Developing indicators and measures of high-quality for Australian general practice

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ABSTRACT

Background. Rising health costs and health inequity are major challenges in Australia, as internationally. Strong primary health care is well evidenced to address these challenges. Primary Health Networks (PHNs) work with general practices to collect data and support quality improvement; however, there is no consensus regarding what defines high quality. This paper describes the development of an evidence-based suite of indicators and measures of high-quality general practice for the Australian context. **Methods.** We reviewed the literature to develop a suitable framework and revise quality assurance measures currently in use, then reviewed these in three workshops with general practitioners, practice managers, nurses, consumers and PHN staff in western Sydney. We used a descriptive qualitative research approach to analyse the data. **Results.** A total of 125 evidence-based indicators were agreed to be relevant, and 80 were deemed both relevant and feasible. These were arranged across a framework based on the Quadruple Aim, and include structure, process and outcome measures. **Conclusions.** The agreed suite of indicators and measures will be further validated in collaboration with PHNs across Australia. This work has the potential to inform health systems innovation both nationally and internationally.

Keywords: general practice, high-quality care, indicators, measures, patient-centred medical home, primary care, primary health care, quality improvement.

Introduction

In Australia, as internationally, there is a critical need for high-quality primary health care (PHC) to address rising health care costs (Dwyer and Duckett 2016). Additionally, there are inequitable health outcomes with particular impact on Aboriginal and Torres Strait Islander peoples; culturally and linguistically diverse populations; those at socio-economic disadvantage; children; and those with disabilities, mental health, drug and alcohol problems (Royal Australian College of General Practitioners (RACGP) 2015a; Organisation for Economic Co-operation and Development (OECD) 2017).

Health systems with high-performing PHC deliver more equitable and cost-effective health outcomes (Basu et al. 2019). The Declaration of Astana asserted that 'strengthening primary healthcare is the most inclusive, effective and efficient approach to enhance people's physical and mental health, as well as social well-being, and that PHC is a cornerstone of a sustainable health system for universal health coverage' (World Health Organization and the United Nations Children's Fund 2018).

In Australia, PHC is delivered in general practices, community health centres, Aboriginal Community Controlled Health Services and allied health practices. High-quality care may not always be achieved, particularly as funding rewards throughput rather than quality, with fee-for-service payments a higher proportion of PHC funding, compared with payment for quality and population health outcomes, than in many other developed countries (OECD 2017).

In North America and New Zealand, PHC has been strengthened through implementation of Patient-Centred Medical Home (PCMH) models (Nutting *et al.* 2010; Cumming *et al.* 2018). There is growing evidence of efficacy of PCMHs, especially when aligned with integrated primary and secondary/tertiary care (Primary Care Collaborative 2017). There is support for PCMH models to improve the quality of PHC in Australia; however, funding approaches do not adequately support such models (The George Institute for Global Health, Consumers Health Forum of Australia, University of Queensland MRI Centre for Health System Reform and Integration 2018; Metusela *et al.* 2020*a*). The introduction of the Practice Incentives Program Quality Improvement payment (PIPQI) in 2019 provided a mechanism for payment of general practices for activities improving patient care, with enrolled practices committing to continuous quality improvement, and to providing data for local, regional and national health outcomes datasets (Australian Government Department of Health 2019).

Primary Health Networks (PHNs), regional organisations whose key objective is to increase the efficiency and effectiveness of PHC (Australian Government Department of Health 2021), assist general practices through collection and analysis of data, driving quality improvement and contributing to the national dataset. The Western Sydney PHN (WentWest) engages in a range of health care quality improvement initiatives in western Sydney, including supporting general practices transitioning to PCMH care models.

In view of the current focus on improving quality in Australian general practice, WentWest and the Western Sydney University research team identified the need for agreed measures of high quality in Australian general practice. Although a number of relevant frameworks map attributes of high-quality PHC, these are not specific to Australian general practice (Bodenheimer *et al.* 2014), do not identify a wide range of evidence-based measures of high-quality PHC (RACGP 2012, 2015*b*) or are focused on process measures rather than outcome indicators (Crossland *et al.* 2016; see Table 1 for definitions).

This research, undertaken with Wentwest and two other PHNs in western Sydney (Nepean Blue Mountains and South Western Sydney PHNs) aimed to develop a suite of evidence-based indicators and measures of high quality based on routinely collected data in Australian general practice. The longer-term aim is for use of these indicators and measures to drive quality improvement and potentially inform changes in the Australian PHC funding model to adequately support high-quality care.

Methods

Overview

We conducted an initial focused literature review to identify current quality frameworks related to Australian general practice and to PCMH models. A subsequent, wider literature review assisted us to revise and expand data routinely collected by WentWest. We identified an initial set of indicators and measures of high-quality likely to be relevant and feasible in Australian general practice, and reviewed these in three workshops with key stakeholder groups. The draft suite of indicators and measures was supplemented and refined in light of workshop feedback and further targeted literature review.

Research team and oversight

A core group of researchers (CM, NC, HVW, JR), three of whom are general practitioners, met quarterly with researchers from a range of PHC disciplines including a further four general practice academics, and an international consultant and primary care physician (KM). The team also met quarterly with an Advisory Group including senior staff and the chair of the WentWest Board, two of whom are general practitioners (refer to Supplementary File S1 for further details of the Advisory Group and research team). We received ethics approval from Western Sydney University Human Research Ethics Committee (H12003).

Literature review

Our initial focused review of the literature was supplemented by a comprehensive literature search of PubMed and

Table 1. Table of definitions.

Term	Definition
Indicators	An indicator is as an explicitly defined and measurable item referring to the structures, processes, or outcomes of care (Campbell *et al.* 2003)
Measures	A measure evaluates an indicator. For a measure to be effective it should be 'specific, measurable, achievable, realistic/relevant and timed' (Bovend'Eerdt *et al.* 2009)
Structure	Structure refers to the material resources, human resources and organisational structures of a general practice. These elements can also be thought of as inputs (Donabedian 2005)
Process	Process refers to activities undertaken in giving and receiving care, and can be also thought of as activities and outputs (Donabedian 2005)
Outcome	Outcome is the effect of care on populations and patients. Structures as well as processes may influence outcomes (Donabedian 2005)
Attributes	Attributes are defined in this paper as those features identified in the literature as characterising high-quality PHC (Table 2)

Medline databases to identify guidelines and documents related to high-quality PHC, using terms: 'general practice', 'primary health care', 'health care quality access and evaluation/standard of care'; 'quality improvement/quality indicators', as well as the following text words: 'attributes', 'indicators', 'elements', 'high-quality', 'general practice', 'primary care' and 'primary health care'. We also used Google searches for grey literature. The inclusion criteria included articles in English, published within the past 10 years that examined high-quality care in general practice in regard to either quality improvement, or models or approaches to quality care, or attributes, characteristics, elements or indicators of quality care.

The core research team reviewed all papers and documents identified for evidence-based indicators and measures of high-quality PHC relevant to Australian general practice. These were incorporated into the suite of indicators and measures.

Review of an initial set of indicators and measures

In parallel with the literature review, the core research team reviewed indicators and measures WentWest reported to general practices engaged in quality improvement, assessing the evidence for each, and in consensus with the wider team, excluding those not considered relevant or important indicators of quality in Australian general practice. The expression of the indicators and measures was reviewed to ensure each was explicitly defined and measurable (Campbell *et al.* 2003; Bovend'Eerdt *et al.* 2009; Table 1). The WentWest list was then expanded to include other measures and indicators identified in the literature.

Workshops

In consultation with the Advisory Group, we determined a sampling frame of key stakeholders to provide important and varied perspectives. Each PHN invited GPs and practice staff (including practice managers and practice nurses) from within their PHN footprint, relevant PHN staff, and consumer representatives, to attend separate workshops. All attendees signed a participant consent form, including for audio-recording of plenary discussions. The objective of the initial WentWest workshop was to develop a quality framework, and review an early draft of indicators and measures, based largely on those used by WentWest for general practice quality improvement. In the latter two workshops, the objective was to review the expanded suite of indicators and measures arranged according to the agreed framework to determine their feasibility and relevance in Australian general practice.

Data

Participants in each of the workshops were divided into small groups, and each group was allocated a different set of indicators and measures to review. Hence, across both later workshops, each of the indicators and measures was reviewed at least twice by a small group of stakeholders. Each small group appointed a scribe who recorded the group's decisions regarding relevance and feasibility of each indicator and measure, as well as open-ended comments informing the decision. Plenary discussion was held at the start and conclusion of each workshop. Written reports from the small groups and recorded plenary discussion constituted the data collected for analysis.

Analysis

All workshop responses were collated and then descriptively categorised. Following the first workshop, development of the evolving quality framework was informed by several rounds of email review and feedback from a smaller number of participants in parallel with similar input from the wider research team and Advisory Group. Following the second and third workshops, a final draft of indicators and measures deemed relevant and feasible in an Australian general practice setting was compiled by the research team.

Ethics approval

The research was granted approval by the Western Sydney University Human Research Ethics Committee (H12003). The research was undertaken with appropriate informed consent of participants.

Results

Developing a quality framework

Attributes of high-quality general practice described in the literature were considered in order to provide a framework within which to organise indicators and measures. We selected relevant reports from the RACGP (RACGP 2012, 2015*a*, 2015*b*, 2016) as the largest professional body responsible for general practice in Australia, and other key documents, including Australian Commission on Safety and Quality in Health Care (ACSQHC) recommendations for a national indicator set (ASCQHC 2012). We also reviewed the international literature related to models of high-quality primary care. Those attributes of high-quality primary care noted in four or more of the reviewed papers were gathered under a number of overarching descriptors (Metusela *et al.* 2020*b*). These descriptors were strongly aligned with the holistic, patient-centred, evidence- and data-informed, team-based approach to PHC described by Bodenheimer *et al.* (2014). This structure was reviewed in the first workshop, and subsequent correspondence with the descriptors above included under each of four general practice responsibilities reflective of the Quadruple Aim of improving the individual experience of care; improving population health; efficient use of resources; and improving the work life of clinicians and staff (Bodenheimer and Sinsky 2014; Table 2).

To ensure indicators and measures beyond just process measures were considered, we incorporated a Donabedian model across the framework, seeking to identify structures, processes and outcomes for each attribute (Donabedian 2005; Table 1).

Reviewing WentWest indicators and measures

The initial WentWest list included 63 indicators. After reviewing the evidence-base for each indicator, 19 were excluded as not being relevant or important indicators of quality in Australian general practice. This was often because they were used to evaluate local programs (such as mental health services or diabetes case conferencing provided by WentWest). Some had been superseded (such as those related to 'pap smears'). Others were general rather than specific in their focus (such as 'patient count' and 'revenue not claimed'). All 44 remaining were refined, so that they were clearly defined and measurable (Campbell *et al.* 2003). Measures were assigned to appropriate indicators and positioned under the relevant attribute. For example, the WentWest measure 'Allergy Coded/Not Coded' was reworded '% active patients with allergy or nil known coded' under an indicator labelled 'Data quality and completeness of demographic and key health data'. This structural indicator addresses data-enabled practice quality improvements under the attribute 'Professionally accountable'. The WentWest measure 'FOBT Eligible Male' was reworded '% active patients aged 50–74 years with FOBT recorded in the previous 24 months' under a process indicator 'Early detection of cancer' addressing preventive health care, under the attribute 'Accountability to our patients'; 'Patients with Diabetes with poor glycaemic control (Hba1C > 7)' was reworded '% active DM II patients with Hba1C ≤ 8%' under the outcome indicator 'Optimal diabetes outcomes' addressing chronic care under the attribute 'Accountability to our patients'.

Expanding the suite of indicators and measures

Informed by our second, comprehensive literature review, we added 91 evidence-based measures to those used by WentWest. These were positioned according to the general practice attribute addressed, across all three elements of the Donabedian model, and in particular helped populate indicators and measures for Attribute 3: 'Accountable to the community' and Attribute 4: 'Accountable to society', which WentWest indicators and measures did not address (Table 2).

Accreditation according to RACGP or the Australian College of Rural and Remote Medicine standards was an assumed baseline measure, so indicators and measures in accreditation standards were not included in our model, which sought to define high quality. As the PIPQI is likely to form the basis of general practice quality improvement data collection into the future, all 10 measures of the PIPQI were included and were given precedence where other similar measures were noted.

We categorised some measures as 'blue skies', meaning these were difficult to measure in Australian general practice at the time of our research; however, were important and potentially measurable in the future. This included measures requiring integrated healthcare data, such as the outcome measure 'use of linked data to measure potentially preventable hospital admissions'.

Results of workshop review

The 37 workshop participants included general practitioners, practice nurses, practice managers, consumers and PHN staff (Table 3).

Table 2. Attributes of high-quality care aligned with the Quadruple Aim.

Attribute	Definition
Attribute 1: Accountability to patients Aligns with Quadruple Aim: 'improving the individual experience of care' (Bodenheimer and Sinsky 2014)	At its core, high-quality general practice provides evidence based, person-centred, comprehensive care (including preventive, chronic and acute care), with patient–general practice team partnerships as a key aim
Attribute 2: Professionally accountable	High-functioning multidisciplinary teams engage in continuing care; that is, coordinated and integrated care with other services and the medical neighbourhood
Aligns with Quadruple Aim: 'improving the work life of clinicians and staff' (Bodenheimer and Sinsky 2014)	High-quality general practice care is supported by clinical governance, staff training and data-enabled practice quality improvement Engagement with general practice education and/or research provides a means of sustaining the quality of the health system
Attribute 3: Accountable to the community Aligns with Quadruple Aim: 'improving the health of populations' (Bodenheimer and Sinsky 2014)	Attribute three refers to the way that general practice care is accessible, responsive to population health needs and focused on providing equitable care
Attribute 4: Accountable to society Aligns with Quadruple Aim: 'reducing the per capita costs of care for populations' (Bodenheimer and Sinsky 2014)	Attribute four refers to the way high-quality general practice promotes efficient stewardship of health resources

Table 3. Workshops by participant type and number.

Workshop	Participant type	No. participants
1	Practice Nurse (PN): 1	11
	Practice Manager (PM): 1	
	GP: 6	
	PHN staff: 3	
2	PN: 1	13
	GP: 8	
	Consumers: 2	
	PHN staff: 2	
3	PN: 4	13
	PM: 2	
	GP: 4	
	GP student: 1	
	PHN staff: 2	
		Total: 37

The initial 2-h WentWest workshop in August 2019 focused on reviewing the proposed general practice attributes, and an early draft of indicators and measures based largely on those used by WentWest. Participants recommended aligning the attributes we had identified with the Quadruple Aim (Bodenheimer and Sinsky 2014). In adapting this to a general practice context, a framework of 'accountabilities' addressing each of the four aims was recommended. In subsequent email discussion with six workshop participants, the attributes identified were aligned with the Quadruple Aim, and expressed as accountabilities to patients, communities, healthcare providers and society more widely (Table 2).

Two subsequent workshops convened by South Western Sydney and Nepean Blue Mountains PHNs provided opportunities to review the expanded suite of indicators and measures. Out of the proposed 135 evidence-based indicators and measures, 125 were agreed to be relevant and 80 feasible, at both workshops. Following these workshops, eight measures were deleted, four were reassigned as 'blue skies' measures and four additional measures were added to the suite (Table 4).

Descriptive analysis of audio recordings of workshops two and three identified challenges in implementation; and in interpretation of data.

Challenges in implementation

Implementation challenges included GP burden, lack of time and resources, and the importance of correct coding. The need to reduce the burden on practitioners and practice staff while improving practice quality was raised. It was noted that 'time, staff, funding' would be required 'for follow-up

implementation'. It was also noted that not all GPs use computers in their practice, particularly in south west Sydney where 'at least 25% of our solo practitioners don't use computers' (GPW2). There was discussion about challenges in consistency of coding, especially where GPs had 'already formed their habits'. It was suggested that training in coding should begin in postgraduate general practice training.

Challenges in interpretation of data

There were several challenges noted in interpreting data, applicability to specific subpopulations and how to define a high-quality result. The question of 'how do we know we are measuring quality?' (GPW2) was raised. It was recommended that future iterations should include specific subpopulations, and that for equity, use of the measures should take account of the practice patient population. It was suggested that improvement at the practice level over time, rather than an absolute outcome be the focus, or alternately, goal ranges could indicate quality rather than a required score: 'having a range of what is the achievable goal rather than a set mark' (GPW3).

The resulting suite of indicators and measures

Following analysis of the data, including ongoing review of the literature and the outcomes of the workshop consultations, a revised suite of 135 indicators and measures, arranged across the agreed framework, was drafted by the core researchers (CM, NC, HVW, JR). This was reviewed, minimally revised, and approved through consensus by the wider research team and Advisory Group. Table 5 provides an overview of the framework. Refer to the Supplementary File S2 and the project report for details of the full suite of indicators and measures (Metusela *et al.* 2020*b*).

Discussion

This paper describes the development of a suite of evidence-based indicators and measures of high-quality PHC in Australian general practice. The suite includes structure, process and outcome measures grouped under four attributes, aligned with the Quadruple Aim and is intended to be incorporated into routinely collected general practice quality improvement data. Conforming with international evidence for high-quality PHC, the indicators and measures promote patient-centred, team-based care delivery (Bodenheimer *et al.* 2014), and outcome measures align with current Australian health priorities (RACGP 2020).

We describe indicators and measures that can largely be drawn from data extracted from general practices; however, accurate and consistent coding is imperative for the data to be reliable (Crossland *et al.* 2016). This highlights the importance of support and training for general practices

Table 4. Measures removed, added or changed to 'blue skies' by the research team.

Indicator	Measure	Workshop feedback	Research team adjudication
Measures removed			
Management of CV disease	% active patient with heart failure coded who have ECG and echocardiography on file	Too much detailed data	Remove, as not enough evidence for this as quality measure
Indicators for mental health: treatment planning undertaken	% active mental health patients with 2712 (review of Mental Health Treatment Plan) in previous 12 months	Achievable if looking at patients in a 2715 (mental health treatment plan) who also had a 2712	Remove, as this is a process measure without a lot of evidence to show it improves care
Use of My Health Record	% of cross views of MyHR	Not feasible for all; not sure this is important to patient	Remove, as no evidence for this as an indicator of quality
Access to home-based care	Practice provides home/residential aged care facility visits	GP practice and area-dependent; skill-dependent Community demographics, e.g. are there local residential aged care facilities? Do we offer it? Do we do it well?	Remove, as although the measure promotes equitable care and continuous care through all phases of life, in the current setting there are issues beyond GP practice control that affect ability to provide this service
Provides healthcare to vulnerable communities	Evidence of stratification of data to vulnerable populations	Clarification of what indicator means; improvement rather than absolute levels	Remove as unclear
GP and staff satisfaction	Annual staff turnover	Affects patients; is easy to measure; staff to have exit survey	Remove measure as although burnout is associated with clinician turnover, total staff turnover is multifactorial
Avoidable hospital care	Use of linked data to measure ED presentations by triage level	Triage level of limited utility for hospital avoidance, e.g. vaccine preventable, diabetic complications; measure by diagnoses, e.g. DRGs (Diagnosis Related Group)	Remove this blue skies measure
Avoidable hospital care	Use of linked data to measure visits to other general practices	Measures like dissatisfaction, second opinion, specialised services, drug seeking – needs qualitative data for reasons	Remove this blue skies measure
Measures changed to 'blue skies'			
Team-based care	Assigned care teams to coordinate care for individual patients	Depends on size of practice	Change to 'blue sky' measure. Maybe more practical in the future if/when enrolment model comes into effect
Health-related social needs assessed	% active patients with screening for health-related social needs recorded	Will need significant GP education/training especially if adapting tools; define social needs; employment needs; tool to measure?; low income, card holders	Change to 'blue sky' measure, given GP training needed and appropriate tools developed
Access to regular primary care provider	% active patients reporting they have a specific GP/Practice nurse/Care team	Community level measure; Pen Cat captured	Change to 'blue sky' measure of continuity of care
Access for low SES	Compare % active patients who are health care card holders with % holding health care cards in practice LGA	Needs to distinguish aged pensioner from disability from lower SE status; blunt instrument; how to identify the local government area?	Change to 'blue sky' measure Needs work on the tools for the social determinants of health and ways of screening for these in practices
Additional measures proposed			
		Measure quality should attempt to assess level of cultural awareness and sensitivity	% current practice staff who have undertaken Aboriginal cultural awareness training in the past 24 months
		Residential Medication Management Review (RMMR) for nursing homes	% active patients residing in residential care who have received a RMMR in the past 12 months
		Annual review of opioid contracts may need to look at lyrica in the near future	% active patients prescribed lyrica who have been reviewed by a pain specialist

Table 4. (*Continued*)

Indicator	Measure	Workshop feedback	Research team adjudication
		Bone density for over 70s	% active female patients ≥45 years of age and males ≥50 years of age with a fracture risk assessment calculated
			% active patients >70 years of age with a bone mineral density test in the past 24 months

Table 5. Indicator headings under the four attributes.

Accountability to our patients
Person-centred care and patient–team relationship
Availability of information for patients
Patient input/feedback on health care delivery
Patient perceptions of care
Evidence-based comprehensive care: preventive health care
Risk factors recorded
Patient perceptions of preventive health
Childhood adverse events
Early detection of cancer
Vaccination: adults and children
Aboriginal and Torres Strait Islander preventive health care
Evidence-based comprehensive care: chronic care
Systems for management of chronic diseases
Indicators for diabetes
Indicators for respiratory disease
Indicators for cardiovascular disease
Indicators for renal disease
Indicators for mental health
Advance care planning
Evidence-based comprehensive care: acute care
Safe prescribing of opioids and benzodiazepines
Professionally accountable
Clinical governance
Staff training
Data-enabled practice quality improvement
Education, training and research to support quality and sustainability
Accountable to the community
Urgent access to care
Understanding of local population
Health related social needs assessed
Community engagement
Accountable to society
Avoidable hospital care
Duplication of care

(The George Institute 2018). Additionally, a study exploring the facility for current GP software and data extraction tools to collect this data is recommended. Research is also required to understand how the indicators and measures would apply in other settings, such as beyond western Sydney, and in other PHC settings, such as Aboriginal Community Controlled Health Services and in prison health settings.

The controversy surrounding implementation of the initial 10 PIPQI measures highlights the importance of considering the challenges of implementing such measures of quality, and those related to interpretation of the data derived from our 135 indicators and measures, as noted by participants in our research. Addressing these challenges will require further consultation (Woodley 2019).

Importantly, consideration of targets for the indicators and measures will need to take into account the practice setting. Practices in disadvantaged areas may require greater investment to achieve the same health outcomes, compared with practices in more advantaged settings. To avoid negative effects of benchmarking, assessment of quality using these measures should be modified according to practice population. Assessment could also focus on improvement over time rather than achievement of targets (Oregon Health Authority 2018).

Limitations of the research

Our research focused on urban general practices in one region in Australia, although western Sydney is large and socioeconomically diverse. Future research will engage PHNs in different areas of Australia, including in rural settings, to review the content and construct validity of our model. Our research was also largely limited to GP and practice staff perspectives. Patient-determined indicators and measures will be considered in the next phase of our research.

Conclusion

Although improvement in quality of Australian general practice is widely supported, challenges include an absence of financial reward for providing high-quality PHC and substantial cost to practices seeking to transform to high-

quality models of care. Conversely, Australian general practice is unlikely to receive a large injection of government funding until it can demonstrate its capacity to deliver care that is consistently high quality, and achieve outcomes similar to those demonstrated in other settings (Primary Care Collaborative 2017). This research is an early step in defining structures, processes and outcomes that would enable such high-quality health care to be delivered in the Australian setting, and in the longer term provide justification for improved remuneration of Australian general practice.

Our proposed model makes a contribution towards measuring and improving the quality of Australian general practice. Our research is timely, particularly as new funding models and approaches to general practice in Australia are under consideration (Australian Government Department of Health 2017, 2022). With further development, consensus and testing, our model has the potential to inform health systems innovation nationally and in other countries seeking to strengthen PHC.

Supplementary material

Supplementary material is available online.

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