

NSW Public Health Bulletin

Volume 15, Number 4
April 2004



ISSN 1034 7674
State Health Publication PH 040064

SELF-REPORTED RISK FACTORS AND MANAGEMENT STRATEGIES USED BY PEOPLE WITH DIABETES MELLITUS IDENTIFIED FROM THE 1997 AND 1998 NSW HEALTH SURVEYS

Leonie Neville

*NSW Public Health Officer Training Program
NSW Department of Health*

Adrian Bauman

*School of Public Health
University of Sydney*

This article describes a study of the prevalence of and risk factors for diabetes mellitus (DM) in the NSW adult population. The use of strategies by people with DM, such as diet, physical activity, and weight loss, are examined and compared with their self-reported diet, physical activity participation, and weight status.

BACKGROUND

DM is an increasing public health issue in NSW and Australia that contributes substantially to the burden of disease.^{1,2,3} DM can result in a wide variety of complications, impaired quality of life, morbidity, disability, and loss of potential years of life, contributing to a large burden on the Australian health care system and the individual.^{1,4–5}

The effective management of DM may reduce the risk of both premature mortality and developing complications. It may also improve health-related quality of life.⁴ There are general recommendations for all people with DM to control their blood glucose levels by following a special diet and participating in physical activity.⁴ While broad recommendations on diet and physical activity for people with DM are similar to those for the general population,^{6–7} individually tailored dietary programs and exercise plans are important in the management of DM.^{8,9} Weight loss and physical activity are important management strategies for people with non-insulin-dependent diabetes mellitus who are obese; benefits include increased sensitivity to insulin, reduced hyperglycaemia, and a reduced risk of coronary heart disease.^{10–11}

continued on page 58

CONTENTS

- 57 Self-reported risk factors and management strategies used by people with diabetes mellitus identified from the 1997 and 1998 NSW Health Surveys
- 63 Monitoring health behaviours and health status in New South Wales: Release of the Adult Health Survey 2002
- 68 Measures taken in New South Wales to address childhood obesity following the NSW Childhood Obesity Summit
- 72 Introducing the NSW Centre for Public Health Nutrition
- 73 Release of the New South Wales Mothers and Babies Report 2002
- 76 Communicable Diseases Report, NSW, February 2004
- 76 Trends
- 76 Listeria in sandwiches
- 76 Diarrhoea infections due to salmonellosis increases in NSW
- 77 Quarterly report: Australian Childhood Immunisation Register
- 78 Improving our understanding of, and the control of, community methicillin-resistant *Staphylococcus aureus*: Development of a trial sentinel surveillance program in the Far West of New South Wales

TABLE 1
METHOD AND DESCRIPTION OF DEFINED VARIABLES FOR DISEASE STATES AND RISK FACTORS USING THE 1997 AND 1998 NSW HEALTH SURVEY DATA

Variable	Description of definition	Method of definition
People with diabetes	All males who have been told ^a they have diabetes + all females who have been told ^a they have diabetes and weren't pregnant when first told + all females who were first told ^a they had diabetes when they were pregnant but have had diabetes apart from when they were pregnant – those who reported they no longer had diabetes when asked about diabetes management.	The Survey questions for diabetes used were: Have you ever been told ^a you have diabetes?; 'Were you pregnant when you were first told ^a you had diabetes?'; 'Have you ever had diabetes apart from when you were pregnant?'; 'What are you doing now to manage your diabetes?' ^b
Other chronic diseases		
Heart disease ^b	All those that have ever had a heart attack or been told they have angina. ^a	
High cholesterol	All those that have ever been told they have high cholesterol and still had a high cholesterol level. ^a	
Hypertension	All those that have ever been told they have hypertension/high blood pressure. ^a	
Adequate nutrition		
Adequate intake of breads and cereals	Recommended levels range from 3–12 serves per day depending on age and gender. ⁱⁱ	
Adequate intake of vegetables	Recommended levels range from 4–9 serves per day depending on age and gender. ⁱⁱ	
Adequate intake of fruit	Recommended levels range from 2–4 serves per day depending on age and gender. ⁱⁱ	
Sufficient physical activity	Recommended levels of physical activity: achieving 150 minutes or more of at least moderate intensity physical activity per week. ⁱⁱⁱ	Questions establishing respondents' level of physical activity in terms of minutes spent walking, exercising moderately and participating in vigorous activity in a given time period ⁱ were used. The formula used to calculate the respondents' physical activity level = Walking (min/wk) + Moderate activity (min/wk) + 2 x Vigorous activity (min/wk). ⁱⁱⁱ
Overweight and obese	Overweight: 25 <= Body Mass Index <30; Obese: Body Mass Index >=30	A derived HOIST variable for Body Mass Index was used, ^c which categorises respondents into acceptable, overweight, and obese, using these questions: 'How tall are you without shoes?' and 'How much do you weigh without clothes or shoes?' [Body Mass Index = weight (kg)/height (cm) ²] ⁱ
Smoking status	Those who smoked daily or occasionally	The question used was: 'Which of the following best describes your smoking status: I smoke daily; I smoke occasionally; I don't smoke now but I used to; I've tried it a few times but never smoked regularly; I've never smoked.' ⁱ

Notes: a = by a doctor or at a hospital b = 1997 only

c = variables that summarise responses for multiple questions to determine conditions or disease categories (HOIST)

ⁱ Report on the NSW Health Surveys 1997 and 1998, Centre for Epidemiology and Research, NSW Department of Health. Available at www.health.nsw.gov.au/public-health/nswhs/hsindex.htm.ⁱⁱ Commonwealth of Australia. *Australian Guide to Healthy Eating*. 1998.ⁱⁱⁱ Armstrong T, Bauman A, and Davies J. *Physical activity patterns of Australian adults. Results of the 1999 National Physical Activity Survey*. Canberra: Australian Institute of Health and Welfare, 2000.

Source: NSW Health Surveys 1997 and 1998, Health Outcomes Information and Statistical Toolkit (HOIST), Centre for Epidemiology and Research, NSW Department of Health.

The main aim of our study was to determine whether NSW adults with DM are using management strategies in terms of their diet, physical activity, and weight loss, and how well these are correlated with their self-reported dietary intake, physical activity behaviour, and weight. This study also aimed to compare the prevalence of risk factors for DM (diet, physical activity participation, and weight) in people with DM to those without DM.

METHODS

This study used data from the 1997 and 1998 NSW Health Surveys, weighted to population estimates. Data were collected from a random sample of NSW adults aged 16 years and older, with 1,000 surveyed in each area health service, using the computer-assisted telephone interviewing system of the NSW Health Survey Program.¹² In order to improve the representation of people that speak a language other than English the survey was translated into five languages: Arabic, Chinese, Greek, Italian and Vietnamese.¹²⁻¹³ The total numbers of responders in these surveys were 17,531 in 1997 and 17,494 in 1998.¹⁴

The survey data was accessed via the Health Outcomes Information and Statistical Toolkit (HOIST), a data warehouse maintained by the Centre for Epidemiology and Research, NSW Department of Health, and analysed using SAS version 8.1. The prevalence of DM in the NSW adult population was determined using a definition of a person with DM developed for this study (Table 1), which includes those with insulin-dependent diabetes mellitus and non-insulin-dependent diabetes mellitus. Odds ratios, using forced entry and stepwise logistic regression models, adjusting for age groups (16–39 years, 40–59 years, and 60+ years) and sex, were calculated to compare the odds

of selected behavioural risk factors and other chronic diseases in those with DM to those without DM. Proportions of those with DM using specific management strategies (diet, physical activity, weight loss) were determined and compared with self-reported risk factor prevalence.

RESULTS

The weighted prevalence of self-reported DM was 4.0 per cent of male respondents and 3.1 per cent of female respondents. The prevalence increased with age, from 0.8 per cent in the 16–39 years age group, 3.3 per cent among the 40–59 years age group, and 9.3 per cent for those over 60 years. The prevalence was 3.3 per cent of those of English-speaking background and 4.5 per cent among those who spoke a language other than English at home.

Table 2 illustrates the risk factor profiles of adults with DM compared to those without DM in NSW. Two-thirds of those with diabetes reported being overweight or obese, which was significantly more than among those without DM. Those with diabetes were significantly less likely to be sufficiently active for health benefits but more likely to have an adequate diet in terms of fruit, vegetables, breads and cereals. Those with DM were slightly less likely to smoke than those without DM, but nevertheless 16.7 per cent smoked. Those with DM were more likely to report high cholesterol and hypertension and more than twice as likely to report heart disease than those without DM (Table 3).

In terms of advice received as part of their management strategy, the majority of respondents with DM reported

TABLE 2

SELECTED RISK FACTORS OF PEOPLE WITH DIABETES MELLITUS COMPARED TO THOSE WHO DO NOT HAVE DIABETES MELLITUS IN NSW,^a 1997 AND 1998 NSW HEALTH SURVEYS

Risk factors	Diabetes mellitus %	No diabetes mellitus %	Adjusted Odds Ratio ^b	(95% CI)
BMI (n=33356)				
Acceptable or underweight	33.7	58.7		
Overweight	34.9	30.0	1.47	(1.27–1.71)
Obese	31.4	11.4	4.82	(4.16–5.59)
Physical Activity (n=35013)				
Sufficient	49.5	60.8	0.66	(0.63–0.69)
Insufficient	50.5	39.2		
Current smoker (n=35015)				
	16.7	23.6	0.81	(0.67–0.99)
Nutrition				
Adequate serves of vegetables (n=34857)	20.0	15.2	1.41	(1.19–1.69)
Adequate serves of fruit (n=34923)	48.3	38.6	1.38	(1.20–1.60)
Adequate serves of breads and cereals (n=34678)	68.0	59.9	1.34	(1.15–1.58)

Notes: a = weighted to NSW population b = adjusted for gender and age group.

Source: 1997 and 1998 NSW Health Surveys (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

TABLE 3

CHRONIC DISEASE STATUS (HYPERTENSION, HIGH CHOLESTEROL, AND HEART DISEASE) OF PEOPLE WITH DIABETES MELLITUS COMPARED TO THOSE WHO DO NOT HAVE DIABETES MELLITUS IN NSW,^a 1997 AND 1998 NSW HEALTH SURVEYS

Chronic disease	Diabetes mellitus %	No diabetes mellitus %	Adjusted Odds Ratio ^b	(95% CI)
Hypertension (n=33639)	44.4	15.9	1.90	(1.62–2.23)
High cholesterol (n=23806)	34.7	20.4	1.39	(1.18–1.65)
Heart disease ^c (n=17474)	22.8	4.8	2.39	(1.84–3.11)

Notes: a = weighted to NSW population b = adjusted for gender and age group c = 1997 only

Source: 1997 and 1998 NSW Health Surveys (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

following a special diet (81.3 per cent), but few reported participating in physical activity (39.1 per cent) or attempting to lose weight (23.6 per cent) as a way to manage their DM.

Of those with DM who reported using one or more strategies to manage their DM, 14.2 per cent reported using neither diet, physical activity, or weight loss as strategies; 70.5 per cent reported using one or two of these strategies; and 15.4 per cent reported using all three strategies. Those with DM who reported using weight loss as a management strategy were nearly six times more likely to also be using physical activity as a management strategy [OR 5.86; 95 per cent CI (4.38–7.84)] and were nearly three times more likely to also be using diet as a management strategy [OR 2.79; 95 per cent CI (1.81–4.29)]. Those following a special diet were three times more likely to also be using physical activity as a management strategy [OR 3.05; 95 per cent CI (2.15–4.31)].

Table 4 shows the prevalence of management strategies according to level of risk factors among adults with DM in NSW. Only one quarter of those overweight reported they were trying to lose weight and less than half reported participating in physical activity as a management strategy for their diabetes. Those with DM who are obese were significantly more likely to report they were trying to lose weight as a management strategy than those with DM who were overweight or of acceptable weight. However, only one-third of those who are obese reported using physical activity and/or trying to lose weight as management strategies for their diabetes.

Those with DM who reported consuming an adequate vegetable intake were significantly more likely to report using diet as a management strategy than those who did not report consuming an adequate vegetable intake. However those consuming an adequate intake of fruit or breads and cereals were no more likely to report following a special diet as a management strategy than those who did not report adequate intakes.

Those with DM who reported a sufficient level of physical activity were significantly more likely to report using physical activity and weight loss as management strategies than those who reported an insufficient physical activity level. Those with DM who reported they were using physical activity or weight loss as management strategies reported an additional hour and more, respectively, of total weekly physical activity minutes of participation than those not using these strategies.

DISCUSSION

This study found a higher prevalence of DM in males than females, an increasing prevalence with age, and a higher prevalence in those who speak a language other than English at home compared to those of English-speaking background. These findings are consistent with other studies in NSW and Australia, although self-report estimates may underestimate the true prevalence of diabetes.^{1,4} The prevalence estimates of DM reported in this study are slightly lower than reported in other analyses of the 1997 and 1998 NSW Health surveys^{1,13} due to the exclusion of those who reported that they were told they have high blood sugar levels.

The results show a high prevalence of co-morbidity, overweight, and obesity among those with DM, and a low proportion of people with DM achieving optimal nutrition, and even moderate physical activity. Few people with DM reported participating in physical activity and there were substantial numbers of those overweight and obese who were not attempting to lose weight as a management strategy for their disease.

These results need to be interpreted with caution, given the potential for selection and response bias in the health surveys,¹² however the data are likely to be reasonably representative of management behaviours among people with DM across NSW.

These results do not take into account individualised diet and physical activity recommendations that may vary for

TABLE 4
THE PREVALENCE OF REPORTED MANAGEMENT STRATEGIES ACCORDING TO LEVEL OF RISK FACTORS AMONG NSW ADULTS WITH DIABETES MELLITUS, 1997 AND 1998 NSW HEALTH SURVEYS

		Respondents' management strategies used for their diabetes mellitus			
		Follow special diet (n)	%	Physical activity (n)	%
				Trying to lose weight (n)	%
BMI					
Acceptable weight		384	85.4	383	38.9
Overweight		397	80.4	397	42.8
Obese		358	80.4	358	36.3
Nutrition					
Adequate serves of vegetables	No	961	79.9	961	37.5
	Yes	241	86.3*	241	43.6
Adequate serves of fruit	No	625	81.3	625	37.3
	Yes	586	81.2	587	40.4
Adequate serves of breads and cereals	No	380	78.9	380	34.2
	Yes	807	82.3	807	41.8*
Smoking status					
Smoker		205	77.1	204	36.8
Non-smoker		1017	82.2	1017	39.6
Physical activity					
Insufficient (<150min/wk)		616	79.2	616	22.6
Sufficient (>=150min/wk)		606	83.5	605	55.9**
Minutes/wk	Yes	226.5	201.7	268.3	207.5
	No				
(mean [95%CI]) ^a		(211.7–235.2)	(170.1–233.3)	(240.5–296.2)	(192.2–222.7)
					(296.1–341.0) (144.7–174.8)

Notes: * p<0.05 ** p<0.001

^a when reported minutes were more than >840/wk recorded amount was truncated to 840 mins (2 hrs/day)

Source: 1997 and 1998 NSW Health Surveys (HOIST). Centre for Epidemiology and Research, NSW Department of Health.

people with DM according to age, lifestyle, and whether there are other complications or risk factors present.^{4,7,9,11} Although important in the management of diabetes, individually tailored diet and exercise programs could not be determined in this study.^{8,9} The specifications used in this study to determine whether respondents with DM were consuming a healthy diet or participating in sufficient physical activity are based on the premise that recommendations for diet and physical activity for people with DM should be similar to those for the general population,^{6,8} and allowed us to compare these risk factors between those with DM and no DM. Despite the limitations described the results do highlight possible gaps in preventive management regarding the diet, physical activity, smoking, and weight loss behaviours of NSW adults with DM.

The real estimate of overweight and obese people with DM who are not attempting to lose weight as a management strategy could be even higher, given the potential for 'social desirability' bias related to this 'weight loss' question. In light of the health benefits of weight loss in this group,^{10,15} reasons why those with DM

who are overweight and/or obese are not trying to lose weight should be explored.

Only half of those with DM were moderately active and there are substantial numbers that were not using physical activity as a management strategy. Those who did report an adequate level of physical activity were much more likely to report using physical activity as a management strategy for their DM, suggesting that health professionals advising those with DM to be active is of benefit. However, one-fifth of those who reported that they were participating in physical activity as a management strategy for their DM did not even meet the modest recommended level of physical activity. This has important implications for increasing information about physical activity within diabetes education, given the positive effect physical activity can have on DM management.¹⁰

Although the majority of those with DM in this sample reported undertaking dietary management strategies, the proportion of people with DM who did not meet current recommendations for dietary intake across all the food groups is of public health concern, given the importance of nutrition in the management of DM.^{6,8} Only one-fifth

of those with DM reported an adequate vegetable intake, one half an adequate fruit intake, and two-thirds an adequate intake of breads and cereals.

Smoking rates in those with DM were only slightly less than those without DM. It is essential that smoking rates be reduced among people with DM because of the complications that may result from smoking in this group.¹⁶⁻¹⁸

McKay et al. suggest that physical activity, diet, and smoking are inconsistently received as key management messages by those with DM.¹⁹ Two significant barriers to the use of lifestyle interventions for patients with DM noted are physicians' lack of time to spend with patients and physician's limited experience with lifestyle-changing interventions.¹⁰

Health care professionals need to be more persistent with advice about weight loss, nutrition, and physical activity as management strategies, encouraging the involvement of interdisciplinary team members, such as behaviourally-focused dietitians, health promotion professionals, and possibly exercise scientists.^{9-10,20,21} Integrated approaches that combine diet and physical activity strategies are more effective in long-term maintenance of weight loss and improved glycemic control than interventions that use either of these strategies on their own.¹⁰

The high prevalence of co-morbidity among NSW adults with DM, and the low proportions of those with DM achieving optimal nutrition, and even moderate physical activity, suggest that further attention is needed on the promotion of physical activity and nutrition to all NSW adults with DM. Weight loss should be recommended to those with DM who are overweight and obese. System-wide efforts should endeavour to achieve this advice for all people with DM as a population health goal.

REFERENCES

1. Public Health Division. *The health of the people of NSW: Report of the Chief Health Officer, 2000*. Sydney: NSW Department of Health, 2000.
2. Australian Institute of Health and Welfare and Commonwealth Department of Health and Family Services. *First Report on National Health Priority Areas 1996*. Canberra: AIHW and DHFS, 1997.
3. Mathers C, Vos T, and Stevenson C. *The Burden of Disease and Injury in Australia: Summary report*. Canberra: Australian Institute of Health and Welfare, 1999.
4. Commonwealth Department of Health and Aged Care and Australian Institute of Health and Welfare. *National Health Priority Areas Report: Diabetes Mellitus 1998*. Canberra: CDHAC and AIHW, 1999.
5. Mathur S, Gajanayake I, and Hodgson G. *Diabetes as a cause of death, Australia, 1997 and 1998*: Diabetes Series no.1. Canberra: AIHW, 2000.
6. Department of Human Services, Victoria. *Diabetes control helped by healthy eating*. Better Health Channel. Available at: www.betterhealth.vic.gov.au/bhcv2/.../Diabetes_control_helped_by_healthy_eating. Publication date: 25 May 1999. Accessed 24 April 2002.
7. Diabetes Australia. *Diabetes and You: The Essential Guide 1999*. Available at www.diabetesaustralia.com.au/multilingualdiabetes. Accessed 29 April 2002.
8. Nuttall FQ and Chasuk RM. Nutrition and the Management of Type 2 Diabetes. *The Journal of Family Practice* 1998; 47(5): S45-S53.
9. Hill J and Poirier L. Helping patients manage their diabetes. *Patient Care*. 1995; 29(3): 97.
10. Wing R, Goldstein M, Acton K, Birch L, Jakicic J, Sallis J, Smith-West D, Jeffrey R and Surwitt R. Behavioral Science Research in Diabetes: Lifestyle changes related to obesity, eating behavior, and physical activity. *Diabetes Care* 2001; 24(1): 117.
11. Patterson C and Levin S. Diabetes mellitus: helping NIDDM patients achieve control through diet and weight loss. *Consultant* 1994; 34(9): 1319.
12. Williamson M, Baker D, and Jorm L. The NSW Health Survey Program: Overview and methods, 1996–2000. *NSW Public Health Bull* 2001; 12(S-2).
13. Baker D. Collecting Information from People of Non-English Speaking Background: Translation of Survey Instruments in the NSW Health Survey Program. *NSW Public Health Bull* 2001; 12(8): 231–233.
14. Public Health Division. *Report on the 1997 and 1998 NSW Health Surveys*. Sydney: NSW Department of Health, 2000. Available at www.health.nsw.gov.au/public-health/nswhs/hindex.htm. Accessed 14 May 2002.
15. Pi-Sunyer E. Weight Loss and Mortality in Type 2 Diabetes. *Diabetes Care* 2000; 23(10): 1451.
16. Al-Delaimy W, Willett W, Manson J, Speizer F, and Hu F. Smoking and Mortality Among Women With Type 2 Diabetes: The Nurses' Health Study cohort. *Diabetes Care* 2001; 24(12): 2043.
17. Haire-Joshu D, Glasgow R, and Tibbs T. Smoking and Diabetes. *Diabetes Care* 1999; 22(11): 1887.
18. Glasgow R. Giving Smoking Cessation The Attention That It Deserves. *Diabetes Care* 2000; 23(10): 1453.
19. McKay H, King D, Eakin E, Seeley J and Glasgow R. The Diabetes Network Internet-Based Physical Activity Intervention. *Diabetes Care* 2001; 24(8): 1328.
20. Franz M, Green-Pastors J, Warshaw H and Daly A. Does 'Diet' Fail? *Clinical Diabetes* 2000; 18(4): 162.
21. Williamson M and Quaine J. Prevalence and management of diabetes in NSW: Is care adhering to the clinical guidelines? *NSW Public Health Bull* 2001; 12(8): 223225. ■■■

MONITORING HEALTH BEHAVIOURS AND HEALTH STATUS IN NEW SOUTH WALES: RELEASE OF THE ADULT HEALTH SURVEY 2002

Deborah Baker and Margo Eyeson-Annan

Centre for Epidemiology and Research
NSW Department of Health

In 2002, the NSW Department of Health, in conjunction with the 17 area health services, completed the first year of the New South Wales Continuous Health Survey. This is an ongoing survey of the health of people in NSW that uses computer-assisted telephone interviewing (CATI). The main aims of the Continuous Health Survey are to provide detailed information on the health of the people of NSW, and to support the planning, implementation, and evaluation of health services and programs in NSW. Following the 1997 and 1998 health surveys, this is the third survey that has collected data on the health of adults in NSW. This article announces the release of the report of the *New South Wales Adult Health Survey 2002* as a supplementary issue of the *NSW Public Health Bulletin*, and summarises changes in health behaviour, health status, and satisfaction with health services, which have occurred between 1997 and 2002.

METHODOLOGY

The content of the New South Wales Continuous Health Survey was developed by the Health Survey Program in consultation with the Health Survey Program Steering Committee, area health services, other government departments, and a range of experts. The survey content covers the eight priority areas outlined in *Healthy People 2005: New Directions for Public Health in New South Wales*. Data were collected on a range of health behaviours, health status, use of and satisfaction with health services, social capital, and demographic information. The survey questionnaire was translated into five languages: Arabic, Chinese, Greek, Italian, and Vietnamese.

The target population sampled in the *New South Wales Adult Health Survey 2002* was all NSW residents aged 16 years and over living in households with private telephones. Households were sampled using list-assisted random digit dialling. When a household was contacted, one person was randomly-selected for interview. Information was collected on a total of 12,622 adults.

HEALTH BEHAVIOURS

Unhealthy behaviours contribute significantly to the burden of ill health in NSW. Behaviours that influence health measured in the *New South Wales Adult Health Survey 2002* included fruit and vegetable consumption, physical activity, alcohol intake, smoking, and smoking in the home (Table 1).

Just under half of all people in 2002 reported eating the recommended daily fruit intake, while only one in seven people reported consuming the recommended daily intake of vegetables. The proportion of people eating the recommended daily fruit intake (45.3 per cent) and vegetable intake (16.2 per cent) did not change between 1997 and 2002. In 2002, less than a half of the respondents reported using low-fat milk. Since 1997 there has been a reduction in the proportion of people who consume reduced- or low-fat milk (45.7 per cent to 43.4 per cent).

Less than half of all people aged 16 years and over reported undertaking adequate levels of physical activity in 2002. This proportion has not changed since 1997.

In 2002, approximately one-third of the overall adult population reported undertaking risk-drinking behaviours. Encouragingly, since 1997 there has been a notable reduction in the proportion of people who participate in any risk drinking behaviour (42.3 per cent to 34.4 per cent).

In 2002, just over one in five adults reported that they are current smokers, while more than 80 per cent of people reported that their home was smoke-free. Encouragingly, from 1997 to 2002, this represents a reduction in the prevalence of smoking (24.0 per cent to 21.4 per cent) and an increase in the proportion of smoke-free households (69.8 per cent to 81.0 per cent).

A number of indicators have been reported for the first time. These include high risk drinking, food security, and vaccinations for influenza and pneumococcal pneumonia in people over 65 years. Trends in these new indicators will continue to be monitored in future surveys. In addition, a comprehensive range of environmental exposures are reported, including exposure to indoor air pollution, wood smoke via wood fires, and benzene via garages attached to home; use of public water supplies, water quality, and exposure to blue green algae through recreational water use; mosquito exposure; and chemical sensitivity.

HEALTH STATUS

Monitoring the health status of a population helps to detect emerging patterns of illness and disease and provides information to inform policy and planning of health services. The *New South Wales Adult Health Survey 2002* collected information on a range of health indicators including: self-rated health status, asthma, diabetes, oral health, overweight and obesity, and psychological distress (Table 2).

TABLE 1**TRENDS IN INDICATORS OF HEALTH BEHAVIOURS BY SEX, NSW, 1997–2002**

Indicator	Year Collected	Males %	(95%CI)	Females %	(95%CI)	Persons %	(95%CI)
Alcohol risk drinking	1997	50.7	(49.3–52.2)	34.1	(32.9–35.4)	42.3	(41.3–43.3)
	1998	50.5	(49.0–52.1)	36.2	(34.9–37.5)	43.2	(42.2–44.2)
	2002	39.2	(37.3–41.1)	29.7	(28.1–31.2)	34.4	(33.1–35.6)
High risk drinking in the past 4 weeks	2002	16.7	(15.0–18.4)	11.7	(10.3–13.1)	14.4	(13.3–15.5)
Pap smear test within the last 2 years	1997	-	-	-	-	-	-
	1998	-	-	77.3	(75.9–78.7)	77.3	(75.9–78.7)
	2002	-	-	74.6	(72.8–76.4)	74.6	(72.8–76.4)
Screening mammogram within the last 2 years	1997	-	-	73.3	(70.9–75.7)	73.3	(70.9–75.7)
	1998	-	-	76.4	(74.1–78.7)	76.4	(74.1–78.7)
	2002	-	-	75.2	(72.6–77.8)	75.2	(72.6–77.8)
Hysterectomy rate	1997	-	-	13.3	(12.4–14.1)	13.3	(12.4–14.1)
	1998	-	-	13.0	(12.2–13.9)	13.0	(12.2–13.9)
	2002	-	-	12.1	(11.1–13.1)	12.1	(11.1–13.1)
Use public water as usual source of water	2002	-	-	-	-	81.1	(79.5–82.6)
Recreational water use limited by blue green algae in last 12 months	2002	-	-	-	-	6.9	(5.9–7.9)
Gas cooking without ventilation	2002	-	-	-	-	55.6	(52.9–58.3)
Exposure to unflued heating	2002	-	-	-	-	22.6	(20.6–24.7)
Potential exposure to benzene through internally-accessed garages	2002	-	-	-	-	22.2	(20.0–24.3)
Vaccinated against influenza in the last 12 months	1997	55.8	(52.3–59.2)	58.2	(55.3–61.0)	57.1	(54.9–59.3)
	1998	61.9	(58.5–65.3)	64.5	(61.8–67.2)	63.3	(61.2–65.5)
	2002	75.3	(72.4–78.3)	75.7	(73.0–78.3)	75.5	(73.5–77.5)
Vaccinated against pneumococcal disease in the last 5 years	2002	36.7	(33.3–40.1)	41.5	(38.5–44.4)	39.4	(37.2–41.6)
Homes with a smoke alarm or detector *	1997					58.2	(57.2–59.1)
	1998					64.0	(63.0–65.0)
	2002					72.9	(71.8–74.0)
Recommended daily fruit intake	1997	37.8	(36.4–39.2)	51.1	(49.8–52.4)	44.5	(43.6–45.5)
	1998	38.0	(36.5–39.5)	49.2	(47.9–50.5)	43.7	(42.7–44.7)
	2002	40.3	(38.4–42.2)	50.1	(48.4–51.7)	45.3	(44.0–46.5)
Recommended vegetable intake	1997	10.8	(10.0–11.7)	21.7	(20.6–22.7)	16.3	(15.6–17.0)
	1998	9.8	(8.9–10.6)	20.5	(19.5–21.6)	15.2	(14.5–15.9)
	2002	9.2	(8.2–10.3)	22.9	(21.6–24.2)	16.2	(15.3–17.0)
Usual use of low fat, reduced fat or skim milk	1997	37.5	(36.0–38.9)	53.8	(52.4–55.1)	45.7	(44.7–46.7)
	1998	38.8	(37.3–40.3)	52.4	(51.1–53.8)	45.7	(44.7–46.7)
	2002	35.8	(34.0–37.6)	50.7	(49.0–52.4)	43.4	(42.1–44.6)
Food insecurity last 12 months	2002	5.2	(4.4–6.0)	6.1	(5.3–6.9)	5.7	(5.1–6.2)
Adequate physical activity	1997	-	-	-	-	-	-
	1998	52.2	(50.7–53.7)	43.1	(41.8–44.4)	47.6	(46.6–48.6)
	2002	50.4	(48.4–52.3)	42.9	(41.2–44.5)	46.6	(45.3–47.8)
Current daily or occasional smoking	1997	27.2	(25.9–28.5)	21.0	(20.0–22.0)	24.0	(23.2–24.9)
	1998	26.2	(24.8–27.5)	21.3	(20.2–22.4)	23.7	(22.9–24.6)
	2002	23.9	(22.2–25.6)	18.9	(17.6–20.2)	21.4	(20.3–22.4)
Smoke-free households *	1997					69.8	(68.9–70.6)
	1998					73.2	(72.3–74.1)
	2002					81.0	(80.0–82.0)
Over estimation of smokers in the community	2002	79.8	(78.2–81.5)	84.8	(83.5–86.2)	82.3	(81.2–83.3)

* Sex not reported.

Source: NSW Health Survey Program, Centre for Epidemiology and Research, NSW Department of Health.

In 2002, 80.7 per cent of the adult population rated their own health as 'excellent', 'very good', or 'good'. However this represents a decrease from the 1997 figure of 84.9 per cent.

In 2002, 10.6 per cent of people aged 16 years and over reported current asthma that was diagnosed by a doctor. The rate of current asthma has not altered since 1997.

In 2002, approximately six per cent of adults reported that a doctor had ever told them that they had diabetes.

The reported prevalence of diabetes has increased since 1997 from 4.7 per cent to 6.1 per cent.

Just under half of all people in 2002 reported being either overweight or obese. The proportion of people classified as overweight or obese has risen since 1997, from 42.2 per cent to 46.3 per cent.

One in eight people in 2002 reported either 'high' or 'very high' levels of psychological distress. Rates of 'high' and 'very high' psychological distress have risen since 1998, from 10.5 per cent to 12.2 per cent.

TABLE 2

TRENDS IN INDICATORS OF HEALTH STATUS BY SEX, NSW, 1997–2002

Indicator	Year Collected	Males %	(95%CI)	Females %	(95%CI)	Persons %	(95%CI)
Excellent, very good, or good self-rated health status	1997	84.9	(83.9–85.8)	85.0	(84.1–85.9)	84.9	(84.3–85.6)
	1998	84.9	(83.9–85.9)	83.0	(82.1–83.9)	83.9	(83.2–84.6)
	2002	81.8	(80.3–83.3)	79.7	(78.5–81.0)	80.7	(79.7–81.7)
Ever diagnosed with asthma	1997	14.9	(13.9–16.0)	18.1	(17.1–19.2)	16.6	(15.8–17.3)
	1998	15.4	(14.3–16.5)	18.0	(17.0–19.0)	16.7	(16.0–17.5)
	2002	18.3	(16.8–19.9)	20.9	(19.6–22.3)	19.6	(18.6–20.7)
Current asthma	1997	8.7	(7.9–9.5)	11.9	(11.0–12.8)	10.3	(9.7–10.9)
	1998	8.9	(8.0–9.8)	10.9	(10.1–11.7)	9.9	(9.3–10.5)
	2002	9.1	(8.0–10.2)	12.0	(11.0–13.0)	10.6	(9.8–11.3)
Blood pressure measured within the last 2 years	1997	82.9	(81.7–84.0)	91.7	(90.9–92.4)	87.3	(86.7–88.0)
	1998	83.2	(82.0–84.4)	91.8	(91.0–92.5)	87.5	(86.8–88.2)
	2002	82.4	(80.8–84.0)	90.8	(89.8–91.9)	86.7	(85.8–87.7)
High blood pressure	1997	16.7	(15.6–17.7)	16.1	(15.1–17.0)	16.3	(15.7–17.0)
	1998	17.2	(16.1–18.4)	17.1	(16.2–18.1)	17.2	(16.5–17.9)
	2002	20.9	(19.4–22.4)	19.0	(17.9–20.2)	19.9	(19.0–20.9)
Cholesterol measured within last 2 years	1997	47.8	(46.4–49.3)	46.6	(45.3–47.9)	47.2	(46.2–48.2)
	1998	50.8	(49.3–52.4)	47.5	(46.2–48.8)	49.1	(48.1–50.2)
	2002	54.7	(52.6–56.7)	52.4	(50.7–54.1)	53.5	(52.2–54.8)
High cholesterol	1997	25.0	(23.4–26.5)	23.6	(22.2–24.9)	24.3	(23.2–25.3)
	1998	21.5	(20.0–23.0)	21.4	(20.1–22.6)	21.4	(20.5–22.4)
	2002	25.3	(23.4–27.3)	24.4	(22.8–26.0)	24.9	(23.6–26.1)
Diagnosed chemical sensitivity	2002	2.4	(1.9–3.0)	3.4	(2.8–4.1)	2.9	(2.5–3.4)
Diabetes or high blood sugar	1997	5.2	(4.6–5.8)	4.3	(3.8–4.8)	4.7	(4.3–5.1)
	1998	4.9	(4.2–5.5)	4.0	(3.5–4.5)	4.5	(4.0–4.9)
	2002	6.6	(5.8–7.4)	5.7	(5.0–6.4)	6.1	(5.6–6.7)
Work related injury in last 12 months	2002	17.9	(16.0–19.7)	12.8	(11.3–14.3)	15.6	(14.4–16.8)
High and very high psychological distress	1997	9.2	(8.4–10.0)	12.9	(12.0–13.8)	11.1	(10.5–11.7)
	1998	9.0	(8.1–9.9)	12.0	(11.1–12.8)	10.5	(9.9–11.1)
	2002	10.5	(9.3–11.6)	14.0	(12.8–15.1)	12.2	(11.4–13.1)
No natural teeth missing	1997	-	-	-	-	-	-
	1998	36.3	(34.8–37.8)	33.7	(32.4–35.0)	35.0	(34.0–36.0)
	2002	37.9	(36.0–39.9)	36.6	(34.9–38.2)	37.2	(36.0–38.5)
Overweight and obesity	1997	49.7	(48.3–51.2)	34.5	(33.3–35.8)	42.2	(41.2–43.1)
	1998	50.3	(48.7–51.8)	34.5	(33.2–35.7)	42.5	(41.4–43.5)
	2002	53.9	(52.0–55.9)	38.5	(36.9–40.1)	46.3	(45.0–47.6)

Source: NSW Health Survey Program, Centre for Epidemiology and Research, NSW Department of Health.

Between 1997 and 2002 there were increases in the proportion of people reporting they had ever been told they had high blood pressure (16.3 per cent to 19.9 per cent) and who had their cholesterol measured within two years (47.2 per cent to 53.5 per cent). Since 1997 there has been no change in the proportion of people reporting that they had their blood pressure last measured within two years (86.7 per cent).

HEALTH SERVICES

As part of the continuing commitment to monitoring satisfaction with health services in NSW, questions were asked about the use of and satisfaction with a range of services. These included difficulties getting health care when needed, admission to hospital, attendance at an emergency department, and use of community health centres and public dental services (Table 3).

In 2002, one in eight people reported experiencing difficulties getting health care when it was needed. Between 1997 and 2002 the proportion of people reporting difficulties getting health care when needed increased (10.0 per cent to 12.6 per cent).

Between 1997 and 2002 emergency department attendance in the previous 12 months (14.3 per cent) and hospital admission in the previous 12 months (13.9 per cent) remained unchanged. Of the people attending an emergency department in the previous 12 months, more than three-quarters rated the care received as 'excellent', 'very good', or 'good'. Of the people admitted to hospital in the last 12 months, over 90 per cent rated the care received as 'excellent', 'very good', or 'good'. Between 1997 and 2002 the proportion of people giving a positive rating of emergency department care (76.5 per cent) and hospital inpatient care (91.0 per cent) did not change between 1997 and 2002.

For the first time, information on attendance at and rating of public dental services and community health centres was collected and these will continue to be monitored in future surveys.

SOCIAL CAPITAL

The term 'social capital' refers to the institutions, relationships, and conventions that shape social networks, foster trust, and facilitate coordination and cooperation for mutual benefit. The *New South Wales Adult Health*

TABLE 3

TRENDS IN INDICATORS OF USE OF AND SATISFACTION WITH HEALTH SERVICES BY SEX, NSW, 1997–2002

Indicator	Year Collected	Males %	(95%CI)	Females %	(95%CI)	Persons %	(95%CI)
Difficulties getting health care when needing it	1997	8.9	(8.1–9.7)	11.1	(10.4–11.9)	10.0	(9.5–10.6)
	1998	8.6	(7.8–9.4)	11.9	(11.1–12.6)	10.3	(9.7–10.8)
	2002	10.9	(9.7–12.0)	14.2	(13.1–15.3)	12.6	(11.8–13.4)
Emergency department attendance in the previous 12 months	1997	15.7	(14.7–16.7)	11.9	(11.1–12.7)	13.8	(13.1–14.4)
	1998	13.9	(12.9–14.9)	12.0	(11.2–12.8)	12.9	(12.3–13.6)
	2002	14.7	(13.4–16.0)	13.8	(12.8–14.9)	14.3	(13.4–15.1)
Emergency department care rated as excellent, very good or good	1997	80.5	(77.7–83.4)	79.9	(77.0–82.9)	80.3	(78.2–82.3)
	1998	82.6	(79.5–85.6)	78.6	(75.7–81.5)	80.7	(78.6–82.8)
	2002	79.8	(75.9–83.7)	73.2	(69.3–77.0)	76.5	(73.8–79.3)
Hospital admission in the previous 12 months	1997	11.3	(10.4–12.2)	14.7	(13.8–15.5)	13.0	(12.4–13.6)
	1998	11.5	(10.6–12.4)	15.4	(14.5–16.3)	13.5	(12.8–14.1)
	2002	11.3	(10.1–12.4)	16.3	(15.1–17.6)	13.9	(13.0–14.7)
Hospital care rated as excellent, very good or good	1997	90.3	(87.9–92.7)	89.9	(87.9–91.9)	90.1	(88.5–91.6)
	1998	92.5	(90.3–94.6)	90.0	(88.1–91.9)	91.0	(89.6–92.5)
	2002	93.5	(90.7–96.2)	89.3	(86.4–92.2)	91.0	(88.9–93.0)
Community health centre attendance in the previous 12 months	2002	4.8	(4.0–5.6)	8.9	(8.0–9.9)	6.9	(6.3–7.5)
Community health centre care rated as excellent, very good or good	2002	91.6	(86.8–96.3)	93.7	(91.0–96.4)	92.9	(90.5–95.4)
Public dental service attendance in the previous 12 months	2002	3.9	(3.1–4.6)	5.2	(4.4–5.9)	4.5	(4.0–5.0)
Public dental service care rated as excellent, very good or good	2002	81.7	(74.4–89.1)	80.7	(75.1–86.4)	81.2	(76.7–85.6)

Source: NSW Health Survey Program, Centre for Epidemiology and Research, NSW Department of Health.

TABLE 4**INDICATORS OF SOCIAL CAPITAL BY SEX, NSW, 2002**

Indicator	Year Collected	Males %	(95%CI)	Females %	(95%CI)	Persons %	(95%CI)
Attended a community event at least once in the last 6 months	2002	52.9	(51.0–54.9)	60.5	(58.9–62.1)	56.8	(55.5–58.0)
Helped out any local group or organisation at least once in the past 3 months	2002	30.5	(28.7–32.2)	35.7	(34.1–37.3)	33.1	(32.0–34.3)
Active member of a local organisation, church or club	2002	45.5	(43.6–47.5)	42.3	(40.7–43.9)	43.9	(42.6–45.1)
Most people can be trusted	2002	69.0	(67.2–70.8)	62.9	(61.3–64.6)	65.9	(64.7–67.2)
Feel safe walking down their street after dark	2002	78.0	(76.4–79.5)	55.8	(54.2–57.5)	66.8	(65.6–67.9)
Area has a reputation for being a safe place	2002	75.2	(73.6–76.9)	71.6	(70.1–73.1)	73.4	(72.3–74.5)
Visit neighbours	2002	68.7	(66.9–70.5)	63.2	(61.6–64.8)	65.9	(64.7–67.1)
Able to ask for neighbourhood help to care for a child	2002	73.3	(71.5–75.1)	68.0	(66.4–69.6)	70.6	(69.4–71.8)
Run into friends and acquaintances when shopping in local area	2002	80.4	(78.8–82.0)	83.7	(82.4–84.9)	82.0	(81.1–83.0)
Sad to leave neighbourhood	2002	71.2	(69.4–73.0)	75.7	(74.3–77.2)	73.5	(72.4–74.7)

Source: NSW Health Survey Program, Centre for Epidemiology and Research, NSW Department of Health.

Survey 2002 included questions on social reciprocity and neighbourhood connection, feelings of trust and safety, and participation in the local community. This is the first time that questions on social capital have been included in an adult survey conducted by the NSW Health Survey Program (Table 4).

Seventy per cent of the population reported that they could ask someone in their neighbourhood for help with caring for a child, if they needed to; and nearly three-quarters of the population said they would be sad if they had to leave their neighbourhood. Two-thirds of people reported feeling safe walking down their street after dark, and males were more likely to report feeling safe than females.

Overall, one-third of the population had helped out a local group or organisation, and more than half of the population had attended a local community event in the past six months.

THE FUTURE

The continued monitoring of indicators via the New South Wales Continuous Health Survey will provide information that will assist health professionals, health planners, and those involved in policy development to plan, implement, and evaluate health programs and initiatives within the community and within population target groups. ■

Printed copies of the *New South Wales Adult Health Survey 2002* are available from the NSW Health Survey Program on (02) 9424 5707. Electronic copies can be downloaded in PDF format from the NSW Department of Health's website at www.health.nsw.gov.au/public-health/phb/phb.html.

MEASURES TAKEN IN NEW SOUTH WALES TO ADDRESS CHILDHOOD OBESITY FOLLOWING THE NSW CHILDHOOD OBESITY SUMMIT

Liz Develin

Centre for Health Promotion
NSW Department of Health

'A nation of porkers'; 'All guns firing in the battle of the bulge'; and 'Junk food wars': these are just some of the headlines used by the print media to describe the national epidemic of overweight and obesity. And while slowing or reversing the increasing prevalence of obesity is the difficult task that faces NSW—and indeed the whole developed world—the NSW Government has taken steps to address this population health crisis. This article describes the health risks of and trends in overweight and obesity in NSW, and the key initiatives that emerged from the NSW Childhood Obesity Summit, in particular the NSW Healthy School Canteen Strategy and the Schools Physical Activity and Nutrition Survey.

TRENDS IN OVERWEIGHT AND OBESITY

The last 100 years have seen significant advances in the health of most people in NSW. Better nutrition, improved living conditions, and increasing therapeutic options, have led to gains in infant, child, and adult health. Today, the majority of children born in NSW can expect to live for about 80 years—most of those relatively healthy years.¹ As the effects of communicable diseases and under-nutrition diminish, they are being replaced, as the greatest causes of ill health and premature death, by chronic diseases caused by factors such as a lack of physical activity and poor quality nutrition.²

Over the last 20 years, rates of obesity in children have risen in many countries, leading some researchers to speak of an 'international epidemic of childhood obesity'.³ But this problem does not affect children alone; in the adult population overweight or obesity is also common, with data for NSW estimating that 63 per cent of men and 46 per cent of women are either overweight or obese.⁴

Research from the late 1990s indicates that around one in every 4–5 children in NSW is overweight or obese. In the 10-year period from 1985 to 1995 the level of combined overweight–obesity in children aged 7–15 years in Australia more than doubled in all but the youngest age group of boys (7–11 years), while the level of obesity tripled in all age groups and for both sexes (Figures 1–4).⁵

The rate of increase in the prevalence of childhood overweight and obesity in Australia appears to be accelerating sharply when viewed from an historical perspective.⁶ For most of the century, the proportion of

overweight children was low and stable at about 2–5 per cent. From a slow rise in the 1950s and 1960s there has been a dramatic acceleration from the late 1970s onwards.

HEALTH RISKS ASSOCIATED WITH OVERWEIGHT AND OBESITY

Being overweight or obese can affect both the physical and mental wellbeing of a child and adolescent. Health effects include raised blood pressure, high cholesterol, and elevated blood sugar,³ and there are an increasing number of cases of type 2 diabetes being diagnosed in Australian adolescents.⁸ Other problems include orthopaedic complications due to excessive weight bearing on joints, sleep apnoea, asthma, and fatty liver.³ Children not only incur adverse physical health effects, overweight and obesity can also have adverse psychological effects that are related to body image and self-esteem.⁷

Obese children have a 25–50 per cent chance of progressing to be obese adults, and this chance may be as high as 78 per cent in older obese adolescents.⁹ Overweight and obesity develops over time, and once it occurs it is difficult to treat. Prevention of weight gain (including involvement in physical activity and good nutrition habits) offers the most effective means of control. This is the rationale for the NSW Health focus on the weight of children and adolescents.

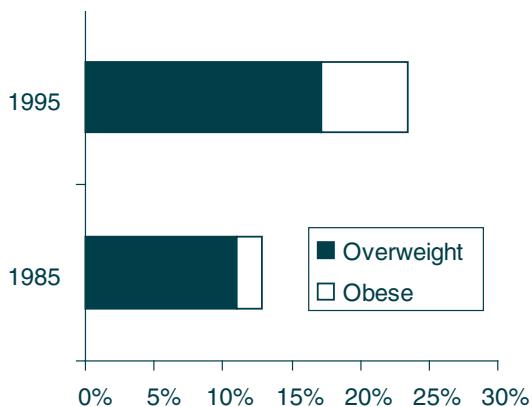
NSW CHILDHOOD OBESITY SUMMIT AND GOVERNMENT ACTION PLAN

Internationally, the World Health Organization has been raising the issue of 'globesity' for some time, and is developing the *Global Strategy on Diet, Physical Activity and Health*. In NSW, the NSW Childhood Obesity Summit was convened in September 2002. The NSW Department of Health, and in particular the Centre for Health Promotion, took the lead in planning and coordinating this.

From the outset, the need for an across-government, intersectoral response to obesity was recognised. Approximately 200 people attended as delegates, including representatives from government, community, industry, parents, and most importantly, children and young people. During the Summit, nine working groups were convened, which spanned the areas of early childhood, family and community, education, health, sport, food industry, media, transport and planning, and local government. Each working group drafted recommendations for action that aimed to decrease the

FIGURE 1

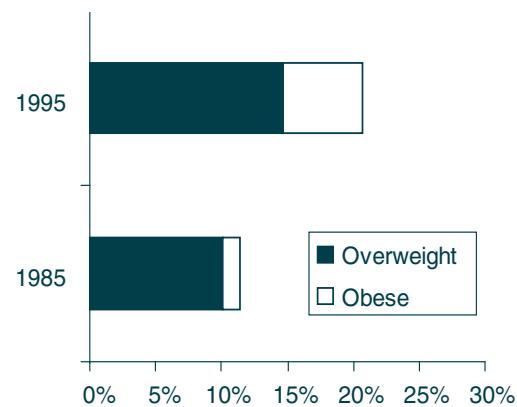
COMPARISON OF THE PERCENTAGE OF OVERWEIGHT AND OBESE GIRLS AGED 7–11 YEARS, AUSTRALIA, 1985 AND 1995



Source: Adapted from Magarey, Daniels, and Boulton.⁵

FIGURE 2

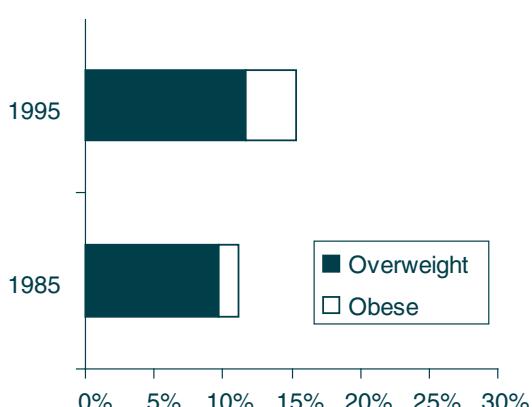
COMPARISON OF THE PERCENTAGE OF OVERWEIGHT AND OBESE GIRLS AGED 12–15 YEARS, AUSTRALIA, 1985 AND 1995



Source: Adapted from Magarey, Daniels, and Boulton.⁵

FIGURE 3

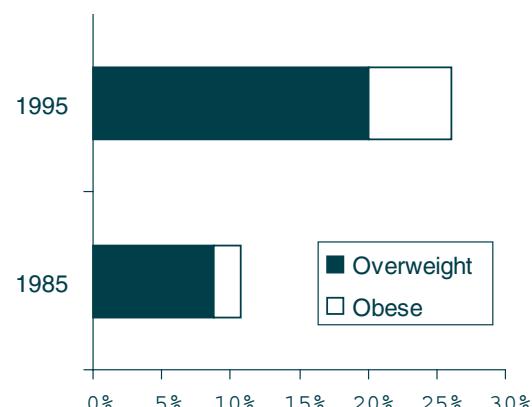
COMPARISON OF THE PERCENTAGE OF OVERWEIGHT AND OBESE BOYS AGED 7–11 YEARS, AUSTRALIA, 1985 AND 1995



Source: Adapted from Magarey, Daniels, and Boulton.⁵

FIGURE 4

COMPARISON OF THE PERCENTAGE OF OVERWEIGHT AND OBESE BOYS AGED 12–15 YEARS, AUSTRALIA, 1985 AND 1995



Source: Adapted from Magarey, Daniels, and Boulton.⁵

burden of childhood obesity in NSW. These recommendations formed the basis of a draft communiqué that contained 145 resolutions.

A Senior Officers Coordinating Committee (SOCC) chaired by The NSW Cabinet Office was initiated. The SOCC then set about developing the NSW Government's response to the Summit resolutions, along with an action plan to tackle childhood overweight and obesity in NSW. Just over one year after the Summit, the Premier The Honourable Bob Carr launched *Prevention of Obesity in Children and Young People: NSW Government Action Plan 2003–2007*.¹⁰

The Action Plan was developed after thorough analysis of the resolutions and consideration of each sector's capacity. It was evident through this process that there were several key priority areas:

- healthier schools;
- an active community;
- support for parents;
- healthy child and out-of-school care;
- community understanding;
- increasing our knowledge;
- governments, industry and the community working together.

Following the release of the Action Plan, the National Obesity Taskforce released the strategy *Healthy Weight 2008—Australia's Future: The National Action Agenda for Children and Young People and their Families*.¹¹ Many of the settings identified nationally are complementary to the seven priority areas identified in NSW. However, within these seven NSW priority areas there are two initiatives that are particularly notable: within the 'healthier schools' priority area the NSW Government mandated healthy school canteens; and in the 'knowledge' priority area there was a commitment to a statewide survey of 5–16 year olds.

NSW HEALTHY SCHOOL CANTEEN STRATEGY

For many years, Australian states and territories have encouraged and supported guidelines for the operation of healthy canteens. However, NSW is the first state to implement a government-endorsed approach to ensure that schools provide a canteen service that provides healthy and nutritious food.

School canteens in NSW are one of the major take-away food markets for children and adolescents. There are more than 3,200 schools (government, independent, and Catholic) in NSW with close to one million students. Approximately 2,700 schools provide a canteen service. A child who regularly purchases lunch and snacks from the school canteen consumes a substantial portion of their daily food intake from this source. It is unrealistic to expect children to make healthy food choices when faced with high-fat and high-sugar alternatives that have often been heavily advertised.

The NSW Healthy School Canteen Strategy has been in development since early 2003. To ensure an approach that would engage all of the school community, an overseeing committee that included representation from the three education sectors (government, independent, and Catholic), parents' groups, principals, canteens, nutritionists, health, and a school student, developed *Fresh Tastes @ School*—NSW Healthy School Canteen Strategy.

The significant difference between this approach and those that have been employed previously is that the Strategy clearly defines—through criteria—what can and cannot be sold in school canteens. The nutrient criteria was developed through consideration of the general characteristics of products (for example, serving size), food technology issues, and the limitations of producing healthier products. The nutritional pros and cons of food categories were also considered, and what contribution different types of foods make to a child or young person's daily nutrient intake was also taken into account.

The challenge for the Strategy was to translate this complex nutritional thinking into a menu-planning tool relevant to schools, and in particular canteen managers. Support

materials have been prepared to assist schools in the implementation of the *Fresh Tastes @ School* Strategy. All schools will receive the *Canteen Menu Planning Guide*, which outlines the nutrient criteria, and a supporting presentation that can be used to educate, and initiate the engagement of, the whole school community. Later in 2004, further support materials including a self-assessment tool, action planner, sample menus, promotional ideas, guidelines on negotiating a healthy leased canteen, healthy fundraising ideas, and case studies, will be disseminated.

It is unlikely that the NSW Healthy School Canteen Strategy will be implemented without some controversy. From a population health perspective, it seems intuitive that public health practitioners would seize any opportunity to offer children more fruit and vegetables, and less foods of minimal nutritional value, particularly those that offer little but sugar and saturated fat. However, it is possible that some sections of the food industry will be apprehensive, as their products are restricted for sale in canteens. Some schools may also fear the potential loss of ancillary funds from the revenue generated through the canteen.

There are, however, opportunities being created for the food industry in the promotion and marketing of new, modified and existing healthy products to all schools. Initial case studies from both primary and secondary schools that have changed to a healthy canteen have also demonstrated the significant opportunity that exists to increase profits through a school canteen menu that contains healthy choices. Case studies are available from both the NSW School Canteen Association website at www.schoolcanteens.org.au and the Federation of Parents and Citizens Associations of NSW at www.pandc.org.au.

SCHOOLS PHYSICAL ACTIVITY AND NUTRITION SURVEY

Attempting to change the dietary behaviour of children and young people is not the 'magic bullet' for childhood obesity. Future strategies need to be based on what we know about children and young people's dietary and physical activity behaviours. To provide this information, NSW Health is funding the Schools Physical Activity and Nutrition Survey (SPANS). A survey of this magnitude has not been conducted since 1997.¹² In Term One of 2004, a cohort of approximately 8,000 students from across the state has participated in the survey, which is being conducted as the inaugural project of the NSW Centre for Overweight and Obesity.

Data collected via questionnaires will include: sociodemographics; physical activity and sedentary recreation behaviour; nutrition information; dieting-weight loss beliefs; and perceptions of aspects of the social

and physical environments relevant to physical activity participation and food consumption. Direct measurements will include adiposity (height, weight, waist girth, and hip girth), cardio-respiratory endurance, and fundamental movement skill proficiency.

A sub-study will also be conducted in a cohort of about 600 Year 10 students (in metropolitan areas only) that involves blood pressure measurement and blood sampling. The blood sample will be tested for: cholesterol, glucose, insulin, liver function, and C-reactive protein. This sub-study will consider the association between body weight and risk factors for diseases such as heart disease and diabetes.

2004 AND BEYOND

Developing the NSW Healthy School Canteen Strategy and implementation of the SPANS, are certainly the key initiatives that are being conducted in 2004 to address overweight and obesity. However, the *NSW Government Action Plan 2003–2007* contains a range of initiatives over the next 3–4 years. NSW Health will also be seeking to encourage breastfeeding; increase best-practice in nutrition and physical activity in the child-care sector; and develop and implement a statewide community education campaign.

A challenge in overweight and obesity prevention is the sparse evidence base from which to develop and plan successful initiatives. However, this should not preclude action. Rather, it affirms the need for comprehensive evaluation of all initiatives, including those such as the introduction of healthy canteens. The NSW Centre for Overweight and Obesity will oversee the evaluation of the Action Plan.

While public health practitioners do not expect to reverse the trend of overweight and obesity in our children and young people quickly—practitioners can strengthen their endeavours and aim for a time when the headlines read ‘A nation of vegie munchers’; ‘All guns firing in the battle of the bicep’; and ‘Junk food sales dropping’.

Copies of the *Prevention of Obesity in Children and Young People: NSW Government Action Plan 2003–2007* and the Obesity Summit Response Document are available from the NSW Department of Health’s website at www.health.nsw.gov.au/obesity.

REFERENCES

1. Public Health Division. *The health of the people of New South Wales—Report of the Chief Health Officer*. Sydney: NSW Department of Health, 2002.
2. Mathers C, Vos T, Stevenson C. *Burden of disease and injury in Australia*. Canberra: Australian Institute of Health and Welfare, 1999.
3. Ebbeling CB, Pawlak DB, Ludwig DS. Childhood obesity: Public-health crisis, common sense cure. *Lancet* 2002; 360: 473–82.
4. Australian Bureau of Statistics. *National Nutrition Survey Nutrient Intakes and Physical Measurements Australia 1995*. Catalogue no 4805.0. Canberra: ABS, 1998.
5. Magarey A, Daniels L, Boulton TJC. Prevalence of overweight and obesity in Australian Children and adolescents: Reassessment of 1985 and 1995 data against new standard international definitions. *Med J Aust* 2001; 174: 561–564.
6. Booth ML, Chey T, Wake M, Norton K, Hesketh K, Dollman J, Robertson I. Change in prevalence of overweight and obesity among young Australians, 1969–1997. *Am J Clin Nutr*, 2003; 77: 29–36.
7. Hill A, Silver E. Fat, friendliness and unhealthy: 9 year old children’s perceptions of body shape and stereotypes. *Int J Obes Relat Metab Disord* 1995; 19 (6): 423–30.
8. Associate Professor Louise Baur, The Children’s Hospital, Westmead (Personal Communication).
9. Must A, Strauss R. Risk and consequences of childhood and adolescent obesity. *Int J Obes Relat Metab Disord* 1999; 23 (S-2): S2–S11.
10. NSW Department of Health. *Prevention of Obesity in Children and Young People: NSW Government Action Plan 2003–2007*. Sydney: NSW Department of Health, 2003. Available online at www.health.nsw.gov.au/obesity/adult/gap/ObesityActionPlan.pdf.
11. National Obesity Taskforce. *Healthy Weight 2008—Australia’s Future: The National Action Agenda for Children and Young People and their Families*. Canberra: Commonwealth Department of Health and Ageing, 2003. Available online at www.healthyandactive.health.gov.au/docs/healthy_weight08.pdf.
12. Booth M, Macaskill P, McLellan L, Phongsavan P, Okely T, Patterson J, Wright J, Bauman A, Baur L. *NSW Schools Fitness and Physical Activity Survey 1997*. Sydney: NSW Department of School Education, 1997. ■

INTRODUCING THE NSW CENTRE FOR PUBLIC HEALTH NUTRITION

Lesley King
NSW Centre for Public Health Nutrition

The NSW Centre for Public Health Nutrition was established in 2000, as an initiative of the NSW Department of Health in collaboration with the Nutrition Research Foundation of the University of Sydney. The purpose of the Centre is to assist and support NSW Health and public health practitioners to plan and implement high quality policies and programs that improve the nutrition of the NSW population. The Centre is a small team of public health professionals with expertise in population nutrition. Karen Webb, Ian Caterson, and Tim Gill are the academic directors of the Centre, which is located at the University of Sydney.

THE ROLE OF THE CENTRE

The role of the Centre for Public Health Nutrition involves reviewing research findings regarding nutrition policy and programs, and producing authoritative documents and guidelines, which inform nutrition interventions in NSW. The Centre undertakes work in four main streams:

- monitoring and surveillance;
- evidence-based planning;
- public health workforce development;
- applied research and evaluation.

The Centre's work within these streams addresses the nutrition priorities of public health, as identified in the NSW Health policy document *Eat Well NSW: Strategic Directions for Public Health Nutrition 2003–2007*. These priorities are: overweight and obesity, breastfeeding, vegetable and fruit consumption, and food security.

The Centre is now also a partner organisation in the NSW Centre for Overweight and Obesity, which was established in 2003. To this collaboration, the Centre for Public Health Nutrition brings specialist expertise in nutrition epidemiology, evidence-based planning for nutrition interventions, and applied research on nutrition.

PUBLICATIONS OF THE CENTRE

The Centre has recently published the following reports, which are available from its website:

- *Report on the weight status of NSW 2003*;
- *Report on breastfeeding in NSW 2004*;
- *Report on the consumption of vegetables and fruit in NSW 2003*;
- *Food Security Options Paper: A planning framework and menu of options for policy and practice interventions*.

Two further reports are due for publication in the near future:

- *Overview of recent reviews of interventions to promote and support breastfeeding*;
- *Best investments for promoting healthy weight*. ■

For further information contact the Centre by telephone on (02) 9036 3005, by fax on (02) 9036 3184, by email at l.king@mmb.usyd.edu.au or cphn@mmb.usyd.edu.au, or visit the Centre's website at www.cphn.biochem.usyd.edu.au.

RELEASE OF THE NEW SOUTH WALES MOTHERS AND BABIES REPORT 2002

Frank Beard

*NSW Public Health Officer Training Program
NSW Department of Health*

Lee Taylor

*Centre for Epidemiology and Research
NSW Department of Health*

The report *New South Wales Mothers and Babies 2002*, the NSW Department of Health's latest report on the health of mothers and babies in NSW, was released in January 2004.

The report shows a continued trend towards later childbirth, with the number of mothers aged 35 years and over increasing from 13,839 (16.3 per cent) in 1998 to 15,872 (18.8 per cent of all mothers) in 2002, and the number of mothers less than 20 years of age falling from 4,118 (4.8 per cent) in 1998 to 3,652 (4.3 per cent) in 2002. Caesarean section rates continue to increase, rising from 19.0 per cent in 1998 to 24.9 per cent in 2002. Over the same period, the rate of normal vaginal birth has fallen from 69.5 per cent to 64.2 per cent. Delivery by Caesarean section continues to be more common among privately-insured mothers than publicly-insured mothers, rising from

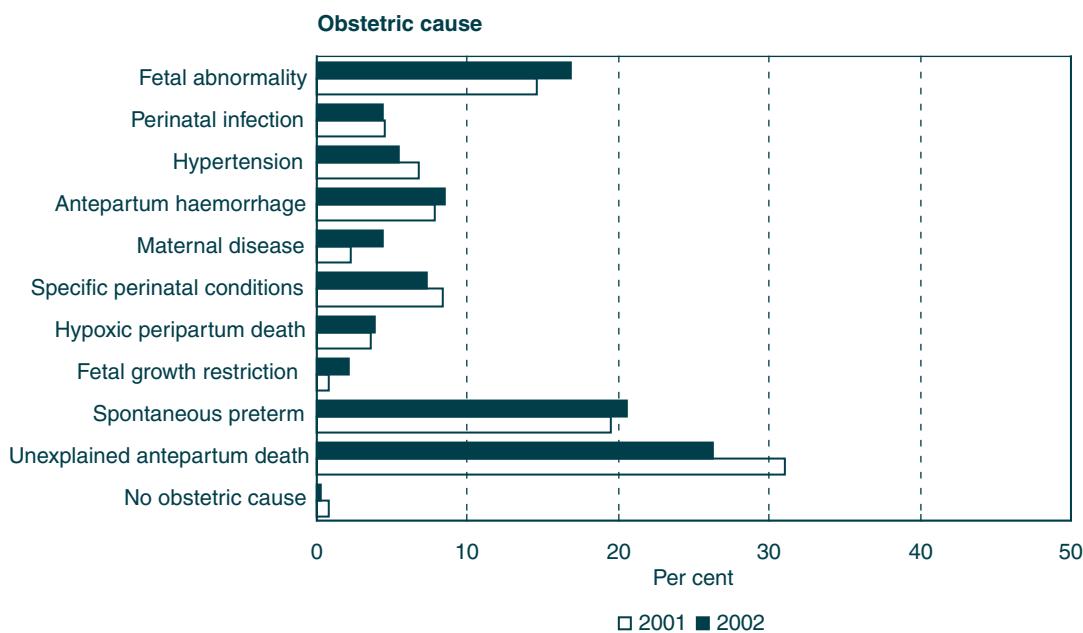
24.4 per cent to 30.0 per cent among privately-insured mothers and from 15.4 to 19.4 per cent among publicly-insured mothers between 1997 and 2001.

The total number of births in NSW has remained stable over the last five years, with 86,005 babies born to 84,587 mothers in 2002. Around one in four mothers were born overseas in 2002 with the most common countries of birth, other than Australia, being the United Kingdom (2.8 per cent), New Zealand (2.4 per cent), China (2.2 per cent), Vietnam (2.1 per cent), and Lebanon (2.0 per cent).

In 2002, the overall perinatal mortality rate (stillbirth or livebirth with subsequent death within 28 days) of 8.7 per 1,000 births was the lowest reported in the past 10 years. While the perinatal mortality rate in babies born to Aboriginal or Torres Strait Islander mothers was higher, at 11.0 per 1,000 births, this was also the lowest rate reported over the past 10 years. Since 1998 the overall rate of low birthweight (less than 2,500 grams) has remained stable at around six per cent, and the percentage of babies born prematurely (less than 37 weeks gestation) has remained stable at about seven per cent. Over the same period, the rates of low birthweight and prematurity in babies born to

FIGURE 1

PERINATAL DEATHS BY OBSTETRIC CAUSE AND YEAR, NSW, 2001–2002



Source: NSW Maternal and Perinatal Committee, NSW Department of Health.

TABLE 1

TYPE OF DELIVERY IN THE LATEST AND PREVIOUS BIRTH BY NUMBER OF PREVIOUS BIRTHS FOR NSW MOTHERS 2001–2002[#]

Number of previous births: Type of delivery in latest birth	Most recent previous birth						Emergency caesarean section #						Not stated			Total		
	Normal vaginal <i>n</i>	Normal vaginal %	Forceps <i>n</i>	Forceps %	Vacuum extraction <i>n</i>	Vacuum extraction %	Elective caesarean section <i>n</i>	Elective caesarean section %	Emergency caesarean section # <i>n</i>	Emergency caesarean section # %	Not stated <i>n</i>	Not stated %	Total <i>n</i>	Total %	Total <i>n</i>	Total %		
1 previous birth																		
Normal vaginal	9044	94.4	1319	7.5	1311	79.3	39	8.9	199	10.9	2	66.7	11914	78.3				
Forceps	63	0.7	71	4.2	40	2.4	4	0.9	54	2.9	0	0.0	232	1.5				
Vacuum extraction	179	1.9	106	6.2	198	12.0	7	1.6	63	3.4	0	0.0	553	3.6				
Elective caesarean section	136	1.4	121	7.1	53	3.2	347	79.2	1195	65.2	1	33.3	1853	12.2				
Emergency caesarean section#	153	1.6	86	5.0	52	3.1	41	9.4	322	17.6	0	0.0	654	4.3				
Not stated	2	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	0.0				
Total	9577	100.0	1703	100.0	1654	100.0	438	100.0	1833	100.0	3	100.0	15208	100.0				
More than 1 previous birth																		
Normal vaginal	8239	94.1	107	60.1	157	70.7	20	2.9	42	13.4	3	100.0	8568	84.3				
Forceps	46	0.5	14	7.9	4	1.8	0	0.0	2	0.6	0	0.0	66	0.6				
Vacuum extraction	140	1.6	18	10.1	29	13.1	3	0.4	4	1.3	0	0.0	194	1.9				
Elective caesarean section	179	2.0	29	16.3	23	10.4	626	91.0	212	67.5	0	0.0	1069	10.5				
Emergency caesarean section#	154	1.8	10	5.6	9	4.1	39	5.7	53	16.9	0	0.0	265	2.6				
Not stated	1	0.0	0	0.0	0	0.0	0	0.0	1	0.3	0	0.0	2	0.0				
Total	8759	100.0	178	100.0	222	100.0	688	100.0	314	100.0	3	100.0	10164	100.0				
Total																		
Normal vaginal	17283	94.3	1426	75.8	1468	78.3	59	5.2	241	11.2	5	83.3	20482	80.7				
Forceps	109	0.6	85	4.5	44	2.3	4	0.4	56	2.6	0	0.0	298	1.2				
Vacuum extraction	319	1.7	124	6.6	227	12.1	10	0.9	67	3.1	0	0.0	747	2.9				
Elective caesarean section	315	1.7	150	8.0	76	4.1	973	86.4	1407	65.5	1	16.7	2922	11.5				
Emergency caesarean section#	307	1.7	96	5.1	61	3.3	80	7.1	375	17.5	0	0.0	919	3.6				
Not stated	3	0.0	0	0.0	0	0.0	0	0.0	1	0.0	0	0.0	4	0.0				
Total	18336	100.0	1881	100.0	1876	100.0	1126	100.0	2147	100.0	6	100.0	25372	100.0				

Source: Linked Midwives Data Collection 1994–2001. Centre for Epidemiology and Research, NSW Department of Health.

Emergency caesarean section includes caesarean sections where the onset of labour was not stated. Data relate only to those mothers where the latest and previous births occurred at term (38–41 weeks gestation) and had a vertex presentation.

Aboriginal or Torres Strait Islander mothers have remained over 10 per cent, one-and-a-half to two times higher than for NSW overall.

The report is the sixth annual report on mothers and babies in NSW and includes an additional chapter on repeat obstetric interventions among multiparous women giving birth in 2001. For women where both the latest and previous pregnancies were singleton with a vertex presentation and delivered at term, episiotomy, epidural anaesthetic, instrumental, and caesarean section delivery were all more likely to occur in the latest birth if they had occurred in the previous birth (Table 1) The highest rates for repeat intervention were seen for caesarean section delivery, with the rate of caesarean section being 93.5 per cent following previous elective caesarean section and 83.0 per cent following previous emergency caesarean section.

The report consolidates findings of the NSW Midwives Data Collection (MDC), the NSW Birth Defects Register,

and the Neonatal Intensive Care Units Data Collection. It also contains summary information on maternal deaths and perinatal deaths in NSW, reviewed by the NSW Maternal and Perinatal Committee. The most common cause of perinatal death during 2002 was found to be unexplained death prior to birth, accounting for 26.3 per cent of all perinatal deaths (Figure 1). While down from 31.0 per cent in 2001, the continuing high proportion of unexplained perinatal deaths highlights the importance of hospital or area-based reviews to assist in identifying potentially preventable factors. ■

The report *New South Wales Mothers and Babies 2002* is available on the NSW Department of Health's website at www.health.nsw.gov.au/public-health/mdc/mdcrep02.html.

COMMUNICABLE DISEASES REPORT, NSW, FOR FEBRUARY 2004

TRENDS

Reports of communicable disease received through to the end of February 2004 in NSW are summarised in Table 3 and Figure 1. Notifications of the mosquito-borne **Ross River virus** and **Barmah Forest virus** infections increased in February, mainly in the north of the State. Notifications of **cryptosporidiosis** remain high, although may have peaked in January. Although the numbers have not increased statewide, cases in February appear to be more widespread than in January. Investigations by public health units, including interviews with patients, have not identified any likely common sources of infection among cases. Nonetheless, because the causal *Cryptosporidium* parasites can easily contaminate swimming pools—thereby placing other swimmers at risk of infection—patients with this infection, as well as anyone with diarrhoea in the previous week, should not enter a swimming pool.

For updated information, visit www.health.nsw.gov.au and click on the link to infectious diseases.

LISTERIA IN SANDWICHES

In late January, a batch of turkey and cranberry sandwiches was tested for bacterial contamination, as part of a food service quality assurance program by an area health service. In mid-February, the testing laboratory reported that it had identified *Listeria monocytogenes* bacteria in two of the sandwiches. No quantification was done of the amount of *Listeria* bacteria present. The food service reported this result to staff of their local public health unit, who determined the appropriate course of action.

The sandwiches were part of a batch of up to 5,000 made each day by a private company and distributed to a range of commercial and other facilities, including the hospitals within the area health service. The staff of the area health service reported that the sandwiches from the batch would have been served to patients and staff in several hospitals, but any uneaten sandwiches had been discarded 24 hours after delivery (which is routine). The food inspector at a second public health unit investigated the manufacturing premises, and could find no likely sources of contamination. Both the manufacturer and the area health service reported that quality assurance procedures had not identified any previous positive *Listeria* results in sandwiches produced by the manufacturer.

L. monocytogenes bacteria are commonly found in the environment, as well as in raw and processed foods. The bacteria can be carried in the gut of both animals and humans without causing symptoms and, in some studies, up to 29 per cent of healthy abattoir workers have been found to carry the bacteria without harm.¹ Illness following

infection is rarely reported. In one European study of 116 pregnant women who were shown to be carrying the organism in their gut, 86 of 87 meconium (the fluid associated with the newborn baby) samples were clear of infection.²

In NSW, between 10 and 28 patients have been reported with listeriosis each year since 1991. When illness does occur, it can either present as gastroenteritis, or invasive disease (including septicaemia or meningo-encephalitis, especially in newborn babies, or as abortion in pregnant women). Risk factors for invasive disease include being pregnant, a neonate, immuno-suppressed, or elderly. Outbreaks of listeriosis have been linked to contaminated foods such as milk, soft cheese, coleslaw, pate and processed meats, as well as oil used to bathe neonates.¹

In response to the finding of *L. monocytogenes* in the sandwiches, NSW Health convened an advisory panel including experts in public health, microbiology, food safety, and the epidemiology of listeriosis. The panel concluded that the risk of infection for anyone who ate the sandwiches was extremely low. As a precaution, however, it was recommended that the doctors in charge of the clinical departments that received the sandwiches at the affected hospitals be advised, and that they should consider the possibility of listeriosis in any patients presenting with symptoms. No infections associated with eating sandwiches have been identified. One patient with listeriosis was identified from the area health service, however genetic fingerprinting of the bacteria from the patient and from the sandwiches showed that they were unrelated.

References

1. Armstrong D, Gellin BG. *Listeria monocytogenes* infections. Evans AS and Brachman PS (editors). *Bacterial infections of humans, Epidemiology and control, 3rd edition*. New York: Plenum Medical Book Company, 1998; 421–436.
2. Kampelmacher EH, Maas DE, van Noorle Jansen LM. Occurrence of *Listeria monocytogenes* in feces of pregnant women with and without direct animal contact. Zentralblatt für Bakteriologie, Parasitenkunde, Infektionskrankheiten und Hygiene—Erste Abteilung Originale—Reihe A: *Medizinische Mikrobiologie und Parasitologie* March 1976; 234(2): 238–42 (Abstract).

DIARRHOEA INFECTIONS DUE TO SALMONELLOSIS INCREASES IN NSW

In February, there has been a large increase in patients diagnosed with *Salmonella* Typhimurium infection in NSW. *Salmonella* infections usually cause diarrhoea, nausea, abdominal pain, fever, and headache. *S. Typhimurium* is the most commonly reported *Salmonella* serovar (or strain) in NSW, and in 2003 it accounted for about 50 per cent of all *Salmonella* in NSW.

TABLE 1**PERCENTAGE OF FULLY IMMUNISED CHILDREN FOR FIVE SEPARATE COHORTS OF CHILDREN AGED 12 MONTHS TO LESS THAN 15 MONTHS BY AREA HEALTH SERVICE**

Area Health Service	30 Mar 03	30 Jun 03	30 Sept 03	31 Dec 03	30 Mar 04
Central Coast	93	92	93	95	92
Central Sydney	91	90	90	89	89
Hunter	94	95	93	94	95
Illawarra	92	93	92	93	93
Northern Sydney	90	91	91	90	91
South Eastern Sydney	90	91	92	90	91
South Western Sydney	91	90	91	90	91
Wentworth	93	91	92	91	91
Western Sydney	92	90	91	91	90
Far West	93	88	91	93	88
Greater Murray	92	94	93	93	93
Macquarie	92	94	93	93	93
Mid North Coast	90	89	90	91	89
Mid Western	94	93	94	91	94
New England	92	92	95	95	93
Northern Rivers	85	84	85	84	85
Southern	89	91	92	89	91
NSW	91	91	91	91	91
Australia	91	91	92	91	91

TABLE 2**PERCENTAGE OF FULLY IMMUNISED CHILDREN IDENTIFIED AS ABORIGINAL OR TORRES STRAIT ISLANDER, FOR FIVE SEPARATE COHORTS AGED 12 MONTHS TO LESS THAN 15 MONTHS**

	31 Mar 03	30 Jun 03	30 Sept 03	31 Dec 03	31 Mar 04
NSW	86	84	88	85	83
Australia	86	84	87	82	83

S. Typhimurium is further discriminated by over 50 phage types, of which types 170, 9, 135, 135a, 197, and 12 are the most commonly reported.

To further characterise the nature of this outbreak, we examined the data for all cases reported to us in January and February by the Centre for Infectious Diseases and Microbiology Laboratory Services at the Institute of Clinical Pathology and Medical Research. By late February, 187 patients had been reported with *S. Typhimurium* infections in 2004. Patients were distributed across all area health services. Males accounted for 54 per cent, and the age groups 10–19 years and 20–29 years accounted for 39 per cent of all patients.

Seasonal peaks of salmonellosis are expected in the warmer months, possibly associated with poor food storage and the consequent increased load of *Salmonella* bacteria in food. *Salmonella* infection can be prevented by: keeping foods refrigerated before use, thoroughly washing hands after using the toilet and before preparing food, not preparing food for others while ill, and not contaminating

ready-to-eat foods with raw foods. To identify a common source of these infections, NSW Health is interviewing cases of *S. Typhimurium* reported after 16 February. To date, no obvious source of the outbreak has been identified.

QUARTERLY REPORT: AUSTRALIAN CHILDHOOD IMMUNISATION REGISTER

Table 1 details the percentage of fully immunised children aged 12 months to less than 15 months in each area health service, reported by all service providers.

These data refer to five different cohorts of children whose age has been calculated 90 days before data extraction. The information contained in each of the reports has been extracted from the Australian Childhood Immunisation Register (ACIR) and may not reflect actual coverage due to under-reporting. Table 2 details the percentage of fully immunised children identified as Aboriginal or Torres Strait Islander in New South Wales for the same cohort, reported by all service providers.

IMPROVING OUR UNDERSTANDING OF, AND THE CONTROL OF, COMMUNITY METHICILLIN-RESISTANT *STAPHYLOCOCCUS AUREUS*: DEVELOPMENT OF A TRIAL SENTINEL SURVEILLANCE PROGRAM IN THE FAR WEST OF NEW SOUTH WALES

Catherine Kennedy and Hugh Burke

*Far West Population Health Unit
Far West Area Health Service*

Barbara Telfer

*NSW Public Health Officer Training Program
NSW Department of Health*

Jeremy McAnulty

*Communicable Disease Branch
NSW Department of Health*

Phil Lambie and Andrew Moreton

*General Practitioners
Outback Division of General Practice*

Iain Gosbell

*Staphylococcal Reference Facility
South Western Area Pathology Service*

This article describes the background and methods used by the community methicillin-resistant *Staphylococcus aureus* sentinel surveillance program that is currently being piloted in the Far West Area Health Service.

Background

Staphylococcus aureus is a bacterium commonly found on the skin and in the nose.^{1,2,3} This usually harmless organism can on occasion cause serious illness and death.^{2,3} *S. aureus* has the ability to become resistant to most classes of antibiotics used in the treatment of infections. Strains resistant to methicillin, known as methicillin-resistant *Staphylococcus aureus* (MRSA), emerged in the 1960s and are now a common cause of infection in healthcare institutions around the world (healthcare-associated MRSA).^{1,2} Since the 1980s, reports from the United States, Canada, Europe, New Zealand, and Australia indicate that MRSA can also be acquired in the community by people who have not had contact with a healthcare institution.^{1,4–17} Though the definition of community MRSA, previously termed ‘community-acquired MRSA’, varies in the literature, and its epidemiology is poorly understood, these reports suggest that community MRSA is becoming more prevalent.

Risk factors for acquisition of strains of healthcare associated MRSA include the extremes of age (young and old), surgery, use of indwelling devices or catheters, previous exposure to antibiotics, haemodialysis, admission to intensive care, and chronic diseases.^{2,3} Many patients with community MRSA lack these risk factors. In recent times, a set of risk factors for the acquisition of

community MRSA, which are different to those for healthcare-associated MRSA, have emerged: intravenous drug use, low socioeconomic status, engaging in contact sports, being an inmate of a correctional facility, and being a man who has sex with men. However, many patients with community MRSA lack these risk factors as well.

S. aureus is spread through direct contact with a person who is infected with or who is a carrier of the bacterium.⁴ Community MRSA infections usually manifest as skin lesions such as boils, impetigo, abscesses, and carbuncles.³ More serious MRSA infections can cause cellulitis (infection of tissue below the skin), osteomyelitis (infection of bone), pneumonia (infection of the lungs), and bacteraemia (infection of the blood).^{2,3} Persons with draining lesions or purulent discharge from sites of infection, such as boils, are the most likely sources of outbreaks.³ Autoinfection (self-infection) is reported to account for one-third of all community MRSA infections.³

In Australia, community MRSA was first detected in Western Australia, mainly among people from remote areas in the Kimberley and Goldfields regions.^{12,16,17} These people had not been in hospitals outside of Western Australia and were not known to carry MRSA. The strains of community MRSA first detected in Western Australia have since spread widely throughout Australia.¹⁸ In the mid-1990s, reports of community MRSA that are resistant to methicillin but not to other drugs came from Brisbane, Melbourne, and Sydney.¹⁵ Many patients were Polynesian and typical infections involved the skin and soft tissues.

The Australian Group on Antimicrobial Resistance has extensive Australia-wide data on MRSA.^{19,20} The 2000 survey showed that several epidemic clones constituted community MRSA in Australia: at least five strains of ‘WA MRSA’, the Oceania strain, the Ipswich strain, and four others.²⁰

While measures to control the spread of community MRSA in Australia have not been identified, it has been reported that ‘... community based control programs need support for individual patient management, improved housing and hygiene, control of skin sepsis, and appropriate use of antibiotics ...’.¹⁴

In 2001, the NSW Infectious Diseases Advisory Committee formed a subcommittee to make recommendations regarding surveillance and control of community MRSA. Members of this subcommittee included staff from public laboratories, the Communicable Diseases Branch of the NSW Department of Health, the Far West Population Health Unit (FWPHU), and the South Eastern Sydney Public Health Unit. A preliminary recommendation made by the subcommittee was to develop and pilot a simple sentinel surveillance program for community MRSA among general practitioners.

Pilot community MRSA sentinel surveillance program

Due to concern expressed by clinicians from the Far West Area Health Service over increasing numbers of local residents presenting with purulent skin infections, local general practitioners and the FWPHU agreed to pilot a community MRSA sentinel surveillance program. Staff from the FWPHU, the Communicable Diseases Branch of the NSW Department of Health, local general practitioners, the local laboratory, and South Western Area Pathology Service (SWAPS) have collaborated to develop the pilot program.

The aims of the community MRSA sentinel surveillance program are to:

- determine what proportion of people presenting to local general practitioners with skin infections had community MRSA;
- describe the epidemiology of community MRSA among patients seen by local general practitioners;
- establish acceptability of the sentinel surveillance program with local general practitioners;
- evaluate the sensitivity of the sentinel surveillance program and its findings;
- make recommendations of what further steps need to be taken in understanding the epidemiology of community MRSA and its prevention and control.

Methods

All patients who attend participating general practitioners with a skin infection or other suspected community MRSA infections were considered for inclusion in the surveillance program. General practitioners were asked to swab skin infections and collect de-identified clinical and demographic data. To protect the privacy of patients, a code for their family name and date of birth was used to identify them on a one-page general practitioner data collection form, which was designed for the pilot program. The information collected on this form was necessary to link the data collected by general practitioners with pathology results.

Patient information collected by general practitioners included date of birth, sex, Aboriginal and Torres Strait Islander status, residential address, date of onset, location of infection, type of infection, and date of swab or sample collection. Completed copies of the general practitioner data collection form were to be sent to the FWPHU, and another copy was placed in the medical record notes of patients.

Swabs collected by participating general practitioners are sent to the local laboratory and tested for MRSA. When found positive for MRSA, samples were forwarded to SWAPS for phage typing. Pathology results from SWAPS

were then forwarded to the FWPHU. The FWPHU then matched the pathology results to the data collected by general practitioners using the patient's code for name and date of birth.

The FWPHU only received notification of MRSA positive results and managed the collection, analysis, and interpretation of data and report findings with the assistance of the Communicable Diseases Branch.

General Practitioner Intervention

Participating general practitioners discussed skin infections and how to prevent their spread with the patients under surveillance. A fact sheet on boils and impetigo was designed for use by general practitioners for dissemination to patients. If a patient was found to have community MRSA, the general practitioner requested the patient to come back for treatment, and used that opportunity to talk with the patient about MRSA and its prevention. A second fact sheet on MRSA was designed to facilitate this process. Treatment for patients found to have community MRSA infections was to include clindamycin or cotrimoxazole, assuming isolates are susceptible.

Evaluation

Mid-pilot and end-of-pilot reviews of general practitioner notes will be undertaken to evaluate the sensitivity of the surveillance system in identifying MRSA cases. Staff of the FWPHU will attend general practitioner surgeries and audit patient notes for suspected skin infections, rate of swabbing and pathology results. A random sample of cases will be interviewed to assess appropriateness and uptake of patient education, and barriers to preventing the spread of community MRSA. This interview process will be done by the FWPHU as part of the evaluation of the pilot and fact sheets.

Ethics approval

The Western NSW Human Research Ethics Committee was provided with a report of the proposed MRSA sentinel surveillance program. They supported its implementation and agreed that as the pilot program was part of public health action it did not require ethical approval. Future projects will need to collect more information on risk factors and the relative value of interventions for community MRSA and are therefore likely to require an ethics application and approval.

Dissemination of findings

It is anticipated that the findings of the pilot will be completed by mid-year. The FWPHU will write up the findings of the pilot and its evaluation with assistance from the Communicable Diseases Branch. The findings will be communicated to the wider public health network in NSW and to the Infectious Diseases Advisory Committee

subcommittee on community MRSA, to inform any future action regarding the surveillance and control of community MRSA.

Acknowledgements

The authors wish to thank the participating general practitioners and the laboratory staff at Institute for Clinical Pathology and Medical Research and the South Western Area Pathology Service for their contributions to this pilot.

References

1. Chambers HF. The Changing Epidemiology of *Staphylococcus aureus*? *Emerg Infect Dis* 2001; 7(2): 178–182.
2. Ruben FL, Muder RR. Staphylococcal Infections. Evans AS and Brachman PS (editors). *Bacterial infections in humans: Epidemiology and control. 3rd edition*. New York and London: Plenum Medical Book Company, 1998; 657–672.
3. Chin J. *Control of Communicable Diseases Manual. 17th edition*. Washington DC: American Public Health Association, 2000.
4. Garner JS, Jarvis WR, Emori TG, et al. CDC definitions for nosocomial infections. *Am J Infect Control* 1988; 16: 128–140.
5. Gosbell IB, Mercer JL, Neville SA, Crone SA, Chant KG, Jalaludin BB, Munro R. Non-multiresistant and multiresistant methicillin-resistant *Staphylococcus aureus* in community-acquired infections. *Med J Aust* 2001; 174: 627–630.
6. Groom AV, Wolsey DH, Naimi TS, Smith K, Johnson S, Boxrud D, Moore KA, Cheek JE. Community-acquired methicillin-resistant *Staphylococcus aureus* in a rural American Indian community. *JAMA* 2001; 286(10): 1201–1205.
7. Nimmo GR, Schooneveldt J, O’Kane G, McCall B, Vickery A. Community acquisition of gentamicin-sensitive methicillin-resistant *Staphylococcus aureus* in Southeast Queensland, Australia. *J Clin Microbiol* 2000; 38(11): 3926–3931.
8. Akram J, Glatt AE. True community acquired methicillin-resistant *Staphylococcus aureus* bacteraemia. *Infection Control and Hospital Epidemiology* 1998; 106–109.
9. Wagenvoort JHT, Kepers-Rietrae M. Methicillin resistant *Staphylococcus aureus* (MRSA) as a community strain. *Eurosurveillance Monthly Archives* 1997; 2(2): 96–97.
10. Salmenlinna A, Lyytikainen O, Vuopio-Varkila J. Community-acquired methicillin-resistant *Staphylococcus aureus*, Finland. *Emerg Infect Dis* 2002; 8(6): 602–607.
11. Herold BC, Immergluck LC, Maranan MC, Lauderdale DS, Gaskin RE, Boyle-Vavra S, Leitch CD, Daum RS. Community-acquired methicillin-resistant *Staphylococcus aureus* in children with no identified predisposing risk. *JAMA* 1998; 279(8): 593–598.
12. Riley TV, Pearman JW, Rouse IL. Changing epidemiology of methicillin-resistant *Staphylococcus aureus* in Western Australia. *Med J Aust* 1995; 163: 412–414.
13. Maguire GP, Arthur AD, Boustead PJ, Dwyer B, Currie BJ. Emerging epidemic of community-acquired methicillin-resistant *Staphylococcus aureus* infection in the Northern Territory. *Med J Aust* 1996; 164(12): 721–23.
14. Maguire GP, Arthur AD, Boustead PJ, Dwyer B, Currie BJ. Clinical experience and outcomes of community-acquired and nosocomial methicillin-resistant *Staphylococcus aureus* in a Northern Australian hospital. *J Hosp Infect* 1998; 38(4): 273–81.
15. Collignon P, Gosbell I, Vickery A, Nimmo G, Stylianopoulos T, Gottlieb T. Community-acquired meticillin-resistant *Staphylococcus aureus* in Australia. Australian Group on Antimicrobial Resistance [letter]. *Lancet* 1998; 352: 145–146.
16. Udo EE, Pearman JW, Grubb WB. Genetic analysis of community isolates of methicillin-resistant *Staphylococcus aureus* in Western Australia. *J Hosp Infect* 1993; 25: 97–108.
17. Pearman JW. MRSA: The pathogen hospitals dread. *Microbiol Aust* 1996; 29–31.
18. Workshop on MRSA Typing: Applications of methods in an MRSA typing laboratory. *Antimicrobials 2003*, Australian Society for Antimicrobials 4th Annual Scientific Meeting, May 1–5 2003, Melbourne, Australia, 2003.
19. Symposium on AGAR Staphylococcus Awareness Program: Community MRSA. *Antimicrobials 2003*, Australian Society for Antimicrobials 4th Annual Scientific Meeting, May 1–5, Melbourne, 2003.
20. Symposia G. NORSA and MORSA in the Community. Epidemiology: The AGAR Data. *Antimicrobials 2002* Australian Society for Antimicrobials 3rd Annual Scientific Meeting, February 28 to March 2, Sydney, 2002. ■■■

FIGURE 1
**REPORTS OF SELECTED COMMUNICABLE DISEASES, NSW, JANUARY 1998 TO FEBRUARY 2004,
BY MONTH OF ONSET**

Preliminary data: case counts in recent months may increase because of reporting delays.

Laboratory-confirmed cases only, except for measles, meningococcal disease and pertussis

BFV = Barmah Forest virus infections, RRV = Ross River virus infections

LI = Legionella longbeachae infections, Lp = L. pneumophila infections

Gp C and Gp B = disease due to serogroup C and serogroup B infection,

other/unk = other or unknown serogroups

NSW population	
Male	50%
<5	7%
5–24	28%
25–64	52%
65+	13%
Rural*	42%

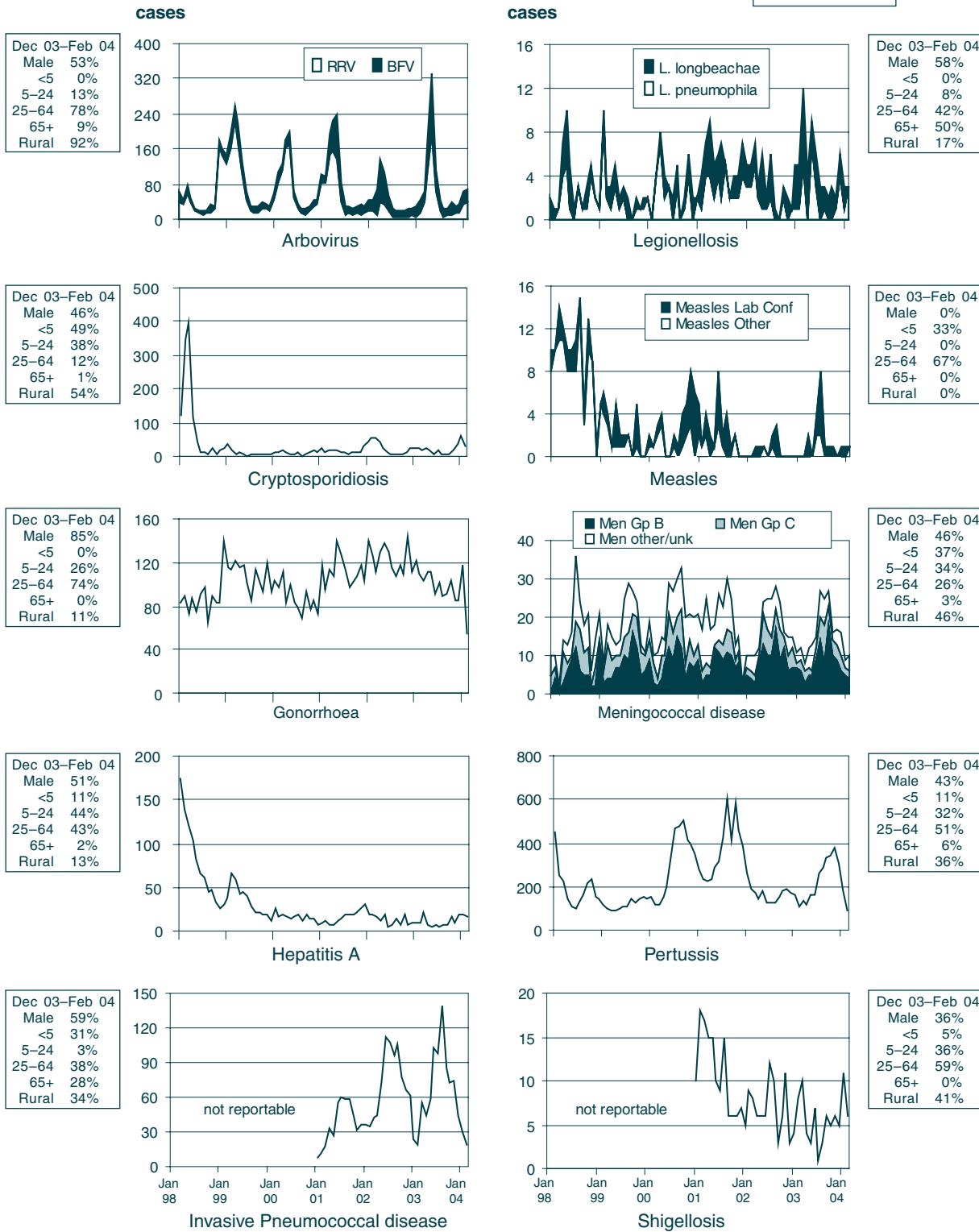


TABLE 3

REPORTS OF NOTIFIABLE CONDITIONS RECEIVED IN FEBRUARY 2004 BY AREA HEALTH SERVICES

Condition	Area Health Service												CHS	for Feb ^t	Total To date ^t	
	CSA	NSA	WSA	WEN	SWS	CCA	HUN	ILL	SES	NRA	MNC	NEA	MAC	MWA	FWA	
Blood-borne and sexually transmitted																
Chancroid*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlamydia (genital)*	94	100	68	27	67	26	90	28	141	29	46	12	2	23	21	813
Gonorrhoea*	21	10	7	1	8	1	4	2	33	2	2	-	-	-	-	1,538
Hepatitis B - acute viral*	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	95
Hepatitis B - other*	25	28	49	3	27	3	2	6	33	1	4	3	-	-	-	3
Hepatitis C - acute viral*	-	-	-	-	-	-	-	-	-	-	1	1	1	-	-	189
Hepatitis C - other*	54	24	19	19	42	30	33	24	49	26	31	-	-	-	-	1
Hepatitis D - unspecified*	-	-	-	-	1	-	-	-	-	-	5	20	-	-	-	420
Syphilis	17	7	5	-	24	2	3	5	41	2	1	-	-	-	-	1
Vector-borne																
Barmah Forest virus*	1	-	-	1	-	-	1	1	-	12	12	2	-	-	-	33
Ross River virus*	-	2	-	-	-	-	1	2	-	6	9	1	4	4	-	44
Arboviral infection (Other)*	-	1	-	-	1	-	-	2	-	-	-	-	-	-	-	4
Malaria*	-	2	-	-	-	-	3	-	-	-	-	-	-	-	-	11
Zoonoses																
Anthrax*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brucellosis*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Leptospirosis*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Lyssavirus*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
Pituitosis*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
Q fever*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Respiratory and other																
Blood lead level*	-	2	-	1	2	-	4	1	-	2	1	-	-	-	-	15
Influenza*	-	1	-	6	2	3	-	1	-	1	1	-	-	-	-	6
Invasive pneumococcal infection*	-	-	-	-	-	-	-	2	1	-	-	-	-	-	-	20
<i>Legionella longbeachae</i> infection*	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	77
<i>Legionella pneumophila</i> infection*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
Legionnaires- disease (Other)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Leprosy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Meningococcal infection (invasive)*	-	5	4	5	-	-	2	1	2	-	-	-	-	-	-	-
Tuberculosis	-	-	-	-	-	-	2	1	3	-	-	-	-	-	-	50
Vaccine-preventable																
Adverse event after immunisation**	1	-	1	1	3	1	-	1	-	-	-	-	-	-	-	17
H. <i>Influenzae</i> b infection (invasive)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Measles	-	2	2	2	-	-	-	-	-	-	-	-	-	-	-	3
Mumps*	2	8	36	35	10	17	12	16	3	32	3	2	3	1	10	9
Pertussis	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	10
Rubella*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	487
Tetanus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
Enteric																
Botulism	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cholera*	-	1	5	9	4	6	1	2	-	5	1	4	2	-	1	52
Cryptosporidiosis*	5	24	16	7	9	7	12	9	19	-	4	8	3	1	4	130
Giardiasis*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	218
Haemolytic uraemic syndrome	-	4	-	3	-	8	-	1	-	-	-	-	-	-	-	1
Hepatitis A*	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	45
Hepatitis E*	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	1
Listeriosis*	16	23	34	21	-	33	8	16	4	43	27	12	13	3	4	2
Salmonellosis*	-	1	6	-	2	1	-	-	-	-	4	-	1	-	-	275
Shigellosis*	-	1	4	-	2	-	-	2	-	-	-	-	-	-	-	15
Typhoid and paratyphoid*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20
Verotoxin producing <i>E. coli</i> *	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18

* lab-confirmed cases only + includes cases with unknown postcode ** HIV and AIDS data are reported separately in the NSW Public Health Bulletin each quarter

** AFELs notified by the school vaccination teams during the National Meningococcal C Program are not included in these figures. These notifications are reviewed regularly by a panel of experts and the results will be published quarterly in the NSW Public Health Bulletin in 2004.

CSA = Central Sydney Area
 NSA = Northern Sydney Area
 WSA = Western Sydney Area
 WEN = Wentworth Area
 SWS = South Western Sydney Area
 CCA = Central Coast Area
 HUN = Hunter Area
 ILL = Illawarra Area
 SES = South Eastern Sydney Area
 NRA = Macquarie Area
 MNC = North Coast Area
 NEA = New England Area
 FWA = Far West Area
 CHS = Southern Area
 GMA = Mid Western Area
 MWA = North Western Area
 FWA = Far West Area
 SA = Southern Area
 CHS = Corrections Health Service

NSW PUBLIC HEALTH BULLETIN

The *NSW Public Health Bulletin* is a publication of the NSW Department of Health.

The editor is Dr Lynne Madden, Manager, Public Health Training and Development Branch.

Dr Michael Giffin is the managing editor.

The Bulletin aims to provide its readers with population health data and information to support effective public health action.

The Bulletin is indexed by MEDLINE and *Index Medicus*.

Submission of articles

The preferred length of Bulletin articles is 1500 words. Tables and figures may be additional to that.

News, comments, and other reports should be 500–600 words.

All manuscripts should contain a short introductory abstract that reflects the structure of the manuscript.

References should be set out in the Vancouver style.

Send submitted manuscripts on paper and in electronic form, either on disc (Word for Windows is preferred), or by email.

The manuscript must be accompanied by a letter signed by all authors.

Full instructions for authors are available on request from the managing editor.

Editorial correspondence

Please address all correspondence and potential contributions to The Managing Editor, *NSW Public Health Bulletin*, Locked Mail Bag 961, North Sydney, NSW 2059, Australia or by email to phbulletin@doh.health.nsw.gov.au. Tel: 61 2 9391 9241, Fax: 61 2 9391 9232.

Distribution

To obtain copies of the *NSW Public Health Bulletin* please contact your local public health unit or by telephone at 61 2 9391 9942.

A new subscribers-change of address form is printed in most issues of the Bulletin. There is also an online subscription form available at the Bulletin's website.

The Bulletin can be accessed in both PDF and HTML formats from www.health.nsw.gov.au/public-health/phb/phb.html.

All back issues are downloadable from the website. Back

issues of the printed version can be obtained from:

Public Health Training and Development Branch

NSW Department of Health

Locked Mail Bag 961

North Sydney, NSW 2059, Australia. ☎

Copyright © 2004 NSW Department of Health



NEW SUBSCRIBERS—CHANGE OF ADDRESS FORM

Please return to:

NSW Public Health Bulletin
NSW Department of Health
Locked Mail Bag 961, North Sydney NSW 2059, Australia

Fax: 61 2 9391 9232

SUBSCRIBE AND UNSUBSCRIBE

- I wish to be placed on the mailing list
- Please remove me from the mailing list

CHANGE OF ADDRESS

- I wish to change my mailing details, as follows:

FROM: _____

Name: _____

Organisation: _____

Mailing address: _____

City: _____ State: _____

Postcode: _____ Country: _____

Telephone: _____ Facsimile: _____

Email: _____

TO: _____

SUBSCRIBE TO THE WEB VERSION

The *Bulletin* can be accessed via the Internet from our Web site at www.health.nsw.gov.au/public-health/phb/phb.html. If you would like to be informed by email when new issues of the *Bulletin* become available, please subscribe to the Internet mailing list when you next visit the site.