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2010 Global Health Council Annual Conference Workshop

Implementing a Gap Analysis Framework to Improve Quality of Care for Your Patients

CASE STUDY: IMPROVING CARE FOR PATIENTS ON ART

JUNE 2010

This workshop participant manual was prepared by University Research Co., LLC, for review by the United States Agency for International Development (USAID) and was authored by Shawn Dick, Suzanne Gaudreault, and Fazila Shakir.. The USAID Health Care Improvement Project is made possible by the generous support of the American people through USAID.

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Annual Conference Workshop

Implementing a Gap Analysis Framework to Improve Quality of Care for Your Patients

Case Study: Improving Care for Patients on ART

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USAID Health Care Improvement Project (HCI)
Quality and Performance Institute (QPI)
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June 2010

Acknowledgements

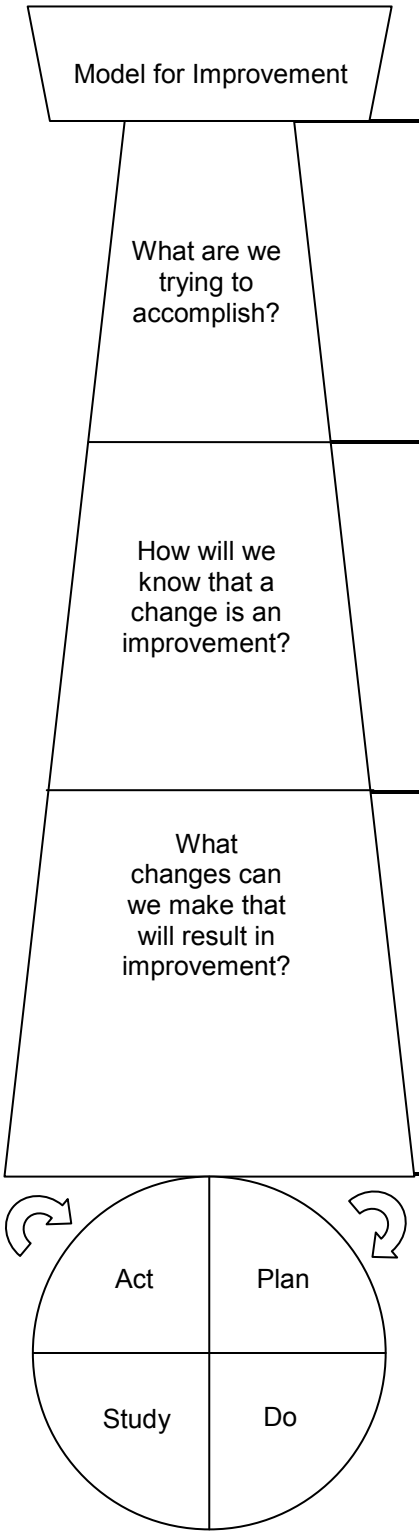
This training case study was developed by University Research Co., LLC (URC) through the Health Care Improvement (HCI) Project, which is made possible by the generous support of the American people through the United States Agency for International Development (USAID). Support for the development of this case study was provided by the President's Emergency Plan for AIDS Relief (PEPFAR) through USAID. The USAID HCI Project is managed by URC under the terms of Contract Number GHN-I-03-07-00003-00.

URC's subcontractors for the HCI Project include EnCompass LLC, Family Health International, Health Research Inc., Initiatives Inc., Institute for Healthcare Improvement, Johns Hopkins University Center for Communication Programs, and Management Systems International.

For more information on applying the Gap Analysis Framework to improving quality of care for patients on ART, please visit www.hciproject.org/improvinghivcare.

Recommended citation: Dick S, Gaudreault S, and Shakir F. 2010. Implementing a Gap Analysis Framework to Improve Quality of Care for Your Patients. Case Study: Improving Care for Patients on ART. Published by the USAID Health Care Improvement Project. Bethesda, MD: University Research Co., LLC (URC).

How to Implement a Gap Analysis Framework to Improve Quality of Care for Your Patients



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**Nolan Model Diagram; Associates in Process Improvement (API)*

Introduction: Quality Improvement Overview and Introduction to the Gap Analysis Framework

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Implementing a Gap Analysis Framework to Improve Quality of Care for your Patients

OBJECTIVES - By the end of the workshop participants will be able to:

- **Define a high quality ART program**
- **Identify a few data points which, when analyzed together, reveal gaps in ART program quality**
- **Gather data to reveal the quality gaps**
- **Identify causes of the gaps**
- **Generate and test changes to close the gaps**
- **Provide ongoing monitoring of the data points and gaps to drive continuous improvement in program quality**

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QI Overview

"Crossing the Quality Chasm" IOM 2001: "Between the health care we have and the care we can have lies not only a gap, but a chasm ….. the problems come from poor systems – not bad people"

From an Improvement Perspective: "Every system is perfectly designed to achieve exactly the results it achieves"

Guiding Principles of Improvement:

- Analyze patient care in terms of processes and systems
- Patient-centeredness is essential
- Solutions should be developed by teams of providers, patients, and support staff as appropriate
- Changes are tested and results measured to drive improvement

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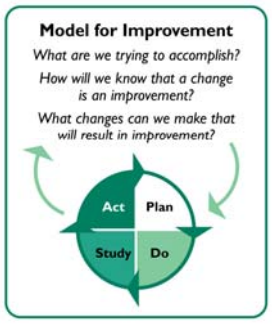

Nolan Model Diagram; Associates in Process Improvement (API)

What is Quality Care for Patients on ART?

- **Everyone who needs treatment receives it.**
- **Everyone who receives treatment is retained in care.**
- **Everyone in care has a good clinical outcome.**

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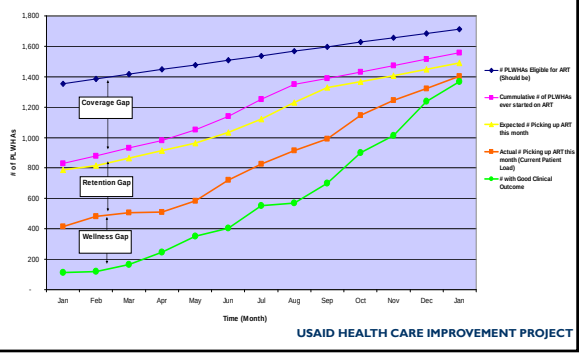
Gaps Analysis Framework for Improving Care for Patients on ART



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Where else can a Gaps Analysis Framework for improvement be applied?

*Situations in which the **potential** number of patients reaching a certain healthcare goal can be measured or closely estimated, then compared to the **actual** number of patients reaching this goal.*

Examples include situations in which patients receive:

- care for chronic conditions
- long-term treatment, especially in outpatient and community-based programs
- periodic follow up over time
- short term follow up to verify status or success of treatment

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Section 1: Identify Your Target Population and Improvement Aim

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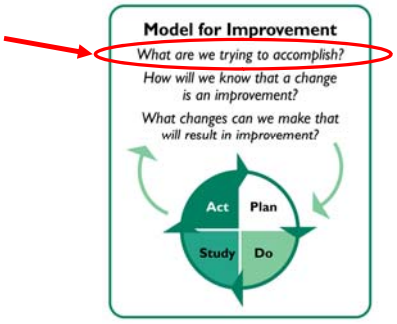

*Nolan Model Diagram; Associates in Process Improvement (API)

What are we trying to accomplish?

Compose a good Aim Statement:

- **Aim Statement:** a measurable, and time-sensitive description of the accomplishments expected to be made from improvement efforts
- A good aim statement includes: a **timeframe**, a **defined target population** (eg. catchment area or district), a brief description of the **work to be performed,** and **numerical performance/outcomes measures**

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Example Aim Statement

- **Using gaps analysis to guide quality improvement activities, our clinic will: provide ART for 90% of the estimated 2500 ART - eligible patients in our catchment area, retain 95% of patients started and expected to continue on ART, and achieve good clinical outcomes for 95% of patients retained on ART. These targets will be achieved by the end of 18 months.**

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Case Study Part 1: Welcome to the Basabasa Clinic

The Basabasa clinic provides antiretroviral therapy (ART) for patients in a rural district of a country with a high HIV prevalence. The clinic has over 1,000 patients receiving HIV services and is continuously putting new patients on ART as they become eligible for treatment.

The clinic serves the district population by: 1) identifying and enrolling HIV-infected patients in care, 2) starting patients on ART when they become eligible for it, 3) helping patients adhere to their ARV regimens, and 4) providing proper treatment and prevention for HIV/AIDS-related conditions and infections and for medication side effects. The clinic team leader, Dr. Fazil knows that there are some problems with each of these services. She knows that some people in the community who should be on treatment have not been to the clinic. She also knows that many patients miss appointments or are not always adhering to their medications, and that some patients have improperly treated opportunistic infections (OI's), medication side effects, and other AIDS-related conditions. As a result, patients in the clinic are not always doing as well as the clinic staff would like.

Dr. Fazil and the staff of the clinic want better outcomes for the HIV-infected people in their catchment area. This means getting people who need ARVs on treatment (improving coverage), helping patients remain in care (improving retention), and helping patients become and stay healthy (improving outcomes).

The clinic team agreed to work on improving services for HIV-infected people in their district and developed the following aim statement:

The team decided that their aim should be:

> "In the Basabasa clinic, we will implement changes aimed at reducing the gaps in coverage, retention, and wellness in order to increase the number of ART-eligible patients in our catchment area enrolled in ART who are enrolled on ART, retained in care, and have either stable or improving health status. "

Example 1: Establishing your Quality Improvement Aims

If you provide ART services for a population and would like to increase the number of HIV-infected persons with positive outcomes, you can develop a clear aim statement by answering the following questions.

Where will your improvement project be implemented: ___the Basabasa clinic_____(A)

- Your site such as a district, town or clinic.

Who are your potential patients (catchment population): __all HIV-positive_____ ____persons in our catchment area who are eligible for ART____(B)

- What health problem are you trying to address? Where are the people with this health problem located? What characteristics of people with this health problem set them apart from others?

What outcome do you want to see for your patients: ___enrolled on ART, retained in care, and either stable or improving health status_____(C)

- What aspects of health care or patient health are you trying to improve? What does a patent need to receive or achieve in order for you to consider your services fully successful?

Put together your responses to complete the aim statement for your improvement project:

In (A)_____the Basabasa clinic _____, we will implement changes aimed at reducing the gaps in coverage, retention, and wellness in order to increase the number of

(B)_ART-eligible patients in our catchment area enrolled in ART_

who are (C) enrolled on ART, retained in care, and have either stable or improving health status._____

Exercise 1: Establishing your Quality Improvement Aims

If you provide ART services for a population and would like to increase the number of HIV-infected persons with positive outcomes, you can develop a clear aim statement by answering the following questions.

Where will your improvement project be implemented: _____

_____(A)

- Your site, such as a district, town, or clinic.

Who are your potential patients (catchment population): _____

_____(B)

- What health problem are you trying to address? Where are the people with this health problem located? What characteristics of people with this health problem set them apart from others?

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- What aspects of health care or patient health are you trying to improve? What does a patent need to receive or achieve in order for you to consider your services fully successful?

Put together your responses to complete the aim statement for your improvement project:

In (A)_____, we will implement changes aimed at reducing the gaps in coverage, retention, and wellness in order to increase the number of

(B)_____

_____

who (C)_____

_____

Section 2: Who falls through the gaps?

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Section 2:
Who falls through the gaps?

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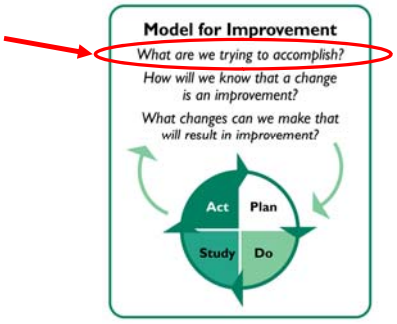

*Nolan Model Diagram; Associates in Process Improvement (API)

Exercise 2:
Where are the HIV service gaps which prohibit some HIV-infected people from achieving good health?

In your **workbook:**

1) Referring back to your aim statement, consider that ART- eligible patients in the community must be identified and supported to ultimately achieve and maintain good health.

2) The HIV services that are in place allow many HIV-infected people to achieve and maintain good health, but many others do not benefit from these services, and ultimately get very sick and die. Where are the gaps in services?

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Case Study Part 2: What goals must people with HIV/AIDS reach in order to achieve good health outcomes?

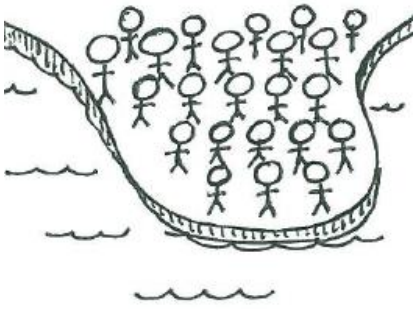
The staff of the Basabasa clinic outlined the goals that must be reached as ART-eligible people progress from being identified as needing services to achieving good treatment outcomes. The first steps for any HIV-infected person is to be tested and present to the clinic for care. The clinic staff knows that many ART-eligible patients in the community have never been tested and/or have never come to the clinic for care. This is the coverage gap.

Once patients take those first steps of being tested and coming to the clinic, they are registered and started on ART. The next step is to continue treatment by keeping regular appointments. However, many patients do not come back to the clinic consistently, return late for appointments, become lost or discontinue treatment altogether. The difference between those who have started ART and the number still in care at any point in time is the retention gap.

Not all patients who are on ART achieve good health outcomes. Some patients suffer from malnutrition, ineffectively treated opportunistic infections, or other health problems. The wellness gap is revealed by the number of patients who come to the clinic for their appointments yet whose health status is still not good.

Example 2: What are the gaps and who falls through them?

Referring back to your aim statement, consider the population that you are trying to reach and the people who could potentially benefit from the services you are trying to improve. Starting at the top of this page, consider all the patients who should benefit from ART and how many of them are truly accessing services. Then consider how many of those who access ART are actually maintained on ART. Finally, consider how many of the patients retained in care actually have good clinical outcomes. By recognizing the gaps in numbers of patients achieving each of these goals, you will identify and can measure the major gaps in services.



Total population in your area

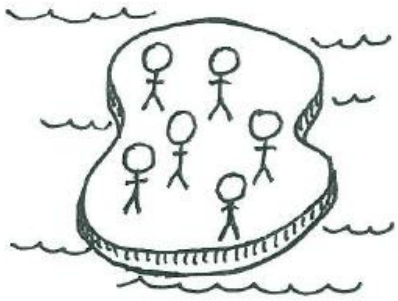
Your potential patients are: all HIV-positive patients in our catchment area eligible for ART (measure 1)

Gap A: Coverage Gap

The patients who have actually accessed needed services are: All patients we ever started on ART (measure 2)

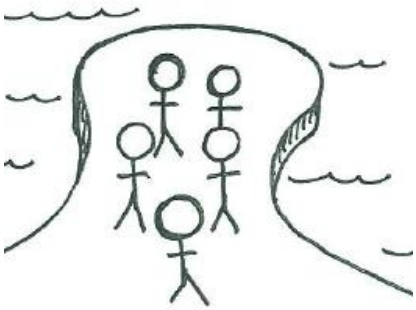
The patients who could potentially be retained in care are: all patients we expect to continue on ART (those not transferred or deceased) (measure 3)

Gap B: Retention Gap



The patients you have actually retained on ART and who could potentially achieve and maintain good clinical outcomes are: those who regularly return for their appointments and are able to get all their prescribed ARVs (measure 4)

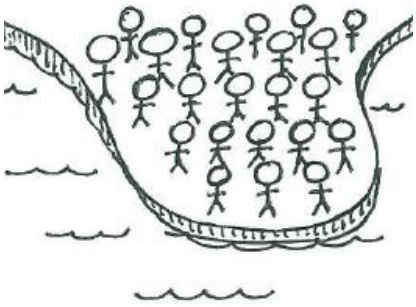
Gap C: Wellness Gap



The patients who have actually achieved the goal of the ART services you provide are: those whose health status improves or remains stable (measure 5)

Example 2: What are the gaps and who falls through them?

Referring back to your aim statement, consider the population that you are trying to reach and the people who could potentially benefit from the services you are trying to improve. Starting at the top of this page, consider all the patients who should benefit from ART and how many of them are truly accessing services. Then consider how many of those who access ART are actually maintained on ART. Finally, consider how many of the patients retained in care actually have good clinical outcomes. By recognizing the gaps in numbers of patients achieving each of these goals you will identify and can measure the major gaps in services.

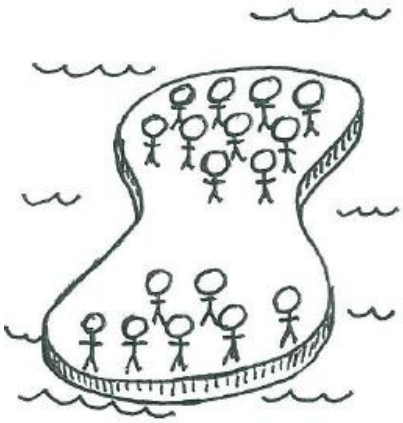


The people potentially needing ART services are:

_____

_____(measure 1)

Gap A: _____



The patients who have actually accessed needed services are:

_____

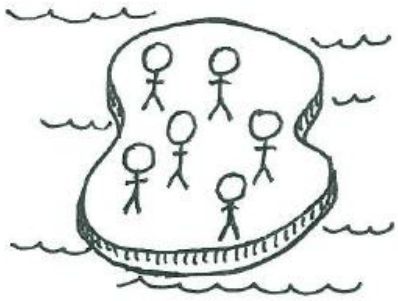
_____(measure 2)

The patients who could potentially be retained on ART at your facility are:

_____

_____ _ (measure 3)

Gap B:__ _____

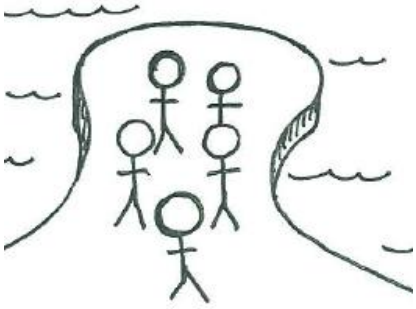


The patients you have actually retained on ART and who could potentially achieve and maintain good clinical outcomes are:__

_____

_____ (measure 4)

Gap C:__ _____



The patients who have actually achieved the goal of the ART services you provide are:

_____

_____(measure 5)

Section 3: Collecting the Data

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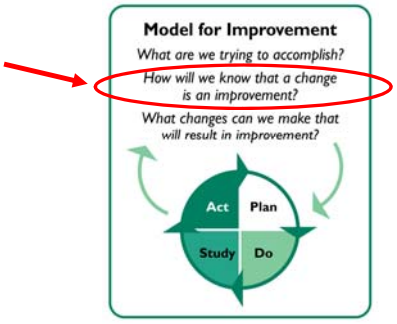

*Nolan Model Diagram; Associates in Process Improvement (API)

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Why measure?

- If you don't measure the results of your changes, how will you know if your changes are improvements?
- Always ask: What is the minimum amount of measurement that you need in order to determine that a change is an improvement?

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Considerations in choosing a good indicator

- The meaning is **clear and unambiguous.**
- It is readily **quantifiable.**
- When using percentages the **numerator** and **denominator** are clear and well-defined.
- The **source** of the data and the **person** collecting it are identifiable.
- The **frequency** with which the data should be collected is practical for the chosen indicator.

Measurement of Quality Indicators: #1 - Coverage

Coverage: *Percentage of people who actually receive ART compared to those who are eligible for it*

Measurement of eligible/potential ART patients (*an estimate*):

- Catchment Population = 100,000
- HIV Prevalence = 5.0% --> 5,000 PLWHAs
- Annual Progression from HIV-infected to ART-eligible = 10%
- ART Mortality = 5% of people on ART die
- Children needing ART=15% of total ART need

Measurement of number of patients actually starting ART:

- From new ART visits or doses dispensed

Coverage:

- Numerator: # patients actually started on ART
- Denominator: # patients eligible for ART

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Measurement of Quality Indicators: #2 - Retention

Retention: *Percentage of patients who are actually on ART at any given time compared to those who would be expected to be on ART*

Measurement of patients started on ART:

– This could be calculated from:
  - Number of people on ART seen during a specified period
  - Number of ART doses dispensed last month

– **Retention**:
  - Numerator: # of patients actually on ART
  - Denominator: # of patients ever started on ART minus deaths & transfers (*potential number on ART)*

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Measurement of Quality Indicators: #3 - Clinical Outcomes

Wellness: *Percentage of patients who are currently on ART and have good clinical outcomes*

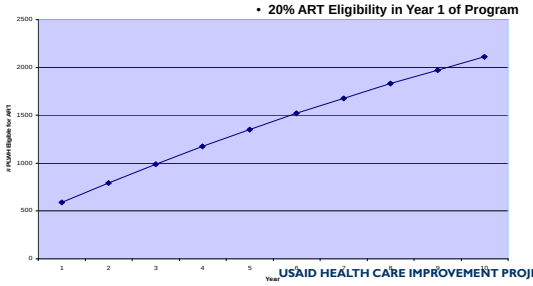
Measurement of patients with good clinical outcomes:

- Based on clinical criteria:
  - Stable weight (no weight loss >2kg)
  - Working or Ambulatory functional status
  - No worsening of disease as defined by Clinical Stage
  - Optional criteria based on CD4 or viral load when available
- Requires review of documentation which teams should work to improve if the information is not readily available
- **Wellness:**
  - Numerator: # of patients with good clinical outcomes
  - Denominator: # of patients actually on ART

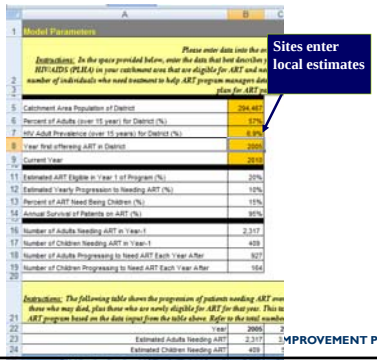
Estimating Coverage: Number of Adults on ART

How many PLWHAs will need ART?

- **CA=100,000 & P=0.05 (5,000 PLWHAs)**
- **10% Annual Progress to ART Eligibility**
- **95% Annual Survival Rate**
- **Children make up 15% of total**
- **20% ART Eligibility in Year 1 of Program**



Estimating Coverage: Excel Model & Dataset



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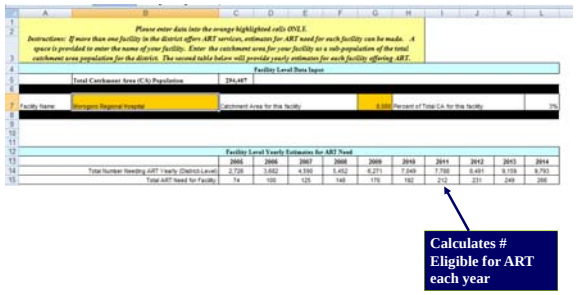

Calculates # Eligible for ART each year

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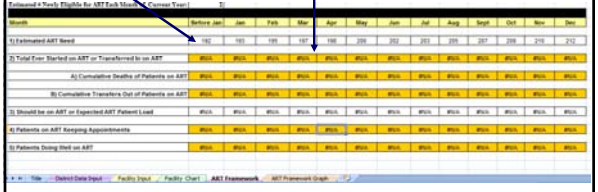
Estimating Coverage: Excel Model & Dataset

Monthly estimates for patients needing ART

Cumulative (Ever started on ART)



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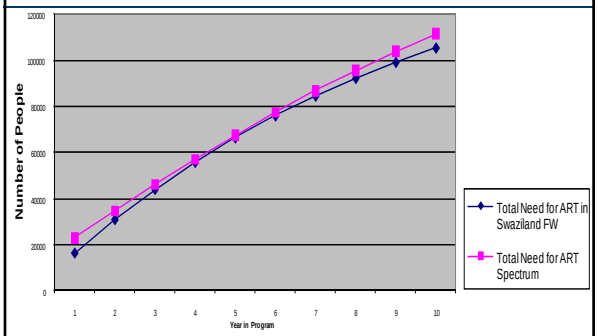
Comparing SPECTRUM to 'ART Framework Calculator' Estimates for ART Need in Swaziland (Adults & Children)



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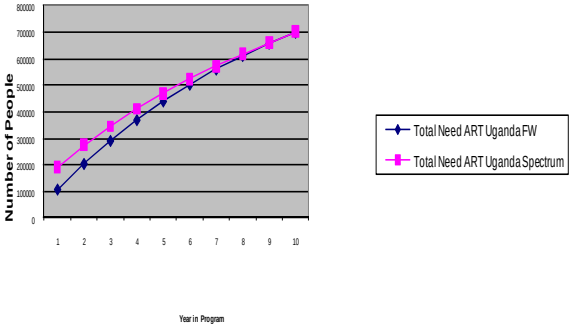
Comparing SPECTRUM to 'ART Framework Calculator' Estimates for ART Need in Uganda (Adults & Children)



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Exercise 3: How will you measure your indicators?

In your **workbook**, look at each group of patients and decide how you will measure their numbers.

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Case Study Part 3: How many potential patients are out there and how many do we have coming to the clinic?

Dr. Fazil and the rest of the team know that all quality improvement projects are driven by data, relying on measurement and monitoring of indicators, both to identify gaps in services and to know whether the changes implemented are improving outcomes.

Having identified the service gaps that they would like to address and the indicators that will reveal these gaps, the team plans how to collect their baseline data.

The first measure, which is the number of potential patients in the catchment area, is the most difficult to calculate. It is only possible to estimate their numbers based upon population and prevalence data. Fortunately, the clinic has recently hired a new data clerk, Ms. Malia, who is familiar with the regional data on HIV prevalence.

She devised a simple way to calculate expected patients in the clinic's catchment area using data she had readily available. Starting with the local population estimate, she knows that the prevalence in her region averages 22%. Of those 22%, she knows that approximately 20% would have been eligible for ART the year her clinic began offering ART services, with an increase of 10% needing ART each year. Using these figures, she is able to calculate the estimated number of ART-eligible people in the clinic's catchment area.

Through further research, she discovered an excel-based ART-framework coverage calculator available online. This calculator uses similar data as her original simple method, but also factors in statistical growth models and the length of time the clinic has been offering ART services. This allows a facility or district to estimate how many people should be on ART now and in the future.

The second measure that needs to be collected is the number of patients the clinic has started on ART. Data on patients started on ART each month is readily available in the patient records and regularly reported to the Ministry of Health. It was decided that Mr. Robinson, the reception clerk, would count the number of new patients started on ART and patients transferring in on ART each month and add it to the number of existing patients. He then reports that figure monthly to Ms. Malia as the cumulative number of patients who have ever started ART.

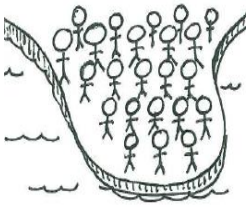
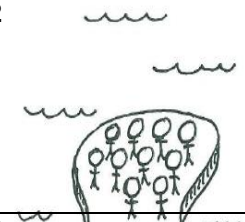
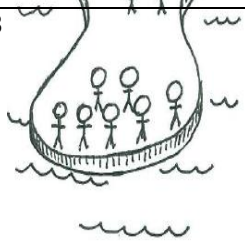
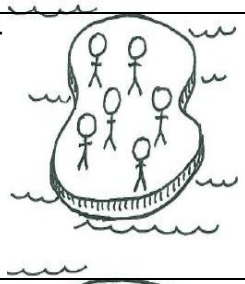
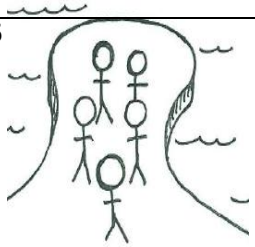
Mr. Robinson also records the number of patients who have died or who have been transferred to another clinic. The number of patients that the clinic expects to continue on ART is thus the total number of patients ever started on ART minus the number who have been transferred or who have died.

The clinic keeps an appointment book and registers the date of next appointment for each patient before they leave. Patients listed as having appointments on any given clinic day are checked off as they arrive. Mr. Robinson reviews the appointment book at the end of each week and records the number of patients who have kept their appointments. Sometimes patients miss their appointments but come to the clinic in time to refill their prescriptions so that they do not miss any ARV doses. This practice is discouraged, but these patients are recorded as having kept their appointments since the main objective is not to miss ARV doses.

The final measure, number of patients whose health status is stable or improving, was obtained by the nurses by reviewing the ART patient files in which weight, clinical stage, and functional status are recorded for each visit. After the baseline data was collected, a register of "patients with worsening clinical status" was established. This greatly facilitated future monthly data collection and patient follow up.

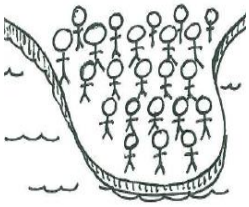
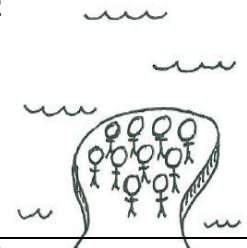
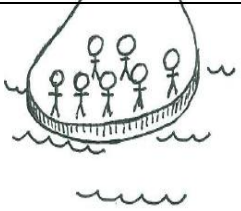
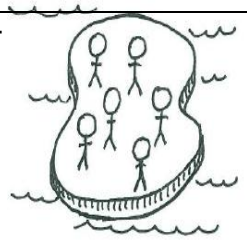
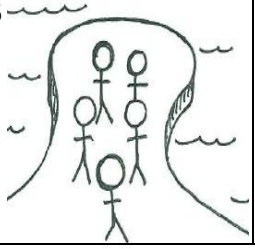
Example 3: How will you determine your patient numbers?

Refer back to the previous exercise in which you identified the relevant data points and the gaps in services. The number of patients at each step must be measured at baseline and monitored as changes are implemented. This will allow you to measure whether changes lead to improvement.

Group/Measure	Data Collection
1 	Who are the potential patients? persons eligible for ART in the catchment area . Where will you get the data? from official health and demographic surveys . Who will collect this data? Ms. Malia, the data clerk How often will it be collected? monthly How will it be calculated? population and prevalence data will be entered into the excel-based coverage calculator .
2 	Who are the actual patients? all patients ever started on ART Where will you get the data? from the official ART register . Who will collect this data? reception clerk . How often will it be collected? monthly .
3 	Who is potentially maintained on ART ? patients expected to continue ART Where will you get data on their numbers? patient files that have . not been archived due to death or transfer . How often will it be collected? monthly .
4 	Who is actually maintained on ART? patients who keep their appointments and refill their ARV prescriptions on time. Where will you get data on their numbers? appointment register. Who will collect this data? the reception clerk . How often will it be collected? monthly .
5 	Who actually has good clinical outcomes on ART? patients with stable or improving health status . Where will you get data on their numbers? patient files initially, then the registry of patients "not doing well" once it is developed . Who will collect this data? the nursing staff . How often will it be collected? monthly .

Exercise 3: How will you determine your patient numbers?

Refer back to the previous exercise in which you identified the relevant data points and the gaps in services. The number of patients at each step must be measured at baseline and monitored as changes are implemented. This will allow you to measure whether changes lead to improvement.

Group/Measure	Data Collection
1 	Who are the potential patients? _____. Where will you get the data?_____ Who will collect this data? _____ How often will it be collected?_____ How will it be calculated?_____ _____
2 	Who are the actual patients?_____ Where will you get the data?_____ Who will collect this data? _____ How often will it be collected?_____
3 	Who is potentially maintained on ART? _____ _____ Where will you get data on their numbers?_____ Who will collect this data? _____ How often will it be collected?_____
4 	Who is actually maintained on ART? _____ Where will you get data on their numbers?_____ Who will collect this data? _____ How often will it be collected?_____
5 	Who actually has good clinical outcomes on ART? _____ _ Where will you get data on their numbers?_____ Who will collect this data? _____ How often will it be collected?_____

Section 4: The Gap Analysis Time Series Plot

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Section 4: The Gap Analysis Time Series Plot

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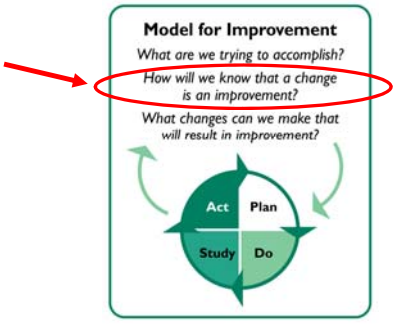


*Nolan Model Diagram; Associates in Process Improvement (API)

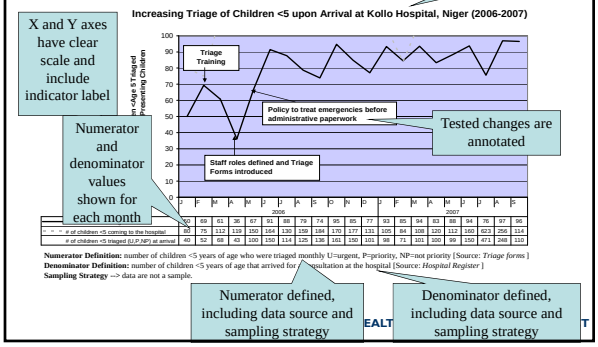
Elements of a simple Time-Series Chart

Clear and well-defined title that includes what and when

X and Y axes have clear scale and include indicator label

Numerator and denominator values shown for each month

Tested changes are annotated



Numerator defined, including data source and sampling strategy

Denominator defined, including data source and sampling strategy

Using Time Series Charts in Gaps Analysis

- In Gaps Analysis: two or more data points are plotted together. These data points must be subsets of each other, representing potential and actual numbers of persons achieving specified healthcare goals.
- The differences between the potential and the actual numbers along the time series lines represent the "gaps".

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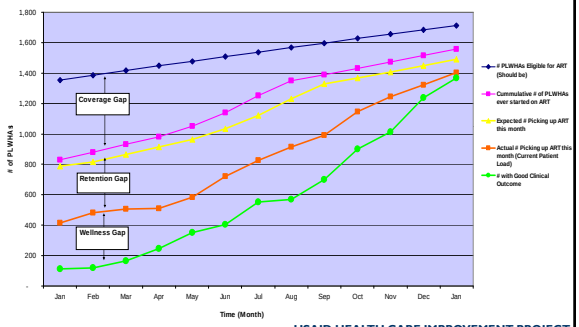
Gap Analysis Framework for Improving Care for Patients on ART



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Exercise 4: Create a Gaps AnalysisTime Series Chart

Sample Data for Time-Series Charts:

		Jan	Feb	Mar	Apr	May	Jun
1	patients eligible for ART in the catchment area	800	810	820	830	840	850
2	Patients registered and started on ART	500	506	515	522	523	528
3	patients expected to continue on ART	476	481	488	498	500	507
4	Patients that have attended their appointments	352	359	365	374	381	392
5	Patients with stable or improving health status	285	292	299	314	321	329

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Case Study Part 4: Collecting and plotting the data

The staff at the clinic began collecting data for the gap analysis so that they could discover the size of the gaps and consider the reasons for them before implementing changes. This also helped them establish a baseline so that they could determine whether their changes would actually lead to improvement. Because most of the data was readily available in the clinic, and staff worked together to collect it, they were able to collect six months worth of data before beginning their improvement activities.

The data clerk prepared a time series chart using this first six months of data. She set up the chart with time running along the X-axis in increments of one month to match the frequency at which they planned to collect and plot data. Then she marked the Y-axis from zero up to the estimated number of potential patients, leaving room for that figure to grow over time.

Each measure was then added to the bottom of the chart in the order originally identified, and the data was transferred here.

After plotting all of the points and tracing a line showing the trend for each measure, a time series chart was created showing all the lines, each one running slightly below the last.

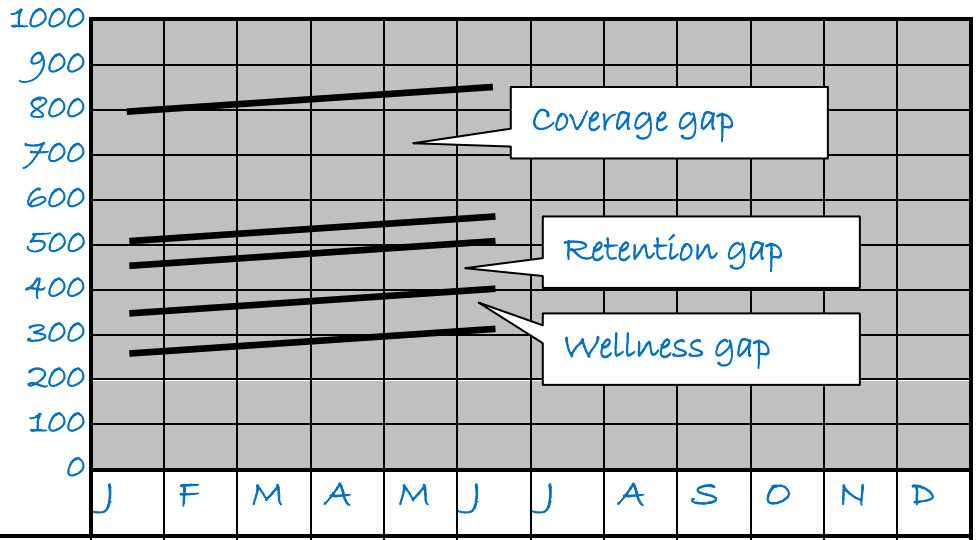
Between these lines, the three critical gaps, coverage, retention, and wellness are clearly seen.

After reviewing the data, Dr. Fazil and her team decided to make their aim statement more specific by quantifying targets for each critical gap:

> "By the end of 6 months we will: 1) provide ART for 80% of those ART - eligible patients in our catchment area; 2) retain 80% patients started and expected to continue on ART; and 3) achieve good clinical outcomes for 90% patients retained on ART"

Example 4: Create your own time series chart

Numbers of HIV-positive patients eligible for ART and in treatment at the Basabasa clinic



1	patients eligible for ART in the catchment area	800	810	820	830	840	850	860	870	880	890	900	910
2	Patients registered and started on ART	500	506	515	522	523	528						
3	patients expected to continue on ART	476	481	488	498	500	507						
4	Patients that have attended their appointments	352	359	365	374	381	392						
5	Patients with stable or improving health status	285	292	299	314	321	329						

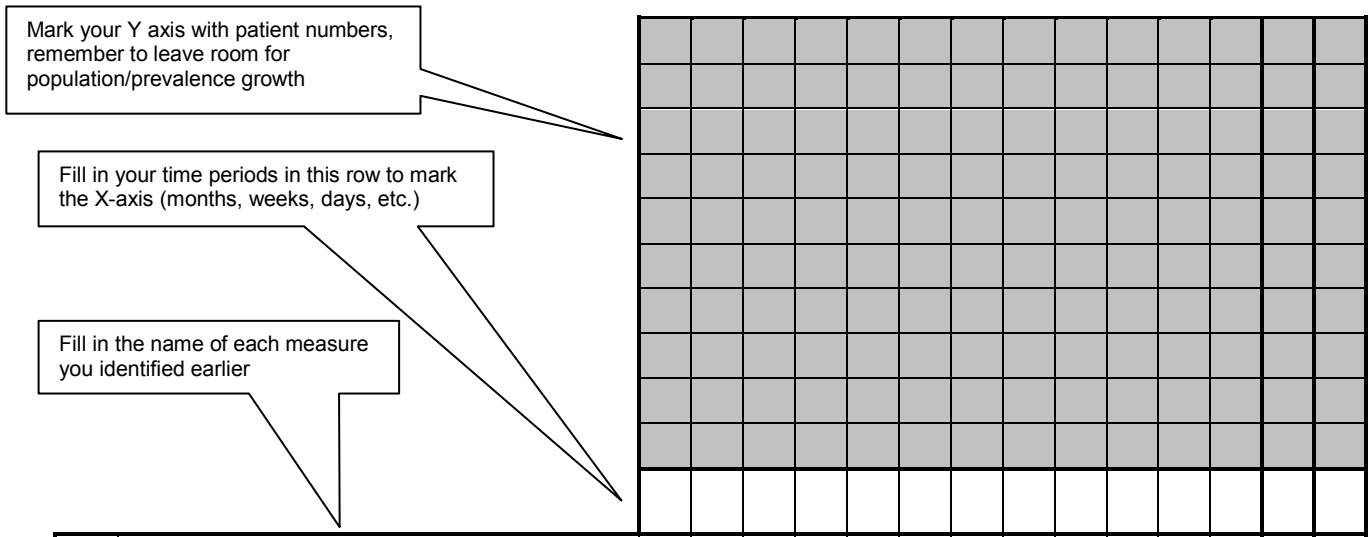
Once you plot your baseline data, you should be able to clearly see each of the critical gaps in the graph as the distance between each measure's line:

- Coverage gap (A): exists between the top-most line (measure 1) and the second line (measure 2)
- Retention gap (B): exists between the middle line (measure 3) and the one below it (measure 4)
- Wellness gap (C): exists between the second line from the bottom (measure 4) and the bottom line (measure 5)

Exercise 4: Create your own time series chart

Complete the blanks below with real or theoretical data to create the run chart for your improvement project. This can be done at your facility if you would like to use real data.

(Title: Using your aim statement; try to include as much information as possible)



1														
2														
3														
4														
5														

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Section 5: Understand Causes Behind the Gaps

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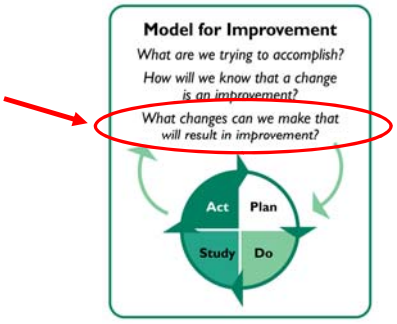

*Nolan Model Diagram; Associates in Process Improvement (API)

Considerations in prioritizing which gaps to address first

- **Size of gap**
- **Ease with which a change designed to address gaps can be implemented:**
  - Are new resources needed?
  - Is the necessary infrastructure in place?
  - Do the problems leading to the gap need to be addressed at a higher level of the healthcare system?
- **Urgency of reducing the gap**
- **Etc….**

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How to understand barriers to quality care

- **Brainstorm individually and as a team**
- **Review records (especially to understand gaps in clinical outcomes)**
- **Discuss with community-based organizations and other members of the community**
- **Map patient journey through the health care process**
- **Discuss with patients, individually and in focus groups**
- **Etc....**

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EXAMPLE: To address the retention gap, the Basabasa clinic team brainstormed together then spoke with patients who had missed their appointments and with those who regularly kept their appointments

Why did you miss your last ART visit?

Examples of reasons reported:	Total #	%
•Transportation / distance barriers	27	*56*
•Conflicts with work schedule	11	*23*
•Too many visits	4	*8*
•Too sick to travel to clinic	3	*6*
•"Feel fine"	1	*2*
•Death of loved one	1	*2*
•Moved to a different region	1	*2*

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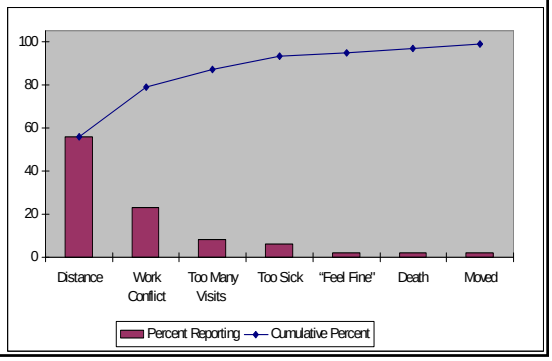
Pareto Chart of Reasons for Missing Visits



Exercise 5: What barriers affect quality of care for your patients?

In your **workbook**, below each of the gaps, list barriers that patients may face in accessing and receiving quality ART services.

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Case Study Part 5: Why do patients miss appointments?

The staff of the Basabasa clinic reviewed the gaps together. Surprised at the size of the retention gap, they decided to focus on this one first. They brainstormed together to identify reasons for patients missing appointments. The consensus was that many of their patients do not fully understand the importance of keeping appointments and of not running out of ARVs. Most of the staff felt that they did not have the skills to effectively teach all of their patients about the importance of attending clinic regularly. They decided to request training on patient education from the District Health Management Team.

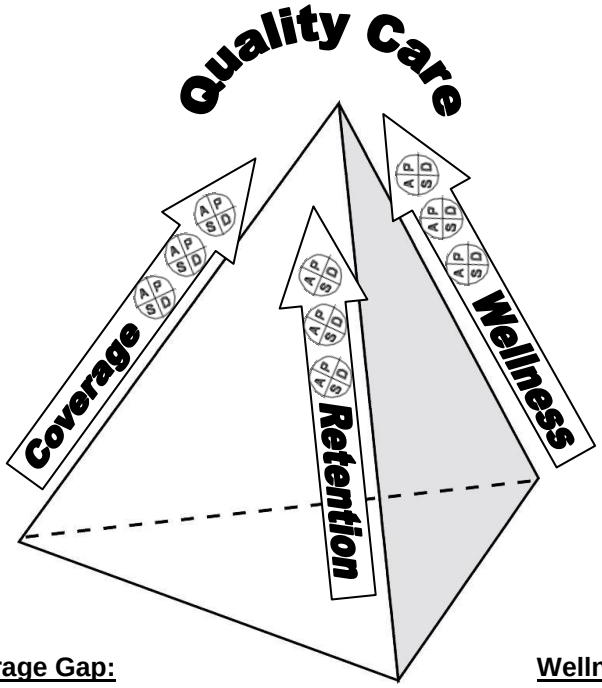
The “expert patients” who worked in the clinic missed the brainstorming session. They did hear about it later, however, and they did not agree with the conclusions from the rest of the staff. They convinced the rest of the staff that the patients themselves should be given a voice in identifying the barriers that cause them to miss their own appointments. They then contacted patients who had missed their appointments and asked them to attend a focus group on barriers to coming to clinic for appointments. They gained much information from the patients attending this session about the true barriers to coming to clinic. Other patients who did regularly attend their appointments were asked what challenges they faced in coming to the clinic and what factors most helped them overcome these barriers.

Through these voluntary patient interviews, the staff gained much knowledge on what barriers their patients face and on what interventions could potentially help them get past those barriers.

Example 5: What barriers affect quality of care for your patients?

Below each of the gaps, list the potential barriers that patients face.

Barriers are impediments that cause people to fall through the gaps.



Coverage Gap:

- transportation costs
- stigma concerns
- cost of treatment
- knowledge of status
- lack of community awareness
- limited hours that the clinic is open

Retention Gap:

- Lack of reminders of appointment dates
- transportation costs
- contact information unavailable
- inconvenient scheduling
- stigma concerns

Wellness Gap:

- Sharing medications
- Cost of medication
- Lack of clinical decision making guidance
- Lack of patient knowledge of regimen / schedule
- medication stock-outs
- Poor linkage to TB care

Also, many drivers and barriers are not specific to any single gap, but affect multiple gaps at once:

- transportation costs
- cost of treatment

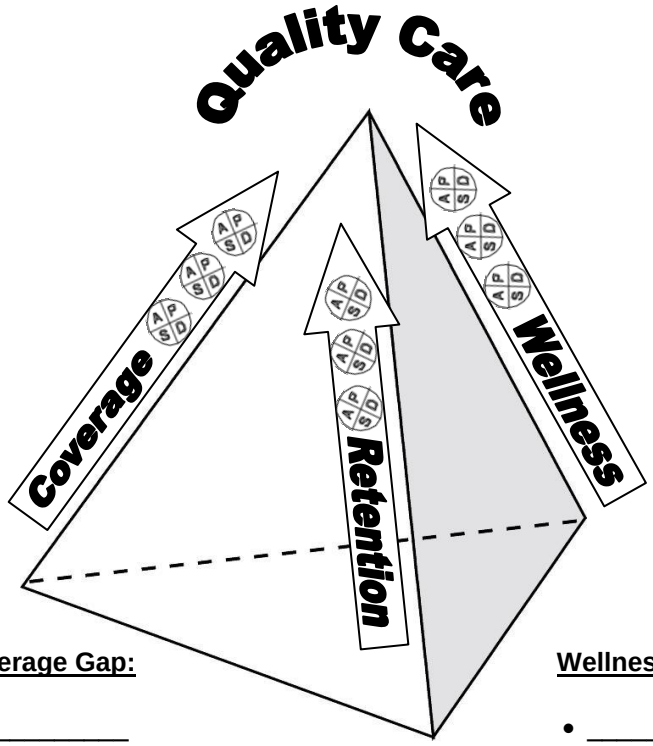
CD4 test result availability

- limited hours that the clinic is open

Exercise 5: What barriers affect quality of care for your patients?

Below each of the gaps, list the potential barriers that patients face.

Barriers are impediments that cause people to fall through the gaps.



Coverage Gap:

- _____
- _____
- _____
- _____
- _____
- _____

Retention Gap:

- _____
- _____
- _____
- _____
- _____
- _____

Wellness Gap:

- _____
- _____
- _____
- _____
- _____
- _____

Also, many barriers are not specific to any single gap, but affect multiple gaps at once:

- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____

Section 6: Identify Changes to Close the Gaps

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Section 6: Identify Strategies to Close the Gaps

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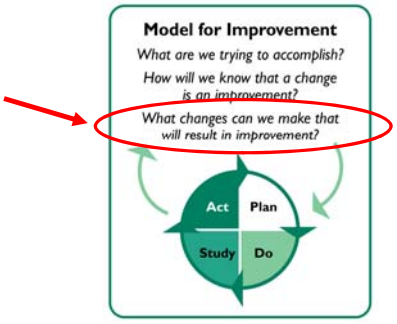

*Nolan Model Diagram; Associates in Process Improvement (API)

Considerations in prioritizing which barriers/problems to address first

- How much does it contribute to the overall problem?
- Is fixing it under your control?
- Does it require new resources?
- Are there feasible and sustainable solutions?
- Etc..

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Developing Changes

- What change will you make?
- Why will this change result in an improvement? How will it work?
- What improvement will we expect to see as a results of this change? What do you think the result will be?

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Retention example: What can we do to help you go to your next ART visit? (n=48)

Suggestions given by patients:	# Reporting*
•Make drugs available closer to my community	22
•Allow someone else to pick up drugs for me	15
•Make clinic hours more convenient to my work schedule	13
•Shorten my waiting time at clinic	9
•Help me with transportation	7
•Less frequent visits	4

**More than one answer possible; all answers tabulated above*

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Who can most influence these barriers to retention?

	ART Clinic/ Hospital	Policy/ Ministry of Health	Community/ CHW	Partners/ NGOs	Local govt/ health district
Transportation / distance		x	x	x	x
Conflicts with other obligations (work, family crises, etc)	x		x		
Too many visits	x	x			
Too sick to travel to clinic	x	x	x	x	x
"Feel fine"	x		x	x	
Moved to a different region			x		x

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What can we do to help you go to your next ART visit? (n=48)

Suggestions given by patients:	# Reporting*
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•Less frequent visits	4

**More than one answer possible; all answers tabulated above*

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Possible Solutions for Testing:

More convenient clinic hours	•Add evening & Saturday clinics
Drugs closer to community	•Dispense treatment to health posts •Mobile clinics
Help with transportation	•Work with NGO or community groups to set up weekly shuttle service •Arrangement with taxi company
Shorter waiting times	•Elective appointment system •Triage system
Allow others to pick up drugs	•Change policy to allow third party dispensing
Less frequent visits	•Dispense three month supply per visit for eligible patients

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Exercise 6: What can you change to improve services at your facility?

In your **workbook**, fill in the changes table with at least three proposed changes.

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Case Study Part 6: What should we change about our clinic?

Now that the clinic staff clearly understood the gaps and identified the most common barriers that patients face at each gap, they decided to brainstorm about what changes they could implement to try to close the critical gaps. Also, once they realized the value of patient input in identifying barriers, they engaged many patients in identifying changes to overcome these barriers.

The team listed a number of potential changes, including changing the clinic setup to protect the privacy of patients and setting up a tracking system for patients who miss visits. The team analyzed each change by looking at the barrier it directly affected and the gap that it was intended to close. The team also listed who was responsible and which stakeholders may be necessary to help implement the changes.

At the end of their meeting together, staff identified the most significant changes that they would be able to implement quickly within their existing resources. They circled those changes on their list.

Example 6: What can you change to improve services at your facility?

Use the tables below to help you brainstorm about possible changes and link them to the barriers they affect and the gaps that they are designed to close.

Change proposed	What barriers does it affect?	What gap(s) will it reduce?	Who are the stakeholders and who can implement this change?
Make clinic entrance more private	Stigma concerns	Coverage and retention	Clinic director, admin staff, district administrator
Improve clinic record keeping	Contact information and scheduling ability	Retention	Data clerk and reception nurse
Give patients a longer supply of medicine	Too frequent visits leading to high transport costs	Retention	Doctors, nurses, pharmacist
Stay open longer hours	Limited hours that the clinic is open	Coverage, retention, and wellness	All clinic staff, district administrator

The following table is intended as a parking lot for you to keep track of future potential changes and barriers that need more research on how to best affect them.

Barrier or suggested change that needs more research or resources	What additional information or resources are needed?	Who can take charge of this and where could they find the additional information or resources?
Transportation costs	a shuttle vehicle or funds to pay for private transportation	The clinic director can request assistance and funds from the ministry
Availability of medicine in the community	vendors or mobile clinic to distribute meds	The district health team can appeal to the ministry or donors

Exercise 6: What can you change to improve services at your facility?

Use the tables below to help you brainstorm about possible changes and link them to the barriers they affect and the gaps that they are designed to close.

Change proposed	What barriers does it affect?	What gap(s) will it reduce?	Who are the stakeholders and who can implement this change?

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Section 7: Test and Implement Changes using PDSA Cycles

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Section 7:
Test and Implement Changes using PDSA Cycles

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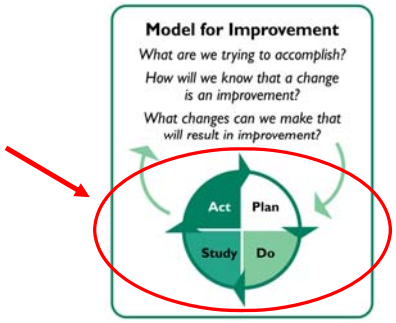
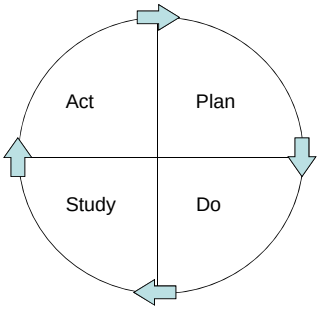


*Nolan Model Diagram; Associates in Process Improvement (API)

The PDSA Cycle

Why test?



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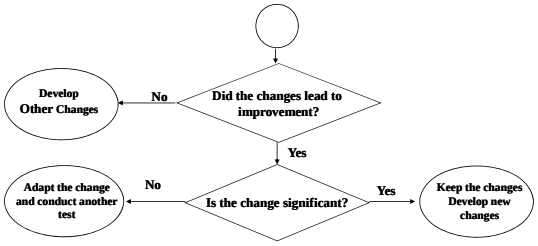
QI methodology

Test and Implement Changes

Analysis - Collect and analyze data to answers the questions:



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Testing a change

1. **Test BIG changes on an initially small scale (for example with one or a few patients), then ramp up.**
2. **Test individual changes separately when possible.**
3. **Negative results are an opportunity to learn.**
4. **Think about how conditions change over time (monthly, seasonal patterns, external variables).**

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Exercise 7: Prepare your PDSA journal

In your **workbook**, fill in the details that will help you establish a complete and useful PDSA journal for your improvement project.

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Case Study Part 7: Making a difference and keeping track of changes

After this work, the staff of the Basabasa clinic were able to implement changes and test the results of each change. The first set of changes that they decided to implement was to relocate the clinic entrance and increase privacy for visitors and to add more hours and flexibility for appointments.

As they started their first round of PDSA cycles to test these changes, the team decided to keep track of the changes and their results in a PDSA journal. This journal records the details of each change, how it was implemented, how well it worked, what the results were, and other important information for their team to know. Each month when the team gathered to review their time series charts, this journal helped them link the effects they saw on the time series chart with the actual changes made at the clinic.

Example 7: Prepare your PDSA journal

For the PDSA journal to be useful, it must be regularly maintained by team members familiar with the changes being implemented. How will your journal be maintained?

Who will write it?	How will it be written?	How often will it be updated?	What resources are needed to write it?
The supervising nurse	In a notebook to be kept in central files	Every improvement team meeting and PDSA cycle	A notebook and one hour time for the nurse after team meetings

For a PDSA journal to be worthwhile, it must be reviewed and used in a regular fashion by the team. How will your PDSA journal be used?

How/where will it be shared with staff?	Who will be responsible for sharing it?	How often will it be shared/discussed?	What is the agenda/purpose of sharing it?
Previous entries will be read during improvement team meetings	The clinic director	Improvement team meetings will happen once every three months	Discuss previous changes in relation to new data and use to suggest new changes

For a PDSA journal to be complete, it must contain certain qualitative details about what is going on in the clinic. The following format illustrates a typical PDSA journal:

What change was implemented	When was it implemented	How was it implemented	What results or other important lessons were learned in the process	What do you plan to do next?
Make clinic entrance more private	July	The entrance was relocated to a back door of the facility, not in view of the street	The waiting room should also be shielded from the street	Put up an additional wall or privacy screen

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Section 8: Monitor Results and Continue to Act

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Section 8:
Monitor Results and Continue to Act

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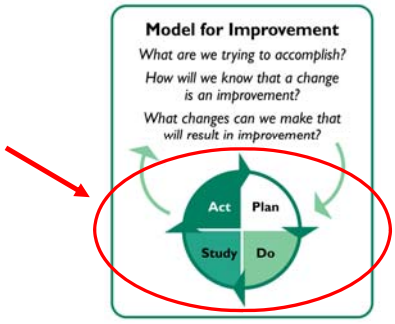

*Nolan Model Diagram; Associates in Process Improvement (API)

QI is not a finite process

- There is always room for improvement
- There are always more changes or updates to the system
- We can all learn from others' experiences
- A stagnant system develops new inefficiencies over time

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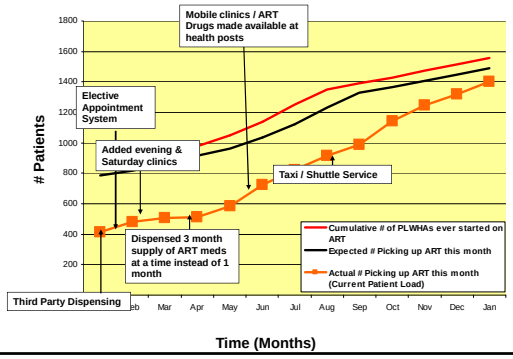

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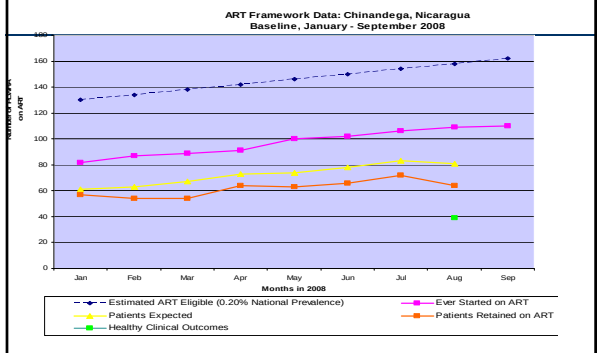
Findings from Nicaragua



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Chinandega: Time to Death after Initiating ART (n=166)

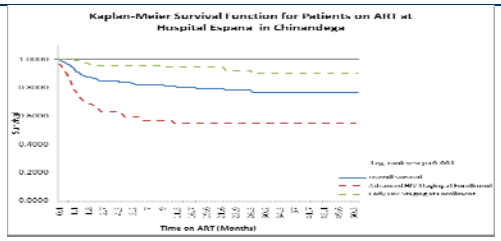

Table 3. Mortality for Patients on ART at Hospital Espana (n=33)	
Deaths of patients ≤3 months on ART, n (%)	25 (75.8)
Death of patients >3 to ≤6 months on ART, n (%)	3 (9.1)
Death of patients >6 to ≤12 months on ART, n (%)	2 (1.2)
Death of patients 12 months on ART, n (%)	3 (9.1)

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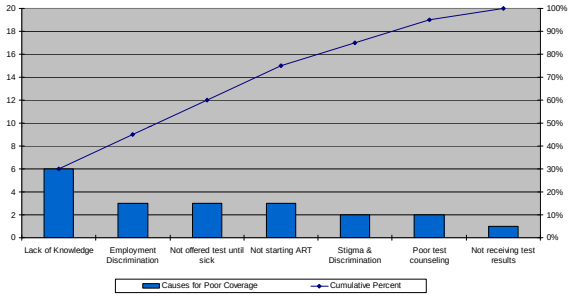
Causes Reported by ART Patients for Poor Coverage Nicaragua, July 2009 (n=9)



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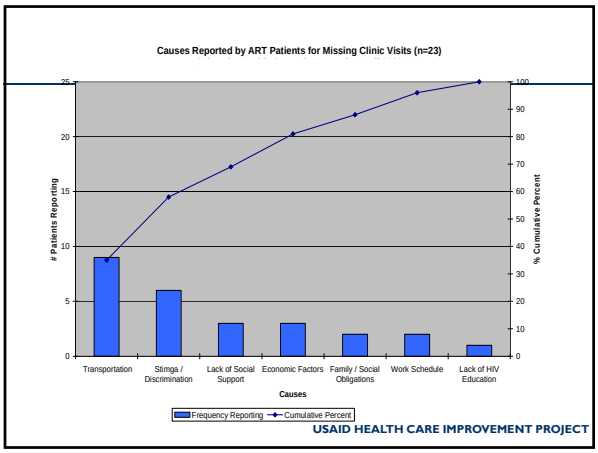
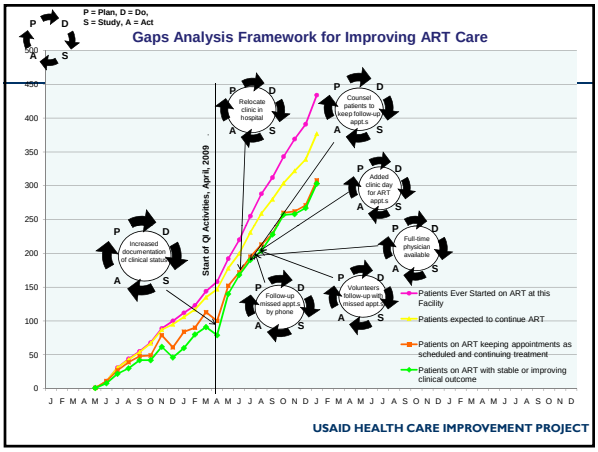
Data from the real story behind the case study





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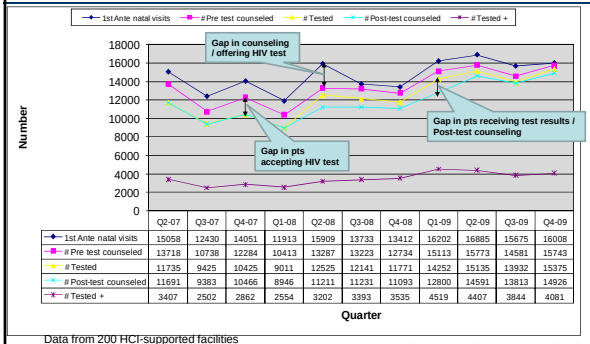
Next Steps…

- **Connect with the HCI Knowledge Management Website and online community of practice:**
  www.hciproject.org/improvinghivcare
- **Share Contact Information**
- **Explore the Available Materials Implement Your Project**

South Africa – Applying the gap analysis framework to improve PMTCT



	Q2-07	Q3-07	Q4-07	Q1-08	Q2-08	Q3-08	Q4-08	Q1-09	Q2-09	Q3-09	Q4-09
1st Ante natal visits	15058	12430	14051	11913	15909	13733	13412	16202	16885	15675	16008
# Pre test counseled	13718	10738	12284	10413	13287	13223	12734	15113	15773	14581	15743
# Tested	11735	9425	10425	9011	12525	12141	11771	14252	15135	13932	15375
# Post-test counseled	11691	9383	10466	8946	11211	11231	11093	12800	14591	13813	14926
# Tested +	3407	2502	2862	2554	3202	3393	3535	4519	4407	3844	4081

Data from 200 HCI-supported facilities

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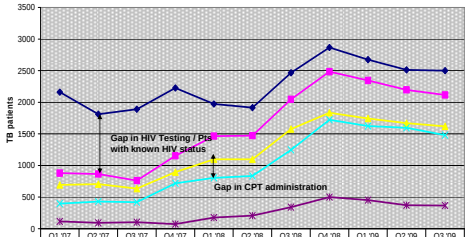
Applying the gap analysis framework to improve HIV in TB Patients at TB Diagnostic Centers in Lesotho, 2007-2009



	Q1 '07	Q2 '07	Q3 '07	Q4 '07	Q1 '08	Q2 '08	Q3 '08	Q4 '08	Q1 '09	Q2 '09	Q3 '09
# of registered TB pts	2162	1813	1892	2227	1975	1915	2467	2866	2675	2512	2501
# of TB pts tested for HIV	879	865	762	1155	1465	1472	2048	2485	2345	2196	2117
# of TB pts HIV-positive	692	705	635	897	1099	1100	1578	1834	1744	1669	1620
# of HIV+ TB pts on CPT	396	429	418	719	804	835	1247	1723	1625	1596	1479
# of HIV+ TB pts on ART	117	95	103	73	178	207	340	500	454	372	367
# of diagnostic centers	4	10	10	12	12	12	12	17	18	18	15

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Case Study Part 8: Try, try, and try again

Part 1 – The first round of changes

After the first round of changes, the team met three months later and discussed the results on their time series chart and what exactly led to those results as recorded in their PDSA journal.

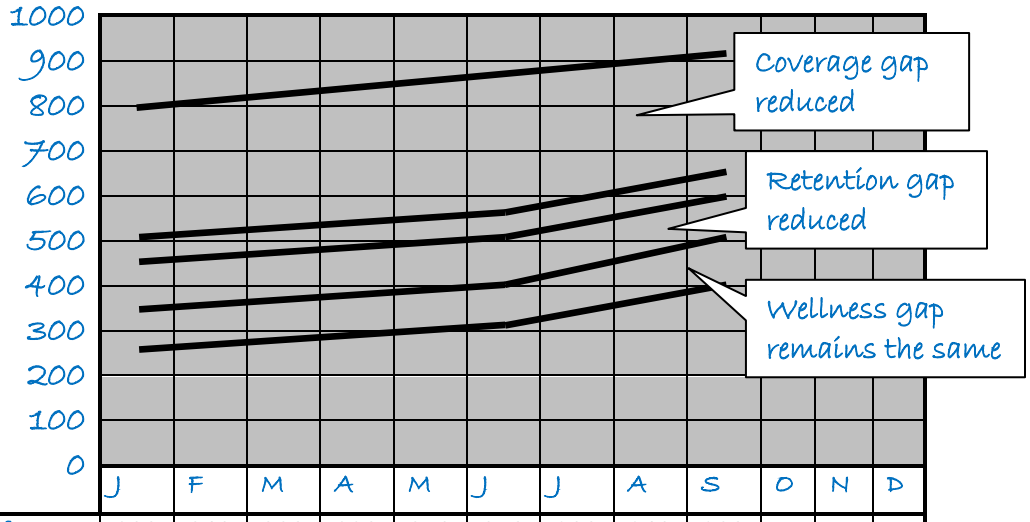
While some possible improvements were visible in the time series chart, the team wanted to see more improvement and decided to continue implementing changes. The existing changes were kept because there appeared to be an improvement in both coverage and retention as a result of the new entrance location.

To address more of the gaps and their drivers and barriers, the team agreed upon two new changes during their meeting. They would first add new clinic hours on Thursdays and Saturdays (the clinic was previously not open on those days), and they would add a schedule of appointments to each patient's file. The decisions on existing and new changes and the effects that the staff expect to see were noted in their PDSA journal.

Example 8: Continuing to close the gaps

Part 1 – The first round of changes

Numbers of HIV patients eligible for ART and in treatment at the Basabasa clinic



1	Patients eligible for ART in the catchment area	800	810	820	830	840	850	900	910	920		
2	Patients registered and started on ART	500	506	515	522	523	528	556	602	630		
3	Patients expected to continue on ART	476	481	488	498	500	507	527	568	599		
4	Patients that have attended their appointments	352	359	365	374	381	392	436	476	502		
5	Patients with stable or improving status	285	292	299	314	321	329	349	377	404		

What change was implemented	When was it implemented	How was it implemented	What results or other important lessons were learned in the process	What do you plan to do next?
Make clinic entrance more private	July	The entrance was relocated to a back door of the facility	The waiting room should also be shielded from the street	Put up an additional wall or privacy screen
Extended clinic hours	October	Added Thursday and Saturday hours	Staff time needs to be rescheduled	Adjust work schedules
Improved record keeping	October	Added contact and schedule sheets	Resources needed to contact patients	find funds to cover phone calls

Case Study Part 8: Try, try, and try again

Part 2 – Learning and continuing to implement changes

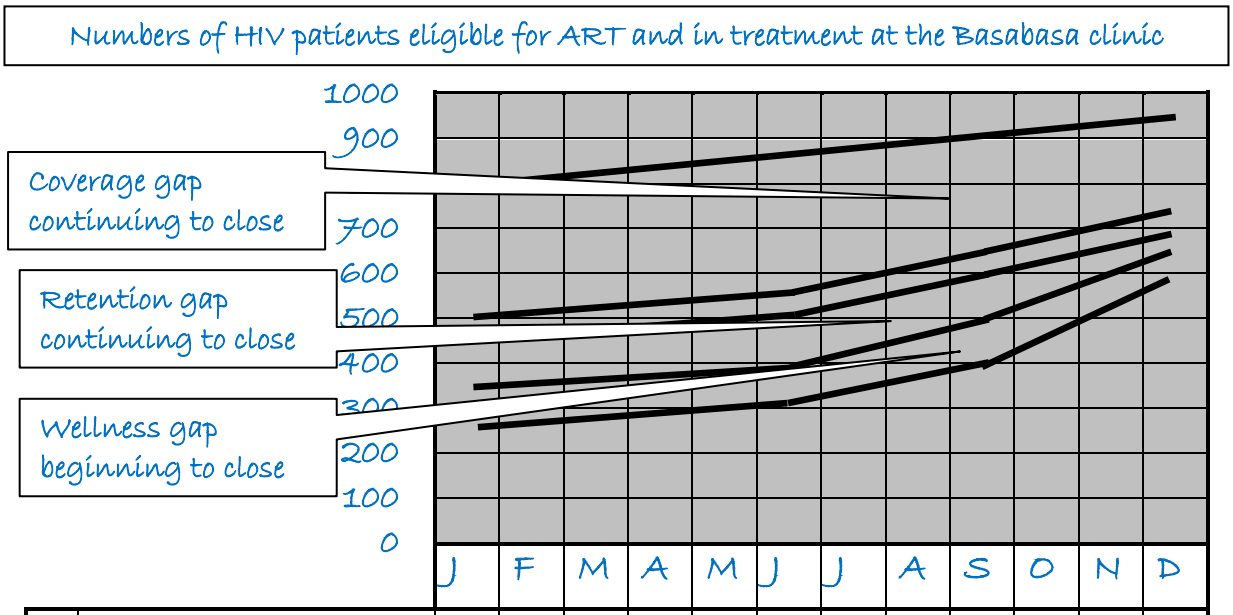
When the team met again, they had a lot more data and changes to discuss, along with a time series plot that started to show a clear improvement in the number of patients with stable or improving health status. As a result of this data, the staff agreed to keep in place the changes made to date.

Two new changes that the team wanted to try were making ART medications available at community health posts and mobile clinics and establishing a taxi/shuttle service to overcome transportation problems. Initially, the clinic was not able to influence the availability of ART medications as health posts and mobile clinics were not allowed to dispense ART. Since that time, the district health team has accredited some health posts so the clinic staff decided to partner with them to distribute more ART medications closer to patients. For those patients who still did not have access to the health posts or mobile clinics, a small amount of funding was secured from a partner to finance taxi shuttle services to bring those patients to the clinic.

These changes were also recorded in the PDSA journal so that the next time the team met, they would be able to compare the changes implemented against the results in their time series chart. Also, as a result of the changes already in place, it was time for the team to reevaluate the process that patients follow and the barriers they encounter along the way. A new analysis of their situation at this point will generate a new set of priorities and possible changes that the team will continue to implement using the gap analysis framework.

Example 8: Continuing to close the gaps

Part 2 – Learning and continuing to implement changes



		J	F	M	A	M	J	J	A	S	O	N	D
1	Patients eligible for ART	800	810	820	830	840	850	900	910	920	930	940	950
2	Patients registered and started on ART	500	506	515	522	523	528	556	602	630	662	694	736
3	Patients expected to continue on ART	476	481	488	498	500	507	527	568	599	629	673	699
4	attended their appointments	352	359	365	374	381	392	436	476	502	554	591	649
5	stable or improving health status	285	292	299	314	321	329	349	377	404	481	546	589

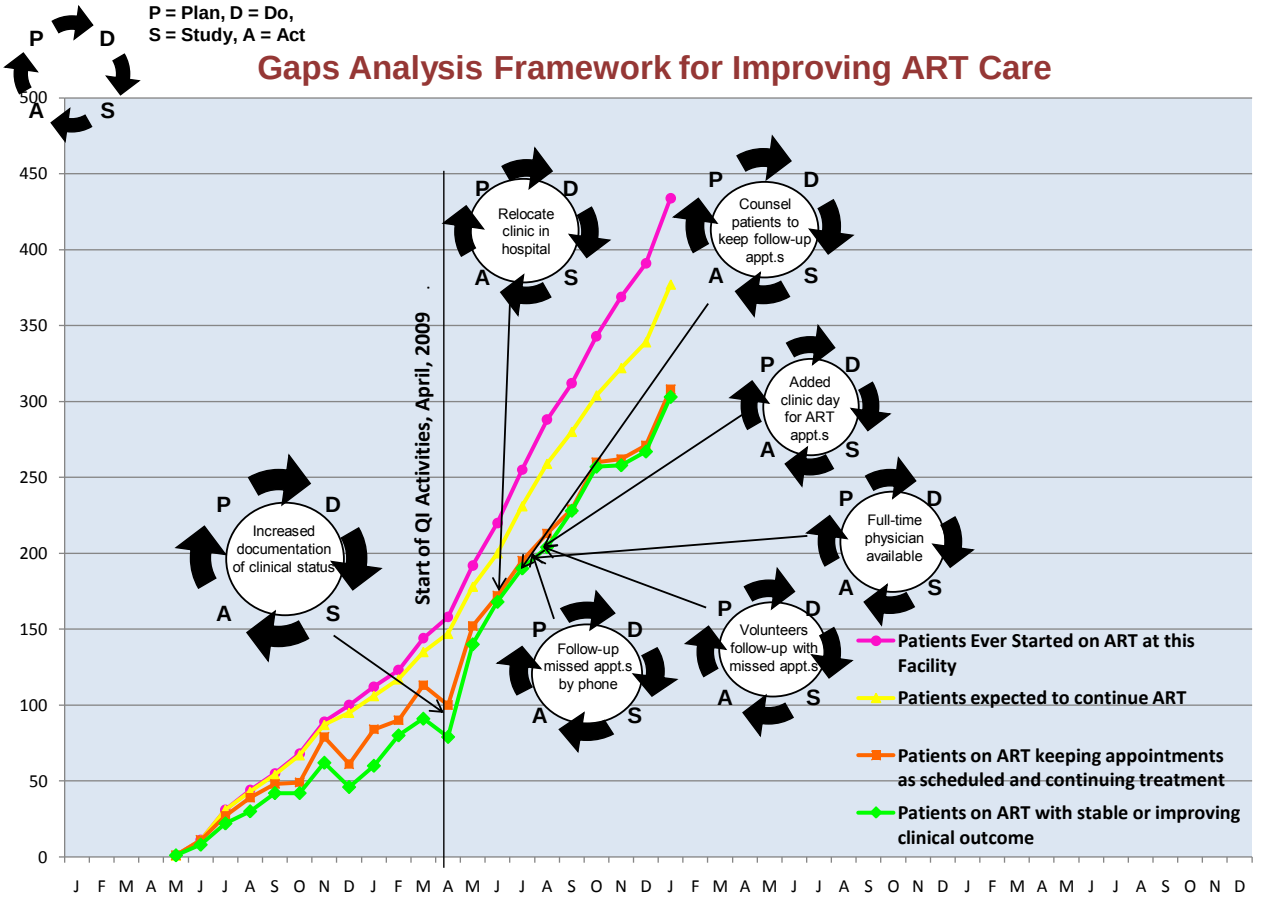
What change was implemented	When was it implemented	How was it implemented	What results or other important lessons were learned in the process	What do you plan to do next?
…(previous entries)…				
Link with mobile clinics	December	Meeting with district health team	Coordination needs to be managed	Set regular meetings among stakeholders
Provide shuttle service	December	Got funds from a partner	Rides should be pooled by community	Develop a regular schedule

Case Study Epilogue: The Real Story

The small clinic described in this case study actually exists and continues to work on improving their ability to treat more patients by closing the coverage, retention, and wellness gaps. The specific changes they implemented and the results they obtained were far more extensive and detailed than this case study suggests, however their ability to improve the quality of services at their clinic and increase the number of patients successfully treated.

Their ongoing work continues to generate more changes and effective results. They recently developed additional algorithms for AIDS management, together with the tangible results from the completed relocation and privacy walls. During the latest visit to the clinic, the staff said they were all very motivated by the work and the results they are seeing.

The actual time series chart from the clinic is below. While the real clinic was new and did not begin with the higher patient numbers used in the fictional case study, they did use and are continuing to use the Gap Analysis Framework to monitor their progress as described in the case study. The gaps, some of the interventions, and the real results that they have been achieving are noted below:



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