

## FROM THE CHIEF HEALTH OFFICER

### Why Victorians Should Eat More Vegetables and Fruit

Professor John Catford

#### HEALTHY EATING IS A PUBLIC PRIORITY

Juries throughout the world have returned the verdict that vegetables and fruit protect against chronic diseases. Increasing numbers of epidemiological and clinical studies indicate that an adequate consumption of plant foods reduces the risk of coronary heart disease, hypertension, stroke, type 2 diabetes and many forms of cancer and asthma.<sup>1,2,3,4</sup>

In Victoria, our Burden of Disease study<sup>1</sup> estimates that low vegetable and fruit intake accounts for 2.8 per cent of total Disability Adjusted Life Years (DALYs). This contribution to the total burden of disease in Victoria exceeds that of high blood cholesterol (2.1 per cent), alcohol (2.1 per cent), illicit drugs (1.9 per cent), occupational hazards (1.7 per cent), and sexually transmitted diseases and HIV (0.8 per cent). Vegetables and fruit are also relatively low in energy density and can replace other energy-dense foods. Their consumption, therefore, can help reverse the current trend of increasing rates of obesity, which accounts for 4.7 per cent of total DALYs.

The National Health and Medical Research Council dietary guidelines for adults, children and older people<sup>2,3,4</sup> emphasise that vegetables and fruit are a key part of a healthy diet and, along with cereals and legumes, should make up the main proportion of food eaten. Consumers have no shortage of information about the importance of vegetables and fruit in a healthy diet, with access to supermarket advertising, magazine and television 'lifestyle' information programs and other media. Even the plethora of diet and weight-loss services on the market, incorporating low-energy plant food diets, indicate that there is a demand for change. Or is there?

#### MOST VICTORIANS ARE NOT ENJOYING THE FULL BENEFITS OF A HEALTHY DIET

While most Victorians will tell you that they understand that a good diet is important for their health and well-being, recent surveys show that only a minority of people are enjoying and taking advantage of the benefits of vegetables and fruit. SIGNAL, the nutrition arm of the National Public Health Partnership, recommends that all people consume at least seven serves of vegetables and fruit per day—five serves of vegetables and two serves of fruit.<sup>5</sup> Unfortunately, our consumption of these foods is well below this level.

In 2000, the Department of Human Services began investing in the regular monitoring of Victoria's health through a series of computer-assisted

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telephone interview (CATI) surveys. This initiative was partly due to the lack of an adequate, sensitive and timely information base on relevant lifestyle indicators at a national level. Known as the Victorian Population Health Surveys, the surveys are allowing us to develop a robust evidence base on the health status, attitudes and behaviours of Victorians. During August–November 2001, trained interviewers asked 7,500 randomly selected householders about their dietary habits. The results are now emerging and will form one of the largest and most contemporary surveys of this kind in Australia.

Only 23 per cent of survey participants reported that they usually eat four or more serves of vegetables per day (17 per cent of males; 27 per cent of females). Consumption of fruit was slightly better than that of vegetables but still of significant concern. Fifty-six per cent of inquiry participants reported usually eating two or more serves of fruit per day (49 per cent of males; 62 per cent of females).

Tables 1 and 2 present the data by sex and age group. Only 12 per cent of 18-24 year olds eat four or more serves per day of vegetables, but consumption improves with increasing age. Fruit intake does not show such a strong age distribution but, again, older people have a higher fruit intake (particularly women). The survey also found consumption variations according to smoking status, socioeconomic characteristics and geographic location (Table 3).

These data raise a series of interesting questions. How important is income for vegetable consumption, compared with the importance of available discretionary time for food preparation? What are the social, cultural, environmental, access, quality and/or price characteristics that contribute to these differences?

**Table 1: Serves of Vegetables Usually Eaten, by Age and Sex, Victoria, 2001**

Age Group	Do Not Eat Vegetables (%)		Eat One Serve or Less (%)		Eat Two to Three Serves (%)		Eat Four to Five Serves (%)		Eat Six or More Serves (%)	
	M	F	M	F	M	F	M	F	M	F
18-24 years	3	1	41	34	46	52	8	11	2	3
25-34 years	0	1	44	27	43	53	10	17	2	2
35-44 years	1	1	35	19	49	50	11	26	4	5
45-54 years	2	0	28	17	53	51	14	26	3	6
55-64 years	0	1	30	15	46	45	19	32	5	8
65 years and over	1	0	23	14	49	47	20	33	7	6
Total	1	1	34	21	48	50	13	24	4	5
All persons (aged 18 years and over)		1		27		49		19		4

**Table 2: Serves of Fruit Usually Eaten, by Age and Sex, Victoria, 2001**

Age Group	Do Not Eat Fruit (%)		Eat One Serve or Less (%)		Eat Two to Three Serves (%)		Eat Four to Five Serves (%)		Eat Six or More Serves (%)	
	M	F	M	F	M	F	M	F	M	F
18-24 years	5	4	47	40	37	45	8	9	3	3
25-34 years	9	6	49	41	36	44	5	8	1	2
35-44 years	6	4	44	35	41	50	6	8	3	2
45-54 years	6	3	44	30	39	54	8	9	3	4
55-64 years	6	3	46	31	39	53	8	12	1	2
65 years and over	2	2	37	25	49	62	9	10	3	1
Total	6	4	45	34	40	51	7	9	2	2
All persons (aged 18 years and over)		5		39		46		8		2

**Table 3: Serves of Vegetables and Fruit Usually Eaten, by Smoking Status, Employment Status and Area of Residence, Victoria, 2001**

	Eat Four or More Serves of Vegetables Per Day (%)	Eat Two or More Serves of Fruit Per Day (%)
Smokers	19	42
Non-smokers	24	60
Employed	20	54
Unemployed	10	44
Not in the labour force	28	60
Urban residence	21	57
Rural residence	28	54
Total	23	56

The ongoing Victorian Public Health Surveys will provide the opportunity to investigate these factors further and to monitor change over time.

### **WE NEED TO BUILD HEALTHY EATING INTO A MODERN LIFESTYLE**

There are significant challenges in shifting consumption at the population level to a diet more in line with the National Health and Medical Research Council dietary guidelines. These challenges exist primarily in the social, cultural and economic environments, often outside of the health field. Modern life, the food we eat and how we eat it have changed significantly in recent years. It is not helpful to suggest that we should simply unwind the clock. Rather, we need to work to build healthy foods—including vegetables and fruit—into a contemporary diet and way of life

We must not think that culture and expectations are static; they have changed and will continue to change, and the health sector can contribute to this process. In some European countries, for example, there is a renaissance of 'slow food'. It has been stimulated by the knowledge that the increased use of 'fast foods' results in greater consumption of fats and energy intake.<sup>6</sup>

Consumers have access to a significant amount of information about food—some of which is supportive and some that is less so. Initiatives such as the '7 a Day' joint campaign by the Dietitians Association of Australia and Coles Supermarkets provide appropriate and evidence-based information. At the other extreme, much of the food advertising on television emphasises energy-dense foods at the expense of the broader range of foods needed to achieve a healthy and varied diet.

Action is needed to redress this imbalance and to ensure those who are least able to interpret such information, especially children, are not inappropriately influenced. It is clear, however, that information alone is not going to change this situation. Feedback from consumers suggests they are tired of repetitive and boring messages about health benefits or threats.

Food and eating are such a fundamental part of life at the family and community level, and efforts to promote healthy eating must be relevant and responsive to these environments. We can learn from 'fast food' television advertisements; many of these promote their products in terms of how they contribute to social standing or well-being. These foods are promoted in a way to make them a part of day-to-day life.

We have to be realistic and acknowledge that we are unlikely to have the budgets available for large-scale mass media campaigns. Parts of the private sector are able to do this but we need to develop alternative

approaches. It is also worthwhile emphasising the other advantages that healthy food can bring. These include: the family and community benefits of preparing and cooking together; the education and employment opportunities for young people to be food literate and have the necessary cooking skills; and the enjoyment and sense of achievement from eating a wide variety of fresh and well-prepared foods.

### **COMBINED STRATEGIES ARE NEEDED AT LOCAL AND NATIONAL LEVELS**

Community-focused interventions that strengthen the physical, social, cultural and economic environments to support and enable healthy eating provide a feasible alternative approach. We need to take note of the success of programs such as the SunSmart and the QUIT campaigns in achieving social, cultural and environmental change. There are many differences between these two examples and a healthy eating program, but they highlight what can be achieved with sustained effort over time.

Such an approach would see efforts from all levels supporting change at the community and family level. Some issues will be best coordinated at the State or national level, such as larger scale food supply strategies, social marketing initiatives, monitoring and surveillance programs, research and policy development, and information and education resource dissemination. These efforts need to be focused and implemented in ways that will achieve change and action at the local level.

Community-level activity needs to find ways of involving and engaging other community sectors to support and enable healthy eating. There is a need to build the capacity and skills of a wide range of professional groups that comprise the local public health nutrition workforce. These include nurses, teachers, carers, doctors, pharmacists, green-grocers, restaurateurs, canteen staff and so on. They need to be involved in and drive local activities. Support is required for comprehensive community-level programs that must be carefully evaluated. Those that are found to be effective need to be built into ongoing services and implemented more broadly.

An interesting new development is underway in the United Kingdom in response to the very low intake of vegetables and fruit among children.<sup>7</sup> Rather like the 'free school milk' service of the 1950s and 1960s, free school fruit is now being provided to English primary school children aged 4–7 years old. At morning recess, children are supplied each day with a different fruit (for example, a banana or an apple) or vegetable (for example, carrots sticks or baby tomatoes) in an easy-to-eat form.

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Funded by the Department of Health in close partnership with the horticultural industry, the National School Fruit Scheme will provide direct intervention with an at-risk group. It will also send a message to the wider community about the importance of eating plant foods. Commencing initially as a pilot program, the scheme will be rolled out nationally by 2004 (see [www.doh.gov.uk/schoolfruitscheme](http://www.doh.gov.uk/schoolfruitscheme)). It is a good example of 'joined-up' government—from farm gate to school gate

## RESPONSES ARE NOW UNDERWAY IN VICTORIA

Significant progress is now being made through the national public health nutrition strategy Eat Well Australia and through the National Aboriginal and Torres Strait Islander Nutrition Strategy and Action Plan. Approved by health Ministers in August 2001, these strategies provide a coordinated way forward. Increasing the consumption of vegetables and fruit is highlighted as a priority, along with action on healthy weight, mothers' and children's nutrition, and the needs of marginalised groups.

In Victoria, a new development is the formation of the Eat Well Victoria Partnership. The Department of Human Services, VicHealth and key non-government and education organisations committed to improving public health nutrition have come together in this partnership arrangement. Participating organisations are committed to combining their efforts and expertise to achieve change. Efforts will be made to raise the profile of public health nutrition and to provide the necessary support and evidence to move it forward.

The Department's public health nutrition program recognises the need to strengthen and build capacity as well as community interventions. Current work includes the development of a public health nutrition monitoring and surveillance program, workforce development ini-

tiatives, research to identify the most appropriate approaches to promote healthy eating in the Victorian context, and action to respond to Koori nutrition needs. These efforts provide the foundation for intervention initiatives, including broad-based comprehensive community programs as well as initiatives focusing on priority settings (such as child-care services).

We are moving into an exciting and challenging time for public health nutrition in Victoria. The release of the Eat Well Australia strategy and the formation of the Eat Well Victoria Partnership are the first steps. Ongoing action will focus on giving all Victorians the opportunity to enjoy and benefit from a healthy approach to eating. Health and education professionals have a key part in setting the agenda for action. In the same way the assessment of smoking and blood pressure is now a routine part of any clinical contact, so must an emphasis on encouraging the greater consumption of vegetables and fruit, particularly in the young.

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## ANNOTATION

# Investing in the Early Years: Challenges and Opportunities for Victoria

Professor Frank Oberklaid

## INTRODUCTION

The evidence for the major impact of the early years of life on a range of outcomes throughout the lifespan is now overwhelming.<sup>1</sup> Public policy in a number of jurisdictions is now being refocused and service delivery to young children and families is being reorganised to address these research findings; some service changes have been summarised in a previous issue of *Health of Victorians*.<sup>2</sup>

The evidence can be grouped into three themes. First, we now have a better understanding of the early influences on child development, both biological and environmental, and an appreciation of the various risk and protective factors that facilitate a favourable or adverse outcome. These factors point to the importance of a healthy and nurturing caretaking environment. From a policy and service delivery point of view, this means ensuring good antenatal care, good early nutrition, appropriate support for parents and families, quality child care and so on.<sup>3</sup>

Second, there is a growing body of evidence that patterns established early in life have long term consequences in areas such as literacy,<sup>4</sup> crime prevention,<sup>5</sup> mental health problems<sup>6</sup> and adult health problems<sup>7</sup> such as obesity, cardiovascular disease and diabetes.

Third, there is the demonstrated effectiveness of early intervention programs designed to change the balance of risk and protective factors early in life and to improve the developmental trajectory and subsequent life chances of children.<sup>3,7</sup>

## CHALLENGES IN APPLYING THE KNOWLEDGE TO PUBLIC HEALTH PRACTICE

While the evidence for the importance of the early years is clear, the challenge lies in choosing how best to translate this evidence into effective and sustainable population-based interventions, as well as ensuring clinical practice is informed by new knowledge. The evidence for the effectiveness of intervention with 'at-risk' cohorts of young children and their families comes from North America mostly, and we need to be cautious about directly translating these findings into an Australian context because we have different service delivery systems and different demographics.

Nevertheless, in the United States, Canada, the United Kingdom and now Australia, there is an emerging consensus about how to use this evidence to make a difference at a population level. All face challenges, however—not only in finding additional resources, but in bringing a more public health-oriented, better coordinated and whole-of-government approach to both policy and service delivery.

Effective interventions in early childhood have been shown to lead to improved outcomes in a number of domains across the lifespan: improved physical and mental health, fewer behavioural problems, better literacy, less likelihood of needing special assistance at school, decreased criminality, greater likelihood of being gainfully employed, and so on. These outcomes, along with the sort of community-based population approaches that have been shown to be effective, transcend any single government department or any single ministry. Investment in early childhood, with its subsequent anticipated benefits, calls for a whole-of-government approach.

Victoria, like other States in Australia, already has an existing infrastructure of services for children and their families. This has evolved over many decades, largely in an *ad hoc* manner and usually in response to demonstrated needs at the time. The services are staffed by well-trained and dedicated professionals committed to making a difference to the children and families with whom they work.

This is a very strong existing investment in the early years, and we need to understand how to build systems that strengthen the existing infrastructure of services. We also need to ensure these systems evolve to account for emerging research evidence as to the effectiveness of clinical and population interventions. These challenges are universal where there are existing services on the ground; a number of them are detailed in the following discussion.

### **Making services flexible and broader in scope**

Secondary services designed to support and take referrals from the universal platforms often have a narrow focus as a result of the way in which they have been established over the years. Examples are found in the areas of child protection, family violence, parenting and so on. Risk factors cluster together, however, and evidence suggests that successful models of intervention

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adopt a holistic approach that targets clusters of risk factors. This points to the need to 'broadband' services—that is, to group existing services with narrow eligibility requirements into broader, more flexible services.

### **Incorporating prevention and early detection as a focus for services**

One of the challenges in funding preventive activities is that benefits may not be evident for some years, yet continued and ever-increasing demands for treatment services remain across the health and community sectors. But waiting until problems become established and entrenched is complex, costly and not often effective. There is a growing body of research documenting the effectiveness and the *cost-effectiveness* of a preventive and early detection/early intervention approach to addressing common problems of childhood.<sup>8</sup> How can we reconcile an ever-increasing demand for treatment services with the need to focus on prevention and early detection?

### **Ensuring a well informed and skilled workforce of providers**

Professionals working with young children and families need to offer interventions that have an evidence base as to their effectiveness and that are consistent with current knowledge. For professionals to do this, they require systematic, interdisciplinary training and a program of needs-based continuing education.

### **Improving the coordination of existing services**

The existing service structure for young children and families is funded by an often-bewildering array of Commonwealth, State, local government, philanthropic and commercial agencies. There is considerable anecdotal evidence of fragmentation and duplication, and of children and families with additional needs who are unable to access services as a result of the often-narrow eligibility requirements of existing services.

### **Community ownership**

Flexibility of service provision and improved coordination are more likely when there is local community ownership and when services are organised at a community level.<sup>9,10</sup> With community responsibility for service delivery and the achievement of desired outcomes, services are also more likely to evolve according to changing service needs and new research findings.

### **Quality framework and evaluation**

All community-based health services need to have a quality framework that focuses on both the delivery of care and, even more importantly, the outcomes for children and families. We need to have information, at a population level, on children's health and wellbeing. We also need to develop a focus on program evaluation, with a prerequisite of reliable and relevant data collec-

tion systems. We urgently need Australian data to tell us what works and what does not work; currently, Australian data are virtually non-existent. We have to understand more about the nature, timing, intensity and duration of interventions.

This means that we urgently need a research agenda and the allocation of adequate resources to begin to address some of these unknowns. We spend large amounts of money on service delivery; it seems reasonable to suggest that a specific budget allocation (perhaps a percentage of the sum invested in program delivery) be committed to research and evaluation. Such an investment will be repaid many times over in an improved understanding of which programs are effective and which are not.

## **THE ROAD MAP**

It is one matter to understand the importance of the early years and resolve to do something; it is another matter entirely to know exactly what to do. There are many challenges, as indicated above. There does seem, however, to be an emerging consensus on an approach to service delivery that is informed by the research evidence.<sup>11,12</sup>

A review of international practice suggests that 12 principles should underpin early childhood services (Table 1). Additional steps along the road include:

- Developing a database—that is, documenting the health status, problems, parental concerns and existing service use at State-wide, regional and community levels.
- Mapping existing services across departments and layers of government, at State, regional and community levels.
- Establishing mechanisms for better community governance in child health, which need to be built on existing and emerging initiatives aimed at improving community capacity, but with a focus on children and families.
- Developing clear and coherent public health policies directed at children and the early years, and specifying desired outcomes and measurable goals.
- Providing a strong and continued focus on outcomes rather than services and processes.

## **CONCLUSION**

A focus on early childhood services addresses two complementary agendas.<sup>1</sup> The first is focused on the future and asks: how can society use the knowledge about early childhood development to maximise the development of the nation's human capital and ensure the ongoing vitality of its democratic institutions? The second is focused on the present and asks: how can the nation use

**Table 1: Twelve principles of early childhood programs**

1. Are built on the existing structure of community-based services for young children and their families.
2. Are sustainable over time.
3. Encourage partnerships, between parents and providers and between providers themselves.
4. Are multidisciplinary, realising that the issues relevant to young children and families transcend the expertise of any single discipline.
5. Are flexible, taking into account the individual needs of families and the differences between communities.
6. Are evidence based.
7. Have a quality framework.
8. Can be evaluated.
9. Are replicable.
10. Are informed by clearly articulated policy and measurable goals.
11. Are family centred.
12. Are delivered in a primary care setting and from a universal platform.

the knowledge to nurture, protect and ensure the well-being of all young children as an important objective in its own right, regardless of whether measurable returns can be documented in the future?

The first agenda speaks to society's economic, political and social interests; the second speaks to ethical and moral values. A consideration of these two agendas leads to the conclusion that providing resources for early childhood services should be seen as an investment rather than as expenditure. All the evidence suggests that it is perhaps the most cost-effective investment that a country can make.

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## LEADING ARTICLES

# Genetics Surveillance in Victoria: A Recent Review

Christine A Stone and Rosemary Lester

### ABSTRACT

*New techniques in genetics surveillance have facilitated an improved public health approach to the detection of, and interventions offered for, a range of important genetic conditions. Over the past ten years, scientific advances associated with genetics have been increasing at an explosive rate. This has meant that an increasing number of diagnostic, predictive and carrier tests are available. This article describes the prevalence of some genetic disorders, the testing activity associated with those conditions and the links with public health.*

### INTRODUCTION

Surveillance for birth defects and genetic diseases started in the late 1950s and early 1960s as a response to the links between thalidomide (an anti-nausea drug) and severe birth defects.<sup>1</sup> Newborn screening for phenylketonuria at a population level started in the late 1960s and was soon followed by prenatal genetic diagnosis for chromosomal and biochemical disorders. The identification in 1989 of the cystic fibrosis (CF) gene and its most common mutation immediately raised the possibility of CF carrier detection by DNA analysis. In the 1990s, testing for single gene disorders commenced.

New advances in genetics promise many new diagnostic, prognostic and possibly curative technologies. These have far reaching implications. As Director of the Office of Genetics and Disease Prevention at Centers for Disease Control and Prevention, Atlanta, Georgia, Muin Khoury states "There will be unavoidable integration of new genetic information in all public health programs and across all diseases, whether or not the diseases are labelled "genetic diseases" or the services are termed "genetic services".<sup>2</sup>

Thus, while public health has had links with genetics over the past 50 years, only in recent years have the terms 'public health genetics' and 'community genetics' been used consistently to refer to the interface between public health and genetics. Given the rapid developments and their broad impact, it is time to review the surveillance of genetic disorders in Victoria.

This article summarises some results from the first stage of an enhanced genetics surveillance system in Victoria. It offers some basic information on the prevalence of selected disorders and on the testing activity related to those disorders. In doing so, it demonstrates a new capacity in Victoria to demystify information made available about genetic conditions. A selection of find-

ings from a detailed report is provided to highlight the public health issues revealed within the data. The report entitled 'Beyond the Crystal Ball: The Epidemiology of Some Genetic Conditions in Victoria' is nearing completion and is expected to be available in hard copy and on the Public Health web site late April 2002.

### METHOD

There has been no comprehensive approach to the surveillance of information about genetics in Victoria. In the abovementioned report, we set out to collect data from many sources to present a picture of current status and recent trends, and to ascertain the gaps that need to be filled to establish a comprehensive genetics surveillance system.

Information was collected from the testing laboratories at the major paediatric hospitals and the Birth Defects Register, Perinatal Data Collection Unit, which actively collects information from laboratories, specialised clinics and hospitals on all infants born in Victoria with birth defects from 1982.<sup>3</sup> Further information came from the annual *Report on Prenatal Diagnostic Testing*, which is produced by the Perinatal Data Collection Unit and the Murdoch Childrens Research Institute and has information from both public and private testing laboratories from the early 1980s.<sup>4</sup> Other sources include the Victorian Admitted Episodes Data and Health Insurance Commission data.

### RESULTS

#### The newborn screening program

The only population-based genetic screening program is the Newborn Screening Program, which screens over 60,000 babies born in Victoria every year. Screening started in 1966 with phenylketonuria (PKU). Screening for congenital hypothyroidism (CH) and CF began in 1977 and 1989 respectively, but gene testing started only in 1990. Figure 1 shows the cases identified by the program over the past ten years.

Table 1 shows the estimated birth prevalence, the total prevalence and the comparison with published sources of data for some genetic conditions in Victoria. The birth prevalence of beta thalassemia is estimated to be less than 1 in 100,000 births.

#### Prenatal testing

Extensive surveillance also occurs as part of the prenatal investigations for conditions such as thalassemia, neural

tube defects and chromosomal anomalies. Figure 2 shows the age distribution of the 163 patients with thalassemia who are currently having regular transfusions at the State-wide thalassemia services at Monash Medical Centre. These are mainly patients with beta thalassemia major.

Figure 3 shows the prevalence of neural tube defects in Victoria for the period 1994-99. Neural tube defects include anencephaly, spina bifida and encephalocele. While there has been a slight increase in their detection due to an increase in the use of maternal serum screening and ultrasound, the prevalence of these defects essentially remained steady from 1983 to 1997, followed by a marked drop in 1998 and 1999.<sup>6,7</sup>

### DISCUSSION

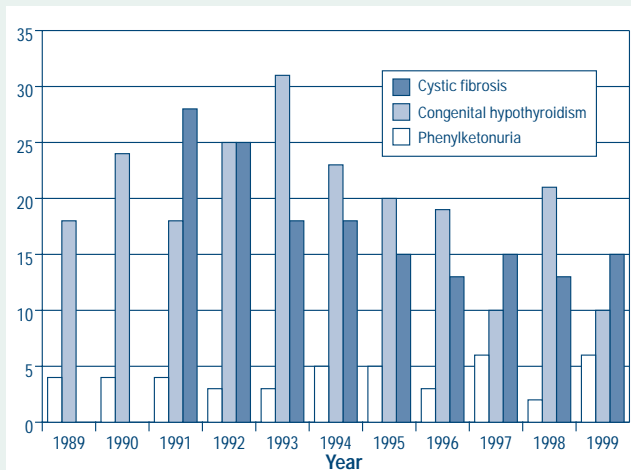
The Newborn Screening Program is a classic public health success story. In two of the three conditions, a relatively simple intervention—namely, the provision of a phenylalanine-free diet in the case of PKU and the provision of a thyroid hormone in the case of CH—reduces the risk of the development of an intellectual disability.

Prenatal diagnosis for thalassemia by cord blood analysis started in 1975, followed by DNA analysis of chorionic villus sampling in 1985. The population distribution of individuals with thalassemia needing transfusions shows the effects of one of the longest running surveillance programs (Figure 2). For the age group 20-40 years old, a higher percentage of affected individuals were born before the introduction of the program and the better possibility of survival with improving treatment. In the past 20 years, only 14 children with beta thalassemia major were born in Victoria.

Table 1: Prevalence of Some Genetic Disorders

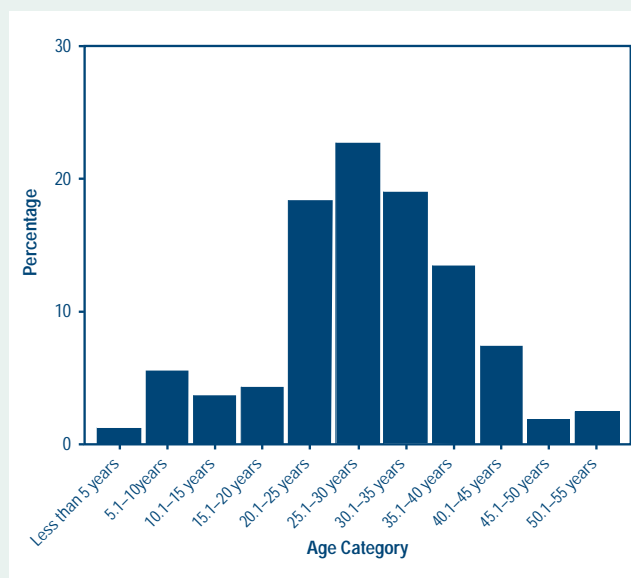
	Birth prevalence	Prevalence	Reported prevalence <sup>5</sup>
Phenylketonuria (PKU)	1 in 15,700 births		1 in 10,000
Congenital hypothyroidism (CH)	1 in 3,224 births		1 in 3,500
Cystic fibrosis (CF)	1 in 2,900 (1992-95) 1 in 4,500 (1996-99)		1 in 2,500
Neural tube defects	1 in 1,000	1 in 640	1 in 500 pregnancies
Chromosomal disorders	1 in 350	1 in 203	
Down syndrome	1 in 900	1 in 485 (1994-98)	1 in 660
Turner syndrome	1 in 7,900	1 in 3,160 (1994-98)	1 in 2,000 females

Figure 1: Newborn Screening Program's Diagnosed Cases, Victoria, 1989-99



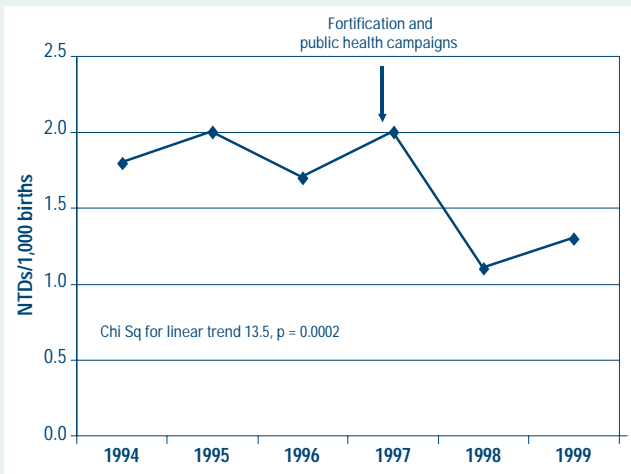
Source: Newborn Screening Program.

Figure 2: Thalassemia—Age Distribution of Patients Being Treated with Regular Transfusions, Victoria, 2001



Source: Thalassemia Services Victoria, Monash Medical Centre

Figure 3: Neural Tube Defects and Folate Intake, Victoria



Source: Birth Defects Register.

>Genetics Surveillance in Victoria: A Recent Review, continued from page 9

One success story of birth defects surveillance systems was the initial demonstration of an association between neural tube defects and folate intake,<sup>8</sup> the demonstration of the links with anti-convulsants,<sup>6,9</sup> and ultimately the demonstration that the campaigns encouraging the use of folate supplements by women before and during the first trimester of pregnancy has worked.<sup>6,7</sup>

These data must be interpreted with some caution, because there are no published surveillance case definitions for these genetic conditions. Case ascertainment may vary within and between conditions.

## CONCLUSIONS

Decisions about targeted screening or population-based screening programs need to be based on the best available data. These surveillance data, along with input from clinical and public health experts and health economists, will inform proper policy analysis. It is important to take a consistent national approach, implemented by all States and Territories. Such an approach has been lacking, but the National Public Health Partnership's appointment of a National Public Health Genetics Working Group is a step in the right direction. Improved surveillance of genetic conditions will be an essential task of the strategy and will contribute to the formulation of good public health policy.

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# Hepatitis C: Enhancing Routine Surveillance In Victoria

Dr Sean Tobin

## ABSTRACT

*Hepatitis C is a serious blood-borne infection of epidemic proportions that is proving difficult to control in Australia. Many people acquire and carry the hepatitis C virus without symptoms, so infection surveillance is challenging. The notifiable diseases system is unlikely to ever represent a comprehensive surveillance system for hepatitis C in Victoria. It has the potential, however, to play an important part in the collection of information about the incidence of, and risk factors for, infection. This information is vital to the planning and evaluation of prevention and treatment strategies.*

*This paper reviews the epidemiology of hepatitis C notifications in Victoria from 1997 to 2000 and outlines Department of Human Services strategies to enhance the notifiable disease surveillance system for hepatitis C infections from 2001.*

## BACKGROUND

The most current modelling of hepatitis C virus (HCV) infection in Australia estimated that around 190,000 people were living with the infection in 1997.<sup>1</sup> This modelling also estimated that there would be approximately 11,000 acute infections each year, with 91 per cent of cases exposed through injecting drugs.

The most recent national notification data indicate that 385 (1.8 per cent) of the 21,629 notifications in 1999 were identified as being acute infections.<sup>2</sup> HCV notifications from Victoria in that year represented approximately 29 per cent of the national notifications, of which less than 1 per cent were identified as being acute infections.

HCV was made a notifiable disease in Victoria in 1990, coinciding with the availability of commercial assays to test for HCV infection. All laboratories and medical practitioners are required to notify the Department of Human Services of HCV diagnoses within five days.<sup>3</sup> For surveillance purposes, the Department classifies hepatitis C notifications as being either 'acute hepatitis C' or 'hepatitis C, not further specified'. Acute infections are defined as:

- The demonstration of seroconversion to HCV where the most recent negative specimen was within the past 12 months
- or
- The demonstration of a positive HCV antibody test or a positive polymerase chain reaction (PCR) test for HCV, and a clinical illness consistent with acute hepatitis within the past 12 months where other possible causes of acute hepatitis have been excluded.<sup>4</sup>

HCV infections associated with a positive HCV antibody or PCR test in the absence of a negative test in the previous 12 months and with no clinical evidence of an acute hepatitis illness are classified as 'hepatitis C, not further specified'. If a previously unreported positive HCV antibody or PCR test is identified, then the case is further classified as being prevalent.

## METHODS

All laboratory-confirmed HCV notifications to the Department from 1997 to 2000 were reviewed, collated and analysed by classification. For population rates, the Department used the reported estimated residential population for 1999.<sup>5</sup> A detailed case-by-case review of acute HCV notifications for 2000 was also performed.

## RESULTS

During the four-year period to 2000, the Department received a total of 23,619 notifications of HCV infection. The proportion of acute cases had risen since 1997, but acute notifications in 2000 still represented less than 1 per cent of all notifications.

Table 1: Summary of HCV Notifications, 1997–2000

	1997	1998	1999	2000	1997–2000
Hepatitis C—acute	11	54	76	78	219
Hepatitis C—unspecified	4,977	6,299	6,279	5,845	23,400
Hepatitis C—total	4,988	6,353	6,355	5,923	23,619

## Combined Hepatitis C Notifications for 1997–2000

The Department divides Victoria into four Melbourne metropolitan regions (north, south, east and west) and five non-metropolitan regions (Barwon South–West, Gippsland, Grampians, Hume and Loddon–Mallee). Notifications of HCV are more common in metropolitan regions than in non-metropolitan regions, with the southern metropolitan region contributing the highest total number of notifications. The western metropolitan region had the highest notification rate per 100,000 population for the four years combined for both males and females (Figure 1). Almost two thirds (62 per cent) of all HCV notifications were for males—a finding that was consistent for all regions.

In the same four-year period to 2000, a total of 219 notifications were defined as being acute infections—approximately 1 per cent of all HCV notifications. Approximately 80 per cent of acute notifications came from residents of metropolitan regions, with the highest population rates also in the western metropolitan region. These findings need to be interpreted with caution, given the small numbers of cases involved.

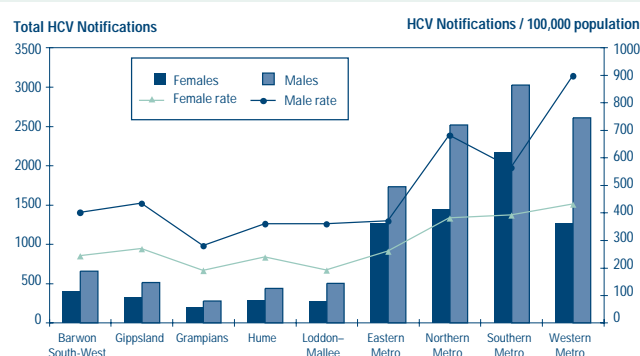
## Acute Hepatitis C Notifications for 2000

Sixty-seven (86 per cent) acute cases in 2000 gave a history of intravenous drug use either currently or in the past. Six cases denied intravenous drug use, and the risk factor status of five cases was unknown.

Two of the six acute cases who denied a history of intravenous drug use reported having either nose piercing and tattooing in the previous 12 months. Infection control investigations were conducted of the two tattooing/nose piercing premises nominated by these two cases. No infection control deficiencies were identified.

Of the remaining four cases who denied a history of intravenous drug use, one case reported having had unprotected sexual intercourse overseas in the previous 12 months, one case was associated with a needle-stick injury and one case appears to have resulted from verti-

Figure 1: Combined HCV Notifications and HCV Notifications by Department Region, 1997–2000



>Hepatitis C: Enhancing Routine Surveillance In Victoria, continued from page 11

cal transmission. No risk factor could be identified for the fourth case.

Of the 78 HCV notifications in 2000 identified as being acute infections, 57 (73 per cent) were first notified by the testing laboratory and the remainder were first notified by the treating doctor. Also of these 78 notifications, 57 (73 per cent) met the case definition for documented HCV antibody seroconversion alone, 11 (14 per cent) met the case definition for a positive HCV antibody or PCR test and a clinical illness consistent with acute hepatitis alone, and 10 (13 per cent) met both case definitions.

## DISCUSSION

The great disparity between HCV incidence estimates obtained through modelling and those made directly from notification data highlights the gap in our understanding of the epidemic of HCV infection in Australia. The Department has thus committed to a national strategy to improve surveillance of HCV infection.

This strategy recommends (a) the establishment of routine systematic assessment of all new HCV diagnoses to identify incident cases, and (b) the development of a standardised protocol for collecting more detailed data on incident cases. The aims are to:

- Ensure the collection of up-to-date information on the epidemiology of HCV infection.
- Detect outbreaks of HCV infection.
- Detect novel modes of transmission.
- Identify those at risk, to target prevention and control strategies appropriately.
- Evaluate prevention and control strategies.

The previous passive HCV surveillance system was relatively insensitive in detecting acute infections, relying on an indication from the notifying doctor or laboratory. As a result, many acute infections are likely to have been misclassified as 'hepatitis C, not further specified'. Identification of cases who constitute an occupational risk of transmission or who might have acquired the infection through nosocomial or novel forms of transmission also depends on the notifying doctor.

The Department's passive HCV surveillance strategy has had some notable achievements. The bulk of the surveillance data has been underused, however, given the difficulty in determining the proportion of notifications that represent acute infections. This determination is vital for understanding the changing epidemiology of the disease and for evaluating prevention strategies.

A short pilot study conducted in 2000, involving intensive follow-up of all notifications, found approximately 4 per cent of notifications could be confirmed as being acute infections. By comparison, conventional methods identified less than 1 per cent as being acute infections. Routine follow-up of all of the approximately 6,000

HCV notifications received each year would be extremely resource intensive and inefficient, so alternative strategies are being developed to enhance the HCV surveillance system to improve our understanding of the routinely collected HCV surveillance data. These include strategies include the following.

### Random Sampling of HCV Notifications for Follow-Up

From February 2001 the Department commenced intensive follow-up of routine HCV notifications by selecting a random sample of 10 per cent of the weekly notifications. No weighting is given to groups at higher risk of acute infection, so as to maintain the capacity to generalise the results to the non-sampled notifications.

Six per cent of sampled notifications have been identified as being acute infections, with a further 15 per cent identified as being prevalent infections. The remainder cannot be classified as being either acute or prevalent, given the available information.

### Increasing Laboratory Reporting of Previous HCV Results

Only a few laboratories currently report previous HCV test results. Yet, almost half of all HCV notifications (36 of 78) identified as being acute in 2000 were identified as a result of a laboratory indicating that they had a record of a negative HCV antibody test in the previous 12 months. The Department will consult with both public and private laboratories to increase the reporting of previous negative HCV testing when laboratories notify the Department of a positive HCV result.

### Improving Liaison with Organisations Performing Serial HCV Testing

A number of organisations—such as the Red Cross Blood Bank, prisons and correctional centres, and sexual health clinics—perform repeated HCV testing on clients. The Department will seek to work with these organisations more closely to use previous testing results to help classify notifications as being acute or prevalent.

### Modifying the 'Notification of Infectious Disease' Form

With the introduction of the new Health (Infectious Diseases) Regulations 2001, the Department will change the 'Notification of Infectious Disease' form used by doctors and laboratories to include a choice under the hepatitis C category of 'acute' or 'non-acute'. This option currently exists for only hepatitis B notifications.

When applied together, these strategies are likely to increase significantly the utility of the HCV surveillance data collected in helping us to understand the epidemiology of HCV infection in Victoria. The silent nature of many HCV infections means there is a continuing need to supplement these enhanced surveillance data with the innovative research of at-risk populations being

undertaken by research institutions in Victoria and other States.

As we collect better information, we help to paint a more complete picture of HCV infection in Victoria. This assists in the development of more effective prevention strategies and allows for more appropriate services for those who carry the infection and suffer its complications.

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# The Victorian Temazepam Injection Prevention Initiative

Dr Malcolm Dobbin

## ABSTRACT

*Prescription drug abuse is a serious problem and the prevalence of misuse of benzodiazepines is high among injecting drug users. In late 2000, a marked and sustained decrease in the availability of illicit heroin led to major and sustained changes in drug use. The most problematic behaviour has been the injection of the liquid contents of temazepam capsules—a prescription medication commonly used for the short term management of insomnia. The result is serious tissue and vascular harm. In response, the Department of Human Services developed an education and information initiative for general practitioners, pharmacists and injecting drug users: the Temazepam Injection Prevention Initiative.<sup>1</sup>*

## INTRODUCTION

Injection of the liquid contents of temazepam capsules was first identified in the United Kingdom in 1987.<sup>2</sup> Serious harm from such injection was first reported in 1988.<sup>3</sup> In subsequent years, numerous journal articles described cases of devastating injury, including gangrene resulting from unintentional injection into arteries,<sup>4,5,6</sup> skin ulcers,<sup>7,8</sup> inflamed tissue,<sup>9</sup> blood clots in veins,<sup>10</sup> abscesses<sup>11</sup> and damage to the veins in the groin (pseudoaneurysm)<sup>12</sup> were also described. Temazepam injection was also associated with a wide range of criminal behaviours,<sup>13</sup> including a thriving black market.<sup>14,15</sup>

Despite intensive efforts over the next nine years to raise doctors' awareness of the implications of temazepam misuse, and despite voluntary bans on prescribing,<sup>16</sup> the

problem was not controlled until temazepam capsules were rescheduled and banned from being prescribed under the UK National Health Service in January 1996.<sup>17</sup>

## TEMAZEPAM CAPSULES

Temazepam is a benzodiazepine hypnotic drug prescribed for the short term treatment of insomnia. It is available as either a tablet or a soft, gelatin liquid-filled capsule. In Australia, temazepam capsules are one of the 10 most frequently prescribed drugs on the Pharmaceutical Benefits Scheme (PBS), accounting for 2.2 million prescriptions in 1999-2000. Temazepam tablets became available several years after the capsules, and there has been a steady trend towards tablets being prescribed instead of capsules. Only 25 per cent of temazepam PBS prescriptions in Victoria in September 2001 were for tablets.<sup>18</sup>

## DIVERSION OF MOOD-ALTERING PRESCRIPTION DRUGS FROM LICIT USE

Many mood-altering prescription drugs such as tranquillisers and the opiate analgesics morphine and pethidine are diverted from licit use for misuse and, in some cases, injection. Drug-seeking people use a number of methods to obtain prescription drugs. These methods include forging prescriptions on stolen prescription stationery, altering prescriptions, falsely representing disease to persuade doctors to prescribe the drugs, presenting to multiple doctors and pharmacists with a false

>The Victorian Temazepam Injection Prevention Initiative, continued from page 13  
claim of a need for drugs, using a false identity to prevent being detected in presenting to multiple doctors, and thieving from pharmacies.

The diversion of mood-altering prescription drugs for misuse is a major problem. In 1999-2000, the Health Insurance Commission identified 8,780 'doctor shoppers'—people who had attended 15 or more different general practitioners in one year.<sup>19</sup> Of the total PBS medicines those people obtained, 35.5 per cent were benzodiazepines, 14.6 per cent were codeine compounds and 8.4 per cent were opioid analgesics.

'Doctor shoppers' comprise a subset of drug-seeking individuals; they exclude those who attend fewer than 15 general practitioners, use a false identity or stolen Medicare card, or obtain private prescriptions. In Victoria in 2000, they obtained a large proportion of PBS prescriptions for benzodiazepines: one in every 11 PBS prescriptions for diazepam 5-milligram tablets, one in 15 PBS prescriptions for oxazepam 30-milligram tabs and one in 19 PBS prescriptions for temazepam 10-milligram capsules (Figure 1).

## BENZODIAZEPINE MISUSE

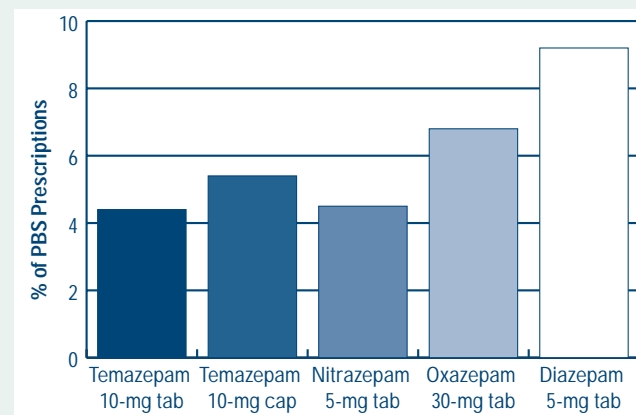
Benzodiazepines are a group of drugs used to treat anxiety, insomnia and epilepsy. Benzodiazepine misuse and injection have been endemic among injecting drug users for many years.<sup>20</sup> Most injecting drug users obtain benzodiazepines from doctors and pharmacists directly, but there is also an active illicit street black market in which the drugs are trafficked or exchanged for heroin. Benzodiazepine use by injecting drug users is associated with increased HIV risk as a result of this user group's needle/syringe sharing, increased injection frequency, poorer health and higher risk of overdose.

Temazepam is unique among prescription hypnotics in that it is supplied as a readily injectable form: a soft, gelatin liquid-filled capsule. Injection of the liquid appears to have become established in the injecting drug user population in Victoria, with many reports of serious damage to blood vessels and tissue similar to that documented in the United Kingdom before the ban on prescribing temazepam capsules on the National Health Service was implemented in 1996.

## THE 'HEROIN DROUGHT'

The availability of heroin in Australia has markedly decreased since late 2000. This change is reflected in a profound decrease in the number of heroin-related deaths: 37 deaths were identified to the end of November 2001, compared with 339 to the end of November 1999 and 312 to the end of November 2000.<sup>21</sup>

Figure 1: Share of PBS Prescriptions Obtained by 'Doctor Shoppers', Victoria, 2000



Source: Health Insurance Commission.

This 'heroin drought' has led to major, unprecedented changes in drug misuse by Victoria's estimated 41,000 dependent heroin users.<sup>22</sup> The most serious adverse effect has been a marked increase in the misuse of temazepam capsules and the injection of their liquid contents. There have also been increases in the trafficking of capsules, the trading of capsules for heroin, pharmacy burglaries and intimidation of doctors, and serious harm caused by injection. A high proportion of cases presenting to emergency departments require admission to hospital. Packs of 25 temazepam capsules are trafficked on the street for between \$50 and \$100, or traded directly for a 'deal' of heroin.

The extent and intensity of criminal activity around drug diversion from licit sources to illicit use—particularly the forgery of prescriptions and theft from pharmacies (smash and grab, armed robberies and ram raids using stolen cars)—indicate a very strong demand.

## QUESTIONS ABOUT LIMITING AVAILABILITY

A concern about limiting access to temazepam capsules is that current injecting drug users will merely substitute another benzodiazepine, with no net benefit. After the removal of the drug's prescription from the UK National Health Service, users *did* substitute other benzodiazepines, but either did not inject the drugs or injected less frequently. The use of other benzodiazepines has not caused serious harm, so there has been a substantial net public health benefit in the United Kingdom.<sup>23</sup>

It is argued that removing the capsules from the market would disadvantage some patients who use the product as intended. However, gel temazepam capsules have not been widely prescribed in the United States (or in the United Kingdom since 1996), suggesting that insomnia can be satisfactorily managed without them.

## THE TEMAZEPAM INJECTION PREVENTION INITIATIVE

The problem of temazepam injection was recognised in April 2001.<sup>22</sup> Pharmacists of the Drugs and Poisons Unit, Department of Human Services, reported that break-ins had occurred at many pharmacies they visited and that temazepam capsules were the only drugs stolen in these cases. The Department established two reference groups to develop a response: a professional reference group of general practitioners and pharmacists; and a group comprised of injecting drug users, needle/syringe program workers and mobile drug safety workers, hosted by VIVAIDS, the user group. In November 2001, the Department mailed a kit describing the temazepam injection problem to each Victorian general practitioner and pharmacy.

In the kit, the Chief Health Officer recommended that doctors and pharmacists avoid prescribing or dispensing temazepam capsules. The kit also contained a fact sheet describing the problem, a list of suggested responses to drug-using patients seeking to obtain the capsules, and a tear-off pad of patient information leaflets about the non-drug treatment of insomnia. This material can be viewed on the Internet.<sup>1</sup>

Many public health problems are complex and require a comprehensive response with many components. Temazepam injection is no exception. In addition to conducting the information and education initiative described above, the Department has undertaken the following activities:

- The Chief Health Officer met with representatives of the pharmaceutical industry, including the Australian Pharmaceutical Manufacturers Association, the manufacturer of the temazepam capsules, and three of the companies marketing the capsules.
- The issue was raised at a national level via referral to the Australian Health Ministers' Conference and the Intergovernmental Committee on Drugs.
- The issue was referred to the Intentional Misuse of Pharmaceuticals Subcommittee of the Australian Pharmaceutical Advisory Council.

## RECENT TACTICS USED TO OBTAIN SOFT, GELATIN LIQUID-FILLED CAPSULES

Since the kits were mailed, the Department has received reports that drug-seeking patients are requesting and misusing other soft, gelatin liquid-filled capsules, including Hemineurin<sup>®</sup> (chlormethiazole), Unisom<sup>®</sup> (diphenhydramine) and Dozile<sup>®</sup> (doxylamine). Other reports indicate that people are asking doctors to prescribe 20 milligrams of temazepam or Euhypnos<sup>®</sup> without specifying the dose

form. Such requests place pressure on pharmacists to dispense capsules because there are no 20-milligram tablets or Euhypnos<sup>®</sup> tablets. Doctors can counter this tactic by always specifying tablets on any prescription for temazepam.

Another reported tactic is to claim lactose intolerance to the minute amount of lactose in the tablets. To counter this tactic, the doctor could advise the patient that temazepam is indicated for short term use only (two to three weeks) and offer help with the non-drug management of sleep problems using the leaflets supplied in the kit.

Many drug-seeking people do not conform to the stereotype of injecting drug users; for example, an elderly woman is reportedly obtaining prescriptions for temazepam capsules from numerous general practitioners and on-selling packs at inflated prices. Doctors could counter this behaviour by avoiding chronic prescribing of hypnotics, as recommended by therapeutic guidelines, and offering help with non-drug treatment of insomnia. If temazepam is necessary for short term use, then tablets can be prescribed as an effective alternative that is considerably less likely to be trafficked and eventually injected.

More information is available by email ([temazepam@dhs.vic.gov.au](mailto:temazepam@dhs.vic.gov.au)) and on the Department's temazepam website (<http://www.drugs.vic.gov.au/temazepam/>).

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## Diabetes: Reducing the Burden of Disease in Victoria

P.G. Van Buynder, K. Mills, R. Watson and S. Begg

### ABSTRACT

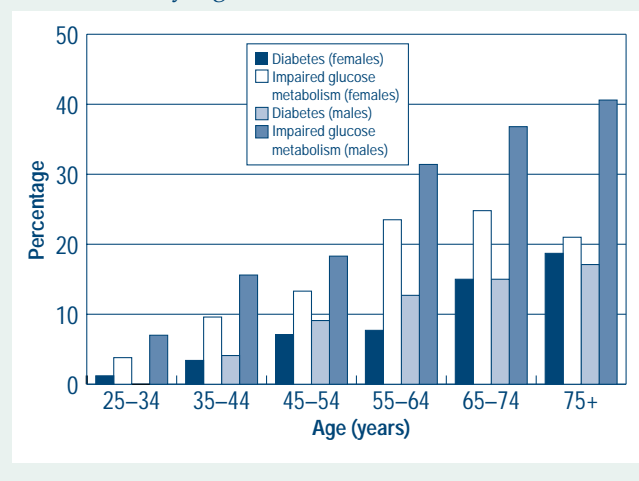
*Poor diets and a sedentary lifestyle have led to increased numbers of overweight and obese individuals and an increased prevalence of diabetes. In adults over 25 years of age in Victoria, the prevalence of diabetes is now over 7 per cent. The rate rises with increasing age, reaching a high of 18 per cent in those aged over 75 years. Diabetes is directly responsible for over 3 per cent of the total disease burden in Victoria, with over half due to non-fatal complications. Diabetes is also responsible for a proportion of the burden of disease due to ischaemic heart disease, stroke and peripheral vascular disease. Type 2 diabetes is preventable and most of the complications of diabetes are preventable or can be delayed with good glycaemic control and aggressive management of blood pressure. This paper reviews proposed multidisciplinary programs to reduce the impact of diabetes.*

### INTRODUCTION

The alarming impact of diabetes in Victoria is well recognised. The situation is unlikely to improve soon without changes to the current nutrition and physical activity behaviour patterns. In adults over 25 years of age in Victoria, the prevalence of diabetes is now over 7

per cent. The rate rises with increasing age, reaching a high of 18 per cent in those aged over 75 years (Figure 1).<sup>1</sup> The prevalence of impaired glucose metabolism (excluding diabetes) is an additional 17 per cent. The number of people with diabetes is estimated to double by 2010,<sup>2</sup> largely as a result of: the increasing number of elderly; the better recognition of prevalent undiagnosed

Figure 1: Prevalence of Diabetes and Impaired Glucose Metabolism, by Age and Sex, Victoria, 2000.



diabetes; better care for and survival of people with diabetes;<sup>3</sup> and the increased prevalence of a sedentary lifestyle and obesity.<sup>4</sup>

The 1999 National Physical Activity Survey collected data on the number of people deemed to achieve sufficient physical activity to derive a health benefit. It found that 14.6 per cent of respondents were sedentary and a further 40.2 per cent, while not sedentary, accumulated insufficient time spent in physical activity.

In relation to diet, the 1995 National Nutrition Survey found that over half of the males aged 12–44 years and one-third of children aged 4–11 years had not consumed fruit or fruit products on the review day. Further, over 20 per cent of these children had eaten no vegetables or vegetable products. The Australian Diabetes and Lifestyle study (Aus Diab) found the overall prevalence of overweight and obese individuals in Victoria to be 60.7 per cent, with 22.3 per cent of individuals in the obese weight range. Table 1 contains the key Victorian findings from the Aus Diab study.<sup>5</sup>

While the number of people with diabetes continues to increase, as does the impact on health services, information on effective illness management is improving. Programs need to address the key elements of effective diabetes care: self-care education and skills training; routine monitoring of clinical status to promote optimal diabetes control; and regular screening to facilitate the early detection and appropriate management of diabetes complications.<sup>6</sup>

## THE EXTENT OF THE PROBLEM IN VICTORIA

Diabetes is a significant contributor to the total disease burden, the use of acute hospital beds and the use of other health care services. It contributed an estimated 3.3 per cent and 3.2 per cent to the total disease burden for males and females respectively in Victoria in 1996. This equates to about 10,500 disability-adjusted life years

(DALYs) in males and 9,500 DALYs in females. If the increased risk of ischaemic heart disease, stroke and peripheral vascular disease is included, then the burden of disease increases to 5 per cent in males and 5.6 per cent in females—a combined total of 33,000 DALYs.<sup>7</sup>

Diabetes complications include retinopathy, nephropathy and circulatory disorders, and are largely preventable with good glucose control<sup>8</sup> and management of hypertension.<sup>9</sup> Analysis of the Victorian Admitted Episodes dataset (VAED) showed 12,100 admissions for diabetes complications in 1999–2000, with an average length of stay of over eight days. Admission rates for diabetes complications are, on average, 50 per cent higher in rural than in metropolitan regions (3.5 per 1000 versus 2.2 per 1000). The rural/metropolitan differences are most marked in those aged 40–60 years old.<sup>10</sup> Additionally, there is a 12-fold variation in admission rates for diabetes among Primary Care Partnerships.

Programs leading to a 25 per cent reduction in the number of admissions for diabetes complications would lead to a reduction of over 20,000 bed days in Victoria and a saving of around \$8.4 million of hospital expenditure.<sup>10</sup>

The Victorian Population Health Survey, conducted by the Public Health Division in 1999, indicated that 92 per cent of people with diabetes had visited a doctor in the previous three months (compared with 65.2 per cent of the general population). In relation to other health services, in the previous 12 months:

- 35 per cent had seen a podiatrist or chiroprapist.
- 38 per cent had seen a diabetes educator or nurse.
- 54 per cent had seen an ophthalmologist or optometrist.
- 29 per cent had seen a nutritionist or dietitian.
- 30 per cent had seen a specialist about their diabetes.<sup>11</sup>

Based on suggested levels of service provision, the rate of use of some of these services (particularly nurses/educators and foot care specialists) is sub-optimal.

Table 1: Key Aus Diab Findings for Persons Aged over 25 Years, Victoria, 2000.

	Males (%)	Females (%)	Total (%)
Overall diabetes rate of those aged ≥ 25 years	7.3	6.9	7.1
Prevalence of impaired glucose metabolism (includes impaired glucose fasting and impaired glucose tolerance)	20.1	14.0	17.0
Prevalence of overweight (BMI ≥ 25)	69.9	51.9	60.7
Prevalence of obesity (BMI ≥ 30)	21.0	23.5	22.3
Prevalence of elevated total cholesterol (≥ 5.5 mmol/l)	52.3	55.8	54.1
Prevalence of elevated triglycerides (≥ 2.0 mmol/l)	25.7	18.1	22.0
Prevalence of hypertension	40.5	33.1	36.8
Prevalence of sufficient exercise	58.5	45.6	51.9
Prevalence of sedentary lifestyle	10.6	13.4	12.0

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## CURRENT DIABETES INITIATIVES

These data have important implications for health service policy development in Victoria. A comprehensive multidisciplinary team approach is critical for the management of diabetes. Two recent Cochrane reviews examined programs to deliver this care. A review of family doctor-based programs, albeit with relatively few studies and small numbers, found that unstructured care in the community is associated with poorer follow-up, greater mortality and worse glycaemic control than result from hospital care. The addition of a computerised central recall (with prompting for patients and their family doctors), however, can achieve standards of care as good or better than hospital outpatient care.<sup>12</sup>

The second review confirmed the benefit of prompted recall and suggested that patient-oriented interventions—such as patient education or facilitated adherence to treatment—can lead to improved patient outcomes.<sup>13</sup>

A number of initiatives have been commenced in Victoria to reduce the burden of disease from diabetes. Funding to address primary and secondary prevention issues has been allocated to diabetes programs in targeted geographic areas based on local data. Programs will address identified key elements of effective diabetes care, to facilitate the prevention, early detection and appropriate management of people with diabetes within the Primary Care Partnership context. Initiatives will also target particular groups at high risk of developing diabetes, including Aboriginal and Torres Strait Islander peoples and people of cultural and linguistic diversity.

Programs not only address primary prevention issues and the cost burden of living with diabetes (via funding for a needle and syringe co-payment). They also address specific aspects of disease management (such as the Public Health Division's Local Initiatives in Diabetic Retinopathy Screening program), the role of key staff such as nurse practitioners, and multidisciplinary coordination of care.

## CURRENT PRIMARY PREVENTION PROGRAMS

Physical activity, healthy eating and healthy weight are key elements of a diabetes primary prevention program. The important benefits of walking as a way of being physically active are the primary message to be promoted through the program over the next period. Existing initiatives, including the Active Script program (encouraging general practitioners to write 'active scripts' for at-risk patients) and the Walk and Talk program, specifically encourage people with, or at risk of, a chronic condition to be more active. The Active Script program in particular has the capacity to directly target this group.

The Public Health Nutrition program has priority actions that include increasing vegetable and fruit consumption, improving mothers' and children's nutritional health and improving indigenous nutritional health. Each of these actions will help reduce the prevalence of risk factors in the population and, in the case of indigenous health, focus on a high-risk group for diabetes.

## MULTIDISCIPLINARY PROGRAM INITIATIVES

Multidisciplinary programs include the following.

- Three pilot projects in integrated disease management will each receive approximately \$1 million over three years as part of the Primary Care Partnership strategy. These projects will use best practice models of disease management for people with, or at risk of, diabetes. The aim is to determine models that improve health and wellbeing outcomes, and reduce hospital admissions. Integrated disease management encompasses the continuum of care, from prevention through to treatment, management and maintenance. Consumer focused and underpinned by evidence based on appropriate research, it reduces the burden of disease through a holistic approach.
- Two projects on diabetes management are part of the Quality Improvement Funding and Best Practice Initiatives Funding initiative. This initiative aims to promote the multidisciplinary development and use of care plans and evidence-based medicine in the management of patients, particularly those with chronic disease. The funded programs look at overall care and foot care specifically.
- Three nurse practitioner projects focus on diabetes management.
- As part of the Winter Emergency Demand Management Strategy, persons with diabetes are eligible for free annual influenza vaccine through public hospitals

## CONCLUSION

Diabetes is a major and increasing contributor to the burden of disease. A significant level of activity is being conducted to address prevention and care issues. Despite this activity, there remains a need for continued support of evidence-based and evaluated interventions to ensure appropriate use of the health dollar at appropriate points on the diabetes continuum of care. Continued research, coupled with evaluation of existing programs, will enable program development initiatives to enhance opportunities for primary and secondary prevention, thus maximising the health outcomes for people with diabetes.

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