Five Levels of Mapping

To better understand how work gets done in our systems, it is critical to develop “flow maps” of the steps in each process, and to add measures to these maps. Some practices are complex and will need to create five levels of flow mapping to see how the work flows from beginning to end through the practice. Other practices may only need to map at two or three levels. The extent to which mapping is carried out is dependent on the complexity of the flow of the work through a practice.

Each arrow on a flow map represents and follows the demand as it flows to and meets the corresponding supply. Performance at each arrow/step can be evaluated by looking at demand, supply, activity and delay (TNA) at that step.

Five Levels of Maps – Overview

While Level 1 and Level 3 maps most commonly occur only in complex specialty care practices, Level 2, Level 4 and Level 5 maps are universal for all practices.

Stage	Map Level and Description	Associated Measure(s)
Declaration of need to appointment made	*Level 1 Map* – Intake Process	Wait time prior to appointment being booked
Appointment made to appointment started	*Level 2 Map* - Delay	Third next available appointment (TNA)
Appointment started to appointment completed	*Level 3a Map*– Handoffs between various provider types within the same day, with red zones occurring in sequence.	Demand-supply-activity (DSA) and TNA for each clinician type
	Level 3b Map– Handoffs between provider types over multiple days where the work goes from one provider type to another within the same department/practice	Demand-supply-activity (DSA) and TNA for each clinician type, cycle time for each step
	Level 4 Map – Classic Cycle Time – an illustration of all the steps in the patient journey through the clinic, from check in to check out. May reflect a single red zone if the patient is only seeing one provider. If the patient is seeing a series of providers in the same visit, a series of Level 3a maps may be embedded in the Level 4 map.	Cycle time
	Level 5 Map – Individual maps of each process that makes up the classic cycle time. These maps assist in communication, information sharing and clarification of roles and responsibilities of each team member.	Simple flow mapping

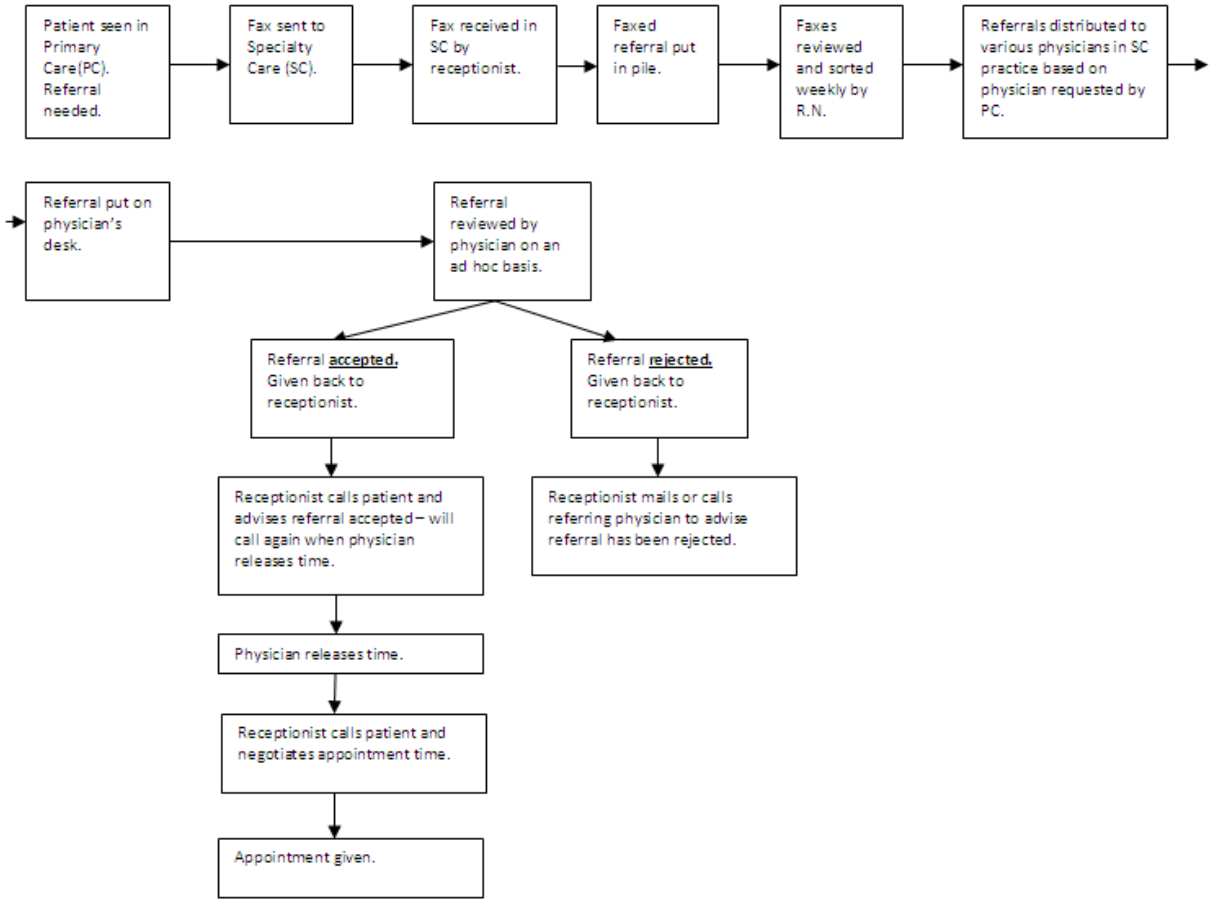
Level 1 Maps

The Level 1 map illustrates the intake process: the work as it flows into the practice from determination (or declaration) of demand to appointment made. The need for this map varies depending upon the level of complexity (number of steps) required to move work into the practice. In primary care, patients self-determine their need or demand and then go through a process, which is usually simple, in order to make the appointment. A map may not be required. However, in many specialty care practices the complexity of the workflow from declaration of demand to time the appointment is actually made (but not yet delivered) can be far more complex. Much of this complexity, as well as the consequent challenges with measurement for baseline and for improvement, are explained in detail in the paper "*Cumbersome Intake Process*" which should be read as an addendum to this paper.

In this cumbersome process, workload is declared, sent (often by fax), received, inspected, sorted, triaged, prioritized, "accepted," re-contacted, and finally appointed. This process, while intended to make the intake and referral process easier and more standardized, is characterized by multiple steps, inspections and decisions, most of which are hidden from the three customers of the process: patients, receivers of the work, and referring providers. Due to these multiple steps, the process results in extensive and extended delays. Because the process is disconnected from the receivers of the work, the receivers commonly hide their capacity and only randomly "release" appointments.

These factors all contribute to making system performance across this referral interface extremely difficult to measure, gauge and assess. Demand should not be measured when the work is received since so much is rejected and will never be managed by the supply. Third next available appointment (TNA) cannot be measured until an appointment is made. The delay in the Level 1 map can only be measured by actual delay - the time from the initial step to the last step. Thus delay is difficult to measure and demand cannot be measured. Without the capability to gauge system performance through basic measurement, we cannot see a baseline of that performance nor can we improve that system performance. At the same time, measurement of basic system performance metrics is critical: demand, corresponding capacity, drop off rates at each step, and particularly delays for the process and delays measured as TNA. The first level map constitutes the first part of the referral process from declaration of demand to when the appointment is made.

Level 1 Map Example

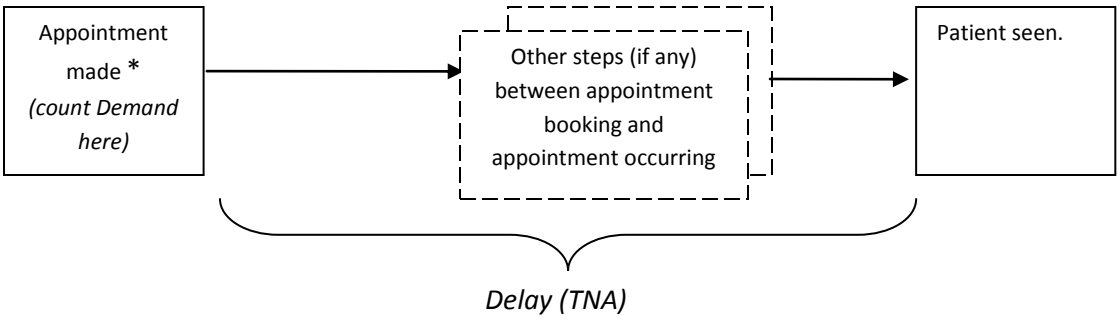


Level 2 Maps

For some practices, particularly in primary care, a Level 1 map is not required. The intake process is either extremely brief or instantaneous. In practices where the intake process is simple we can move right to the Level 2 map. On the other hand, in more complex practices, usually in specialty care, the intake process detailed on the Level 1 map occurs in front of the "appointment made" step detailed in the Level 2 map.

The Level 2 map starts when the appointment is made and where both demand and TNA can be measured. The Level 2 map shows the work as it flows into the practice from determination of demand to actual appointment delivered. The delay measured here is the “access delay.” This Level 2 map illustrates the process from time the appointment is made to the time the appointment is actually delivered, and is measured as third next available appointment.

Level 2 Map Example



Level 3 Maps

The Level 3 map is more specific and applies only to those practices or departments with internal handoffs from one provider type to another in order to deliver a total package of service. If the work flows into one provider without any handoffs then this map is not necessary except perhaps to see how work gets recycled as return demand or reappointed for procedures or tests.

Once the appointment is made, the Level 3 map illustrates how the work progresses through the practice. Some complex practices hand off the work from provider to provider within the same day: patients are seen by a series of providers in sequence within the day's appointments. In a sense, this flow has a series of linked "red-zones." This is a Level 3a map.

Other practices have a series of linked red zones but the hand-off occurs between days, not within the same day. A Level 3b map illustrates hand-offs from one provider to another between days.

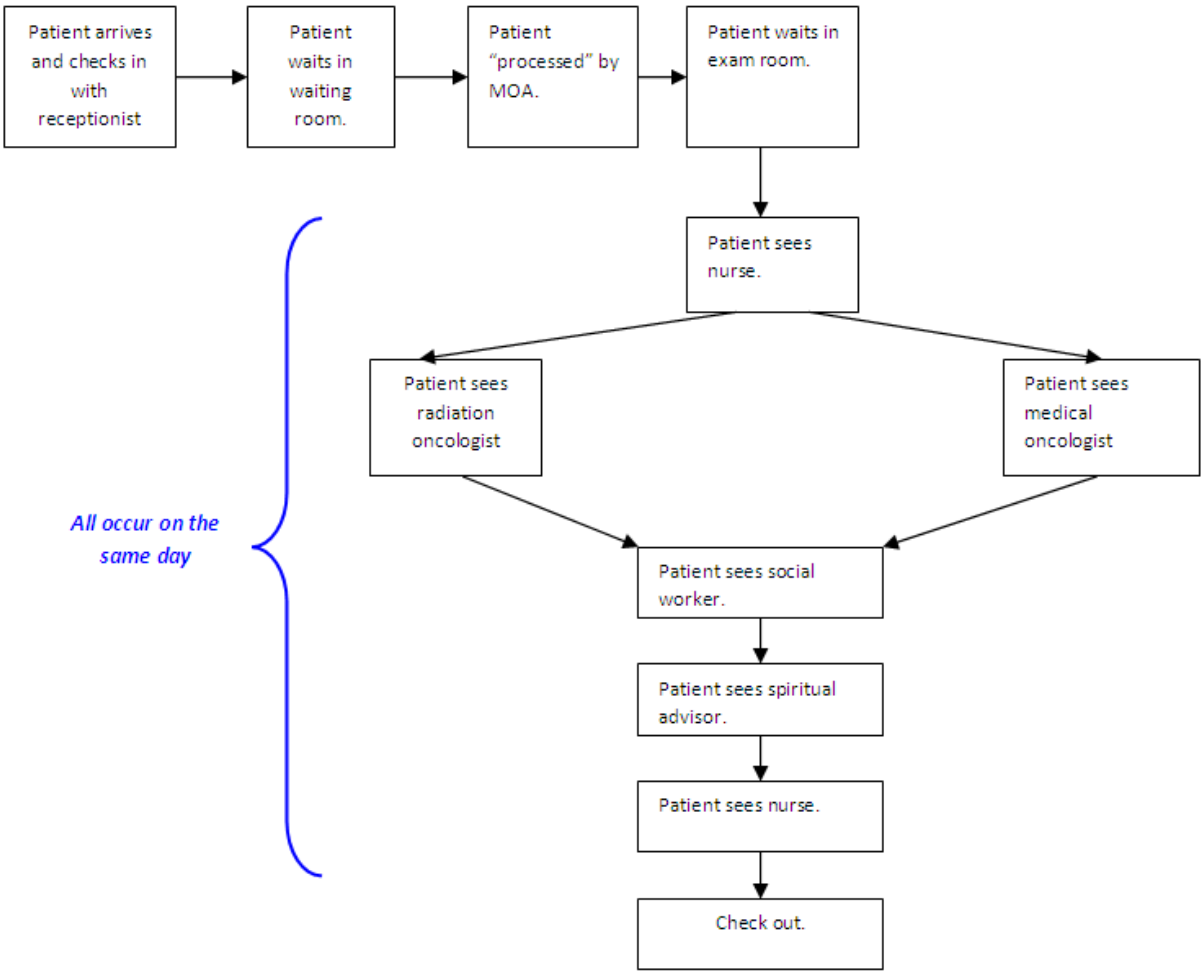
In either case, work flows from one provider type to another. Each arrow represents this handoff as demand is moved as "new" demand to each subsequent provider type. Each arrow has a measurable demand, a corresponding supply, an activity (how supply was used) and a delay.

Both Level 3a and Level 3b maps are intended to view workflow in more complex practices where there are multiple provider types who deliver a variety of services. In some cases there is a rigid prescribed sequence from one provider type to another while in others, the sequence is flexible. In some of these practices all patients are seen by one provider type and then routed in various sequences and proportions to other provider types.

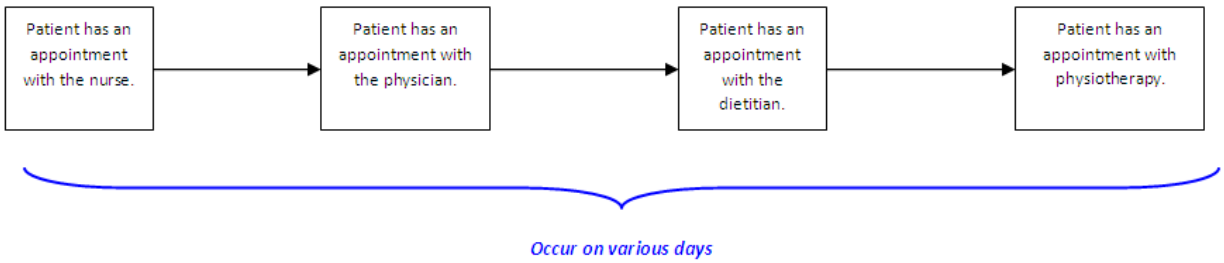
Mapping these flows, with the addition of measures, is critical to assess system performance. Each distinct provider type, regardless of where that type sits in the flow sequence, has its own demand, supply, activity and delay, and, as such, needs to be measured independently from the other provider types. Some of these paths will be “larger” than others with far more demand met by more corresponding supply than other paths. Some paths will have multiple intersections and sources of demand dependent upon the sequencing of the work. All distinct routes - demand streams - and handoffs need to be measured. Each arrow in the map indicates demand moving

to supply and needs its own measure of demand-supply-activity (DSA) and delay. By measuring each of the distinct demand streams, we can identify the system flow bottlenecks, rate limiting steps and mismatches. Measurement allows us to improve system performance.

Level 3a Map Example



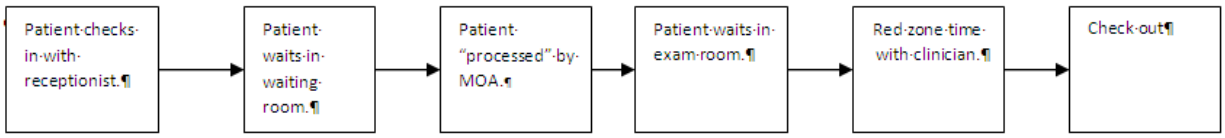
Level 3b Map Example



Level 4 Maps

The Level 4 map shows the classic cycle time, that is, how work progresses on the day of the appointment through the various steps arranged to set up and complete that appointment. The Level 4 map commonly shows the work as it progresses through the receptionist (receiving) to waiting room, through pick up from the waiting room, through various steps to the exam room, through the "red zone" process to the check out process. This map may also illustrate any extra steps that occur during all or some of the visits, for example trips to the lab, pharmacy, etc. The Level 4 map is measured by cycle time and can be further evaluated by value added and non-value added time within the appointment cycle.

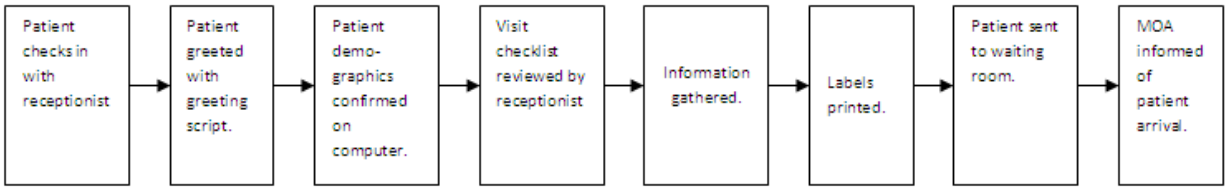
Level 4 Map Example



Level 5 Maps

The Level 5 map describes the flow of work within each component of the entire appointment. This map details the sequence of tasks within each process and, as such, is imbedded within the Level 4 map. The Level 5 map is used to view both the processes that directly support the patient's journey as well as those that indirectly support that journey. Examples of direct processes include the front desk process, the MOA process, etc. as they directly involve the patient. Indirect processes are the telephone answering process and the message process, which do not relate directly to the appointment. Level 5 maps are the most detailed, complex and variable of all the levels of maps.

Level 5 Map Example – Check-In Process



Level 5 Map Example – Prescription Refill Process