Gold Coast Primary Health Network

PRACTICE-BASED POPULATION HEALTH MANAGEMENT PROGRAM

SUMMARY OF INSIGHTS AND LESSONS LEARNED

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GOLD COAST

An Australian Government Initiative

Contents

Introduction

This document provides background information and insights gained by Gold Coast Primary Health Network (GCPHN) during the two years (2015-17), while developing the Practice Based Population Health Management Program. Included is guidance and insights for other PHNs who wish to introduce the approach to general practices in their locality. The overall aim of practice based population health management is to understand the profile of the general practice population so that resources can be appropriately prioritised and allocated. This approach requires analysis of the data available from the total general practice population. There are no parameters on the data collected, such as only chronic diseases or only for a 12-month period, making the span and range of data comprehensive and informative. This level of data will support PHNs and general practices to improve health outcomes:

- general practices know the profile of their practice population and individual patients, including those not frequently attending
- general practices optimise their services to meet the need of their patient population
- PHNs understand the health needs and trends in their locality in close to real time terms
- PHNs work with general practices in solution design where there are service gaps
- PHNs work across the sector where service gaps or needs are outside the remit of primary care

To provide context to the development of the program the issues and levers at a different levels are included:

- at a macro level, the role of policy and finance backed by evidence on the drivers of system change
- on a meso level, the processes involved in structuring the program, such as engaging stakeholders and consumers in designing the interventions
- on a micro level, how to localise evidenced based interventions based on the data available, and how to monitor and evaluate.

The blue text boxes in the document provide the lessons and the insights gained from GCPHN staff when working through the program development.

Definitions of Population Health

There are many definitions for the various approaches to managing the health of a population, the main confusion tending to be between public health and population health. In the future, with improved data linkage across primary and secondary care, and community providers, population health can be expanded to be broader than just practice based. The benefits of starting with a practice based approach is that there is a long history of IT management systems in general practice, and so longitudinal data available.

GCPHN has used the characteristics of population health applied to general practice[1] to develop the definition below

Practice based population health management:
an interest in the health and wellbeing of local populations or communities in addition to (but not instead of) a focus on individuals and family care by general practices. It includes proactive, preventative care for healthy and chronically ill people, and a focus on the distribution of health within

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[1] Reclaiming a population health perspective. Nuffield Trust 2013 https://www.nuffieldtrust.org.uk/research/reclaiming-a-population-health-perspective

populations. It also means proactive care for people attending regularly who are at risk of deteriorating health, and thinking about the health of people who are registered but not attending regularly.

Some other definitions used for population health are below:[2]

Public health:
represents societal/governmental actions that improve the health of populations. The focus is on communities, jurisdictions or geographic areas. Care is often related to communicable disease.

Population health:
a comprehensive approach to health care, considering the distribution of health outcomes within a population, the determinants of health that influence the distribution of care, and the policies and interventions that are impacted by the determinants.

Population health management:
the process of addressing the population health needs, and controlling problems at the population level, and strategies to address those population health needs.

Population health informatics:
the application of health IT and technologies and information sciences to improve the health and wellbeing of a targeted population.

Background

In 2015, GCPHN started exploring the concept of population health in general practice. Developing a practice based approach to population health management was an explorative and very iterative process. While there are frameworks for population health, there wasn't much available in Australia on the practicalities around implementation. Given this, a Commissioning Support Unit in the National Health Service (NHS) and with the Bloomberg School of Public Health at Johns Hopkins University in the United States (US) were contacted, as these organisations were already working in this field.

The early focus was on the population health IT tools available and this quickly expanded to evidenced-based frameworks and measures. The Institute of Healthcare Improvement (IHI) Triple Aim approach and the new Whole of System Measures (which now includes clinician experience) were incorporated into the approach to consistently measure outcomes. The Population Health courses sponsored by the Office of the National Coordinator for Health Information Technology US were also useful in providing guidance and validating GCPHN's approach.

Value of this approach

PHNs are required to develop and submit health needs assessments for their locality. The data received from national and state agencies are usually aggregated to a statistical area level, and there is often a time lag in the availability making interpretation challenging. PHNs may also be familiar with collecting and interpreting aggregated data from general practices via commercially available clinical audit tools. However, aggregated data does not highlight the individual patients who would benefit from specific interventions, nor does it allow tracking outcomes for individuals over time.

Practice based population health management covers the entire practice population from the healthy patients to the chronic and complex patients. This is done by primarily by standardising the data from

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[2] Johns Hopkins HealthCare Population Health Research 2016

general practice using international coding systems and applying analytical tools to highlight where evidenced based interventions are likely to improve health outcomes. The data are always de-identified when viewed by GCPHN staff, but re-identifiable back in the practices as reports and alerts.

The benefits to PHNs in taking this approach is that data and information gained can be used to inform improved health needs assessment processes, service design/planning and commissioning of services, and assist in performance monitoring and evaluating the effectiveness of those services. The approach will also assist the Practice Support teams to explore the benefits for future PHN support to general practice.

Population Health – System Drivers for Change

Implications of Policy Finance and Business

For PHNs to articulate a compelling case for practice based population health management to stakeholders, it is important to understand national and international trends and drivers. While the concept of population health management is relatively new to Australia, the US health system is currently undergoing significant reform based on population health. The reform, known as Obama Care, takes a whole of systems approach including legislation, new models of care and quality frameworks. The issues being addressed, such as fee for service funding, duplication and waste, and resistance to change, resonate with the Australian health system, and this present an opportunity to bring what works from overseas into the development of practice based population health management.

Inflation

In Australia, government health spending has grown 74% over the past decade. The biggest and fastest-growing spending category in health is hospitals, who receive almost AUD$18 billion more in real terms than in 2002-03; an increase of over 95%. The next biggest category is primary care and medical services, which includes Medicare. This has grown by over 60%, accounting for a further AUD $11 billion increase[3].

National policy is starting to respond to this unsustainable growth in health care costs and appears to be looking to the US for solutions. The Patient Centred Medical Home (PCMH) in the US is a model of care encouraging a shift towards payment focused on value not volume, and resources for system wide improvements. The model is starting to demonstrate reduction in hospital and Emergency Department (ED) use[4].The Australian Health Care Home model soon to be trialled is structured in a similar way to the PCMH and has many of the same objectives .

Waste in the healthcare system

In 2014, the US spent $3 trillion on health care. Estimates place waste in the US health system between 21-47%[5]. The estimated waste in the Australian health care system is $20 billion a year[6]. Healthcare waste generally categorised as behavioural, clinical and operational.

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[3] Grattan Institute 2013 https://grattan.edu.au/wp-content/uploads/2014/04/208_duckettmcgannon_oped_conversation_health.pdf
[4] Green, L., Chang, H., Markovitz, A & Paustain, M (2017) The Reduction in ED and Hospital Admissions in Medical Home Practices Is Specific to Primary Care–Sensitive Chronic Conditions. Health Research and Educational https://www.pubfacts.com/detail/28255992/The-Reduction-in-ED-and-Hospital-Admissions-in-Medical-Home-Practices-Is-Specific-to-Primary-Care-Se
[5] Berwick, D & Hackbarth, A (2012) Eliminating waste in US health care. Journal of American Medical Association. http://christianacare.org/documents/valueinstitute/Berwick-Hackbarth%20-%20Eliminating%20Waste.pdf
[6] The Australian (2016) Budget 2016: healthcare waste costs $20bn a year. http://www.theaustralian.com.au/national-affairs/health/budget-2016-healthcare-waste-costs-20bn-a-year/news-story/37475d4c7c3a7adfcd65b8216b8ed015

- behavioural waste is mainly under consumer control but can be due to failures in care delivery and care coordination e.g. not referring to preventative services. It includes smoking, obesity, alcohol abuse and non-adherence to medication.
- clinical waste is due to failures of care delivery, coordination and overtreatment, and includes defensive medicine; treatment variations; preventable admissions; medical errors; hospital acquired infections and over prescribing antibiotics.
- operational waste is in administrative complexity, bureaucratic processes, pricing failure and fraud and abuse, and includes paper forms, redundant claims, and ineffective implementation and use of IT.

> Understanding the issue of waste in health care was a pivotal moment for us. Often we think of reducing cost as rationalising care, or cost shifting. Whereas, if there was less duplication, reduced overtreatment, de-prescribing, and fewer errors, then the costs would decrease. We know the current funding system rewards volume over value, but even in this environment we think practice-based proactive care that reduces waste without impacting on the business model will demonstrate better patient outcomes for the at least the same, if not reduced cost.
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> ** These blue text boxes are the PHN team's reflections*

Reimbursement models

Fee for service (FFS) is a payment model where services are unbundled and paid for separately. In health care, it gives an incentive for providers to deliver more treatments because payment is dependent on the quantity of care, rather than quality of care. Often health providers generate income from over treatments that may not be in the patient's best interest (e.g. repeated procedures, unnecessary tests or over prescribing medications). The patients may also end up paying for unnecessary care (e.g. duplicate tests, time off work).

If the model is changed to a quality of care focus, this incentive can reduce volume and focus on value. The diagram below[7] shows how financial risk of the funder, in our context the Commonwealth, reduces as the risk shifts to the provider who has a set amount of funds to deliver the care for individuals. The theory is that if financial risks shift to the service provider they become more motivated to reduce waste. An example of the application of this approach in Australia is bundled payments for patients meeting specified criteria within the Health Care Home model trials.

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[7] Frakt, A. & Mayes, R (2012) Beyond Capitation: How New Payment Experiments Seek To Find The 'Sweet Spot' In Amount Of Risk Providers And Payers Bear. Health Affairs 31, no. 9 http://www.hcfe.research.va.gov/docs/2012_frakt_capitation_ha.pdf
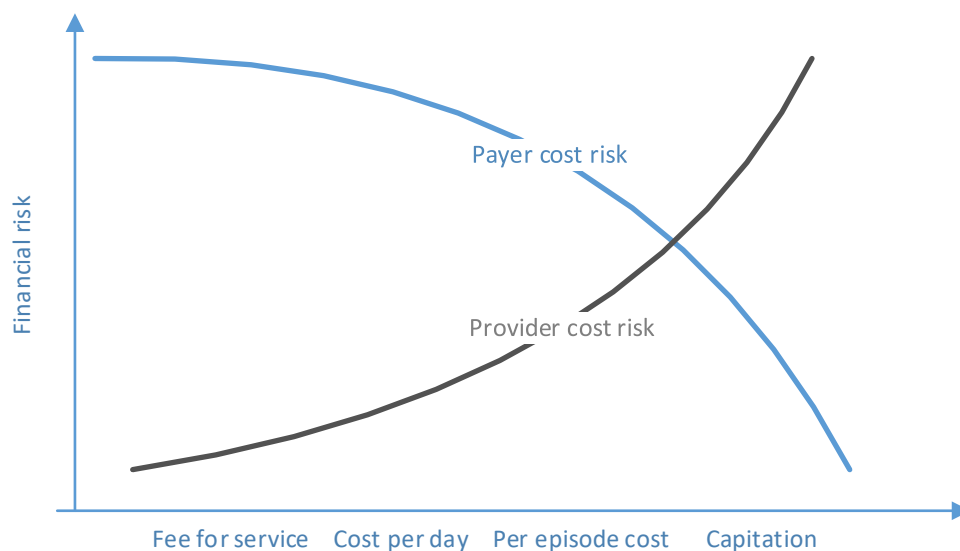
The Triple Aim

Introducing reimbursement models into health care reform needs balancing with health outcomes and the value add to the patient. The Triple Aim is a framework developed by the Institute for Healthcare Improvement that focuses on population health and describes an approach to optimising health system performance. It focuses on three areas:

- Improve health for a defined population:
    - not just delivering more health care
    - focused on outcomes not process
    - defining the target population whose health you want to improve
    - ensuring the proactive investments for appropriate care, including prevention
- Enhance the patient care experience including quality access and reliability by:
    - improving the quality and coordination
    - convenient and broader access
    - care delivered when needed
- Reduce or at least control the per capita cost of care by:
    - eliminating the waste.

The framework is included in the current US healthcare reform agenda with the strategic goal of changing the context of healthcare. More than 150 organisations from the US, Canada, England, Scotland, Spain, Sweden, New Zealand, and Singapore have adopted the Triple Aim[8], and it is being implemented in Australia through organisations such as the NSW Agency for Clinical Innovation.

The diagram below[9] shows how the Triple Aim can underpin health reform. The right hand side shows the current state of fee for service, moving across to providers sharing the savings when systems are integrated and waste is reduced, through to global payment. Global payment is healthcare providers (hospitals and GPs) receiving a single comprehensive payment for a group of related services based on the expected costs for a clinically defined episode of care.

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[8] A primer on defining the Triple Aim (2014), IHI, http://www.ihi.org/communities/blogs/Documents/rsomgtae.4lc.1e880535-d855-4727-a8c1-27ee672f115d.33.pdf
[9] Accountable Care: A Value-Based Approach to Health Care Transformation. 27th annual IHI national Forum 2015 http://app.ihi.org/FacultyDocuments/Events/Event-2613/Presentation-12720/Document-9797/Presentation_Forum_27_ACO_LL_slides_.pdf

Fee for service	Pay for performance	Shared savings	Shared risk	Global payment

Focus on Individuals	Individuals and Populations	Individuals, Populations and Communities

Care	Care and Cost	The Triple Aim

Do to	Do For	Do WITH
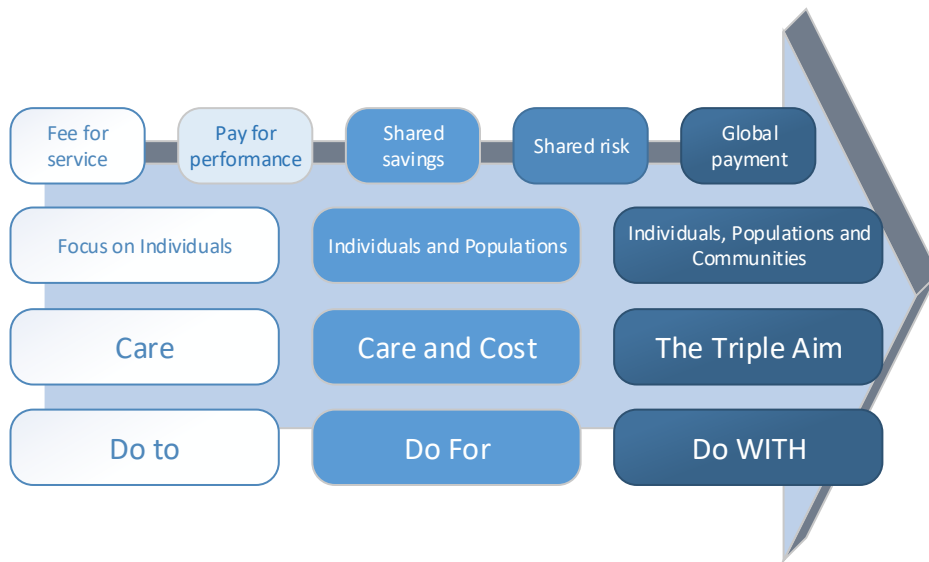
IHI acknowledged there is concern that costs will need to increase to improve quality or experience. However, they claim that the Triple Aim can be achieved by changing the reimbursement models to incentivise different behaviour and reduce waste coupled with better measurement[10]. This approach is seen with current integrated care initiatives in Australia, which are often a blend of state and commonwealth funding, moving towards shared savings model. In 2012, NHS England implemented global payment through Clinical Commissioning Groups. These groups are responsible for approximately 2/3 of the total NHS budget including mental health services, urgent and emergency care, elective hospital services, and community care.[11]

The Triple Aim underpinning health reform is demonstrating outcomes: the US Patient Centred Medical Home (PCMH) is moving away from fee for service and is demonstrating improved outcomes at reduced costs. Results seen from PCMH sites include a 65% reduction in specialist utilisation and 53% reduction in hospital admissions at one site, and a 4.2% reduction in patient's overall health care costs, savings estimated at US$40 million in 2011 at another site.[12]

As a PHN, we were keen to implement the Triple Aim; it seemed simple and logical, and we had The Johns Hopkins ACG® System to support the analysis needed. What we had not paid much attention to was how important the financial aspects captured during this work could be in informing more accountable models of value based care into the future.

Through the work, we could see actual resource utilisation by individuals and by practices, and their predicted future use. Australia is starting that move away from fee for service with Health Care Homes, and there is a lot to be learned from the drivers and experiences in the US in moving to value based care. We soon realised that the Triple Aim would be pivotal in achieving value based care, not just in general practice, but across the whole care continuum on the Gold Coast

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[10] Berwick, D & Hackbarth, A (2012) Eliminating waste in US health care. Journal of American Medical Association. http://christianacare.org/documents/valueinstitute/Berwick-Hackbarth%20-%20Eliminating%20Waste.pdf

[11] NHS Clinical Commissioners (2017), about CCGs   https://www.nhscc.org/ccgs/

[12]Patient Centered Primary care Collaborative – Achieving the triple Aim (2017)   https://www.pcpcc.org/content/achieving-triple-aim

Population Health Management

In IHI's model for population health[13] shown below, equity is seen as a major contributing factor to prevention, health promotion and medical care. Prevention and health promotion is influenced by the upstream factors, and/or individual factors. While some of these may be outside the scope of practice based population health management, PHNs can have a role in influencing other agencies who do focus on the broader socio-economic and behavioural factors, such as education and housing. In terms of medical care, the upstream and individual factors will affect intermediate outcomes and health status. Therefore, in many cases the medical intervention has to respond to failures upstream.
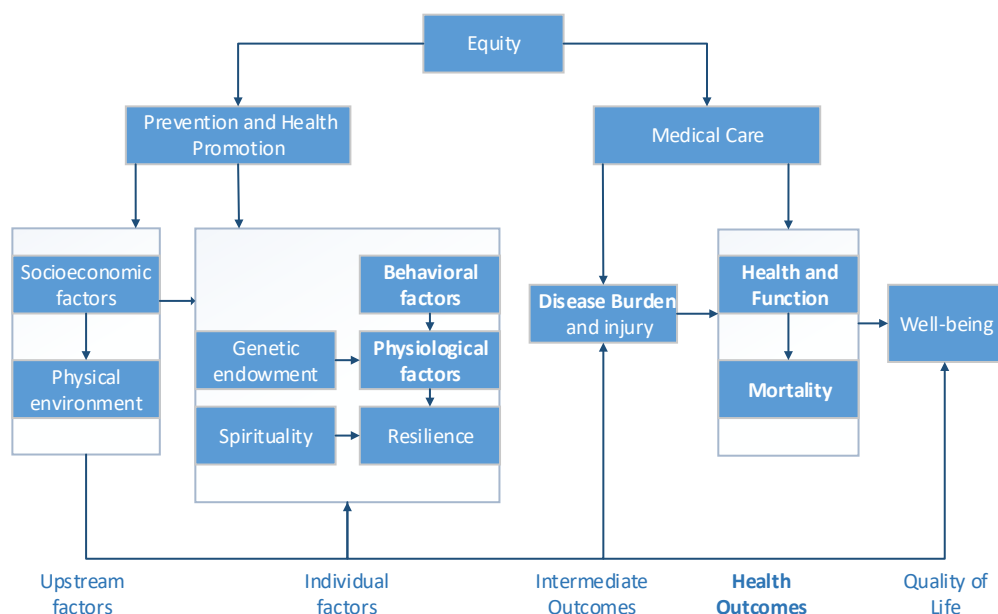
Determinants of health

Health care contributes approximately 20% towards health outcome, with social and individual behavioural factors contributing 80%[14]. Given this, there is not a single entity that can be accountable for achieving good health and wellbeing; it is a collective effort by many sectors not necessarily accustomed to working together towards one goal. PHNs are well placed to influence this approach, and through partnerships and collaboration, can have a role in ensuring plans across the multiple determinants of health are coordinated, and new incentives and resources needed are lobbied for.

The diagram below[15] shows how the coordination of policies and programs across the determinants of health can address the factors that impact on health and wellbeing to improve outcomes.

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[13] Stiefel M, Nolan K. Guide to Measuring the Triple Aim: Population Health, Experience of Care, and Per Capita Cost. IHI Innovation Series white paper. Cambridge, Massachusetts: Institute for Healthcare Improvement; 2012. www.IHI.org
[14] County health ranking model 2014 University of Wisconsin http://www.countyhealthrankings.org/our-approach
[15] County health ranking model 2014 University of Wisconsin http://www.countyhealthrankings.org/our-approach
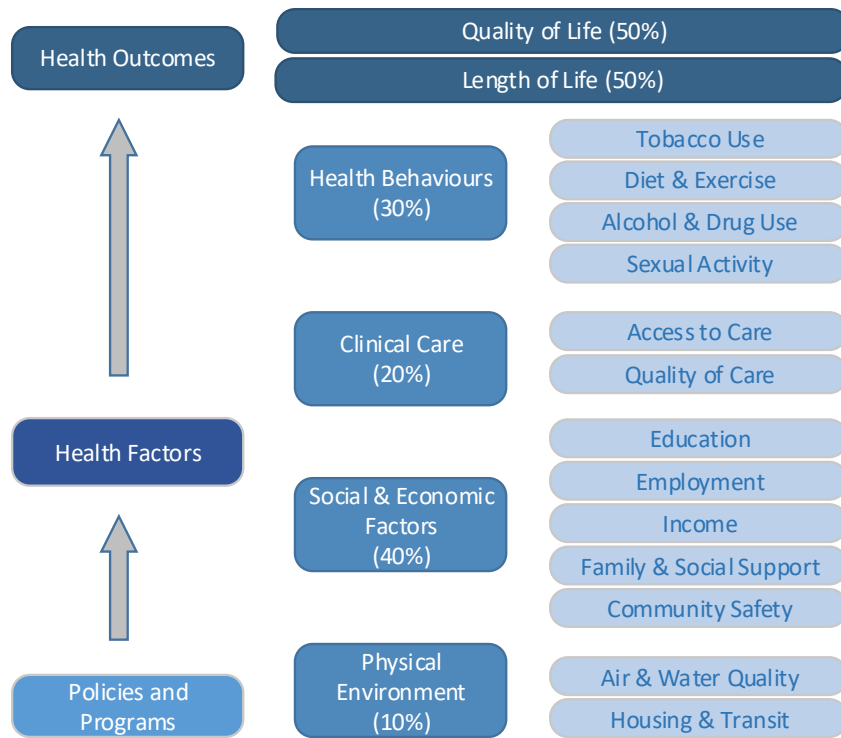
Role of policies across determinants of health   Factors impacting on health and wellbeing

> Seeing how little health care contributes to health outcomes was quite a surprise for staff at our PHN. We realised that we could play a big role on a systems level by using our influence with agencies and stakeholders who work in the areas associated with the non-healthcare determinants of health. We also realised that General practice was a big lever in addressing many of the determinants of health, especially around the risk factors and some of the social issues. We built this into our model for general practice to ensure we were supporting data collection on these elements, and also building community service access pathways.

Data driven process for population health management

Data are critical for determining interventions and the needs of a population, from receiving data from multiple sources, integration, cleansing and ongoing management of integrated data to archiving and updating of 'analysis ready' data. PHNs may already be supporting some aspects, such an aggregated view of people with diabetes without a HbA1c recorded, however, without an end-to end process for monitoring health at a de-identified individual level, the ability to evaluate the impact and costs is limited. The table below shows the PHN data driven analytics support process[16].

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[16] Johns Hopkins HealthCare Population Health Research 2016

Assess
Development of condition registries; population health assessments

Focus
Analysis & summary of important health status indicators

Predict
Development & testing of tailored risk predication models; implementation of prediction models

Develop
Ad hoc reporting to assist in program development; outcomes and evaluation planning; Measure development definitions

Identify & Stratify
Implementation of identification algorithms; Identification of gaps in care; Patient lists with pertinent demographic & risk factor information

Intervene
Management & outcomes reporting/monitoring dashboards; identification & application of benchmarks; provider profiling

Evaluate
Impact, quality & cost savings evaluation

Disseminate
Written & oral reporting for technical & non-technical audiences

Risk adjustment and predictive modelling

The data driven analytic support provided by the PHN is used to support the practice based population health approach through the following processes

Risk Adjustment:

Risk adjustment analyses the characteristics associated with a person's disease and morbidity, and adjusts for outcomes whether they be clinical or financial.

- risk adjustment can be used to assist in moving from fee for service to value based care (VBC) where benefits exceed the costs
- risk adjustment can modify fixed amounts and facilitate VBC. If risk adjustment is not used providers may avoid sicker patients as they are more costly to treat for the same fixed payment amount
- risk is calculated using clinical hierarchies, diagnosis codes, age and gender.

Predictive Modelling:

Makes use of available risk data and statistical analysis to segment a population based on likely outcomes.

- predictive modelling informs different types of care based on individual or group factors, for example, not all patients with heart failure have a similar risk of re-admission
- predictive models can be used to find patients that are more likely to respond positively over those that do not.

Limitations:

- mean reversion – patients who are identified as high cost can have lower costs in subsequent periods, this can give the false impression that the intervention has reduced cost, when it could have occurred regardless of the intervention

- up-coding more severe diagnosis can increase risk score and improve payment, the incentive can be to give patients similar but more severe diagnosis that attracts more funding.

Below is an example of the utilisation of services by risk cohorts in the US (patients 65yrs +) as defined by the number of co-morbidities[17]. Of note is that the top 20% of individuals account for 66% of the total costs; see more different doctors per year (increasing the risk of uncoordinated care); and have more medications.

Number of chronic conditions	Percent of population	Relative cost per patient	Estimated percenatge of total Medicare costs	Average number of unique visits per year	Average number of filled prescriptions per year
5+	20%	3.2	66%	13.8	49
3-4	27%	0.9	23%	7.3	26
0-2	53%	0.1	11%	3.0	11

Risk Models:
Scores based on certain outcomes, such as the coming year's cost, which have been calibrated in a benchmark population, can be applied. Once a score has been assigned to everyone in a cohort of interest they can be arranged from low to high, and subgroups can be identified, for example the top 5% or 1% of scores. From here, the groups can be targeted for interventions. Below shows how risk factors add to a total weighting, which can then be used to segment similar scores into groups:

Risk factor	Characteristics	Weight
Demographics	65 year old female	0.74
Prior utilisation	Costs in 76-90 percentile	0.60
Risk of hospitalisation	Presence of hospital dominant condition	1.14
Diabetes	Type 2 diabetes with complications - based on ICD diagnosis code. Hypoglycemic (non insulin) drug use - based on NDC Rx code	0.56 0.49
Peptic disease	Peptic ulcer - ICD Peptic disease drug marker - NDC	0.03 0.51
Chronic liver disease	Chronic liver disease - ICD	0.95
Psychosocial	Anti-anxiety drug marker- NDC	0.26
all other specified conditions/co-morbidities illness burden	-	2.71
Total	-	**7.99**

This level of analysis by PHNs can used by general practices to optimise primary care, such as allocating nurses to coordinate care for their most complex patients, and to inform PHN health needs assessment and service planning. Once PHN s have understood the value of tpractice based population health management, the first step is to engage stakeholders in the design of the program and interventions, then the next step is to identifying the data needed to monitor and measure outcomes.

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[17] Johns Hopkins HealthCare Population Health Research 2016

Because population health management is relatively new to Australia, people tend to confuse it with public health, and /or with integration initiatives, which tend to focus on those at most risk of hospitalisation. Using the population health management IT tool, we are able to see the profile of all the individuals in the general practice, and to see that population segmented by their resource utilisation and other factors. We can also see who is at risk of hospitalisation; the chronic but stable patients; and those with 'rising risk' of developing a chronic disease.

The Johns Hopkins ACG® System we are using is extremely comprehensive and has been extensively used in the US as part of the move to the Triple Aim and VBC. The ACG is currently in use in over 17 countries and affecting the health care delivery of over 70 million covered lives and has a bibliography listing over 700 academic publications

Models for Engagement in Program Design

Understanding the theory behind population health management is important when moving to program design. Population health takes into account factors broader than health care services, and different models are needed to engage the various stakeholders in the process.

The precede proceed model

The precede proceed model [18] is a cost-benefit evaluation framework developed in 1974 that is extensively used in the US by the National Center for Chronic Disease Prevention and Health Promotion. The model assesses health and quality of life needs, assists in designing, implementing and evaluating health promotion and other public health programs to meet those needs, with a focus on outcomes rather than inputs. The model works on the basis of active participation of the target group in the process.

The planning has 5 phases (Precede) to complete to enable the prioritisation process before moving to implementation phases (Proceed).

Preceded:

Phase 1: the target population is assessed for aspects such as quality of life.

Phase 2: quantifies the issues in a more structured fashion (epidemiologists are of help in this phase).

Phase 3: behavioural (day to day activities that either improve or impair health) and environment assessment - what supports already exist; who is the target group(s) accessing it.

Phase 4: predisposing factors, reinforcing and enabling factors to behaviours, with a primary focus on the environment. For example, educational interventions to stop smoking are preferable to change behaviour rather than banning smoking.

Phase 5: whether organisations are ready to engage in new programs or innovation. Business experts are useful to determine whether programs are adequately funded, administratively supported, and sustainable. For significant programs, policy experts assess if the program is likely to have support across elections/changes of government.

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[18] Green, I & Kruter, M (2005) health program planning: An educational and ecological approach. (4th ed.) New York: McGraw-hill

Phase 5 Administrative & policy assessment	Phase 4 Educational & ecological assessment	Phase 3 Behavioral & environmental assessment	Phase 2 "Epi" assessment	Phase 1 Social assessment

Health promotion
- Health education
- Policy

Predisposing factors

Reinforcing factors

Enabling factors

Behaviour

Environment

Health

Quality of life

Phase 6 Implementation	Phase 7 Process evaluation	Phase 8 Impact evaluation	Phase 9 Outcome evaluation	

Prioritising Interventions:

When the five phases are completed, the information is populated within the prioritisation matrix. The two dimensions of the matrix are one - the level of importance, and two - the level of changeability. Top of the matrix is the level of importance; how valuable is it to change this health outcome or behaviour status in the community (e.g. obesity leads to diabetes, which leads to premature death). Therefore, it is important to work on obesity, and high importance is assigned. Next, assess if the health status/behaviour is changeable or immutable. If obesity is a changeable health feature, the level of prioritisation for this issue will appear in the top left quadrant.

	Importance +	Importance -
Changeable +	High priority for program focus	Low priority
Changeable -	Priority for innovative program	No program

Proceed:

Phase 6: the program is developed and implemented. Programs are often designed to modify or change the predisposing factors; reinforcing and/or enabling factors in the environment.

Phase 7: assess whether the environmental changes achieved what was intended.

Phase 8: assess the impact of the program on the population or individual.

Phase 9: evaluate if the health status is improved.

We engaged key local expert stakeholders including academics, our Community Advisory Council (CAC) and clinicians and staff from four general practices, in designing the Practice Based Population Health Management Program. It was a highly iterative process with many turns in direction as we responded to new information and policy decision. We started by developing the Program Logic, which was highly valuable as it meant we managed to keep the end goal in sight regardless of where the posts shifted to. Next we wrote the evaluation plan which was also a good foundation for other document, such as the ethics application for 'quality improvement activity'.

We followed the commissioning cycle, but on reflection we worked more closely to the precede proceed model, which added value as it soon emerged the focus of the program would be behavioural change: new ways of thinking and working in the practices, patients attending the same general practitioner (GP), and patients and GPs being joint decision makers.

Engaging Patients

Population health management has a strong focus on individual's behaviour due to the impact this has on health outcomes. Patients often have a continuum of behavioural needs, and patients with complex medical needs often have complex behavioural needs. Therefore, both aspects need to be taken into account when engaging patients, tailoring interventions, and monitoring. Some patients with complex medical conditions have low behavioural change support needs and are often able to self-identify for services, and are able to learn and change their behaviour. Whereas other patients may have high behavioural change support needs and are unable to change their behaviour without therapeutic interventions and ongoing support.
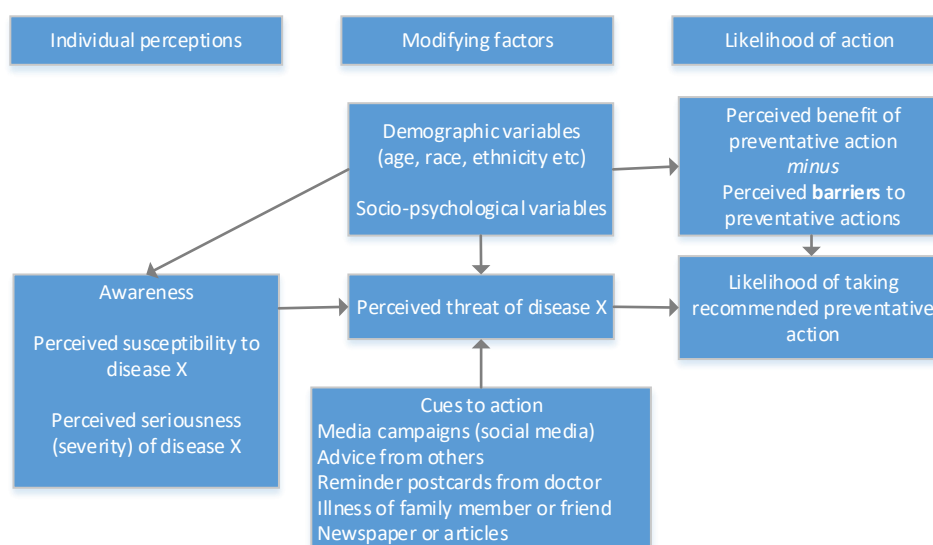
Health belief model

The heath belief model was developed in the 1950s in response to widespread failure of screening programs for tuberculosis[19]. The model highlights the importance of self-efficacy in predicting behaviour changes, with a focus on individual's behaviours, perception of their health status, and the ability to change the status. People with high self-efficacy believe "I can do something; I can make the change, and realise the outcome that I hope to have happen".

The health belief model starts with individual perception elements; for example, teenagers in general, have low perception of their susceptibility to bad outcomes, particularly things they believe occur later in life. Their perceived severity is also low as the time when these bad outcomes will occur is so far away. This reduces their likelihood to invest in a healthy lifestyle as a preventative measure.

Modifying factors can also influence perceptions, such as a middle aged woman with a family history of breast cancer will perceive the threat of the disease as high, this may be further reinforced as breast cancer has a high publicity profile. These perceived threats inform on the likelihood of action; this woman is more likely to participate in screening.

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[19] Carpenter, Christopher J. (2010). "A meta-analysis of the effectiveness of health belief model variables in predicting behavior". *Health Communication*. 25 (8): 661–669.

The health belief model below shows the interactions between the individual's perceptions, factors that may modify or influence those perceptions, and the likelihood of the individuals taking action

Individual perceptions	Modifying factors	Likelihood of action

Demographic variables (age, race, ethnicity etc)

Socio-psychological variables

Perceived benefit of preventative action
minus
Perceived **barriers** to preventative actions

Awareness

Perceived susceptibility to disease X

Perceived seriousness (severity) of disease X

Perceived threat of disease X

Likelihood of taking recommended preventative action

Cues to action
Media campaigns (social media)
Advice from others
Reminder postcards from doctor
Illness of family member or friend
Newspaper or articles

We took the concept of behavioural change to our Community Advisory Group to get their insight into how to influence patient behaviour. They advised on how we might encourage patients to see their regular GP, and to go to their GP and not the Emergency Department for issues that can be managed by their general practice, and how to encourage self -management for those patients with low behavioural needs.

Clinician Behaviour

Population health management also has a strong focus on clinician behaviour, as new ways of thinking about the practice population and of working as a team are required. The Capability, Opportunity and Motivation - Behavioural Change Model[20] states that improving the design and implementation of evidence-based practice depends on successful behaviour change interventions. The model works by assessing whether someone has the ability to change, whether they have the chance to change combined with the desire to change. The arrows between the components show that opportunity can influence motivation as can capability, for example, enacting a behaviour can alter capability, motivation, and opportunity. The intervention design is targeted at the components of the behaviour system that would need to be changed; an intervention may change one or more components.

[20] Michies, S., Van Srealane, M & West, R (2011) The behaviour change wheel: A new method for characterising and designing behaviour change interventions. *Implementation Science*

The Capability, Opportunity and Motivation - Behavioural Change Model
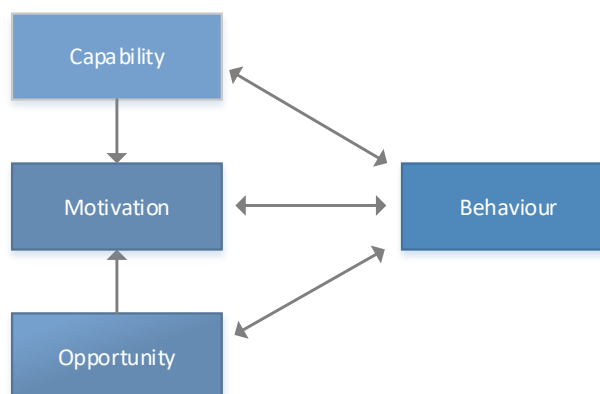
The first step is to identify the behaviour change that is desired; what would need to change in terms of capability, opportunity and/or motivation. From there the effective interventions are applied. The table below provides an example of changing GP behaviour around data quality.

Strategy	Capability	Motivation	Opportunity
Education - increasing knowledeg or understanding	✓		
Persuasion - using communication to induce positive or negative feelings or stimulate action	✓		
Incentivisation - creating expectation of reward			
Coercion - creating expectation of punishment or cost			
Training - imparting skills		✓	
Restriction - using rules to reduce the opportunity to engage in the target behaviour (or reduce opportunity to engage in competing behaviours)			✓
Environmental restructuring - changing the physical or social context			
Modelling - providing an example for people to aspire to or imitate		✓	
Enablement - increasing means/reducing barriers to increase capability or opportunity			

From the assessment, an intervention plan outlines the range of behavioural change techniques that can be used, such as providing free education by an eminent presenter on data quality in the practice using examples of data driven clinical outcomes from other practices. When key stakeholders are engaged, then planning the population health interventions can begin.

The Clinical Advisory Group applied the Behavioural Change Model to GPs as a profession, as the initial challenge was around GP engagement in the program. While we had buy-in from the nurses and managers, many of the GPs felt population health management was something other staff in the practice would take care of. We also applied the approach to particular individuals where we felt we were not getting the same traction as with their colleagues.

Population Health Interventions

Population health interventions are programs and resources that affect a number of people by changing underlying conditions risk, and by facilitating health improvement for the population as a whole. They can be delivered within and outside the health sector. The practice based population health management approach is the optimal place to start identifying those that would benefit from the interventions as general practices work across the whole prevention continuum. The framework[21] below combines perspectives at the three levels of intervention: community, clinical and system. PHNs can work with general practices to ensure the levels are linked and care is provided across the continuum, with the future focus on reducing risk and early intervention to slow the trajectory towards negative outcomes.
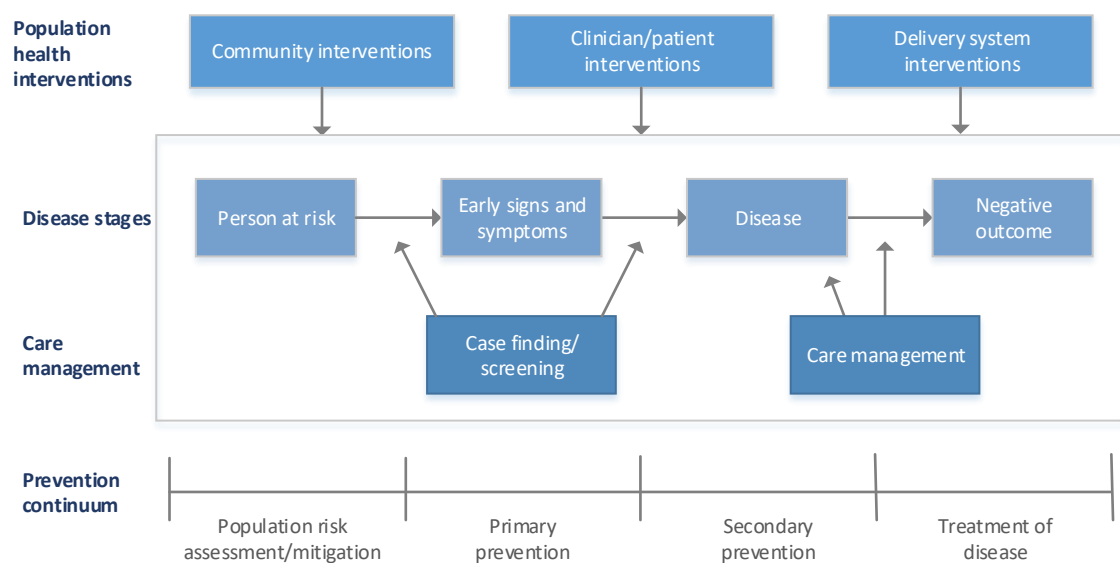
Key elements of population health interventions

The following elements should be considered when identifying or designing interventions. While PHNs focus mainly on primary care, they can influence secondary and tertiary health care providers to better manage the health of populations.

- Collaborative team based care:
    - integrated into primary care
    - coordinated care (including transition from inpatient to outpatient care).
- Inclusion of:
    - case management (individual assessments and care plans)
    - patient self-management support; personal and programs (health educators, use of assessments, care plans and intervention)
    - flexible model of specialist integrated primary care.
- Multiple delivery modalities and options:
    - in practice, telephone, web based
- Clinic-community partnerships:
    - community -based surveillance, health promotion and supplementary support people

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[21] Johns Hopkins HealthCare Population Health Research 2016

o design and implementation of risk behaviour protocols and programs (nutrition, fitness, weight management) that are flexible, and adapted to address the patient at different risk stratification levels.

Clinical Intervention Framework

The clinical intervention framework provides the specificity and appropriateness of primary, secondary and tertiary prevention interventions, enabling these to be targeted to the identified sub-population. The framework enables clinicians to work across the continuum of health to prevent or slow disease trajectories. As shown in the pyramid, the biggest focus should be on primarily protecting healthy people from developing diseases; this often sits with general practice and may include public health e.g. vaccinations.

Tertiary prevention:
- The smallest proportion - interventions to manage care for people with complicated chronic health problems; aiming to control diseases and prevent further deterioration, and to maximise quality of life.

Secondary prevention:
- The middle proportion- interventions to halt or slow the progress of disease at its earliest stages

Primary prevention:
- The biggest proportion - interventions to protect healthy people from developing a disease or condition

Tertiary prevention

Secondary prevention

Primary prevention
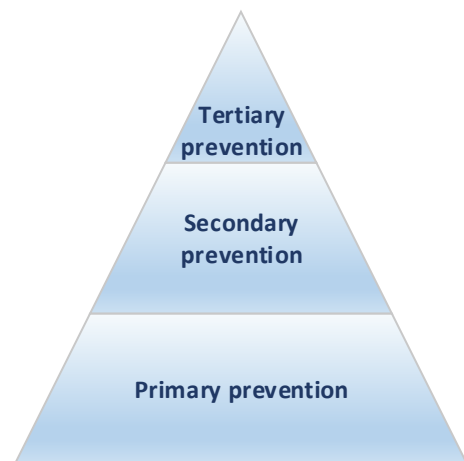
Similarities of successful interventions

The population health interventions that have an evidence base for being effective are below

Reducing hospital admissions[22]

- target the high risk patients - previous hospitalisations or complications from their chronic disease
- strong transitional care
- medication management - focus on ensuring patients have the medications and are adherent
- ongoing assessment and monitoring of patient with chronic conditions
- focused Care Plans to the most important priorities of the patient
- close communication between the care coordinator, GP, patient and specialist
- face to face contact between the care coordinator and the patient.

Disease management programs[23]

- programs where funding models (fees) were put at risk, did not save money or reduce admissions
- programs where case managers have significant interactions with GPs, reduced admissions
- programs where case managers have regular patient interaction, reduced admissions

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[22] Brown, R., Peikes, D, Peterson, G., Schore, J., & Razafindrakoto, C (2012) Six features of medicare coordinated care demonstration programs that cut hospital admissions of high risk patients. Health Affairs 31(6) 1156-116 http://content.healthaffairs.org/content/31/6/1156.full.pdf+html

[23] Congressional Budget Office (2012) lessons from medicare's demonstration projects on disease management care coordination and value based payments. Issue brief

- programs that lacked face to face interaction, such as over the phone, had no impact on reducing admissions.

The role of general practice in population health management

General practice plays an important role in population health management due to interacting with people across the health continuum from healthy people to the chronic and complex patients. The process of risk stratifying the practice population identifies sub-populations that would benefits from specific interventions; PHNs can have a key role in facilitating this on behalf of general practices. The diagram below shows the types of applications of risk stratification, or segmentation, at different stages of the population risk pyramid[24] . The management applications are the high level interventions that the general practice can implement.

Risk stratifying the practice population
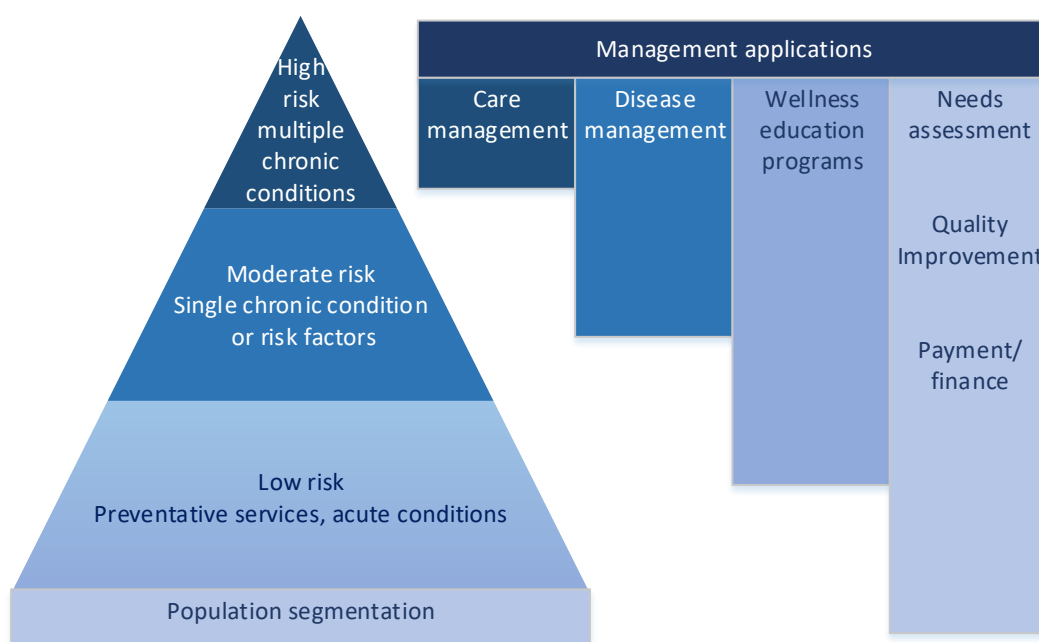
Models of care in general practice

For successful implementation of the practice based population health management program in general practice, it is important to understand the model of care within each practice. This assessment allows an analysis of the barriers and enablers to implementing the approach, and highlights opportunities for improvement that will support implementation. It also enables the PHN to tailor the resources and tools to fit with the models of care.

The diagram below shows how a PHN can facilitate practice based population health management through targeted practice support activities aimed at supporting the evidenced based processes and measures.

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[24] Johns Hopkins HealthCare Population Health Research 2016

Strong clinical governance

Triple Aim Domains and measures		
Population health	**Experience of care**	**Cost per capita**
• Workforce wellbeing • Individual health • Healthy behaviours • Community wellbeing & health equity	• Access • Prevention • Safety • Appropriateness and effectiveness • Patient centered	• Affordability • Societal footprint

Process for population health management					
1.Define the population	**2.Identify gaps and action**	**3.Risk stratify**	**4.Engage patient**	**5.Manage care**	**6.Measure outcomes**
Group individuals based on reliable data	Immediately focus attention on patients requiring interventions	Sophisticated risk stratification based on reliable data and evidence	Engaged as a care team member and proactive about their health	Advanced approach to identify care needs and facilitate interventions at the patient level	Improve patient, population, and care delivery quality and financial outcomes

GCPHN practice support domains		
• Service access pathways and tools • Data reports on risk metrics • Population health profiles • Team approach to coordinated care	• Patient feedback mechanisms • Data reports on clinical metrics • Data quality reports • Recall and reminder systems • Booking systems for GP continuity of care	• Business modelling • Socio-economic profiling

GCPHN practice support systems enablers			
Gold Coast general practice profiles	Access to information	Access to Evidence base	Workforce development

We identified early on that strong clinical governance would be the make or break of the uptake of this program in general practice. While as a PHN we could support, facilitate and enable the process, we needed the importance of the program to be owned and driven within the practice, using a whole of team approach. We targeted engagement of 80% of the staff from the four pilot practices, to get their buy-in to the program. Key to this was the clinical leads in each practice; we then had to work out the motivating factors for each practice, with a focus on the clinical leads – it wasn't a one-size fits all approach.

Program logic

The program logic sets out the theory of change, and is a useful tool when engaging stakeholders. The GCPHN program logic incorporates the Triple Aim and is based on the assumption that if general practice knew the profile of their entire population (patients regularly attending and those not), then they could target interventions. If primary care is optimised with enhanced access and continuity across the care continuum, this should improve health outcomes in the target groups, improve the patient experience (and increase clinician satisfaction), and reduce costs.

GCPHN Practice based population health management - program logic

System impacts	**Focused Outcomes**	Improve health outcomes for target groups, improve patient & clinician experience, reduce health costs and unnecessary hospital use
Primary care response — Health interventions with proven impact	Community Interventions	Service pathways, NGO, self-management & case management programs, respite
	Patient Specific Interventions (basic & advanced)	Behavioral, medical, social, psychological & organisational Interventions
	Practice Interventions (advanced)	structured programs, GP specialists, outreach services, public health, enhanced access
	Practice Interventions (basic)	GP continuity of care, basic undifferentiated care, preventative care, clinical governance & data quality
System Change — PHN project management	Sector Wide intervenations	Health & Community sector integration, role of PHN in clinical governance & data quality
	Population variables	Variables, similarities, groups, risks, sensitivity to intervention, complexity & cost, gaps
	System Drivers	service gaps, volume over value, poor patient experiences, equity, burden of care & appropriateness of care

The program logic informs what data are needed for monitoring and evaluation of the program. At this stage, how to access and manage the data needs determining.

> As a PHN, we had only previously dealt with general practice data on an aggregated level. The work we were considering meant we had to have much better understanding of what was available from general practice, how to extract it, and make sense of it. We spoke to the Family Medicine Research Centre at the University of Sydney who, at the time, had oversight for the use of the international classification for coding in primary care (ICPC2*), and the Australian GP interface terminology known as PLUS (ICPC2+). We soon realised we had a big challenge ahead given the various coding systems used by general practice electronic health record software systems. Given this, we decided to be ambitious for the pilot and selected four practices, each with a different software system.

* International Classification Committee of the World Organization of Family Doctors. ICPC-2: International Classification of Primary Care. 2nd ed. Oxford: Oxford University Press; 1998.

Relationship of Data and Analytics to Population Health

As already stated, data and analysis are essential for population health management, especially at a general practice level. The relationship of data and analytics to the interventions is important for to identify of areas of interest, and to monitor and evaluate outcomes. The analysis of data from general practice is used for: [25]

- surveillance and assessment to determine population needs and patterns, and tracking population level health changes or trends resulting from interventions. Data are collected and refreshed, on a regular basis, into the population health database
- identification of population subgroups in need of particular intervention
- monitoring of intervention processes and procedures, implementation and adherence to protocols, and sustained changes
- evaluation of intervention effect on designated clinical, behavioural, community, health systems and economic outcomes.

Data integrity and quality was the biggest barrier to getting the program up and running. We have learned a lot about international coding classifications! With assistance from Johns Hopkins University in the US, we have converted local/national coding to international classification systems. This has enabled us to compare apples with apples for the four General practices. Johns Hopkins was also able to benchmark this data for us against the US and UK, to highlight where we may have coding issues across the four. As a side product of this process, we have also been able to apply the Veterans Affairs Anticholinergic Burden Scale to the medication data from the practices to highlight those patients with a higher risk. Although our method is not validated, it highlights the possibilities when data are standardised.

Understanding data

To work across the continuum from raw data to knowledge requires different skillsets and competencies, which may not traditionally sit with PHN staff. Analytics is the discovery of meaningful patterns in data, and there are different types of analytics requiring different levels of skill:

- descriptive analytics describes the data and uses common statistics such as counts and averages. Typical reporting methods are pie charts, bar charts, tables and written narratives
- diagnostic analytics attempts to answer 'why did it happen' using drill down techniques, data discovery and correlations
- predictive analytics predict rather than describe or classify, using rapid analysis and relevant insights. Assesses the extent to which each of multiple possible factors/variables predicts an event/outcome
- prescriptive analytics examines data or content to answer questions, and is characterised by techniques such as graph analysis, simulation, event processing, neural networks and heuristics.

The diagram below shows the relationship between the value add and increasing difficulty of the skills required for comprehensive analytics.

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[25] Content for this section from Oregon Health & Science University and the University of Texas Health Science Center at Houston 2016
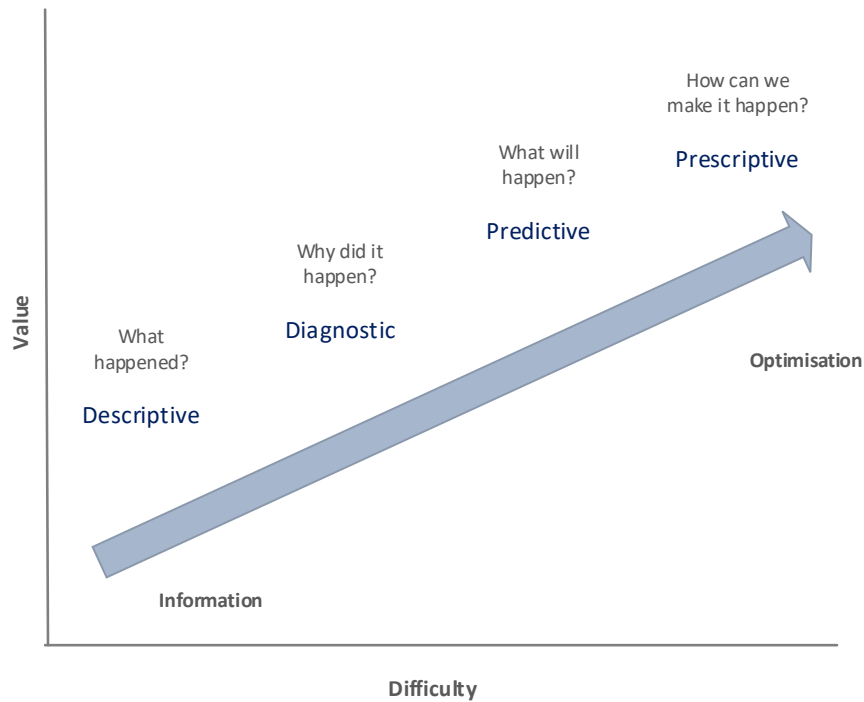
Steps in data analysis

There is also a process to get from raw data to knowledge, which again requires different levels of skills:

Identify the problem and the stakeholders -

- define the problem to be studied (can be in a business case): why is it important, how will the results impact patient care or the organisation
- identify stakeholders with a direct interest in the problem, and a need to receive the results of the analysis.

Identify what is needed and where it is -

- what data elements (e.g. gender, lab results) are needed?
- where are these elements located; which systems or database tables?
- is there a single clinical warehouse or many systems?
- who is the contact person for each system and who will be responsible for retrieving the data?

Develop a plan for analysis and retrieval -

- enlist a database administrator for each system
- develop the plan for retrieving the data elements
- develop methods for cross checking numbers of records as well as completeness - how many are expected and was everything obtained
- for analysis enlist a statistician where possible
- identify population, sample size and statistical test to be performed.

Extract/transform/load -

- extraction - may be an iterative process with repeated data extractions
- the data are retrieved and checked for completeness (using a data quality algorithm)
- descriptive statistics such as counts are done at this step
- errors corrected, empty fields addressed (using a data quality algorithm)
- transformation - data synchronized – all data are same format e.g. M F for male and female
- data are loaded into destination system.

Check, clean and prepare -

- check data are now in the system where the analysis will be run
- should be a complete set of data- check everything is ready for analysis
- check descriptive statistics
- double check problem or question being investigated
- double check analysis against plan.

Analyse and interpret -

- use the data analysis plan
- perform actual statistical analysis - consult with a statistician to confirm interpretations and conclusions.

Visualise -

- nominal (categorical) data such as column or bar chart
- quantitative data – histograms and scatter plots.

Disseminate new knowledge -

- write up findings – the problem and process used to address it and the results
- use the right visuals
- disseminate to stakeholders.

Implement the knowledge

- requires participation of the stakeholders.

Scales of data measure

Measurement systems typically contain multiple measures and involve comparing a measurement to itself over time against a preset goal or in relation to other measurements. Being consistent with how data are named and used is important for repeated measurement.

- nominal – are names, labels, categories e.g. patient name or gender. These measures can only be counted (or categorised and counted)
- ordinal – means order or sequence e.g. first second and third, but intervals are not necessarily equal. All ordinal data also have a name (nominal)
- interval and ratio – has equal intervals that are the same e.g. weight, distance. Includes nominal and ordinal properties – name and ranking. Can calculate the size of the differences in the intervals. Ratio have an absolute zero point. Interval and ratio can be grouped into 'scale' data.

Data dictionaries

Data inconsistency occurs between files when similar data are kept in different formats in two different files, or when matching of data must be done between files. As a result of the data inconsistency, these files duplicate some data such as addresses and names, compromising data integrity.

- inconsistent naming e.g. systolic blood pressure vs SBP
- inconsistent definitions e.g. how reason for a visit is defined across practices
- varying file lengths for the same data elements e.g. limits to 25 characters in one system and 50 in another
- varied data elements such as for male and female - M, F in one system and 1, 2 in another.

A data dictionary is a centralised repository of information about data such as meaning, relationships to other data, origin, usage, and format. It ensures all necessary data points are defined and described so they can be accounted for and reported correctly. It includes specific descriptions of the data element

from the report requirements and associated business or clinical process, and information from the underlying database. Documenting the source of the data, processing and database storage creates transparency and enables analysts to report consistently and accurately. If a single data element has multiple sources e.g. a code from a billing system and from a practice management system, a data dictionary ensures all elements being measured are considered correctly. This documentation process can also highlight if the necessary data elements are even available to the organisation.

Example of a data dictionary

Determined by: reporting requirements				Business/ clinical	Database structure	
Data element	Description	Supported process/analysis	Acceptable unit	Process source	Data table	Data type
HbA1c	Value of haemoglobin A1c test	The % of patients 18-75yrs with diabetes type 1 or 2 who had HbA1c <8.0%	Percent (%)	Test result	Test result	Interger
Blood Pressure	Existence of blood pressure measurement	Percentage of patients with a diagnosis of hypertension with blood pressure recorded	mmHg	Vitals	Vitals	Interger or N/A
Blood Pressure	Systolic and diastolic blood pressure values	Percentage of patients whose latest blood pressure >140/90	mmHg	Vitals	Vitals	Integer
Weight	Patient weight	Vitals	Kg	Vitals	calculation of BMI	Integer

Having a data management process and data dictionary is foundational for doing this work. We had chosen to work with practices with different practice management software systems and did a 'best guess' through most of the initial data identification, extraction analysis and storage processes. We needed three files from each practice management system (the data set), which meant accessing data tables and trying to link data elements, identify gaps and re-extract data. We often returned to office finding we had missed something, used the wrong timeframe or pulled the wrong tables. We quickly developed a process and data dictionary. On reflection, we could not have developed a dictionary until we knew data was actually available, but having a documented process would have helped.

Measures

A measure can be described as a standard, a basis for comparison, or a reference point against which other things can be evaluated. Measures are conveyed as percentage, average, ratio and absolute numbers. Measures can be structural (the characteristics), process (what is done) and outcomes (what happens); measures also cover patient experience.

Measurement is the actual amount of the number of cases meeting specific criteria out of a total number meeting general criteria, expressed as a ratio or percentage. The denominator is calculated first; this is the description of the overall population that would be eligible for the process, service or outcome, or experience measure being calculated. The numerator is the number of specific cases that meet the conditions of the measure.

Some examples of measures for population health[26]

Patient/caregiver experience:
(Self-rated responses collected through a standardised survey)
- timely care, appointments and information
- communication with the provider
- patients' rating of provider
- appropriate access to specialists
- health promotion and education
- shared decision-making
- health status/functional state.

Care-coordination/patient safety:
- medicine reconciliation
- unplanned admissions for patients with multiple conditions (two or more)
- screening for falls risk.

At risk populations:
- diabetes: HbA1c control
- hypertension: controlling high blood pressure
- ischemic vascular disease: use of antithrombotic
- heart failure: beta-blocker therapy for left ventricular systolic dysfunction.

Preventative care:
- breast cancer screening
- colorectal cancer screening
- influenza immunisation
- pneumonia vaccination for older adults
- body mass index screening and follow up
- tobacco use screening/cessation intervention
- clinical depressions screening follow up plan
- high blood pressure screening and follow up.

Program Monitoring and Evaluation[27]

Program monitoring is the routine tracking of program activities considering adherence to the plan, cost changes and uptake. Program evaluation is a field of study designed to answer whether an intervention had the desired impact, whether the program is on the right track, and what might be done to improve it. An evaluation plan should be written in advance of the program being started and should cover how data will be collected and linked, and how achievements will be measured. The evaluation outlines how well the program was implemented, if the desired changes were achieved, and if so to what extent that can attributed to the program.

Program evaluation considerations

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[26] Accountable Care Organization 2015 Program Analysis Quality Performance Standards Narrative Measure Specifications, 2015, Center for Medicare https://www.cms.gov/Medicare/Medicare-Fee-for-Service Payment/sharedsavingsprogram/Downloads/ACO-NarrativeMeasures-Specs.pdf
[27] Content for this section from Johns Hopkins University 2016

Some high levels consideration for PHN planning how to evaluate programs are:

- determining whether the evaluation should focus on those in a program (program-based evaluation) or all persons in a targeted population (population-based evaluation)
- mapping out the conceptual framework or logic model to provide the structure
- utilising theories of change, such as the health belief model
- if behavioural change interventions will work on multiple levels – community, organisation, family and individual
- if the individual's environments is likely to work towards changing their behaviour, not only encouraging it, but also make it easier
- if the program is designed to do not one but many things in order to improve the quality of the experience (e.g. educational material, awareness campaigns etc.).

Some key questions for the evaluation of programs focusing on behavioural change:

- how is the intervention expected to achieve the desired outcomes - processes issues
- who is the target population for the intervention – it may not help all people, but it also may not be the people we intended to have benefit, which may or may not be acceptable
- does the evaluation focus on those enrolled in a particular program, or all persons who fall within the definition of target population? Sometimes it's difficult to keep contact with people in the target group
- what study design will be used to evaluate impact – e.g. survey individuals, or self-reported outcomes, or other more objective measures
- what are the measures of success – determined prior to implementation otherwise mission creep or expectation expansion can occur
- what are the available data for answering these questions about behaviours change, and how can IT help inform those programs.

Types of Evaluation

Program evaluation takes four forms each with a separate purpose, as outlined below. If a PHN is using the Triple Aim, cost effectiveness evaluation can assess the impact beyond measuring the extent to which change occurred to quantify the cost per unit change.

- **Formative evaluation** is the quantitative assessment of needs during the planning phases, and it establishes baselines and objectives against which progress is assessed in the later summative evaluation. Primary data collection and/or secondary analysis about the target population gathers information such as the epidemiology of a disease, persons most affected, drivers of unhealthy behaviour, and barriers to change. Feedback on the analysis tends to be qualitative in nature.
- **Process evaluation** is how well is a project being implemented such as volume, reach, level of exposure to the interventions, recruitment to attract participants, and any unintended influences on the intervention.
- **Summative evaluation** assesses whether the change occurred as a result of the intervention. It includes increase in knowledge, risk perception, self-efficacy, and changes in behaviours, especially when the program has not been running long enough to assess outcomes.
- **Outcome evaluation** – can be summative in nature but also used when looking for the long term effect.

Research considerations

Research is not a requirement of population health management; however, adding academic rigour can add value to the process and validate outcomes. Some type of research that could be considered:

Experimental design is usually clinical research trials where one group gets an intervention, another gets a placebo, another group does not get anything. Another type is randomised control trials (RTC) where people do not know which intervention they are getting, and the people who receive no intervention will not even know there is an intervention available.

Non-experimental design only controls for some potential sources of bias but are widely used e.g. a pre-test – post test design with no control. They are easier to implement where information is being drawn from sources where no experiment was intended.

Quasi experimental have greater generalisability and control for some but not all, potential sources of bias. Some randomisation is used, and this design is better than non-experimental design.

Observational studies – do nothing to change behaviour; some feature in the environment post-test only, among experimental population, analytics are difficult.

> Although the project is quality improvement and not research, we sought advice from the Department of Health Human Research Ethics Committee, who recommended we seek ethics approval. We applied through a local university as an external applicant. Having the evaluation plan already written for the program was very useful when writing the ethics application. We did not want it to be a research program as we want the ability to change tack, turn processes into business as usual, and spread the learnings as quickly as possible. We have university representation on the Clinical Advisory Group, and we are keen to have research occurring within the program on specific elements with separate ethics approval.

Preparing for implementation

Practice based population health management is a broad concept and a key challenge will be 'where to start' with implementation. When working through the process of developing the program it will become clearer what the priorities are for the PHN's locality, or for specific stakeholder groups that are interested in being involved. It is important to take the time to engage with a broad range of stakeholders and ensure key players are involved in co-designing solutions. Successful implementation of solutions and interventions will require strong, appropriate governance in the general practices and at the PHN.

With such rich clinical data at our fingertips, we at first thought we would be focusing on clinical interventions and measures. As we worked through the process and listened to our stakeholders we realised what was needed for our most at risk group (the complex aged patients) was an end to end process that focuses on their values and quality of life goals, with the aim of reducing unnecessary specialist visits and tests, and de-prescribing where appropriate. We worked with the pilot practices to co-design processes and tools to enhance and link current MBS items for the over 75yrs health assessment and Care Plan. We refined an existing evidence-based Care Plan that focuses on quality of life, and included a short narrative from the patients about their life, and an exacerbation plan added three monthly pre-booked review appointments to check progress and to include 'seasonal reviews', such as prevention (falls risks, vaccinations) in Autumn. We used the data analysis we had done (on 22,000 patients) to identify the patients who would benefit most from the process, and developed tools to enable practices to optimise their resources within the current MBS funding models. The next wave would be those eligible for the 45-49 yrs. old health assessment, with a similar process to identify the groups of interest and target evidenced based responses.

Conclusion

With the ever increasing costs within the health care sector, initiatives such as the practice based population health management program are required to ensure targeted, cost-effective, high-value and high-quality services are delivered that can be monitored and evaluated. However, despite the obvious benefits of such a program, many challenges exist in terms of acceptance, changes to practice, and sustainability at the general practice and PHN level.

If PHNs can overcome these challenges, the rewards are likely to be appropriately prioritised and allocated resources in general practice, improved PHN health needs assessment processes and service design/planning and commissioning of services. The approach will also assist the Practice Support teams to explore the benefits for future PHN support to general practice.