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BEST ADVICE

# Panel Size

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## BEST ADVICE – PANEL SIZE

The objective of this tool is to provide a guide for Canadian family physicians on factors affecting practice panel size and the consideration of measures of performance and quality of care.

Although there is insufficient evidence to establish benchmarks or recommendations for the number of patients for which family physicians should be responsible, this resource acts as best advice to define panel size, provide approaches, identify factors that affect panel size, and address the measures that gauge performance. It is important to note that there are compromises to consider regarding the impact of panel size on access and quality of care for registered patients versus that for non-registered patients at the community level.

Establishing a manageable panel size is necessary when balancing the workload for a busy practice. The right-sized practice can enable a balance between the demand for service and supply of service. This balance will enable the practice to meet commitments to patients for access to services, quality of care, and an overall satisfying healthcare experience. There is evidence that the quality of care, access to services, and continuity of care delivered decreases when family physicians care for too large a number of patients. Large patient loads have been linked to a decreased availability of emergent care,<sup>1</sup> reduced number of yearly visits,<sup>2(pp1501-5)</sup> shorter consultation times,<sup>2</sup> lower continuity,<sup>3(pp44-51)</sup> fewer preventative care services,<sup>4(pp11-7)</sup> lower quality individual health promotion,<sup>5</sup> lower quality disease management,<sup>6(pp309-318)</sup> and a decline in comprehensiveness of care (e.g., reduction in home visits).<sup>7</sup> Alternatively, if a panel size is not large enough, the family physician may not be able to financially support his or her practice and there might be increased unmet community need. Large patient loads in primary care can also adversely affect the demand for service in other sectors of the health care system through increased referrals to specialty care and use of emergency services.

## DEFINITION OF PANEL SIZE

A **panel** is the formalized linkage and long-term, ongoing relationship between a primary care physician to a provider and his/her patients. **Panel Size** is the number of individual patients under the care of a specific provider.<sup>3</sup>

### *Related terms:*

**Workload** is defined as all tasks required to be performed including functions directly related to patient care and those of a more administrative nature.

**Productivity** is defined as the number of patient encounters per unit of time.<sup>3</sup> In its Principles of Comprehensive Primary Care, the Association of Family Health Teams of Ontario (AFHTO)

states that comprehensive primary care is accountable to and needs to represent the expectations and needs of the population it serves.<sup>8</sup> This philosophical foundation addresses the qualitative measures met within a panel and could, therefore, measure productivity as the number of satisfied relationships per unit of time.

**Full-time Equivalent** – The Canadian Institute for Health Information uses an algorithm that relies on the number and complexity of services rendered (based on fee schedule) to estimate the provider's full time equivalent worked. Although there are significant limitations to this methodology, it is widely used and accepted.

*“Full-time equivalent (FTE) is defined as the measure used to estimate whether a physician is working full-time. It is a weighted count, based on total fee-for-service payments received. A physician's FTE value is calculated using his or her total payments in relation to upper and lower payment benchmarks for that specialty in that jurisdiction.”<sup>9</sup>*

## APPROACHES

A standard panel size for all family physicians does not exist, but physicians can define their ideal panel size using approaches (*Appendix A*) that take into account the supply and demand of services. It should be noted that none of these methods measure quality or efficiency.

Measuring panel size tends to be easier to determine in systems with full patient registration to individual provider. There are several ways to calculate a virtual “active” panel. A physician can count a panel of patients within the last 12 months but may be missing those who may not have visited the clinic within the last year. A physician can count her/his panel of patients over the past 36 months but can risk over counting – some patients may no longer be patients of the provider. The most important number to look at is the visit rate. The best way to discover an “active” panel of patients would be to discover the unique unduplicated patients over the last 18 months and use their 12 month visit rate in the panel equation.<sup>3</sup>

## PRACTICE FACTORS THAT AFFECT PANEL SIZE

### 1. HEALTH CARE SYSTEM

#### Provider Remuneration

While most family physicians still receive some of their income by fee-for-service (FFS), alternative models of payment have been growing in popularity. Traditionally, fee-for-service payment models reward volume of service rather than prevention of illness and coordination of care which might be carried out in non-face-to-face ways.<sup>10</sup> Family

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physicians increasingly show a preference for blended payment models of remuneration.<sup>11</sup> Blended payment models that align incentives for care are more common in newer primary care practices. There should be room to consider multiple approaches to payment models, and payment schemes should be aligned with desired patient outcomes. The CFPC has long endorsed blended funding models.

### Scope of Practice of Associates

A strong and high-performing primary healthcare system with an essential role played by family physicians has the potential to deliver better health care for the population as a whole and specific groups such as those with chronic diseases.<sup>12,13</sup> Given the complexity of care in family practices, many family physicians are adopting an integrated interdisciplinary approach to deliver proactive quality care to their patients. Practices with high-functioning primary care teams enable non-physician team members to take on clinical tasks that patients need, that physicians have insufficient time to perform, and that involve a blending of multidisciplinary skills, focusing several people's — rather than a single physician's — insights on each patient's problems.<sup>14</sup> Both the traditional family practices that have cared for Canadians for many years and those that are parts of newer primary care initiatives contribute significantly to the delivery of quality of care to our population.

Multidisciplinary clinical teams may produce clinical outcomes superior to those achieved by “usual care” arrangements, with many studies evaluating the addition of nurses, social workers, psychologists, and clinical pharmacists to teams.<sup>15</sup> These effective care teams including nurses, other health professionals and practice support staff can enable the practice to provide a greater scope of comprehensive care services, increased patient visits, allow a larger caseload, and enable the family physician to better manage administrative and clinical work by delegating responsibilities to the most appropriate health care professional. A study by Bodenheimer describes a multidisciplinary system in which family



physicians have a more coordinated and consultative role that could work to enhance panel size.<sup>16(pp2086, 2089)</sup> One study of primary care teams suggests that six team members is the optimal size; teams with greater than 12 members are too large.<sup>17</sup>

A 2009 study by Francis et al. showed that the use of medical residents increased panel size and improved the efficiency and continuity of care within a clinic. “Residents serve as primary care physicians for their own panel of patients, and each resident is assigned to a single attending faculty member for the duration of their residency. Faculty members supervise 2 to 7 residents per year. If a patient needs an appointment but the primary resident is not available, the patient may be seen by any provider on the resident/attending team based on availability. The study showed that percent continuity for patients followed by residents was significantly affected by the number of resident clinics, the panel size for the residents, and the attending physician.”<sup>18(pp310-15)</sup>

Although there isn’t specific evidence on the optimal team ratio, the efficiencies of the allied health professionals, the team composition’s effect on panel size, and what the team’s skill mix should look like, much depends on the panel and its needs; including population health and prevention approaches as part of the care.

## Access

International research provides clear evidence of the correlation of access to effective family practices with better population health outcomes.<sup>19(pp1493-8)</sup> While it is not always possible for a patient to see her own family physician, her nurse or her other medical home team members, effort must be made to ensure that continuity of care remain central to access planning and quality.

Establishing wait time targets in primary care is exceedingly difficult. Therefore, in lieu of setting access targets, we should focus on enhancing access, specifically through same-day scheduling. According to Murray and Tantau, same-day scheduling (also called open or advanced access) is about doing today’s work today, eliminating the “distinction between urgent and routine”, but it doesn’t mean every appointment is open.<sup>20</sup> The Murray and Tantau model leaves 65 per cent of the day’s bookings open and 35 per cent booked. The 35 per cent are for “patients who couldn’t make it in on Friday and chose Monday instead or patients whom the physician deliberately scheduled today for follow-up.”<sup>20</sup>

In an effort to enhance timely access, one should balance access with continuity of care. As patient encounters are increasingly defined by more than face-to-face interactions during regular hours, timely access can also be supported through use of group visits, email, phone, ‘smart’ phone, social media, interactive electronic patient records, and after-hours care. Haggerty et al found that being available to patients by telephone helped to improve accessibility and continuity.<sup>21(pp116-23)</sup> Since timely access is essential in the delivery of primary



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care, efforts to reduce the rate of missed appointments can significantly improve productivity.<sup>3</sup> Providing same-day opportunities for patients experiencing acute or semi-urgent symptoms can reduce the incidence of ‘no shows’ for appointments. It should be noted that face-to-face appointments should be used when information is highly ambiguous, complicated or emotionally charged and email or phone discussions are best reserved for clear, simple and emotionally neutral messages.<sup>22(p572)</sup>

## 2. PRACTICE CONTEXT – POPULATION, COMMUNITY AND PHYSICIAN CHARACTERISTICS

### Population

A family practice is influenced by the patient profile and case mix of its population. Demographics of the population such as age, gender, language spoken, culture, socio-economic status, and medical complexity determine the number of patient visits.

The age and gender of a patient population can predict visit utilization. It has been shown that females, babies and older patients require more visits.<sup>3</sup> For example, a 0-12 month old male has a 5.02 times higher ‘risk’ of a visit than a 50 year old male. Since all risk is relative, this is a zero sum game; the number of patients has to be equal to the number of ASAMES (age and sex adjusted medical equivalents).<sup>23</sup> A provider may opt to have fewer patients who are considered high risk than a provider who chooses to have more patients at less risk.

Complex or chronic conditions will significantly impact a family physician’s caseload. Patients with chronic care disease management cases require routine patient visits, greater time requirements and more resources. Studies have shown that it would take 7.4 hours per working day to provide all recommended preventive care to the average primary care panel,<sup>24</sup> plus 10.6 hours to adequately manage chronic conditions;<sup>25</sup> 42 percent of primary care physicians report not having adequate time to spend with their patients; and 50 percent of patients leave the office visit without understanding what advice their physician gave.<sup>26</sup> In sum, family physicians in the 15-minute visit can no longer do what is expected of them. In response, Dr. Tom Bodenheimer, a primary care physician in the U.S, developed the Primary Care Teamlet Model. The Teamlet model proposes that the 15-minute physician visit be replaced by an encounter featuring a clinician and a health coach (a medical assistant or other caregiver with considerable training and responsibility) providing pre-visit, visit, post-visit, and between-visit care.<sup>26</sup>

A patient’s socioeconomic status can determine his or her health risk and general health status. Canadians with a lower socioeconomic status make higher use of the health care system, yet report greater barriers to accessing care.<sup>27-29</sup> Additionally, a patient’s language and cultural values may impact the time a family physician spends with the patient. Family physicians may need to use a translator at clinical appointments, with pre- and post-visit

dialogue, and may need to provide written resources in various languages. A patient's cultural values may need to be considered when providing medical care.

Case mix is an important factor for a family physician to consider when determining panel size. It is also a factor in determining capitation rates. In Canada, Ontario uses a "Needs-based Health Care Funding" model that utilizes a Standardized Mortality Ratio (SMR); capitation rates are adjusted based on age and sex. British Columbia has adopted a diagnosis-based method for adjusting risk used in the United States called the John Hopkins ACG Case-Mix System. The system was developed with the aim of measuring population's disease burden on the basis of co-morbidity levels, measured as a sum, or sets, of diagnoses. It could be potentially used as a tool for risk adjustment in capitation budgets or for efficiency assessment in resource consumption Morbidity index.<sup>30-34</sup> The United Kingdom model uses age and sex adjustments along with standardized mortality rates and ecological measures of socioeconomic status.

To ensure a manageable panel size, it is important to strive for an equitable mix amongst the panel's patient profile and case mix. If the practice contains a high proportion of complex cases, the family physician may prefer a smaller panel size or may enlist non-physician members of a practice team to take on clinical tasks to ensure the delivery of quality care.

## Community

The geographic location of a practice and socioeconomic status of its patients affects the practice's panel size and the comprehensive care services it provides. Typically, practices located in rural settings offer a larger basket of services than a practice located in an urban area.<sup>35,36</sup> Larger practices can offer a larger array of services and more efficient referrals. It has been shown that primary care teams in disadvantaged areas have higher demands on their time. Their patients consult more frequently, call more often at night, and have poorer self-reported health.<sup>37</sup> Carlisle et al found that in very deprived areas, 20% more general practitioners are needed for the same population.<sup>37</sup> Health care costs, including general practitioner workload and pharmaceutical costs, increase in socio-disadvantaged areas.<sup>38</sup> A family physician may need to travel to remote cities to conduct patient visits. The time taken to fly or drive to other areas will impede on the time spent at the practice.

## Physician Characteristics

The profile of a family physician including their age, sex, provider style and years in practice influences the panel size that they manage. Older and male providers tend to care for larger panels.<sup>39</sup> New providers take time to reach a stable panel size.<sup>40,41</sup> Compared to male physicians, female physicians conduct longer medical visits engaging in significantly more communication that can be considered patient-centred.<sup>42</sup> Family physician consulting style, whether they are considered "fast consulters" or "slow consulters", will affect the size of the panel they can manage. A 2002 systematic review of consultation-length studies found that doctors with longer consultation lengths in many international settings prescribed



less, provided more lifestyle advice, dealt with more problems, and exchanged more information.<sup>43</sup> Longer consultation length has also been associated with improved chronic disease management.<sup>44</sup> The family physician's scope of practice should be considered when determining a panel size. Providers offering more comprehensive care such as obstetrics, hospital, and emergency room coverage, especially in rural areas, may need to limit panel size.<sup>45</sup> Participation in teaching or research activities may also affect panel size.

### 3. Organization of Practice – Human Resources and Office Infrastructure

The organization of a practice including human resource support and the office infrastructure itself affect the productivity of a practice.

#### Human resources

Health and human resources include support staff and other care providers. Support staff, such as a receptionist or administrative staff, work to maintain an effective practice and ensure effective patient flow.<sup>45</sup> Health care providers such as a nurse practitioner and multidisciplinary team members work together with the family physician to provide and coordinate a broad spectrum of health care services for patients. Whether staff are part-time or full-time equivalent impacts the productivity of a practice. Studies show that part-time staff appear to be just as productive<sup>46</sup> or more productive<sup>47</sup> than full-time staff when their productivity is pro-rated to their full-time equivalent.

#### Office infrastructure

##### *Health Information Technology/Electronic medical records (EMRs)*

An electronic medical record (EMR) focuses on medical information and is configured to reflect the needs of patients for access to personal health information by their family



physician and other team members who are directly caring for them. EMRs ensure effective collaborative care; they assist in understanding community needs; they are integral to the delivery of high quality care; they help ensure timely access; offer alerts to important events, they support evaluation, practice management, quality indicators and health outcomes tracking; and they can, if integrated properly, help to support patient panels. Alternatively, EMRs may increase charting time for the family physician.

On-line interactions through electronic patient records can allow appropriate patient access to information within their own EMR. This interactive technology can enable patients to create and manage their personal health information based on their personal and clinical information (i.e. address changes, report on blood pressure readings, weight, laboratory requests etc.) and enable follow-up actions on results without having face-to-face encounters with their health professional.

EMRs must be adequately funded, have standardized language to ensure common data management and be interoperable with other electronic health records relevant to the patient's care. There must also be ample training and ongoing technical support for all team members. It is widely known, however, that access to and use of these systems by family physicians is not as common in Canada as in other countries.<sup>48</sup>

### *Office design*

The physical organization of a clinic that utilizes multi-disciplinary teams can improve clinical outcomes and support larger panel sizes.<sup>40,41</sup> An adequate number of clinical rooms helps limit downtime related to bottlenecks.<sup>40,41</sup>

## QUALITY OF CARE MEASURES

The central reason for establishing an appropriate panel size is to support the delivery of high quality care.

In striving for high quality care, a physician and his/her team should track its patients' health outcomes, the office's processes of care, such as those that relate to appropriateness, access, patient safety and responsiveness, and patients' satisfaction with the care they receive. According to Snyder et al, high quality care should: "...identify excellent comprehensive care. [It] must recognize successful management of multiple complex chronic conditions, meeting the counseling and communications needs of patients, and providing continuity of care and other attributes of comprehensive care. All measures must sustain and enhance appropriate patient care and the patient-physician relationship."<sup>49</sup> Since the population determines the expectations, elements of quality are not of equal value

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to the population. For example, a good patient relationship is valued at about twice the value of all chronic disease management.<sup>50</sup>

### *Indicators of quality*

#### **Accessibility**

Timely access is essential in the delivery of patient-centred care. Improved access to care can reduce redundancy and duplication of services (e.g. when a patient doesn't wait for an appointment and sees another provider), improved health outcomes, better patient and provider satisfaction, and a possible reduction in emergency visits. Several CFPC papers, including its 2009 medical home discussion paper, 2006 wait times paper, and 2009 Primary Care Wait Time Partnership report support the use of same-day appointments in primary care settings.

#### **Continuity**

Continuity of care is care that accounts for the continuum of the patient's health needs through their lives. Continuity requires good communication between the patient's family physician, nurse and other care providers both within and external to the primary care setting. Starfield et al found that having a single primary care physician improved health outcomes: "The more physicians patients see, the greater the likelihood of adverse effects; seeking care from multiple physicians in the presence of high burdens of morbidity will be associated with a greater likelihood of adverse side effects".<sup>19</sup>

#### **Comprehensiveness**

Comprehensive care refers to the range of services provided within a family practice by the family physician and the family practice team members. Evidence suggests that continuity and comprehensiveness of care improves the health status of patients; results in more efficient, higher quality health care delivery; lowers healthcare costs and increases patient and physician satisfaction when anchored in the primacy of the patient-physician relationship.<sup>51</sup>

#### **Patient satisfaction**

Access to services, continuity, coordination and comprehensiveness of care are associated with higher patient satisfaction.<sup>52</sup> When panels are "over- full" and patients are systematically deflected to others in the practice or to other venues for care, patient satisfaction cascades downward as does provider satisfaction while costs and rework increase.<sup>45</sup>

#### **Chronic Disease Management**

Solo and team-based family physicians can mitigate or eliminate chronic diseases through preventative health counseling, performing more screenings and immunizations, and providing care advocacy and coordination of care. An appropriate panel size would allow the clinician time with each patient to focus on chronic disease and preventive care health issues while addressing acute concerns as needed.<sup>53</sup>

## Preventive Care

Preventive medicine is a cornerstone to the practice of family medicine in reducing incidence and severity of leading causes of disease and disability, but is often difficult to implement because of a lack of time and logistical difficulties. One study found that on the basis of recommendations from national clinical care guidelines for preventative services and chronic disease management, and including the time needed for acute concerns, sufficiently addressing the needs of a standard practice panel of 2,500 would take approximately 21.5 hours per day.<sup>53</sup>

## Health Outcomes

Research supports better health outcomes and lower costs overall with support for a strong primary care system. Starfield et al found that the greater the extent to which a wide range of services are provided by practitioners and a family orientation of these services are associated with better health outcomes at lower costs.<sup>19</sup>

## CONCLUSION

There are limits on how many patients a physician can effectively care for without compromising patient's quality of care. The key is to ensure that the demand for services will not exceed the supply of services. It is also important to measure the population's needs and their expectations as an indicator of population satisfaction.

Factors related to the health care system, practice context and the organization of the practice including are important considerations in determining a panel size.

If panel is too big, the practice may experience issues around discontinuity, wait times and patient dissatisfaction. If the panel is too small, the family physician cannot generate enough revenue to maintain a quality practice. A physician may be able to gauge a right-sized panel size based on: patient satisfaction; if the community needs are being addressed by comprehensive practice; if quality of care process indicators were being met; health outcomes were improved; and the physician(s) and other health care providers were experiencing a sustainable quality of life.

To ensure an appropriate and equitable panel size, a family physician should consider adjusting the panel size in relation to the physician's practice style and patient population.

The CFPC recommends establishing panel size targets and conducting ongoing monitoring. A monitoring strategy must ensure quality of care, accessibility, patient satisfaction, comprehensiveness of services and staff effectiveness.

## Appendix A



Generally, panel size is reported using these approaches:

### Defining panel size for a family physician

Number of patients per family physician FTE. This method attributes all patients to the family physician (current method in Ontario). In multi-disciplinary practices, this number needs to be accompanied by ratio of nurse practitioner to family physician.

# of patients per family physician FTE (for a given ration of nurse practitioner : physician).

Example: 1200 patients per family physician FTE  
1800 patients per family physician FTE and nurse practitioner  
(ratio of 1 nurse practitioner: 1 physician)

### Defining panel size for a multi-disciplinary setting

Number of patients to FTE doctor, including x per y allied health professionals per doctor (social worker, dietitian, physiotherapist...)

Example: 5000 patients to FTE doctor including 4 allied health professionals per doctor

### Workload Formula<sup>3</sup>

Panel Size = provider visits per day x number of days worked per year / visits per patient per year

Example: 18 visits per day x 240 days worked per year / 3.19 visits per patient per year = 1354 patients

### Ideal Panel Size Formula<sup>54</sup>

Panel size x visits per patient per year (demand) = visits per provider per day x number of days worked per year (supply)

Example: if a physician provides 20 visits per day, 220 days per year, and his or her patient population averages two visits per patient per year, the ideal panel size would be 2,200.





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