Editorial

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Predicting the future is not easy. As young medical graduates in the 1970s we were told not to bother with infectious disease specialties as they had largely been fixed with vaccines and antibiotics. There was a surplus of doctors, and the Alma Ata Declaration had ushered in a new model of primary health care which was going to solve third world poverty and disease. Things were looking so good that, in 1989, John Caldwell said:

*Perhaps the single greatest achievement of the modern world has been the reduction in death rates nearly everywhere and probably a very substantial increase in the proportion of the world’s inhabitants who feel really well most of the time.*

But then we got HIV/AIDS, the fall of the soviet empire followed by neo-conservative triumphalism, rapid demographic and health transition, global fast food and obesity, a doctor shortage and a crisis in health services. This has all happened in less than 30 years, none of it apparent in 1978. Obesity so burdens our young folk now that there are credible predictions that this generation of parents will be the first to outlive its children. Few of these children will get to feel really well most of the time. In fact they will know a cornucopia of chronic conditions including arthritis, diabetes, mood disorders, heart and renal problems, excess cancers, and sleep and breathing difficulties. How depressing. How preventable.

The good news is that there is now a fair understanding of the complex web of biological, social, economic, environmental and political determinants of the current predicament, as the papers collected here demonstrate. There is also evidence that this understanding is beginning to manifest in public opinion and political pressure for solutions which go beyond the short term, end-stage ‘fix’. We are beginning to address the role of the food and transport industries, town planning, poverty, education and public policy which promotes health. The not-so-good news is that little of what we think will work has actually been implemented, despite a plethora of (largely unfunded) policies.

In the meantime, we need to make sure that people with existing conditions receive the best care and opportunities for self care. Current health services centred around acute episodic care by rigid hierarchies of health professional groups are not sustainable. We need a different type of health care worker who can support people in the community to manage their chronic conditions. Our current professional guild structure may soon be as irrelevant in this new environment as blood-letters in the age of penicillin. We may have optometrists performing cataract extractions and nurses doing endoscopy and laposcopic gastric banding, as these and other procedures become routine and high-volume.

But who can predict the future? Karl Popper didn’t try. He was an optimist who ‘has no knowledge of the future and therefore makes no predictions’. He said:

*We must make a very clear division between the present, which we can and should judge, and the wide-open future, which we are able to influence. We therefore have a moral duty to face the future quite differently from how we would if it were just a continuation of the past and present. The open future contains different possibilities. So our basic attitude should not be ‘what will happen?’, but ‘What should we do to make the world a little better?’*
The Prevention of Chronic Disease - the Policy Context

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The health of South Australians - their physical, mental and social wellbeing - is now being seriously threatened by the growth of chronic disease. The impact of chronic disease now outweighs the importance of all other conditions and, if unchecked, this will result in unsustainable demand for health care services as well as personal hardship. For the first time in many years it is predicted that healthy life expectancy for today’s children will be less than that of their parents: this is principally due to obesity-related chronic conditions. Much chronic disease can be prevented, or better managed, through action, both at the population level and in relation to the needs of individuals. This paper outlines the national and state policy context for the required action, as well as some of the challenges to achieving change.

What is the problem?
In the Australian population, over 70% of the burden of disease and injury can be attributed to chronic conditions and approximately 50% of the adult population live with a chronic condition. In South Australia alone it is estimated that at least 450,000 people over the age of 20 have a least one preventable chronic disease, and this burden is growing. The South Australia Generational Health Review (GHR) Report: 2003 found that the current health system is unsustainable, and recommended a reorientation of the system from acute to primary health care. This included a strong emphasis towards prevention and early intervention, and a focus on consumer-centred care rather than on institutions. There was also an emphasis on reducing inequities in health outcomes (eg diabetes), access to health services (eg prevention programs such as healthy weight programs) and the social and environmental conditions which support good health (eg access to affordable healthy food). This applies to Indigenous people in particular, as well as to disadvantaged populations generally.

What causes chronic disease?
Many factors combine to impact on health and wellbeing, and on the development of chronic disease, including:

- **Social or upstream determinants** eg education level attained, adequacy of income, affordability and location of housing, under- and unemployment, and access to childcare.
- **Environmental determinants** eg community access to recreation facilities, public transport, nutritious safe food, as well as clean air and water and unpolluted environments in which to live, work and play.
- **Psychosocial factors** such as sense of control, resilience, community connections, self-esteem, and life experiences in the early years.
- **Behavioural determinants** especially tobacco use, inadequate physical activity, poor diet, risky alcohol consumption and unhealthy weight.
- **Biological risk factors** eg hypertension, high cholesterol, and metabolic syndrome.
- **Genetic and familial factors** such as type 2 diabetes, cardiovascular disease, asthma and some cancers, these factors playing a role through predisposition to disease.
- **Accessible and affordable health services** eg programs which support prevention (screening, support and referrals) and early detection and management of chronic conditions.

The Organisation for Economic Co-operation and Development (OECD) estimates that some 40-50% of premature deaths result from preventable behaviours.

Complex problems require multiple solutions
Complex problems caused by varied determinants require multi-strategy solutions, and evidence suggests that both a stronger public health approach and a strengthened primary health care system are required. Action at all stages of both the health-disease continuum and the life continuum are required, with interventions that are tailored to the needs of both individuals and populations (see ‘When you can’t breathe … nothing else matters’ - Dr R Ruffin, D Wilson and S Appleton). There is good evidence that chronic disease can be prevented from occurring in the first place and also from progressing to become a complex problem requiring expensive and intensive medical care.

What is the role of the health system?
Given that many of the determinants of health are outside the direct influence of the health system, it is essential that a broad approach be taken to chronic disease prevention. There are three complementary components to action:

1. **Social or upstream determinants** eg education level attained, adequacy of income, affordability and location of housing, under- and unemployment, and access to childcare.
2. **Environmental determinants** eg community access to recreation facilities, public transport, nutritious safe food, as well as clean air and water and unpolluted environments in which to live, work and play.
3. **Psychosocial factors** such as sense of control, resilience, community connections, self-esteem, and life experiences in the early years.
4. **Behavioural determinants** especially tobacco use, inadequate physical activity, poor diet, risky alcohol consumption and unhealthy weight.
5. **Biological risk factors** eg hypertension, high cholesterol, and metabolic syndrome.
6. **Genetic and familial factors** such as type 2 diabetes, cardiovascular disease, asthma and some cancers, these factors playing a role through predisposition to disease.
7. **Accessible and affordable health services** eg programs which support prevention (screening, support and referrals) and early detection and management of chronic conditions.
1. A primary prevention approach which aims to make ‘the healthy choice the easy choice’ for the whole population, through the creation of social and physical environments which support good health. The health system plays a vital role in working across sectors to ensure, for example, that school policies support healthy eating, that work places offer family friendly environments, that legislation bans smoking in enclosed environments, that policies control the promotion of alcohol to young people, and so on. This requires strong leadership and advocacy at a central level, supported by complementary local action and partnerships at all levels to underpin this approach. Because large numbers of the population are at a moderate level of risk, primary prevention aims to influence this group, which contributes most to the burden of disease.

2. A focus on groups at risk, to ensure that strategies are relevant, investment is prioritised and inequalities are reduced. Examples include programs to ensure that healthy food is available and affordable in Aboriginal communities, that women in disadvantaged areas have access to breastfeeding support, or that people with mental illness are assisted to quit smoking.

3. Support for individuals who are at risk, or those who have chronic disease, to ensure they have access to good treatment and management services, as well as advice on prevention, and that they are supported to manage their condition effectively. Better care will result from recognising the impact of the broader determinants of health on individuals as well as the inequities faced by different groups. This form of secondary and tertiary prevention complements the work described above in aiming to bring about significant improvements in health, even though this may be for fewer numbers.

For health services with limited budgets, a workforce predominantly trained in working with individuals, and a media that focuses attention on hospitals, treatment and illness rather than on health and wellbeing, finding the right balance across these three areas is challenging. It is clear, however, that if we are to prevent chronic disease there needs to be a much bigger investment in population-based strategies.

**National policy directions**

A number of national bodies are responsible for a broad range of activities in the prevention and management of chronic disease. These include the National Public Health Partnership (NPHP) and the National Health Priority Action Council (NHPAC), who report to the Australian Health Ministers Advisory Council (AHMAC) and to the Australian Health Ministers Conference (AHMC).

NHPAC was formed to oversee the administration of the seven National Health Priority Areas (NHPA).

1. diabetes
2. heart, stroke and vascular disease
3. arthritis and musculoskeletal conditions
4. asthma
5. cancer
6. mental health
7. injury prevention

In conjunction with federal, state and territory governments, NHPAC is developing a National Chronic Disease Strategy (NCDS) to be presented to Health Ministers in November 2005. The NCDS aims to provide an overarching framework for all non-communicable chronic diseases and a national direction for improving chronic disease prevention and care across Australia.

As an umbrella strategy for non-communicable chronic disease, the NCDS presents a coherent approach to improving the prevention, detection and management of chronic disease. In the strategy, 41 key directions detail areas for service improvements at all levels of the health system. At the same time, NCDS is not intended to be prescriptive about how the key directions are to be implemented, nor is it designed to provide detailed coverage on every element of prevention and care.

Complementing the NCDS is the development of National Service Improvement Frameworks (NSIFs) for arthritis and osteoporosis, asthma, cancer, diabetes, and heart, stroke and vascular disease. The NSIFs identify ‘critical intervention points’ along the continuum of care where opportunities exist to make significant health gains. They aim to encourage the delivery of more person-centred, equitable, timely, effective, affordable and cohesive health care, and to drive health service improvements to achieve better health outcomes for all Australians with these diseases, especially for disadvantaged groups. For example, they identify the need to address inequality by reducing variations in care that appear across different clinician and health services, between metropolitan, regional, rural and remote areas, and in the care provided to disadvantaged groups.

The National Public Health Partnership is responsible for identifying and developing strategic and integrated responses to public health priorities in Australia. In relation to chronic disease, the primary focus has been the development of the national strategies *Eat Well Australia*, the National Aboriginal and Torres Strait Islander Nutrition Strategy and Action Plan (NATSINSAP), and *Be Active Australia* (which includes strong focus on Aboriginal and Torres Strait Islander (ATSI) populations and high need groups). These strategies set out agendas for nutrition and physical activity action at the national level. Together with the *National Tobacco Strategy 2004-2009*, the proposed *National Alcohol Strategy 2005-2009* and the National Obesity Taskforce’s *Healthy Weight 2008*, they address the major behavioural risk factors and provide a detailed set of prevention strategies with a major focus on...
whole populations. Recently a decision has been made to establish a Chronic Disease and Injury Prevention Committee which will work closely with NHPAC.

**State policy drivers**
The policy environment for the prevention and management of chronic disease in South Australia is being driven by the current health reform agenda. This process commenced with the recommendations of the Generational Health Review and is complemented by South Australia’s Strategic Plan (SASP), March 2004. The SASP articulates key objectives for this state over the next decade and, in particular, Objectives 2 and 6 provide specific targets for the health system.

**Objective 2: Improving wellbeing**
The SA Strategic Plan sees as a major priority the further improvement of quality of life and wellbeing for the community and for individual citizens. The aim is for a much healthier population, as indicated by the following targets:

- Increase healthy life expectancy of South Australians to lead the nation within 10 years.
- Reduce the percentage of young cigarette smokers by 10% within 10 years.
- Reduce the percentage of South Australians who are overweight or obese by 10% within 10 years.
- Exceed the Australian average for participation in sport and physical activity within 10 years.

**Objective 6: Expanding opportunity**
Objective 6 makes a strong commitment to investment in the early years and recognises that education is a fundamental component. Target T6.1 particularly aims to reduce the gap between outcomes for South Australia’s Aboriginal population and outcomes for the rest of South Australia’s population, particularly in relation to health, life expectancy, employment, school retention rates and imprisonment.

**Primary health care policy**
Improved prevention and management of chronic disease in South Australia requires a strong primary health care system, as outlined in the SA Primary Health Care Policy. A requirement of the policy is the establishment of Primary Health Care Networks; these are not about offering ‘new’ services but about doing business ‘better’ by providing linkages and coordination between primary health care providers to improve population health and wellbeing.

As well as health sector roles in developing integrated health care responses, partnerships across government sectors, such as health, education, justice and housing, are increasingly being used to create synergies and better outcomes for individuals and families.

**Chronic disease framework**
In 2004, the South Australia Department of Health developed a chronic disease framework. *Chronic disease: prevention and management opportunities for South Australia* was the first State chronic disease framework to propose systematic approaches to both prevention and management of chronic disease.

The natural history of preventable chronic diseases shows causal links to some common risk factors for which control and intervention is possible; these include smoking, poor nutrition, physical inactivity and the risky use of alcohol. Clustering preventable chronic diseases together with their common risk factors offers opportunities for systematic approaches in the prevention, early intervention and improved management of chronic diseases. Activity in the primary health care system permits action across the life and disease continuum – from prevention through to management, and across the breadth of risk factors and chronic conditions. It has been demonstrated that primary health care approaches can slow the growth rate of chronic diseases.

Four strategies were proposed in *Chronic disease: prevention and management opportunities for South Australia*:

**Overarching strategy**
1. Adopt a clustered approach to chronic disease prevention and management.

**Action strategies**
2. Increase system coordination and integration.
3. Increase the availability of a system for self-management.
4. Increase primary health care capacity for prevention, early detection, early intervention, and chronic disease management.

**How does this work in practice?**
South Australia is now in the fortunate position of having clear policy directions, at state and national levels, which support the improved prevention and management of chronic disease. Increasingly, regions are developing complementary strategies, and over the next few years we can expect to see increasing strategic action at all levels.

There are already examples of well-integrated approaches, such as in the important area of increasing the consumption of fruit and vegetables to prevent a number of chronic conditions and to promote healthy eating. The development of the National Fruit and Vegetable Coalition brings together public, private
and non-government sectors to undertake national activities such as the development of a business case for investment, public relations activities on the benefits of increasing the consumption of fruit and vegetables, and national research. At the state level, the Coalition is implementing a coordinated state campaign to promote fruit and vegetables, integrating fruit and vegetables into school guidelines, distributing resources, and providing a mechanism to share experience and expertise. In the area of monitoring, comprehensive data is collected which can also be made available at the regional level to track progress. Complementing this campaign are local activities such as supporting markets or stores in remote areas to provide affordable fruit and vegetables, working with local schools and childcare services to provide healthy food choices, and working with high need groups such as young mothers to introduce fruit and vegetables appropriately to their babies.

Conclusion

In order to prevent and better manage chronic disease in South Australia, both primary prevention and ‘high risk’ approaches are important and complementary. A population approach aims to create the best physical, social and policy environments for supporting people to be healthy. This requires good treatment and management services, easily accessible through the primary health care system by those with established diseases. Similarly, the need to treat individuals at risk will never reduce unless it is complemented by a primary prevention approach that recognises the broad determinants of health and ensures that impediments to making healthy choices are minimised.

Social, behavioural and environmental health determinants may be considered by some health workers as outside their realm of influence, or that of the health system. But to think in this way decreases our chances of impacting on chronic disease and our opportunities for advocacy and leadership for action. While health workers and health services on their own cannot solve poverty or unemployment, they are in an ideal position, through their work with individuals and communities, to identify where health inequalities are contributing to poor health outcomes.

The challenge for the health system and for individual workers is to find the right balance: working with individuals at risk whilst increasing our efforts to move the whole population to a lower level of risk. The national, state and regional policy contexts are increasingly focussed on preventing and managing chronic disease. However, in order to support and embrace the changes that are foreshadowed in this article, a re-orientation of health workforce skills, knowledge and understanding will be required. To better align the health system to the needs and priorities of the community as a whole, a positive view of these changes is required, such that a broader social view of individual and population wellbeing becomes routine in healthy system planning, as well as in individual health encounters.

References


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**Chronic Disease Surveillance in South Australia**

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**Introduction**

Chronic diseases are the most prevalent, costly and preventable of all health problems. The contribution of chronic diseases in the total burden of diseases has risen considerably in recent decades to replace communicable diseases as the leading cause of morbidity and mortality in developed countries. The burden placed upon the individual, the health system and the community is also expected to increase as the population ages in future decades.

Chronic diseases are defined as non-communicable diseases that have complex causes, multiple risk factors, a long latency period, and a long illness period which ultimately results in some limitation of daily living. The chronic diseases are generally regarded as cardiovascular diseases (CVD), diabetes, chronic lung disease, arthritis, musculoskeletal diseases and cancer. Conditions, such as incontinence, mental health conditions and dementia-related disorders, are often included in this definition.

Many chronic diseases share common risk and protective factors. The risk factors include the modifiable aspects associated with smoking, diet, physical activity and alcohol consumption. These risk factors are modifiable on a population basis – either by changing personal behaviours or by enforcing policy and legislative changes. While low levels of physical activity and high levels of alcohol consumption are risk factors for ill-health, the converse (ie higher levels of physical activity and lower levels of alcohol) are seen as protective factors. Other biomedical risk factors (such as hypertension and elevated cholesterol) are also important risk factors for ill-health and are commonly related to more than one chronic disease (eg diabetes and CVD).

Increasing emphasis is also being placed upon the relationship between chronic disease/conditions, risk and protective factors, and the range of social inequalities that occur across the life course. In addition, endeavours to replace the use of single focused or a ‘silos’ approach as a means to describe each disease is gradually being replaced by larger, more contextual and inclusive lifestyle approaches.

South Australia (SA) is served comprehensively by the SA Cancer Registry which oversees the collection and analysis of all cases of invasive cancer diagnosed in SA. The surveillance, monitoring and epidemiological...
assessment of the other non-communicable chronic diseases, the associated risk and protective factors, and the related social and inequality measures, is primarily undertaken in SA, on a population-wide basis, by the Population Research and Outcome Studies (PROS) Unit in the Department of Health. This includes diabetes, asthma (and other respiratory conditions such as Chronic Obstructive Pulmonary Disease (COPD)), arthritis and musculoskeletal conditions, incontinence and aspects associated with mental health (e.g., psychological distress and depression). The risk factors covered by the Unit include body mass index (BMI), alcohol, smoking, physical activity, nutrition (food consumption and food insecurity), high blood pressure (HBP) and high cholesterol. Relevant indicators of socioeconomic inequality include household income, housing status, marital status, family structure and education level.

The assessment of these diseases and associated factors is undertaken on a high level indicator basis – policy, planning and health service management is undertaken by the relevant non-government agencies or other Department of Health specialised policy and planning areas. The Unit undertakes descriptive analysis to explain and predict trends in chronic diseases and associated factors, so as to inform population-wide early detection, preventive and service management efforts. Data collection for the surveillance and monitoring of non-registry-based chronic diseases and associated factors are commonly undertaken by the use of population-based surveys. This is because the conditions are managed in the community (until complications necessitate more invasive treatment) and are not ‘counted’ by other existing systems.

Methods
Following are details on the methodology and results from two systems designed to collect data on chronic disease and associated factors in SA.

The South Australian Monitoring and Surveillance System
The South Australian Monitoring and Surveillance System (SAMSS) is a telephone monitoring system designed to systematically monitor the trends of chronic diseases, health related problems, associated factors and other health services issues for all ages, over time, for the South Australian health system. SAMSS is able to provide representative and timely estimates of key indicators associated with chronic diseases and risk factors for the state overall, and for each health region, by a range of social and demographic variables. Box 1 highlights the methodology associated with SAMSS.

North West Adelaide Health Study
To monitor the change in individuals and to evaluate the change along the disease continuum from no disease to disease with complications and ultimate death, the PROS Unit is involved with the North West Adelaide Health Study (NWAHS). NWAHS is providing information about chronic diseases, including diabetes, chronic lung disease, arthritis and musculoskeletal conditions, enabling more effective targeting and strategic interventions to improve health outcomes. In addition, NWAHS is able to report clinical assessed estimates rather than self-reported estimates obtained from the population surveillance systems. Box 2 highlights the NWAHS methodology.

Box 1
The South Australian Monitoring and Surveillance System (SAMSS) methodology
- 600+ randomly selected people (of all ages) are interviewed each month.
- Respondents aged less than 16 years have surrogate interviews.
- All households in SA with a telephone connected and the telephone number listed in the Electronic White Pages (EWP) are eligible for selection in the sample.
- A letter introducing the survey is sent to all selected households.
- The person with the most recent birthday is chosen for interview. There is no replacement for non-respondents.
- Up to ten call backs are made to the house to interview the selected person.
- A CATI (Computer Assisted Telephone Interviewing) system is utilised to conduct the interviews.
- The data are weighted by area (metropolitan/rural), age, gender and probability of selection in the household to the most recent SA population data so that the results are representative of the SA population.

Box 2
North West Adelaide Health Study methodology
- This was a biomedical cohort study of 4000+ representative adults, randomly selected from Glenelg to Gawler.
- All households with a telephone connected and the telephone number listed in the EWP are eligible for selection in the study.
- The sample was stratified into the two health regions: western Adelaide and northern Adelaide.
- A letter introducing the study and an information brochure were sent to the household of each selected telephone number.
- Within each household, the person who had their birthday last and was 18 years or older, was selected for interview and invited to attend the clinic.
- Appointments were made for participants in one of the two hospital-based clinics (The Queen Elizabeth Hospital and Lyell McEwen Health Service). Participants were sent an information folder that included a questionnaire with questions on chronic disease, alcohol consumption, physical activity levels, quality of life and socio-economic details (including highest education level, marital status, work status, country of birth and household income level).
- Age, sex, smoking status, height, weight, and whether they had ever been told they had high blood pressure or high cholesterol were asked in the recruitment telephone interview.
- At the clinic a range of assessments were made including taking blood (to test fasting plasma glucose, lipids, HbA1c), skin prick tests to common allergens, blood pressure, height and weight (to determine BMI), and spirometry lung function tests.
Results

Table 1 highlights the prevalence of self-reported chronic diseases (from SAMSS) with estimates ranging from 4.2% for self-reported doctor-diagnosed osteoporosis to 22.1% for arthritis. Table 1 also highlights the prevalence of diabetes, asthma and COPD when clinical assessments were made in the NWAHS. The prevalence of diabetes (determined from fasting blood glucose levels) was 6.6% with an additional 13.8% of the participants having impaired fasting glucose (a pre-diabetes state). The prevalence of asthma (as determined by lung function tests) was 12.3% with nearly a quarter of people with asthma not previously having the condition diagnosed.

Table 1. Prevalence of chronic disease/conditions in South Australia, ages 18 years and over

<table>
<thead>
<tr>
<th>Disease</th>
<th>SAMSS (self-report)</th>
<th>NWAHS (measured)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arthritis</td>
<td>22.1</td>
<td>-</td>
</tr>
<tr>
<td>Asthma</td>
<td>13.8</td>
<td>12.3</td>
</tr>
<tr>
<td>CVD</td>
<td>5.2</td>
<td>-</td>
</tr>
<tr>
<td>Diabetes</td>
<td>6.7</td>
<td>6.6</td>
</tr>
<tr>
<td>COPD</td>
<td>5.9</td>
<td>3.5</td>
</tr>
<tr>
<td>Osteoporosis</td>
<td>4.2</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: SAMSS (July 2002 to December 2004)

Table 2 highlights risk factor prevalence rates. Within the NWAHS cohort population, the measured rates of obesity were significantly higher, as was the prevalence of hypertension and elevated cholesterol. Within the SAMSS data-base, 59.7% of adults in SA (18+ years) have at least one risk factor (assessed by self-reported HBP, high cholesterol, no physical activity).

Table 2. Prevalence of risk factors in South Australia, ages 18 years and over

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>SAMSS (self-report)</th>
<th>NWAHS (measured)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI</td>
<td>Overweight</td>
<td>36.4</td>
</tr>
<tr>
<td>-</td>
<td>Obese</td>
<td>18.4</td>
</tr>
<tr>
<td>Current smoker</td>
<td>20.0</td>
<td>-</td>
</tr>
<tr>
<td>Nutrition</td>
<td>5+ vgs/day</td>
<td>8.6</td>
</tr>
<tr>
<td>2+ fruit/day</td>
<td>40.9</td>
<td></td>
</tr>
<tr>
<td>Physical Activity</td>
<td>No activity</td>
<td>19.9</td>
</tr>
<tr>
<td>Active but not</td>
<td>30.9</td>
<td></td>
</tr>
<tr>
<td>sufficient</td>
<td>49.1</td>
<td></td>
</tr>
<tr>
<td>Hypertension</td>
<td>18.5</td>
<td>26.8</td>
</tr>
<tr>
<td>Elevated Cholesterol</td>
<td>14.3</td>
<td>35.5</td>
</tr>
<tr>
<td>Alcohol risk</td>
<td>Short term</td>
<td>29.7</td>
</tr>
<tr>
<td>Long term</td>
<td>4.1</td>
<td></td>
</tr>
</tbody>
</table>

Source: SAMSS (July 2002 to December 2004)

Discussion

Availability of the chronic disease information from SAMSS and NWAHS is aimed at promoting evidence-based decision making, providing information about the impact of chronic conditions on quality of life, identifying appropriate points of intervention, and improving the planning and delivery of services to improve the health and wellbeing of people with, and at risk of, chronic disease. While the risk factor epidemiology paradigm is seen to place decreased emphasis on other influences of health, such as wealth distribution, work status and housing ownership, and other economic and socio-political dimensions of life, all need to be considered so that prevention, early detection and management programs are implemented to limit the occurrence and progression of chronic diseases in South Australia.

Figure 1: Proportion of population with no risk factors by SEIFA Index, aged 18 years and over

SEIFA 2001 Index of Relative Socio-Economic Disadvantage Quintiles (postcode level)

Source: SAMSS (July 2002 to December 2004)
The Prevention Terminology

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This paper draws heavily from a paper prepared by Colin Sindall (Department of Health and Ageing) and Judy Stratton (formerly Department of Health and Ageing). My thanks to them.


If we are to increase our efforts in the prevention of disease, especially chronic diseases as outlined in the Department of Health Strategic Directions, it would be useful to have a common framework. This paper provides some definitions for a few of the more frequently used terms.

Stratton and Sindall identify four different ways of categorising preventive measures:

1. Stage in the natural history of a disease at which they are introduced.
2. Determinants of a disease which are being addressed.
3. Target groups to which they are applied.
4. Setting or level of delivery of preventive measures.

1. Stages of Disease
For chronic, non-communicable disease there is a continuum from a disease-free state, to asymptomatic biological change, to clinical illness, impairment and disability, development of complications, and, for many conditions, ultimately death. This is illustrated in the following diagram (Figure 1). At every point along the continuum there are opportunities for prevention of the disease itself, its progression, or associated complications.

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References
Preventive interventions are frequently conceptualised in terms of primary, secondary and tertiary prevention.³

**Primary prevention**

*Primary prevention is defined as the protection of health by measures which eliminate or reduce causes and determinants of departures from good health and control exposure to risk.*

*Primary prevention decreases the number of new cases of a disorder or illness.*

Causes and determinants include social, environmental and economic factors which contribute to disease or conversely are protective, for example, encouraging adequate housing, clean air, education and income as well as actions to promote and support healthy behaviours such as tobacco control legislation and access to and information about healthy food. Primary prevention seeks to reduce or eliminate risk factors and encourage health-promoting factors, thus preventing disease occurring in the first place.

In this (stage of disease) context primary prevention is usually directed at the whole population but is also relevant to sub-groups, e.g., older people, and in one-to-one clinical settings, e.g., providing information on how to stay healthy, or supporting people to get involved in community activities.

**Secondary prevention**

*Secondary prevention refers to the measures available to individuals and populations for the early detection of departures from good health and prompt and effective intervention to correct them.*

Secondary prevention is therefore aimed at early detection of biological abnormalities (e.g., high blood pressure or cholesterol) and their prompt treatment and management (including medication and risk factor modification), to reduce morbidity and mortality. Cancer screening (e.g., breast, cervix, and bowell) is also a secondary prevention measure as it attempts to detect cancers early. Secondary (and tertiary) prevention includes clinical, pharmacological and surgical treatments as well as the management of behavioural risk factors e.g., supporting those who have diabetes to be active and eat a healthy diet.

The terminology becomes more complicated in relation to cardiovascular disease where secondary prevention is used to describe interventions (such as reduction of behavioural risk factors) in people who have experienced a cardiovascular event (e.g., heart attack or stroke) and are therefore at risk of another event.⁴

Using the more descriptive term early detection, rather than secondary prevention might help to overcome these problems.

**Tertiary prevention**

*Tertiary prevention consists of the measures available to reduce or eliminate long-term impairments, disabilities and complications from established disease, and to minimise suffering caused by existing departures from good health.*

Tertiary prevention seeks to minimise the impact of established disease and uses many of the same methodologies as above. In practice, of course, the lines between different forms of prevention are somewhat blurred.

**2. Determinants of health and disease**

Figure 1 identifies a range of determinants of health and illness which include social and environmental factors, often called upstream determinants, as well as those which relate to the individual, e.g., behaviour, psychosocial factors such as resilience and self-esteem (midstream or host factors). This latter group of factors is strongly influenced by the upstream determinants. For example, it is hard to make a decision to quit smoking if you are unemployed, homeless or feel you have little control over your life; it is difficult to comply with medications if there is no fridge in which to keep antibiotics.

Measures aimed at upstream determinants correspond broadly to primary prevention measures in the earlier terminology. Policies directed at social, environmental, psychological and behavioural determinants benefit those who are well as well as those with disease. Detection and management of the biological, psychological and behavioural risk factors or disease precursors corresponds to secondary prevention, while the effective management of established disease (preventing complications and restoring health and function to the maximum extent possible) corresponds to tertiary prevention.

**3. Target groups**

Discussion about prevention often centres around identifying appropriate target groups. Interventions might focus on the whole population (e.g., promotion of consumption of 2 fruit and 5 veg), at-risk groups or individuals (e.g., smokers or Aboriginal and Torres Strait Islander community) or individuals with established disease (e.g., people with diabetes or those who are obese). Prevention approaches apply to all target groups.

*Figure 2: Target groups for preventive activities⁵*
It should be noted that the mental health field uses the terms ‘universal’ (for the whole population), ‘selective’ (for individuals and groups with higher risk) and ‘indicated’ (for those with early signs and symptoms). See Promotion, Prevention and Early Intervention for Mental Health – A Monograph.8

Universal and Targeted approaches
A ‘whole of population’ or ‘universal’ approach aims to develop interventions that are targeted to the entire population without individual selection. The aim is to reduce the level of risk (risk factors) and to move the entire risk factor distribution to a lower level. This needs to be complemented by a high risk or targeted approach where individuals considered to be at high risk for a particular disease will be identified and their conditions addressed.

4. Level of delivery of preventive measures
The fourth category describes where preventive measures are delivered. Primary prevention tends to occur at the level of the whole population or subgroups, eg school canteen policies or through public policy around food regulations or safe alcohol use guidelines. Social and economic determinants are perhaps better addressed at the level of the population or particular subgroups rather than with individuals, though effective practitioners recognise the context within which their client lives and works and the impact of this on their prognosis. However, as identified above, clinical settings in both primary health care services and acute care and aged care services also have a role in primary prevention.

Behavioural risk factors can be addressed at the whole of population level, eg working with local government to create ‘walkable’ neighbourhoods; influencing state planning policy for open space measures; or supporting individuals though, eg, nicotine replacement therapy provision. Early detection or secondary prevention usually takes place through a clinical setting or through work with at-risk groups through primary health care services or screening programs.

Primary health care services play a vital role in promoting health and preventing and managing illness.

Population Health Approach
Also common now is use of the term ‘population health approach’. The Department of Health is finalising a Population Health Policy which draws on the Canadian experience and outlines the key elements as:

- The unique requirements of those population groups with special health needs are to be taken into account when determining priorities for action.
- Health services are considered in a whole of government context.
- Communities are an integral part of achieving health objectives.
- Enhancing health status requires intersectoral collaboration and partnership.
- Policy and program implementation should be evidence based.

These themes complement those described above.

Other commonly used frameworks are Health Promotion and Public Health. These will be further explored in future editions of the Public Health Bulletin.

Conclusion
Given the confusion around overlapping terminology, it may be helpful if clear descriptions are provided as to the focus of the relevant work. This should include whether target clients do or do not have chronic conditions, and whether the interventions are primarily focussed on individuals, groups at risk, or the population as a whole.

References
The Impact of Early Life on the Subsequent Development of Chronic Disease

A/Prof Peter Baghurst
Public Health Research Unit,
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Children Youth and Women’s Health Service

If one were asked to nominate the major influences on our thinking about the determinants of health over the last quarter of the twentieth century, it would be imperative to include the growing understanding of (1) how strongly social factors can influence the risk of disease, either directly, or indirectly by encouraging specific behaviour patterns; and (2) the importance of the early years in establishing health outcomes in later life.

The aetiology of cardiovascular disease (CVD) is rich with examples of how both biological factors and socially determined behaviours in the early years can lead to an undesirable health outcome in adult life. But our definition of ‘early life’ needs to encompass life in utero, given the growing acceptance of Barker’s Fetal Origins Theory of Adult Disease.1 Using old parish birth records in the UK, Barker observed that low birth-weight babies were at much greater risk of CVD in later life than heavier babies; this is a strong epidemiologic association which has been demonstrated in several different settings subsequently. Given that fetal under-nutrition can produce acute physiologic changes, such as redistribution of blood flow to protect the brain, a lowered metabolic rate to reduce the use of substrates, and a slowing of growth to reduce demand for those substrates, Barker argued that such adaptations leave a permanent biological ‘memory’ of under-nutrition – a process increasingly referred to today as ‘programming’ and now implicated, albeit controversially, in other long-term outcomes such as kidney disease and osteoporosis.

Animal studies which demonstrate higher blood pressure in the progeny of mothers fed protein-restricted diets also support the notion that maternal pre-pregnancy nutrition may influence programming. And, while these findings would appear to confirm the importance of good maternal nutrition both prior to and during a pregnancy, the situation with respect to possible interventions which might ‘remedy’ low birth-weight through postnatal ‘catch-up’ is controversial. In fact there is disturbing evidence that accelerated postnatal growth may be positively associated with blood pressure. Long-term studies and good record linkage facilities are needed to resolve these controversies.

In addition to the direct biologic determinants of CVD there are, of course, a host of behavioural factors which are probably more important from a public health perspective. Obesity in children leads to obesity in adulthood, insulin resistance, heart disease, and possibly cancer. It currently looms larger than anything else on the public health radar screen. The vast majority of children who have a problem have simply got their energy intake and expenditure out of balance. We know what’s required – more physical activity, and maybe a little less to eat. But we know remarkably little about how to achieve these remedies. Issues such as the safety of children on our busy roads, on bikes or just walking the streets; the sedentary lifestyle encouraged by the instant gratification of all forms of electronic entertainment; and factors affecting food choices, are all important – but they are very difficult to control or influence.

Smoking may still be the biggest risk factor for CVD – but the short-term fiscal consequences of controlling this behaviour have frightened governments away from the most obvious legislative means of reducing smoking. While some might still try to argue that the decision to smoke is purely personal, there is mounting interest in the highly repeatable observation that children and young people with emotional and behavioural problems are more likely to resort to recreational drugs of all kinds than their less troubled peers. Given the importance of the relationship between children and their carers in terms of their cognitive, linguistic, emotional, social and moral development, it is now generally accepted that children who do not enjoy relationships with their carers that are warm, nurturing, individualised, and responsive in a contingent and reciprocal manner, will be at risk of adopting behaviours which are directly damaging to health. Since the ability of caregivers to attend to the individualised needs of young children is influenced by both their internal resources (eg emotional health, social competence, intelligence, educational achievement, personal family history) and the external circumstances of their lives (eg family environment, social networks, employment status, economic security), it is not difficult to see how the choice of risky behaviours may be heavily influenced by the social context in which such choices are made. The public health importance of finding new and better ways to support children with developmental problems that are secondary to the influences of adverse caregiving environments characterised by poverty, family violence, and parental mental illness cannot be over-emphasised.

With around a quarter of all deaths resulting from cancers, one might well ask whether there are measures we can take in the early years to prevent cancer in adult life. Many cancers of the lung, oesophagus, nasopharynx, pancreas and bladder could be prevented by refraining from smoking, a context-sensitive behaviour already discussed in the context
of CVD. Melanoma and other skin cancers caused by exposure to ultraviolet light are preventable through simple behavioural changes – some enforceable at early ages – but peer pressure to acquire a particular body-image is a strong influence against the adoption of sun-smart practices.

Over the past 25 years we have seen estimates of the risk of cancers attributable to dietary habits steadily whittled away by epidemiologic research. Despite the identification of a host of plausible mechanisms by which various foods and food components might possibly influence carcinogenesis, evidence for the public health relevance of these mechanisms remains unconvincing. Getting the energy balance right appears to be our best hope at the moment, with obesity and lack of physical activity being consistently cited as risk factors for several common cancers. Finding enjoyable ways for our children to be active now – and to want to stay active in later life – must surely deserve its status as a high public health priority.

The danger in emphasising too heavily the role of the early childhood years on adult outcomes is that one creates an image of a health trajectory too closely akin to the trajectory of a rocket. Nothing can alter its course after the motor is extinguished following a brief firing at the launch. This would, of course be extremely disheartening to those trying to improve the lives of adolescents and adults. Perhaps the analogy is not so poor, however, if we allow our rocket to be fitted with small course-adjusting ‘retro’-rockets.

References

Further reading


Background
Chronic Obstructive Pulmonary Disease (COPD) is a slowly progressive disease of the airways, characterised by gradual loss of lung function. It includes emphysema chronic bronchitis and chronic obstructive bronchitis and is one of the most common respiratory conditions of adults. The exact prevalence of COPD is difficult to establish because of the problem of definition and diagnosis. Sometimes it is difficult to differentiate between COPD and chronic asthma, and in older age it may be difficult to differentiate from other problems of ageing. A working definition may be given as a ‘disease state characterised by the presence of air flow limitation due to chronic bronchitis or emphysema; the air flow obstruction is generally progressive, may be accompanied by airway hyperactivity, and may be partially reversible’. The physiological definition is a FEV1/FVC ratio (forced expiratory volume to forced vital capacity) equal to or greater than two standard definitions from the predicted.

COPD poses a considerable and increasing future threat to the health care system and to society in terms of direct costs of health care services and indirect costs through loss of productive life. Worldwide, it is expected to become the fifth leading cause of disability adjusted life years (DALYs) by 2020. In Australia it is currently the third leading cause of disease burden and the sixth leading cause of disability. COPD also leads to a significant deterioration in quality of life, especially as the disease progresses. Smoking is the dominant risk factor for development and progression of the disease. A recent South Australian study has identified the risk of COPD attributable to smoking alone to be 40% for current smokers and 78% for current smokers and ex-smokers together.

This paper argues that a great deal can be done to improve COPD morbidity and mortality by means of an integrated public health campaign comprising primary and secondary prevention components. Emphasis is placed on the importance of three initiatives:
• establishing a public health agenda for COPD which deals with the primary risk factor of smoking.
• improving early detection of COPD in general practice.
• developing resources for smoking cessation in general practice for both the general practitioner and the patient.

The North West Adelaide Health (Cohort) Study (NWAHS)
The NWAHS is a representative population study in which biographical and biomedical information on COPD has been obtained from an ongoing population surveillance program of chronic disease and associated risk factors. Methods employed in the study have been documented previously. The data presented in this paper were obtained from the baseline study of a sample population n=4010 who completed spirometry and answered questionnaires. Biographical data were obtained by interview and from the self-completion questionnaires. Airway obstruction was measured using spirometry, conducted according to American Thoracic Society (ATS) criteria. Each subject performed at least three reproducible forced vital capacity (FVC) manoeuvres. Obstruction was determined using forced expiratory volume (FEV₁) in one second (ie the amount that can be forcefully exhaled in the first second from a full inspiration), expressed as a percentage of the forced vital capacity (FVC), that is, the volume change between a full expiration and residual volume after expiration. People who demonstrated post bronchodilator airway obstruction according to the criteria of Quanjer, (FEV₁/FVC equal to or less than two standard deviations below that predicted for age and gender) were classified as having COPD. All identified cases were further classified according to severity, based on FEV₁, as a percent of predicted volume for an individual of a specific age and gender, as specified by ATS criteria.

Results
The NWAHS study showed that 3.5% of the population have COPD (Figure 1) but this reaches 11% in males aged 60+ years of age. Of the total number with COPD, 85.6% were previously undiagnosed. Table 2 shows that, while more than half of the undiagnosed group had mild COPD, 10% had severe disease, which is cause for concern. The prevalence of smoking in the NWAHS population without COPD was 16.6%, compared to 30.4% in the COPD sub-population aged 40 years or older (Table 3). However, smoking prevalence is higher than this in some COPD groups and declines with increasing severity of disease. The greater the severity of disease the more likely people are to have already quit smoking (Table 2).

Table 1: Age specific COPD prevalence according to diagnostic status*

<table>
<thead>
<tr>
<th>AGE</th>
<th>All COPD</th>
<th>Previous COPD diagnosis</th>
<th>Undiagnosed COPD</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>&lt;40</td>
<td>1.5 (26)</td>
<td>0.0 (0)</td>
<td>1.5 (26)</td>
<td>1.4 (12)</td>
<td>1.7 (14)</td>
</tr>
<tr>
<td>40-49</td>
<td>2.7 (20)</td>
<td>0.0 (0)</td>
<td>2.7 (20)</td>
<td>1.8 (7)</td>
<td>3.6 (13)</td>
</tr>
<tr>
<td>50-59</td>
<td>3.7 (22)</td>
<td>0.2 (1)</td>
<td>3.5 (20)</td>
<td>4.2 (12)</td>
<td>3.3 (10)</td>
</tr>
<tr>
<td>60+</td>
<td>7.5 (71)</td>
<td>2.0 (18)</td>
<td>5.4 (51)</td>
<td>11.1 (47)</td>
<td>4.6 (24)</td>
</tr>
<tr>
<td>Total</td>
<td>3.4 (138)</td>
<td>0.5 (20)</td>
<td>2.9 (118)</td>
<td>3.9 (78)</td>
<td>3.0 (61)</td>
</tr>
</tbody>
</table>

* Based on % predicted post- bronchodilator FEV₁
1 Airway obstruction demonstrated in the clinic and self-reported doctor confirmed emphysema
2 Airway obstruction demonstrated in the clinic in the absence of self-reported doctor confirmed emphysema

Table 2: Severity of COPD overall and according to diagnostic status*

<table>
<thead>
<tr>
<th>COPD diagnostic status</th>
<th>Smoking status</th>
<th>COPD</th>
<th>All COPD</th>
<th>Previous diagnosis</th>
<th>Undiagnosed</th>
<th>Current smoker</th>
<th>Ex-smoker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severity*</td>
<td></td>
<td></td>
<td>mild</td>
<td>50.6 (69)</td>
<td>26.5 (50)</td>
<td>54.3 (64)</td>
<td>47.6 (62)</td>
</tr>
<tr>
<td>moderate</td>
<td>34.0 (47)</td>
<td>25.8 (5)</td>
<td>35.7 (42)</td>
<td>38.1 (116)</td>
<td>34.4 (21)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>severe</td>
<td>15.4 (22)</td>
<td>48.7 (10)</td>
<td>12.0 (12)</td>
<td>14.3 (6)</td>
<td>19.7 (12)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>total</td>
<td></td>
<td>100 (138)</td>
<td>14.4 (20)</td>
<td>85.6 (114)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Based on % predicted post- bronchodilator FEV₁
1 Airway obstruction demonstrated in the clinic and self-reported doctor confirmed emphysema
2 Airway obstruction demonstrated in the clinic in the absence of self-reported doctor confirmed emphysema

Table 3: Age specific smoking prevalence in COPD

<table>
<thead>
<tr>
<th>Smoking status</th>
<th>Age &lt;40</th>
<th>Age 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current-smoker</td>
<td>33.6 (29.5)</td>
<td>16.6 (30.4)</td>
</tr>
<tr>
<td>Current /Ex-smoker</td>
<td>51.9 (51.9)</td>
<td>52.1 (79.5)</td>
</tr>
</tbody>
</table>
In logistic regression analyses the variables that best jointly described those people with COPD were male gender, older age, low income and lower education level.

**Discussion**

The increasing burden and impact of COPD can be modified if a comprehensive public health plan is developed to address key aspects of the problem. In terms of primary prevention, the major initiative must be directed to smoking prevention programs, given that up to 50% of all smokers are likely to be affected. At present, COPD detection rates may be underestimating this figure by almost 90%. To date no major public health promotion agenda dedicated to COPD has addressed the COPD/smoking relationship, or its consequences and preventability, with the South Australian public. Establishing this agenda is a necessary starting point for progress. It will be necessary, given the benefits of earliest possible cessation, to target smokers at an age when they are prepared to listen to the COPD message. This will mean further qualitative research for the development of communications. The development of COPD smoking cessation programs must be distinguished from generalised smoking cessation programs. COPD specific programs need to be targeted more specifically, especially towards male smokers living on lower income and of lower education levels with whom the largest smoking problem exists. The Quit Line and community based cessation programs have a role to play with this target group and as part of the overall public health plan.

Primary care has a major role to play in reducing the burden of COPD through earliest possible detection and intervention. This is essential, given the large undiagnosed group with COPD. It should, however, be pointed out that the general practitioner’s task in relation to COPD is not simple, and COPD can be difficult to diagnose, especially in the older person where it is most common. Before a general practitioner can diagnose a patient with asthma or COPD they must first have the symptoms presented to them. An important factor in under-diagnosis is that many patients do not present their symptoms to a doctor: this is a feature of all chronic diseases, including COPD. This issue underscores the importance of appropriately establishing a COPD agenda with the South Australian population, as mentioned, and of promoting the need for, and advantages of, early presentation of respiratory symptoms. Another, complementary, approach to the problem of identifying COPD cases would be the use of smoking history to trigger measurement of lung function.

There is also a great deal that can be done to improve the likelihood of early COPD diagnosis and intervention in primary care. The general practitioner is well placed to make a difference, given a planned public health approach. A number of international guidelines have been developed for COPD, which agree on the role of spirometry in its diagnosis. Establishing lung function measures is essential to the diagnosis of COPD, but the use of spirometry in general practice is limited and of variable quality. This leaves us with two choices for improvement: either we need to improve general practitioner or in-practice nursing skills in relation to spirometry, or we need to provide enough specialist spirometry services to which general practitioners can refer. As lung function is basic information for the diagnosis and management of COPD, improvement in the practice and quality of spirometry is essential. Spirometry is to dyspnoea as the electrocardiogram is to chest pain. Improving the situation in general practice is an infrastructure and training problem that requires funding.

International COPD guidelines also agree on the importance of smoking cessation. However, general practitioners need to be supported in the effective implementation of smoking cessation initiatives. We know that simple advice from a doctor giving the reasons for quitting can be effective with some patients. The Lung Health Study showed that doctors who are adequately prepared and supported can achieve high smoking cessation rates, and these can be sustained over the long term, resulting in significant benefits. This was an aggressive smoking cessation program in which the doctor played a pivotal role, strongly recommending cessation and then referring participants to groups guided by a health educator. Given the Australian burden of disease study mentioned earlier showed that smoking is the number one risk factor contributing to disease outcomes in Australia, an aggressive approach to smoking is warranted as part of well planned public health program within which the general practitioner can focus on patient specific issues and communication.

The Lung Health Study also showed that smokers with COPD were more likely to be male, of lower educational status and on lower incomes. Their circumstances may mean that access to nicotine replacement therapy is financially out of reach. In such cases it is necessary to consider the addition of nicotine replacement therapy to the Pharmaceutical Benefits Scheme, as removing barriers to smoking cessation must be a part of preventive COPD policy.

Increased detection of COPD cases will also lead to other preventive benefits. Earlier detection of COPD will produce milder cases where, as already shown, there is a higher concentration of smokers who will benefit from intervention. It will also lead to earlier development of management plans and improved management of COPD exacerbation, annual influenza and periodic pneumococcal vaccinations. All of these important additional management initiatives will improve quality of life for those with COPD and, theoretically, reduce the prevalence of late diagnosis when treatment and management of the disease have become more complex and requires increased use of health resources.


Focussing on New Ideas for Dying Habits

Della Rowley
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Drug and Alcohol Services South Australia

The article When you can’t breathe … nothing else matters, by authors Ruffin, Wilson and Appleton (see page 13 in this issue) concludes that smoking is the number one risk factor contributing to Chronic Obstructive Pulmonary Disease (COPD) in Australia. Smokers with COPD are more likely to be males of lower educational status and on lower incomes. The authors consider that an ‘aggressive approach to smoking cessation is warranted’.

The British Lung Foundation’s recent survey of 1,200 women1 revealed that only 1% of women said that COPD was their main worry. Yet rates of the disease are soaring and it may soon be the fourth biggest killer of women. Male rates of COPD have reached a plateau, but there appears to be little understanding of how the disease can be prevented and managed effectively. The survey’s authors concluded that a measurable increase in awareness about COPD is needed, along with increased diagnosis and a reduction in the prevalence of smoking in affected people.

Since the 1970s there have been large-scale public awareness anti-smoking campaigns in Australia. Despite a general awareness that tobacco kills 19,0002 people in Australia each year, and millions worldwide, it appears that some population groups are still not aware that COPD is one of the major consequences of smoking.

Currently playing on South Australian television and radio, the advertising campaign Bubblewrap3 links emphysema and smoking and is the first public health campaign in South Australia to make the link between smoking and COPD. Early evaluation of this campaign showed that those with lower levels of education were affected by the campaign; it made them feel concerned about their smoking.4 However, public health campaign approaches to tobacco control are not sufficient to make significant progress with the most disadvantaged, high prevalence groups.5 There is a well documented relationship between smoking and socio-economic status. Smoking prevalence is highest among males of 30-44 years, and higher still among unemployed people, those who left school at the age of 15, and those who have gained no further qualifications or have a trade qualification.6

We cannot continue to ignore smoking rates of over 50% in these priority populations. New and innovative strategies are needed while maintaining the current population-wide approach. South Australia’s Tobacco
Control Strategy 2005-2010\(^2\) is concentrating effort on three priority groups: Aboriginal people, those with a mental illness and young people. The prevalence of smoking in each of these population groups is far higher than that of the general population and they make up a large proportion of the remaining group of smokers.

Working closely with all three groups in a collaborative way is essential, and this means the concerted effort of many health professionals supporting each other’s work. We know that the desire to make a ‘quit’ attempt is very similar across all socio-economic status groups, but people who live in lower socio-economic status areas have less confidence about quitting.\(^6\) This lack of confidence relates to the degree of addiction as well as to the length of time a person has smoked, how many cigarettes they smoke, and also to the environment and the influence of other people with whom they live, work and socialise.\(^6\)

Increasing the capacity of doctors and other health workers to give ‘quit’ advice, especially in disadvantaged communities, is an important component of tobacco control. It is true that inattention, or pessimism, has prevented health workers from persisting with high prevalence smoking groups. There have been many rationalisations for not working on smoking cessation programs with these priority groups. It is understandable, though not a sustainable argument, to concede that the pressures of other more critical issues such as petrol sniffing deaths, or severe mental illness, tend to discount the consequences of smoking in such groups.

We are beginning to see some success with innovative projects around the state, working with people with a mental illness and working in areas of multiple disadvantage. Interventions by clinicians and counsellors, and the use of pharmacotherapy, significantly increase the likelihood of smokers quitting, and efforts are needed to increase the use of these strategies in disadvantaged communities.\(^8\) Broader community approaches are also needed, and these projects must involve the community in the design and implementation of interventions. They need to support positive identity formation rather than just focussing on not smoking, and preferably they should be entertaining, supportive and interactive.\(^9\)

People who still remain smokers, in the face of the strong evidence of health risks, are going to need a range of services that address their life circumstances while providing the extra encouragement to give up their habit. Pressure on its own is not enough incentive. Legislation to make all work places, including hotels and clubs, smoke-free by November 2007 will break the social nexus between smoking and alcohol and gambling and remove one very powerful arena for inducing young people to initiate smoking. With these combined strategies we hope to further reduce smoking-related deaths and ensure that smoking really is a dying habit.

References

The Go for 2&5® Campaign
- Example of a Public Health Nutrition Early Intervention Strategy

Christina Pollard
National Public Health Partnership Fruit & Vegetable Project Officer
Department of Health in Western Australia.

Background

It has been suggested that eating more fruit and vegetables may be the single most important dietary change needed to reduce the risk of major chronic diseases.1

Increasing fruit and vegetable consumption is a global nutrition priority. The 'Global Strategy on Diet, Physical Activity and Health', endorsed by the World Health Assembly, encourages countries 'to take steps to increase the consumption of fruit and vegetables' and emphasises that governments play a primary steering and stewardship role in strategy development, ensuring implementation, and monitoring long-term impact.2

In Australia, the National Public Health Partnership (NPHP) is responsible for identifying and developing strategic and integrated responses to public health priorities.3 In 2004, the NPHP supported its nutrition advisory sub-committee Strategic Inter-governmental Nutrition Alliance (SIGNAL) to form a nationally coordinated approach to increasing fruit and vegetable consumption.

A year later, in May 2005, the national Go for 2&5® campaign was launched, with its goal over five years to increase fruit and vegetable consumption by at least one serve per day. The success of the Go for 2&5® campaign, which was developed by the Department of Health in Western Australia, has led to it becoming Australia's national fruit and vegetable campaign. It is now an Australian state and territory government health initiative, supported by industry and other organisations with an interest in promoting good health.

Why promote fruit and vegetables?

The main reasons why health authorities promote increasing fruit and vegetable consumption include the following:

- There is growing evidence of the health protective effects of an adequate dietary intake of fruit and vegetables.
- Intakes of fruit and vegetables are significantly below recommended levels, and this is true for most age and gender groups.
- Most people think their intake is adequate despite it being low (particularly for vegetables).
- Many people are not aware of the recommended intakes of fruit and vegetables (particularly vegetables).
- There is a lack of media promotion of fruit and vegetables to compete with heavily promoted unhealthy foods.

Health benefits of increasing fruit and vegetable intake

Eating adequate amounts of fruit and vegetables may help in the prevention and management of conditions including: cardiovascular disease; stroke; hypertension; some cancers (including cancer of the mouth, pharynx, oesophagus, stomach, colon, rectum, lung and possibly cancer of the breast, ovaries, cervix, endometrium, thyroid, liver, prostate and kidney); some vitamin deficiency diseases (including Vitamin A deficiency, Vitamin C deficiency and scurvy, Folic acid deficiency and megaloblastic anaemia); and some bowel disorders (including constipation, Crohn's disease, diverticular disease); obesity; diabetes and hypercholesterolemia.4,5

How fruit and vegetables help to protect us from disease

Fruit and vegetables contain a wide range of micronutrients, antioxidants and phytochemicals, with no single nutrient providing all the protection against preventable chronic diseases. The recommendation is to eat a wide variety of fruit and vegetables, to promote growth and development and to protect against chronic diseases.

Additionally, fruit and vegetables are low in fat and energy. Eating more of them leaves less room for less nutritious foods and may contribute to lower risks of obesity, hypertension, diabetes, circulatory diseases and some cancers.

Fruit and vegetable recommendations - how much of which types should we eat?

The total amount of fruit and vegetables recommended depends on age, appetite and activity levels, and is increased with pregnancy and breast-feeding. Children are encouraged to Go for 2&5®; however, the amount of food that children need for healthy growth and development depends on age, activity and body size (see Table 1).

Vegetables

It is recommended that adults and adolescents eat at least five serves of vegetables (including legumes) per day. One serve of vegetables is about 75 grams: around half a cup of cooked vegetables (including legumes), one cup of salad vegetables or one medium potato. A wide variety of vegetables should be eaten every day, particularly the dark-green, orange/yellow and cruciferous varieties. This should include some raw and cooked vegetables.
Fruit

It is recommended that adults and adolescents eat at least two average-sized pieces of fruit per day. A wide variety of fruits should be eaten each week, particularly orange or yellow varieties, which are high in vitamins A and/or C. One serve of fruit is about 150 grams: one average-sized piece of fruit, two smaller pieces (eg apricots) or one cup of chopped or canned fruit.

Table 1: Recommended daily intake of fruit and vegetables

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Fruit (serves)</th>
<th>Vegetables (serves)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-7</td>
<td>1-2</td>
<td>2-4</td>
</tr>
<tr>
<td>8-11</td>
<td>1-2</td>
<td>3-5</td>
</tr>
<tr>
<td>12-18</td>
<td>3-4</td>
<td>4-9</td>
</tr>
<tr>
<td>Over 18</td>
<td>2-5</td>
<td>4-8</td>
</tr>
</tbody>
</table>

Source: The Australian Guide to Healthy Eating

Current fruit and vegetable intake

The 1995 National Nutrition Survey provides valid and reliable food intake data; however, many people overestimate their fruit and vegetable intake during such surveys, which suggests that consumption levels are actually lower than those reported. The results show that most Australians are consuming well below the recommended intakes of fruit and vegetables, in many cases half of what is recommended.

Background to the Go for 2&5® campaign

Developed by the Western Australia Department of Health, the Go for 2&5® campaign is a social marketing campaign aiming to increase awareness of the need to eat more fruit and vegetables and to encourage increased consumption. Since its launch in 2002, adults in WA have been eating more fruit and vegetables.

Prior to the campaign, most WA adults were aware of the benefits of fruit and vegetables, agreeing that ‘they are healthy’, as a positive aspect of including fruit and vegetables in their diet. Even so, while more adults felt they should eat more fruit, only half thought they should eat more vegetables.

The campaign targets the meal preparer and shopper in the household, the person who has the greatest influence on the family diet. Its objectives are to:

- Encourage awareness of the need to eat more fruit and vegetables, particularly vegetables.
- Improve perceptions of the ease of preparing and eating vegetables.
- Increase awareness of the recommended number of serves of fruit and vegetables.

The campaign uses a comprehensive range of strategies, including mass media advertising (television, radio and press), as the overarching focus for public relations activities, publications, point-of-sale activities, website, school-based activities, liaison with food industry groups, and community activities.

The strategy

The West Australian Go for 2&5® campaign has taken an ‘encouragement’ approach. Initially, the single-minded advertising proposition was ‘It’s easy to get an extra serve of vegies into your day’. This was followed by the more specific ‘How many serves of vegies are you really eating today?’.

The Go for 2&5® campaign included paid advertising (television, radio, print), public relations, a website (www.gofor2and5.com.au), publications, and arts events, sponsorships and point-of-sale promotions. The 30-second television commercials featured animated fruit and vegetable characters informing viewers that their vegetable intake was low, encouraging them to ‘fit a few more vegies in your day’, and promoting a cookbook with healthy fruit and vegetable recipes.

Although schoolchildren were not the primary target group for the campaign, they do take information home to their parents. The annual Schools Fruit’n’Veg Week provides an opportunity for the whole school community to focus on the health aspects of eating fruit and vegetables. Their website is at: http://www.fruitnvegweek.health.wa.gov.au/home/index.asp

Campaign Results

Prior to the campaign, most adults knew that fruit and vegetables are good for them, however the barriers to increasing consumption were reported as already eating enough and that they are difficult to prepare. In 2004, a tracking telephone survey (n=780) showed higher awareness (66% spontaneous, 87% prompted) and more people thought they should eat more vegetables (34% in 2002 increased to 43% in 2004).

As shown in the accompanying graphs, in WA as a result of the Go for 2&5® campaign, there have been significant improvements in attitudes, knowledge and beliefs towards fruit and vegetable consumption (Figure 1) and self-reported intake (Figure 2).

Figure 1: Attitudes, knowledge and beliefs towards consumption

Similarly, there has been an overall average daily increase of 0.8 serves of fruit and vegetables across the adult population since the commencement of the campaign (Figure 3). Fruit consumption has increased from 1.6 serves to 2.1 serves per day and vegetable consumption from 2.6 serves to 2.9 serves per day.

**Conclusion**

The national Go for 2&5® campaign was launched in South Australia in 2005, with the goal over five years to increase fruit and vegetable consumption by one serve per day.

Western Australia’s Go for 2&5® campaign has demonstrated much success, of increasing fruit and vegetable consumption by almost one serve in three years, which has led to other Australian states and territories taking part in the national campaign. Increasing fruit and vegetable consumption is a national nutrition priority where all states and territories are working together to follow the successful example shown by Western Australia.

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Of all diseases prevalent worldwide, diabetes mellitus bears a peculiar association with increasing affluence. It is almost as if diabetes and its partner-in-crime, cardiovascular disease, are the just penalties for improving a nation’s socio-economic status! Why is this so? In simple (and perhaps simplistic) terms, improvement in socio-economic status goes hand in hand with increased access to high fat and refined carbohydrate diets, and with a sedentary lifestyle. Affluence means motorised transport, supermarkets and fast food chains rather than walking and a subsistence diet. It is estimated that approximately 60% of the Australian population can currently be classified as either obese or overweight, and this represents an 18% increase in the prevalence of obesity since 1980. With obesity comes insulin resistance, one of the twin defects leading to diabetes (the other is a relative deficiency in insulin production). It is therefore not surprising that by the year 2010 there are likely to be approximately 1 million people with Type 2 diabetes in Australia, one of the highest prevalence rates for this disease in the developed world. Basically, this means that one cannot have one’s cake and eat it too! (At least, not without putting some effort into working it off!)

While no one would wish to turn the clock back to a hunter-gatherer lifestyle, the affluent world needs to take a serious look at its comfortable and overindulgent existence in order to avoid the penalties that accrue. A number of studies have clearly demonstrated that modification to lifestyle can significantly alter the onset of diabetes mellitus. The Finnish Diabetes Prevention Study demonstrated that, in a group of people at high risk for diabetes, the risk could be reduced by as much as 58% through altering dietary intake and increasing the level of physical activity. The Nurses Health study from the United States showed a much lower rate of onset of diabetes mellitus in the group of women they stratified as low risk, based on body mass index, dietary habits and level of physical activity. While individual choice and responsibility towards maintaining a healthy lifestyle remain the cornerstone in reducing individual risk of developing this chronic disease, government and health policy initiatives are essential in reducing community risk.

The AusDiab survey of the prevalence of diabetes in Australia estimates that for every person with known Type 2 diabetes there is another who has yet to be diagnosed. Type 2 diabetes is an insidious disease, often with very vague symptoms which may not be immediately recognised by patients or their doctors. It is not uncommon for the first presentation of diabetes to be with one of its chronic complications. Studies estimate that around 5% of patients admitted to coronary care units with acute myocardial infarction will be diagnosed for the first time with diabetes, suggesting that they may have already had the condition for a number of years without realising it. More dramatically, patients have been known to present with sudden onset of blindness which on investigation revealed diabetic retinopathy as the cause; yet they had not known they had diabetes. There is therefore a strong imperative to screen actively for diabetes in populations known to be at high risk, so as to allow early detection and appropriate treatment. The earlier the detection, the more effective the strategies will be to reduce the risk of chronic complications. Current guidelines have identified at-risk populations such as those with a first degree relative with diabetes, specific ethnic groups (Aboriginal and Torres Strait Islanders, Polynesians, people from the Indian subcontinent, or from parts of South East Asia, China etc), obese subjects and certain other groups. Members of these groups have been designated for regular screening from a recommended age. For more specific details on whom, when and how to screen, readers are referred to the guidelines, Managing Type 2 Diabetes in South Australia. Screening can be simply done by measuring fasting plasma blood glucose. A fasting blood glucose level greater than 7 mmol/L on two occasions, or a random blood glucose level of 11 mmol/L or more in a symptomatic patient, will confirm the diagnosis. An oral glucose tolerance test is occasionally needed in ambiguous cases.

Impaired glucose tolerance (IGT) is defined in a patient who has a blood glucose level of between 7.8 and 11 mmol/L after a two-hour glucose load. This condition is important to recognise for two reasons – the individual is at a higher risk of developing Type 2 diabetes and, significantly, even without the evolution to full-blown diabetes, impaired glucose tolerance confers a higher risk for developing cardiovascular disease. Hence, patients with this condition need aggressive management of cardiovascular risk factors as well as advice on lifestyle alterations to reduce the risk of progression to diabetes. Another group of patients is identified as having impaired fasting glucose (fasting glucose levels of between 5.6 and 6.9 mmol/L). The significance of this condition with regard to cardiovascular disease is not as clear as with IGT. Nevertheless both groups are at higher risk of developing Type 2 diabetes and are part of the at-risk population that should be screened regularly.

If the acute metabolic disturbances associated with diabetes were the only concern, then its management would be relatively straightforward. It is not difficult to obtain a fair level of metabolic control that minimises symptoms, eradicates thirst and frequent urination,
improves energy levels and reduces drowsiness. It is
the prevention of the draconian chronic complications
of this disease that is the major challenge. Recently
an eminent diabetologist ruefully observed that the
problem posed by the possible bird ‘flu epidemic, for all
its potentially devastating outcome, is nowhere near as
overwhelming as the catastrophic burden on patients
and the health care system that is being predicted
for the diabetes epidemic. After all, the effects of bird
‘flu are likely to sweep through communities over a
few months and then pass. The massive burden of
diabetes complications such as renal failure, blindness,
limited mobility from amputations etc include long-
term disabilities for patients and an ongoing drain on
community and health care resources over decades.

On the positive side, however, is the highly convincing
data from several major trials in the last decade, which
clearly demonstrate that this burden can be significantly
reduced for both patients and the community. The
Diabetes Control and Complications Trial on Type 1
diabetes a and the United Kingdom Prospective Diabetes
Study for Type 2 diabetes b showed a marked reduction
in microvascular complications such as eye and kidney
disease, and nerve damage, with tight glycaemic
control. Not only could the onset of these complications
be retarded but, encouragingly, the progression
of established complications could be slowed by
improving blood glucose levels. The target marker for
good glycaemic control, an HbA1c level of 7%, is not
in the normoglycaemic range but is an achievable goal
for most patients with diabetes. With the exception
of the very young and the very old, this should be
the goal for all patients with diabetes and their health
care providers. The downside of good control is the
increased frequency of hypoglycaemia, which is dreaded
by patients and can sometimes be a disincentive to
achieving optimal control. The advent of new types of
insulin and delivery systems will aid in this area.

Macrovascular diseases make up the other major group
of diabetes complications – heart attacks, strokes, and
blocked arteries to the legs leading to claudication and
gangrene. Blood glucose control alone is not sufficient
to reduce the risks of these events. However, several
trials on blood pressure and cholesterol treatment have
demonstrated a substantial reduction of these life-
threatening complications in the diabetic population. c
For patients with diabetes, the target levels for blood
pressure and cholesterol are more stringent than for
those of the general population. Indeed the goals in
a diabetic person with no previous history of a heart
attack are equivalent to the levels aimed for in patients
who have already had a heart attack and are aiming to
prevent a second one (secondary intervention goals).
The cessation of smoking is a given.

While these goals are easy to identify, the actual
achievement is much more challenging. It requires a
health care system that has the capacity to support and
monitor patients, health professionals who are familiar
with the targets that need to be achieved, and patients
who are actively engaged in their own management.

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Introduction
The National Chronic Disease Strategy (NCDS) is due for release in October 2005 after being presented to federal, state and territory health ministers within the Australian Health Ministers’ Advisory Council (AHMAC). The strategy comprises four action areas, one of which is self-management, and this is integrally linked with the other action areas of prevention, early detection, and integration and coordination. This paper provides a definition of chronic condition self-management (CCSM) as it applies to the individual, the clinician and the health system. It also discusses the role of GPs and other health workers in using a population health approach to provide self-management support for people with an established chronic condition and people at risk of developing chronic conditions.

Self-management is viewed as a key element in the prevention and early intervention of chronic conditions, and can be applied to individuals, families, communities and populations. It fits well with public health models of prevention and the population approach. It also acknowledges that social determinants of health have a powerful influence on lifestyle behaviours and perceived choices, so that attempts to prevent and minimise the impact of chronic conditions must focus not only on individuals but also on the social determinants of health which influence their behaviours. This is everybody’s business, and particularly that of the health service systems, which often shape and influence how a person responds to and manages their chronic condition.

Rationale for self-management as part of a public health approach
The leading chronic conditions (cardiovascular disease, cancer, chronic lung disease, and diabetes) share several key risk factors (tobacco use, poor diet, lack of physical activity, and alcohol use) and are strongly influenced by social determinants of health such as poverty, education, mental health and unemployment. Self-management programs offer a key strategy that can be used to prevent and better manage the range of chronic conditions and their risk factors, as well as taking into account the underlying determinants of health. Hence, population health strategies that shift towards primary intervention are crucial for the prevention and management of chronic conditions.

However, existing health care systems tend to provide episodic care services in response to patient demand, often in association with acute health events, and do not necessarily encourage self-management. Currently, attempts to address many of the risk factors noted above occur within administrative and bureaucratic silos, with each developing its own strategy in isolation. A person must usually seek help from a single health professional, or else be forced to navigate a labyrinth of services provided by health professionals within a fragmented and disjointed system. Diverse and divergent structures and cultures offer few clearly established communication pathways that enable information to be shared. This often leads to duplication and waste, and ignores the possibility of a holistic approach to the person’s health and wellbeing, or to the realities of their psychosocial environment.

The current system of health care focuses heavily on treating individual chronic conditions and delivering specialised disease management programs through specialist clinics. Under these circumstances of fragmented patient care, health professionals may under-treat or overlook other related (or unrelated) disorders, with deleterious consequences for the person’s morbidity and mortality. The person with the chronic condition is also more likely to feel disempowered within such a system, and less likely to learn effective self-management. Evidence from research on compliance and adherence supports the idea that health professionals need to change the way they interact with consumers of health services.

Such research has found that 30-50% of people do not comply with their treatment (medical or behavioural lifestyle changes) irrespective of disease, prognosis or setting. This suggests that health professionals need to consider and understand the person’s viewpoint and potential barriers to managing their health, rather than simply dictating the treatment and expecting the person to follow it largely without question.
The person’s perspective

When a person develops a chronic illness and is first given a formal diagnosis, this constitutes a critical life event for them. Such a crisis has well defined characteristics. Put simply, it is a time of emotional disequilibrium, and one that needs resolution through the learning of new skills to cope with the challenge that is presented. Once the challenge is confronted, dealt with and overcome, the person can achieve a sense of mastery, and self-efficacy can grow. This is the first step in developing an effective self-management approach to any clinical condition. The person’s experience of chronic illness is subjective, interpersonal and social.

Self-management tasks involve an understanding of, and the ability to distinguish between, the experience of illness, levels of distress, perceived loss of wellbeing, illness behaviour, and the impaired functioning observed by others. They serve to reduce the effects of the condition or disease on the person, such as social stigma and exclusion, and decreased levels of participation in family and community, and aim to promote full personal and social wellbeing.

Similarly, the perspective of a chronically ill person’s carer is unique. Caring for someone with chronic illness has a significant impact on the carer’s role, and on their interpersonal relationships with the person and with others, as well as causing inevitable changes in their own careers and lives.

A cognitive behavioural (CBT) approach to CCSM, as used in the Flinders model, enables the health professional to use a motivational approach in support of self-efficacy and change, as part of their interaction with a chronically ill person. It is linked with a crisis intervention model which recognises that crisis offers a unique opportunity for the person to make positive changes. It also involves an important personal, emotional, social and psychological adjustment, progressing towards self-management beyond the limits of bio-psychosocial understanding, and is therefore more meaningful for the person with the chronic condition.

Medical practitioners and allied health workers are critical partners for people faced with the diagnosis of any chronic condition. At this time, the person, their carers and family, doctors and health workers must join together as “partners in health” to develop complementary roles in the total management of the condition. Central to this is agreeing on what CCSM means and how responsibility for self-management and self-management support is shared.

Definitions of self-management

People with chronic conditions need (and want) to live effective lives in spite of their symptoms and limitations, if they are to make the most of their lives with the least possible disability and optimum health outcomes. Central to this is good mental health and wellbeing to foster positive coping skills and independence rather than dependence. Together with these goals, any definition of CCSM needs to encompass the broad spectrum of chronic conditions and to support a generic focus for action. It needs to recognise that personal risk factors for health, CCSM and health promotion are part of the same strategy.

CCSM is about how the person, the health workers and the system share knowledge and responsibility and work together to support the achievement of better health and wellbeing, as defined by the person, not by the professional. It acknowledges social, psychological, and biological impacts on self-management ability, and sets all this within a cultural context that recognises and respects the beliefs and values of the person.

Self-management is therefore a set of attributes of the individual who:
- has knowledge of their condition and treatment
- follows a treatment plan (care plan) agreed and negotiated with their health professionals, carers/family and other supports
- actively shares in decision-making with health professionals, carers/family and other supports
- monitors and manages signs and symptoms of their condition
- manages the impact of the condition on their physical, emotional and social life and has good mental health and wellbeing as a result
- adopts a lifestyle that addresses risk factors and promotes health by focusing on prevention and early intervention
- has confidence in their ability to use support services

This occurs within a health system that provides ready access to appropriate systems of self-management support which are:
- evidence-based
- adequately resourced
- endowed with staff who are adequately trained, culturally sensitive to the person’s needs and who support the belief in the person’s ability to learn self-management skills

Hence, for definitional purposes, self-management is what the person with a chronic condition (or at risk of a chronic condition) does, and self-management support is what the health professional and the health system do to support the person in achieving optimal self-management.

The professional assists the person with a range of tasks that promote effective self-management, based on the person’s goals, wishes and capacities, by addressing and encouraging the person’s participation in the key

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skills of knowledge-building, problem-solving, decision-making, and confidence-building. This is achieved by addressing central tasks regarding role, emotional management, and medically related tasks, using a client-centred, holistic approach that builds on the person’s capacity, strengths, resilience and dignity. CCSM involves the identification of issues, setting of goals, and commitment to action components. Hence, progress and outcomes are measurable via action plans that can be reviewed over time for process and impact by the person, helping professionals and other supports. We argue that a self-management care plan must be client-owned and client-driven in order to be effective.

We also suggest that this care plan can be incorporated into current GP chronic disease care planning arrangements, as the means of promoting collaboration and partnership between the person, their GP and other health professionals, and alleviating the fragmentation of services and communication between these self-management support providers.

**Conclusion**

For chronic condition self-management to become an accepted and established part of health care in Australia, a range of support structures and relationships need to be developed or enhanced. Fundamentally, this also requires a shift towards building self-management capacity in the individual with the chronic condition, and placing them at the centre of action and knowledge. This involves a significant change in the behaviour of health professionals who have traditionally viewed themselves as experts. Increasing the capacity of the primary (as well as secondary and tertiary) and acute health care sectors to provide timely, coordinated and integrated chronic disease management support is essential. Promoting a partnership approach to self-management care planning is needed, with the person as an equal partner with each and all of those providing support. It also involves raising awareness in the community about managing, promoting and maintaining health and wellness, and minimising health risks as part of a population-wide approach.

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IMPROVING HEALTH OUTCOMES: SELF-MANAGEMENT OF CHRONIC DISEASE

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Patients with chronic conditions make day-to-day decisions about – self-managing – their illnesses. This reality introduces a new chronic disease paradigm: the patient-professional partnership, involving collaborative care and self-management education. Self-management education complements traditional patient education in supporting patients to live the best possible quality of life with their chronic condition. Whereas traditional patient education offers information and technical skills, self-management education teaches problem-solving skills. A central concept in self-management is self-efficacy – the confidence to carry out a behavior necessary to reach a desired goal. Self-efficacy is enhanced when patients succeed in solving patient-identified problems. Evidence from controlled clinical trials suggests that (1) programs teaching self-management skills are more effective than information-only patient education in improving clinical outcomes; (2) in some circumstances, self-management education improves outcomes and can reduce costs for arthritis and probably for adult asthma patients; and (3) in initial studies, a self-management education program bringing together patients with a variety of chronic conditions may improve outcomes and reduce costs. Self-management education for chronic illness may soon become an integral part of high-quality primary care. JAMA 2002; 288: 2469-2475

In its report on innovative care for people with chronic conditions, the World Health Organization presents health self-management as a key strategy to respond to the increasing global burden of chronic diseases. The term ‘self-management’ is used to describe the health activities undertaken by individuals with a chronic illness to manage their condition, including daily symptom management, behaviour and role adaptation, and management of the psychosocial aspects of living with a chronic illness. People with chronic conditions need education and support to help them accomplish these tasks.

While the reason behind the success of self-management education programs is unclear, and there are methodological limitations to some studies, increased perception of personal control appears to be positively associated with changes in health behaviour and health status. An Australian longitudinal study reported that positive effects on clinical and functional outcomes are sustained following attendance at a registered arthritis self-management course.

In the United Kingdom, the ‘Expert Patient Program’, developed to improve the management of people with chronic conditions, provides accredited, local self-management education programs. Preliminary results of this approach show a need to raise awareness of the education program among health professionals and the public, and a need to target these programs to population sub-groups, particularly marginalised groups.

Self-management was a major focus of the Australian Government Sharing Health Care Initiative (SHCI), which aimed to improve the quality of life of people with chronic conditions. The Initiative comprised demonstration projects testing a range of chronic condition self-management models, including Indigenous-specific projects, education and training of health professionals and people participating in the projects. The results of a national evaluation of the SHCI demonstrated that the people participating reported improved health outcomes, a better quality of life and reduced service utilisation. This trend was observed across all eight demonstration projects, including those with Indigenous and Culturally and Linguistically Diverse client groups.

The issues around living with a chronic condition are many and various. An example of a highly successful self-management program is the Stanford Chronic Disease Self-Management Program (CDSMP). This program is the basis of the Expert Patient Program in the UK. Building on the experience and evaluation of the Arthritis Self-Management Program, the Stanford Centre for Research in Patient Education and Kaiser Permanente began, in 1990, to develop the CDSMP.

The program content concentrates on patients’ self-defined needs and self-management options for common problems and symptoms such as pain, fatigue, fear and frustration. Patients participating in the program also learn how to manage emotional and other changes brought about by illness, including anger, depression, uncertainty about the future, changed expectations and goals, and isolation. The program is based on the self-efficacy theory and incorporates skill mastery, reinterpretation of symptoms, modeling, and social persuasion, to enhance patients’ sense of personal efficacy.

The Stanford CDSMP has been demonstrated to improve healthful behaviours and health status at 6 months. It also resulted in fewer hospitalisations and days of hospitalisation. These changes were sustained at 2 year follow up.
It is our responsibility to our profession and to our patients to recognise the role of self-management of chronic disease and to establish it as an integral part of high quality primary care. A beginning step for South Australia has been the recent acquisition of a license for the Stanford CDSMP that covers all Department of Health funded health portfolio entities.

References


The Heart Foundation Cardiovascular Health Course for Aboriginal Health Workers

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Introduction

The National Heart Foundation Australia (NHFA) is striving to support the prevention and management of chronic disease for all Australians, particularly Cardiovascular Disease (CVD), and with a special focus on those at greatest risk. As an important component of this strategy, the NHFA is supporting appropriate training for Aboriginal Health Workers (AHW) in Cardiovascular Health (CVH).

Since late 2003, in an effort to make a positive impact on the health status of Aboriginal people and Torres Strait Islanders, the National Heart Foundation South Australian Division (NHFSA) has been working to develop a specific training program in South Australia. A collaborative partnership has been established for this project with Nunkuwarrin Yunti, Pika Wiya and the Aboriginal Health Council of South Australia (AHCSA). Whilst the training course has a clear prevention focus, the management of CVD is included, due to the prevalence and early onset of CVD among Aboriginal people. Financial support for the program has been received from the SA Department of Human Services (now the Department of Health, Aboriginal Health Division) and the Commonwealth Office of Aboriginal and Torres Strait Islander Health (OATSIH).

The National Heart Foundation and Aboriginal and Torres Strait Islanders

The NHFA describes its strategic direction as aiming to decrease the incidence of heart, stroke and blood vessel disease. Such cardiovascular conditions contribute significantly to the level of ill health experienced by Aboriginal and Torres Strait Islanders. The NHFA has developed a Platform for Action with Aboriginal people and Torres Strait Islanders which works towards addressing the level of CVD in this population. The key components of this platform include:

- support of national, state and territory cardiovascular disease training programs
- support for the provision of cardiac rehabilitation programs for all eligible Aboriginal & Torres Strait Islander patients.
- support for the implementation of a nationally managed program for the secondary prevention and management of rheumatic fever and rheumatic heart disease.
- development and implementation of a secure funding base for the Aboriginal and Torres Strait Islander cardiovascular programs.

The NHFA has strategically decided to develop training strategies with Aboriginal and Torres Strait Islander health workers. This was the key recommendation identified by the conference Heart Disease and Aboriginal Health – What will make a Difference? The conference was held in 1997 in Perth in partnership between the NHFA, the Australia Medical Association, and Derbarl Yerrigan Health Services (WA).

Why train Aboriginal and Torres Strait Islander health workers?

In Australia, Aboriginal and Torres Strait Islander health workers have a range of roles including:

- providing information to assist community members and clients to make informed decisions about their health and treatment options
- assisting and supporting planning programs, including the development of a community profile to assist in identifying health problems
- ensuring cultural sensitivity and maintaining traditional health philosophies
- providing health education and promotion, management and control

Aboriginal Health Workers (AHWs) play a critical role in improving and maintaining the health of Aboriginal people, as it is thought that no other health professional is as well placed or better able to provide culturally appropriate health care and education to Aboriginal people within their own communities. It is recognised that living locally in communities and understanding community issues at first hand gives AHWs an enormous advantage in treating and preventing Aboriginal ill health.
Cardiovascular health training for Aboriginal and Torres Strait Islander health workers

Following the conference Heart Disease and Aboriginal Health – What will make a Difference? the NHFA, the Australia Medical Association and Derbarl Yerrigan Health Services developed the ‘Heart Health Manual’ training package. It was designed specifically for AHWs, to assist them in reducing the high prevalence of heart disease among Aboriginal people. The training package is registered as a Certificate in Cardiovascular Health for Aboriginal Health Workers (NTIS: 51023) and graduates from this course receive an Accredited Skills Formation (ASF) Level 5 certificate.

The training course is run over 60 hours and includes training in a number of chronic disease risk factors, with several case studies to demonstrate how health workers can facilitate healthy behaviour change with their clients. The modules covered in the course include:

- Aboriginal Health
- Cardiovascular Health
- Role of the Aboriginal Health Worker
- Individuals
- Working with Families
- Nutrition/Schools
- Organisations and Prisons
- Community Action
- Special Groups

From the initial effort to develop and trial this training package, several National Heart Foundation Divisions in Australia have worked towards engaging the Registered Training Organisations (RTO) to integrate the Cardiovascular Health Training Program into their existing training programs.

So what has actually happened in South Australia?

Project staff at the NHFSA, working closely with Nunkuwarin Yunti, Pika Wiya and the AHCSA, adapted the accredited Western Australian resources to ensure that they were appropriate for South Australia. The course was then conducted as a pilot program at Nunkuwarin Yunti in metropolitan Adelaide, and at Pika Wiya in Pt Augusta. Eight students completed the 10-day course in Adelaide and another eight in Pt Augusta.

As a result of these successful pilots, AHCSA has been prepared to take on the ongoing role of RTO, working collaboratively with the Heart Foundation to continue conducting courses throughout South Australia. To date, the course has been successfully run in Ceduna, Pt Lincoln and Coober Pedy, and there are plans for Mt Gambier, the Riverland and another metropolitan-based course.

It has been noted that sections of the initial course are now included in the Aboriginal Primary Health Care (APHC) Certificate which is being completed by Aboriginal Health Workers. As a result, discussions are taking place with the AHCSA to trial an abridged version of the CVH course in conjunction with the APHC certificate.

Conclusion

While the accredited course continues to be well supported nationally, it has been recognised that strategies to embed the content of the Cardiovascular Health Course for AHWs into other existing educational activities are also critical.

In South Australia, the Heart Foundation believes that work in this area can only be successful if close partnerships with Aboriginal health services are ongoing. As a result, we continue to work with AHCSA to provide the level of support required to maintain training in this area.

It is also acknowledged that the NHFA can bring a level of expertise to the area, and can play an important role in promoting cardiovascular health as a priority on the already full Aboriginal Health agenda. However, to make an ongoing difference and actually to improve the health status of Aboriginal people, clearly it is the Aboriginal Health Workers who must embrace the information, develop the skills and lead the community based projects.

References

The South Australian Health Omnibus Survey
15 Years on: Has Public Health Benefited?

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Introduction
Cross-sectional surveys are the most commonly used method of assessing health-related behaviours, determinants of behaviour, and prevalence estimates for non-registry based chronic diseases in the population. These types of survey can also be used to identify preferences, satisfactions, perceptions and attitudes, and how these may vary across subgroups and situations.

The South Australian Health Omnibus Survey (HOS) is a representative, cross-sectional survey that has been in operation since 1990. It is administered by the Population Research and Outcome Studies unit (PROS) of the South Australian Department of Health, in conjunction with a private Health Research company (Harrison Health Research). The goal of HOS is to collect, analyse and interpret data, which can then be used to plan, implement and monitor health programs and other initiatives. HOS is a ‘user-pays’ service, but each organisation pays only for questions that have direct relevance to their information requirements. This allows several organisations to share the operating costs of undertaking and administering such a survey. HOS is used by a number of government and non-government organisations to obtain data on a range of health issues in South Australia (SA). Surveys have been conducted annually each October/November. On occasions, to satisfy customer demand, a second survey has been undertaken (as in 1996, 1998, 2004) and is nominally called the ‘autumn’ HOS. Methodology for the Autumn HOS is identical to that of the yearly ‘spring’ survey.

This paper addresses the HOS methodology, the range of uses of the survey vehicle over the years, and the benefits to South Australia of having the ability to satisfy, under one umbrella, a wide range of public health data needs.

Method
HOS has been designed to meet the highest standards of population survey methodology with rigorous adherence to formal statistical techniques.

Sampling
The survey sample is a clustered, multi-stage, systematic, self-weighting area sample. Each survey samples 4,400 households. The observed response rate during the years 1991-2003 has been approximately 70%, resulting in a minimum of 3000 interviews (with persons aged 15 years and over) per survey. The large sample size and high response rate facilitates a high level of confidence that the results and trends noted from the survey are applicable to the South Australian population as a whole.

Seventy-seven percent of the sample is selected from the Adelaide metropolitan area, with the remainder being drawn from those country towns with a population of 1,000 or more (based on Australian Bureau of Statistics [ABS] latest Census information). Country towns with smaller populations are not included because of the additional cost of interviewing people living in remote areas. Within the selected metropolitan and country areas, the ABS Collection Districts (CDs) are the basis of the sample frame. A CD is a geographical area comprising approximately 200 dwellings. Cluster sampling means that some, but not all, of these CDs are included in the sample. To achieve a sample of 4,400 households, 10 households are selected from each of 440 selected CDs. Table 1 details the sample procedure and other sampling criteria.

Table 1: Health Omnibus sampling criteria

| Stage 1 - Selection of CDs | • 340 metropolitan and 100 country CDs are selected | • Skip interval = the number of households divided by the number of CDs required |
| Stage 2 - Selection of households within CDs | • Ten households per selected CD are chosen using a fixed skip interval from a random starting point. | • Starting point = random number between one and the skip number |
| Stage 3 - Selection of individuals within households. | • The person who was last to have a birthday (aged 15 years or over). | |
| Additional criteria | • Selected persons are non-replaceable | • 6+ visits are made to each household before the selected individual is classified as a non-contact. |
| | | • Selections found to be hotels, motels, hospitals, nursing homes and other institutions are excluded from the survey. |
**Questionnaire administration**

Clients are offered assistance to develop questions where required. Background demographic questions are included free of charge to users. HOS is a personal interview survey, which is considered to be the 'Gold Standard' of interview techniques. Interviewers read out the questions and, if necessary, prompt cards are used. The questionnaire is designed to take approximately 30-40 minutes for respondents to complete. Prior to the main survey, a pilot study of 50 interviews is conducted to test questions, validate the survey instrument and assess survey procedures. A quality control committee chaired by an epidemiologist oversees all facets of HOS. Committee members consist of a representation of prior users of the survey.

**Data collection**

The company undertaking the data collection component is a member of Interviewer Quality Control Australia (ICQA), a national quality assurance initiative of the Market Research Society of Australia. Accredited organisations must strictly adhere to rigorous quality assurance requirements and are subject to regular audit in this regard. Interviewers are trained extensively, and ten percent of the interviewers’ surveys are selected for validation. Validation involves re-contacting survey respondents to ensure that they meet the selection criteria within that household, that they were interviewed, and that their recorded responses to selected questions agree with their original responses. Data entry is fully verified to ensure accuracy of data capture. Recorded data is edited for accuracy and consistency.

**Weighting**

The survey data is weighted by sex, five-year age groups, geographic area and probability of selection within the household to provide estimates that apply to the South Australian population.

**Results**

A major use of the data has been to estimate the prevalence of chronic conditions or health related behaviours. This has included asthma, diabetes, arthritis, postnatal depression, hearing loss, hormone replacement therapy (HRT), palliative care, osteoporosis, eating disorder, hysterectomies, urinary incontinence, pelvic floor disorders, smoking, body mass index (BMI), complementary and alternative medicine use and mental health issues.

The power of the HOS, and one of the major benefits of the survey, is the ability to share the data amongst public health users. This has encouraged collaboration between researchers, and enables identification and detailed explanation of associations in the data in a cost-effective way. Examples include assessing behaviours amongst people with chronic diseases such as diabetes and smoking, asthma and smoking, diabetes and cardiovascular risk factors, psychosocial and traumatic events, depression and diabetes, HRT and risk of cardiovascular disease, and HRT and osteoporosis. In addition, various studies have shown the relationship between quality of life and chronic diseases, chronic conditions and behaviours.

Repeated cross-sectional surveys that exhibit a high level of consistency in methodology constitute a surveillance system and present opportunities for trend analysis. As an outcome of the consistency of the HOS methodology, changes in health problems and disease trends have been monitored. In particular over the past 15 years, asthma prevalence, BMI, diabetes prevalence, HRT use and smoking trends have been established and reported. The trend series produced from HOS are amongst the longest in Australia. Figure 1 highlights the increasing prevalence of diabetes since data was originally collected in 1991 with projections until 2016.

**Figure 1: Prevalence of self-reported diabetes in South Australia 1991 to 2004 by agegroups, with projections to 2016**

HOS has also been used to evaluate the effectiveness of public health programs and practices, to gain information on perceptions towards, and acceptability of, health services and programs or organisations, or to support changes in legislation within the state. This has included the evaluation of health interventions, and programs such as asthma management plans and smoke-free dining. The data has also been used to gain information on the acceptability and uptake of new initiatives, and to inform program directions. Examples of these are uptake of nicotine replacement, assessing the degree of confidence in the community that healthcare providers keep and use information responsibly, and asking men who have had a blood test for prostate cancer about their understanding of the test.

Perceptions of the risk of disease have also been assessed, and an evaluation has been conducted on the effect of media on health behaviours. Data has also been used to gain information that identifies target groups for public health interventions and campaigns, including early detection and prevention of osteoporosis, prevention of...
incontinence, postnatal depression, smoking, obesity, suicidal ideation, depression and arthritis.

Information on knowledge, attitudes and behaviours that are related to public health problems have also been collected, including knowledge about osteoporosis and the associated risk factors, adults’ understanding of depression and beliefs about its appropriate treatment, mental health literacy, and the influences behind treatment-seeking behaviour. HOS has been used to evaluate survey methodologies, to provide cost analyses, and to compare hospital patients with the general community or with metropolitan and country respondents.

Discussion

HOS is a large, representative sample that provides reliable estimates for chronic conditions, health risk behaviours and a range of other public health related issues including health service use, health management, health outcomes and policy support. As a result of its stability and the methods employed, the survey is fully subscribed (and often over subscribed) each year, with little formal marketing. Use of the data has been widespread and frequent, and the analyses well disseminated.

Many Australian state and community based data collection tools are fragmented, and the benefit of having major policy-makers, planners, promoters and researchers under one umbrella has been shown to be beneficial to the users and the community. Policy makers, health planners and health promoters require best available evidence and timely, accurate data, for decision-making. The SA HOS conforms to best practice methods in providing that evidence. Along with the user’s personal area of interest, consistent, reliable indicators on economic, social and demographic correlates of health are routinely collected – adding to the benefit and comparability of the data.

There are acknowledged limitations with HOS. Unlike computer assisted telephone interviewing (CATI) methodology, there is less control/supervision with face-to-face interviewing, and it is difficult to monitor each interview. Owing to cost pressures, interviews are conducted only in English, and only towns with over 1,000 people are incorporated into the sampling strategy. In addition, along with other self-reported methodologies, self-reported conditions and behaviours may produce under- or over-reporting.

Challenges lie ahead for HOS. Response rates over the past decade have been respectable (70%+), but with increasingly inaccessible buildings (eg locked gates), busy lifestyles, and security and privacy concerns, an impact on response rates is expected, following patterns and trends interstate and overseas.1 There is also an increased concern with the quality and safety of the interviewers. Future challenges include adapting the methodology to ensure continued receipt of high quality, representative, timely data so that the HOS users of South Australia can have access to this data. This may require incorporating the latest technology to make HOS more efficient, including using computer assisted personal interviewing (CAPI), computer assisted self-interviewing (CASI) or audio computer assisted self-interviewing.

HOS is an effective tool for obtaining public health information for community based planning and activities. The methodology has been designed to meet the highest standards of cross-sectional survey design (including sampling, response rate, data quality and validity) so as to provide measures of the health status of the South Australian population and to guide understandings of the determinants of health. Although a plethora of data sources are available to public health professionals, the value of a regular, reliable, methodologically sound, community based survey is worthwhile, and valuable in the provision of a different but complementary and timely public health data source.

References


VECTORBORNE DISEASES

Malaria
Twenty three (13 males, 10 females, age range: 2 to 49 years) cases of malaria were reported. In the period under review there were 22 reports of *Plasmodium falciparum* and one mixed infection of *Plasmodium malariae* and *Plasmodium falciparum* received for persons reporting exposures in Africa.

Ross River virus
In the period under review, 30 cases of Ross River virus infection were reported. This compares with 40 cases notified during the corresponding period in 2004. The last major outbreak of Ross River virus infections in South Australia occurred during the summer of 2000-2001. Figure 1 illustrates 3 to 4 year cyclic increases in the number of cases of Ross River virus infection.

Barmah Forest virus
In the period under review, 12 cases of Barmah Forest virus were reported. This compares to 2 cases notified during the corresponding period in 2004. Eleven of these cases (92%) either reside in rural South Australia or reported recent travel to rural South Australia.

Dengue fever
In the period under review, there were 3 reports of dengue fever in people who reported recent travel to South East Asia.

Health Information

ZOONOSES

Q fever
There were 14 (13 males, 1 female, age range: 17-73 years) reports of Q fever infection. Five of these (all males, age range: 35-73 years) cases were associated with the outbreak investigation in the Mid North of the State and reported on in the June 2005 edition of the Public Health Bulletin. The remaining 9 cases all reported various risk factors associated with animal contact. The Communicable Disease Control Branch investigated 2 small clusters of Q fever. One cluster involved 2
unvaccinated males, aged 19 and 23 years respectively who worked as sheep crutchers at the same place of employment. The other involved 1 male, 1 female aged 17 and 32 years respectively, and employed as meat workers in a meat processing plant. One of the cases was not vaccinated and the other case’s vaccination status was unknown.

VACCINE PREVENTABLE DISEASES

Pertussis
In the period under review, there was a continuing increase in the number of cases of pertussis reported. In total, 651 (252 males, 399 females) cases were reported for residents of rural, remote and metropolitan areas of South Australia.

Figure 2: illustrates the increase in the number of cases reported by age grouping and year.

Influenza
South Australian influenza surveillance combines laboratory-confirmed cases reported by the Institute of Medical and Veterinary Science and South Path, with clinical diagnoses of “influenza-like illness” collected by the Royal College of General Practitioners members participating in the Australian Sentinel Practice Network, and Emergency Departments of the Royal Adelaide Hospital, Women’s and Children’s Hospital, Noarlunga Health Service and the Queen Elizabeth Hospital.

In the period under review, there were 31 influenza A and 24 influenza B laboratory diagnoses of influenza virus reported. Refer Figure 3 (next page).

The influenza strains circulating in South Australia in the period under review, as typed by the WHO Collaborating Centre for Reference and Research, are mainly A/H3/California/7/224-like and B/Shanghai/361/2002-like. There have also been positive cultures of A/H3/Wellington 1/2004-like, B/Hong Kong/330/2001-like and A/H1/New Caledonia/20/99-like.

Invasive Haemophilus influenzae
In the period under review, there were 5 (2 males, 3 females, age range: 10 to 87 years) cases of Haemophilus influenzae reported. Of these, 1 case was identified as Indigenous.

Invasive pneumococcal disease
In the period under review, there were 61 (36 males, 25 females,) laboratory confirmed cases of pneumococcal disease reported. Two of the cases were Indigenous.

The median age of cases was 52 years (age range: 8 months to 98 years). Eleven (18%) cases were in children aged less than 5 years. Two deaths were reported to be linked to this disease.
Health Information
Information about the pneumococcal vaccination programme can be obtained by telephoning the South Australian Immunisation Coordination Unit (08) 82267177.

Mumps
There were 3 (2 males, 1 female, age range: 39-69 years) cases of mumps reported during the time period under review. Two of the cases were not vaccinated; the remaining case’s vaccination status was unknown.

GASTROINTESTINAL DISEASES

Campylobacter
Campylobacter remains the most commonly reported notifiable disease in South Australia. In the period under review, 876 notifications were received for residents of metropolitan Adelaide, rural and remote areas of South Australia. A similar number of cases were notified in the same period last year.

Hepatitis A
In the period under review, there were 2 (2 males, aged 14 and 22 years respectively) cases of hepatitis A reported. Risk factors included recent overseas travel to an area endemic for hepatitis A infection and male to male sex.

Shigellosis
There were 17 (8 males, 9 females) cases of shigellosis reported. Of these, \textit{Shigella flexneri} 2a and \textit{Shigella flexneri} 4a mannitol negative variant were the most frequently reported species.

Transmission of \textit{Shigella flexneri} 2a occurred in urban and rural South Australia, including 1 case in an Indigenous person. In total 6 (3 males, 3 females, age range: 2 to 44 years) cases were reported.

Transmission of \textit{Shigella flexneri} 4a mannitol negative variant occurred among remote Indigenous communities in South Australia. In total, 4 (3 males, 1 female, age range: 1 to 48 years) cases were reported. All were Indigenous.

Cryptosporidiosis
In the period under review there were 101 (52 males, 49 females, age range: 9 months to 79 years) cases of cryptosporidiosis reported. At the same time period in 2004 there were 29 cases reported.

The Communicable Disease Control Branch conducted an investigation of a cluster of 8 (5 males, 3 females, median age 6 years) cases of cryptosporidiosis linked to use of public swimming pools. Advice resulting from the epidemiological investigation resulted in the superchlorination of two public swimming pools.
**Salmonella**

In the period under review, 292 (156 males, 136 females) cases of salmonellosis were reported. Of these, 68 (23%) cases were aged less than 5 years.

The most commonly reported *Salmonella* were *Salmonella Typhimurium* phage type 9 (43 cases), *Salmonella Infantis* (25 cases), *Salmonella Typhimurium* phage type 186 (22 cases), *Salmonella Typhimurium* phage type 108 (20 cases) and *Salmonella Typhimurium* phage type 135 (15 cases).

**Salmonella Typhimurium phage type 186**

In the period under review, The Communicable Disease Control Branch investigated 3 separate outbreaks of *Salmonella Typhimurium* phage type 186. The first involved 9 (5 males, 4 females, age range: 0 -39 years) cases, eight were from metropolitan Adelaide and one from rural SA. Epidemiological and environmental investigations were unable to identify the source of infection.

Results of the descriptive investigation of 2 further outbreaks of *Salmonella Typhimurium* phage type 186 (9 cases in total) among residents of metropolitan and rural South Australia were suggestive of person-to-person transmission in 8 of the 9 cases of illness.

**Salmonella Typhimurium phage type 9**

The Communicable Disease Control Branch investigated an outbreak of salmonellosis (9 cases) associated with an Asian restaurant. Results of the descriptive epidemiology and environmental investigation were suggestive of food borne transmission but no specific food item was identified.

**Salmonella Typhimurium phage type 108**

The Communicable Disease Control Branch investigated an outbreak of salmonellosis (9 cases) associated with a restaurant in a rural setting. A case control study showed elevated odds ratio (OR: 35.2; 95%CI:2.6 – 1047) for marinated chicken roll suggestive of food borne transmission as the cause of this outbreak. The environmental investigation was not able to identify the source of contamination of the chicken roll.

**Salmonella Typhimurium phage type 135**

The Communicable Disease Control Branch investigated a cluster of 6 cases of salmonellosis from metropolitan Adelaide and rural South Australia. Hypothesis generating interviews could not identify the source of the illness.

**Salmonella Typhimurium phage type 64**

The Communicable Disease Control Branch investigated concurrent outbreaks of salmonellosis (46 cases) associated with a café in metropolitan Adelaide. In total, 6 separate functions catered for by the café were investigated. In addition cases emerged from the community that reported eating at the same café. Cross contamination involving a common food is the likely explanation of this outbreak.

**Salmonella Paratyphi A**

In the period under review there were 4 (4 females, age range: 6 to 30 years) cases of paratyphoid fever reported. All cases reported recent travel to either India or Cambodia.

**Shiga toxin producing Escherichia coli (STEC)**

In the period under review there were 24 detections of Shiga-toxin producing *Escherichia coli*. The age range of cases (12 males, 12 females) was 9 months to 68 years. Cases were residents of rural and metropolitan areas of South Australia.

The Communicable Disease Control Branch investigated a small cluster of Shiga-toxin producing *Escherichia coli* serotype O111. A detection of STEC serotype O111 was found in a 1 year old male indigenous child with haemolytic uraemic syndrome (HUS). This case was linked by time and place to another STEC case, a 5 year old male child, also serotype O111 and with the same molecular typing pattern. A third STEC serotype O111 occurred in the sibling (3 year old male) of the HUS case and this was thought to be due to person to person transmission. However the mode of transmission for the first 2 cases could not be determined.

A sporadic case of haemolytic uraemic syndrome was also reported in a 7 year old male child from metropolitan Adelaide.

During this period, sporadic cases of Shiga-toxin producing *Escherichia coli* were enrolled in a national case-control study designed to identify risk factors for STEC in Australia.

**OUTBREAKS OF GASTROENTERITIS**

In the period under review, the Communicable Disease Control Branch and local government Environmental Health Officers investigated 6 reported outbreaks of gastroenteritis.

Two of the reported outbreaks were among residents and staff of aged care facilities in South Australia. In total, 52 residents and staff experienced gastrointestinal illness during these outbreaks. In 4(67%) of all reported outbreaks, norovirus was identified as the agent responsible for the illnesses.

Norovirus was also identified as the agent responsible for an outbreak of gastrointestinal illness at a childcare centre where 12 staff and 25 students reported illness.
No agents were identified for outbreaks of gastroenteritis reported at a community centre and within the general community.


OTHER DISEASES

Invasive meningococcal disease

In the period under review, there were 5 (3 males, 2 females, age range: 6 months – 51 years) laboratory confirmed cases of meningococcal disease reported. Three of the cases were aged less than 5 years.

Of the 5 reported cases, 3 were identified as serogroup B and 2 were identified as serogroup C.

During the same time period in 2004, 3 cases of meningococcal disease were reported.

Figure 4 illustrates the decrease in the number of cases of invasive meningococcal serogroup C infection in South Australia since the introduction of the vaccination programme.

Legionella pneumophila serogroup 1

There were 2 sporadic cases of legionellosis (1 male, 1 female, age range: 77- 81 years) reported during the time period under review.

Several possible sources for the illness were investigated for both cases. A domestic hot water system was identified as the source of infection for 1 of the cases.
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The Public Health Bulletin South Australia is a publication of the S.A. Department of Health. The Bulletin aims to provide current data and information to practitioners and policy makers emphasising the value of orienting services towards prevention, promotion and early intervention and to support effective public health interventions.

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