

The National Quality Center is pleased to bring you the Quality Academy, an online learning opportunity on key quality management concepts. The NQC provides no-cost, state-of the-art technical assistance for all Ryan White Program grantees to improve the quality of HIV care nationwide. The Center is funded through a cooperative agreement with the HRSA HIV/AIDS Bureau and managed by the New York State Department of Health AIDS Institute.

This Tutorial is titled:

Measurement and Data in Quality Improvement - Overview



Hello and welcome to the National Quality Center's Quality Academy.

This Tutorial presents an overview of the use of measurement and data in your quality improvement work.

Using measurement to support improvement rather than as an end in itself.

Taking key steps towards improvement: measure, assess variation, act on data findings.

Creating an environment where measuring performance is helpful.



Here's the key question we are going to work to answer in this Tutorial:

"Why is measurement so important to quality, and how does measurement support quality improvement?"

Pop Quiz					
	ŀ	How many peo HIV in the 18,000	ple were estimat United States in	ted to be living w the year 2007 43,000	ith
		929,000		1,300,000	
5	Using Measure to Support Improvement		National Quality Center (NQC)		

Let's begin our exploration of this question with another question.

Do you know how many people were estimated to be living with HIV in the United States in the year 2007?

18,000? 43,000? 929,000? 1.3 million?



In 2007, roughly 1.3 million people in the United States were living with HIV.

Let's think a bit about this number and what it means. 1.3 million is a measure. With this measure we can:

•Estimate resources that will be needed to care for these people

•Predict the number of cases of AIDS we can expect

•Evaluate, when we repeat the measure in 2008, whether the epidemic is getting worse or better

Having this measure gives us a lot more power in our work in HIV care than we would have if we just had the "gut instinct" that – hey, there's a lot of HIV in the United States.



"You can't improve what you can't measure." Measurement gives us power. And it enables us to see if we are improving.



You can actually think of measurement and quality improvement as ying and yang. Performance measurement enables quality improvement, and the desire to improve quality informs performance measurement. The two are dependent on each other.



As Paul Plsek, a quality expert, reminds us, "While deciding what to measure and how to measure it are important challenges, an equally important challenge lies in determining the appropriate reaction to the measurement once we have it."



Where does measurement fit into the whole improvement process?

Here's a flowchart of what's involved in improvement. Improvement begins with a decision about what's important in your organization – in your HIV program. You make these decisions as part of your strategic planning. Then, you select and define indicators to measure your performance, and look at the resulting data to evaluate how you are doing.

Is there a need to improve? If so, clarify the improvement opportunity, define the goal you wish to reach (which involves measurement), analyze your work process (which involves measurement), plan and test the changes you make, assess their impact (which involves measurement), determine whether the tested change helps achieve your goal (which involves measurement), and if so, institutionalize the change and continue to measure, to assess the impact of the change over time.

Measurement supports improvement. Improvement drives measurement.



Let's take a look at data points over time and evaluate the importance of variation.

Here's an example. This HIV program measures the percent of eligible patients who are assessed for treatment adherence, and this graph shows the program's performance, by month, for calendar year 2005. The results are shown in a run chart, a line graph that shows performance over time.

What can we say about this program's performance?

•It hovers in the high 70% range,

•The performance does not vary much from month to month, over time no big improvements or losses, and

•The variation in performance appears to be random, with no obvious patterns.

Given this performance, you could say that work in the program is pretty stable, month-to-month.



Here are the results for calendar year 2005 from another HIV program that measures the same thing: the percentage of eligible patients who are assessed for treatment adherence. What can we say about this program's performance?

We can say that, like Example # 1, in many months the performance hovers consistently in the high 70% range, but in April and October it dropped significantly, below 40%.

Does this program appear to have stable performance? No—something unusual took place in April, and in October.



Both programs show variation in their results. Each program's performance varied month-to-month: in fact, if it were the exact same every month, you'd begin to think the data were false.

The program in Example 1 has variation that results from a program where "the system of causes is constant or common." The program's operations are stable, and it shows what is called "common cause variation."

What are some of the possible reasons why the program has "common cause variation"?

The patients they see may vary. Patients attend the clinic with a certain constant no-show rate.

The providers may vary. Some may just be better at remembering adherence assessments than others.

The effectiveness of reminder systems may vary.

Now, what about the program in Example 2? For 10 months of the year, it is showing common cause variation, too, for all the reasons listed above. But something unusual happened in April and October, and so the performance rate variation in these two months is most likely the result of "special cause variation."

What could cause special cause variation for the program in Example 2? Unusually high patient volumes, due to electrical problems at a nearby clinic. A particular provider who was avid about adherence assessment was rotating out of the clinic or was on vacation.

A temporary total breakdown in the reminder system, medical record system or electronic medical record.

In short, something outside the ordinary.



Understanding which type of variation you are seeing is important, because the action you need to take depends on which type of variation it is. This flow chart shows the difference.

The program in Example 2 saw that it had a special problem in April and October; therefore, the action this program should take is to identify what that problem was, and deal with it.

The program in Example 1 "only" has to worry about common cause variation. So, the leaders in that program have two questions to answer: is our current performance, in the high 70% range, acceptable? If so, then the right thing to do is to keep monitoring. If not, if the program wants to improve its performance, the right thing to do is to work on the system as a whole. This isn't easy, and we'll talk more about how to do this in later Tutorials, but the pay-off can be significant.



Let's stop for a minute to review.

Would a change in the number of cancelled appointments during a heat wave be considered special cause variation or common cause variation?

The correct answer is special cause variation.



And another question to consider. Would changes in the number of women referred each quarter for GYN exams, in the absence of any other process changes, be considered special cause or common cause variation?

In this case, the answer is common cause variation.



Here's why understanding the difference between special and common cause variation matters. If a manager, or a leader, assumes that the variation is a result of special cause when, in fact, it is the result of common cause, the manager then ends up "tampering."

The term tampering was first used by quality pioneer W. Edwards Deming. You should avoid these tactics because tampering won't fix your problem, and it may actually make things worse.



Here are some examples of tampering in health care organizations.

•One primary care clinic's medical director was alarmed to see that for the past two weeks, her clinic had patient visits that numbered somewhat on the low side. As a result, she asked the clinic to double the number of appointments booked, and chaos resulted. She didn't look back over time, or she would have noticed that the low numbers she was reacting to were well within a normal pattern of variation for the patients seen by that clinic.

•A visiting nurse was penalized for not "making quota" in the number of home visits made. The quota had been arbitrarily set and did not consider things like how large a geographic area each nurse had to cover. The nurses with patients close together could easily more than make quota. The nurse whose patients were widely scattered could never make it. The cause was common but singling out one nurse for criticism was treating the cause as if it were special.

•Tampering can work with praise, too. Do you feel good when you're praised for something you know you had absolutely no control over? The causes of waiting time in a clinic are many and complex, and physicians play only one small part. Being praised didn't help this physician, and it angered and demoralized his colleagues.



How do we tell the difference between common cause and special cause variation?

First, plot data over time. Looking at the patterns of variation over time helps you identify common or special cause.

Look for trends or patterns in the data. Anything that doesn't seem random is a sign that there's a special cause.

If you know about control charts, use them. If you don't know about them – and would like to know more – use some of the references noted at the end of this Tutorial, especially the work of Raymond Carey.



Harry Roberts, who has written a useful book on quality called "Quality is Personal" provides some help in identifying trends. He recommends using "Berkson's Interocular Traumatic Test." Sometimes, as with our Examples 1 and 2, the data "hit you right between the eyes."

What are some simple ways to identify trends?

Six consecutive data points trending in one direction is a significant trend. Try to identify the special cause that is making the trend happen.

Obvious clumping: like Example 2, with the two data points clearly different from the rest

Repeating patterns. Seasonal variation may be a special cause that you will want to understand and address.

Statistical analysis helps precisely identify special cause, but the analysis can be complex. See what the "interocular traumatic test" can show you to help you differentiate special and common cause.



Again, we care about differentiating the two because we don't want to tamper. Tampering is bad because

•It doesn't fix the problem and can make things worse (like the overscheduled clinic that descended into chaos)

•It frustrates and demoralizes staff who are punished, or praised, for normallyoccurring variation.

•When tampering happens, it could lead to mistrust of data. People begin to feel that data will be used against them, no matter what, and they withdraw from any effort to measure – and therefore improve – performance.



William Sherkenbach, of the Ford Motor Company, coined the "Cycle of Fear" in the early 1980s. It refers to reaction to measurement that is used to assign blame.

If people feel measurement will be used to assign blame, they begin to fear measurement. Their reaction, as their fear increases, is to, first, kill the messenger – they react with defensiveness, anger, and non-cooperation. The next step is to filter the information: make sure that whatever measures get reported show that everything is just fine, thank you. Management, catching on that information is being filtered, begins to micromanage to get the "true" story, and through micromanagement creates more fear that starts the cycle all over again.

Can you think of examples of the cycle of fear?



The way to break the cycle of fear is with transparency about the measurement you are doing.

In deciding what to measure, involve a broad range of constituents and be inclusive throughout the process.

Share the results, create an open environment. Results should not be held secret. Results are information that will help you improve, and improvement is everyone's goal.

Listen to people when they describe results. They know things about their work processes you don't, and this information is valuable for improvement.

Understand what tampering is, and don't do it! It will damage your organization.



Your organization has begun to collect data on several performance measures, and the staff are anxious. What can you do to reduce this anxiety?

A) Make sure everyone knows the measures that will be used, when and how the data will be collected, and what will happen to the results.

B) Limit distribution of the results to only a few people, so staff won't be comparing their performance to others.

C) Have each manager meet with the CEO to explain why his or her department's numbers are so bad.

D) Begin to chart the data over time and post the charts in the cafeteria

E) (a) and (b)

F) (a), (c) and (d)

G) (a) and (d) – G is the correct answer, make sure everyone knows the measures and begin to chart the data over time



Let's summarize what we've learned in this Tutorial.

•Measurement is critical to improvement. You can't improve what you can't measure.

•Measurement is not an end in itself. Improvement is the goal; measurement is important throughout the improvement journey.

•People may feel threatened by measurement because (through experiences like tampering) they may have had bad experiences with it in the past. Work to remove this sense of threat, and help staff feel like they have some ownership of the measurement taking place in their organization.



If you would like to learn more on this topic, please refer to the sources used in the making of this Tutorial. You can also contact the National Quality Center for more help, at NationalQualityCenter.org.



This concludes our training session. Thank you.