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PANEL SIZE

How Many Patients Can One Doctor Manage?

TIMOTHY COOK

There are limits to the number of patients you can effectively care for. Here's how to determine that number, improve patient access and better manage your workload.

Our health care system is increasingly recognizing the importance of improving patient access to care and is embracing the principles of advanced access, or "same-day scheduling." Access improvement depends on correctly matching patient demand with appointment supply without a delay[1-16] and without harming continuity of care.[17-25] In other words, it means seeing patients when their needs arise, not bumping them to another day or to another provider.

In its interim report on primary care, the Institute of Medicine stressed the importance of the relationship between patients and their primary care providers, which it defined as a "sustained partnership."[26] For this sustained partnership to become actualized, practices need to recognize that there are limits to the number of services each provider can deliver and the number of patients each provider can be accountable for (commonly referred to as "panel size"), and these limits must be defined.[27] This article describes the importance of panel size in balancing appointment supply and patient demand, methods to determine both the current and ideal panel size, and ways to make adjustments.

Why is it important to define a panel?

Establishing which patients are assigned to which physicians in the practice is important for a number of reasons:

1. It makes patients happy. Patient surveys clearly demonstrate that patients want the opportunity to choose a primary care provider; they want access to that provider when they choose; and they want a quality health care experience. Establishing a panel links each patient with a provider with whom they have a health care relationship.

2. It defines the workload. Establishing a panel helps divide and define workload within a practice and helps ensure that each provider is carrying his or her fair share.

3. It predicts patient demand. Panels are the source of demand not only for visits but also for non-visit work (paperwork, e-mail, etc.), tests, procedures and hospitalizations. Understanding the panel helps a practice anticipate that demand both.

4. It reveals provider performance issues. Understanding the panel allows groups to see the effects of provider variability. For example, if two providers have the same panel size but one provider has more demand than the other, then the practice can explore why this difference exists (e.g., one physician uses shorter return-visit intervals) and whether it is justified.

5. It helps improve outcomes. Identifying individual panels enables providers to make a commitment to continuity (that is, to taking care of their own patients for all their visits), which results in improved clinical outcomes,[17, 18, 28-30] reduced costs and enhanced revenue per visit.[13, 16, 19, 31]

What is the current panel size?

Panel size is simply the number of individual patients under the care of a specific provider. Panel size is easiest to determine in practices that can use enrollment data to link patients to individual providers and capture that linkage in their information system. This is most feasible in "closed" systems, such as some HMOs. In other environments, where panel size can shift rapidly or where it is not determined by enrollment or not permanently codified in the information system, other methods are required to link patients with providers and establish the panel size.

Determining the practice panel. The panel for an entire practice can be defined as the unique patients who

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Practices are sometimes surprised by the relatively small amount of provider time they have devoted to appointment work.

A provider needs a panel of manageable size in order to see patients when their needs arise, rather than bump them to another day or another provider.

To determine a provider's current panel size, follow the four-cut method described in the article.

have seen any provider (physician, NP or PA) in the last 18 months. Some practices may prefer to use data for the last 12 months; however, this method tends to underestimate the panel size, as many patients do not visit the practice within a year.

Determining the individual provider panel. Each patient on the practice's panel should then be placed on the panel of only one provider. Because patients may have seen multiple providers in a practice, this requires deciding which patients "belong" to which provider. The following "four-cut" method can be useful:

1. Patients who have seen only one provider for all visits are assigned to that provider.
2. Patients who have seen more than one provider are assigned to the provider they have seen most often.
3. The remaining patients who have seen multiple providers the same number of times are assigned to the provider who performed their most recent physical or health check.
4. The remaining patients who have seen multiple providers the same number of times but have not had a sentinel exam are assigned to the provider they saw last.

This four-cut method may not be 100-percent accurate (some patients will be assigned to the incorrect provider, and some patients will ultimately choose a different provider than the one they were initially assigned to); however, it's a good start. Panel assignments can be refined by asking and confirming at every opportunity the patient's choice of provider.

Determining the "target" panel. The target panel is the practice panel (defined earlier) divided by the number of full-time-equivalent (FTE) *clinical* providers. To determine the number of FTE clinical providers, take the total FTE providers and subtract the portion of each provider's time spent on nonappointment or nonclinical duties such as hospital rounds, operating room duties, procedures, management duties and meeting time.

For example, a practice with 6,000 patients and three FTE clinical providers would have a target panel of 2,000, or 6,000/3. (See the worksheet on page 47.) The target panel size can be compared with individual provider panel sizes to get a glimpse at whether a group's workload distribution is equitable.

These calculations relate to the current panel size. But the current panel size is not always the right size.

What *should* the panel size be?

Practices and individual providers should not take on more work than they can manage. If a panel is too large, the excess demand results in a never-ending and ever-expanding delay in services in addition to constant deflections to other providers, resulting in discontinuity. On the other hand, if a panel is too small, demand may not be adequate to support the practice. The demand for appointments must equal the supply of

ADJUSTING FOR PRACTICE STYLE

Some providers claim that their practice style warrants a smaller panel size. For example, a provider with a highly personable style of practice may feel more effective conducting longer office visits.

In a practice where physicians' salaries are fixed, decreasing the panel size for one provider can be controversial because it increases the size of others' panels. One possible solution is to provide a salary adjustment that corresponds to the panel adjustment. For example, a physician whose practice style involves lengthy office visits, resulting in a panel size that is 80 percent the size of the typical panel in the practice, might need to be paid 80 percent of what a fully paneled provider receives. In productivity models, some degree of practice style adjustment can be accommodated; however, if the smaller panel size pulls revenue down below daily expenses, then accommodation makes no business sense.

PATIENT PANEL SIZE WORKSHEET

The following worksheet can help you capture the data you need to calculate your current and ideal panel size. You can download an Excel version of this spreadsheet, which performs many of the calculations for you, at http://www.aafp.org/fpm/20070400/44pane.html.

	CURRENT PANEL	Example	Your practice
A	The practice panel: The number of unique patients who have seen any provider (physician, NP or PA) in the practice in the last 12 or 18 months	6,000	
B	Full-time-equivalent (FTE) providers	4.0	
C	FTE providers devoted to nonvisit work	1.0	
D	FTE clinical providers (B - C)	3.0	
E	The "target" panel for each FTE clinical provider (A ÷ D)	2,000	
	For an individual provider		
F	Clinical FTE of the individual provider being analyzed	0.80	
G	Actual panel for the individual provider (This can be determined using the "four-cut" method described in the article.)	2,000	
H	Difference between actual and target panel for the individual provider (G - (E x F))	400	

	IDEAL PANEL	Example	Your practice
I	Visits per patient per year (The average is 3.19, but your number may vary and can be adjusted based on patient acuity, as described in the article.)	3.19	
J	Provider visits per day	24.0	
K	Provider days per year	240.0	
L	Ideal panel size ((J x K) ÷ I)	1,806	
M	Difference between actual and ideal panel for the individual provider (G - L)	194	

Note: Strategies for reconciling the actual and ideal panels are provided in the article.

appointments if timely service is desired. A simple equation can be used to express this:

> *Panel size × visits per patient per year (demand) = provider visits per day × provider days per year (supply).*

This equation reveals each provider's ideal panel size based on his or her historical level of productivity. (See the worksheet, above.) However, this number is not immutable; the ideal panel size is derived from the three other variables in the equation, all of which are changeable. Often a provider will want to increase the ideal panel size (e.g., to increase capitated reimbursement, to retain current patients or to expand access to the community), which requires making adjustments to the following variables:

Visits per patient per year. The average number of visits per patient per year is 3.19, according to data we collected in one primary care practice. However, practices should calculate this figure for themselves by dividing the number of unique patients seen in the last 12 or 18 months into the number of visits to the practice that these patients generated within the same period. To increase the size of the panel that a provider can successfully care for, the number of visits per patient per year can be decreased by improving continuity (when patients see their own provider they require fewer visits),[31] lowering the visit return rate (i.e., the percentage of visits for which the provider requests a follow-up visit),[32] providing more service at each visit, increasing teamwork,[33] and using alternatives

The "target" panel is the practice's panel divided among providers in proportion to the time they have available to see patients.

A provider's current panel size is often not the ideal panel size.

The ideal panel size is the result of a simple equation that quantifies supply and demand.

Those providers who insist, "I have to say 'yes' to new work. I have no choice," are simply deceiving themselves. This is an irrefutable act of denial.

to traditional visits such as e-mail, telephone care and group visits.[34]

Provider visits per day. This variable is determined by looking at historical data regarding the number of visits provided per day; it is not simply the number of appointment slots *available* per day. This variable can be increased by optimizing care delivery models, decreasing the no-show rate, offering more appropriate help so that providers can reduce individual visit length,[33] improving the workflow by reducing bottlenecks and providing more "just in time" support, increasing the number of exam rooms,[25] and removing unnecessary work from the providers to allow them to maximize appointment supply.[33]

Provider days per year. This variable is determined by looking at the number of days a provider's schedule was booked for patient visits per year. It can be influenced by changing expectations about the number of days that should be booked with appointments and making critical decisions about how provider time is distributed (e.g., shifting providers away from nonclinical duties in favor of clinical duties). When doing this exercise, practices are sometimes surprised by the relatively small amount of provider time they have devoted to appointment work.

Isolating each of these variables helps providers understand how their practice patterns influence their panel size. For example, if a provider supplies 20 patient visits a day and works

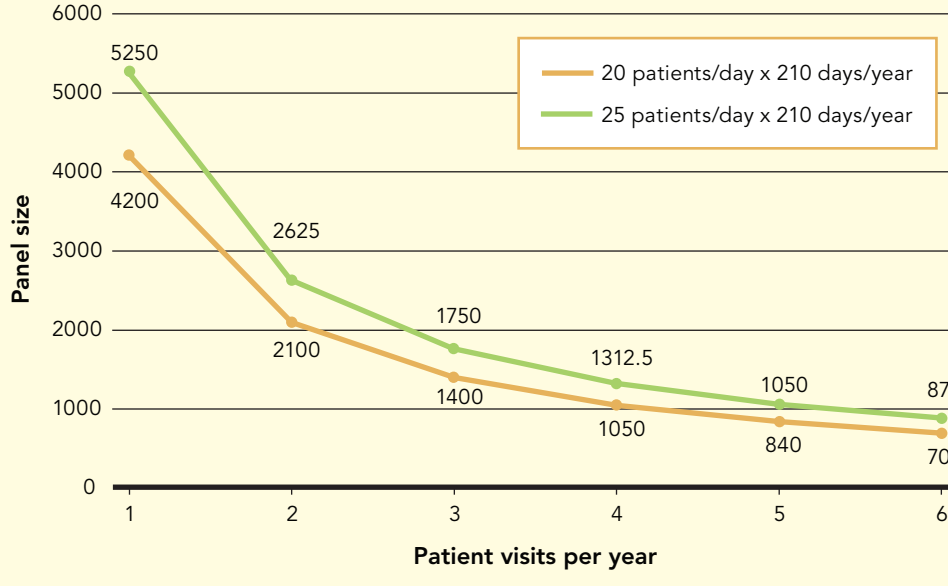
Changing one or more variables in the equation can change the ideal panel size.

For example, by removing unnecessary work from providers, a practice could increase its number of visits per day and accommodate a larger panel.

Ideal panel size is not fixed; it is an outcome of the environment in which you practice.

VARIABLES THAT AFFECT PANEL SIZE

Panel size can be influenced by the number of patients seen per day, the number of days the provider is available per year and the average number of visits per patient per year. For example, a provider who sees 20 patients per day, 210 days per year, with an average of three visits per patient per year, could manage a panel of 1,400 patients. By increasing capacity to 25 patients per day, the provider could manage a panel of 1,750 patients.



ADJUSTING FOR AGE AND GENDER

Providers sometimes claim that their patients are older and sicker than those on the panels of other providers, which justifies a smaller panel. Sometimes these arguments can become self-fulfilling prophecies, as providers can "prove" that their patients have higher acuity by creating more return visits (which increases demand) or longer visits (which limits supply).

Still, it's true that panels equal in number are not necessarily equal in acuity at any single point in time. In some practices, panel acuity tends to balance out over time. In others, due to many factors such as patient mix and provider interests, permanent acuity differences exist.

Patients' age and gender can predict visit utilization and reflect acuity. Over a number of years, we have collected visit utilization data within a primary care practice. Patients were divided into predetermined subsets based on gender and age. The average visit rate for all patients was approximately 3.19 visits per patient per year. The number of visits in each age and gender subset was divided by the average visit rate to determine the likelihood of a visit within the subset. For example, a 0- to 11-month-old male is 5.02 times more likely to visit than a 55- to 59-year-old male, whereas a 35- to 39-year-old female is half as likely to visit as a 75- to 79-year-old female.

Practices with sophisticated information systems could use this data to adjust provider panels. However, the process is complicated and requires caution. If one panel is adjusted down due to higher acuity, there needs to be a parallel adjustment up in panels with lower acuity. In addition, practices should consider whether many of the acuity factors could be managed more effectively by providing focused team support than by adjusting panels.

Patients' likelihood of a visit, by age and gender

	Relative weight	
Age	**Male**	**Female**
0-11 mos	5.02	4.66
1	3.28	2.99
2	2.05	1.97
3	1.72	1.62
4	1.47	1.46
5-9	0.98	1.00
10-14	0.74	0.79
15-19	0.54	0.72
20-24	0.47	0.70
25-29	0.60	0.82
30-34	0.63	0.84
35-39	0.66	0.86
40-44	0.69	0.89
45-49	0.76	0.98
50-54	0.87	1.10
55-59	1.00	1.20
60-64	1.17	1.31
65-69	1.36	1.46
70-74	1.55	1.60
75-79	1.68	1.70
80-84	1.70	1.66
85+	1.57	1.39

210 days per year at an average visit rate of three visits per patient per year, then the maximum panel size is 1,400. But if the provider can increase visits per day to 25 through the strategies outlined earlier in the article, then the maximum panel size would increase to 1,750. (See "Variables that affect panel size," page 48.)

What this demonstrates is that panel size is an outcome of the system in which providers operate. The ideal panel can be determined, but its size will necessarily differ in different environments depending on all the provider and system factors noted above.

What are the limits to panel size?

There is a limit to practice and individual panel sizes. If a practice or individual provider keeps saying "yes" to new patients and exceeds the limit, the overage can initially be absorbed into a waiting time. However, patients' willingness to wait has a limit. At some point, patients quit. Thus, despite saying "yes" to an endless stream of new patients with our words, we say "no" with our actions because these patients won't have access to care. Those providers who insist, "I have to say 'yes' to new work. I have no choice," are simply deceiving themselves. This is an irrefutable act of denial.

In addition, the increasing wait time for an appointment leads to escalating chaos within the practice as evidenced by an increased number of phone calls to the practice; longer handling time for those calls; more patient complaints; increasing no-show, cancel and reschedule rates; greater numbers of "walk-ins"

While panel size can be influenced by providers' practice patterns, it is not unlimited.

An excessively large panel will lead to long waits and eventually a loss of patients.

It will also create chaos within a practice, in the form of increased phone calls, no-shows and patient complaints.

If the panel is too big, the provider creates "overwork" (can't get the work done), "overtime" (needs overtime support) and "over there" (sends the work away).

to the practice due to patients getting impatient; greater use of triage resources to determine who has to wait and who cannot wait; and an increased level of discontinuity, which worsens patient outcomes and satisfaction and increases the return visit rate and visit length, which in turn lowers productivity.[13,16]

The main point is that if the panel is too big, the provider creates "overwork" (can't get the work done), "overtime" (needs consistent overtime support) and "over there" (sends the work away). If the panel is too small, the provider will not generate enough revenue to cover expenses.

A large patient panel also harms continuity, as patients are often bumped to other providers.

A small patient panel is also problematic, as it won't generate enough income to support the practice.

To manage over-paneled providers, consider closing their practices to new patients or shifting resources to support them.

What do you do with an over-paneled provider?

Once a provider's individual panel has been identified and all strategies for adjusting the panel have been dutifully applied, it might be found that the provider is indeed "over-paneled."

If a provider is over-paneled, these strategies will reduce his or her panel:

1. Let attrition take its course. Every year in a typical practice, patients move away, die or change insurance.
2. Close the over-paneled doctor to new patients, at least temporarily, and excuse him or her from seeing the patients of absent providers.
3. Shift more resources to support that provider. This may take the form of additional nursing or clerical staff, or possibly additional exam rooms.
4. Move patients away from that panel. In this situation, providers will need to inform their patients directly, for example, by sending a letter to patients informing them that they are being moved to another provider's panel.

The bottom line

There is a limit to the number of patients each provider can effectively care for. That limit depends on the system in which the provider practices, but it can be defined using the methodology described in this article. Having an appropriate panel size is key to managing clinical workloads and optimizing patient access to care. FPM

Send comments to **fpmedit@aafp.org.** The authors will answer frequently asked questions in an upcoming issue of *FPM*.

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It may be necessary to assign patients to a new physician within the practice.

Having an appropriate panel size is key to managing your workload and providing high-quality care.