome measures related to health that will take longer to achieve. A sample list of topics is provided below.

General Measures Topics

Data linkage process

• Frequency of electronic matching of person-level HIV/STI surveillance data

• Linkage rate

Linkage quality

• Frequency of systematic quality checks of integrated data

• Matches using primary identifiers (name, SSN, DOB), which yields higher quality matches than those using close (misspellings, similar dates) or secondary identifiers (geography, gender, race)

Outcomes of data linkage

• Updates to client records (name, address, contact information)

• Identification of clients not in care

Health outcomes

• Clients linked to care, retained in care, reengaged in care, HIV viral suppression

• HIV/STI coinfection rate

• STI screening and treatment

• Outreach to referred partners for testing and linkage to care

2. Select project implementation measures: After topics are selected, select specific project implementation measures from within those topic areas, such as those in the table below.

Data linkage measures
• Frequency of electronic matching of person-level HIV/STI surveillance data
• Linkage rate between HIV/STI surveillance data
• Proportion of exact matches between HIV/STI surveillance data
• Proportion of non-exact (fuzzy) matches between HIV/STI surveillance data
• Frequency of systematic data quality checks of integrated HIV/STI surveillance data
• For projects working towards an integrated HIV/STI surveillance data system: Proportion of updates to client records in integrated HIV/STI surveillance data system...   - first, last, or middle name   - home address   - contact information   - other (e.g., risk, lab information)

3. Create indicator definitions: Next, operationalize outcome measures by creating specific indicator definitions that name the systems involved in the data linkage and the items to link. See examples in the 'Measure Specification Examples' table below.

Measure Specification Examples	
Frequency of electronic matching of person-level HIV/STI surveillance data	Number of occurrences of electronic matching of person-level HIV/STI surveillance data (i.e., how frequently system-wide linkages are made)
Linkage rate between HIV/STI surveillance data	Proportion of patients successfully linked between systems; linkage defined as both systems containing the other system's personal identifiers.
Proportion of exact matches between HIV/STI surveillance data	Proportion of exact matches on primary, generally include Social Security Number, name (first, middle initial, last), and date of birth. There may be secondary identifiers such as geography, gender, race, and ethnicity.
Proportion of non-exact (fuzzy) matches between HIV/STI surveillance data	Proportion of non-exact (fuzzy) matches. For example, there may be an exact match on a secondary identifier, but no exact match on primary identifiers. This may also include a match with a preponderance of close identifiers. Some of these may be logical, such as a "Meg Smith" and "Meaghan Smith" with very similar dates of birth from the same ZIP code. Some of these may use a distance algorithm, such as Soundex or Levenshtein distance.

*Note: The purpose of collecting the **linkage rate between HIV/STI surveillance data systems** is to assess the proportion of patients who are successfully linked between the two systems. You can define linkage as both systems containing the other system's personal identifiers. For the denominator, include all people living with HIV/AIDS (excludes deceased) within your HIV surveillance data system (e.g., eHARS). For the numerator, include those in the denominator who are found in the STI surveillance system (e.g., PRISM, STARS). Report this measure as of the end of each quarter. This measure should not be limited to new client or patient records.*

HIV/AIDS Bureau Improving Ryan White HIV/AIDS Program Outcomes Using a Tiered Technical Systems Approach to HIV/STI Linkages - Implementation Guide - Evaluation Module - *3B: Potential Implementation Outcome Measures*

2

4. Collect indicator data: Finally, collect a limited, core set of outcome measures, like the ones in the first two columns of the table below. Once your project has successfully collected data for those measures, you may consider adding more, like the Additional HIV/STI outcome measures in the third column.

Measures Selected by the Enhancing Linkages Evaluation

HIV/STI outcome measures	Implementation measures	Additional HIV/STI outcome measures
HIV viral suppression	Frequency of electronic matching of person-level HIV/STI surveillance data	Late HIV diagnosis
Retention in care	Linkage rate between HIV/STI surveillance data	Treatment for syphilis
Linkage to HIV medical care	Proportion of exact matches between HIV/STI surveillance data	Partner contact attempts for people newly diagnosed with HIV
Not in care	Proportion of non-exact ("fuzzy") matches between HIV/STI surveillance data	Linkage to care of partners for people newly diagnosed with HIV
Reengaged in care	Frequency of systematic data quality checks of integrated HIV/STI surveillance data	Partner contact attempts for people newly diagnosed with syphilis
People newly diagnosed with HIV	Proportion of updates to client records in integrated HIV/STI surveillance data system - first, last, or middle name	Linkage to care of partners for people newly diagnosed with HIV
Partners identified by people newly diagnosed with HIV	Proportion of updates to client records in integrated HIV/STI surveillance data system - home address	Chlamydia coinfection rate
People newly diagnosed with syphilis	Proportion of updates to client records in integrated HIV/STI surveillance data system - contact information	Gonorrhea coinfection rate
Partners identified by people newly diagnosed with syphilis	Proportion of updates to client records in integrated HIV/STI surveillance data system - other (e.g., risk, lab information)	Syphilis coinfection rate

For further guidance on the HRSA Ryan White HIV/AIDS Bureau (HAB) performance measures, please refer to:
https://hab.hrsa.gov/clinical-quality-management/performance-measure-portfolio

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3