McMaster University | Health Forum

ONTARIO SPOR SUPPORT UNIT

Canadian Primary Care Research Network
Réseau canadien de recherche en soins primaires

Context

- Interdisciplinary primary-care teams offer a promising approach to provide improved access to comprehensive patient-centred care.
- We use the term interprofessional primary-care teams to refer to primary-care practices that involve a range of different providers including family physicians, nurse practitioners, allied health professionals and other staff that make use of information/communications technologies and other supports to provide more efficient collaboration and better continuity of care for patients.
- While the structure of these teams can vary greatly (e.g., what types of providers are engaged in the team, whether all professionals operate under one roof, the types of supports they use), the commonality between all models is the focus on improved access to a broader range of services for patients attached to the teams.
- Existing literature supports the effectiveness of interdisciplinary team-based primary care approaches; however, to succeed at a systems level, regular evaluation of the implementation process and outcome indicators are needed.
- This rapid evidence profile provides a high-level summary of the evidence identified in existing evidence syntheses and experiences within Canada and internationally related to approaches and measures that may be used to evaluate team-based care models.

Rapid Evidence Profile

Approaches to and measures for evaluating interdisciplinary team-based primary care

15 January 2025

[MHF product code: REP 88]

Box 1: Evidence and other types of information

+ Global evidence drawn upon

Evidence syntheses selected based on relevance, quality, and recency of search

- No forms of domestic evidence used

+ Other types of information used

Jurisdictional scan (All Canadian provinces and territories and four countries: AU, NZ, UK, US)

*** Additional notable features**

Prepared in three-business days using an 'all hands on deck' approach

Questions

1) What domains and measures can be used to evaluate team-based primary care?

High-level summary of key findings

- We identified 19 evidence syntheses relevant to the question of which 11 were highly relevant.
- In general, many of the identified evidence syntheses focused on examining the effectiveness of models of team-based primary care rather than explicitly comparing domains and approaches to evaluation.

    - As a result, much of the rapid evidence profile focuses on the different approaches and measures that may be used rather than identifying best practices.
- With respect to approaches to evaluating team-based primary care, both feedback from patients and providers, as well as the use of administrative database studies, were common approaches in both the identified evidence syntheses and in the jurisdictional scan.
- The included literature did emphasize the tendency for administrative database studies to highlight the efforts of primary-care physicians over other members of the team, given they are typically responsible for inputting data into patient and clinical records.
- With respect to identified measures for evaluating team-based primary care, implementation was most frequently reported as part of the jurisdictional scan and often included levels of patient attachment and geographic availability of primary-care teams. However, some measures were included in identified evidence syntheses such as the number of each type of professional working on teams, participation of professionals in practice activities, and type of communication between professionals.
- With respect to patient outcomes, common measures identified in both the evidence syntheses and jurisdiction scan included timely access to care, perceived quality of care, participation in care, unmet care needs, and patient satisfaction.
- Population health outcomes tended to focus on health service utilization, but some evidence syntheses did report specific health outcome measures such as blood pressure, body mass index, and changes in health behaviours.
- Cost-related outcomes were rarely mentioned in either evidence syntheses or the evaluation frameworks identified from our jurisdictional scans.
- Finally, provider-experience measures tended to focus on provider satisfaction, level of communication and problem-solving within the team, as well as extent of collaboration and understanding of team roles.

Box 2: Approach and supporting materials

At the beginning of each rapid evidence profile and throughout its development, we engage a subject matter expert and citizen partner, who help us to scope the question and ensure relevant context is taken into account in the summary of the evidence.

We identified evidence addressing the question by searching Health Systems Evidence and PubMed. The first search was conducted on 13 November 2024, with a second search completed on 26 November 2024 to achieve a more comprehensive search. The search strategies used are included in Appendix 1. In contrast to synthesis methods that provide an in-depth understanding of the evidence, this profile focuses on providing an overview and key insights from relevant documents.

We searched for full evidence syntheses (or synthesis-derived products such as overviews of evidence syntheses) and protocols for evidence syntheses.

We appraised the methodological quality of evidence syntheses that were deemed to be highly relevant using the first version of the AMSTAR tool. AMSTAR rates overall quality on a scale of 0 to 11, where 11/11 represents a review of the highest quality, medium-quality evidence syntheses are those with scores between four and seven, and low-quality evidence syntheses are those with scores less than four. The AMSTAR tool was developed to assess reviews focused on clinical interventions, so not all criteria apply to evidence syntheses pertaining to delivery, financial, or governance arrangements within health systems or implementation strategies.

A separate appendix document includes:

- methodological details (Appendix 1)
- details about each identified synthesis (Appendix 2)
- details from the jurisdictional scan (Appendix 3)
- documents that were excluded in the final stages of review (Appendix 4).

This rapid evidence profile was prepared in the equivalent of three days of a 'full court press' by all involved staff.

Framework to organize what we looked for

- Features of models of team-based primary care
  - Providers engaged in the team
    - Primary-care physicians (e.g., family physicians, general practitioners)
    - Specialist physicians (e.g., those engaged specific referral networks for common areas of primary-care practice)
    - Physician trainees
    - Nurse practitioners
    - Nurses
    - Allied health professionals (e.g., physiotherapists, occupational therapists, psychologists, dieticians)
    - Midwives
    - Pharmacists
    - Social workers
  - Where
    - Co-location
    - Multi-site (e.g., hub and spoke model)
  - Supports for the team
    - Patient navigator/care coordinator
    - Physician assistants
    - Administrative staff
    - Information and communication technologies used to provide or support care
- Equity considerations for evaluation (based on the PROGRESS+ framework)
  - Place of residence
  - Race, ethnicity, culture, language
  - Occupation
  - Gender and sex
  - Religion
  - Education
  - Socio-economic status
  - Social capital
  - Personal characteristics associated with discrimination (e.g., age, disability)
  - Features of relationships (e.g., for dependents)
  - Time-dependent relationships (e.g., time-limited characteristics of patient needs)
- Approaches to evaluate team-based primary care
  - Real-time patient feedback
  - Other patient feedback (e.g., patient surveys, interviews, focus groups)
  - Administrative database studies (e.g., from locally held team-based health records or system-level data)
    - Practice activities
    - Outcomes assessments
    - Costing studies
  - Provider feedback (e.g., patient surveys, interviews, focus groups)
- Measures to evaluate team-based primary care
  - Implementation-related outcomes
    - Number of teams
    - Geographic spread
    - Provider attachment
  - Outcomes (equity-driven quadruple aim)
    - Patient experiences

- Population health outcomes
- Costs
- Provider experiences

What we found

We identified 19 evidence synthesis documents relevant to the question, of which:

- 11 were deemed to be highly relevant
- six of medium relevance
- two of low relevance.

Evidence syntheses were deemed to be highly relevant if they addressed a team-based model that focused predominantly on primary care (but could include specialists as part of the team) and included multiple types of primary-care health providers beyond a traditional general practitioner and nurse(s) dyad. We outline in narrative form below our key findings from the 11 highly relevant evidence synthesis as well as findings based on experiences from the jurisdictional scan of four countries (Australia, New Zealand, U.K., and U.S.) and all Canadian provinces/territories (see Box 1 for more details).

Detailed data extractions from each of the included evidence documents are provided in Appendix 2, while a summary of experiences from Canadian provinces and territories and from other countries is provided in Appendix 3. Hyperlinks for documents excluded at the final stage of reviewing in Appendix 4.

Coverage by and gaps in existing evidence syntheses and domestic evidence

With respect to coverage and gaps in the framework above, most of the evidence syntheses we identified examined the effectiveness of models of team-based primary care rather than explicitly examining approaches to evaluation. As a result, most of the identified evidence focuses on what approaches and measures appear in the literature rather than on best practices for evaluation. In general, the approaches and measures included in the framework above were well represented in the included evidence syntheses and jurisdictional scan, except for real-time patient feedback. That said, the McMaster Health Forum has previously examined the use of real-time patient feedback initiatives in a recent rapid evidence profile.

Most of the evidence syntheses describe variations in the features of models of team-based primary care, with most including almost all the providers listed in the organizing framework above. However, included evidence syntheses were relatively silent on supports for the team, despite many of the approaches to evaluation depending on them (e.g., information and communication technologies for administrative database studies).

None of the included evidence syntheses explicitly mention measures or approaches to evaluate team-based primary care focused on equity considerations; however, a few examples are provided within the jurisdictional scan, namely from Australia and New Zealand, with respect to measures focused on Indigenous peoples.

Key findings from included evidence documents

Below we summarize the key findings from the 11 evidence documents deemed highly relevant to the research question. We chose to summarize the findings by two main categories (approaches and measures) to address the dual nature of the research question. Details about the findings from each evidence synthesis can be found in Appendix 2.

Approaches to evaluating team-based primary care

Due to the overlap of patient and provider feedback in many of the studies, approaches to evaluate team-based primary care have been subdivided into two broader categories: feedback (including real-time and other patient feedback, as well as provider feedback) and administrative data (including practice activities, outcomes assessments, and costing studies).

Feedback

Five older evidence syntheses were identified (three medium quality and two low quality) that include patient and/or provider feedback in evaluating interprofessional team-based primary care. The first older medium-quality synthesis examined 81 quality improvement instruments for primary-care teams, most of which focus on the use of provider feedback to examine team context (e.g., enabling conditions or attitudes, the composition of the team, organizational climate, individual knowledge/skills/efficacy, and readiness for change), team process (e.g., behaviours, collaboration, and leadership, under which there are many subcategories, including task analysis, monitoring and adjustment, communication, problem solving, and workload sharing), and outcomes of team-based care (e.g., team effectiveness and individual staff-level outcomes, information about patient health, quality of care, as well as broader organizational trends).(1) The second recent medium-quality synthesis investigated the use of patient feedback, alongside the collection of clinical outcomes, to evaluate primary-care teams. Within the synthesis, patient feedback was used to determine patient satisfaction, self-reported health improvement, and perceived degree of patient-centeredness.(2) The third older medium-quality evidence synthesis investigated the integration of primary and speciality care for patients with a variety of long-term conditions and used patient feedback to evaluate patient quality of life, unmet care needs, functional measures, burden of illness, pain, and condition-specific outcomes. Additionally, patient health behaviours were measured related to smoking, exercise, and diet, and the proportion of patients and providers satisfied with care were cumulatively evaluated. That said, the evidence synthesis noted the importance of framing in questions related to patient satisfaction, describing the receipt of very different results depending on how the questions were phrased.(3) Finally, one older low-quality evidence synthesis provides insights into how existing instruments that measure team work could be applied to primary-care settings. Examples of approaches used include self-report surveys and observational checklists, the latter of which were used for simulation exercises and field use. The constructs measured in these instruments fall under four main categories: cognitive, affective/relational, behavioural, and leadership. However, the evidence synthesis notes that the utility of these instruments may be limited in clinical practice since they were designed for the research setting and it was highlighted that it is difficult to develop "a common understanding of, and taxonomy for, measurement of effective teamwork in primary care" when there is variance in the models of team-based care.(4)

One older low-quality evidence synthesis evaluated provider feedback through surveys of healthcare providers.(5) The evidence synthesis noted that when using provider surveys for primary-care teams they must be carefully adapted to capture the nuanced interactions and roles unique to this healthcare setting, while still considering the conceptual consistency, psychometric validity, and administrative feasibility of a survey being used in practice.(5) The evidence synthesis recommends that adapting the tools should be prioritized before additional tools are created.(5)

Administrative

Seven evidence syntheses (one high quality, three medium quality, and three low quality) used administrative data to evaluate interprofessional team-based primary care. Two of the syntheses (one older and one recent medium quality) investigated the evaluation of pharmacist integration into primary-care teams reporting patient-related outcomes through medical charts and routine clinical data.(6; 7) An older medium-quality evidence synthesis evaluated domains of collaboration, including the disciplines represented within the team and collaboration activities by analyzing communication between providers (e.g., electronic health record software, emails, referral reports), medical notes detailing where and when collaboration occurred, and meeting minutes from team meetings.(8) An older high-quality Canadian-focused evidence synthesis investigated primary-care reforms in Alberta, Ontario, and Quebec that resulted in new organizational or payment models.(9) Three categories of outcomes were evaluated: health service utilization, process of care, and physician costs/productivity. All categories evaluated objective data from administrative data

sources, such as health-service utilization statistics, documented completion of guideline-recommended tests and measurements (disease/care plan specific), and the number of services delivered or patients seen. Finally, an older low-quality evidence synthesis spoke about some of the limitations with evaluating team-based care using administrative data. For example, data collected from EHR and other clinical sources tend to focus on primary-care providers, not reflecting the role that associate care providers play in the patient-centred medical home model or other team-based primary-care models.(10) The evidence synthesis recommends that information and communication technologies should formalize the roles and responsibilities of associate care providers in routine documentation. Other challenges include reporting at a practice/primary-care provider level instead of a team level, only collecting the number of associate care providers rather than information about how or to what extent care is provided by these team members. Restructuring administrative data collection to prioritize team performance, instead of only primary-care provider performance, could help to align the organizational evaluation structure with the principles of team-based care.

Measures of team-based primary care

Measures to evaluate team-based primary care refer to the type of indicator – implementation-related/process outcomes and equity-driven quadruple-aim outcomes. Several of the syntheses reported on multiple measures, and in this section of the report, the sources will be mentioned more than once with the details specific to that category.

Implementation-related outcomes

Despite several of the evidence syntheses reporting on process outcomes, we did not find many examples of implementation-related outcomes. There were four evidence syntheses (one high quality, two medium quality, one low quality) that were identified with insights about measuring implementation-related outcomes. One older medium-quality synthesis measured visits to different service providers.(3) Similarly, one recent medium-quality evidence synthesis measured the number of consultations an individual had with the primary-care team as well as continuity of care as a process measure, but without elaborating on the specific type of indicator used.(2) An older low-quality evidence synthesis also included implementation measures such as the participation of different disciplines in certain practice activities (e.g., patient diagnosis, mental health management), the combination of interprofessional providers working on the team for any given case (e.g. primary-care physician and specialist, highly multidisciplinary teams, doctor-nurse-pharmacist triad, physician-nurse duo with interprofessional support as needed), as well as the type of communication that occurs between professionals on the team (e.g. face-to-face, email, telephone, referral letters, feedback reports).(8) Lastly, an older high-quality evidence synthesis reported provider adherence to new guidelines related to providing interdisciplinary care and their delivery of preventive services.(9) We did not identify any reporting of other measures, such as those related to the attachment of patients or geographic spread of interdisciplinary teams within a particular jurisdiction. This is likely a result of evidence syntheses examining the effectiveness of models of team-based primary care rather than examining the implementation of system-wide expansions of primary-care teams.

Patient-experience outcomes

Five evidence syntheses mentioned outcomes related to patient experiences, most of which were self-reported. The outcomes included in the evidence synthesis cover a wide range of team-based primary care models, such as primary-care teams, interprofessional collaboration between primary care and pharmacists, organizational primary-care reforms, patient-centred medical homes, and shared-care models for chronic conditions. Most often, patient experience was captured through subjective survey feedback, including self-rated health outcomes and functional measures, perceived quality of care, perceived participation in care, unmet care needs, and satisfaction.(2; 3; 7; 9) Only one evidence synthesis reported on specific indicators related to access, despite at least one other syntheses highlighting this as a key component of primary care to measure.(2; 3; 10) The patient feedback regarding access included whether patients can get same-day or urgent access to appointments, the time spent waiting for appointments, and the accessibility of the clinic via phone call during clinical hours and after office hours to return voicemail messages.(10) However, the study noted that patient experience surveys often worded the questions in a way that focused on primary-care providers only,

instead of also asking about the experience of interprofessional team members and the integration of work between interprofessional providers on the team.(10)

Population health outcomes

Four evidence syntheses (one high quality and three medium quality) report on population health outcomes. Two of the syntheses measure health service utilization as proxy measures for health outcomes, including use of primary and secondary/specialty care visits, as well as medication, hospital, and emergency department use for both general and avoidable visits.(6; 9) Another recent medium-quality evidence synthesis related to pharmacist integration in primary care investigated disease-specific health outcomes including changes to blood pressure, cardiovascular risk, and depression.(11) Lastly, one older medium-quality evidence synthesis investigated the impact of shared-care models between primary and specialty care for a wide range of chronic conditions, and included measures such as prescribing rates, service utilization measures, management of risk factors, mental health symptoms (evaluated as prevalence, in response to treatment, and number in recovery/remission), blood pressure, body mass index, and patient-reported measures such as patient health behaviours (e.g., smoking, exercise, diet), condition-specific outcomes, functional measures, and burden of illness.(3)

Costs

Two evidence syntheses (one older and high quality and one older and medium quality) provided insights into measuring cost outcomes. The older high-quality synthesis measured simple cost of providing care as a team, and also did an economic analysis of cost-effectiveness.(3) However, the evidence synthesis reported that it was difficult to make conclusions about the cost-effectiveness due to differing time points (e.g., year of pricing that was reported), currencies, and how cost allocation can change from year to year based on how health systems are organized within each country. The older medium-quality synthesis evaluated costs saved by integrating pharmacists into primary-care teams measured by changes in medication and healthcare usage. However, since these indicators are at a health-system level, many of the costs are related to downstream effects such as hospital and emergency department visit costs, not just primary-care costs.(6)

Provider-experience outcomes

Provider-experience outcomes were primarily measured through self-report instruments related to teamwork constructs and components of current practice. The focus of five evidence syntheses (one high quality, one medium quality, and three low quality) was on the features of the team and the team dynamic, as well as the subsequent impact on practice activities. Behavioural processes were highlighted as measures in three of the syntheses, but the categories of measures were defined differently in each.(1; 4; 5) For example, two evidence syntheses (older low quality and older medium quality) incorporated communication, problem solving, coordination, and conflict management into the behavioural category, whereas another created a new ‘collaboration’ category for these examples, instead defining behavioural components as goal setting and task analysis.(1; 5) This exemplifies how the lack of a unified definition and framework makes it challenging to effectively evaluate and compare models, measures, and approaches to evaluating team-based primary care.

Key findings from the jurisdictional scan

As a part of the rapid evidence profile, we undertook a jurisdictional scan to identify measures used to evaluate team-based care in all Canadian provinces and territories, as well as at a national level in Australia, New Zealand, U.K. (England, Northern Ireland, Scotland, and Wales), and the U.S.

Findings from Canadian provinces and territories

For the Canadian scan, we found that all provinces and territories have implemented team-based primary care to various degrees. We identified approaches to evaluation of team-based primary care and associated measures in most provinces. We did not identify any evaluation approaches or measures specific to team-based care in the three territories but have included identified evaluations of primary care more broadly in Appendix 3. The most extensive evaluation frameworks for team-based primary care were identified in British Columbia and Alberta.

Approaches to evaluate team-based primary care

We did not identify the use of real-time patient feedback as an approach to evaluate team-based primary care in any province or territory. However, the Saskatchewan Health Authority's developmental evaluation of the province's health networks indicates that real-time feedback is a characteristic of their evaluation, but does not elaborate on how this is assessed or what is meant by real-time feedback. Other patient feedback methods are widely used, including patient surveys, interviews, and focus groups. Examples include patient surveys in British Columbia as part of the Team-based care Evaluation Adoption Model (TEAM) Framework, patient and provider surveys and interviews as part of the primary care network model evaluation in Alberta, interviews with providers and staff as well as patient surveys in Saskatchewan, and the annual primary health and primary care surveys conducted in New Brunswick.

Many jurisdictions use administrative data to support the evaluation of team-based care. For example, British Columbia's team-based primary care evaluation has used a clinic report to gather data on types of provider and staff, attachment numbers, access, and team capacity from 15 team-based primary care clinics in the province. Alberta conducts an annual primary healthcare panel report, which provides a snapshot of primary-care network performance on a wide range of indicators as compared to the primary-care network average. The Government of Manitoba has recommended the publishing of similar data on a quarterly and annual basis to measure practice activities including patient-provider attachment. Quebec's funding and professional support for family medicine groups annual review (2022) provides data for the assessment of weighted registered patient numbers and attendance rates for family medicine groups. It also provides practice activity data on vulnerable patients, births, pregnancy monitoring, disadvantaged patients, and complex needs/home monitoring.

Measures to evaluate team-based primary care

As mentioned above, two of the most comprehensive approaches to evaluating team-based primary care models were identified in British Columbia and in Alberta. In British Columbia, an adoption evaluation framework is being used that consists of 10 dimensions, each of which have indicators associated with them and approaches for collecting data. The evaluation is being undertaken by the Innovation Support Unit in the Department of Family Practice at the University of British Columbia in collaboration with the Ministry of Health. The 10 dimensions include a mix of both implementation and quadruple-aim outcomes:

- relationship-centred care
- patient experience
- provider experience
- team function
- quality-of-care processes
- capacity of and access to primary care team
- team-based primary care foundations (e.g., presence of foundational elements such as team-based training, clinical infrastructure and information systems)
- governance and accountability
- population health
- healthcare costs.

In Alberta, a multi-component evaluation framework has been developed, which includes five different evaluation activities. Two of these activities are performed routinely – contract management and performance monitoring. Contract management requires family care clinics attached to primary care networks to report on expenditures, health human resources, and service volume counts. Performance monitoring requires primary-care networks to provide annual reports to Alberta Health Services that are largely related to quadruple-aim outcomes, including:

- time to third next appointment in calendar days
- patient experience
- compliance with screening of patients as recommended by the Alberta Screening and Prevention Program
- completion of self-assessment and performance improvement plan by the governance committee
- completion of performance assessment of primary-care network administrative lead and other staff members
- proportion of member physician clinics in primary-care networks that conducted team effectiveness surveys during the year
- percentage of participating physicians and providers using Community Information Integration/Central Patient Attachment Registry compatible electronic medical records.

In Saskatchewan, we identified a one-off evaluation of Saskatchewan Health Networks, which are collaborative teams of health professionals that provide fully integrated primary-care services and in some instances extent to intermediate and complex services such as specialized community care. The evaluation aimed to understand how and why health networks achieve their outcomes and provide necessary information to learn from successes and barriers in their development. Evaluation measures included:

- structure of health networks and integration of physicians
- implementation approaches and processes for health networks
- engagement of health professionals in health networks
- functioning of teams, including level of communication and understanding of team member roles
- patient experience
- causal pathways for health improvements (largely identified via literature review but discussed in interviews).

In Manitoba, the government published primary care interprofessional team toolkits in 2015 and 2018, which involves a section on evaluation and monitoring. The toolkits recommend quarterly and annual patient-provider attachment measurement, clinic change log recording and reporting, process evaluation, and provider focus groups to track ongoing clinical support, address urgent and emergent issues with staff and clinic, facilitate change within the practice (physicians added, removed, changes to attachment number, baseline), and provide performance reviews to providers and staff.

Ontario is in the process of expanding interdisciplinary primary-care team, but we identified evaluation measures from 2014, which includes measuring patient access to an interprofessional primary care team, including the percentage of patients who report attachment to interprofessional healthcare providers at the place they usually receive care, by type of provider, and the percentage of primary care practices or organizations that report having various types of healthcare providers (by provider type). In addition, we identified an evaluation conducted by The Conference Board of Canada of the Family Health Team initiative in Ontario from 2014. The evaluation used a range of approaches including a facility survey (completed by staff of the family health team and administrators), a provider survey, a patient survey, site visits and patient focus groups. The domains of measurement used were developed based on the Starfield framework and include:

- access (weekend service, evening service, same-day or next-day care, telephone-based care, timeliness of care, use of family health team as place of first contact, wait times)
- prevention and health promotion (health promotion services received, disease prevention services received)
- coordination (patient access to medical records, provider access to medical records, continuity of care from different providers, coordination of care with specialists)

- patient and family centredness (continuity of professionals, sufficient time with care providers, provider's knowledge of patient and their medical history, provider's knowledge of family members, provider's knowledge of neighbourhood health risks, patient involvement in care, provision of home visits, cultural competence)
- patient involvement in chronic disease management (patient understanding of health conditions and available treatment options, patient confidence in medical decisions, provision of treatment plan, and follow-ups for chronic conditions).

In Quebec, funding is provided to support the creation of Family Medicine Groups. This funding has an annual review component that requires family health groups to submit information related to:

- level of funding planned for the upcoming year based on number of patients registered
- name of electronic health record used
- professional resources in full-time equivalencies and by type of profession
- service offerings, including opening and closing times for services
- whether the practice receives support for access to primary care for patients without a family doctor.

In New Brunswick, the Primary Health Care Action Plan includes a focus on expanding access to collaborative team practices and emphasizes performance measures including attachment and timely access to care. Other maritime provinces such as Nova Scotia have more extensive evaluation practices in place. Namely, in Nova Scotia a set of 28 indicators for primary care quality have been established, including select measures that speak directly to collaborative family practices. These include:

- the type of governance model used for collaborative family practice teams
- number of collaborative family practice teams in the province
- available primary health human resources by type, in full-time equivalencies working in each team
- scope of primary health services provided by each general practice
- provider time in direct patient care, by type of provider
- percentage of population served by a collaborative family practice
- number of family physicians working in collaborative family practice teams.

Though there have been efforts to expand access to team-based primary care in Prince Edward Island and Newfoundland and Labrador, we were unable to identify evaluation frameworks. In Prince Edward Island, the Primary Care Road Map provided examples of strategic performance indicators related to the success of implementing team-based care including the number of new primary-care teams established and ratings of workplace psychological safety from healthcare providers. In Newfoundland and Labrador, the government published a health policy framework for family care teams in 2023, an action of which is to develop a provincial framework for performance monitoring and evaluation of family care teams as well as to define a set of metrics to assess them and their effect on population health.

Findings from international jurisdictions

In addition to the Canadian findings, we identified experiences of evaluating primary-care teams from four jurisdictions – Australia, New Zealand, U.K. (England, Northern Ireland andScotland) and the U.S. at a national level. Across all jurisdictions there has been an expansion of interdisciplinary primary-care teams and some examples of explicit evaluation frameworks. Though we identified national U.S. programs focused on expanding team-based primary care, we could not identify a national evaluation framework that is used by the Centers for Medicare and Medicaid Services and have instead included frameworks endorsed by the American Hospital Association in valuing team-based care and by the Centers for Disease Control and Prevention.

Approaches to evaluate team-based primary care

Data collection from routine administrative data was found to be the most common approach to evaluating team-based primary care. In Australia, administrative data reporting as part of the workforce incentive program – practice stream is collected by Services Australia and is also required of primary-care networks to submit data for select quality measures to the Department of Health and Aged Care. Similarly, in New Zealand, data is collected from the National Enrolment Service and from reporting directly by primary health organizations to Health NZ, while in England routine data from electronic health records and clinical records are reported to NHS Digital and the Care Quality Commission. Though much of this information is taken from electronic records, mandatory reporting on indicators, and service volume measures, we also identified other approaches used particularly, in England and Scotland, including provider surveys, patient surveys, patient focus groups, and direct observation.

Measures to evaluate team-based primary care

In each country, we identified both implementation outcomes and quadruple-aim related outcomes. We have summarized these below by jurisdiction as their explanation often required additional details regarding the model of team-based primary care.

In Australia, primary health networks are funded by the Australian government to support the management and commissioning of primary care in health regions. Primary health networks are not directly responsible for the delivery of primary-care services. They have recently (as of 2023) been asked, through the workforce incentive program – practice stream, to encourage the commissioning of multidisciplinary and team-based models of primary care. In particular, the program provides financial assistance to general practices to cover the cost of engaging other primary care professionals beyond physicians (e.g., nurses, midwives, allied health professionals, and Aboriginal and Torres Strait Islander health workers and health practitioners). Process outcomes are monitored for this program, including the number of each type of eligible professional engaged, hours worked by newly engaged professionals, and number of incentive grants provided to primary-care practices. Though we were unable to identify a specific framework used to evaluate the delivery of team-based care, we did find a performance evaluation framework for primary health networks (i.e., the commissioners of care) some of which may be relevant to team-based primary care, including:

- the rate of general practice team care arrangements/case conferences (including a separate indicator specifically for the extent to which this service is received by Aboriginal and Torres Strait Islander people)
- number of cross-provider views of shared electronic health records
- formalized partnerships with other regional service providers to support integrated regional planning and service delivery.

For New Zealand, we identified two national initiatives related to team-based primary care – primary health organizations and comprehensive primary and community care teams. Like Australia, primary health organizations act as a mid-level organization between district health boards and primary-care providers. Primary health organizations act as networks of general practice providers. While in some cases these primary health organizations have supported the implementation of team-based models, they have not all consistently included expansion. Primary health organizations' performance is evaluated using the following implementation measures (with additional indicators under development):

- estimated percentage of the total population who are enrolled in a primary health organization (by ethnicity)
- health indicators including immunization rates for eight months and 24 months, as well as smoking cessation (with additional indicators pending)
- enrolment information, including the number of people enrolled in each primary health organization and demographic details.

More relevant to the question at hand is the example of a model of team-based primary-care delivery implemented within primary health organizations, comprehensive primary and community care teams, which include a general practitioner, care coordinator, practice nurse, nurse practitioner, pharmacist, practice pharmacists, physiotherapists, extended care paramedics, as well as select cultural service providers for Māori and Pacific Islander populations. We

identified three levels of measurements that are used to monitor these teams that include both implementation and quadruple-aim outcome measures:

- system measures, including:
  - emergency department attendance
  - after-hours consultations
  - ambulatory sensitive hospital admissions
  - time to next appointment
  - use of Whānau-centred care planning for complex care
  - patient experience
- service measures, including:
  - the availability of alternative to face-to-face consultations
  - virtual planned consults
  - shared care record keeping
  - shared care planning
  - availability of a patient portal
- comprehensive team development, including:
  - skill sharing and scope development
  - clinical governance
  - interdisciplinary team meetings in place.

In the U.K., we identified different approaches to evaluation in Northern Ireland, Scotland, and England. We did not identify any evaluation of team-based primary care in Wales. In both Scotland and Northern Ireland, there has been a similar emphasis on expanding the use of multidisciplinary primary-care teams. However, in Northern Ireland, an evaluation of implementation or outcomes has not been complete nor has an evaluation framework for routine evaluation been developed. However, the National Audit Office has been collecting implementation measures as part of a one-off audit on primary care including the number of multidisciplinary teams that have been created, attachment of patients, staffing numbers, activity data of services provided by multidisciplinary teams, and costs associated with implementation.

In contrast, in Scotland, an outcomes model (consisting of four logic models) and an evaluation framework were developed as part of the expansion of multidisciplinary teams. Outcomes in the evaluation framework focus largely on implementation outcomes (i.e., expansion of primary care workforce, improved physical and digital infrastructure), population health outcomes (i.e., primary care addresses health inequalities), and patient experience (i.e., people are informed about their care, people are empowered by their providers, people report feeling confident in looking after their own care, patient experience in practice and after hours). In addition, Public Health Scotland includes measures related to provider experience of participating in multidisciplinary primary care, including engagement with learning and development in practice, perceptions of positive and negative aspects of their role, job satisfaction, working environment, ways of working in the practice setting, and their perceived impact.

In England, primary care networks are groups of general practitioners who work together alongside other health and care providers to deliver a wide range of services to local populations. Many different organizations are involved in the evaluation of primary-care networks, with implementation related outcomes largely collected by NHS Digital, while patient experience outcomes are collected by the Care Quality Commission. Implementation outcomes largely focus on number and types of staff, adherence to contract hours, mix of services provided, the types of appointments that are available to patients, and the staffing and skill mix. In contrast, the Care Quality Commission sets out a range of quality statements which broadly relate to care being safe, effective, caring, responsive, and well-led.

Finally, in the U.S., while there have been a number of Centers for Medicare and Medicaid Services initiatives that have involved multidisciplinary primary-care teams (for example comprehensive primary care plus), we could only identify evaluations of the model as a whole (which largely focused on its uptake across the country) rather than an measures

that could be used to assess the functioning or value of a primary-care team. We identified two national level frameworks related to measures for team-based care. The first, though not specifically related to primary care, is from the American Hospital Association and examined the value of interdisciplinary care teams, in general, and the second is from the Centers for Disease Control and Prevention. The framework from the American Hospital Association included both implementation outcomes and quality outcomes. Implementation outcomes included:

- those related to training and coaching (e.g., percentage of staff trained in teams with providers from different disciplines, implementation of virtual communication systems to other types of professionals)
- those related to the uptake of team-based care (e.g., percentage of patients treated by interdisciplinary care teams, number of clinics).

While outcomes included:

- health outcomes such as biometrics for chronic diseases, patient safety events, complication rates, healthcare utilization
- patient experience such as satisfaction ratings, extent of shared decision-making, and reported self-efficacy
- costs such as avoidable hospital admission
- provider experiences such as provider satisfaction and staff retention.

We also identified a health system scorecard assessment on evaluating multidisciplinary team-based primary care for care management of heart disease and stroke by the U.S. Centers for Disease Control and Prevention. This assessment involved scoring a yes or no answer to questions about the use of a multidisciplinary team, including: who it includes (at least a nurse or pharmacist), use of care team huddles, referrals to specialized clinics, use of collaborative practice agreements with pharmacists or community health workers, and provision of collaborative drug therapy management or medication therapy management.

Next steps based on the identified evidence and experiences

- Ensure documentation of implementation or process measures when examining team-based primary care.
- Continue to widely share approaches and measures for evaluating team-based primary care.
- Update existing evidence syntheses with new primary studies to ensure they are inclusive of new approaches and measures for evaluating team-based primary care.
- Where possible, develop common measures and associated suggested approaches to evaluate team-based primary care to allow for greater comparison across jurisdictions regarding their implementation and, ultimately, their effectiveness at improving quadruple-aim outcomes.

References

1. Brennan SE, Bosch M, Buchan H, Green SE. Measuring team factors thought to influence the success of quality improvement in primary care: A systematic review of instruments. *Implement Science* 2013;8: 20.
2. Li M, Tang H, Liu X. Primary care team and its association with quality of care for people with multimorbidity: A systematic review. *BMC Primary Care* 2023;24(1): 20.
3. Smith SM, Cousins G, Clyne B, Allwright S, O'Dowd T. Shared care across the interface between primary and specialty care in management of long term conditions. *Cochrane Database of Systematic Reviews* 2017;2(2): Cd004910.
4. Shoemaker SJ, Parchman ML, Fuda KK, et al. A review of instruments to measure interprofessional team-based primary care. *Journal of Interprofessional Care* 2016;30(4): 423-32.
5. Valentine MA, Nembhard IM, Edmondson AC. Measuring teamwork in health care settings: A review of survey instruments. *Medical Care* 2015;53(4): e16-30.
6. Hayhoe B, Cespedes JA, Foley K, Majeed A, Ruzangi J, Greenfield G. Impact of integrating pharmacists into primary care teams on health systems indicators: A systematic review. *British Journal of General Practice* 2019;69(687): e665-e674.
7. Angibaud M, Jourdain M, Girard S, et al. Involving community pharmacists in interprofessional collaboration in primary care: A systematic review. *BMC Primary Care* 2024;25(1): 103.
8. Saint-Pierre C, Herskovic V, Sepúlveda M. Multidisciplinary collaboration in primary care: A systematic review. *Family Practice* 2018;35(2): 132-141.
9. Carter R, Riverin B, Levesque JF, Gariepy G, Quesnel-Vallée A. The impact of primary care reform on health system performance in Canada: A systematic review. *BMC Health Services Research* 2016;16: 324.
10. Annis AM, Harris M, Robinson CH, Krein SL. Do patient-centered medical home access and care coordination measure reflect the contributions of all team members? A systematic review. *Journal of Nursing Care and Quality* 2016;31(4): 357-66.
11. Pascucci D, Sassano M, Nurchis MC, et al. Impact of interprofessional collaboration on chronic disease management: Findings from a systematic review of clinical trial and meta-analysis. *Health Policy* 2021;125(2): 191-202.

Goodale G, Waddell K, Kupinski H, Bhuiya A, Demaio P, Dass R, Ali A, Wilson MG. Rapid evidence profile #88: Approaches to and measures for evaluating interdisciplinary team-based primary care. Hamilton: McMaster Health Forum, 15 January 2025.

This rapid evidence profile was funded by the Canadian Primary Care Research Network and the Ontario SPOR SUPPORT Unit. The McMaster Health Forum receives both financial and in-kind support from McMaster University. The views expressed in the rapid evidence profile are the views of the authors and should not be taken to represent the views of either the Canadian Primary Care Research Network, Ontario SPOR SUPPORT Unit, or McMaster University.