The Starfield Model - Measuring Comprehensive Primary Care for System Benefit

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Abstract

Comprehensive primary care describes the long-term relationship between patient and provider in which medical services, support for self-care and care coordination are the foundation. Research has associated comprehensive primary care with better system quality, equity and efficiency. A performance measurement method is needed to enable teams delivering such care to optimize their performance and to evaluate the benefits over time. This paper describes "The Starfield Model" – an approach to measuring quality, capacity and total system cost at this scope of service – and the results achieved by a small family health team in implementing this model. This experience suggests that real benefits arise from meaningful feedback to providers. The model has the potential to work in any payment system of primary care, thereby providing insight into all types of comprehensive primary care practices.

Introduction

There is a compelling association between comprehensive primary care and system efficiency and effectiveness. The lifelong work of Barbara Starfield observed that an investment in primary care was associated with improved system quality, equity and efficiency (reduced cost) [1,2,3,4]. In British Columbia this efficiency was quantified by Marcus Hollander. The total cost of care was measured for the sickest patients. Patients without close alignment to primary care had a system cost of $30,000/patient/year. Patients with close alignment to primary care had a system cost of $12,000/patient/year [5].

Defining Comprehensive Primary Care

Starfield and Hollander's work should not be interpreted as a blanket endorsement of any and all forms of primary care. It focuses on *comprehensive* primary care.

Starfield was explicit in the form of primary care associated with her observations. In 2009 she wrote *"The key components of primary care at the clinical level include access to and use of first-contact care, patient-focused (rather than disease-focused) care over time for defined populations, services that are comprehensive and timely, and coordination of care when patients need services elsewhere."[6]*

Hollander's observations implied similar associations with a comprehensive scope of primary care. Primary care alignment was measured by the number of different primary care doctors involved in a patient's care. Tight alignment was determined by 90% all services being provided by a single primary care provider. The implication is that the single provider probably provided all services (a comprehensive scope of care).

While there is no definition of comprehensive primary care in Canada, there is a general observation that it is a long-term relationship between a provider and a patient in which medical services, support for self-care and care coordination are the foundation. In Ontario the 7,400 primary care physicians who have signed Patient Enrollment Model (PEM) contracts have agreed to a scope of care described in the contract which is reasonably congruent with comprehensive primary care[7]. Regardless of definition,

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comprehensive primary care incorporates many different services and attributes which would require many indicators to describe.

The Starfield Model

The Association of Family Health Teams of Ontario (AFHTO) is committed to the vision that all people in this province will have timely access to high-quality and comprehensive primary care; care that is informed by the social determinants of health, delivered by the right mix of health professionals in partnership with patients and their community, anchored in an integrated and equitable health system, and sustainably resourced and delivered. To this end, informed by Dr Starfield's work[8] and the pioneering efforts of the Dorval Medical Family Health Team, AFHTO has adopted an approach to performance measurement called The Starfield Model in her honour.

The model begins with comprehensive primary care as the foundation of a sustainable, responsive health care system, with the goals to:
- Optimize health outcomes for patients and populations
- Meet patient and public expectations
- Support a sustainable health care system

The focus of the primary care team is therefore to:
- Improve quality
- Increase capacity to assure access for patients
- Reduce cost – at the team level and the system level

To be able to optimize performance of primary care teams, the foundation must be set to:
- Support the fundamental relationship between patients and their primary care team
- Enable primary care teams to collect and report data efficiently
- Encourage and reinforce excellence in team performance
- Provide the feedback needed to promote stewardship of health system resources beyond the Primary Care Team

Measurement and feedback is therefore structured for teams providing comprehensive primary care to a defined patient population, and is focused on outcomes and processes, not activities and transactions. The measures are presented in terms of Quality, Capacity and Total System Cost. Indicators are defined by a representative body that refines the selection and weighting of the indicators to establish a uniform measurement system for all of the teams.

Measuring Quality

Barbara Starfield wrote, "Any country that is serious about primary care would eschew a sole focus on disease-oriented quality goals. Yet Canada has adopted lock, stock and barrel the 'micro', biomedically
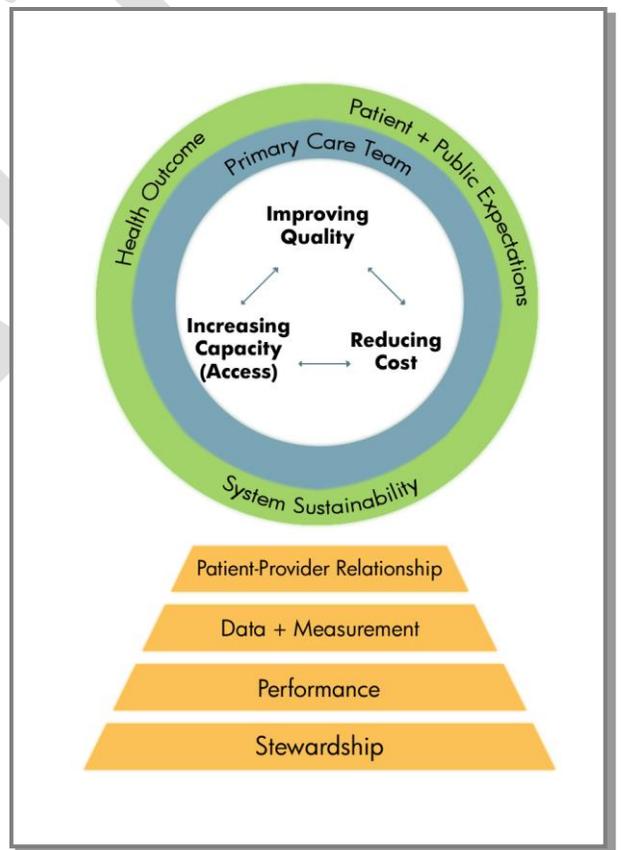
oriented approaches to quality, and payment for performance focused narrowly on diagnosis and management of specific diseases."[9]

Quality in comprehensive primary care encompasses multiple factors and requires simultaneous measurement of multiple indicators. In order to track overall quality over all of these dimensions, a **composite measure** is needed.

To create a composite measure, **patients must be engaged in determining the weighting** of individual indicators and groups of indicators. To be relevant to the public and accountable to patients, the measure must reflect what they value in their care.

The measurement system must be **dynamic**. Periodic review of indicators enables measurement to adapt to changing public expectations and evolving scientific evidence, thereby increasing accuracy over time.

Measures must also be **adjusted to reflect the complexity** in the case-mix of patients. A number of methods exist to correct for practice population differences. A simple but crude method is to use the capitation multiplier table in the Ontario Patient Enrolment contracts to adjust the patient count on the basis of historic primary care utilization[‡]. A second method is the Johns Hopkins' system of Adjusted Clinical Groups (ACG)[10] . In Ontario the Institute for Clinical Evaluative Sciences (ICES) in Ontario is currently developing an approach for this province.

Measuring Capacity
Our health care system has an obligation to provide care for all 13.5 million residents. With an assured right to comprehensive primary care together with assurance of quality, the system would be much closer to achieving equity in health care for its entire population.

When quality is assured, as determined through the composite indicator described above, capacity can be measured by the following formula:
(Population with assured Quality) / (Comprehensive primary care provider labour units[§])

There are 7,400 primary care doctors contracted to provide comprehensive primary care through the Patient Enrollment Models, providing an average of 30 hours of patient care per week[11]. The formula tells us that this labour resource[**] (7,400 x 30 hours = 22,200 labour units a week) would have to provide assured quality at an efficiency of 60 patients per labour unit in order to fully meet the needs of the province.

Applied at the practice level, a practice that is assuring quality for its population of 6,500 patients and provides this service with 120 hours per week of appointment hours for doctors and nurse practitioners,

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[‡] Total capitation payment divided by average capitation rate = number of average patients
[§] The labour units are the number of appointment hours per week for the doctors and nurse practitioners to whom patients are rostered or registered.
[**] Nurse practitioners and family physicians in other models (e.g. salaried physicians in Community Health Centres) are also providing comprehensive primary care in Ontario.

would achieve a capacity measure of 6,500/120 = 54.2.[††] The valuable contribution of others in interprofessional models such as Family Health Teams and Nurse Practitioner-Led Clinics is reflected through the practice's ability to enhance its quality and/or capacity and reduce total system cost through improved outcomes for patients.

Measuring Total System Cost
Currently, there are only surrogate measurements of Total System Cost available to comprehensive primary care practices. ICES has completed work that enables about 85% of total health costs to be tracked to the individual Ontario health card number, [12] which could then be aggregated for the roster of patients registered with a practice. This work is not yet done on an on-going basis, but theoretically, could run as frequently as the source data is updated.[13]

The Dorval Medical Family Health Team's Experience
Guided by work in composite indicators (CI) of quality in primary care such as the United Kingdom's Quality Outcomes Framework (QOF)[14], over the past decade the Dorval Medical Family Health Team has developed a CI of comprehensive primary care for use in its practice. Dorval Medical's CI uses monthly measurement of about 60 indicators, with explicit measuring methods for each indicator, and an explicit weighting relationship between all indicators. The specific steps used by Dorval Medical to create its CI are available on the practice's website.[15,16]

The same CI is used to measure 4 key attributes of comprehensive primary care's relationship with patients:
- **Access** – access to provider time or patient information;
- **Knowledge** – current comprehensive patient record which tells the story of the patient. It also includes knowledge transfer (patient health education);
- **Trust** – trust that expected services will be provided to the expectation of the patient population;
- **Sensitivity** – sensitivity to the emotional component of the relationship.

Dorval Medical is accountable to its patient population, and therefore the weighting of individual indicators used to construct the CI are subjected to patient polling to determine the indicator's value to the patient provider relationship, the degree to which the indicator reflects the components of the relationship (Access, Knowledge, Trust and Sensitivity) and the thresholds for measurement[17]. A detailed description can be obtained in the document "Creating a Composite indicator for Comprehensive Primary Care" on the Dorval Medical website[18].

The practice does not yet have a data source for Total System Cost. It uses a surrogate measurement (total acute care bed days) which represents about 40% of total cost of care. A data source for total cost of care is under development at the Institute for Clinical Evaluative Sciences (ICES).

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Every month, the practice reports the 60 indicator scores, the 4 attribute scores and the overall Quality score. This measurement is reported along with the practice's Capacity and the surrogate for Total System Cost. These 3 measurements (Quality, Capacity and Cost) provide an understanding of the practice performance.

Dorval Medical's Results

Dorval Medical Family Health Team serves a population of about 7,000 patients in Oakville, Ontario. Abstracted data from the local hospital describes this population as the most acute population of any group in Oakville with an Average Resource Intensity Weighting (ARIW) of 1.9 compared to the community ARIW of 1.7[19]. Similarly, analysis of the population by ICES suggests that the rostered population is about 10% more acute than the provincial average.

Despite having a more at-risk patient population, the practice was able to assure quality at a level which compares favourably to the limited data from the province or other practices, achieve a capacity of 60 (i.e. roughly the capacity required to assure access to comprehensive primary care for all Ontarians with the current primary care labour force), and a substantially reduced total cost of care compared to the rest of the Oakville catchment area.

The following 3 graphs describe the practice performance by the 3 measurements of Quality (composite indicator), Capacity and Cost.
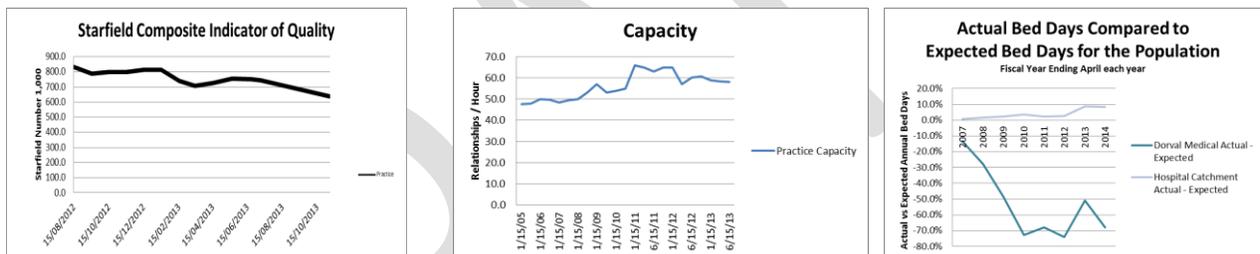
Quality: The trend in the Starfield Number (composite Indicator of 60 indicators) appears to trend downward but in fact is due to refinement of the measuring method. Individual indicators remained stable and at a high level of achievement. The presumption that the practice outcomes are good is weakened due to the absence of provincial comparisons. Monthly feedback of quality measurement helps providers and the entire practice to focus on the patient provider relationship by being mindful of the relationship:

1. Am I being accessible?
2. Am I knowledgeable about my patients' health status?
3. Am I providing the expected services to my patients' expectations, and
4. Am I sensitive to the emotional needs of my patients?

Capacity: The practice has 6 doctors and 2 nurse practitioners providing comprehensive primary care. All but one doctor have achieved a capacity of 60 or greater, supporting provincial equity in comprehensive primary care.

Cost: The surrogate indicator for total system cost is the total bed days used for the patients of Dorval Medical in comparison to the bed days for the rest of the Oakville catchment area. Despite higher acuity,

the patients of Dorval Medical occupied hospital beds at less than half the rate expected. This observation mirrors Hollander's observations in British Columbia[5].

Implications for Practices
If ongoing experience with the Starfield Model demonstrates meaningful feedback to practices it would prove to be a powerful influence for quality improvement. A comparable measurement for performance will allow practices to find subtle performance improvement ideas from other practices. Such incremental improvements working across all practices in the province can result in immense benefit over time[20].

Currently, finding innovations from other practices is very difficult as there is no way to determine if a better result for any one indicator is associated with improved performance at the level of comprehensive primary care. There is also no current method to measure the total cost of care implications or the practice capacity implications of adopting an innovation.

Implications for Payment Models of Primary Care
The Starfield Model can be used by any practice which is committed to comprehensive primary care including practices in Fee-For Service, Family Health Groups, Family Health Networks, Family Health Organisations, Family Health Teams, Community Health Centers and Nurse Practitioner Lead Clinics.

Currently, the system can observe the cost of primary care per patients, but there is no insight into the quality of service provided, the capacity of the models, or the impact on the total cost of care for the patients cared for with a particular model. This last measurement is particularly important as Starfield and Hollander's work would suggest that an investment in comprehensive primary care is associated with improved quality and a reduction in the total cost of care.

System level problems may find solutions with a reliable performance measurement model. *Quality*, which is currently unmeasured, can be assured. *Capacity* can be the focus of innovation so that all 13.5 million residents of the province can have the choice of a comprehensive primary care provider. Models which provide good quality and capacity can be tuned to reduce the total cost of care. It is entirely possible that an apparently more expensive model, such as the family health team or community health centre, will turn out to provide superior performance with assured quality, a capacity to see many more people for the same scarce labour resources and all with a significantly reduced total cost of care.

Conclusions
The Starfield Model observes performance in comprehensive primary care by *measuring Quality Capacity* and *Total System Cost*. Quality incorporates multiple indicators weighted in a composite indicator according to the population's expectations of the relationship with their providers. Capacity of comprehensive primary care can be achieved with assured quality in a manner that there would be no shortage of primary care in Ontario. Efficient performance can lead to significant cost savings without compromising Quality or Capacity.

The Health Care System's future sustainability might be achieved by measurement of performance in comprehensive primary care.

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5 Increasing Value for Money in the Canadian Healthcare System, Hollander et al. Healthcare Quarterly Vol 12 No. 4 2009

6 Toward international primary care reform, Starfield, CMAJ • MAY 26, 2009 • 180(11)

7 While there may be slight differences in the specific description of comprehensive care in the Patient Enrollment Model (PEM) contracts, the Primary Health Care Branch of the Ministry of Health and Long-Term Care reports general the definition is as follows:

DESCRIPTION OF COMPREHENSIVE CARE
Comprehensive Care assumes that the care is part of an on-going process into the future and provides care in the patient's family and social context. It includes the creation, management and maintenance of an appropriate medical record managed by the physician.

Comprehensive Care includes the following services:

Health Assessments
1. When necessary, the taking of a full history, including presenting complaint, if any, past illnesses, social history, family history, review of systems and performing a complete physical examination.
2. Periodically taking a specific history and performing a physical examination as required to screen patients for disease.
3. Regularly taking a specific history and performing a physical examination as required to respond to patient complaints and/or to manage chronic problems.

Diagnosis and Treatment
Assess and plan for patients' care based on the outcomes of a history and physical examination aided by appropriate investigations and consultations according to the results of complete, periodic, or regular health assessments. Care for and monitor episodic and chronic illness or injury. In the case of acute illness or injury, offer early access to assessment, appropriate diagnostic testing, primary medical treatment, and advice on self-care and prevention. Provides or co-ordinates chronic disease management for conditions such as diabetes and hypertension.

Primary Reproductive Care
Provide primary reproductive care, including counselling patients on birth control and family planning, and educating about, screening for, and treating sexually transmitted diseases.

Primary Mental Health Care
Offer treatment of emotional and psychiatric problems, to the extent that the physician is comfortably able to provide the treatment. Where appropriate, refer patients to and collaborate with psychiatrists and appropriate mental health care providers.

Primary Palliative Care
Provide palliative care or offer to support the team responsible for providing palliative care to my terminally ill patients. Palliative care includes offering office-based services, referrals to Community Care Access Centres or to such other support services as are required, and making patient visits where appropriate.

Support for Hospital, Home and Long-Term Care Facilities
Where applicable and where possible, assist with discharge planning, rehabilitation services, outpatient follow-up and home care services.

Service Co-ordination and Referral
Co-ordinate referrals to other health care providers and agencies, including specialists, rehabilitation and physiotherapy services, home care and hospice programs and diagnostic services, as appropriate. Appropriately monitor the status of patients who have been referred for additional care and collaborate on medical treatment of patients.

Patient Education and Preventative Care
Use evidence-based guidelines to screen patients at risk for disease, to attempt early detection and institute early intervention and counselling to reduce risk or development of harm from disease including appropriate immunizations.

Pre-Natal, Obstetrical, Post-Natal, and In-Hospital New Born Care
Provide or arrange to provide maternity services, including antenatal care to term, labour and delivery, and maternal and newborn care.

8 http://www.afhto.ca/wp-content/uploads/Economic-Perspectives-of-Controlling-Health-Costs-2013-04-18.pdf

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12 **Wodchis WP,** Austin P, Newman A, Corallo A. Henry D. The Concentration of Health Care Spending: Little Ado (yet) About Much (money). Canadian Association of Health Services and Policy Research, Montreal, PQ. May 30, 2012.
http://cahspr.ca/web/uploads/presentations/C6.1_Walter_P._Wodchis.pdf

13 Physician and drug data is updated monthly, home care and CCAC data quarterly, and hospital data on an annual basis.

14 http://www.qof.hscic.gov.uk/

15 http://www.dorvalmedical.ca/wp-content/uploads/2013/12/Creating-a-Composite-indicator-for-Comprehensive-Primary-Care.pdf

16 http://www.dorvalmedical.ca/wp-content/uploads/2013/12/Surveying-for-Domain-and-Indicator-Weighting-of-Quality.xls

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18 http://www.dorvalmedical.ca/wp-content/uploads/2013/12/Creating-a-Composite-indicator-for-Comprehensive-Primary-Care.pdf

19 Data available from Health Records, Halton Healthcare Services, Oakville Trafalgar Memorial Hospital

20 http://www.newyorker.com/reporting/2009/12/14/091214fa_fact_gawande