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Guest Editorial

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Current perspective

Health reform is now a worldwide imperative. The overlapping groups of public and population health and general practice are not immune, and are being actively drawn into these discussions. In Australia there has been a burgeoning of health system reviews that have created a new and exciting momentum around prevention, public health and population health activities, which will offer increased opportunities for general practice and primary care. The National Health and Hospital Reform Commission (NHHRC),¹ the Primary Health Care Strategy² and the National Preventative Health Taskforce³ have all signalled an increasing importance for the whole spectrum of disease prevention, health promotion and protection. This element of our health care system has clearly been the 'poor cousin' when compared to the interest and funding that acute hospital-based and general practice care generates. The terms of reference of the NHHRC report use phrases such as 'greater focus on prevention in the health care system' and 'improved frontline care to better promote healthy lifestyles and prevent and intervene early in chronic illness'.¹

This issue of the Bulletin provides an excellent summary of the broad public and population health activities that involve general practitioners (GPs), their practices and staff, and the Divisions of General Practice (Divisions). The articles in the issue span the broad public and population health continuum. In the area of protection, Litt & Pearce and Williams & Morgan highlight the role of general practice in controlling pandemic influenza. Quigley and Somers both outline the role of rural general practice in disaster management, while Benson concentrates on refugee health and D'Onise on the care of the homeless. The unique planning and service roles, that Divisions of General Practice have created, are allowing innovative health promotion models to be established that are aimed at improving 'the population health of the local communities'; as is discussed by Kalucy et al.



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Other authors illustrate the potential of general practice to influence and actively contribute to the prevention agenda: Spurrier on obesity management; McLean et al, preconception care; and Harris & Powell Davies, chronic disease prevention. Kidd argues that a policy and curricula framework underpins this crucial general practice role, clearly identifying that GPs are integral to any population health approach to improving the health of their communities.

With the increased emphasis on population health and the promotion of a healthy lifestyles, it is timely to debate how to strengthen the contribution of general practice in a creative and coordinated manner. We are still a long way from a system that places the same value on prevention and a population health perspective as on acute care. General practice has largely been reactive, responding to the need to respond, diagnose and provide treatment to almost 90% of the population who visit a GP each year. What we now require is the establishment of partnerships, together with policy and funding levers, that will create a more proactive, prevention-oriented general practice that integrates a whole-of-life perspective for patients, carers and their families.

Future perspective

There will be a number of crucial building blocks that will be required to garner the full potential of general practice. They will include, as priorities, workforce development, coordinated national leadership that integrates linkages with general practice, strengthening of practice-based infrastructure, and fostering of patient and family linkages with general practice and primary health care services.

Lilley and Stewart state that 'there will be an urgent requirement for the existing population health workforce, primary health care and non-government sectors to increase their knowledge and understanding of prevention, promotion and protection theory and practice, within new organisational development frameworks'.⁴ They argue that unless there is a coordinated approach across health policy developers, academic institutions and health professional colleges to plan, train and develop a primary care population health workforce, the true potential of this model will not be reached. Within general practice training programs, it will be crucial to establish educational programs that, for example, teach the value of brief intervention for smoking cessation programs, which

Helena Williams mentions as being a successful GP intervention;⁵ foster the establishment of new community-focused GPs which is the concern of Scrimgeour; create local GP 'epidemiologists' and public health specialists working with Divisions to both measure local risk factor profiles and implement new population health initiatives, as touched on by a number of authors: Fraser, Kalucy et al and Helena Williams; and establish 'SNAP-like initiatives' in their practices as discussed by Harris & Powell Davies. These training programs need to be created in partnership with public and population health specialists in state Health Departments, using resources such as the national Public Health Education and Research Program or National Health and Medical Research Council Population Health Capacity Building Grants.

The establishment of the National Prevention Agency, signalled in the recent Federal Budget, is a welcome initiative.⁶ Once this agency is created, it is likely that long-term Australia-wide goals and targets will be established. These targets will no doubt include reducing childhood and adult obesity; reducing smoking prevalence, particularly among Indigenous people and lower socioeconomic groups; reducing the age-adjusted prevalence of diabetes, reducing harmful levels of alcohol consumption; and making sure that all children have a healthy start to life.⁷ GPs and their practice-based teams will need to embrace and develop programs to help meet these targets. Divisions, in partnership with state jurisdictions, will have a role in developing local 'GP-friendly' initiatives that align with these goals and targets. Helena Williams has suggested that establishing these types of partnerships, at both local and national levels, has not been clearly flagged as a priority within the current national initiatives.

Approximately two-thirds of the total burden of disease in Australia and almost 80% of all deaths can be attributed to six chronic diseases—cancer, cardiovascular disease, mental disorders, injury, diabetes and asthma.⁸ These diseases are, and will continue to be, the core 'business' of general practice and GPs and their staff. Increasingly, GPs will adopt the role of coordinating and organising their acute and preventive care services. Currently, general practice is struggling to effectively manage these roles. Harris & Powell Davies have listed practitioner, practice and health system impediments to adoption of a true population health role. In South Australia the GP Plus policy initiative is attempting to overcome these

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impediments in partnership with general practice. The NHHRC has argued for new infrastructure funding and specific grant funding to support multidisciplinary clinical services and care coordination services that are tied to levels of enrolment of young families and people with chronic and complex conditions.¹ These initiatives are worth exploring. All 'enrolled' patients could automatically be offered a home care assessment, a GP management plan, a team care arrangement and the appropriate chronic disease (diabetes and asthma) programs as discussed by Mc Namara et al. If appropriate, they could be fully assessed for access to Medicare mental health management item numbers. In addition, well-baby checks and 45-year-old health checks could be offered for eligible enrolled patients and families.

The partnerships between public and population health and general practice will inevitably continue to grow. What we need to do now to efficiently use the skills and expertise from both groups to improve the health of our communities is to foster the development of the GP public and population health workforce, establish links with national leadership and build a general practice infrastructure that actively manages a 'specific' group of people and their families.

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Population health and public health roles in Australian general practice

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Background

Australian general practice extends from providing individual patient care to addressing the health needs of the broader population. The general practitioner (GP) of the future will need clinical, population health and public health skills to manage a multidisciplinary team.¹ This view is based on the observation that the environmental and social determinants of health² are intrinsically linked to the clinical presentations of patients. It is also reflected in the Royal Australian College of General Practitioners (RACGP's) definition that states:

*'General practice is the provision of primary continuing comprehensive whole patient medical care to individuals, families and their communities.'*³

This integrated role between general practice, population health and public health is promoted internationally as it has the potential to improve health outcomes.¹ Furthermore, a combination of these skills is consistent with recommendations of the World Health Organization (WHO) for training health professionals in the 21st century.⁴ The WHO considers that health professionals require five core competencies—patient-centred care, partnering (working with patients, health professionals and communities), quality improvement, information and communication technology and a **public health** perspective. In contrast, recent recommendations of the National Health and Hospitals Reform Commission considers that strategies to improve the health of communities and people should focus on a **population health** perspective and empower consumers to take more responsibility for their own health.⁵

How do these approaches differ and does this difference matter?

Some health professionals, including myself (previously),⁶ have considered population health and public health in general practice to be interchangeable. However, this paper suggests that there are subtle differences between these terms,⁷ and an exploration of

these differences is important in considering strategies to improve equity of access in health care. An inverse care law continues to exist in health care provision, with the 'availability of good health care varying inversely with the need for it in the population'.⁸ This is relevant to general practice as the majority of GPs will provide population health to their patients.

In Australia, poorer disadvantaged groups, while using some acute care services in general practice, are the lowest users of preventive care—about 10–15% of the population will not access a GP in any one year.⁹ The inverse care law is likely to be particularly marked in rural areas of Australia, as poor infrastructure, including transport, and lower numbers of GPs reduce access to health services. Additionally, rural GPs' high workload in meeting the demands of acute care often prevents expansion of preventive health services.¹⁰ Therefore, the most disadvantaged, who are most likely to benefit from population health activities, often miss out on accessing these interventions.

Traditionally, GPs consider that they have an obligation in the main to their own population of patients, and extending care to patients outside the surgery has been seen to be beyond the scope of general practice. However, some programs have been implemented to reach disadvantaged groups outside the practice by Australian Divisions of General Practice, Aboriginal Medical Services and in some instances by rural practitioners.¹⁰ These activities rely on salaried medical practitioners and different models of health care delivery to a fee-for-service practice. Considering the health care of the entire population outside the surgery, and implementing changes to improve health overall, is a public health approach that needs to involve multiple stakeholders in its implementation.¹¹

These principles have been incorporated in the 'towards unity for health' movement,¹² which recognises that partnership between individuals, organisations and communities is needed to improve equity of access to health care via community-based education, research and service. Public health programs need to interact and operate in a complex pentagon of intersecting relationships between 'health service providers, health professionals, the community, policy makers and the academic community' to optimise outcomes.¹² In reality, this interaction is often suboptimal due to the differing priorities of multiple stakeholders, and the need to share power, resources and decision making in order to collaborate.¹²

The differences between population health and public health have been incorporated in the updated RACGP curriculum, with competencies prescribed from the medical student level to continuing professional development for GPs with a special interest in this field.¹³ In GP registrar training, traditional population health activities are, for example, giving 'focused brief advice' about the lifestyle factors of smoking, nutrition, alcohol and physical activity; and 'implementing preventive guidelines' in practice.¹³ In contrast, educational activities in continuing professional development for GPs extend to a public health approach such as 'describing successful strategies to encourage disadvantaged groups to present to general practice for preventive care' and 'implementing strategies in general practice to reduce injury and violence'.¹³ These public health interventions require skills in advocacy, and the ability to work in a team and engage and negotiate with multiple stakeholders, as identified by Boelen.¹²

This recognition is timely, as defining the differences between population health and public health in general practice can assist health professionals, health providers, government, academics and patients¹² contribute to and collaborate in health improvement programs, as advocated by the National Health and Hospitals Reform Commission, and in programs to train future health professionals.

A continuum of roles in the interface between population health and public health in general practice

Population health has several interpretations in the literature:¹⁴ a concept, referring to the health of a defined population (such as a general practice patient list); or a field of study linking health outcomes, determinants of health and interventions. Within Australian general practice, population health activities are considered to be those core practices—such as screening and preventive health services (e.g. immunisations)¹⁵—that can be provided to a defined population. However, defining populations can be problematic. For instance, patients of a medical practice are often shared between a number of GPs, and some patients, particularly the disadvantaged, don't see a GP at all in any one year.

The GP's role in screening and immunisation is well recognised as having significant impact on the health of Australians.¹⁶ In contrast, the GP's effectiveness in promoting lifestyle change is more limited,¹⁷ with, at most, 2–4% of patients changing their lifestyle behaviours after brief advice from a doctor. Broader public health and new public health approaches are needed to modify the socioeconomic determinants of health^{2,16} and encourage patients to practise health-promoting behaviours.¹⁶

A comparison between **primary health care** and **general practice** is important to this discussion as developments in public health, including 'new' public health philosophy, are key to exploring these differences. The RACGP's definition of general practice differs markedly from primary health care as defined by the WHO's Declaration at Alma-Ata.¹⁸ Primary health care considers stakeholders who need to be involved in organisational change to allow 'toward unity for health'¹² to improve health via a public health approach.

A comparison of the two definitions shows primary health care to be much broader in outlook than general practice, extending the definition to include health care as a tool for social and economic development. Primary health care is universally available, rather than being provided to patients who are able to access a general practice in the private sector. General practice within Australia is a component of primary health care, which is also provided by nurses and other health professionals.

Some components of primary health care's philosophy, such as self-determination and the promotion of social and economic development, share many similarities with public health. Public health began with a community-led movement to improve living conditions in the 19th century, and was a process focused on environmental health with limited input from doctors.¹⁶ Today, public health continues to be a socially driven movement focusing on improving the health of all people.¹⁹ As a discipline, it is a 'combination of science, practical skills and beliefs that is directed to the maintenance and improvement of the health of all people'.¹¹ It is multidisciplinary in focus, with medical doctors, nurses, health promoters, epidemiologists, sociologists, environmental officers and health economists working in the field.

Calls for a 'new' public health movement arose from the Ottawa Charter for Health Promotion in 1986.²⁰ Limited progress in delivering primary health care's aims resulted in recognition of the importance of health

promotion in achieving 'Health for all by the year 2000 and beyond'.²⁰ Implementation of the Ottawa charter includes the following five strategies for success,²⁰ which are also embodied in the 'towards unity for health' movement:¹² building health policy, creating supportive environments, strengthening community action, developing personal skills, and reorienting health services.

Leadership in population health and public health in general practice can extend to policy development; advocacy with other stakeholders; and liaison with general practice, population health and public health practitioners to promote collaborative models of health care. Those GPs with an interest in this field can develop these leadership skills by considering further studies in public health.¹³ A number of joint training programs for general practice and public health have also been developed.^{21–23}

The application of population health and public health approaches to a clinical presentation in Australian general practice is demonstrated in the following hypothetical case study.

Case study: Robert, a GP in a small country town, has seen five patients develop lung cancer in the last year. They are all men aged over 65 years and three are non-smokers.

<p>Population health approach in general practice</p>	<p>Robert has implemented several population health approaches in his practice based on preventive guidelines.¹⁵ He routinely asks about the smoking status of his patients and provides brief advice about smoking cessation when required. He advocates exercise classes provided by community health for those patients with chronic obstructive airways disease. He routinely administers influenza vaccine and pneumococcus vaccine to his patients. Concerned about the increase in lung cancers, he consults the RACGP guidelines on the evidence of preventive activities in practice.¹⁵ He finds that there is no evidence for routine chest X-ray screening preventing lung carcinomas in patients who are over 50 years of age.</p>
<p>Public health approach in general practice</p>	<p>Robert is approached by some of the community about the rise in lung carcinomas. He audits the five patients, conducting a case series. He finds that all the patients have worked at a closed mine that quarried asbestos. Robert notifies the public health unit of his concerns, and liaises with the cancer registry, who confirm that a cancer cluster is present in the region. He explores what has happened to the closed mine site to prevent further exposure of the population. He begins to ask all his patients occupational health questions, and considers reviewing the literature on whether surveillance with chest X-rays is needed for his patients with occupational exposure at the mine.</p>
<p>'New' public health approach in general practice</p>	<p>Robert is made aware that the mine site has not been rehabilitated and that mine tailings are blowing around the site. There are several roads nearby. He liaises with the local council and a working party is formed to lobby for rehabilitation of the site. The council receives a grant to fence off the mine site and divert roads from the area.</p>
<p>Leadership in public health and general practice</p>	<p>Robert liaises with a public health expert in the Department of Rural Health at his local university. A literature review of asbestosis and lung disease is conducted. This is used to better inform the profession on an approach to patients with occupational exposure to asbestos based on the evidence and patient concerns. Robert publishes his literature review and case series.</p>

Tensions in a broader continuum

In practice, barriers limit the application of activities along the broader continuum of public health and 'new' public health approaches in general practice.^{1,24} Many aspects of the health care system create disincentives to an expansion of these activities, including a fee-for-service remuneration system that rewards the number of patients seen; limited time; limited training in population health and public health; limited contact between GPs and other health professionals within the health care system; lack of status of public health work; and limited capacity for GPs to expand their services to patients who are unable or unwilling to attend their surgeries.²⁴

These issues require a holistic approach to health reform that includes consideration of the impact and input from the five main stakeholders identified in the 'towards unity for health' concept—policy makers, health professions, health managers, academic institutions, and communities.¹² Organisational change requires a consideration of the interaction of all stakeholders.¹² Using population health and public

health interchangeably can cause different stakeholders to have different perceptions of each other's roles. A fee-for-service model offering preventive services to the worried well⁸ does not work in a public health approach that seeks to optimise equity of access for all.

An example of this is that health care is paid for by government through a process of policy change that is implemented by health care providers with input from academics in policy development. Policy makers and academic public health practitioners are often salaried, and therefore removed from the actual day-to-day running of a practice, and may not appreciate the impact of policy change on GPs' time, practice and patients. There is some criticism²⁵ of general practice's narrowly based individualistic lifestyle SNAP (smoking, nutrition, alcohol, physical activity) approach by 'new' public health practitioners.¹⁶ This may reflect confusion between general practice's role³ in meeting the needs of a defined practice population and primary health care's¹⁸ role in extending to the broader community the organisational changes embodied in the 'towards unity for health' approach.¹²

A previous review of the interface of general practice and population health was conducted by Fry and Furler in 2000.²⁶ However, in this review the use of the term 'public health' was avoided. The authors undertook this decision to emphasise 'a concern with how general practice and broader primary health care programs can contribute to improving the health of whole populations', and because the media and general public use 'public health' to describe publicly funded acute hospital services.

The approach of excluding public health was, in my opinion, problematic for general practice, as peak organisations, such as the RACGP, have in previous versions of the curriculum referred almost interchangeably to 'population health' and 'public health'.²⁷ I encountered the difficulties in using these terms interchangeably in a pilot project to train general practice registrars in rural population health and public health. The terms were defined as synonymous by the stakeholder reference group appointed to advise on the project.⁶ This blurring of definitions may have contributed to some stakeholders describing an 'unease about coexistent clinical and population/(public) health roles' in the training pilot.

Such tension is reported elsewhere in the literature. Kamien²⁸ observes that most change concerning an expanded population health and public health role in

general practice has, to date, been imposed by the government. There can be a tension in maintaining professional GP autonomy and incorporating population health and public health role into general practice.²⁹ This can extend to all of medicine, which is seen to be in 'schism' and 'competition' with the paradigm of public health as outlined by Boelen.¹² This is based on unequal power relationships within the 'towards unity to health' pentagon of stakeholders, with imposed changes by public health policy makers, health providers and academics threatening the autonomy of doctors and the rights of the community.¹²

Consistent with Boelen's 'toward unity for health' model,¹² Buetow and Docherty³⁰ have warned that change imposed without collaboration has the scope to impair the doctor-patient relationship due to a prime focus on population health based targets. Recently, a similar debate has been raised in Britain, where a pay-for-performance bonus for improved diabetes control in general practice may be deleterious due to the strict targets set.³¹

Conclusion

Improving the health of the Australian population requires a combination of population and public health interventions. While population health skills are core skills used by all GPs, there is great potential for GPs and other health professionals to implement public health approaches to extend care to patients presently not accessing health care services. GP autonomy and input into the process are important to avoid undermining these initiatives. There is a continuum of roles in the interface of general practice with population health in practice, public health, 'new' public health and leadership approaches. True collaboration between stakeholders involves clarification by GPs and other primary health care providers, other sectors of the health system, public health practitioners, government and patients of their roles within this framework.³² A collaborative approach is likely to overcome many of the present tensions in attempting to increase the population health and public health focus of Australian general practice. The interface needs to be considered in training programs for health professionals and in any planned health care reforms. Advanced training for GPs in population health and public health is emphasised in the RACGP curriculum and has been developed in recent programs.^{13,21,22,23}

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The interface between general practice and public health

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*'Our patients can reasonably expect to have their immediate medical needs attended to, along with an examination of broader issues which may have led to their presentation. It follows logically that family physicians must have a role in looking beyond illness, and trying to shape behavioural, societal and environmental influences on ill health.'*¹

*'Australia leaves its GPs to fend for themselves in trying to construct systems for dealing with the preventive load.'*²

Introduction

The quotes above represent two views of the current role of Australian general practice in public health. This paper aims to explore the evolution of the role more broadly, and also consider the challenges surrounding general practice's involvement in public health, across the spectrum of promotion, protection and prevention. The paper will also attempt to show that general practice is increasingly—and indeed strongly supports the idea of—taking on a greater population health approach, despite the barriers that exist within the structural and funding and financing systems in Australia.

Since the Rudd Government came to power, a number of health policy works have been commissioned, including the National Health and Hospitals Reform Commission report; the Primary Health Care Strategy discussion paper; the National Preventative Health Taskforce, and the Council of Australian Governments (COAG) National Partnership Agreement on Hospital and Health Workforce Reform. In South Australia (SA) similar pieces of work have been completed or are being drafted (for example the Chronic Disease Action Plan for SA and the Primary Prevention Plan). Most of these policy documents are consistent in emphasising the importance of population health and primary health care approaches in maintaining and achieving wellness and health, and in optimally managing chronic disease, thereby ultimately enhancing quality of life and reducing hospital demand.

Only a few of these documents, however, overtly recognise the capacity and role that general practice is playing, or could potentially take on, in a broader population health approach. It is interesting to note that there was little interaction with grass roots general practice in the development of, for example, the Chronic Disease Action Plan for SA.

There is therefore little mention of general practice as a key provider of primary prevention and risk intervention services; or, indeed, little acknowledgement of how general practice might assist governments by taking on a greater role, given its daily interaction with the majority of the population. There is significant potential for increased population health impact within general practice, with an increasing number of general practitioners (GPs) now working within multidisciplinary team models of care, along with practice nurses and other allied health professionals.

General practice involvement in prevention

General practice is doing many things well. There is evidence, for example, for the effectiveness of implementing clinic systems designed to increase the assessment and documentation of tobacco use. Use of these systems almost doubles the rate at which clinicians intervene with those patients who smoke, and results in higher rates of smoking cessation. Brief cessation advice to smokers from GPs, delivered opportunistically during routine consultations, has a modest effect but substantial potential public health impact. Brief advice delivered to smokers by nurses also has a modest effect on the odds of quitting, compared to no advice.³

General practice has been active for many years now in systematic approaches to raising immunisation rates. It has historically been supported by federal immunisation practice incentive payments (which are separate to Medicare fee-for-service items, and thereby provide a more flexible funding stream to deliver this work) and the work of the Divisions of General Practice.

Divisions have assisted general practices in their successful efforts to achieve high immunisation rates. They have delivered education, for example regarding immunisation schedule changes and cold chain transporting and storage of vaccines, particularly to practice nurses, who are increasingly taking on this work. Divisions have also been active in coordinating GP and nurse attendance at such events as Nunga

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immunisation days and newly arrived refugee immunisation (NARI) clinics, taking these events out to the community.

At the time of writing, a number of divisions are providing a range of allied health services within residential aged care facilities. These services relate to oral health screening and dental care, as well as mental health groups. Having ascertained what the priority needs are by conducting needs analysis in the care facilities, the divisions work closely with residential aged care staff, the SA Dental Service, mental health nurses, carers, GPs and practice nurses.

A significant proportion of general practices in Australia participate in the National Primary Care Collaboratives (NPCC), in the Australian Primary Care Collaboratives (APCC), and in SA in the southern GP Plus Health Care Network (50% participation). This participation has provided significant support and incentives for practices to access a range of tools and resources designed to assist them to take a population health and continuous quality improvement approach to addressing practice population outcomes across a range of indicators (for example recording and improving smoking status, blood pressure measures and cervical screening rates).

The Practice Health Atlas™ (PHA)⁴ is a decision support tool, designed by the Adelaide Western General Practice Network, for GPs, nurses, managers and other practice staff. It aims to inspire general practice teams to reflect on their activities and to develop business models for more effective health care services and outcomes. It is based on the synthesis of relevant, high-quality and timely practice population health data, as well as the use of such data to predict future health care needs and trends (intelligence). Further work is supporting practices in the use of an ever-widening range of IT/IM tools designed to improve risk and prevention activities (for example the Doctors Control Panel).⁵

The success of these specific activities lies in general practice teams taking a population health approach, aided by the use of high-level data, to inform strategy while not interfering with the individual doctor–patient interaction.

Some data is being fed to registers (for example the APCC online reporting system, the Australian Childhood Immunisation Register or division-held databases), where it can be benchmarked and then shared with peers to enable the implementation of practice strategies designed to improve outcomes.

Conversely, however, some prevention activities are not proving to be successful. This may be, in part, because the policies and implementation strategies have not been developed in partnership with general practice providers. For example, it is increasingly being identified, through the SA *Do it For Life* program, that comorbid mental health issues are proving to be a significant barrier to patients being able to address identified lifestyle risk factors. This was not predicted in the early development of this program, and has meant that state health services and local divisions will increasingly need to meld lifestyle/risk intervention and mental health programs to better support those patients identified and referred from general practice.

In the southern region of Adelaide, in the first six months of the 2008–09 financial year, some 849 45–49 yr old health checks (Medicare item 717) were undertaken in general practices, out of an eligible population of approximately 27,000. The reasons for this are likely multifactorial, and might include the time pressures of child rearing, mortgages and careers, and the fact that this population does not recognise that they are at risk or see their health as a priority. Of equal relevance, however, is the likelihood that general practice has difficulty with systematising new processes.

Discussion

General practice has often come under fire for focusing on individual patient care to the detriment of public or population health approaches. Some of this is likely to be consumer driven, with patients attending GPs for specific ailments they wish addressed and the savvy and efficient GPs, wherever possible attempting to address risk factors and prevention opportunistically during those consultations. Patients, however, are not necessarily open to such interventions at that time. While there is some evidence for success in an opportunistic approach, the impact of a systematic and planned approach to prevention through general practice would be spectacular. Indeed, there is evidence that family physicians strongly endorse the importance of delivering preventive care services but are frustrated by the ineffectiveness of opportunistic approaches, and require the use of support tools to do this.⁷

There is no doubt that the fee-for-service system provides good incentives to provide acute episodic care and increase access. However, the uptake of the Medicare item 717 referred to above suggests it might not be the optimal funding incentive for prevention activities, many of which could be delivered by skilled general practice nurses and allied health practitioners.

The lack of a comprehensive funding model to support general practice in undertaking prevention and promotion activities—particularly one that supports practice nurses to increasingly undertake this work—does little to support general practice to engage systematically in prevention. It is also apparent that general practices vary in their capacity and willingness to embrace change. It seems that one of the greatest barriers to optimal prevention in general practice is not lack of knowledge but lack of a systematic and integrated approach.⁸ Such an approach could be achieved by improvements to the funding and financing system in general practice, improved integration with other providers and acknowledgement of the potential impact of greater integration with general practice.

It is often quoted that approximately 85% of the Australian population sees a GP at least once a year.⁹ There is no doubt that one of the major strengths of general practice is its relationship with the individual patient—the holistic ‘cradle to grave’ care provided, the intimate knowledge of the social milieu in which the patient exists, and the privileged position of GPs to raise topics (such as overweight and obesity, smoking, drug and alcohol intake), often for the first time, within the context of the patient’s family history and environment. Indeed, several studies have found that preventive activities increase with increasing continuity of primary care.¹⁰

Summary

It is entirely possible to take an individual approach to health care for each patient and, at the same time, consider the whole practice population—indeed, to consider and address population health needs across a region. There is scope for a greater focus on preventive care in general practice. Increasingly, there is a wider range of tools/resources and partnerships to support general practice to take on a greater systematic approach. It is exciting to anticipate the impact that could be achieved for a large proportion of the population if only these opportunities were maximised and supported by governments at every level, and for long enough to enable system changes to be sustained and entrenched.

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Preventing chronic disease in primary health care: a work in progress

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Introduction

Chronic disease is an increasingly large part of the burden of disease.^{1,2} Much is preventable—the risk factors for vascular conditions, in particular, are well understood; and effective strategies are known for reducing the ‘SNAP’ behavioural risk factors (smoking, poor nutrition, hazardous alcohol consumption and physical inactivity) in individuals and populations.^{3,4}

Primary health care has the potential to deliver prevention to those at higher risk through its wide reach, often-continuing relationships with patients/clients, evidence-based interventions and acceptance of risk factor management as a legitimate activity.^{5,6} The accepted approach in general practice is the ‘5As’ approach (Box 1). However, current practice does not match this potential, and it is not well understood how such work fits with other parts of primary health care (for example community health). The potential population health impact of widespread risk factor management is not known.⁷

A number of studies have explored the factors that influence the management of behavioural risk factors in primary health care. These include clinicians’ lack of knowledge and skill, their beliefs and attitudes (in particular confidence and perceived effectiveness), practice type, and perceived congruence with clinicians’ roles.^{8,9}

This paper examines the role that primary health care can play in chronic disease prevention, the barriers and facilitators involved in clinicians addressing the risk factors, and the organisational models needed to support this role at the population level.

Methods

The focus of this paper is on general practice and community health services, reviewing results from studies conducted at the University of New South Wales (UNSW) over the past 5 years. These include:

- > a feasibility study Smoking Nutrition Alcohol and Physical Activity (SNAP) implementation in general practice, conducted in 2003–04¹⁰
- > evaluation of 45–49-year-old chronic disease prevention health checks in general practice in 2007¹¹
- > a feasibility study of behavioural risk factor management in community health in 2005.¹²

All studies received Human Research Ethics Committee approvals and the informed consent of participants.

The paper also draws upon a review of national preventive care policy initiatives in behavioural risk factor management in Australian general practice between 2001 and 2007, including the implementation of health checks in general practice.^{13,14}

Results

In this analysis we have used the 5As framework (see Box 1).¹⁵

Box 1: The 5As approach

ASK:	all patients about smoking, nutrition, alcohol and physical activity
ASSESS:	readiness to change and dependence (on smoking and alcohol)
ADVISE:	by providing brief, non-judgmental advice with patient education materials (such as Lifescripts) and motivational interviewing
ASSIST:	by providing motivational counselling and a prescription (Lifescript or pharmacotherapy if indicated for nicotine or alcohol dependence)
ARRANGE:	referral telephone support services, group lifestyle programs or an individual provider (eg dietician or exercise physiologist), and a regular follow-up visit

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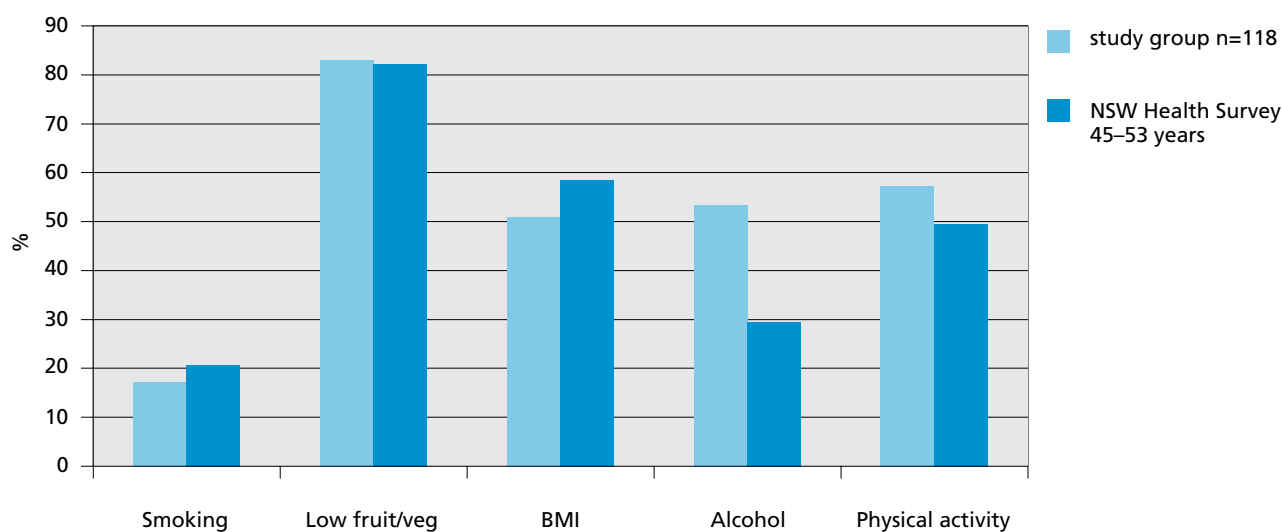


Figure 1: Presence of risk factors in participating patients presenting for 45–49 year old health check in 2005–66 compared with similar age group in the NSW Health Survey 2003

Ask: identification of patients at risk

This is the first step in preventive action. Figure 1 shows the prevalence of risk factors in our evaluation of the impact of a health check for patients aged 45–49 years in eight Sydney practices. At baseline, 97.5% of participating patients had at least one, and the majority two or more, SNAP risk factors, demonstrating ample opportunity for intervention.¹⁶ This is similar to results from the NSW Health Survey^{11,17} and our findings in other studies in general practice and community health.¹⁰

Assess: assessment of level of risk and readiness to change

The next step is to assess the patient's level of risk and motivation (usually in terms of readiness to change). GPs and community health nurses vary in the frequency with which they report assessing risk factors in their patients (Figure 2).^{2,4} The introduction of the health check in 2007 is likely to have increased the frequency. Community health nurses seem ready to accept risk factor assessment as part of their role, incorporating SNAP questions into their discussions with the patient.¹²

The assessment of motivation or readiness to change is much less frequent in both general practice and community health services. This improved after training

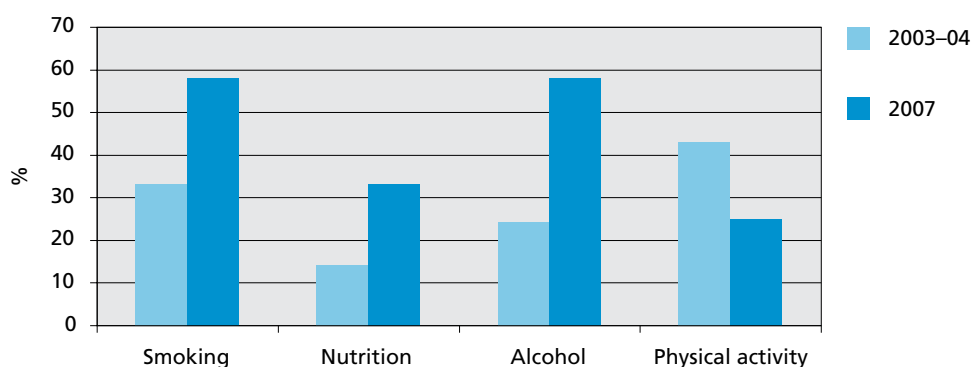


Figure 2: Proportion of GPs at baseline reporting frequent assessment of SNAP risk factors 2003–04 and 2007

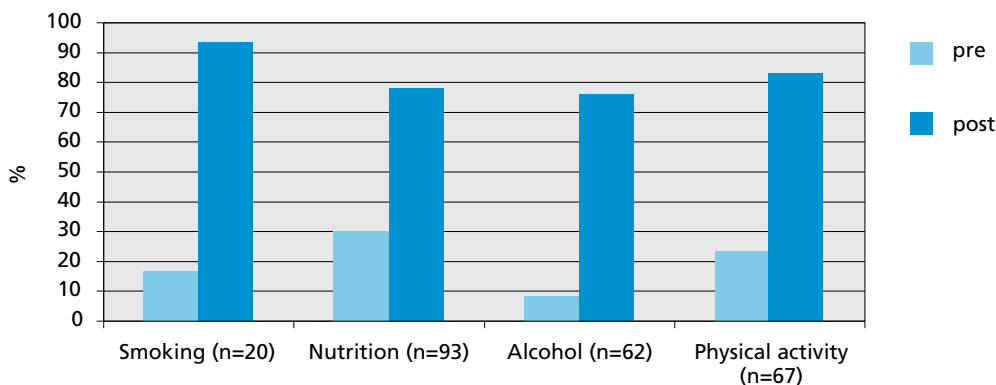


Figure 3: Information and advice patients with risk factors reported receiving from the practice before and after a health check 2007

but was still low in absolute terms. Clinicians seemed to have difficulty incorporating assessment of readiness to change into routine practice due to time constraints, patients not interested and other reasons.

Advise: giving of brief advice, information and goal setting

Primary health care providers seem willing to take on the provision of brief advice, with rates greatly increasing after the introduction of the health check in general practice and a training workshop for GPs in 2007 (Figure 3).³ Community nurses are more comfortable with discussing collaborative goal setting with patients than are GPs.

Arrange: arranging referral for lifestyle interventions

Levels of referral for lifestyle interventions are very low,¹⁸ although they improved somewhat after the health check in 2007 (Figure 4).

Lack of patient motivation was one reason for not using referrals. Several clinicians felt that patients were reluctant to spend money on their health, and would be disinclined to talk with the GP next time if they had previously been referred.

Follow-up

The overall rate of follow-up was low, reflecting the passive approach to managing preventive care taken by most clinicians. This was true for both GPs and community nurses.

Barriers to implementation

We identified significant barriers to the implementation of preventive care in primary health care. These related especially to assessment, referral and systematic follow-up at the level of practitioner, practice or health service, and the health system.

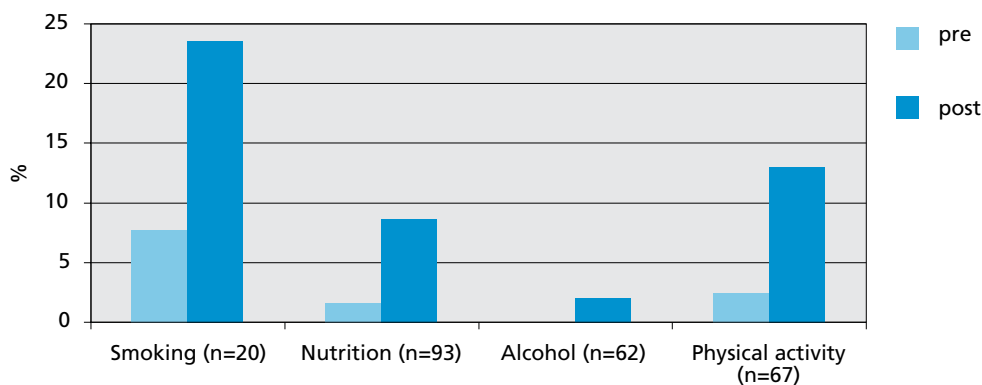


Figure 4: Referrals to other services before and after the health check as reported by patients with the risk factor 2007

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Practitioner barriers include:

- > expected effectiveness in changing patient behaviour
- > congruence with practitioner roles
- > perceived acceptability to clients, especially among community health nurses
- > other demands on practitioner time, including more acute problems
- > confidence in addressing risk factors and motivational counselling.

Practice or health service barriers relate largely to capacity and include:

- > sharing roles within the patient care team
- > the quality of links with referral services or programs
- > information systems for identifying patients at risk for follow-up appointments etc.
- > lack of decision support systems for assessment and referral
- > accessibility of the practice/service, including availability of appointments.

Health system barriers include:

- > availability and accessibility of low-cost referral services and programs
- > workforce shortages, especially in outer urban and rural areas
- > lack of funding for preventive care (apart from some specific groups such as those aged 45–49 years)
- > lack of monitoring and reporting of provision of preventive care.

Discussion

Primary health care has a role in chronic disease prevention, including identification, assessment and brief advice in general practice and community health. However, many providers find more complex assessment of risk and readiness to change a challenge, and their greatest weakness is in referral of high-risk patients for more intensive individual or group interventions. Many Divisions of General Practice report similar experiences with referrals to group diabetes prevention programs for patients aged 40–49 years. This is important given the difficulty in providing more than brief interventions in primary health care services for patients at high risk.

Barriers include patient and provider attitudes, and provider confidence in the efficacy of interventions and their ability to undertake lifestyle interventions given their other roles and responsibilities. Practices and other health services have limited capacity to provide comprehensive interventions for those at high risk. These are similar to the factors influencing chronic disease management in primary health care. Our work suggests that the model for preventive care outlined in Huang et al.¹⁹ can be adapted along the lines of Figure 5.

Addressing preventive care needs dedicated time in primary health care. For general practice this means specific funding on either a fee-for-service or a performance basis. Funding and workforce development are also needed to make referral services more available and accessible. However, these are unlikely to be enough on their own. Teamwork needs to be facilitated both within the primary health care practice and with referral services to build system capacity.



Figure 5: Adaptation of chronic care model for preventive care (adapted from Huang et al.)

A number of issues remain unresolved. It is unclear how broader population health initiatives fit with preventive primary health care. The role of health checks for chronic disease prevention in primary health care is still uncertain: research has demonstrated a positive impact of health checks on the frequency of preventive care and achieved some outcomes, but has not demonstrated cost effectiveness.^{20–22}

Our own research continues. To date most has comprised descriptive or uncontrolled time series studies, but we are currently conducting several controlled studies that should provide more information on efficacy in the Australian context. Further research is also needed to explore how there can be better integration of service delivery between primary health care and other preventive services and programs, and how access to preventive care can be improved for specific population groups, especially Indigenous and socioeconomically disadvantaged communities.

Conclusion

Primary health care in Australia is well placed to contribute to the prevention of chronic disease. However, this potential is at least partially unrealised due to a combination of practitioner, service and system barriers. In particular, there are significant barriers in the referral pathway from primary health care to more specialised services and programs that provide intensive interventions for people with the SNAP risk factors. Overcoming these barriers will require action at all levels.

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Population health role of the Divisions of General Practice Network

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What are Divisions of General Practice?

Divisions of General Practice provide services and support to general practices to achieve health outcomes for the community within defined catchment areas. Divisions can achieve systemic improvements in local primary care that cannot be achieved by individual general practitioners working alone.¹ Today the Divisions Network, which is funded largely by the Australian Government, consists of 111 Divisions of General Practice (divisions), six state-based organisations (SBOs), two hybrid SBO-divisions (in the Northern Territory and the Australian Capital Territory) and the Australian General Practice Network. With its national coverage, the network has a workforce of more than 3000 staff members with clinical, health science, public health and management skills, adding substantial infrastructure to primary care.²

Divisions address the needs of general practitioners (GPs) and practices and the health of their populations, and respond to local and national priorities. Unlike some primary care organisations in the United Kingdom and New Zealand, divisions have no contractual 'hold' over the general practices in their region. Their capacity as change agents depends on the extent to which they can persuade, inform and legitimise their activities.³

What is the population health role of divisions?

Since the implementation of the divisions program, the Australian Government has viewed divisions as playing a significant role in population health,^a implementing and supporting health promotion, disease prevention and treatment programs within identified subpopulation groups.⁴ In this context, divisions are expected to:

- > improve access to general practice services by considering the characteristics of the local population and the potential mismatch between need, access and use of general practice services
- > improve the quality of general practice services through stronger chronic disease and injury prevention activities, better management of chronic disease, earlier diagnosis and intervention.⁴

Whereas GPs might identify their *practice population* as the people who attend the practice, a *division population* includes the entire population of the defined catchment area. In addition, divisions target specific activities toward different subpopulations identified by demography; health problem (or risk); or geographic, political or administrative territory.⁵ Because divisions fulfil multiple roles for multiple stakeholders, they sometimes experience tension between their role as a local support organisation for GPs and their role in population health.⁵

Assessing population needs

A population health approach includes assessing the needs of a defined population, then planning, implementing and evaluating the strategies to address these needs. Divisions have a dual role—supporting general practice to obtain and use data about practice populations, and identifying and addressing the needs of the local community within the division population. In Australia information technology and information management (IM–IT) has been identified as an indispensable element in a population health approach at both the general practice and division levels.⁶

Using IM–IT to identify the needs of *practice populations* has become simpler and more systematic due to business management tools such as the Practice Health Atlas⁷ and Pen Computer Audit Tool.⁸ General practices using these tools, with the support of their divisions and SBOs, are better able to understand the sociodemographic and health characteristics of their patients.

^a The term 'population health' is used here rather than 'public health', which is associated with health care delivered in the government-funded sector.

Data availability for needs assessment and planning at the *division population* level has been enhanced by the population health profiles prepared for each division in Australia.^b These profiles^c demonstrate that individuals using practices within a division do not always reside within the division catchment. For example, in South Australia in 2003–04 between 68% and 94% of people attended general practices in the division in which they resided. The lower figure is seen in urban divisions with a mobile commuting population (e.g. Adelaide Northern and Eastern Division, 68.5%), whereas in the rural Eyre Peninsula Division 94% of GP attendances were of individuals within the division catchment. Divisions are aware of the difference between practice population and division population, incorporating this consideration into planning and implementing their population health role.

Data are complemented by each division’s knowledge of the local area acquired through multiple sources, including community input. Divisions engage their local populations in a number of ways such as community education, forums and surveys. In 2006–07, 65% of Australian divisions involved community members in program evaluation, 57% in strategic planning and 48% in needs assessment. Divisions complete the consultation process by providing feedback to consumer and community members, often through websites, community newspapers or division newsletters.²

A place at the planning table

In 2006–07 divisions were represented on more than 2000 external committees, indicating strong engagement with communities throughout Australia.² Almost all divisions were represented on area, district and regional health service committees, and many sat on committees about specific local issues. This collaborative approach is also reflected in formal reciprocal agreements (or memorandums of understanding) established between divisions and other organisations—almost two-thirds of divisions reported agreements with hospitals and half with mental health services in 2006–07.

Divisions’ role in improving access

Limited access to primary health care services is more common in rural and remote areas, where workforce recruitment and retention is a major focus for divisions (and government). Almost 80% of rural and remote divisions are therefore involved in improving access to locum services, compared to around 20% of metropolitan divisions (Figure 1). Taking a different approach, nearly 700 GPs were paid on an hourly or sessional basis to address access barriers such as limited practice hours or financial constraints in 2006–07.² For example, these GPs worked in youth health clinics or in-school services, provided health checks or screening

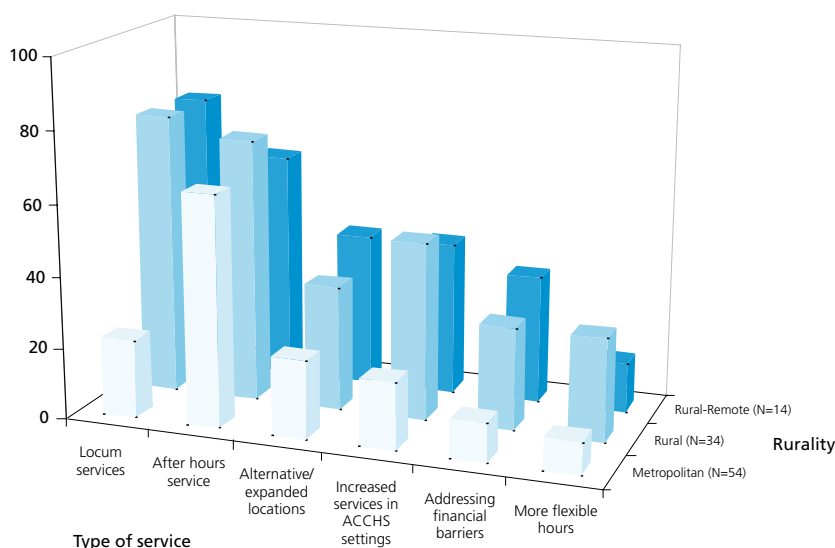


Figure 1: Proportion (%) of divisions providing services to increase access to GP services by rurality, 2006–07

Data source: Annual Survey of Divisions 2006–07.² Rurality calculated using Rural, Remote and Metropolitan Areas classification.⁹ ACCHS: Aboriginal Community Controlled Health Service.

^b Population Health Information Development Unit (PHIDU), University of Adelaide. www.publichealth.gov.au/publications/population-health-profiles-of-the-divisions-of-general-practice.html.

^c Table 3 of 2007 Supplementary profiles prepared by PHIDU

in hard to reach rural and remote settings, or specified services for Indigenous Australians. To increase access to allied health professionals, divisions directly contract them to deliver services to their communities through federal programs such as More Allied Health Services (MAHS) and Access to Applied Psychological Services (ATAPS).

Divisions' role in health promotion and secondary prevention

Divisions have played a substantial role in furthering prevention activities in primary health care through implementing government policy and initiatives at the state or national level, a task that GPs alone would be ill equipped to do. Divisions tailor their approaches to population health to suit the program and target population through a combination of education, practice support, recall systems, community awareness and collaboration with other providers (Figure 2). As previously identified, divisions are engaged to support both practice populations (i.e. through practice support or recall systems) and the division population or subpopulations within their catchment (as is evident in a community awareness approach). Divisions typically aim to reach a broad population through their prevention programs—most reported no specific target for many of their prevention activities in 2006–07.²

Responding to local population health needs

Divisions operate at a local level and are embedded within the communities with which they work. This on-the-ground understanding of their communities and the conditions in which they live makes them ideally placed to respond to disasters, public concerns and ongoing health needs. To respond to disasters, divisions require an emergency plan, and the ability and will to put it into action. For example, in the February 2009 Victorian bushfire devastation, divisions in the affected areas facilitated initial action and recovery, providing information and support services including treatment clinics and counselling. The coordinated response effort shown by these Victorian divisions is a result of having established emergency response plans formulated with other local organisations. Similarly, divisions in other areas of Australia have responded to their local populations' needs. Eight divisions reported responding to the needs of drought-affected communities across Australia from 2005 to 2007.^{2,10} Relief activities for local northern Queensland divisions were targeted toward communities affected by Cyclone Larry in 2006; and New South Wales and South Australian divisions provided support to local communities after the 2007 Newcastle floods and the 2005 Eyre Peninsula bushfires, respectively.

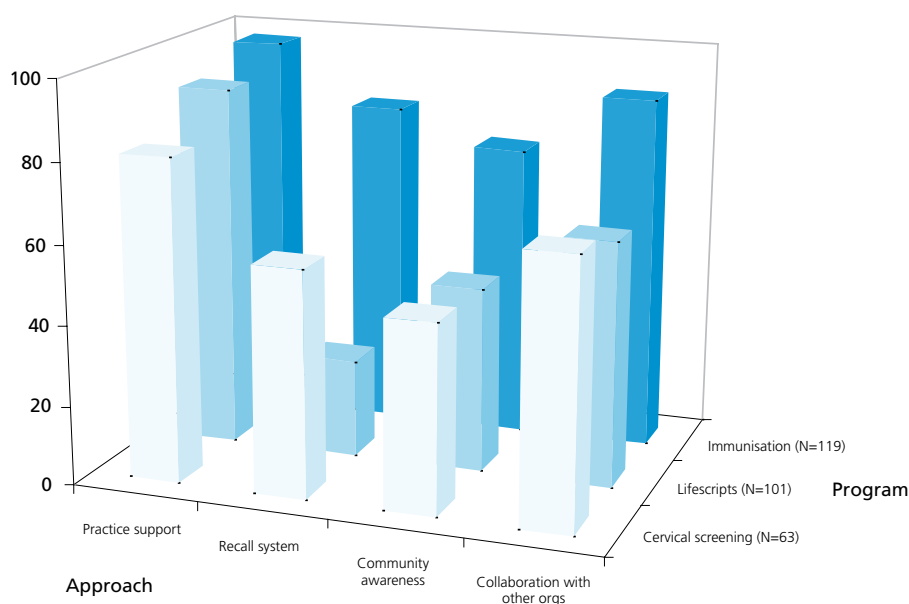


Figure 2: Proportion (%) of divisions conducting prevention programs by approach, 2006–07

Data source: Annual Survey of Divisions 2006–07.² The Lifescripts program involves a holistic approach to prevention, incorporating risk factor management specifically in the areas of smoking, alcohol consumption, nutrition and physical activity.

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Local need is not always based on critical events, but may address long-term solutions to chronic problems within the community. Many of the South Australian Riverland's GPs and a MAHS-funded Aboriginal health worker provide health care to the local Indigenous population from a bus, locally known as the Peelies Bus, that visits all the major Riverland towns once a fortnight. The Peelies Bus aims to reduce disparities in the health and wellbeing of the Riverland Aboriginal community by improving access to timely and culturally appropriate services, and linking into existing services rather than replacing them. The bus depends on a close working relationship between the three partner agencies (Riverland Division of General Practice Inc., Riverland Regional Health Service Inc. and Families SA). It also benefits from the availability of 'point of care' pathology testing equipment. Results are available on the same day, at the same location, compared to the usual delays associated with waiting for results to return from the laboratory.

Final comments

Divisions are already playing a role in improving population health in their local communities. The potential availability of more reliable practice data through IM-IT development could mean that divisions have a greater impact on health service planning and policy.² Division Network staff will need to add data analysis to their existing skills set, and continue to work with their practices to demonstrate the value of a population rather than an individualist focus.¹¹ Divisions' unique understanding of the population health characteristics within their catchments enables them to engage in focused improvements in the quality of, and access to, primary health care services.

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How population health data can help primary care services to improve population health: a rural case study

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What is population health?

Population health can be defined as 'the health outcomes of a group of individuals, including the distribution of such outcomes within the group'.¹

This field of activity incorporates population-level examinations of health outcomes, determinants of health, and policies and interventions linking the two.¹

A unique outcome from population health data is the identification of 'sick populations', where a high average level of disease risk in a population is directly related to the proportion of people at very high risk. In addition, population health data provides a greater understanding of the interrelationship between multiple determinants of health in affecting health outcomes.²

Despite such benefits, population health approaches to health care have been criticised for being almost exclusively quantitative and epidemiological in focus, and consequently lacking the context or aptitude to

translate population-level information to changes in clinical practice and health service delivery³. Using a rural Australian case study, this paper illustrates how population health data can in fact stimulate important changes to general practice and primary health care.

Greater Health population health surveys

During 2004–06 the Greater Green Triangle University Department of Rural Health (aka *Greater Health*, a collaboration between Flinders University in South Australia and Deakin University in Victoria) undertook three population health surveys in rural southeastern South Australia and adjoining southwestern Victoria.^{4,5} Based on the World Health Organization's MONICA protocol⁶ and the more recent European Health Risk Monitoring project⁷, these population-based surveys drew stratified random samples from local electoral rolls, and sought to examine the prevalence of chronic disease risk factors and related health behaviours among them. Both laboratory and non-laboratory tests, as well as self-completed patient surveys, were used to collect the data.

The surveys were undertaken following local and international consultation about the major health challenges to the region. Consultation occurred in two brainstorming days 3 months apart, in which local health professionals examined the available pool of epidemiological data. Divisions of General Practice participated in the analysis, leading to the setting of heart disease and diabetes as local priorities for intervention. A consensus was reached that such surveys were essential as part of a concerted effort to improve the health status of the region.

Using population health data for general practice

The resulting research has given rise to a basic report and an ongoing series of peer-reviewed publications that present the results of this work (see Box 1). These publications demonstrate the high prevalence of chronic disease risk factors in the region, and the evidence–treatment gaps in their management. Such findings act to confirm the health priorities of the region; advocate for interventions to policymakers and service providers; and, importantly, provide baseline data against which the success of future population-level interventions could be measured.

Box 1 Summary of published peer-review papers by topic

*Overweight, obesity and metabolic syndrome*⁵

The prevalence of overweight and obesity combined was 74.1% (69.7–78.5) in males and 64.1% (59.5–68.7) in females. According to International Diabetes Federation criteria, the overall prevalence of metabolic syndrome was 31.8% (28.6–35.1). With only 30% of the population within the 'normal weight' range, urgent action is required at the highest level to change unhealthy lifestyle habits by improving diet, increasing physical activity and making our environments supportive of these objectives.

*Hypertension*⁴

This study emphasises suboptimal detection and treatment of hypertension, especially in men, in rural Australia. This will have serious future consequences in terms of cardiovascular outcomes if left unaddressed. Overall, one-third of participants had hypertension and one-third of those were not aware of a previous diagnosis. Only half of those diagnosed were treated and half of the treated actually achieved blood pressure control.

*Physical activity*²⁰

One-fifth of adults in rural Australia were inactive, with few individuals engaged in daily physical activity at moderate to vigorous intensity to achieve health benefits. Leisure-time physical activity has the most potential for improvements to be made at a population level.

*Psychosocial*⁹

A third of the rural population reported psychological distress, with the highest prevalence observed in middle-aged men and women. Thus, health professionals should attend not only to physical health, but also to mental health status, in this age group. It is also important to target prevention strategies to the 20% who reported moderate levels of psychological distress, in order to prevent the development of more serious conditions.

*Metabolic syndrome and depression*¹⁸

Our data show an association between metabolic syndrome and the cognitive and affective components of depression in a rural population, with the prevalence of depression in individuals with metabolic syndrome being 50% higher. Based on the findings of this study, awareness of depressive symptoms as part of metabolic syndrome could be as important in clinical management as chronic diseases.

*Smoking cessation*⁸

We found that the overall prevalence of smoking was 15% when adjusted, the rate decreasing with age. Those smokers in the 25–44 years age group were most likely to want to stop but were less likely to have received advice on smoking cessation than older smokers. This suggests a need for greater vigilance in proactively targeting younger smokers.

Benefits of this data to general practice and other primary care services are both direct and indirect. Published results give a direct insight into the health behaviours and co-morbidities associated with chronic diseases. This allows general practitioners (GPs) to engage in more comprehensive primary care screening tailored to individual patients. Clinically relevant findings, which can be used by GPs, include the following:

- > Young people are not given sufficient advice about smoking and may warrant more systematic screening by GPs.⁸
- > People in the age group 45–54 years are at the highest risk of depression.⁹
- > Most people with diet-related cardiovascular risk factors report low levels of dietary advice from GPs or other health professionals.¹⁰
- > The majority of patients with diagnosed hypertension are undertreated, with diagnosed men less likely to receive drug treatment or achieve blood pressure less than 140/90 mmHg.⁴
- > Almost all adults with diabetes or established cardiovascular disease have at least one suboptimal lipid parameter.¹¹
- > Central obesity, an independent risk factor for diabetes and myocardial infarction, appears to be even more prevalent with the burgeoning obesity epidemic.⁵

Public Health and General Practice

Based on the epidemiological data showing low identification rates and evidence–treatment gaps, there is a direct case for GPs to use the newer Medicare item numbers for chronic disease management. They allow GPs more consulting time, and they fund practice nurses to do screening and case management. They reimburse disease management plans and reviews, and also allow the patient access to a number of allied health professionals. Some of the commonly used item numbers for management of chronic diseases and chronic disease risk are discussed in Table 1. During patient consultation, population data can also help primary care practitioners by raising awareness of important issues such as:

- > potential comorbid conditions for certain patient groups
- > major evidence–treatment gaps that should be addressed, such as screening for depression in patients with diabetes and heart disease
- > the allocation of practice resources to meet the needs of local patients.

Indirectly, population-level efforts to reduce the average exposure to such chronic disease risk factors generate a disproportionate reduction in the number of people who are considered at high risk.² The obvious benefit to general practice from such efforts is to reduce excessive levels of demand on GP services stemming from epidemic levels of risk factors such as obesity, and allow GPs to focus more on high-risk individuals.

Table 1: Commonly used Medicare item numbers in chronic disease prevention, detection and management

Item number	Title	Description ^a	Eligibility
717	45-year-old health check	A one-off health check, with GPs encouraged to consider lifestyle and biochemical risk factors, and family history. Practice nurses and other health professionals can assist.	45–49-year-old patients at risk of chronic ^b condition(s)
713	Type 2 diabetes risk evaluation	Review of diabetes prevention activities for patients with a 'high risk' score identified by the Australian Type 2 Diabetes Risk Assessment Tool. Much of the work can be done by practice nurses.	High-risk diabetic patients aged 40–49 years
721–731	Enhanced Primary Care (EPC) Chronic Disease Management (CDM)	Preparation or review of GP management plans (GPMPs); coordinating, implementing or reviewing team care arrangements (TCAs) with input from other professionals. Can involve other health professionals.	Patients with a chronic ^b or terminal medical condition
10997	Monitoring and support	Practice nurses and Aboriginal health workers provide monitoring and support services.	Patients with a GPMP or TCA
700 & 702	Health assessments for older persons	In-depth assessment containing medical, social, physical and psychological components. Information can be collected by, for example, practice nurses.	Older patients (75+ or, ATSI 55+)
710	Aboriginal and Torres Strait Islander (ATSI) adult health check	To facilitate early detection and intervention for common and treatable conditions that cause considerable morbidity and early mortality (e.g. circulatory, respiratory, endocrine conditions).	ATSI adults aged 15–54 years
900 & 903	Medication management reviews	Patient referred to accredited pharmacist for medication review and management plan for implementation by GP and community pharmacist.	
2517–2526 & 2620–2635	Management of diabetic patients	A number of items for various aspects of management and completion of the diabetes cycle of care. Much of the work can be done by practice nurses.	Patients with established diabetes mellitus
2710–2713	GP mental health plans	Early intervention, assessment and management in parallel with EPC and CDM items. Practice nurse can provide general assistance with development of plan.	Patients with mental disorders

^a Further details see Medicare Benefits Schedule for further details <http://www.health.gov.au/internet/mbsonline/publishing.nsf/Content/Medicare-Benefits-Schedule-MBS-1>

^b A chronic condition is a disease likely to go on for 6 months or more.

Public Health Bulletin

Using population health data for specific conditions: obesity

Obesity was a primary focus of attention following the Greater Health surveys, which found that 68.9% of the adult population was considered either overweight (38.9%) or obese (30.0%).⁵ In addition to improving public awareness of the problem through media releases and health forums, several projects were also initiated to complement existing state and federal initiatives.

Projects run directly through the University Department of Rural Health (UDRH) included *Food and Move*, designed to promote healthy eating and regular physical activity for young people in the secondary school setting.¹² The *Primary Health Care Research, Evaluation and Development* (PHC RED) program run through the UDRH was able to award research bursaries to local health and education practitioners so that capacity for addressing such issues at a service-delivery level was enhanced. Relevant PHC RED projects involved investigating the delivery of best practice obesity management through surveying GPs,¹³ and identification of barriers to selling healthy food in school canteens.¹⁴

Local organisations were also able to use the risk factor information independently to advocate for action in the region. The Heart of Corangamite is a network of community agencies and health promotion practitioners in one of the surveyed regions. The network was formed to combine resources and prioritise strategies to respond to the *Greater Health* survey findings. Its key objectives include: increasing consumption of fruit, vegetables, water and low-fat dairy products; and increasing opportunities for active transport and access to established sporting and recreation clubs and organisations in the region. Meanwhile, a *Healthy Active Regional Transport* program was funded in the Limestone Coast area to promote cycling in rural areas, using survey data to establish the need for physical activity interventions.

Summary

Population health data from the Greater Health survey has helped to inform future directions for primary care in the region. Several new models of care aimed at supporting general practice with high-risk patients have been examined. Initiatives include:

- > the development of a diabetes prevention program that has now been adopted throughout Victoria¹⁵
- > managed clinical networks, with clinical pathways for co-morbid depression in acute coronary syndrome^{16,17}
- > collaborative care for patients with diabetes, coronary heart disease or both¹⁸
- > improving attendance at cardiac rehabilitation¹⁹
- > community pharmacy support for general practice in the prevention of cardiovascular disease (see <http://www.greaterhealth.org/research> for details).

A close alignment of activities within *Greater Health* between public health, health services and workforce programs ensures that the momentum for dissemination of findings and addressing evidence-treatment gaps was maintained. Formal and informal networks across general practice and other health and related professions further facilitated dissemination.

Improved management of chronic diseases, including cardiovascular disease and diabetes, and their risk factors requires a change in the way GPs approach their work, particularly patient consultations. It requires them to:

- > see their patients as belonging to populations at risk
- > use available MBS item numbers to fund identification, review and management plans for at-risk patients to measure the risk factors
- > ensure that treatment is directed to the targets set in national guidelines.

It requires teamwork, particularly delegating screening and case management tasks to practice nurses, and arranging administrative staff to maintain disease registers for call, recall and clinical auditing.

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Professional education and the role of general practitioners in public health and population health

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Background

The role of public health and population health in general practice and general practitioner (GP) education is not new. Hippocrates, arguably the first general medical practitioner to record the details of his observations about patients and use these in teaching his students, recognised risk factors across his patient population for chronic disease and mental health problems. Among his many aphorisms, Hippocrates noted that 'Sudden death is more common in those who are naturally fat, than in the lean' and 'If during an illness there is weeping involuntarily, it is well. But if weeping occurs in spite of oneself, it is bad.'¹ These observations made about his patient population predated the Australian Government's cardiovascular disease prevention and mental health awareness programs by many centuries. Over the millennia, by whatever name you choose (apothecary, GP, family doctor), general medical practitioners throughout the world have been specialists in observing, protecting, promoting and restoring the health of the people of their local communities.

General practice and population health in Australia

GPs in Australia specialise in many ways, one of which is in understanding the health care challenges facing their own unique patient populations. The 2006 definition of general practice by The Royal Australian College of General Practitioners (RACGP) states that 'General practice is the provision of primary continuing comprehensive whole patient medical care to individuals, families and their communities.'²

In 2003 the Australian Government Department of Health and Ageing, in conjunction with the General Practice Partnership Advisory Council and the National Public Health Partnership Group, released a joint consensus statement on the role of general practice in population health. This included a definition of the public health roles of general practice:

*'...the prevention of illness, injury and disability, reduction in the burden of illness and rehabilitation of those with a chronic disease. This recognises the social, cultural and political determinants of health. This is achieved through the organised and systematic responses to improve, protect and restore the health of populations and individuals. This includes both opportunistic and planned interventions in the general practice setting.'*³

Registrars training in general practice around Australia are regularly reminded that GPs are ideally placed to incorporate public health-based activities, such as preventive care and health promotion, into their consultations. Given that there are almost 100 million consultations between Australians and their chosen GP each year,⁴ and that over 85% of all people in Australia visit a GP at least once every year,⁵ opportunistic prevention and health promotion has been one way of incorporating population health into general practice.

One of the great achievements of Australia's network of Divisions of General Practice has been the successful incorporation of population health initiatives across general practice in discrete geographic regions. Probably the best examples of this success have been in immunisation and chronic disease prevention and management programs.

RACGP Curriculum for Australian General Practice

In 2007 the RACGP issued the new Curriculum for Australian General Practice.⁶ One of its core components concerns population health and public health. The RACGP's approach has been to seek to further strengthen the incorporation of population health into Australian general practice. In the words of the RACGP Curriculum Statement:

Public Health and General Practice

*'There is considerable overlap between population and public health, and differing models of this interface have been developed. A continuum can be considered between population health activities within general practices, public health activities with the community, and what have been termed "new public health" movements which include the engagement of communities, organizational development, and specialization or leadership in fields such as policy development.'*⁶

*'In general practice, population health represents an extension and expansion of existing clinical roles toward an emphasis on prevention and a focus on groups or populations rather than on individual patients. This may involve activities such as immunization, risk assessment and management, patient education and screening in which general practitioners are already engaged within their practice. General practice public health also involves notification of disease of public importance.'*⁶

To support Australia's GPs in their population health and public health roles, the RACGP has developed a number of key resources for use in general practice. These include *RACGP: guidelines for preventive activities in general practice*,⁷ now in its seventh edition; *SNAP: a population health guide to behavioural risk factors in general practice*;⁸ and *RACGP: putting prevention into practice*.⁹ The RACGP has also endorsed resources that provide advice to patients on ways to work with their GP in preventive care and health promotion activities.^{10,11}

The RACGP Curriculum Statement also reminds GPs about the importance of the social determinants of health.

*'Population based health activities in general practice should include, as a priority, activities that are designed to meet the specific needs of disadvantaged population groups. General practice also has an important advocacy role around the structural issues that affect health status, especially for socially disadvantaged groups.'*⁶

In some locations, such as rural and remote regions and in many Aboriginal medical services, there is an even wider scope for GPs to combine the role of family doctor and public health practitioner. This includes involvement in activities such as health service planning

and environmental health, and advocacy for community participation in health promotion activities.¹²

There is growing awareness that the strongest gains from general practice population health activities result from two approaches: i) better integration of the professional disciplines working in primary care, including general practice nurses, nurse practitioners, community-based allied health professionals, Aboriginal health workers and other community health workers; and ii) improved partnerships between general practice and both public health services and consumer and community organisations.⁶

The RACGP curriculum for population health and public health outlines the learning objectives across the five professional domains of general practice: communication skills and the patient–doctor relationship; applied professional knowledge and skills; population health and the context of general practice; professional and ethical roles; and the organisational and legal dimensions. The specific objectives under each domain are outlined in Table 1.⁶ These objectives are augmented in the RACGP curriculum by specific learning objectives across the professional life of a GP—from medical student to prevocational doctor to vocational registrar to the career-long continuing professional development of experienced GPs.

Further career education

During their subsequent careers many GPs gain additional skills in areas such as epidemiology, health program management, evaluation, biostatistics and health economics.¹² There are many Australian GPs who have gained qualifications such as a Master of Public Health, and there are many GP members among the Fellows of the Australasian Faculty of Public Health Medicine of the Royal Australasian College of Physicians, all contributing to the public health and population health focus of Australian general practice.

Table 1: RACGP curriculum: learning objectives in the five domains of general practice – population health and public health

<p>1. Communication skills and the patient–doctor relationship</p> <ul style="list-style-type: none">> Enabling patients to take control of their health involves two-way communication in the formation of a patient–doctor partnership.> GPs need to be able to assess risk factors of both individual patients and the broader population, and explain and implement preventive health interventions in general practice, including the modification of lifestyle risk factors. <p>2. Applied professional knowledge and skills</p> <ul style="list-style-type: none">> GPs need to be able to describe the epidemiology of common conditions encountered in Australia and internationally, as well as the recommended preventive activities conducted in the Australian community, including general practice; and access current guidelines for screening and prevention.> GPs need to be able to assess the health needs of a specific population, for example the elderly, men, women and young people. <p>3. Population health and the context of general practice</p> <ul style="list-style-type: none">> GPs need to be able to describe national health priorities, methods for assessing the health status of a community, and population health and public health approaches to prevention in general practice and the broader community. <p>4. Professional and ethical role</p> <ul style="list-style-type: none">> GPs need to be able to compare and contrast their professional and ethical roles in their obligations to patients and the broader community, for example the rights of the individual versus the rights of the community, or patient confidentiality versus the public good. They also need to be able to describe methods of infectious disease control.> GPs need to liaise with other health professionals to optimise population health care outcomes, and advocate on behalf of patients. <p>5. Organisational and legal dimensions</p> <ul style="list-style-type: none">> GPs need to be able to describe the role of population-based general practice activities within the context of the Australian health system, as well as work effectively within these systems to improve the health of patients and the broader community.> GPs also need to be able to describe the medico-legal duties of the GP in public health.
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Source: from The Royal Australian College of General Practitioners, 2007⁶

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The community-oriented general practitioner

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The concept of community-oriented primary care

In South Africa in the 1940s, a team of health workers led by Dr Sidney Kark and his wife Emily, working in a socioeconomically deprived area of Natal, developed an approach to primary health care which came to be known as community-oriented primary care, or COPC. This approach recognised the socioeconomic determinants of health but focused on interventions that can be developed from within the health sector. There was an emphasis on health care workers maintaining a close involvement with a defined community, with ongoing monitoring and surveillance of health status and risk factors to allow appropriate modifications to program development over time.¹

The features of COPC, as described by Kark, are outlined in Table 1. The first essential feature listed is the 'complementary use of clinical and epidemiological skills'. In other words, the COPC approach generally relies on a multidisciplinary team, with a key role for personnel with skills in both general medical practice and public health. The ideal COPC practitioner might be called the 'community-oriented GP': someone who is a general practitioner with public health skills, working as part of a team providing comprehensive primary health care to a defined community.

The rise of apartheid in South Africa in the 1950s led to the demise of COPC in that country, but the approach was taken to Israel by the Karks, who moved to Jerusalem in 1959.³ It has also had a following in the United States,⁴ and in recent years has been revived in South Africa through the work of Stephen Tollman and Kathy Kahn.⁵

Relevance of community-oriented primary care for Australia

In Australia the term COPC has received little attention, but the approach has many similarities to the community health centre movement which emerged in the 1970s and has persisted to some extent, particularly in Victoria and to a lesser extent in South Australia. There are also examples where mainstream GPs, particularly in country areas, have extended their practices to include elements of COPC.

However, the most outstanding example of this approach in Australia has been the Aboriginal Community-Controlled Health Service (ACCHS) movement, where GPs, in association with Aboriginal Health workers and nurses, have worked in a community-oriented capacity. In some areas state or territory Health Departments employ GPs to provide services to Aboriginal communities. While these GPs are individually community-oriented, working within an organisation such as an ACCHS significantly increases the effectiveness of the community-oriented approach.

The first ACCHS was established in Redfern in 1971. With now over 120 ACCHSs across Australia, these services have become the major provider of primary health care to Aboriginal people in all geographic

Table 1: Essential and highly desirable features of community-oriented primary care²

<p>Essential features:</p> <ul style="list-style-type: none">> complementary use of epidemiological and clinical skills> a defined population for which the service is responsible> defined programs to address community health problems> community involvement in promoting its health> health service accessibility: geographic, fiscal, social and cultural <p>Highly desirable features:</p> <ul style="list-style-type: none">> integration, or at least coordination, of curative, rehabilitative, preventive and promotive care> a comprehensive approach extending to behavioural, social and environmental determinants> a multidisciplinary team> mobility, including outreach capability, of the health team> extension of community health programs into broader programs of community development

* The author acknowledges the useful comments of fellow community-oriented GP Nick Williams on an earlier draft of this paper.

regions of the country. Compared to COPC, the ACCHS movement has placed greater emphasis on the importance of community ownership and management of primary health care, but the features of COPC outlined in Table 1 are instantly recognisable as the features that have characterised the approach taken by most ACCHSs.

One of the key roles within ACCHSs has been that of the community-oriented GP. Some GPs have come to work in ACCHSs bringing public health skills with them. More commonly, a GP who commences working within the ACCHS sector recognises after some time that the approach required is different from that of mainstream general practice, and he or she then obtains some up-skilling in public health, either formally or informally. With this combination of skills, and working within an organisation with close links to the community, the GP is able to take a COPC approach, even if this term is not known.

However, it is regrettable that the need for specific education and training for GPs to work in Aboriginal health has not received the attention it deserves. Training in COPC requires developing a combination of both general practice skills and particular community-oriented public health skills. The fact that GPs working with Aboriginal people need to become culturally competent has been well recognised, but GPs working with a disadvantaged community and taking a community-oriented approach require professional skills that differ somewhat from mainstream fee-for-service general practice, and this has not been recognised.

If anything, the opportunities for training and support for community-oriented GPs have decreased. While many medical schools previously had departments of community medicine, the recent trend has been toward establishment of separate departments of general practice and public health, with less opportunity for combining the skills taught in both departments.

Of greater concern, perhaps, are the trends in government Aboriginal health policy. Over the past decade there has been a turn away from support for Aboriginal self-determination and for the role of Aboriginal community organisations. The current government's focus is also on directing funds for Aboriginal primary health care to mainstream general practice. Within ACCHSs, funding imperatives have increased the use of Medicare Enhanced Primary Care items, which has encouraged an individualistic fee-for-service, rather than a community-oriented, approach. These policy directions ignore the fundamental role

that ACCHSs have played in developing an appropriate style of primary health care for Aboriginal people, and show inadequate recognition of the importance of the community-oriented GP.

Both these trends, in academia and in government, reflect the pervasiveness of the neo-liberal ideology which has become dominant since the 1970s. This viewpoint sees people, including Aboriginal people, as individual producers and consumers rather than recognising that they are participants in communities. It is exemplified by Margaret Thatcher's oft-quoted statement that 'there is no such thing as society, only individual men and women'.⁶ Arguably, this downplaying of the role of community has been particularly destructive to contemporary Aboriginal society.

Conclusion

There are good reasons to revive the concept of the community-oriented GP, particularly in the area of Aboriginal health. One way to do this is to apply pressure to governments to reconsider current mainstreaming policies. Despite the lack of evidence for such policies, they support general practice rather than ACCHSs and their community-oriented GPs. Another way is to promote the concept within the health professions. Perhaps there is a need for a College of Aboriginal Health,⁷ which would ensure training and support for GPs and other health practitioners who wish to make a contribution to ameliorating Australia's most embarrassing public health issue—the gap in health status between Aboriginal and non-Aboriginal people.

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General practice: retrospective reflections from a public health perspective

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This reflective paper describes a little of my personal and professional journey from general practitioner to public health physician. The journey is intentionally incomplete, as I continue to enjoy working at the interface between general practice and public health.

On graduation from medical school, I made the transition from being an impoverished student to an overworked, but reasonably well paid, resident medical officer. This enabled me to finance a number of overseas trips to what seemed to me to be exotic locations. From these adventures I developed a desire to experience living, learning and working in another country and culture on a longer term basis.

I had completed my family medicine training, mostly in rural practices, and achieved Fellowship of the Royal Australian College of General Practitioners (RACGP). However, I soon realised that my ability to function as a family doctor in another culture would have significant limitations, particularly because of my lack of cultural awareness and limited language ability. I decided that, with adequate preparation, I could more readily contribute towards the broader prevention of illness and enhancement of health in these settings. This led to postgraduate training in public health and my first experience of living, learning and working in another culture—in Cambodia. The nature of the work was focused on improving mother and child health. Based on a community development approach, this was achieved through the implementation of key health interventions delivered through a partnership between the health services and village health workers. In addition, I now had an opportunity to start learning the language and understanding the culture.

A combination of circumstances led to my departure from Cambodia after 3 years. My positive, and negative, experiences during this time had reinforced my commitment to a public health approach. I then completed specialist training in public health medicine in Australia and, at the start of 2001, returned to Cambodia, this time for another 6 years. My role in public health had expanded from mother and child health to now include prevention, care, support and advocacy for people living with HIV and AIDS. The role also provided for the provision of public health input for a range of community development initiatives.

In reflecting on this journey, I see a number of parallels between general practice and public health. My initial decision to train in general practice was based on a desire to address the health of the whole person, while recognising the need for support from my specialist colleagues. The parallel is that I see public health as addressing the health of whole communities even though public health medicine is considered a 'speciality'! I do miss some clinical aspects of general practice, in particular the process of taking a good history, conducting an appropriate examination and ordering relevant tests, thus leading to a diagnosis and the development of a management plan with the patient. However, there are equivalent processes in public health disease surveillance that provide some compensation for this loss—identifying a greater than expected number of cases of a particular condition; collecting relevant and timely epidemiological data for analysis; taking action to identify the source or determinants; and preventing further cases. Just as in general practice, some diagnoses remain elusive, so not every outbreak is 'solved'; and while many patients in general practice get better without a specific management plan, many outbreaks also end without any active public health intervention!

These shared perspectives between general practice and public health provide opportunities for increased cooperation between health professionals in both disciplines. Working at the interface between general practice and public health is both frustrating and rewarding—frustrating because the heavy workload of a busy general practice physically limits opportunities for practice staff to become involved in public health responses to the extent they would like; and rewarding in the provision of public health 'specialist' support to enable general practices to become more involved in

public health research and responses. I certainly see a place for public health professionals, particularly those with a background in general practice, in supporting public health initiatives implemented through the RACGP and Divisions of General Practice.

With the increasing use of information technology, coupled with greater assurances on the security and confidentiality of information, many general practices are well placed to provide timely and relevant data on a wide range of public health issues. In turn, public health professionals can provide basic and advanced epidemiological and data analysis skills to support general practice staff in operational, and more formal, research activities. They can also conduct the literature reviews and the research required to recommend effective or evidence-based 'tools' that general practices can use, in individual patient consultations, to address preventive and public health concerns.

Much has been written about the tension between the individual–clinical approach to health and the community–population approach to health. In practice, there is no dichotomy, although resources are usually skewed towards the clinical approach. As other papers in this publication attest, a combination of both approaches is possible. When this collaboration is expanded to encompass a multisectoral response to health issues, the goal of general practice—the health of the whole person—and the goal of public health—the health of the whole community—are seen to be inseparable. My return to working in the health system in Australia 2 years ago has been enriched by my experiences of living, learning and working overseas. The interface between general practice and public health is an exciting place to work.

General practice involvement in public health oriented refugee health

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Introduction

Most health professionals in Australian general practices deal with public health issues every day without necessarily being conscious that this is what they're doing. When working with people of refugee backgrounds, in particular, it is much more important to be conscious of public health issues as they have a greater impact on the everyday health of this population. A general practice is unlikely to achieve successful health outcomes without taking into account the myriad aspects of health promotion, protection and prevention that affect the health of refugees, originating from their countries of origin and in transit, as well as in Australia.

Background

Australia has a long history of people coming to our shores seeking asylum from persecution because of their 'race, religion, nationality, membership of a particular social group or political opinion'.¹ Our ways and timeframes for ascertaining whether their fear of persecution is 'well-founded'¹ have often been questioned, but the fact remains that Australia takes more UN-certified refugees per head of population than other developed nations.²

Currently, Australia accepts approximately 13 000 refugees per year, of which about 1300 come to South Australia. These comprise 30% from Africa (mostly Sudan, Congo, Burundi, Liberia, Sierra Leone), 40% from the Middle East (Afghanistan, Iran, Iraq) and 30% from elsewhere (Burma, China, Nepal).³ About half of those who come as refugees are aged under 18 years, and many families are headed by women with up to 12 children. Some have spent more than 10 years in overcrowded and extremely unsafe refugee camps, where they have experienced untreated infectious diseases, poor sanitation and deficient diets.

Such a background will be unimaginable for most Australian health professionals. Even those refugees who do not come from developing countries have experienced hardship and poverty following their decision to flee their country—during their flight, in refugee camps and in resettlement. As well as taking account of the cultural, social and religious differences between Australia and the countries of origin of most refugees, health professionals need to develop skills in screening for, diagnosing and treating unfamiliar physical and psychological problems. Public health is paramount in the approach to all these issues.

Promotion

For people who have had minimal schooling and for whom survival has been their main priority, most of our concepts of health are completely unknown. Physiology, anatomy and disease causation need to be explained, sometimes many times, before any management plan is implemented. This is especially so for chronic health problems that require long-term treatment and follow-up. Health system literacy is as important as health literacy. The best laid plans will come to nothing without an understanding of how the Australian health system works, how to get medication, what happens with a referral, and the actual role of a general practitioner (GP) or allied health professional.

The environment in which patients are seen needs to be 'safe'. This includes 'cultural safety', where the patient's cultural and other differences are treated with respect. Some of this will be obvious. For example, because of the need to fast during Ramadan, the GP may need to alter medication regimens. However, some will be more subtle, for example the need to ask for and gain permission before touching the patient to take their blood pressure or examine them. To ensure that patients' cultural safety is maintained, health professionals need to be 'culturally aware'. This means being as conscious as possible not only of their own ethnicity but also of their otherwise unconscious expectations of themselves, the patients and the world in general, based on their own cultural upbringing.⁴ Most members of a general practice team aim to be non-judgmental, especially when dealing with refugee patients, but only a small percentage of motives, beliefs and reactions are conscious. There is likely to be a difference between doctor and patient in communication styles, approaches to completing tasks, notions of time, decision-making styles and attitudes toward disclosure.⁵

In many countries there are diseases that mean stigma, severe morbidity or certain death as there is no treatment or only limited access to appropriate health care. This can include most mental health problems, cancer and blood-borne viruses such as hepatitis B and HIV. People of refugee background may be very reluctant to be tested for or diagnosed with these diseases as they may not realise they can be treated here. Fully informed consent for many investigations will involve a discussion about the possibilities of treatment in Australia if a positive result is found.⁶ This might mean a much longer preamble to procedures we might take for granted, such as a Pap smear or mammogram; or allowing extra time for a discussion about diagnosing such things as depression or hepatitis C.

One of the constant challenges for any GP is that of follow-up of patients, and this tends to increase with people of refugee background. It is important to recognise the barriers to health-seeking behaviour, such as different expectations of cure rather than treatment, and social issues such as poverty or lack of transport. Many refugee patients have not had the experience of keeping appointments, having regular antenatal visits, follow-up investigations or taking long-term medication for chronic disease.

Protection

Protection of the public is one of the basic tenets of public health. Many of the infectious diseases seen in refugee patients are not going to be problems for the rest of the community. Schistosomiasis and malaria are two of the most important infectious diseases to diagnose and treat in this population, but neither of these will spread to the rest of the South Australian population as we do not have the appropriate vectors here. However, they can cause significant morbidity and occasional mortality, and must be screened for as they may be asymptomatic.

On the other hand, people of refugee background have some of the highest incidences of tuberculosis, hepatitis B, hepatitis C and taenia solium in our community.⁷ Again, these may be asymptomatic, but their identification and appropriate treatment are important not only for the health of the patient but also because of the potential public health implications. GPs need to be aware of their legal obligations to notify many of these diseases to the public health authorities. Because of the need for cultural sensitivity and support, the general practice team is probably the best placed

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to explain the public health implications, to do the necessary contact tracing and to follow up many of these diseases.

A constant struggle in general practice is to balance evidence-based medicine and the principles of self-management. In caring for refugee patients the additional parameters of health literacy, slowly moving through the stages of change, and the often overwhelming social, historical and cultural factors add another level of difficulty to this balance. For many who have struggled to survive in a hostile environment and whose only health care has been the short-term treatment of infectious diseases, an injection and a letter of advocacy may be all they are expecting from their GP visit.

Nothing is likely to happen in general practice if the GP does not understand the patient and the patient does not understand the doctor. Health is not just about treating the test result with the right medication. The use of an interpreter of appropriate language, dialect, gender and religion is paramount for good health care, especially if dealing with mental health problems, sexual health, domestic violence or other sensitive issues. The legal requirements of confidentiality and informed consent oblige all GPs to use the Translating and Interpreting Service (TIS) Doctors Priority Line to their utmost capacity.⁸

Prevention

Good preventive health care at the primary health level is an everyday occurrence for Australian GPs. For patients of refugee background, the social determinants of health will often need to be addressed before any other preventive activities are attempted. If housing, education, safety, transport and other issues related to poverty and resettlement difficulties are not dealt with, a patient is unlikely to view a screening Pap smear or lifestyle advice as a priority.

Preventive health screening will involve a different range of investigations, which may include post-traumatic stress disorder, haemoglobinopathies, parasites and vitamin D deficiency.⁹

Severe developmental delay in children, often due to the mental health problems of the parents or the child, will need urgent referral to a multidisciplinary team. This, however, assumes that the age of the child matches that of the visa, a difficult feat in itself.¹⁰ Being aware of the potential for serious mental health problems in adolescents of refugee background can avert an escalation of these problems. Spanning two cultures, dealing with the past, struggling with language issues, living in a single-parent household, and often caring for younger siblings or unwell parents make adolescents a particularly vulnerable group.

Unknown, undocumented or erratic immunisation histories mean that most refugee patients will need a program of catch-up vaccinations, which is best done with the help of one of the experienced nurses who run the New Arrival Refugee Immunisation (NARI) clinics for local councils.

Risk factors for vitamin D deficiency such as dark skin or being fully covered by clothing should alert GPs to do further investigations. Diet is another risk factor, not just because of the relative malnutrition suffered by many refugees on arrival, but because of the higher incidence of dental caries and diabetes as their diets change to the Western diet of high sugar and fat.¹¹ Early education and regular follow-up of dietary and exercise practices is of extreme importance.

Conclusion

Optimum health care for Australia's refugee population requires a different skill set to 'usual' general practice. It is not just about screening using the template for the 714 Medicare item number, using a TIS interpreter and treating exotic parasites;⁹ it is also about dealing with the more complex public health issues that underlie good care—health promotion, protection and prevention.

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The role of GPs in environmental health: working with homeless people

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What is environmental health?

The medical profession has long recognised the importance of a healthy environment for both preventing disease and supporting health. Over 2000 years ago, Hippocrates wrote the seminal text, *On airs, waters and places*, that set the foundations for environmental health practice.¹ He described physical, chemical and biological features of the environment that can exert an influence on health and wellbeing.

The accumulated knowledge over time on the importance of the environment to health has led to sophisticated environmental health infrastructure and management systems. This progress has been central to a significant reduction in communicable diseases, improvement in quality of life and increased life expectancy over the last 100 years. Unfortunately, despite past successes, some populations still live in poor environmental conditions, leading to high rates of diseases such as *Shigella*, hepatitis A, post-streptococcal glomerulonephritis and chronic serous otitis media.

GPs and environmental health

While many of the features of environmental health practice are outside the health system, general practitioners (GPs) play an important role in advocacy of mitigation of the effects of poor environmental conditions on the health of their clients. The following exploration of the impact of the environment on homeless people and the role GPs can play illustrates the fundamental importance of the environment to health, and how the issues highlighted over 2000 years ago have not been completely resolved today.

Homelessness

There is a lot of debate about definitions of homelessness as 'a home' means different things for different people. What is consistent is that being homeless is not as simple as having inadequate or no housing. Having a home means that a person has access to shelter and good functioning health hardware (such as running water, storage facilities and cooking facilities). It also includes the security and social connectedness that having a home can provide. Homelessness is a lack of any of these integral aspects.

Health impacts of homelessness

People who are homeless generally have multiple markers of social disadvantage, including social exclusion, unemployment, low education levels and limited access to healthy food choices. These factors can combine in different ways to produce poor health outcomes. In fact, across the spectrum of homelessness, from living in a boarding house to sleeping on the street, there is an increase in disease with reduced access to any form of shelter.²

Homeless people have a greater risk of chronic disease, infectious diseases such as respiratory tract and skin infections, mental illness, substance abuse disorders and poor oral health than the general population. The increased rate of death is difficult to quantify but has been estimated at between three and eight times the risk of death in the general population.^{3,4} The average age of death is between 42 and 52 years.³

GPs' role and ways of working with homeless people

This highly complex social problem requires a system-wide approach. In dealing with the health issues of this group of people, health professionals need to look beyond what the health system can provide. They need to include services such as housing and social services, and consider issues of safety, food security and social support. On an individual general practice level, there are a number of steps the health professional can consider to improve the quality of the service they provide for homeless people.

The first step is increasing the accessibility of a general practice to homeless people by providing health care that is respectful, focuses on effective communication, is holistic in its approach and is flexible in addressing client needs. There are often a number of complex issues to manage as well as a need for client advocacy, which often requires longer, bulk-billed appointments. Key to this increased responsiveness is to systematically identify people who are homeless. Homeless people are not a homogeneous, easily identifiable group. The traditional face of homelessness, an elderly man with alcohol dependence, is changing. In fact, the fastest growing subsection of homeless communities is families with children.⁵

Understanding the social context that homeless people live in is integral to effective clinical care. For example, a homeless person may be isolated socially and have no carer when they are unwell. This makes moving around to carry out normal self-care duties such as finding a toilet, running water, food and a safe place to rest at night potentially impossible. As such, health professionals should carefully consider the environment in which the homeless people live when making decisions regarding their health care. For example, when prescribing medication, GPs need to be aware that there may be no fridge for storage of drugs and no clean water when deciding on which drug formulation to prescribe. Drugs that have a street value should be prescribed with caution, as homeless people may be at risk of violence from others who seek to take their medication. Overdose or adverse events are a potential risk with some drugs due to the multiple complex social and health issues that most homeless people have.

It has been demonstrated that the ideal model of health care for homeless people involves the use of a multidisciplinary team, including a GP, who work together with complementary skills.⁶ For GPs, this may be facilitated by making use of Enhanced Primary Care Medicare item numbers, such as those for chronic disease and for clients who are Aboriginal or Torres Strait Islanders. Box 1 provides an example of one such program model established in Adelaide specifically to provide appropriate health care for homeless people.

Box 1: A holistic primary health care program for homeless people: No Pulgi program

The No Pulgi program in Adelaide is an example of a primary health care service that was developed to specifically address the largely unmet health needs of homeless people, particularly their chronic needs.

No Pulgi is a collaborative effort initiated by Nunkuwarrin Yunti of South Australia Inc., Aboriginal Sobriety Group Inc. and the Royal District Nursing Services. It is supported by SA Health and the Office for Aboriginal and Torres Strait Islander Health's Aboriginal Primary Health Care Access Program. Other key agencies involved with the service include Drug and Alcohol Services South Australia and the Street to Home service. It was developed to better address the health needs of homeless people, acknowledging that this is a difficult and complex task that would best be tackled by a partnership model.

No Pulgi provides outreach primary health care services to day centres and other places where people live and gather in the city, including the Adelaide city parklands. The service is free and flexible, and has strong links with homeless service providers to ensure holistic care that also includes social and environmental domains. The service also works in partnership with other groups in the sector, including social services, to ensure seamless service delivery and the best quality of care.

Beyond good communicable disease control, environmental health's involvement is expanding into promoting healthy environments to prevent chronic disease. An example of this is the Heart Foundation's 'Active by Design' program, which promotes the use of urban planning to encourage physical activity.⁷ The persistence of environmentally related diseases, and the new approaches required for chronic disease control, ensure the ongoing relevance of environmental health for GPs today.

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Conclusion

The ongoing importance of a healthy environment to human health is exemplified by the adverse effects of a poor environment on vulnerable populations such as homeless people. While many important environmental health issues are being well managed outside the health care system, GPs have an important role to play in wider advocacy for health-promoting environments and for mitigation of the effects of a poor environment on the health of their clients.

General practice role in obesity prevention from a population health perspective

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Introduction

Rates of obesity have increased significantly in the past 20 years in westernised countries. Recent estimates report 52% of Australian women, 67% of Australian men and 23% of Australian children aged 2–16 years are overweight or obese.^{1,2} While there has been some recent debate (mainly in the media) about whether or not this represents a true epidemic,³ children and adults classified as obese experience much greater levels of comorbid health problems, including long-term cardiovascular, orthopaedic, neurological and endocrine disease.^{4,5} In addition, greater levels of psychological distress, stigmatisation and lower quality of life are experienced by both children and adults with obesity.^{6,7,8}

Obesity, as compared to other chronic health conditions, brings to mind (for both patient and practitioner) a range of negative images, thoughts and emotions: disappointment, laziness, failure, poor self-esteem, excuses, lack of will-power, poor self-control etc. Obesity counselling was reported by primary care physicians to be frustrating and not professionally gratifying.⁹ In a systematic review of primary care physicians' knowledge, attitudes, beliefs and practices regarding childhood obesity, physicians reported that management of obesity was very important, but the vast majority considered themselves not competent in treating it.⁹

At a population level, government policy tends to focus on individual responsibility to maintain a healthy weight.¹⁰ This is in contrast to overwhelming evidence that increasing rates of obesity are secondary to our obesogenic environments.¹¹ There is a clear need for policies supporting environmental change in the community, for example the regulation of food industry advertising to children and the accessibility of public transport.

The vast majority of weight loss trials, both in children and adults, report moderate results at best, with long-term outcomes suggesting that many individuals regain their weight without ongoing intervention.^{12,13} When considered from the perspective of a negatively perceived chronic disease, combined with the fact that rising rates of obesity appear to stem from environmental factors, it is not surprising that general practitioners (GPs) report low self-efficacy at managing patients with obesity. A preventive approach to the management of obesity can assist the primary care practitioner generate both a positive clinical outcome and professional satisfaction.

In this paper I will describe potential areas where GPs could provide substantial input and leverage in obesity prevention. Most of these suggestions are small individual steps but, together, they contribute to the multilevel population approach necessary for tackling an environmentally based complex health issue.¹¹ Grief and Talamayan (p. 631) call for a need to shift the paradigm in primary care settings from treatment of obesity to prevention of overweight and obesity.¹⁴ They suggest that this would include 'proactive reprioritization of addressing weight issues in the office setting' (primary prevention) and 'integrating treatment strategies to prevent progression of obesity' (secondary prevention).¹⁴ This approach is similar to the new clinical discipline, 'lifestyle medicine', described by Egger, Binns and Rossner (p. 143) as 'the application of environmental, behavioural, medical and motivational principles to the management of lifestyle-related health problems in a clinical setting'.¹⁵ Characteristics and differences between this form of practice and conventional medical practice are given in Table 1.

Prevention of obesity

Prevention can be considered at a number of levels. Primary prevention aims to prevent the onset of obesity in a normal weight population. Secondary prevention aims to reduce the impact of obesity and prevent the onset of obesity-related comorbidities in those already above a healthy weight. Obviously, many primary prevention strategies (for example, making aspects of the environment less obesogenic) have the potential to improve the health of both normal-weight and overweight individuals.

Table 1: Differences between conventional medicine and lifestyle medicine^a

Conventional medicine	Lifestyle medicine
Treats individual risk factors	Treats lifestyle causes
Patient is often a passive recipient of care	Patient is an active partner in care
Patient is not required to make big changes	Patient is required to make big changes
Treatment is often short-term	Treatment is almost always long-term
Responsibility falls mostly on the clinician	Responsibility falls mostly on the patient
Medication is often the 'end' treatment	Medication may be needed, but as an adjunct to lifestyle change
Emphasis is on diagnosis and prescription	Emphasis is on motivation and compliance
Goal is disease management	Goal is primary/secondary/tertiary disease prevention
Little consideration of environment	Consideration of environment
Side effects are balanced by the benefits	Side effects are seen as part of the outcome
Referral to other medical specialities	Referral (also) to allied health professionals
Doctor generally operates independently on a one-to-one basis	Doctor is coordinator of a team of health professionals

^a From Egger et al. 2009¹⁵

Primary prevention

Advocacy

As noted by Fraser, GPs could (time and energy permitting) initiate or become involved with community projects that focus on enhancing physical activity and dietary patterns of individuals through environmental change.¹⁶

Provision of nutrition advice to new parents

Developing healthy eating patterns in very young children is recognised to be a key early step in supporting lifelong dietary habits.¹⁷ For example, avoiding overly sweet, salty and fatty foods in the early weaning period, and offering a wide variety of different fruits, vegetables and cereals, may positively influence the acceptance of core food groups by children. On the other hand, certain actions associated with provision of food, for example using food treats to reward good behaviour or giving food to allay discomfort, may set up lifelong expectations and habits.¹⁸ Anticipatory guidance by family doctors and paediatricians is standard practice in the United States, and covers many areas of child development.¹⁹ GPs in Australia could consider expanding their role to not only provide advice regarding when to wean and what to feed young infants, but also counsel parents regarding behaviours that support healthy dietary patterns later in life.

Nutrition advice to pregnant mothers

Evidence shows that parental dietary patterns and physical activity behaviours are associated with those of their children.²⁰ Parents may act as role models for children for these behaviours (for example not liking vegetables and being fussy eaters). Children are also directly exposed to both the household food environment and an environment that is either more or less supportive of physical activity or sedentary behaviour.²⁰ Pregnancy is a time when many women focus on their own health to enhance the growth and development of their unborn child. For example, smoking cessation occurs at higher rates in the pregnant population.²¹ A woman may be particularly receptive to nutritional and physical activity education during this time, with long-term benefits both for herself and her children and family.²²

Reorientation of a general practice surgery to support healthy lifestyle

A general practice with a real commitment to improving the lifestyle of individual patients may wish to consider characteristics of the surgery and behaviour of the practice staff in supporting lifestyle change. For example, Grief & Talamayan suggest improvements in the standardised dietary and physical activity education brochures that are available in patient waiting areas.¹⁴ This could be extended to include information about active community events (bike rides, local fairs etc.). Waiting rooms of many clinics offer a collection of 'women's magazines', the majority of which will

include pseudoscientific advice on the latest diets. While I am not suggesting complete removal of such items, balancing this with positive and accurate information is important. The placement of sweets and chocolates to assist charity fundraising in medical clinics undermines attempts to assist patients improve their lifestyles, as does the traditional giving of jellybeans to appease children after immunisations.

Supporting breastfeeding

GPs have a substantial role in supporting breastfeeding, and many GPs are accredited lactation consultants. Breastfeeding has shown a small but significant and consistent association with reduced risk of childhood obesity, controlling for socioeconomic variables.²³

Secondary prevention

Screening

The mainstay of secondary prevention is screening. The GP works in a professional environment ideal for obesity screening. Orientating a primary care practice to routinely measure and correctly interpret the height and weight of all patients is the first step in ensuring that overweight and obese individuals receive intervention in accordance with the National Health and Medical Research Council clinical practice guidelines.²⁴ An Australian study showed that weight status cannot be accurately performed by visualisation alone, and that all children should have height and weight measured and correctly interpreted.²⁵ Despite this, up to 80% of physicians report relying on clinical impression.⁹ Gerner et al. showed that, in Australian GP practices, measuring equipment is often not available and, if present, is not accurate.²⁶ The new Medicare-funded 'Healthy Kids Check' at 4 years of age is one structured opportunity for such screening. Screening in this context goes beyond anthropometrics, to include nutritional and physical activity screening. Grief and Talamayan argue that a nutrition history should be taken for all patients as a benchmark.¹⁴

Management to prevent progression

Focusing on improving physical activity and improved dietary patterns is a less stigmatising and more sustainable approach to management of individuals with overweight and obesity than focusing simply on weight. To provide consistent and accurate goals for patients, GPs need to be familiar with age-appropriate national physical activity and nutritional guidelines, and have educational brochures of these available. Provision of an exercise prescription could become as standard as a pharmaceutical prescription.²⁷

Working as a multidisciplinary team

Lifestyle medicine recognises the need for referral to allied health specialists. Developing collaborative partnerships and referral pathways to nutrition specialists, exercise physiologists and psychologists is an important part of obesity management.¹⁵ The Enhanced Primary Care Program in Australia has the potential to improve patient access to appropriate lifestyle support specialists by providing Medicare benefits for allied health disciplines involved in chronic disease management.²⁸

Conclusions

The complexity of issues that the patient with obesity may present with can be daunting. Considering the efficacy of intervention trials, general practice appears to be a disappointingly unsuccessful environment in which to manage this condition. However, with the adoption of a broader population paradigm, GPs can leverage at many levels to enhance the lifestyles of both individual patients and the greater community.

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Preconception care in general practice: reproductive health plans facilitate public health action

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Introduction

The importance of maternal and paternal health in the development of a healthy baby is clear. The role of the general practitioner (GP) is crucial in delivering public health messages and facilitating public health action for potential parents prior to conception, and can help minimise the risk of adverse outcomes for both mother and baby. As stated by the United States Centers for Disease Control in 2006, the main goal of preconception care is to provide health promotion, screening and interventions for women of reproductive age to reduce risk factors that might affect future pregnancies.¹

Presentations to GPs due to pregnancy-related issues are common, and provide an excellent opportunity to deliver public health messages and actions to help improve the health of the population, both current and future. Routine use of a 'reproductive health plan' in general practice will enhance health literacy and community knowledge about reproductive health issues, thus enhancing public health benefits. Early prenatal care is often too late. It has been recognised that preconceptional health promotion needs to be integrated into women's general health encounters during the potential childbearing period.² This period spans from menarche to menopause and should not be limited only to those years when pregnancy is desired.

Public health action in primary care improves neonatal outcome

One clear example of the benefits of public health action in the general practice setting is the use of preconception folic acid following identification of the link between folic acid supplementation and reduced neural tube defects. In South Australia the prevalence of neural tube defects significantly declined from 2.0 per 1000 births in 1966 to 1.1 per 1000 births in 1999.³ Although the reduction may be attributed, in part, to other medical advances, the contribution of supplementation is clear. Short-term campaigns to promote public awareness of preconception folic acid supplementation have been effective. Ongoing reminders, advice and support from GPs can maintain the momentum to produce an important health outcome.

Routine preconception care in general practice—a common theme

General practitioners are in the unique situation of seeing unreferral patients repeatedly over years.⁴ They have the opportunity to get to know their patients extremely well and to gain their trust and respect. This places the GP in an excellent position to facilitate the modification of lifestyle factors that impact on reproductive health. Advice on appropriate levels of exercise and ensuring protection from potentially toxic substances in the environment at work and at home are common themes in the general practice setting, and have particular value in the preconception period. Issues such as maintaining a healthy weight, appropriate nutritional intake, and avoiding the use of cigarettes, alcohol and other drugs are important for both the male and female partner.

The increasing prevalence of obesity can be assumed to correlate with reduced fertility rates, and the risk applies to both males and females who are overweight. During a preconception consultation, measuring weight and height to enable calculation of the body mass index (BMI) is a quick and effective way to assess this for both partners.

The GP is well placed to advise on the significant decline in fertility with age (Figure 1). The ovarian reserve can be expected to diminish rapidly from the mid 30s and to be extremely low by the age of 40 years. The myth that regular menstrual cycles indicate that 'all is well' needs to be debunked. GPs can assist their patients in assessing ovarian reserve through the use of techniques such as the 'egg-timer' test, which uses a combination of the anti-Müllerian hormone (AMH) level and the

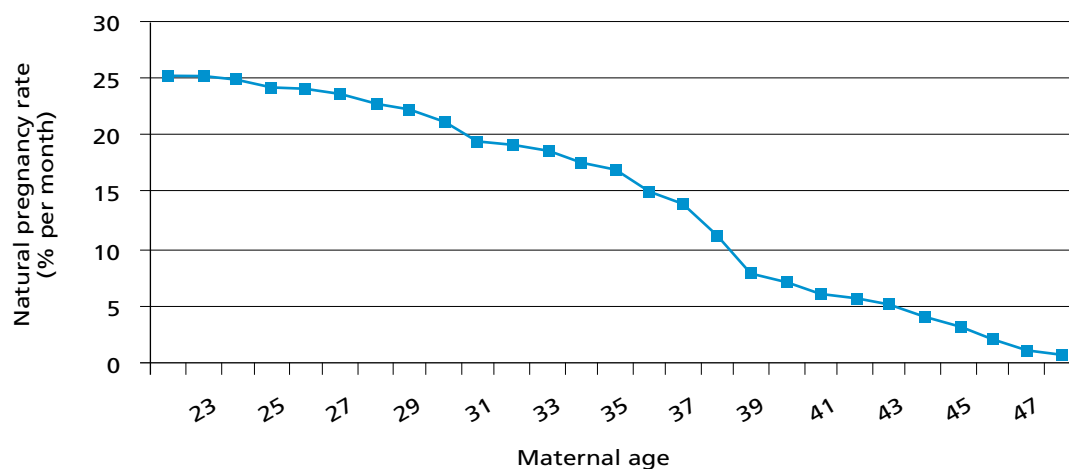


Figure 1: Pregnancy rate (natural conception) by maternal age

antral follicle count from a baseline ovarian ultrasound scan. As the main providers of prescriptions for hormonal contraception, GPs are uniquely positioned to enquire proactively about future pregnancy plans. They can provide give accurate information regarding fertility and age when consulted for contraceptive advice by women aged 35 years and over, particularly those who have not yet started a family. The AMH component of the egg-timer test is accurate even when a woman is currently taking hormonal contraception, and AMH is far superior to FSH in identifying women with reduced ovarian reserve.⁵ The GP will need to refer patients to specialists where the need dictates. Early referral is advised should the presence of moderate to severe endometriosis or polycystic ovarian syndrome (PCOS) be suspected. Aside from the fertility issues, women with PCOS may have significant future health implications and need particular attention paid to their cardiovascular risk factors.

Specific medical conditions

Although public health initiatives must consider the community as the unit of concern, it is the individual within the community that presents a specific, unique situation requiring individualised management. Appropriate treatment of specific conditions can minimise potentially serious obstetric outcomes, and medication review is essential. Teratogenic medication should be avoided, and stabilisation of medical conditions such as diabetes, thyroid disturbances and cardiac disease achieved. Potential exacerbation of immune disease and the effects of mental health issues in pregnancy need to be considered.

Advances in medical genetics continue to escalate, and the provision of counselling needs to be considered in situations where a genetic condition is present or suspected. Similarly, the provision of information about the increased chance of chromosomal abnormalities with increased maternal age should start in general practice, and be incorporated into the reproductive health planning process. The chance of a woman giving birth to a baby with trisomy 21 (Down syndrome) increases dramatically with maternal age, as shown in Figure 2.

Utilising public health initiatives: immunisation and cancer prevention

Immunisation illustrates public health in action and, in the preconception situation, provides another example where general practice and public health initiatives are interlinked. All women contemplating pregnancy should have their rubella and varicella immunity assessed. Vaccination for these diseases is a simple way to reduce risk to mother and baby. Precautions may need to be taken to ensure pregnancy does not occur either during a course of immunisation or in the month after the last vaccination. Influenza vaccination is also recommended as there are special risks in pregnancy. The Pap smear check should be up to date prior to a planned pregnancy and, particularly in older women or those with a family history of breast cancer, checks of the breasts to exclude a pre-existing malignancy may be warranted.

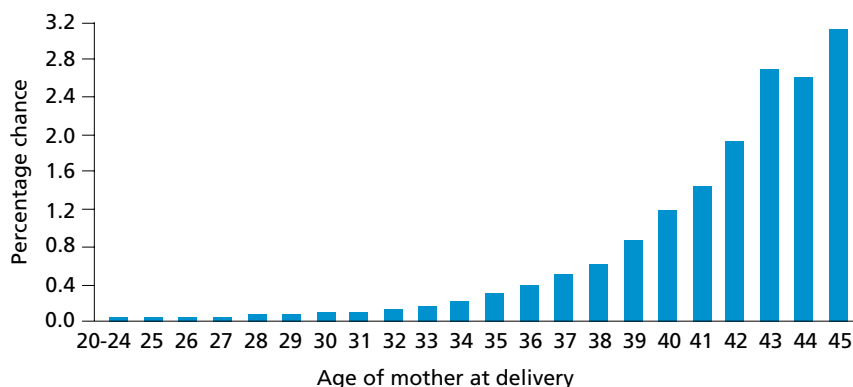


Figure 2: Risk of delivery of a live baby with Down syndrome (trisomy 21) by maternal age at the time of delivery
Source: www.genetics.com.au/factsheet/fs28.html

Communicable disease

The control of communicable disease has special importance in the pregnant woman, and the GP can provide public health advice regarding the infections relevant to this group of patients. Toxoplasmosis, listeria and the more common salmonella and campylobacter present a risk to the foetus, so the preconception discussion should include information regarding safe food handling and preparation, foods likely to be a source of listeria and the avoidance of handling 'kitty-litter'. Other communicable diseases of relevance are the sexually transmitted diseases, particularly in regard to their potential contribution to infertility.

Maximising the message and minimising the risks and the cost

Social trends have clearly affected reproductive health in many countries including Australia. Delays in childbearing due to changes in the roles of women in society have had a significant impact upon reproductive health. There are implications for an individual woman due to the reduction in her ovarian reserve and her ability to spontaneously fall pregnant, with the consequence of broader health care and economic implications.

The time has come for a 'reproductive health plan' to be a routine part of general practice. Planning in advance should increase community understanding of the effects of maternal age on natural fertility rates, and reduce the risk of women leaving childbearing until after their ovarian reserve is significantly depleted. This aspect of planning would have particular public health benefit, as increased maternal age at the time of first pregnancy is associated with increased demand for reproductive medical procedures—at a high cost to the community. A reproductive health plan may also help contribute to improved community health and wellbeing by identifying potentially preventable

problems. To maximise their utility, such plans would need to span the potential childbearing period from menarche to menopause, and should not be limited only to those years when pregnancy is desired.

Conclusion

In South Australia the Government's very useful Perinatal Practice Guidelines are widely available, providing GPs and other professionals with clear guidance on appropriate management of patients before and during pregnancy.⁶ Reproductive health plans are not currently recommended as standard practice; however, with the broad range of potentially preventable health issues that would be addressed, we need to consider how such plans could add value to the South Australian community.

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GP planning in a pandemic*

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Background

The 1918–19 influenza pandemic killed more than 10 000 Australians.¹ Extrapolating these mortality rates to the current Australian population indicates that an estimated 200 000 people would be killed by a similar influenza pandemic today.² The other estimated effects are shown in Box 1.³

Box 1: Potential impact of pandemic influenza if we are not prepared

- > 40% of the population (8.5 million Australians) would show clinical signs of infection and 2.4% of those affected would die (around 200 000 people)
- > 50% of the population may not go to work at the peak of the pandemic
- > several waves of infection, each lasting up to 12 weeks, could occur, with disruption to services that could last as long as 2 years

Human-to-human transmission has been implicated in up to 25% of cases of H5N1 avian influenza. With a mortality rate of 62%, it is fortunate that sustained human-to-human transmission has not yet occurred.⁴ With the recent outbreak of H1N1 swine influenza, the need for general practitioners (GPs) to be prepared has escalated.

Why do GPs need to be prepared?

There are a number of good reasons why GPs will need to be prepared for pandemic influenza (PI).^{5,6} These include: workload/business continuity, medico-legal, ethical and personal reasons.

Business continuity

In a pandemic outbreak of influenza, one in four people within the community may be affected. This will have a significant impact on the workload of the general practice, which may have a similar number of staff absent for the same reasons. In addition, some staff may choose not to come to work. Without a number of changes, it will not be feasible for GPs to carry on as usual, as well as dealing with the increased workload.^{5,7} Most patients contracting PI will be urged to stay at home.³ Many will likely contact their GP and some will want to see them, even when alternative arrangements are available, for example flu clinics. Conservative estimates suggest that there would be an additional 20 GP consultations per week if every GP in Australia was working and only 50% of those affected saw their GP.^{3,7,8}

To cope with the increased workload, GPs will need to:

- > review the practice's infrastructure and staff
- > reduce/cancel non-clinical activities, including meetings and teaching
- > consider offering some consultations by phone and bolstering telephone triage
- > discuss amalgamating or teaming up with neighbouring practices
- > delegate, alter, share or defer some tasks, for example prevention visits, minor surgery, routine home visits, chronic disease management visits.⁵⁻⁷

Medico-legal

There is no guarantee that emergency powers legislation will extend to providing (or altering) the medico-legal circumstances of clinical practice.⁹ Practice staff will expect a safe work place. Similarly, any delegation of clinical tasks will need to be accompanied by appropriate training and support.^{6,10}

* **Editor's Note:** Pandemic planning is a continuing priority action of governments. Most planning anticipates new diseases that are highly infectious and associated with high morbidity and mortality. Whilst the current H1N1 pandemic is less severe than forms assumed in pandemic planning, current experience will be incorporated into future planning.

Ethical

Practices will need to recognise that there may be a range of views, conflicting values and possible stigmatisation associated with working during a pandemic.¹¹⁻¹³ Does the GP have a duty of care to continue working in the face of significant personal risk of harm? This has generated significant debate in the literature, with some arguing that 'professional codes of conduct do not insist on normal working when there is personal risk'.¹⁴ Most GPs themselves indicate that they would keep working,^{10,15} which is what happened in the SARS outbreak¹⁶ and previous pandemics. Nevertheless, concern about being adequately protected against PI will likely influence their preparedness to keep working. A recent Australian survey found that less than half of a sample of hospital health care workers believed that antivirals like oseltamavir would protect them against PI.¹⁷

Personal

In the event of a pandemic, GPs have expressed a strong sense of moral obligation to look after their families and their patients and staff, provided that they can reduce the risk of PI to themselves and their families.^{10,14} The importance of adequate and early prophylaxis is highlighted in a recent modelling study. The investigators found that, providing antivirals are distributed to contacts before exposure in the early stages of a pandemic, the probability of an outbreak can be considerably reduced.¹⁸

Unfortunately, most Australian general practices are not currently prepared for PI;^{15,19} some are even confident that it would not greatly affect their work.¹²

Where can GPs get good information?

The Australian Government has been active in PI planning. The Australian Health Management Plan for Pandemic Influenza 2008³ includes a number of annexes, including one for primary care. In addition, there are published checklists to assist GPs with planning^{5,6,20} and a range of web sites, both Australian (<http://www.flupandemic.gov.au>; <http://www.pandemic.net.au/resources.html>) and international (WHO <http://www.who.int/csr/disease/influenza/pandemic/en/>; CDC <http://www.cdc.gov/flu/Pandemic/>). These documents cover the major issues, including business continuity, communication, triaging of patients, infection control and quarantine, clinical management, use of antivirals, vaccination and planning for particular needs. The case study (at the end of the article) provides an outline of some of the 'on-the-ground' issues that practices may face.

What is the GP's main role during a pandemic?

GPs will have a key role in keeping the primary health care system functioning.^{5,6,20} They will need to prioritise their workload so that they can continue to manage patients with acute and chronic illnesses, in addition to providing health-related advice. Patients will ask their GP for advice on how to manage both suspected and actual PI cases at home. GPs will also need to be advocates for public health strategies to minimise the spread of PI,^{3,7} especially given both the limited pandemic awareness and the variable likely adherence by the public to using masks and social distancing techniques.^{21,22}

What issues need further discussion, planning and resolution?

Protection of frontline workers and their families

If Australian GPs and their staff are going to have an estimated extra 600 000 consultations per week, they will be working hard to keep up with the demand. They will want immediate assurance that there will be access to antiviral medication, vaccinations (when and if available) and national personal protective equipment (PPE) stockpiles.¹⁹ They need to be confident that they will be able to go home to their family and not pass on the disease (see Box 2).¹⁰

Box 2: From The Advertiser

South Australia's first (death from influenza in 2007) – a 48-year-old receptionist who died at the Royal Adelaide Hospital on Tuesday – worked at a doctor's surgery in Adelaide's northern suburbs. (The Advertiser 29 August 2007)

Masks for personal protection need to be fit-tested for individual face shapes, to choose the make that provides an adequate seal during normal movements (see <http://www.flupandemic.gov.au/internet/panflu/publishing.nsf/Content/safeuse-dvd-1> for a demonstration of how to fit PPE). The testing process takes about 30 minutes and requires a sealed room and specialised equipment. In the SARS outbreak over 97% of GPs wore masks.²³ In order for masks to be immediately accessible, this fit-testing needs to occur before the start of a pandemic.

Cost of preparation and providing medical care during a pandemic

Clarification is needed on how and when PPE will be provided in the early stages of PI. One recent estimate of the cost of PPE materials for a solo GP and practice nurse was \$644 per week.²⁴ There will be other significant costs associated with modifying waiting rooms and disposing of a large volume of potentially infectious materials.²⁵

The Medicare Benefits Schedule (MBS) currently pays GPs primarily for face-to-face contact based on time and the complexity of consultations. The provision of telephone consultations, practice nurse consults, public health data gathering and mass immunisation campaigns may need to be written into the MBS to provide income in place of deferred activities such as scheduled chronic disease management. Some GPs will need to consider the costs if they decide to close their practice(s) during a pandemic. Patel and colleagues¹⁹ have indicated a need to inject funds into hospital care and primary care preparedness simultaneously.

Medico-legal issues

There is remaining uncertainty about a range of medico-legal issues,^{6,7} including:

- > occupational health and safety and human resources (for example staff disability and death, paying absentee staff)²⁶
- > duty of care and the choices regarding seeing versus not seeing patients^{14,27}
- > indemnity coverage for alternative patient care strategies, including telephone consultations and those done by practice nurses.⁷

As employers, GPs need to know their responsibility to staff.¹⁴ Can staff take unsanctioned leave or refuse to care for suspected influenza cases? Will WorkCover insure salaries of those staff who catch influenza? Can employees and insurance companies waive the need for a doctor to provide sick certification when medical resources will be under intense pressure? These questions and others are best answered prior to a pandemic. There is no discussion of the issues surrounding duty of care or indemnity in the most recent update of the Australian Health Management Plan for Pandemic Influenza, despite considerable concern among GPs.^{10,28}

Ethical: distribution of masks, antivirals and pandemic vaccine

The ethical framework in the Australian Health Management Plan for Pandemic Influenza discusses broad

principles rather than providing clear guidance for GPs. Timely access to medication for patients, particularly in rural areas, will depend on where stockpiles are located and how much will be entrusted to GPs. There are also uncertainties around the use of antiviral medication for practice staff and families. Similar clarification is also needed for the provision of masks, other PPE and vaccines, and whether the practice will be responsible for the rationing of use of these items. If the GPs do not have stock in hand, access to stock (PPE, antivirals, pandemic vaccine) will then become a vital issue. Secure storage near the practice, or in pharmacy or local/state government facilities, police stations etc., will need to be clearly decided and managed.

Dealing with unknowns

Ongoing updating of GPs with clear, succinct, relevant and comprehensive information will be essential to enable doctors to continue to work and address many of the emerging issues, especially where there are a number of unknowns. During the SARS outbreak there were regular updates to doctors across Australia. The need to keep abreast of the pandemic as it unfolds will have to be built into the workload of staff. Practices will need regular internal briefings and meetings to review, among other matters, the availability of PPE stock, work rosters and triaging of patients. Other relevant information including patient outcomes and resources, hospital status and waiting times will also be needed.

Summary

Pandemic planning is a complex logistical process that is continuing to evolve.¹⁹ The current plans in South Australia have highlighted some of the issues outlined above, and will need ongoing review and updating. A primary care pandemic advisory committee is needed that can discuss options related to implementation of the primary care pandemic plan. Good planning needs to focus on the planning process and not just the production of a written document.¹⁹ There is also an important role for the same committee to provide education, support and training for GPs and practice staff to facilitate their preparedness. The sooner a planning group involving all the relevant sectors is operating, the better prepared South Australia will be. General Practice SA Inc. (GPSA), the State Division coordinating group, is well placed to take up this role. Even if all the issues are not addressed beforehand, the discussion stage is needed prior to a pandemic rather than being sorted out on the run during such a crisis.

Case study of pandemic planning in general practice

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Recently, two mock influenza pandemic exercises were coordinated in the Limestone Coast region of South Australia (SA): 'Exercise Hawk Flu' in a large general practice of 14 doctors in Mt Gambier, and 'Exercise Seagull' in a solo general practice in Robe. The aim was to provide realistic training and test the responses and coordination of staff and patients for an outbreak of pandemic influenza (PI). It gave the staff the opportunity to observe how potentially infected patients would flow through their service and to identify glitches and allow improvements to be made, with the main focus being on infection control.

The following insights were gained from these exercises:

Infection control

- > Cough etiquette and respiratory hygiene should be exercised in all general practice clinics now to reduce the spread of seasonal influenza and to prepare patients for PI. Resources needed include: tissues, surgical masks, antimicrobial hand wash and hand washing sinks, foot-pedal flip-top bins to dispose of tissues in waiting rooms, and triage stations at the entrance to the clinic.
- > Patients are contagious for 24–48 hours before symptoms start, so upgraded infection control is necessary.
- > Patients, even children, were compliant during both exercises with wearing of surgical face masks in waiting rooms, and reported appreciation that efforts to reduce infection were in place.
- > Implementing social distancing rules to reduce cross-infection is important. In our exercises we placed a table in front of the reception area to deter patients from leaning on the reception desk. Chairs were placed 1 metre apart in waiting rooms.
- > The isolation, grouping and supervision of suspected PI patients needs to be carefully addressed to ensure that other patients are not compromised in the waiting room. In Exercise Hawk Flu there was a dedicated entrance to a separate waiting room. One consulting room was identified for seeing potentially infected patients, and was emptied of all unessential equipment to aid sterilisation between patients.
- > All signage relating to infection control practices and other staff/patient information needs to be clear, large enough to read and well positioned, and available in different languages if required. Telephone reception staff should warn symptomatic patients that they will be expected to apply a surgical face mask and sterilise their hands on entering the clinic building.
- > A challenge for one of the GPs participating in Exercise Hawk Flu was the use of his stethoscope. Close proximity to his face was an issue for infection control as he was required to use the same stethoscope for each patient. In Exercise Seagull at Robe Community Health Centre, four stethoscopes were on hand to assess patients, and these were cleaned with detergent wipes in between patients.
- > Waste disposal presented a huge challenge for both exercises. During Exercise Seagull it was estimated that two large wheelie bins would be required daily to dispose of personal protective equipment (PPE) and other clinical wastes (a total of at least 10 extra full wheelie bins required per week in one solo general practice). Follow-up with local councils has been made to develop plans for how this extra waste would be disposed of during a real pandemic.
- > Promotion of the uptake of seasonal influenza vaccination is important. If a pandemic were to occur, staff who had received the annual (seasonal) flu vaccination would be combating only the new influenza virus as they would already have antibodies to protect against annual influenza.

Personal protective equipment

- > All practice staff in close proximity to patients must be fit-tested with P2/N95 respiratory masks.
- > Practice staff need to be trained in the donning and doffing of PPE. With practice, each donning and doffing of gloves, masks, gowns and goggles took approximately 1.5 minutes during the exercises.
- > PPE must be worn correctly and staff must continually check each other's PPE for correct fit and wear.
- > An initial stockpile of 2 weeks supply of PPE is recommended for all general practices. Most PPE has a shelf life of 5 years.

Staffing

- > General practices should review their staffing levels and staff roles, and determine whether there is a need for reassignment of some staff to deal with the increase in flu patients.
- > More staff would be required to triage patients who telephone or attend the practice. This would be a challenge in small practices.
- > All individuals and staff should be encouraged to develop their own immediate pandemic plans with regard to care of dependant minors and seniors, and decide whether they would be available to work during such a crisis.

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The role of general practice in disaster planning and response—bushfires

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Introduction

Recently, there appears to have been an increase in the incidence of major weather-related disasters. Floods and fire at the level of '100-year events' have occurred throughout Australia over the past few months. While disasters are inevitable, this increased incidence has added a level of urgency to discussions of the central role of general practice and primary health care (GP & PHC) teams in their management.

This paper will briefly outline the duality of the centralised and the community-based management of disasters; discuss the role of general practitioners in society; reflect on where GP & PHC fits within the major incident response framework; and discuss some of the risks of regimenting GP & PHC responses to major incidents.

Disasters and major incidents in the first world and the third world

There is considerable discussion about the use of appropriate terms to describe major events. These are not debated in this paper. Rather, a 'disaster' is considered as having occurred when normal community and organisational arrangements are overwhelmed by an event, and extraordinary responses need to be instituted. This differs from a 'major incident' with respect to the disruption of organisational arrangements. In a disaster, the whole of societal infrastructure is affected, whereas a major incident, while still requiring external and extraordinary responses in its management, does not necessarily depend on these resources for the ongoing social functioning of that community. In this sense, disasters are more likely to occur when the event is truly of catastrophic proportion and pervades all levels of society. A major incident, on the other hand, may involve pockets of such devastation where input of external resources is essential, but the integrity of the community at large is maintained.

As local and intermediate resources tend to be more developed and resilient in first world countries, disasters are more commonly seen in third world countries (Hurricane Katrina is an exception). As the focus in this paper is bushfires and floods in the Australian environment, I will therefore refer to major incidents rather than disasters.

Emergency management and community response

In Victoria the State Health Emergency Response Plan, or Health Displan, has been put in place by the Department of Human Services to manage major medical emergencies.¹ This is coordinated through the Emergency Management Team (EMT), which is activated when two or more agencies are involved in a major incident. While the Health Displan talks of general practitioner (GP) involvement via the GP Sub Plan, and cites the Divisions of General Practice as being the conduit through which GP involvement is managed, the reality is that almost all GP involvement is still ad hoc.²

Virtually every major incident occurs within a community, and it is usually community members who raise the alarm. The initial response is usually carried out by community members before the EMT becomes involved (i.e. before two or more agencies are involved). At this stage, and indeed, I would argue throughout the response phase, community members mount a second tier of response that is parallel to that of the EMT.

In the case of a bushfire, for example, this community response might even include the local Country Fire Authority unit. During the recent Black Saturday fires in Victoria, one fireman commented on the radio that shortly after the alarm was raised, his unit saw a house burning, so they put it out, even before the formal EMT-led response had been instigated! At this stage, I would consider that unit to still be part of the community response and this would persist until it had been incorporated into the centrally-controlled EMT response.

The EMT response necessarily tends to be a military-like operation with a command and control structure that is based on harm minimisation, risk management and hazard reduction. It seeks to protect 'assets', which may include community members' lives. The community response is quite different. It is usually ad hoc and chaotic, is based on responding to the known vulnerabilities of community members, and relies on scarce and often inadequate local resources and networking.

The current role of GP & PHC lies firmly in this latter group—the community responders—and why this should remain so is discussed below. Meanwhile, the question has been raised as to whether this group would not do this better if they were centrally organised?

The nature and role of GP & PHC

The Royal Australian College of General Practitioners defines general practice as 'that component of the health care system which provides initial, continuing, comprehensive and coordinated medical care for all individuals, families and communities and which integrates current biomedical, psychological and social understandings of health'. It also claims that 'primary care involves the ability to take responsible action on any problem the patient presents, whether or not it forms part of an ongoing doctor-patient relationship'.

The American Academy of Family Physicians offers a similar definition on the role of family physicians as '...first contact care and assumes ongoing responsibility for the patient in both health maintenance and therapy of illness. It is personal care involving a unique interaction and communication between the patient and the physician. It is comprehensive in scope and includes the overall coordination of care of the patient's health problems, be they biological, behavioural or social'.

Murtagh³ emphasises the patient advocacy component of this role as '...the patient requires a trusted focal point in the often bewildering health service jungle. Who is to do this better than the caring family doctor taking full responsibility for the welfare of the patient and intervening on his or her behalf?'

In considering these definitions, it is clear that the GP is ideally placed to offer on-the-ground support to the members of his/her community in a time of adversity. The GP & PHC teams form a solid foundation for the resilience of the community. They are ideally placed to be at the forefront of the response phase, on biological, psychological and social levels, and their early involvement hastens both the transition to the recovery phase and the recovery itself.

The risks of imposing a centralised approach on GP & PHC

Another victim of the Black Saturday fires told the story that his house was under direct threat when he saw the very welcome red and blue flashing lights of an approaching fire appliance. He thought he was being saved by his local unit, but it was, in fact, a unit from

New South Wales that had become lost in the smoke. His house was saved, nonetheless. This story epitomises the difference between the local community response and the EMT response, and offers a parallel for the GP situation.

While the outcome was the same, the incident involved an element of serendipity. Many victims, like the man in the story, expected their local units to protect their houses, often unrealistically. In a major incident like Black Saturday, the local units are organised for the greater good, and this sometimes means sacrificing 'local assets'. I do not argue that this should not be the case.

On the other hand, the role of the GP & PHC is far better carried out if they do what they do well for the people that they know well. As part of the local community response, they strengthen communities by their mere presence. This was certainly reported back to me when I just walked down the main street of Cockatoo on the day after Ash Wednesday in 1983. GPs are seen as reliable advocates for the people of their community and provide a sense of security.

Conclusion

During my work in the years after Ash Wednesday, and throughout most of 2005 in Aceh following the 2004 tsunami event, it was primary health care that the people needed. This is the case not only for the recovery phase but also the response phase. One of the greatest weapons that a community has during and following a major incident is a well-meaning, well-connected, easily recognisable local family doctor.

Support, preparation and coordination are likely to improve the delivery of GP & PHC services to communities dealing with adversity and major incidents, while centralising these services would remove their local strength. Some of the Divisions of General Practice may be able to offer this, particularly if their senior staff comprise active clinicians. A community that can rely on its GP & PHC team to be there for them in adversity will be far stronger, have greater resilience, retain its identity and recover far more quickly and completely.

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One GP's reflections on the 2005 Eyre Peninsula bushfires

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Cummins Medical Clinic

Cummins Medical Clinic is a rural general practice in South Australia providing comprehensive care to a community of 3300 people on Lower Eyre Peninsula. It, like most rural practices, supplies medical expertise to the local hospital as well as providing general consulting services.

In this setting there is an expectation that part of the obligation of the GP to the community is an involvement in planning for disasters. I've been asked to write this article on the basis of my involvement as a GP in the bushfires on Eyre Peninsula in 2005.

A true disaster, I think, is something that outstrips your resources. Trying to logically plan for such an event is difficult and, at times, lacks logic. The local Division of General Practice had previously expended time and money on local disaster planning. While the plan was utilised that day, it also was found to have some obvious deficiencies that were not apparent during previous testing.

The lessons we learnt (in italics below) that day were numerous. The day was one of extreme weather—40+ degree heat and gale force winds; there was also a fire at Wangary some 60 kilometres away which had not been extinguished; and we were initially unaware of the fire in our area.

Normally on a Tuesday I would travel 80 kilometres north to the township of Lock to consult. I didn't go because of a 'bad feeling' about the day. Common sense prevailed but should we have had a policy?

My colleague Dr Grobler and I closed the clinic and went to the hospital when we became aware of the fire. A fire crew of five injured men arrived without warning, all with facial and inhalation burns. They were triaged to a large ward where one GP and two or three nurses could observe all five while awaiting retrieval. We learnt that relying on normal communication doesn't necessarily work in severe circumstances.

Normally, three of the five injured fire crew would have been intubated for airway protection but we couldn't afford the resources. They were closely observed and rapidly retrieved. We learnt that normal protocols and procedures may need rapid re-evaluation and adjustment under these conditions.

The disaster plan that had previously been developed included support from other GPs and hospitals. Dr Graham Fleming travelled from Tumby Bay some 40 kilometres away to lend a hand to the influx of minor injuries, for example irritated eyes. He then faced the difficult decision of attempting to return to his own hospital when the fire front cut off transport access between the hospitals.

An external disaster such as this places the staff that you normally rely on in a difficult situation—either attending to their duties at work or protecting their own homes. Some individuals paid an extraordinary price that day based on selfless decisions. Should we expect this of them?

Although there was never an immediate threat to the hospital, it also became apparent that we needed a clear evacuation procedure. This has since been tested through an 'Emergo' scenario but, prior to this, at the time of the fire emergency, we had not adequately addressed this situation.

The most important lesson of the day was to effectively use all the available resources—the hospital kitchen hands managed a collection area for the displaced people arriving at the hospital; reception staff from the medical clinic filled in the paperwork at the hospital; and Country Fire Service sheds were equipped with eye wash equipment and the radio operator was instructed in its use.

Obviously, this account is not as an expert witness but as an individual who was at the wrong place at the wrong time, and relies on my hazy recollections of a very difficult day. However, I hope it may give you some food for thought.

Communicable Disease Control Branch Report

Communicable Disease Control Branch Disease Surveillance and Investigation Report 1 January to 31 March 2009

The Disease Surveillance and Investigation Section (DSIS) of the Communicable Disease Control Branch (CDCB) conducts statewide surveillance for notifiable disease enabling analysis of health data and initiation of specific public health actions to prevent further spread. Specified data are provided daily to the National Notifiable Diseases Surveillance System.

Weekly summaries of notifiable diseases in South Australia (SA), as defined in the *Public and Environmental Health Act 1987*, are published on the SA Health website. Included are counts of notified infections, information about current cluster and outbreak investigations as well as historical data.

Some investigation and control activities are conducted in conjunction with partner agencies that provide expertise and authorities under other Acts in SA. These include OzFoodNet, various Environmental Health Branches of SA Health, Primary Industries and Resources SA, IMVS, SA Pathology and Environmental Health Officers (EHO) from local government.

Summary

Between 1 January and 31 March 2009, the DSIS collected a total of 2106 reports of notifiable diseases, including a seasonally consistent number of 706 reports of gastrointestinal diseases.

> Investigation and control activities included:

- > 706 cases of pertussis, including one cluster in a childcare centre
- > 26 cases of cases Shiga-toxin producing *E. coli* infection
- > 19 cases of invasive pneumococcal disease
- > 18 cases of shigellosis
- > 9 cases of legionellosis
- > 4 cases of invasive meningococcal disease
- > 4 cases of listeriosis
- > 3 cases of hepatitis A
- > 2 cases of Q fever
- > 1 case of measles

- > 1 case of brucellosis
- > 1 typhoid case
- > 5 outbreaks of gastroenteritis due to norovirus
- > 4 outbreaks of gastroenteritis - no agent identified
- > 2 outbreaks of salmonellosis
- > 1 cluster of Shiga-toxin producing *E. coli* cases

VECTORBORNE DISEASE

Two Arboviruses that cause disease in SA, Ross River virus and Barmah Forest virus, are spread by mosquito vectors. These infections usually demonstrate cyclic patterns of disease, peaking in summer months. Each year, in early summer, a health alert is released from CDCB to raise awareness of these infections, and a prevention program, the *Fight the Bite* campaign, has operated in SA since 2004.

Common symptoms of arboviral disease include arthralgia, rash, flu-like symptoms and swollen glands; these range from mild to disabling; complications occur rarely.

Barmah Forest virus

In first quarter of 2009, ten cases of Barmah Forest virus infection were reported compared to nine in the same period of 2008. Cases comprised six males and four females, with an age range of 14–56 years.

Ross River virus infection

Between January and March 2009 inclusive, 77 cases of Ross River virus infection were reported (31 males, 46 females, age range: 12–75 years), compared to 55 in the same period of 2008. As in 2008, these numbers are low compared to the number of cases reported in epidemics.

Dengue fever

During the first quarter of 2009, eight cases of dengue fever were recorded, compared to nine cases in 2008. Cases comprised three males and five females, with an age range of 10–46 years. These infections were acquired overseas; three in Pacific islands, four in Asia and one in South America.

Malaria

The three cases of malaria reported in first quarter of 2009 were all acquired overseas. Cases comprised two males and one female, aged from 5–27 years. All cases were caused by *Plasmodium falciparum* and reported exposure in Africa.

ZOONOSES

Brucellosis

Notifications of brucellosis are rare in SA and generally result from infections acquired overseas or undiagnosed chronic infections. The last case of brucellosis reported SA was in 2007.

One case of brucellosis was reported in a 16-year-old male from rural SA who had been on a trekking holiday overseas; during the incubation period he had consumed food consistent with exposure. Further characterisation by IMVS, SA Pathology identified the causative isolate as *Brucella melitensis*.

Hydatid Disease

Hydatid disease, caused by the larvae of the tapeworm, *Echinococcus granulosus*, is now rare in SA. Hydatid cysts, which usually appear in the liver or lungs but can also occur in other viscera, result from this infestation.

One case was reported in the first quarter of 2009 in a 59-year-old male from metropolitan Adelaide whose medical history suggested past rather than recent infection.

Q fever

Q fever is a zoonotic disease caused by *Coxiella burnetii*, and cases often have direct exposure to animals, commonly sheep, cattle or goats, that are natural reservoirs for this infection. Typically, cases are males aged between 15 and 60 years with occupational exposure to animals in the meat and livestock industries. An average of 20 cases per year has been reported for the last 10 years.

The two cases of Q fever reported in the first quarter of 2009 were males aged 30 and 56 years. One was employed in a meat industry; the other lived in rural SA, and had occasional animal contact.

VACCINE PREVENTABLE DISEASES

Influenza

The Disease Surveillance and Investigation Section collates datasets from both laboratory and clinical sources to describe influenza in SA. Several laboratories report positive tests to the Section (SA Pathology; IMVS, SouthPath, Women's and Children's Hospital). Clinical diagnoses of 'influenza-like illness' are collected from two sources: Royal Australian College of General Practitioners members participating in the

Australian Sentinel Practice Research Network (ASPREN), and emergency departments of several public hospitals. These combined data provide a weekly picture of confirmed influenza infections and influenza-like illness activity across the state.

In the first quarter of 2009, 11 reports of laboratory confirmed influenza A and three reports of influenza B were recorded, compared to a total of four cases in the same period last year.

Invasive *Haemophilus influenzae*

The introduction of Hib vaccine in 1997 resulted in a reduction in the number of cases of invasive disease due to *Haemophilus influenzae* type b. However, cases of Hib disease continue to occur in unimmunised or partially immunised children. Other types of *Haemophilus influenzae* still cause disease.

Four cases of invasive *Haemophilus influenzae* infection were reported in the first quarter of 2009. Cases comprised two males and two females aged 1, and 19–54 years. All cases were hospitalised because of the disease.

One *Haemophilus influenzae* isolate was type f; the other three isolates were unencapsulated strains (untypeable).

Invasive pneumococcal disease

A common bacterium, *Streptococcus pneumoniae*, is the cause of invasive pneumococcal disease; and many individuals carry the organism harmlessly in the respiratory tract. *S. pneumoniae* is a frequent cause of otitis media in children, and pneumonia in all age groups. Two vaccines help protect against some of the 90 identified serotypes of *S. pneumoniae* infection: a 23-valent vaccine; and a seven-valent vaccine for infants and children.

Between 1 January and 31 March 2009, 19 cases of invasive pneumococcal disease were reported, compared to seven in the corresponding period of 2008. Notification recorded infection in eight males and 11 females, with an age range from <1-96 years. Eighteen cases were admitted to hospital because of the illness, and most were residents of metropolitan Adelaide. One case was reported as Indigenous.

Communicable Disease Control Branch Report

Measles

Measles is a highly contagious viral infection spread by the respiratory route and is rare in SA. Vaccination protecting against measles, has been available in Australia since about 1968, and immunisation cover in SA is high. Susceptible contacts are unvaccinated or partially vaccinated people who have been exposed to the case. After exposure, susceptible contacts can be offered quarantine, vaccine or immunoglobulin, as appropriate, to avert further spread of measles.

One case of measles were reported between 1 January and 31 March 2009. The case was a 16 year-old male from metropolitan Adelaide, unvaccinated for measles, who acquired the infection overseas. On return, he was diagnosed with measles and was resident in Adelaide for the whole infectious period. Intense contact tracing by both DSIS and the Infection Control Service at a major Adelaide hospital resulted in administration of vaccine and immunoglobulin to many people, including school colleagues and hospital emergency department attendees. Information was distributed to many others in accordance with national guidelines. All commercial premises known to have been visited by the case were issued with information.

A Public Health Alert informed medical practitioners of the presence of measles in the metropolitan area, and a media release alerted the public to locations of potential exposure. The IMVS, SA Pathology undertook daily measles testing to provide timely identification of new cases. All potential cases were followed up by CDCB staff.

No further cases were detected, and after two full incubation periods the level of alert reverted to normal.

Mumps

Mumps cases are diagnosed by detection of mumps-specific IgM antibody plus a clinically compatible illness. Before national vaccination, mumps was a childhood disease in SA, with peak incidence in the 5–9 year age-group. However, many young adults currently aged between 29 and 43 years only received a single mumps vaccination in their youth and these individuals are encouraged to seek further vaccination. The increased susceptibility of this group is reflected in cases reported since 2000, when peak rates have been reported in older adolescents and young adults.

Five cases of mumps were notified during the first quarter of 2009, compared to seven in for the same period in 2008. Cases comprised three males and two females with ages ranging from 8–62 years. One infection was acquired overseas on the Indian subcontinent.

Pertussis

Although pertussis vaccine was introduced in 1963 in SA, more than 40 years later, *Bordetella pertussis* infection remains prevalent, and demonstrates variation in time, dramatically increasing in spring every 3–5 years. In recent years, pertussis has occurred most commonly in those over 20 years of age. In the last quarter of 2008 a marked increase in cases was recorded, signalling the onset of an epidemic.

Between January and March 2009, 706 cases of pertussis were notified, compared to 87 in the same period of 2008, but consistent with 1016 cases reported in the last quarter of 2008.

This quarter, cases comprised 277 males and 429 females with an age range of <1–91 years, and a mean age of 40 years. Cases were geographically dispersed throughout SA. Most cases were more than 20 years of age (74%). Nineteen cases were less than 12 months old at diagnosis, of whom ten were appropriately vaccinated for age.

A cluster of pertussis cases occurred in a childcare centre in rural SA. Control of spread was achieved by close cooperation with the centre and local GPs; information and advice was provided, and some children and staff were recommended to receive chemoprophylaxis.

Rubella

Rubella infection, 'German measles', is caused by a virus and was first described by German physicians. Although symptoms are usually mild, infection in pregnant women may result in infection of the foetus and cause serious damage, especially in the first eight to ten weeks of pregnancy. The risk of foetal damage diminishes if the mother acquires rubella infection after 16 weeks gestation, and is rare after 20 weeks. Vaccination provides protection against rubella infection.

One case of rubella was reported in the period under review, in an unvaccinated 28-year-old male from metropolitan Adelaide who had recently travelled to Asia.

Varicella infection

Among 412 confirmed cases of varicella infection reported during the first quarter of 2009 were 182 males and 230 females with ages ranging from <1–98 years. These data are consistent with the 430 notifications in the same period of 2008.

Medical notification characterised 84 infections as chickenpox, these cases had an age range of <1–80 years, but 86% of cases were less than 35 years of age. A further 249 cases were characterised as shingles; these cases ranged in age from 5–98 years; 88% were 20 years of age, or more.

GASTROINTESTINAL DISEASES

In first quarter of 2009, gastrointestinal illnesses accounted for 34% of disease notification in SA, compared to 57% of notifications in the first quarter of 2008. The difference is largely due to the current denominator being inflated by the high number of pertussis notifications in this quarter.

Among 12 outbreaks of gastrointestinal illness investigated during the quarter, were nine clusters in closed community settings; five caused by norovirus and four where no agent of infection was detected. Two outbreaks of *Salmonella* and one of STEC were also investigated.

Campylobacteriosis

Campylobacter infection was the most commonly reported gastrointestinal disease in SA during the quarter and accounted for 60% of notifiable gastrointestinal disease.

In the first quarter of 2009, 426 Campylobacteriosis notifications were received for cases resident in SA, both metropolitan and rural, compared to 526 cases during the same period of 2008. Cases comprised 241 males and 185 females, with an age range of <1–95 years; 18% of cases were aged less than 10 years at diagnosis.

No clusters of Campylobacteriosis were detected in the period under review.

Cryptosporidiosis

Cryptosporidiosis is a parasitic infection of the bowel and *Cryptosporidium* parasites can be found in a range of animals as well as humans. The infection is spread by the oral–faecal route and commonly occurs by drinking contaminated water. Accidental ingestion can occur whilst swimming. Unlike other gastrointestinal infections, people with cryptosporidiosis must abstain from swimming for 14 days after symptoms disappear.

Thirty-seven cases were reported in the period compared to 29 for the same period in 2008. Cases comprised 18 males and 19 females, with an age range of <1–87 years. However, 92% were less than 40 years of age. Cases were reported from both metropolitan and rural areas of SA.

Cryptosporidiosis cases with reported risks potentially requiring public health action are referred to local government EHOs, as well as the Water Quality Section of SA Health's Scientific Services Branch.

Hepatitis A

Hepatitis A virus causes infection ranging from asymptomatic (particularly in children) to fulminant hepatitis, and is unusual in SA. When present, symptoms include fever, anorexia, abdominal discomfort and jaundice. With an incubation period of 15–50 days, exposure can be difficult to pinpoint. Hepatitis A virus is endemic in some developing countries, and transmission is usually by the faecal-oral route. Outbreaks due to contaminated food or water have been reported in Australia.

Three cases of hepatitis A were reported during the first quarter of 2009, compared to eight for the same period of 2008. Cases comprised one male and two females aged from 6 to 59 years. Unusually, two cases acquired the infection in Australia. One case reported recent overseas travel to countries where hepatitis A infection is endemic. Contact tracing is undertaken for all cases of hepatitis A infection and prophylaxis administered to close contacts.

Communicable Disease Control Branch Report

Listeriosis

Infections caused by *Listeria* are rare in SA. When cases occur, commonly the person also has a chronic illness. Listeriosis cases are interviewed using a targeted food risk questionnaire to ascertain the likely source of the agent of infection.

Four infections due to *Listeria monocytogenes* were notified between 1 January and 31 March 2009, consistent with recent years. The cases were males aged 56 and 70 years, and females aged 57 and 67 years. All lived in or near metropolitan Adelaide. No links were found between these cases.

Two isolates were characterised as *L. monocytogenes* serotype 1 and two as *L. monocytogenes* serotype 4. These cases were referred to the Food Policy and Programs Branch, SA Health for investigation.

Rotavirus

In the first quarter of 2009, 123 cases of rotavirus infection were notified, compared to 110 in the last quarter of 2008. Cases comprised 77 males and 46 females aged from <1–96 years; most were less than 10 years of age (88%).

Salmonellosis

Salmonella infection is usually the second most common notifiable gastrointestinal illness reported in SA and accounted for 25% of gastrointestinal infections reported between January and March 2009, when 177 cases were reported compared to 192 cases in the first quarter of 2008.

These cases comprised 87 males and 90 females, with an age range from <1–85 years and 22% of cases were aged less than 10 years. Cases resided in a range of rural and metropolitan locations in SA.

Two clusters of *Salmonella* infection were investigated in the first three months of 2009. One was caused by *S. Typhimurium* phage type 9, the other by *S. Typhimurium* phage type 108; no source was identified for either of these outbreaks.

Shigellosis

In the first quarter of 2009, 18 cases of shigellosis were reported, compared to 50 cases in the same period of 2008. Cases included nine males and nine females with an age range from 1–94 years. Among the notifications was one report of infection in an Indigenous Australian.

In contrast to recent years, the most common isolates causing cases were *S. sonnei* biotype g and *Shigella flexneri* 2a (5 cases each). Also evident were infections due to *Shigella sonnei* biotype a (3 cases) and various *Shigella flexneri* biotypes (4 cases). One infection was caused by *Shigella dysenteriae* 2.

Shiga toxin producing *Escherichia coli* (STEC)

Among the enterohaemorrhagic *Escherichia coli* (EHEC) bacterial strains are shiga-toxin producing *E. coli* (STEC). Some of these infections cause bloody diarrhoea, and a small proportion of cases progress to shiga toxin-mediated haemolytic uraemic syndrome (HUS). This syndrome can cause severe, chronic disease. In SA, laboratory screening of IMVS, SA Pathology specimens with bloody diarrhoea for genes encoding the STEC toxins enhances prompt notification of these infections.

Between 1 January and 31 March 2009, 26 cases of STEC infection were reported, compared to 12 for the same period in 2008. All cases were interviewed with a standard risk questionnaire to collect comprehensive food and environmental histories.

Molecular tests by the IMVS, SA Pathology showed identical genetic sequences in isolates from five cases notified in a short time period and an investigation looked for links between these cases. Concurrently, cases with the same molecular profile occurred at higher than expected numbers in several other states. A national investigation was triggered but the source was not identified.

The age range of the 11 males and 15 females was 1–82 years. Ten cases were admitted to hospital as a result of this infection.

Yersiniosis

Two cases of *Yersinia enterocolitica* infection were notified between January and March 2009, inclusive. Cases were both males aged one year-old, and resided in metropolitan Adelaide.

OTHER DISEASES

Invasive meningococcal disease

In Australia, historical notifications of invasive meningococcal disease caused by *Neisseria meningitidis* included a proportion of cases attributed to *N. meningitidis* serogroup C infection and associated with severe disease. Routine meningococcal C vaccination, implemented in 2003, offer vaccine to children and adolescents in the high risk age-groups of 0–4 and 15–24 years. The predominant serogroup of *N. meningitidis* responsible for disease remains serogroup B, for which no vaccine is available.

Four cases of invasive meningococcal disease were reported in the first three months of 2009 in one male and two females aged 18–27 years. All were residents of metropolitan Adelaide. Contact tracing was undertaken in all cases, and clearance antibiotics provided for close contacts in accordance with national guidelines.

All infections were caused by *N. meningitidis* serogroup B.

Legionellosis

Nine sporadic cases of Legionellosis were reported during the first quarter of 2009, all were from metropolitan SA. Laboratory tests attributed seven cases to *Legionella longbeachae* and two to *L. pneumophila* serogroup 2.

The seven cases due to *L. longbeachae* were males aged 42–85 years. Six had recent gardening as a risk for acquiring the infection, the other case had an underlying chronic illness and no obvious high risk exposure.

The *L. pneumophila* serogroup 2 cases occurred in females aged 72 and 93 years, who lived in different areas of metropolitan Adelaide. No links were found between these cases. However, further molecular tests by the IMVS, SA Pathology showed identical genetic sequences in both isolates. These cases were also referred to Applied Environmental Health Branch, SA Health for environmental investigation; no links were detected between them.

These data are provisional and subject to further revision.

Communicable Disease Control Branch Report

Notifiable diseases in South Australia 1 January to 31 March 2009 and annual comparisons 2002–2008

Notifiable disease	2000		2001		2002		2003		2004		2005		2006		2007		2008		2009
	Jan-Mar	Total	Jan-Mar	Total	Jan-Mar	Total	Jan-Mar	Total	Jan-Mar	Total	Jan-Mar	Total	Jan-Mar	Total	Jan-Mar	Total	Jan-Mar	Total	Jan-Mar
Anthrax	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Barmah Forest virus infection	0	9	6	7	4	4	0	1	0	6	9	27	92	190	19	60	9	38	10
Botulism	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Brucellosis	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Campylobacteriosis	432	1863	476	2587	662	2491	847	2630	471	1959	460	2113	427	2471	926	2731	526	1984	426
Chikungunya	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	1	0
Chlamydia (genital) ¹	241	918	346	1429	433	1767	477	1975	573	2427	677	2706	791	3127	932	3480	919	3651	873
Cholera	1	2	0	1	1	3	0	2	0	0	0	2	0	0	0	1	1	0	0
Creutzfeldt-Jakob disease	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	3	1	3	0
Crimean-Congo Haemorrhagic Fever	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cryptosporidiosis	59	153	18	64	30	118	21	81	14	76	52	160	69	191	332	459	29	61	37
Dengue Fever	2	5	2	6	2	8	2	10	3	4	1	5	3	10	5	23	9	31	8
Diphtheria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Donovanosis ¹	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ebola Fever	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gonorrhoea ¹	45	121	57	134	21	135	62	217	78	371	93	401	133	503	105	458	109	485	98
Haemophilus influenzae infection (invasive)	0	2	1	11	1	9	3	11	5	17	3	13	2	8	4	18	3	11	4
Hepatitis A	21	53	2	16	4	16	3	13	6	12	0	9	4	9	2	5	8	19	3
Hepatitis B ¹	63	317	94	357	62	262	50	230	44	223	68	276	71	262	70	328	76	284	63
Hepatitis C ¹	339	1228	307	1081	236	862	235	872	228	778	180	722	188	694	147	610	147	580	127
HIV ¹	10	48	17	66	19	46	4	58	18	55	20	50	20	61	25	55	15	47	13
Hydatid disease	0	3	1	9	3	7	2	8	1	5	0	2	0	2	1	7	1	12	1
Influenza	0	0	11	130	2	284	3	309	11	72	10	273	3	87	6	280	4	484	11
Lassa Fever	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Legionellosis	11	83	5	31	10	68	12	63	4	48	7	57	4	62	5	20	3	18	5
Leprosy	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0
Leptospirosis	0	8	0	3	0	2	0	2	0	1	0	3	0	1	0	0	0	0	0
Listeriosis	3	7	1	6	0	2	0	1	0	3	1	6	1	5	1	7	1	1	4
Lysavirus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malaria	7	33	6	30	6	19	2	27	2	20	18	43	8	34	3	24	5	17	3
Marburg disease	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Measles	0	11	0	2	0	1	2	25	0	6	0	0	0	9	0	1	1	2	1
Meningococcal disease (invasive)	1	32	4	37	8	31	5	31	4	13	2	23	3	18	1	16	1	19	4
Mumps	5	16	4	12	1	10	2	12	0	3	3	8	1	20	2	22	7	18	5
Mycobacterial disease (non-tuberculous) ²	7	47	12	44	8	47	14	49	19	68	11	69	16	54	9	68	8	53	21
Ornithosis	1	6	2	14	2	4	0	1	1	5	0	1	0	0	0	3	0	0	0
Paratyphoid Fever	0	2	1	1	0	3	1	1	0	6	4	6	2	4	0	4	0	5	0
Pertussis	62	539	194	1948	285	563	54	232	54	926	296	1409	375	2152	56	382	87	1294	706
Plague	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pneumococcal disease (invasive)	0	0	0	79	16	207	29	167	47	204	20	134	14	104	5	91	7	117	19
Poliomyelitis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Q Fever	2	13	2	16	4	29	1	12	2	36	5	20	4	16	0	24	3	16	2
Ross River Virus infection	124	368	139	176	26	47	7	20	28	57	17	92	248	362	55	214	55	183	77
Rotavirus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	132	123
Rubella	2	7	1	5	2	5	0	1	0	2	0	0	1	2	0	1	1	1	1
Salmonellosis	176	449	186	604	141	507	149	434	152	525	155	576	191	556	333	868	192	647	177
Severe Acute Respiratory Syndrome (SARS)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shigellosis	8	30	10	32	13	25	8	27	23	57	8	47	5	37	5	59	50	143	18
Smallpox	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shiga toxin producing E. coli / HUS / TTP	17	37	14	29	13	38	17	41	4	33	5	38	12	38	22	42	11	39	26
Suspected Food Poisoning	1	2	0	1	0	4	1	20	7	76	10	66	111	513	26	446	4	62	2
Syphilis ¹	0	4	0	10	10	18	4	11	4	14	3	13	10	43	8	50	12	52	7
Tetanus	2	4	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
Tuberculosis ²	15	56	18	49	10	46	10	46	19	60	13	46	17	72	8	59	9	59	20
Typhoid Fever	1	3	1	4	1	3	0	2	1	3	0	2	1	2	3	5	1	3	0
Varicella infection	0	0	0	0	184	1134	211	1226	434	1585	258	1741	390	1682	454	1748	430	1783	412
Yellow Fever	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yersiniosis	6	11	0	8	3	12	2	18	1	6	3	7	4	11	4	17	4	20	2

¹ Data collected by Sexually Transmitted Diseases Services ² Data collected by SA Tuberculosis Services

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