



AIM Measurement Overview

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As an organization or medical practice moves from its current state to the vision of a new state, it must change what it does and how it operates. This requires fundamental and profound changes in how the work is approached.

A set of high-leverage changes for access and office efficiency creates the foundation for improvement, and for our work in AIM. These changes have been used successfully with hundreds of other groups as they moved from traditional delivery systems to advanced access.

How do we know that making these changes actually results in an improvement?

To answer this critical question, clinics will need to collect a set of measures over a period of time. These measures help to demonstrate that the changes tested actually resulted in improved outcomes.

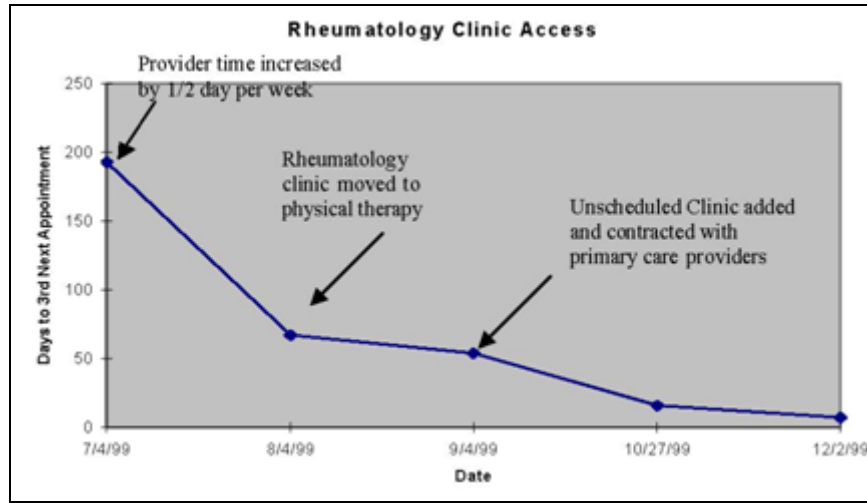
To assist teams with measurement and data collection, this measurement package consists of four parts:

- This document (*AIM Measurement Overview.pdf*), which provides an overview of the key measures for access, office efficiency and teamwork.
- Excel file *AIMTracking.xls* (used to enter the data)
- Excel file *AIMAnalysis.xls* (generates graphs and charts).
- Excel file *AIM Toolkit Primary and Specialty.xls*, which contains electronic copies of sample data collection tools that can be used by team members when collecting data. Paper copies of these tools are also included in the Participant Binder.
- Check the Alberta AIM Website frequently, for updates to the above measurement package at : <http://www.albertaaim.ca/measurment.html>

We hope you find these to be useful resources as you proceed with this challenging and rewarding work.

1. Measurement Principles

Measurement is an important way to help us understand the performance of the current system, identify the primary areas on which to focus attention, set goals for improvement, and assess the results of changes made. Annotated run charts, such as the Rheumatology Clinic Access example below, are an excellent tool to provide a visual analysis of the changes made. This graph shows the performance of the system over time and identifies key events and any other circumstances that could affect performance.



Measurement should be used to speed improvement, not to slow it. A team should employ just enough measurement to know whether the changes they are making are leading to improvement, but not so much to become buried in the measurement process itself. Consider the following ideas to make measurement simple and effective.

Plot Data Over Time

Improvement requires change and change occurs over time. Much of the information about a system and how to improve it can be obtained by plotting data (access delays, cycle time, etc.) over time, and observing trends and other patterns. An annotated run chart (such as the one above) works well to display data and trends.

Focus on the Measures That are Directly Related to Your Aim

If the aim is to reduce the length of time a patient has to wait to see his/her provider of choice, collect data on delay and plot components such as time to third next available appointment on a run chart. This will allow you to see the effects of your improvement efforts.

Use Sampling

Sampling is a simple, efficient way to understand how a system is performing without having to engage in an overwhelming amount of data collection and analysis. When large system changes are desired, the variety of conditions included in the sample, rather than sample size, is the primary concern. Sampling is especially important if an organization does not have an electronic data collection system. To save resources, rather than obtaining data for every patient, try obtaining data for every 20th patient or for patients arriving at set times during the day (e.g. 9:00 a.m., 11:00 a.m., 1:00 p.m., and 3:00 p.m.).

Use Rapid Improvement Processes

Teams are encouraged to use rapid cycle improvements or frequent small tests of change (PDSA cycles) to improve existing and/or introduce new processes or systems.

Integrate Measurement into the Daily Routine

Useful data is often easy to obtain without relying on an electronic information system. Sample data forms that can be printed and used for basic data collection are included as a separate file to complement this document.

Create Graphs

Graphs are excellent visual display of measures over time, and are used to convey information on a team's progress toward a goal. The aim of any visual display is to present the greatest amount of information in the smallest space using the least amount of ink.

2. What to Measure

The following key measures will help teams to understand their current situation and measure their improvement progress.

(NOTE: Some of the advanced measures described in this document are not included in the 'AIM Tracking' spreadsheet. However, if teams choose to, they can develop their own methods for tracking them.)

Access Measures

- Delay
 - Third next available appointment
 - Future open capacity
 - Percent of appointments made today on today's schedule
- Demand
 - Demand
 - Panel size/caseload size
 - Continuity
- Supply
 - Appointments per session
 - Provider full time equivalents (FTEs)
- Activity
 - Supply used
- No-shows

Efficiency Measures

- Cycle time
- Flow mapping

Teams and Team Work Measures

- Team functioning assessments

Outcome Measures

- Patient satisfaction
- Staff satisfaction
- Provider satisfaction
- Health outcomes
- Financial outcomes

3. Access Measures

The focus of the AIM initiative is to reduce the delay a patient experiences when attempting to book an appointment with his/her provider. The delay, or wait time, for an appointment reflects the gap or time lapse between when the demand for the appointment is declared, and when the resource or the supply by the provider is available. In order to understand the dynamics of the appointment system, we need to measure delay, demand for appointments, supply of appointments and activity.

3.1. Delay

Delay measures track the amount of backlog and the amount of future available capacity.

- Third next available appointment is used to determine the amount of backlog that exists.
- Future open capacity shows the number of open appointment slots for the future.
- Percent of appointments made today on today's schedule indicates the degree to which today's demand is being seen today.

Together, these measures indicate a team's progress in creating future capacity and reducing the backlog.

3.1.1. Third Next Available Appointment

The most basic measure of delay is the number of calendar days to the third next available appointment. The third next available appointment is used — rather than the first or second — because it is a better reflection of system availability, since the first or second next available appointment may be available due to a cancellation or some other event. It is important that this measure be an indicator of when an appointment is available by easy, barrier-free means, not by begging the provider or nurse for an earlier appointment. It is simply the third next available appointment offered by the scheduling system as the scheduling system is set up today. As the team tests strategies and simplifies the scheduling system, the third next available appointment will reflect these changes.

Third next available appointment can be tracked as follows:

1. **For Primary Care** - by "Short" or "Long" appointment. There are no set definitions for each of these appointment types – it is up to each clinic to determine what a short appointment is and what a long appointment is.
2. **For Specialty Care** – by "New" or "Return" appointment. It is important to distinguish between patients that are seeing the specialist for the first time, and those who are returning because of an ongoing need.

Counting Third Next Available Appointment

To find the third next available appointment for a specific appointment type, count the number of calendar days from a selected data collection day to the day when the third next appointment of the same type is available. (Note: This includes Saturdays and Sundays even if the clinic is not open on weekends.) Collect this data on the same day at the same time each week for each provider.

Example

- Dr. Jane's schedule:

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday
Time	5-Nov-07	6-Nov-07	7-Nov-07	8-Nov-07	9-Nov-07	10-Nov-07	11-Nov-07	12-Nov-07
0900-0910	BP check	Shrt of breath	BP check	BP check	BP check	closed	closed	BP check
0910-0920	Prenatal	Remove Wart	Prenatal	Prenatal	Not booked			Prenatal
0920-0930		Asthma			Meeting			
0930-0940	Well baby	Not booked	Well baby	Not booked	Flu			Not booked
0940-0950	Sore toe	#2 Prenatal	Sore toe	Sore toe	Sore toe			Sore toe
0950-1000	Nursing home	Well baby	Nursing home	Nursing home	Nursing home			Physical
1000-1010	discussion	Ear syringe	discussion	discussion	discussion			
1010-1020	Dressing	Dressing	Dressing	Dressing	Dressing			Dressing
1020-1030	Sore eye	Sore eye	Sore eye	Sore eye	Sore eye			Sore toe
1030-1040	Flu	Flu	Flu	Flu	Flu			Flu
1040-1050	Diabetes	Diabetes	Diabetes	Diabetes	Sore Knee			Diabetes
1050-1100	Back pain	Back pain	Back pain	Back pain	Back pain			Back pain

- Jerry does the count on **Tuesday at 10 a.m.:**
 - 1st next available appointment: Thursday at 9:30 am
 - 2nd next available appointment: Friday at 9:10 am
 - 3rd next available appointment: Monday at 9:30 am
- Third next available appointment = 12 (Nov 12th) minus 6 (Nov 6th count day) = 6 days
- The number '6' would be entered for Dr. Jane in the Delay sheet in the measurement spreadsheet (see below).

Week Beginning:	Dr. Jane
29/10/2007	3
05/11/2007	6
12/11/2007	

Tips

- It is helpful to collect the measures even when the clinic/program is experiencing unusual circumstances. Having the data for every week, no matter what the circumstances, will help show the results of events such as holidays and also the results of improvement such as contingency plans during peak periods.
- It is helpful to have an alternate person for taking measurements so that the data can be collected consistently, even when the usual data collection person is not available.

3.1.2. Future Open Capacity

NOTE: This measure is not included in the AIM measurement spreadsheet.

This measure is a determination of the number of **open** appointment slots, expressed as a percent of the total number of appointment slots, within a specified period. The usual period is four to five weeks. This data is especially important when the third next available appointment data approaches “today.” It is therefore a more sensitive indicator of access.

Measuring Future Open Capacity

- Determine how many total (open and booked) appointment slots a provider has within the specified amount of time (A).
- Count how many of those are open (B).
- Divide the number of open slots (B) by the total number of slots (A) to obtain the percent of future open availability.

Example

If a provider has 440 appointment slots (open and booked) in a four-week time frame, and 220 of them are not filled, then future open capacity is 50%. It may mean, however, that tomorrow is only 10% open, and twenty-five days from now is 90% open.

3.1.3. Percent of Appointments Made Today on Today’s Schedule

NOTE: This measure is not included in the AIM measurement spreadsheet.

This measure indicates how much of today’s work is actually being done today, and is an extremely important parameter to track. Ideally, the scheduling system can be used to report on this measure. Otherwise, staff must perform this task manually.

Manually Calculating Percent of Appointments Made Today on Today’s Schedule

- Determine how many appointments were made today for each provider no matter where/when they were scheduled (A).
- Divide today’s appointments booked today (B) by the total number of appointments made today (A).
- The answer is the percent of appointments made today on today’s schedule.
- This data can be graphed on a run chart similar to the third next available appointment run chart.

Example

If there were a total of 30 appointments made today for Dr. Red (scheduled for today or another day in the future), and 10 were booked in today's schedule, the percent of appointments made today on today's schedule is 10 divided by 30, or 33%.

3.2. Demand

When compared with supply of appointments, demand for appointments can help determine whether a provider has more work than he/she can reasonably manage, or whether he/she has excess capacity. It also helps teams decide which change strategies to test first. For example, if demand is clearly greater than supply, providers might use strategies to gain capacity and reduce demand before attempting the difficult work of backlog reduction.

3.2.1. Demand

Demand is defined as the **number of appointments booked today for any day in the future**. These appointments are booked “**on**” today but not necessarily booked “**for**” today. Demand varies from day to day, and seasonally. It is extremely important to track this data over time so that trends and variation can be determined. This allows a practice to develop plans to meet demand.

Primary Care

In primary care, it is useful to capture demand in two categories – internal and external:

- External demand is generated by patients randomly requesting an appointment, whether the appointment is scheduled for today or in the future. Sources of external demand include phone calls, walk-ins, faxes and emails.
- Internal demand is generated by the provider in the form of follow-up **appointments that are booked by the patient before he/she leaves the clinic**. All other demand is counted as external.

Specialty Care

In specialty practices/programs, demand is captured as new and return appointments. Specialists provide the greatest value to the health care system when they see new patients. The key is to minimize the delay for these appointments. New appointments compete with return appointments. Collecting data on the demand for new and return appointments is critical in improving access to specialists.

Measuring Demand

To measure demand, the person or people scheduling appointments must keep a daily record of the requested appointments for each provider irrespective of the day the appointment is booked for. The person or people counting demand are encouraged to use a *Weekly Demand Tabulation* sheet to track demand for each provider throughout the day.

Each day, everyone in the clinic who books appointments needs to record demand for both categories (internal and external for primary care, and new and return for specialty care) - for

every provider. This may mean using multiple copies of the *Weekly Demand Tabulation* sheet, and keeping them available for use wherever appointments are being booked in the clinic.

When counting demand, count demand for the panel physician, (the requested provider), even if that provider is unavailable that day and the patient is seen by someone else. This is still demand for the panel physician.

The daily record (tally) of demand for each provider is kept by making a “tick” for each appointment booked on the *Weekly Demand Tabulation* sheet.

At the end of each day, all demand tabulation sheets should be gathered up and the number of requested appointments for each provider should be totaled by type and entered into the spreadsheet.

Optional Advanced Measurement

Determine a standard appointment length, usually the shortest appointment (e.g. 15 minutes). In the *Weekly Demand Tabulation* sheet, make a “tick” for each standard appointment slot for each provider. If the appointment is a long appointment (e.g. 30 minutes), make two demand ticks for that appointment. This more accurately reflects the amount of time that is allocated to that appointment/patient. Tally the total number of ticks made each day for each provider and enter the numbers into the spreadsheet.

3.3. Panel Size (Primary Care)

In primary care, panel size is the number of unique patients for whom a provider is responsible for providing care. A group or individual's ability to do all of today's work today is directly related to the size of their patient panel. The panel size appropriate for an individual provider will depend on several factors:

- How often a provider is in the office
- The risk associated with caring for a specific population of patients
- The provider's scope of practice
- Age, sex, and acuity of the patient population

Panel size is an important tool for anticipating demand. Experience shows that between .75 to 1% of a provider's panel will call for an appointment on a given day. Therefore, demand is formally linked to panel size. A large panel will create demand commensurate with its size. Managing panel size (age and sex adjusted) is an important way to level demand across a system of providers and to shape demand on a daily basis.

In a fee for service environment, panel size is the number of unique individuals who have seen a provider in the practice and for whom the provider coordinated the majority of care over the last 18 months. This includes patients who have been seen at greater than yearly intervals. When querying the computer system for this information, remember that it is not simply the number of patients (or patient count) seen in the previous eighteen months, but the number of unique patients seen. If a computer system records the patient's primary provider, this information should be easy to obtain. However, until continuity becomes a system property, it could happen that a patient may appear on several providers' panels. In this case, tiebreaker logic is used to determine which panel the patient should be on. Common tiebreakers are the provider seen most often, or the provider seen for a physical. Track panel size at prescribed intervals, as it may change based on deaths, births, moves or other circumstances.

In practices where the panel size is unknown, it may be necessary to calculate the number of unique individuals who have seen any one of the providers in the practice over the last 18 months. This number gives a rough estimate of the patients who "belong" to the practice. For best access and best outcomes, it is important for the clinic to take this practice panel data and break it down to determine panel at the individual provider level.

Calculating Panel Size

To calculate a physician's panel size, use the EMR or file system to identify the number of unique unduplicated patients currently receiving care from that physician. Data may also be made available by Alberta Health and Wellness to assist in this process.

3.3.1. Practice Panel and Current Panel

The current panel for the practice and individuals within the practice can commonly be determined by reviewing the panel identification in the EMR. While there may be some "orphan patients" not yet linked to a specific provider, the sum of all patients identified with individual providers plus the orphans will equal the practice panel.

In environments where there is no EMR or other means to accurately identify, link and track paneled patients, the four-cut method described in the published articles can be used to perform this function. First, all patients seen by any provider in the practice in the last 18 months are identified. This is the practice panel and will include orphans since, while they may not be linked to any specific provider, orphans have at least been seen by someone in the practice. From there, patients are further divided as follows:

- **First cut:** Those patients seen by only one provider in the practice are assigned to that provider.
- **Second cut:** Those patients seen by more than one provider in the practice are assigned to the provider they saw most frequently.
- **Third cut:** Those patients seen by more than one provider in the practice the same number of times are assigned to the provider who performed some form of bonding exam (i.e. a "physical").
- **Fourth cut:** Those patients seen by more than one provider the same number of times but without any clear bonding exam are assigned to the provider who saw them last.

In this way, all patients seen by anyone in the last 18 months are linked to a specific provider. This is the current panel for all individual providers and the sum of all the individuals will equal the practice panel.

3.3.2. Target or Shared Panel

The "target" or shared panel is the term that looks at a theoretical division of the current practice panel in proportion to full-time equivalent (FTE) worked by each provider. For example, in a practice of five providers, three of whom are full-time and two of whom are half-time, the total clinical FTE is 4. If the practice panel was identified as 10,000 unique patients, and the workload was "shared" equitably, the three full-time providers would have panels of 2500 and the two half-time providers would have panels of 1250. The target panel can be compared to the current panel and an analysis of who is over and who is under their "target or "share" can be determined. The sum of the over plus the under will equal zero.

3.3.3. Ideal Panel

The ideal panel can be derived using the following panel formula, as outlined in the published articles:

$$\text{Panel Size} \times \text{\# of Visits per Patient per Year} = \text{\# of Visits per Office Day} \times \text{\# of Days Worked in the Office per Year}$$

Therefore the ideal panel size a provider can support is:

$$\text{Ideal Panel Size} = \frac{\text{\# of Provider Visits per day} \times \text{\# of Days Worked in the Office per Year}}{\text{\# of Panel Patient Visits per Year}}$$

This equation is not immutable. It can be influenced in order to change the ideal panel number or the variables can be changed in order to accommodate a fixed and unchangeable panel size number. The ideal panel for each individual can be compared to the current panel and viewed as over/under. The sum of the over and under will not equal zero.

With a dataset of the provider's panel, additional valuable information can be obtained such as demographics, age and sex distribution, health needs, common diagnoses, hospitalization rates, patient utilization and identification of shared patients between primary care and specialty services.

3.3.4. Panel Reports

A panel report, based on AHW billing data, is available from Alberta Health & Wellness as a starting point to determine your patient panel/s. The four cut methodology is used to determine this information. This report is a starting point only, establishing a process to keep accurate panel information in your clinic that is easily accessible, is important.

You can access a form to request the AHW panel information through your local facilitator.

3.4. Caseload Size (Specialty Care)

Caseload is the term used in specialty care to describe the number of patients for whom the provider is responsible. However, there are two major differences between panel in primary care and caseload in specialty care. While panel implies a long-term linkage, caseload implies a temporary relationship. Second, in primary care, the new workload is a small part of the overall work, whereas in specialty care new work is the most valuable component of the workload.

A specialty physician's caseload is made up of patients from several primary care physicians' panels. In specialty practices/programs, it is important to understand the provider's caseload size, or the number of unique patients actively receiving care within a given twelve-month period of time. Knowledge of caseload size helps the specialist balance supply of and demand for appointments.

If we cannot identify current caseload within a specialty care practice we can use the four-cut method described above. The ideal caseload equation is critical in specialty care just as it is in primary care:

$$\text{\# of Patients X Expected Number of Visits per Patient} = \text{\# of Visits per Office Day X \# of Office Days Worked}$$

Calculating Caseload

To calculate a physician's caseload, use the EMR or file system to identify the number of unique unduplicated patients currently receiving care from that physician.

3.5. Continuity

3.5.1. Primary Care

Continuity is a measure of the likelihood that a patient will see his/her own primary care provider when receiving care. Interpersonal continuity defines the important relationship between the family doctor and his/her patients. It is well documented that continuity contributes to significant improvement in patient health outcomes, increased patient and provider satisfaction, decreased demand, decreased visit return rates and overall lower costs to the health care system.

Continuity is most significant at the individual provider level. A strong relationship between patient and physician/provider helps to generate patient trust with the other team members in the clinic. In this environment, team members are able to function to the best of their ability.

Continuity is measured from the patient's perspective - what is the likelihood a patient will see his/her own primary care provider? Continuity is based on retrospective data. In order to collect continuity data, accurate provider panel data is required. Continuity is measured retrospectively over the previous month.

Measuring Continuity

Provider's Continuity =
$$\frac{\text{Visits by my panel patients to me}}{\text{Total visits by my panel patients to the clinic}}$$

3.5.2. Specialty Care

While continuity (the likelihood that a patient will see his/her own provider) is traditionally a primary care concept, there are applications of the same concept in specialty practice. Continuity is usually a system property in specialty care. It is rare, except in some academic environments, for specialty care providers to see each others' patients. It is most important that there be continuity to the specialty provider within the episode of care, and for subsequent episodes of care with a same or similar diagnosis. For example, if a patient is referred to cardiology for management of severe hypertension, continuity to the same specialist for the period during which the blood pressure is stabilized is important. After the patient is stabilized, he/she returns to primary care. If a subsequent referral to cardiology is required (because the patient's blood pressure is again out of control), it would be best managed by the same cardiologist as the initial episode. However, if a patient is referred to a dermatologist for psoriasis, and then subsequently requires a referral for a melanoma, the continuity between episodes of care is less important.

3.6. Supply

Supply is the measure of provider capacity or availability. Advanced access systems rely on adequate and flexible supply. It is helpful to think of supply in three dimensions:

- Macro supply - the number of providers time the number hours each works
- Deployment of supply - the way macro supply is spread throughout the day, week, month and year
- Process of supply - defining the work and who should do it to optimize supply

There are several ways to measure the dimensions of supply. Provider full-time equivalents (FTEs) and appointments per session are used to measure macro supply.

3.6.1. Supply of Appointments

Supply of appointments per session is another important measure that looks at how many patients per specific period each provider is capable of seeing under the current system. This is a further refinement of macro supply. It is a rough calculation of approximately how many appointment slots each provider or a system of providers has available. It is a prospective measure.

Supply data provides important information, especially when compared to demand. For example, if the demand for a physician averages 125 appointments per week and the average supply of appointments that physician has is 96, then supply and demand are mismatched, and the physician will develop a backlog of patients who are waiting to see him/her. Supply and demand can be balanced by adding supply and/or reducing demand.

Collecting Supply Data

Count the number of appointments available for each provider, for each day (include filled and unfilled slots). This total number of appointments is entered in the correct rows and columns in the *Weekly Supply and Activity Tabulation Sheet*.

Example

On Monday Dr. Joe has 25 appointments on his schedule. Dr. Henry has 30 appointments on the schedule.

Date	Dr. Joe	Dr. Henry
13-July-2008	25	30

Optional Advanced Measurement

Determine a standard appointment time and length, usually the shortest appointment length (e.g. 15 minutes). In the *Weekly Supply and Activity Tabulation Sheet*, enter the total number of standard appointment slots for each provider. If an appointment is booked for longer than the standard appointment slot, for example 30 minutes, it would be counted as two standard appointment slots, or two units of supply.

3.6.2. Provider Full Time Equivalents (FTEs)

NOTE: This measure is not included in the AIM measurement spreadsheet.

The number of providers available, expressed as full-time equivalents (FTEs), is the most basic measure of supply.

Count the number of FTE providers in the office on a daily, weekly, and monthly basis. This data is often surprising and offers insight into demand and capacity management. For example, the data may show four provider FTEs available on a Monday, traditionally the highest demand day. Alternately, the data may reveal seven provider FTEs on Thursday, one of the lower demand days. This indicates a need to manage provider days in the clinic in a different way to better match supply and demand.

3.7. Activity

Another dimension of capacity is activity, or “supply used.” In many busy practices, and due to a variety of circumstances, a provider may end up seeing more patients than he/she has appointment slots for. Conversely, if patients don’t show up for their appointments, a provider may in fact see less patients than he/she has appointment slots for. Activity is therefore a retrospective look at the number of appointment slots that were actually used in a particular day, week, month or year. Activity is measured as follows:

$$\text{Activity} = \text{Appointments Booked} + \text{Squeeze Ins} - \text{No Shows}$$

Collecting Activity Data

Count the number of appointments booked for each provider, for each day, then add in the number of “squeezed-in” appointments that were seen that day, then subtract the number of patients who didn’t show up for their appointments that day.

The activity (result of above calculation) for each provider is then entered in the correct rows and columns in the *Weekly Supply and Activity Tabulation Sheet*.

Optional Advanced Measurement

Determine a standard appointment time and length, usually the shortest appointment length (e.g. 15 minutes). In the *Weekly Supply and Activity Tabulation Sheet*, enter the total number of standard appointment slots for each provider. If a patient is seen for longer than the standard appointment slot, for example for 30 minutes, it would be counted as two standard appointment slots, or two units of activity. If a patient with a long appointment (e.g. 30 minutes) no-shows, it would be counted as two slots of no-show.

Example

If Dr. Joe has 20 booked appointments, 4 squeeze-ins and 2 no-shows on Monday, Monday’s activity for Dr. Joe would be 22 appointments, as outlined in the following table:

Monday	Dr. Joe
Appointments booked	20
+ Squeeze-In Appointments	4
- No-Show Appointments	2
= Monday Activity	22

3.8. No-Shows

No-shows are patients who fail to keep their scheduled appointments without notifying the clinic prior to their appointment time. No-shows can increase staff work and reduce provider productivity due to lost appointment time, since the vacant appointment cannot be assigned to another patient. No-shows may also negatively affect patient health as a result of the patient not seeing the provider when he/she was booked. Collecting this data can determine whether or not no-shows are a significant problem for the clinic, and if they are, strategies to reduce the no-show rate can be tested and implemented.

Collecting No-Show Data

No-show data is tallied at the end of each day, for each provider, by counting the total number of patients scheduled for appointments on that day, and the number of patients who did not show up for their appointments.

The person documenting no-show data is encouraged to use the *Weekly No-Show Tabulation Sheet* to track each provider's no-shows.

4. Efficiency Measures

Efficiency measures are key in determining the flow and timing of work in the clinic. The measures provide direction and feedback on improvements made, by helping teams to decide what changes to test, and determine whether the changes are successful.

4.1. Cycle Time

Cycle time is the recommended measure to assess the status of, and later improvements in, patient flow and process efficiency in the clinic. It is simply the time from when a patient enters the office or clinic “checkin”, until the patient leaves “checkout”.

Cycle time is divided into the following subsets, each depicting an important aspect of the process:

- Time from check-in to rooming
- Time from rooming until the patient sees the provider
- Time with the provider (red-zone)
- Time with nurse in follow-up (including any delays)
- Time at ancillary areas (including delays)
- Time from last clinical contact through check-out (including delays)

It is important to track cycle time not only to measure progress on efficiency improvements, but to make sure that patients are not getting appointments easily, only to find themselves spending a long time in the waiting room, or waiting at other stages of their visit to the clinic.

Cycle time data collection should be kept simple. At first, measure the total time from checkin to checkout. If a problem is detected at this macro level, cycle time data should be collected for all individual parts of the visit.

If you are collecting only the macro-level cycle time data, it is important to conduct a separate analysis of face-to-face contact time between patient and provider. This data will be helpful when establishing accurate appointment slot durations and intervals.

Clinics without an information system that easily tracks patient arrival times can gather this information manually by sampling a manageable number of patients (e.g. five) per provider within a certain time span of interest (e.g. peak hours) on a selected day. Since the 10 a.m. and 3 p.m. appointment times tend to run behind, be sure to include these and three other times, spaced throughout the day.

Focus on collecting cycle time data for a specific provider on a selected day rather than randomly collecting a few samples for numerous providers within a day. Strive to collect a representative sample for each provider for each weekday.

Record (either on the patient's chart or a data collection sheet) the time each pre-selected patient checkin at the office.

At the end of the visit, the last staff person to interact with the patient (whether it is the billing person or the receptionist who schedules a return appointment) records the time the patient leaves the office.

The flow, as measured by the cycle time, can be optimized by having an explicit arrival time and explicit appointment time with the doctor time. This helps patient flow through the office, team functioning and the overall measurement process.

Example front desk script:

"Your scheduled arrival time to prepare for the appointment is 0800 a.m. and your scheduled appointment time with the doctor is 0815a.m".

Collecting Cycle Time Data

Provide each selected patient with a copy of the Cycle Time sheet on a clipboard and ask them to fill it in as they move through the steps in their visit. Make sure they record the time of day (e.g. 10:15 a.m.), and not the length of time (e.g. 5 minutes).

4.2. Flow Mapping

Flow mapping is a way to identify and clarify each step of a process in order to improve that process. By flow mapping a process, the team can discuss, test, and implement ways to improve processes within the daily flow of work, thus becoming more efficient. It is often surprising how various members of a team hold different views of the key steps in a process.

Learning to use flow mapping is best accomplished by starting with something seemingly simple that everyone knows how to do, such as brushing teeth or making a pizza.

- Record each of the process steps on a separate sheet of sticky paper.
- Put the steps in the right order.
- Be sure to record who is responsible for each step.
- Discuss the steps, and rearrange them if necessary,
- Add forgotten steps.
- For mapping larger processes, you may want to group the smaller detailed processes to make a higher level flow map

By the end of the exercise, the team should agree on the steps, the order, and who is responsible. When all team members agree on the steps and the order, analyze the process:

- Is there a simpler, less complex way to do the process?
- Are there steps that have become obsolete or are not necessary? If so, eliminate them.
- Is the right person currently doing the task? All team members should be working to the highest level of their licensure. Look at who is doing the steps, and whether he/she is the right person for the task? If not, determine who should do the task.
- Minimize hand-offs.
- Construct a new way to execute the process, test it, make further changes, as required, and then implement it.
- Make sure the process is documented correctly and clearly, and that all documented processes are kept in a place where team members can access them.

5. Team Measures

Operational Teams

The hallmark of good “operational teams” is speed and efficiency for a patient. Measure of this aspect of the work is cycle time as discussed above.

Clinical Teams

The hallmark of good “clinical teams” is the number of aspects of evidence-based care provided to the clinic’s patient population. Enter identified chronic disease and prevention topics in the appropriate area of the spreadsheet. Use it to track implementation of protocols and results.

Teams and Team work

Producing desired outcomes requires excellent teamwork. **Your facilitator has access to a number of team work resources. We recommend your clinic/program spend time to engage in a formal team work development process and decide which set of resources will support your clinic/program best.**

As an option, a measurement tab has been included in your measurement tracker tool based on the workbook, “Championship Teams”.

This process will address issues such as:

- Are we in agreement about our team’s goals and objectives?
- Am I clear about my job?
- What are team members’ expectations of each other?
- Does everyone participate in getting things done around the clinic?
- Do we all understand the goals of the clinic and are we committed to them?
- How is conflict managed?
- What does it feel like to work at the clinic?

Collecting Teamwork Data

If you chose to utilize the Championship team resource, each team member is asked to answer the nine questions in Module 1 of the Championship Teams book, using the *Championship Teams Individual Data Summary Sheet*. This will provide a baseline measure of teamwork. The Individual Data Summary Sheet should then be completed periodically, over time, by all team members, to track changes in teamwork and team development.

6. Outcome Measures

A major goal of AIM is to enhance the success of and quality in an organization. Success can be measured relative to patient, provider and staff satisfaction, and clinical and financial outcomes. Many organizations already have systems in place to measure these important parameters. Measures should reflect the paradigm shift required as a result of the changes being implemented. For example, patient satisfaction measures should include wait for an appointment, wait at an appointment, and continuity with the provider of choice.

Measure	Measure Shows	Initial Frequency	Maintenance Mode
Patient Satisfaction	Degree of patient delight	Initially	Quarterly
Staff Satisfaction	Staff morale	Initially	Quarterly
Provider Satisfaction	Provider morale	Initially	Quarterly
Health Outcomes	Clinical efficacy	Initially	Annually; more often if possible
Financial Outcomes	Productivity and efficiency	Initially	Annually; more often if possible

7. Summary of Measures

The following table summarizes the measures to be entered into the spreadsheet. It provides a quick reference to the reason for and activities associated with each of the measures.

Measure	What it Means	Why It is Important	Who Collects/Calculates	When to Collect/Calculate
Delay	The wait time for an appointment. A measure of the time between today and the day the third next "open space" appears on the schedule.	Provides feedback on the amount of time a patient has to wait to see the provider. Is also a measure of the success of backlog reduction.	Scheduler or office manager	Measure at the same time and day each week (e.g. Wednesday at 10:00 a.m.) for each provider.
Demand	The number of appointments booked today (calls, fax, email, walk-in, squeeze-in, follow-up)	Provides information on variation and better enables clinics to match supply with demand.	Scheduler	Daily for each provider using the EMR or a manual tally sheet.
Supply	A prospective measure of the number of appointment slots each provider has to offer each day.	Provides information on the planned number of appointment slots each provider has to supply. Used to look at the balance between supply and demand.	Scheduler or computer query	Daily
Activity	A retrospective measure of how many available appointment slots were used. This is a measure of provider productivity. Add scheduled appointments and squeezed in appointments, and subtract no-show appointments.	Provides information on how much work was completed each day.	Scheduler or computer query	Daily
Panel Size (Primary Care)	The number of unique individuals who have seen a provider in the practice for whom the provider has coordinated the majority of care over the last 18 months.	Panel size provides information about which patients and providers have a relationship. This measure helps the practice anticipate demand.	Office manager using the computer	Monthly
Caseload (Specialty Care)	The number of unique patients actively receiving care within a given twelve month period of time	Caseload size is an important tool for anticipating demand. This is a measure of how the new patients are divided. The goal is to achieve an equitable distribution between providers.	Office manager, using the computer	Monthly
Continuity	The count of visits by a provider's own patients to that provider, divided by the total visits by that provider's patients to the clinic. Continuity is measured retrospectively using patient visit information over the previous month. Continuity cannot be calculated until patient panels/caseloads have been defined.	Improvements in continuity leads to better patient outcomes, increased patient and provider satisfaction, decreased demand, decreased return visit rates and lower no show rates.	Computer	Monthly
No-Shows	The number of patients who fail to keep their scheduled appointments without notifying the clinic of their inability to keep the appointment prior to the scheduled time of the appointment.	Contribute to wasted appointment supply and non-productive provider and staff time, and result in re-work (the need to re-schedule the visit).	Scheduler or computer query	Daily or weekly
Cycle Time	A measure of the total amount of time a patients spends in the clinic from check-in to check out, including the amount of time spent at each step of the office visit.	Provides information on office efficiency and patient flow, as well as the delay the patient experiences during the office visit.	One person assigned to record arrival and departure times, or assign the task to the patient, who records times for each step on a form as he/she moves through the clinic.	Measure for approximately 5 patients per physician per day during one week. Collect cycle time data at regular and peak demand periods.
Teamwork	A measure of the team's state of health	Identifies teamwork needs, and allows the team to develop as they adapt to the changes taking place.	Every team member	Early on, as a baseline measure. Periodically thereafter.