

# Collecting Quality Data for Performance Management

A Learning Guide Prepared by  
Essential Access Health in Conjunction with  
AcademyHealth as Part of the Community Health  
Peer Learning Program

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The Community Health Peer Learning (CHP) Program aims to advance progress toward population health improvements through the expanded capture, sharing, and use of electronic health data from diverse sectors. Engaging ten Participant Communities and five Subject Matter Expert (SME) communities in a peer learning collaborative, the CHP Program builds community capacity and supports the identification of data solutions, acceleration of local progress, and dissemination of best practices and lessons learned.

This learning guide is part of a series developed by CHP SME communities - highlighting their practical experiences, noting key lessons, and sharing insights relevant to those working as part of local initiatives to improve population health. The guides are intended to inform the ongoing work of CHP Participant Communities, as well other projects supported through a rapidly growing number of place-based health improvement initiatives. While individual guides address specific topics, such as community-wide information exchange capacity building, at their core, they also tell a story of how data infrastructure development, enabled through purposeful collaboration, can help drive better care, smarter spending, and healthier communities. We hope you find these stories to be engaging, practical, and useful!

Part 1

# Introduction

Performance Management

Using this Guide

# Performance Management

Programs seeking to improve population health through the expanded collection, sharing, and use of electronic health data face many challenges, including managing and improving performance. Strong performance management is vital to running a successful program that accomplishes its population health goals. It helps to ensure that program staff are working towards a common goal and are efficiently and effectively using the tools and processes designed to ensure the best chances of success.

Before you can manage or improve performance, you need to know what it is. Measuring current performance through specific, well defined measures provides a foundation to communicate about progress, identify successes, and pinpoint areas where improvement is needed.

In addition, performance measures have many broader uses, among them:

- Strategic planning
- Project implementation plans and scopes of work
- Program evaluation
- Grant writing and other funding activities
- Quality improvement

There are many challenges to accurately measuring performance. It can be difficult to decide exactly what to measure or to determine the best way to collect the data. Although the use of electronic systems has increased the potential to capture and share data, each system has its own set of limitations. Bad decisions along the way can lead to data that no one believes is reliable or reflective of their work. This can make it much more difficult to use those data for all of the activities listed above. And that's where this guide can help.

# Using this Guide

This guide covers the basic concepts involved in choosing and calculating measures and collecting accurate and comprehensive data for them.

It does not cover how to present performance measure results to stakeholders, including how to format data or how to frame messaging around results. Nor does it cover specifics on how to document the overall impact of your program.

Keep in mind that every organization and data sharing network is different. There are many possible solutions to every data collection challenge, and this guide is meant as an introduction to the variety of approaches you can take to conquer your own data collection and performance measurement challenges.

Throughout the guide, you will see information in boxes. Here's what they contain:

## BEST PRACTICE

Best practices are displayed in colored boxes like this one.

## FOR EXAMPLE

Real world examples of the concepts being discussed are included in white boxes like this one. Some are examples of successfully following best practices - things you *should* do. Some are examples of practices that would lead to problems measuring performance - things you should *not* do.

Part 2

# Choosing Performance Measures

What to Measure

When to Choose

Setting Benchmarks

Resources



# What to Measure

There are many factors to consider when deciding what your program should measure. In general, look for measures that support organizational and stakeholder priorities and provide an indication of how effectively you are realizing your organization's mission and vision.

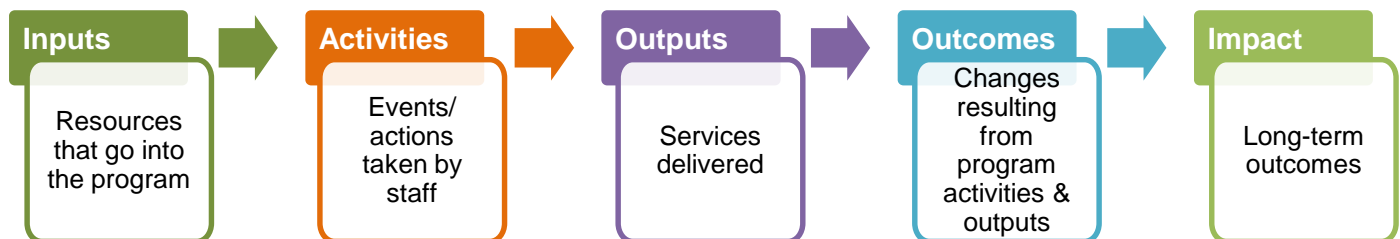
Specific measures may be imposed from outside funders or regulators, but they may not be enough to ensure project success. Think through not just what you want to do to accomplish your goal, but *how* you'll know whether you've done so.

As a starting point, perform a review of existing measures and identify any gaps.

You might ask yourself:

- How will we know if we did what we said we would?
- Is our program accomplishing its larger goals?
- Who will use the results?
- How/when the results will be used?
- What information about this program, if it were available, would make a difference in what we do?
- What do we want to improve?
- What larger impact do we want to have on our community?

Use your program's logic model to help identify potential performance measures:



**Sample program logic model**

## Types of Measures

It may be helpful to think about potential measures in terms of the commonly used categories of *structural*, *process*, and *outcome* measures.

**STRUCTURAL-** These are measures of whether systems (e.g. staff, facilities, IT programs) are in place to achieve high performance on process and outcome measures. They can include input measures, which track the Inputs or Resources shown in your program logic model.

**PROCESS-** Measures that help track information related to the who, what, when, where, and how much of your program can help determine the causes of poor or outstanding overall performance. They might measure whether a best practice is followed, e.g. if a test is done for certain types of patients. They can strengthen your ability to report on your program and provide information to refine or improve future activities.

This category can also include output measures, which track the program's internal work and its products and services delivered, e.g., the number of patients tested. They link back to the "Activities" and "Outputs" on your logic model.

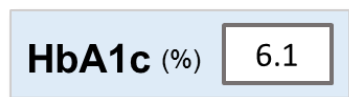
**OUTCOME-** These are measures of whether or how a population's health status has changed. Ideally it reveals whether your overall program goals and your work on structure and process are having the effect you seek. These measures link to the Outcomes and Impact pieces of your logic model.

Outcome evaluation provides information about whether or not your program is accomplishing its larger goals and objectives. Process measures can be building blocks to achieve outcomes, so it's usually helpful to use both.

## FOR EXAMPLE: DO THIS

Advance Health Care is creating a data platform to share data with several community organizations, with a shared goal of controlling diabetes in their high-risk population.

### Adding Data Collection Capacity



Their partners need to modify their software to collect data on HbA1c levels. They institute a **STRUCTURAL MEASURE** of the number of partner organizations that are currently able to record these data. They set a goal (benchmark) that 50% of the partners make necessary structural changes within 6 months.

### Conducting Tests



All partners agree that they need to test for HbA1c in order to know if they are affecting population health. They set a **PROCESS MEASURE** of the percentage of patients tested per year, with a goal of testing 50% of all high risk patients.

### Comparing Population Data

$$\frac{\text{\# patients tested with HbA1c < 5.7\%}}{\text{\# patients tested}}$$

The partners also want to know if their efforts are impacting population health, so they set two **OUTCOME MEASURES**- the percentage of patients whose HbA1c is under control, and the percentage of patients whose HbA1c is improving.

## Useful Measure Features

In addition to thinking about the type(s) of measures you need, you can assess individual measures further by making sure they address the following concepts:

**RELEVANCE-** Think about how meaningful the measure is for your program's goals. Will it resonate with your stakeholders and with those implementing the project? How directly can you tie it to the work you are trying to accomplish?

**SCIENTIFIC SOUNDNESS-** In addition to tying into your program goals, a good measure will also reflect current best practices in your field. This helps to ensure that your measurement findings will be valid and reliable, which will encourage your stakeholders to take them seriously.

The measure needs to be valid, meaning that it measures what you think it measures. For example, tracking the percentage of physicians

who prescribe a medication is not the same as the percentage of patients who actually take that medication.

**FEASIBILITY-** You may have the most relevant and scientifically sound measure in the world, but if it's too hard to collect the data for it, it will fail. Your expectations for the type and amount of data that can be collected need to be realistic. If not, your data is likely to be incomplete and unusable.

Work closely with your partners to determine feasibility. Your systems will likely vary in the ability to capture certain data elements.

**CLARITY-** To encourage stakeholder buy-in, avoid measures whose calculations are so complex that it takes time and effort to interpret results. Such measures may be very meaningful to the statisticians and scientists in your group, but may be quickly rejected as confusing and ambiguous by others.

### **ALIGNMENT WITH OTHER MEASURES-**

Whenever possible, choose measures that are already in use for other reporting or quality improvement purposes, or at least that use data already being collected. Such measures may have already been validated, although it's important to think about how earlier uses of the measure might differ from your intended use.

If a measure is already in use, staff should already be motivated to collect the data, and specifications may already be in place for how to do the calculations. Avoiding new questions and workflow steps facilitates more complete data collection.

Of course, the use of existing data must always be weighed against the need for a relevant and scientifically sound measure for your particular program goals. In certain cases, it is appropriate to create a new measure and/or add new fields to the system.

### **BEST PRACTICE**

Strategize about ways to get buy-in from your stakeholders on the measures you choose. If they don't believe the measure is worthwhile, they won't be invested in asking new questions or carefully collecting accurate data.

Ask for stakeholder opinion before you make final measure selections. Share baseline data to demonstrate the need for measurement. Make sure they agree with the measure's relevance and scientific soundness, and that the measure's purpose and meaning are clear.

# When to Choose

Deciding what to measure should come early in the process of implementing your program. That way you can set up good data collection processes right from the start.

You may find yourself struggling to strike a balance between the ideal set of measures and what's practical to measure; feasibility can often become a limiting factor.

## Practical

*What data is available or could be added?  
What can we measure?*

## Ideal

*What would we most like to measure? What would provide the most value?*

The measures you begin with may evolve over time, becoming more precise and more useful. In the real world we often start with what's doable and work towards the ideal, based on the data that's already being collected. We can incrementally work over time to add in better data that will allow us to measure goals more precisely. It's common to experience more difficulty measuring outcomes,

so you may find yourself starting with structure and process measures while you build additional data collection capacity into your system.

### FOR EXAMPLE: DO THIS

Advance Health Care wants to reduce emergency department visits for chronic conditions among homeless clients at several area hospitals. Ideally they would like their hospital partners to report on this exact measure. They confer with their partners to identify exactly which data are currently collected and find that unfortunately, the hospitals do not all record the visit reason in their electronic systems in a structured and usable way.

Advance Health care and its partners make plans to try to modify the hospital systems over time to collect better data on visit reason. In the meantime, they decide to measure the total number of emergency department visits among homeless clients, regardless of whether the visits are for chronic conditions.

# Setting Benchmarks

Once you have chosen your measures, you may wish to set benchmarks- goals for how well you'd like to perform.

## **BEST PRACTICE**

Unless a benchmark is imposed on your program by outside stakeholders or regulators, take time to collect preliminary results before choosing a goal. Knowing your performance at the start of the project not only provides you with baseline data against which you can measure your progress, but it will guide your decision-making about how high to set your initial goals.

You'll want to strike a balance between setting lofty, ambitious goals that would indicate spectacular success in your program, and setting realistic goals that are achievable given the timeframe involved. If you set your benchmark too high, it can discourage program participants. Giving them an attainable goal encourages buy-in and sustained effort.

Even if your initial goal is lower than you'd like, you can always increase it later once your preliminary goal is met.

## **FOR EXAMPLE: DO THIS**

Advance Health Care is partnering with several community organizations that provide outpatient care to postpartum women and their babies. Their overall program goals include increasing the percentage of new mothers who are screened for postpartum depression.

Once data collection is implemented, they share a preliminary calculation of results with all partners. They see that current screening rates range from 25% to 50%, and there is also a significant amount of missing data. They discuss these results with the partners and decide to set a goal of 100% documentation and 60% screening by the end of the program's first year.

At year's end, some partner organizations are meeting the 60% goal and some still fall short. After further discussions, Advance Health Care increases the benchmark to 70% for the next project year to maintain momentum and continue to drive improvement.



# Resources

## Performance Management & Measurement

HRSA (Health Resources and Services Administration) guide. Includes: What is Performance Measurement, Why Measure Performance, How Can We Better Manage Performance, Choosing Goals for Performance Management, What Does a Performance Measure Look Like, Types of Performance Measures, and Additional Resources.

<http://www.hrsa.gov/quality/toolbox/methodology/performancemanagement/index.html>

## Science of Improvement: Establishing Measures

The Institute for Healthcare Improvement's guide to establishing measures. Includes: How to Know if a Change is an Improvement, Tips for Effective Measures, Types of Measures, Sample Measures, and Plotting Results.

<http://www.ihl.org/resources/Pages/HowtoImprove/ScienceofImprovementEstablishingMeasures.aspx>

## Evaluating the Quality of Medical Care

Donabedian article discussing assessing the quality of care. Includes: Definition of Quality, What to Assess, Sampling and Selection, and Indices of Medical Care.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2690293/>

## Desirable Aspects of a HEDIS Measure

Attributes used by the National Committee for Quality Assurance (NCQA) in its measures of health quality. Includes: Relevance, Scientific Soundness, and Feasibility.

<http://www.ncqa.org/tabid/415/Default.aspx>

## Variety of Measures in NQMC

The National Quality Measures Clearinghouse list of measure categories. Includes: Measures of Quality and Measures Related to Quality and Domains of Measurement.

<https://www.qualitymeasures.ahrq.gov/help-and-about/summaries/varieties-of-measures-in-nqmc>



## Part 3

# Calculating Performance

Deciding on Your Calculations

Planning for Reporting

Configuring the Calculations

Troubleshooting

Gaining Experience

Resources

# Deciding on Your Calculations

Collecting and using quality data for performance measurement is not a linear process. In fact, it's quite the opposite. We've outlined each step of this guide in the order it might ideally be done, but in reality you are likely to work on several steps at once. For example, you may need to get started training staff on how to collect data while you're in the early stages of working out calculation details. You'll likely find yourself jumping back and forth between sections of this guide as you make progress in multiple areas simultaneously.

## **BEST PRACTICE**

Working out calculations is actually best done before you begin collecting data. You may realize there are additional data elements you need in order to make the most precise measurement. Don't wait until your report is due to figure out which data you need.

Once you know what you will measure, you need to set out specifics on how to calculate results. This process is rarely as straightforward as you might expect.

Let's look at a sample process measure. It might be reported as the percentage of visits where staff performed a certain assessment. This measure would have two parts:

- **Numerator:** The number of visits where staff performed the assessment
- **Denominator:** The total number of visits where staff should have performed the assessment.

While it is often easy to count up the data for the numerator, deciding which records to include in the denominator can be more challenging.

These decisions can have a huge impact on your results. Deciding what *not* to count - which records to **exclude** from your calculations - is important.

**FOR EXAMPLE: DON'T DO THIS**

Advance Health Care wants to measure successful referrals for its homeless patients. In its homeless question, it collects eight different options:

At Risk for Homeless
Currently not Homeless, was in last 12 months
Homeless Unknown Shelter
Living in Shelter
Living with Others
Not homeless
Street, Camp, Bridge
Transitional Housing

They decide to include in their numerator those patients with successful referrals. They include in their denominator all patients except those who answer “Not homeless.”

This skews their results since two other categories also include patients *not* currently homeless (“At Risk for Homeless” and “Currently not Homeless, was in last 12 months”). While it may be interesting to look at data from these two groups, including them in the measure may make their referral rate look less successful than it really is.

If your measure aligns (matches up) with similar measures already being reported elsewhere, following those existing guidelines for record selection can simplify the process for everyone. For example, the Uniform Data System, reported by many federally funded health centers in the U.S., provides very clear guidelines, based on diagnosis and other codes, about which records to include in its reporting.

Table 6A: Selected Diagnoses

	Diagnostic Category	Applicable ICD-9-CM Code	Applicable ICD-10-CM Code
<b>Selected Infectious and Parasitic Diseases</b>			
1-2.	Symptomatic / Asymptomatic HIV	042, 079.53, V08	B20, B97.35, O98.7, Z21
3.	Tuberculosis	0.10.xx - 018.xx	A15- thru A19-

**Sample UDS Instructions**

Of course, you need to assess such specifications to be sure they make sense for your program and goals. If they don't match up perfectly, using a validated measure and all its specifications as a starting point can still make configuration much easier than starting from scratch.

### BEST PRACTICE

Create a clear and specific description of your measures using plain English. Share with your stakeholders to ensure consensus, and use it as your starting point in later steps when you configure your electronic system to pull data and calculate results.

Have those whose performance is being measured review preliminary data as well as calculations- they may identify problems or provide advice on additional exclusions.

### FOR EXAMPLE: DO THIS

Meaningful Use, the federal government's measures of the use of electronic health records, provides great examples of clearly worded measures. Here's one on measuring the percentage of patients with referrals:

*Denominator*- Number of patients, regardless of age, who were referred by one provider to another provider, and who had a visit during the measurement period.

*Numerator*- Number of patients with a referral, for which the referring provider received a report from the provider to whom the patient was referred.

Patients are identified as having a visit during the measurement period if they have a signed chart note labeled with an encounter type of "Office Visit", "Home Visit", "Nurse Visit", or "Nursing Home Visit."

Instead of including patients of all ages, such a measure could also list *Exclusions*, such as "Patients under 18 years of age."

# Configuring the Calculations

Once you have determined the specifications for your measure and have collected at least a few test records worth of data, you'll need to set up a report that will carry out your calculations.

You can wait to start this configuration work until you're already underway, although working through these details may reveal additional changes needed in data collection so the sooner you tackle it, the better.

To create this report, you will translate the measure's plain English specifications into language your electronic system can understand. You will use the behind-the-scenes field names and list all relevant codes (e.g. procedure codes or insurance codes) that apply.

Sometimes this configuration entails recoding the values entered by the front end user. This reclassification can be completed by programming or sometimes via

other set-up or mapping features in the system. It's vital to know about and validate all such coding and recoding.

## FOR EXAMPLE: DON'T DO THIS

The programmer at Advance Health Care was asked to create a performance report showing results for each racial group. He wasn't given specific instructions so decided to put any clients with Hispanic ethnicity who had declined to provide a race into the White category, skewing the results.

## BEST PRACTICE

Work closely with your programmer on the details of the configuration. Have them provide you with a list of any data fields they recode within their programming so that questionable programming decisions can be identified and either corrected or explained during reporting. If you don't read code, ask them to translate it or walk you through their decisions.

You can also request a non-coded version of the final report that shows results without recoding. For example, it could list results for every race category in the system (e.g. Chinese, Japanese), regardless of how you want to combine them for actual reporting (e.g. Asian).

Ensuring accurate calculations is an ongoing process. Data is always changing over time and calculations may need to be updated.

### **FOR EXAMPLE: DO THIS**

For a report that is supposed to include all publicly insured clients, the programmer and program staff confer every six months about whether any new insurance codes have been added into the system, and they update their performance reports accordingly to ensure that clients aren't left out of the report.

### **BEST PRACTICE**

Maintain thorough documentation of your calculation decisions, as well as how they are applied when your reports are configured. Keep it in your Data Manual and use it to help answer stakeholder questions about how to interpret results and to aid in troubleshooting problems.

# Planning for Reporting

It may feel counterintuitive to build the final data report before you really have any data to review, but completing this step early on can provide helpful feedback in several ways.

Sometimes just seeing the way your measures will appear in a mock-up of the final scorecard or report can help motivate stakeholders to improve before any results are even available. It can also help them begin to imagine what they might do with their results, i.e., how they could use them to improve. This in turn might prompt requests for additional types of reports, or changes in reports or planned frequencies for reporting.

Working out the report structure might also help you spot small changes you might want to make to calculations, such as the units in which you want results to be generated.

## FOR EXAMPLE: DO THIS

Advance Health Care was working with partners to improve screenings for domestic violence and chlamydia at their partner organizations. When thinking about reporting needs, they began at the network level, wanting to see overall results over time.

<b>Overall Results</b>		<b>Domest. Viol. Screening</b>	<b>Chlamydia Screening</b>
	<b>GOAL</b>	<b>50%</b>	<b>80%</b>
<b>DUE DATE</b>	<b>Year-end 2015</b>	<b>31.9%</b>	<b>77.7%</b>
Feb 15	Quarter 1 2016	29.8%	79.1%
May 15	Mid-year 2016	33.0%	79.5%
Nov 15	Quarter 3 2016		
Feb 15	<b>Year-end 2016</b>		

Once they had a mock-up of this report, they realized that their largest partners would more heavily influence the outcomes, so they decided to add a new set of measures of the percentage of organizations meeting their goals:

<b>Agencies Meeting Benchmarks</b>		<b>Domest. Viol. Screening</b>	<b>Chlamydia Screening</b>
<b>GOAL = 100%</b>			
<b>DUE DATE</b>	<b>Year-end 2015</b>	<b>16 (21%)</b>	<b>18 (24%)</b>
Feb 15	Quarter 1 2016	22 (35%)	26 (43%)
May 15	Mid-year 2016	18 (28%)	26 (40%)
Nov 15	Quarter 3 2016		
Feb 15	<b>Year-end 2016</b>		

# Troubleshooting

Maintaining sound data collection practices and a properly configured set of reports requires ongoing effort. If and when you find yourself with data that does not seem to reflect what's actually happening, there are steps you can take to identify the sources of your data problems.

## BEST PRACTICE

Don't wait for an annual report to find out there's a problem. Review results regularly and provide regular feedback so stakeholders can let you know when they notice anything unusual or unexplained in the results.

One of the best tools for understanding what's really happening is to conduct chart reviews, where you pull sample records and review them for accuracy and completeness. Although time consuming, this type of review can help you determine why data is incorrect. It can also help to distinguish between people's theories

about the cause of the problem and the reality.

It's a good practice to trace the data through every step of the workflow, starting with how staff is asking a question and following along where and how they record the answer, to how the report is programmed and results calculated. You can do most of this by reviewing the electronic system, but it may also help to sit with staff and observe their processes.

Be strategic about which staff to work with to troubleshoot and resolve issues. If the solution involves adjusting workflow, data entry, or clinical items then you would talk with front line staff and providers. If the issue involves adjusting the way the data are gathered or displayed then you'll want to work with IT or other software support staff. These two groups don't always know what each other is doing, so you might find yourself acting as a go-between as you identify updates needed in one direction based on findings at the other end of the system.



Here are some other tips for identifying problems:

- The more documentation you maintain on your calculations and programming, the easier and quicker your troubleshooting can be. More importantly, keep this documentation up-to-date as you make modifications; otherwise it may only cause confusion.
- System updates can sometimes negatively affect forms, data entry screens, and data.
- Problems can occur when data is combined from multiple organizational or electronic sources. Although it is theoretically consistent, small differences involving multiple data collection steps can lead to discrepant results.

# Gaining Experience

Building your team's skills in performance measurement takes time. Each step in the process will likely include mistakes that you'll only identify in hindsight.

Responding to stakeholder questions and concerns when the data don't look right will provide opportunities to explore your and your partner's systems to find the sources of problems. The more cycles of measurement you do, the more frequently this type of feedback will come, and the faster you will be able to learn from experience.

If this doesn't sound like a perfectly smooth process, that's because it's not. Always keep in mind the purpose of your measures. This should be the framework, or the guide, with which you think through calculations and analyze results.

Even as you are getting started with the process, begin assembling any reference materials or tools you come across that you find helpful.

You may want to share these with your stakeholders or create a toolkit that can help them understand their data.

As you collectively move your team, partners, and stakeholders beyond the logistics of collecting and reporting the data, be ready to dive into quality improvement activities to help improve the results themselves. Again, you may find it helpful to assemble tools and materials on your project's subject matter that could be helpful once you reach this point.

# Resources

## Managing Data for Performance Improvement

HRSA (Health Resources and Services Administration) guide. Includes: Getting Data Ready for Analysis, Using the Data for Analysis and Interpretation, and Additional Resources.

<http://www.hrsa.gov/quality/toolbox/methodology/performanceimprovement/>

## Measuring and Benchmarking Clinical Performance

A practice facilitation handbook from the Agency for Healthcare Research and Quality. Includes: Selecting Clinical Performance Measures, Refining Clinical Measures: Defining the Numerator and Denominator, and Benchmarking.

<http://www.ahrq.gov/professionals/prevention-chronic-care/improve/system/pfhandbook/mod7.html>

## UDS Reporting Instructions for Health Center Data

HRSA guide to Uniform Data System reporting. Includes many examples of measure definitions and questions frequently asked about those definitions.

[https://www.machc.com/sites/default/files/E-%20UDSReportingManual\\_508.pdf](https://www.machc.com/sites/default/files/E-%20UDSReportingManual_508.pdf)

## IHS Sample Meaningful Use Measures

The Indian Health Service summary of Meaningful Use clinical measures. Includes the objective, measure description, numerator and denominator, and exclusion for each.

<https://www.ihs.gov/meaningfuluse/includes/themes/newihstheme/pdf/Stage2Measures.pdf>

## CDC Quality Measures Summary

The Centers for Disease Control summary of asthma measures. Includes an overview of various organizations that endorse and use quality measures and a sampling of the types of measures they create.

[http://www.cdc.gov/asthma/pdfs/quality\\_measures\\_summary\\_3\\_18\\_15.pdf](http://www.cdc.gov/asthma/pdfs/quality_measures_summary_3_18_15.pdf)

Part 4

# Collecting Quality Data

Overview

The Data Collection Process

Resources

# Overview

## Know Your Performance

You've decided what you want to measure, the information that will help you stay on track to achieve your project's goals and to prove that you have achieved them. Now you need to collect the data.

This may sound like a straightforward task, but all too often it can turn into a quagmire. If data are incomplete or inaccurate, you and your partners may spend a great deal of time sorting out where the process has gone awry.

Meetings intended for addressing progress towards goals can devolve into sessions speculating about how the data can't be trusted. Instead, staff end up either dismissing the data as not reflecting reality or spend their time completing data clean-up projects instead of performance improvement projects.

## Training Matters

One important step to avoiding these pitfalls is to systematically train your staff. The time you spend on training will repay itself later when your data requires little troubleshooting.

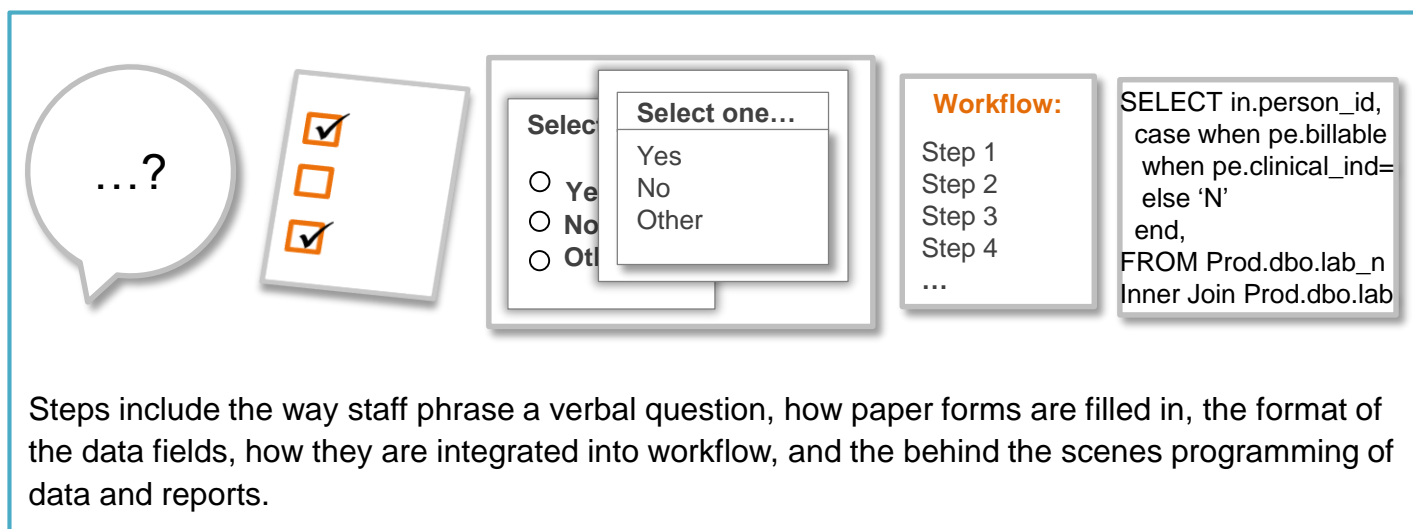
### BEST PRACTICE

Get staff buy-in on data collection efforts by:

- Sharing the big picture. Explain how the data will be used and how it will help achieve worthy program goals.
- Explaining how high quality data will provide the most useful feedback on how well the program is working.
- Showing how common data entry errors can result in unintended consequences, like making it appear that performance is poor when it's actually good.
- Focusing on what staff actually needs to know, such as how to collect the data, where it fits into their workflow, how to handle incomplete data and how terms are defined.
- Collaborating to identify ways to incorporate new questions into workflow or otherwise make it easier for staff to collect data. Use their expertise in workflow to crowdsource best practices and ideas for improvements.

## Every Step Matters

Before the data are available to measure performance, it will have undergone several transformations following a long path that includes many steps:



Collecting complete and correct data at each step is essential. Staff can fail to collect it at all or can handle it incorrectly at any point. A single point of trouble is all it takes for your results to be rendered unusable.

### FOR EXAMPLE: DON'T DO THIS

Advance Health Care needs to know how many homeless patients it serves in order to apply for grant funding. A question about homelessness is in their electronic system, but staff tend to only ask the question when the patient “looks homeless” and 90% of the time, they skip the question. Of those 10% of patients who are asked, half are indeed homeless. But a 50% homelessness rate is a vast overestimate since only a few of the many patients they don't ask are homeless.

### DO THIS INSTEAD

Advance Health Care trained its staff to routinely ask all patients their housing status. They followed up with reports on the percentage of patients for whom these data were collected.

# The Data Collection Process

## Keeping Track

Maintaining thorough documentation about your data collection process is critical to keeping data quality high. Keep a binder (your “manual” or “problem log”) that outlines the data collection process from start to finish. As you identify and correct problems in the process (using a Plan Do Study Act approach), document what you’ve learned and keep a list of best practices to follow and problematic practices to be avoided.

Any time questions arise, or as your staffing changes over time, this manual will serve as a reference. Keep it in a place where staff can refer to it easily, and use it to conduct periodic retraining to prevent actual practices from drifting over time.

It is also important to learn from trend errors in your results. With limited time and resources, it can be tempting to just correct errors in the data output. Although this may be the most efficient approach in the short term,

the same types of errors will likely continue in the next data cycle. Instead, take the time to address the source(s) of the problem directly (e.g. updating data entry fields with additional/fewer options, staff retraining). The effort will pay off in the long run with a better functioning (less time consuming) system that provides more accurate data.

## Asking Questions

If staff don't understand how or when to ask a question, or how to categorize an answer, your data can be skewed.

### FOR EXAMPLE: DON'T DO THIS

Although federal guidelines require all patients to be asked their race, staff take a shortcut and record a race of White for all patients of Hispanic ethnicity.

Staff record the client's *primary* physician on a referral record when the *rendering* provider is what's needed.

For a project that requires a count of homeless patients, staff mistakenly only count those who report they are homeless, but not those who report they are living in a shelter.

Train staff about:

- How to phrase questions so that patient responses are precise
- How all terms in the question and the responses are defined

- How to handle special situations and exceptions to the general guidelines
- How to ask questions in a culturally sensitive way

Staff need to know how to communicate definitions to their clients. If they understand how the data will be used, it will be easier for them to select the best category when presented with an answer that isn't an obvious fit into any of the available categories.

It's also helpful to keep a broad view of all the other data you're collecting. There may be opportunities to avoid overlap by combining questions.

### FOR EXAMPLE: DO THIS

When collecting data on disability for a project designed to improve physical access to their youth center, staff knew they needed to identify those clients with physical disabilities. Mental health disabilities were not to be counted. Staff specifically asked clients, "Do you have any physical disabilities?" when collecting this data.



### BEST PRACTICE

Whenever possible, align questions for a new project with your other reporting requirements. If you're already asking a similar question, don't add a new, slightly different version. Instead use the current question. This will require less staff retraining, eliminate redundancy, and reduce the impact on workflow.

You *can* add new response categories to an existing question and have it work for both the current and new projects. You just need to make sure you can map all the new responses into one of your original categories.

### FOR EXAMPLE: DO THIS

Advance Health Care was collecting whether or not their clients were homeless with a simple yes/no question which they reported to one of their funders. Then they partnered with a community health center that collected homeless data for a federal report known as the Uniform Data System, or UDS. UDS collects several subcategories of homelessness such as living in a shelter or in transitional housing.

At the request of their community health center partner, Advance added the subcategories to their homelessness question so the project could utilize more refined data. When reporting to their funder, they simply combine all the subcategories back into the same "Yes, homeless" that they've always reported.

## Paper Forms

Not all data collection is electronic. Initial data collection often starts with having patients or staff complete a paper form. This step is certainly not necessary for quality data collection, but may be needed for other logistical reasons. If used, be sure the paper document aligns with the other steps in data collection:

- If your staff sometimes collects the same data verbally, be sure the way they phrase the questions matches the written versions.
- Make sure all responses on the paper form work with those in your electronic system.

### BEST PRACTICE

When collecting data at multiple sites, standardize data collection everywhere possible, including how verbal questions are phrased and how they appear on paper forms. Be sure questions translated into other languages are gathering the same data.

### FOR EXAMPLE: DON'T DO THIS

On Advance Health Care's paper form, patients are instructed to select all race categories that apply, but their new electronic system collects only one answer.

What is your race? Check all that apply.

- AMERICAN INDIAN OR ALASKAN NATIVE
- ASIAN
- BLACK OR AFRICAN AMERICAN
- NATIVE HAWAIIAN OR PACIFIC ISLANDER
- WHITE

#### Race

Asian

Asian

Black or African American

American Indian or Alaskan Native

Native Hawaiian or Pacific Islander

White

Unknown / Not Reported

When entering the electronic data for patients checking multiple races, some staff members enter the first race listed. Others select the race they feel most closely matches the patient's appearance. Others leave the field blank or select "Unknown".

### DO THIS INSTEAD

Add a response of "More than One Race" to the electronic system or modify it to allow multiple responses to be checked.

## Electronic Data Fields

The fields where you enter data into your electronic system come in a variety of formats. Each format is geared to handle a different kind of question, and each has its own advantages and disadvantages.

These fields include:

- Free text, including memo fields
- Radio buttons
- Drop-down menus, also referred to as pick lists
- Check boxes

**REQUIRED OR OPTIONAL?** You often have the choice of making a field required, meaning the user *must* record an answer before advancing to the next record, or optional, meaning they can leave the field blank.

Required fields are usually listed in red or carry a red asterisk.

### BEST PRACTICE

When you require a field, be sure that the categories cover all possible response options so staff won't be forced to select inaccurate categories. For example, include an "Unknown" answer in case they are not able or forget to ask the question.

### BEST PRACTICE

When leaving a field optional, monitor the data regularly to make sure staff are remembering to collect and record the information.

**FOR EXAMPLE: DON'T DO THIS**

It was important to Advance Health Care to find out whether they were providing the same level of care to patients of all means, so they decided to make Annual Income a required field. They were surprised that average client income dropped precipitously in the next report even though there were no missing data.

It turned out that quite a few patients refused to provide this information because they did not know their annual income or didn't wish to disclose it. Most staff dealt with this by entering "\$0," which skewed their income estimates downward, especially among teenagers and more affluent patients who were more likely to refuse to answer.

**DO THIS INSTEAD**

Advance Health Care added a checkbox for "Refused" so there would be a suitable place to record all possible answers.

## Unstructured Data

Unstructured data are just that- data without a pre-set structure or organization. Unstructured data are the electronic equivalent of a paper medical record and include free text fields, dictation and transcription entries, and memo fields.

Unstructured data are useful for collecting information that is:

- **Subjective:** like a comment or suggestion
- **Unusual:** unlikely to fit into a predetermined category
- **Explanatory:** provides additional information

A major drawback of unstructured data is that it can't be used in a systematic way to measure anything unless you first code it. Also, data sorting functions don't work well for unstructured data since the system treats every variant as different.

**BEST PRACTICE**

Unless you are handling data that fits the previous description (subjective, unusual, explanatory), avoid the use of unstructured data fields. When you do use them, review the contents periodically to see whether you can expand the coding options in a related field or add a new structured field to capture what staff are writing there.

**FOR EXAMPLE: DON'T DO THIS**

When Advance Health Care needed to track the success of referrals for treatment of patients diagnosed with HIV, they thought they could use the Reason for Referral field in their electronic system. Unfortunately it was a free text field, so responses they wanted to track included answers such as “HIV positive,” “sero-positive for HIV,” and “HIV treatment”. Some answers of “counseling” applied but not all. Answers with spelling errors or extra spaces also needed to be counted. Unfortunately the unstructured data made it almost impossible to identify all the patients they wanted to track.

**DO THIS INSTEAD**

Advance Health Care changed the field to a structured field with a drop-down menu.

## Structured Data

Structured data comes from data entry fields that provide a limited set of response options- a structure. Such fields include at least some standard answer options for the user to choose from. There are several types of data fields that can be used to collect structured data.

### RADIO BUTTONS

6. Were you born between 1940 and 1970?

Not reviewed  No  Yes

### DROP-DOWN MENUS / PICK-LISTS

**Language Barrier**

No

<none>

No

Yes

### CHECK BOXES

Translator needed

## Using Structured Data

Structured data generally makes performance measurement easier since having a finite list of responses encourages standardized processes for collecting the data and simplifies analyses and reporting.

If your required reporting for a question includes a limited list of responses, you may still want to include a longer list in your system. Overly broad categories may lack needed detail; narrow categories can always be combined in the report if needed, provided they don't overlap and they all fit into one of the narrow categories.

You may find the additional detail useful when conducting other analyses or conducting quality improvement activities. For example, you might include subcategories for race such as "Chinese" and "Japanese." These responses can be mapped into the "Asian" category for final reporting to funders.

### BEST PRACTICE

Include a "Decline to State" or "Refused" option for sensitive questions (e.g. Sexual Orientation) that staff is likely to skip over if they are uncomfortable or aren't sure how to sensitively ask. That way you can tell that they actually tried to collect the data ("Refused"), as opposed to skipping the question ("Unknown" or blank).

**AUTO-POPULATION.** Auto-population occurs when data fields are completed automatically with default values or using data collected during prior visits. For example, "Family Size" may default to "1" if it's not collected. Or "Income" at an April visit may be populated with the patient's income as of their March visit. This practice discourages staff from updating the data and can lead to inaccurate results.

### BEST PRACTICE

Avoid using auto-population. It can obscure unknown data, make it hard to see changes over time or obscure true values.

**RADIO BUTTONS.** Radio buttons contain a set of responses from which the user can choose one and only one. Typically they appear as a list where all possible answers are visible, and each answer has a circle that can be clicked to choose it.

6. Were you born between 1940 and 1970?

Not reviewed    No    Yes

**Use radio buttons** only if you are seeking a single answer among a set of choices. For example, you could use them for a question such as “Type of Provider.” Or you could use them to collect a person’s age from a set of age ranges. Just make sure that the age categories don’t overlap. For example, a 30 year old would not know whether to mark “20-30” or “30-40” when the age categories should have been “20-29” and “30-39.”

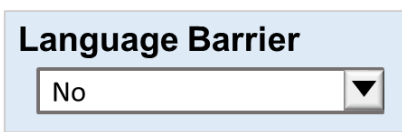
**Don’t use radio buttons** for data where you want users to select more than one, or all that apply. Don’t use them when a free text response might be needed to enter an unusual response.

#### BEST PRACTICE

It is particularly important to include an option of “Not reported,” “Unknown,” or “Missing” when using radio buttons. This is because once the user selects an option, the answers cannot easily be returned to their previous all blank (null) state. You can change the existing answer to a different answer, but you may not be able to reset it altogether. Including a “Not reported” option will allow users who accidentally answer the question to have an appropriate response to select if they don’t actually know the answer.

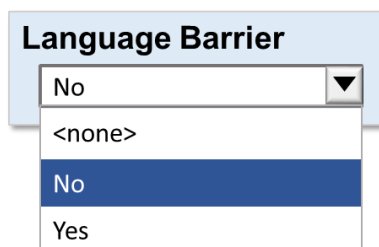
## DROP-DOWN MENUS / PICK-LISTS.

Drop-down menus are similar to radio buttons in that they include a list of all the response options. In addition, they take up less space on a data entry screen.



A screenshot of a data entry form titled "Language Barrier". It features a drop-down menu with a downward-pointing arrow on the right side. The menu is currently closed, and the text "No" is visible inside the input field.

Unlike radio buttons, they usually include a “blank” option so the user can reset the response to its initial unanswered state.



A screenshot of a data entry form titled "Language Barrier". The drop-down menu is open, showing a list of options: "No", "<none>", "No", and "Yes". The "No" option is highlighted with a blue background.

They can also include a free text option that can be used if the listed options are not comprehensive. Avoid or use this feature sparingly because respondents may skip over an applicable category and instead use the free text option to write in more specific

information. For example, a respondent may skip over “White” and write “German” as a free text option.

### BEST PRACTICE

In most cases, it’s best to use a “locked down” pick-list without a free text option. Otherwise you will find yourself with a recoding project each time you want to use the data.



**BEST PRACTICE**

When setting up a drop-down menu, order the menu options in a logical way such as alphabetical, conceptual, or most common response first. The goal is to make it as easy as possible for the respondent to find the answer they are looking for.

**FOR EXAMPLE: DON'T DO THIS**

Choices listed randomly:

**Homeless Status**

Not Homeless ▼

- Doubling Up
- Street
- Shelter
- Transitional
- Not Homeless**
- Unknown / Not Reported

**DO THIS INSTEAD**

Most common choice at top, all others alphabetical:

**Homeless Status**

Not Homeless ▼

- Not Homeless**
- Doubling Up
- Street
- Shelter
- Transitional
- Unknown / Not Reported

**CHECK BOXES.** Check boxes are answers or groups of answers that appear together on the screen. Unlike radio buttons, the user can select more than one.

**Race**

Black or African American ▼

- Asian
- Black or African American
- American Indian or Alaskan Native
- Native Hawaiian or Pacific Islander
- White
- Unknown / Not Reported

**Use check boxes** when you want to allow more than one response. For example, “Risk Factors for Asthma” should be set up as a set of check boxes since a patient might have more than one at the same time. On the other hand, “Asthma in the Last Year” should be set up as a set of radio buttons or a drop-down menu since you want to limit users to a single response.

The “Check all that apply” option can complicate reporting, but is sometimes necessary. For example, it is much simpler to ask clients to choose one race and include a “More than one” option. But you may find yourself needing to know the details of their multiple races.

You might need to manipulate data like these in different ways, sometimes using each individual race chosen by a client, and sometimes recoding multiple selections into a single “More than One” response.

Note that an unchecked checkbox is presumed as a “No” even if the user accidentally skipped over the option, deliberately skipped over the option, or wasn’t sure what the option meant. This can result in an overestimate of “No” responses since you’ll never know how many of the responses were actually skipped or not applicable.

### BEST PRACTICE

If your question has only one answer per client or per visit, format it with a drop-down menu rather than a check box. That way you’ll know for sure how many times the question was answered. You will have better information on data collection practices (i.e., how often staff are asking the question) and your calculations will be more accurate.

## Workflow

Successful data collection requires more than choosing the proper question format. You also need to consider who will ask the question and at what point in a client's visit it will be asked. Standardize these processes as much as possible to ensure consistency and improve the quality of your data.

### BEST PRACTICE

Get staff feedback on the best ways to incorporate new questions into the current workflow, and then train everyone on how and when to collect it. Make establishing data collection procedures an iterative process as you incorporate continuing suggestions for improvement.

Use existing data fields (rather than adding new fields) whenever possible. This is especially true when the data is already used for other reporting purposes (especially billing/payment), which increases the likelihood that staff will collect it.

Be on the lookout for “rogue workflow” approaches that individual staff members develop. These might work better for them but may not fit into data collection requirements. Or they may provide you with ideas on how to improve the process for everyone.

### BEST PRACTICE

Create new fields in a place that makes sense, where the staff will already be looking at the time they collect these data. Also, create or arrange fields under screens that staff can access easily. Consider placing data elements in multiple places to accommodate different staff (e.g. intake workers vs. clinicians) and different points in the workflow, unless it's important that such data collection points be standardized.

Build in ample time to test the data collection processes so you can identify common errors and make changes. Look for places where you can build edit checks into the system. These checks can flag or prohibit responses

that are impossible, such as a birthdate in the 1800's.

Ensuring data quality and completeness is an ongoing process. Data collection can change over time, backsliding into progressively poorer quality as staff turnover and competing priorities impact the process. Ongoing training efforts, and the provision of feedback in the form of reporting, can help you avoid these problems.

# Resources

## **Beacon Learning Guide: Capturing High Quality Electronic Health Records Data to Support Performance Improvement**

Learning guide from the Office of the National Coordinator for Health Information Technology. Includes: Identify and Engage Physician Champions and Stakeholders and Jointly Develop Vendor Engagement Strategy; Identify Measures, Identify and Map Data Elements, and Conduct Initial Data Quality Review; Develop and Implement EHR Data Quality; and Establish Process to Continuously Monitor EHR Data Quality and Resolve Data Quality Issues.

<https://www.healthit.gov/sites/default/files/onc-beacon-lg3-ehr-data-quality-and-performance-improvement.pdf>

## **Simple Data Collection Planning**

The Institute for Healthcare Improvement's short guide to basic data collection.

<http://www.ihc.org/resources/Pages/Tools/SimpleDataCollectionPlanning.aspx>

This learning guide was produced as a part of the Community Health Peer Learning (CHP) Program.

In 2015, the Office of the National Coordinator for Health Information Technology (ONC) awarded AcademyHealth \$2.2 million to cooperatively lead 15 communities in the CHP Program. Through this two-year program, AcademyHealth will work to establish a national peer learning collaborative addressing community-level population health management challenges through expanded collection, sharing, and use of electronic data. Learn more at [www.academyhealth.org/CHPhealthIT](http://www.academyhealth.org/CHPhealthIT).

