

Eat Well NSW

Strategic directions for
public health nutrition

to **2003**
2007



This work is copyright. It may be reproduced in whole or in part, subject to the inclusion of an acknowledgement of the source and non-commercial usage or sale.

© NSW Department of Health 2004

SHPN (NPA) 040007
ISBN 0 7347 3634 7

For more information, please contact:
Nutrition and Physical Activity Branch
NSW Centre for Health Promotion
NSW Department of Health
Locked Mail Bag 961
North Sydney NSW 2059
Tel. (61 2) 9391 9661
TTY. (61 2) 9391 9900

Copies of this report are available from the NSW Health website.
www.health.nsw.gov.au

February 2004

Foreword

Good nutrition is fundamental to normal growth and development, general health and prevention of disease and disability.

Poor nutrition impacts on the normal physical and cognitive development and potential of infants and children; causes ill-health in adults; and contributes to the development of chronic and life-threatening diseases and conditions such as coronary heart disease, high blood pressure, Type 2 diabetes, obesity and some cancers.

Improving diet has the potential to cut health care costs and improve quality of life but requires strategies to manage both under- and over-nutrition throughout the lifespan. Eat Well NSW provides a framework for action. Priorities with the potential to achieve health gain include promoting breastfeeding of infants, promotion of healthy weight and promoting increased consumption of vegetables and fruit among children and adults.

The vision for Eat Well NSW is better health for all people in NSW through effective and focused public health action to promote healthy eating and good nutrition.

A myriad of social, economic, environmental and individual factors determine eating habits. Making healthy food choices is more difficult for some due to their circumstances. Also, a small but significant proportion of the NSW population does not have reliable access to good food. Increasing food security is a direct priority of Eat Well NSW and reducing inequities that affect access to healthy food is a guiding principle relevant to all priorities. Eat Well NSW is a good example of NSW Health's commitment to social justice as set out in the draft *NSW Health and Equity Statement*.

Eat Well NSW takes a public health focus on prevention consistent with *Healthy People 2005: New Directions in Public Health in NSW*. Timeframes for many public health goals are medium to long term. Dividends in the form of a healthier population, prevention of diet related disease and improved food security may not be reaped for years or even decades after action is taken to bring about improvements in population eating patterns.

Influences on diet and nutrition extend beyond the health and nutrition sector. We have developed Eat Well NSW through extensive consultation with relevant experts and strategic partners as well as health sectors. Achieving measurable and equitable improvements in population food and nutrition as outlined in Eat Well NSW will require further consultation, new partnerships and sustained effort by many sectors of the community.

This framework for action will ensure that public health nutrition efforts are directed at the areas likely to have the biggest health impact. I commend this strategy to all those with an interest in public health nutrition.



Robyn Kruk
Director-General

Definition of public health nutrition^a

Public health nutrition embodies the key principles of public health.^b It:

- focuses on nutrition issues that affect the whole population rather than the specific dietary needs of individuals
- promotes good health and early intervention to prevent health problems rather than addressing ill health
- uses a systems approach that takes into account the impact of food production, distribution, access and consumption on the nutritional status and health of particular population groups
- considers social and environmental determinants of food consumption as well as food and nutrition knowledge, skills, attitudes and behaviours in the broader community.

Effective public health nutrition action requires a comprehensive approach incorporating environmental, educational, economic, technical and legislative measures. It also requires collaboration within the health sector and across many other sectors.

^a Based on:

i Hughes R and Somerset S. *Definitions and conceptual frameworks for public health and community nutrition: a discussion paper*. Australian Journal of Nutrition and Dietetics, 1997, 54:40-45.

ii SIGNAL. *What is public health nutrition?* www.dhs.vic.gov.au/nphp/signal Nov 2001.

^b Public Health Division. *Healthy People 2005. New Directions for Public Health in NSW*. NSW Department of Health: Sydney, 2000. www.health.nsw.gov.au

Contents

| | | | |
|---|------------|--|-----------|
| List of abbreviations | ii | 3 Strategic management and implementation | 31 |
| Glossary | iii | Introduction | 31 |
| List of tables and figures | vi | Role of the NSW Nutrition Network | 31 |
| Executive summary | vii | Supporting products and resources | 31 |
| | | Measuring progress | 32 |
| 1 Investment in public health nutrition | 1 | Appendices | |
| Reasons to invest in public health nutrition | 1 | Appendix 1. | 35 |
| Burden of diet-related disease | 1 | Acknowledgments | 35 |
| Costs of poor diet | 1 | Consultant | 35 |
| Health inequities related to poor diet | 2 | The Eat NSW Steering Committee | 35 |
| Dietary patterns and trends | 3 | Other key informants | 36 |
| Building on strong foundations | 3 | Appendix 2. | 45 |
| Opportunities for action | 4 | Development process for Eat Well NSW | 45 |
| Purpose of Eat Well NSW | 4 | Appendix 3. | 46 |
| Development process | 4 | Population focus | 46 |
| About this document | 5 | Focus on prevention | 46 |
| | | Reduction of health inequities | 46 |
| 2 Framework for planning and action | 7 | Relevance and acceptability to the community | 46 |
| Vision | 7 | Work in partnerships | 46 |
| Guiding principles | 7 | Comprehensive approach | 46 |
| Priorities for 2003-2007 | 7 | Sustainable actions | 46 |
| Strategic directions for priorities | 7 | Effective actions | 46 |
| Promoting healthy weight | 8 | Support of innovation | 46 |
| Promoting increased consumption of vegetables and fruit | 14 | Appendix 4. | 47 |
| Promoting breast feeding | 18 | Criteria for selecting priorities | 47 |
| Improved food security | 23 | Appendix 5. | 49 |
| Achieving effective and sustainable effort in public health nutrition | 28 | Policy context | 49 |
| | | Appendix 6. | 52 |
| | | Public health nutrition services in NSW | 52 |
| | | Appendix 7. | 56 |
| | | International body mass index cut-offs | 56 |
| | | References | 57 |

List of abbreviations

| | | | |
|--------|---|-----------|--|
| ABS | Australian Bureau of Statistics | NATSINSAP | <i>National Aboriginal and Torres Strait Islander Nutrition Strategy and Action Plan</i> |
| ADHAC | Australian Department of Health and Aged Care | NHMRC | National Health and Medical Research Council |
| AFNMU | Australian Food and Nutrition Monitoring Unit | NGO | Non government organisation |
| AGPS | Australian Government Publishing Service | NPHP | National Public Health Partnership |
| AHS | Area Health Service | PAL | Physical activity level expressed as a multiple of basal metabolic rate. |
| AIHW | Australian Institute of Health and Welfare | PHN | Public Health Nutrition |
| ASSO | Australian Society for the Study of Obesity | RACGP | Royal Australian College of General Practitioners |
| BFHI | Baby Friendly Hospital Initiative | SEIFA | Australian Bureau of Statistics Socioeconomic Indices for Areas |
| BMI | Body mass index (see glossary for definition) | SIGNAL | Strategic Inter-Governmental Nutrition Alliance |
| EWA | <i>Eat Well Australia</i> | SIGPAH | Strategic Inter-Governmental forum on Physical Activity and Health |
| EWNSW | Eat Well NSW | WHO | World Health Organisation |
| GP | General Practitioner | | |
| HP2005 | <i>Healthy People 2005: New Directions for Public Health in NSW</i> | | |
| IWG | Implementation Working Group | | |

Active transport

Physical activity undertaken as a means of transport. This includes travel by foot, bicycle and other non-motorised vehicle but excludes recreational activity.

Absolute poverty

Severely limited financial capacity to provide basic daily needs such as food, shelter, clothing and general care.

Adiposity rebound

Adiposity (as indicated by BMI) increases during the first year of life and then decreases before beginning to rise again around the age of six years. The increase in adiposity that occurs after it reaches its lowest point is referred to as 'adiposity rebound'. This is a normal pattern of growth that occurs in all children.

Body image

The mental picture that individuals have of their body and how they feel about their body.

Body mass index

Indicator of body fatness. Calculated from weight and height. $BMI = wt(kg) / ht(m)^2$

Breastfeeding

The child receives some breastmilk but can also receive any food or other liquid including non-human milk.

Ever breastfed

Refers to infants who have ever been put to the breast or received expressed breastmilk.

Exclusive breastfeeding

The infant receives only breastmilk or expressed breastmilk, and no other liquids or solids with the exception of drops or syrups consisting of vitamins, mineral supplements or medicines.

Full breastfeeding

An infant is fully breastfed if he/she receives breastmilk as the main source of nourishment. This includes infants who are either:

- a exclusively breastfed or
- b predominantly breastfed.

That is, infants can be classified as fully breastfed if:

- a they receive only breastmilk with no other liquids or solids (except vitamins, mineral supplements, or medicines) or
- b they receive breastmilk and water, water-based drinks, fruit juice, oral rehydration solution, but do not receive breastmilk substitutes or solids. The fully breastfed rate is the combined rate of exclusively breastfed and predominantly breastfed.

Predominant breastfeeding

An infant's predominant source of nourishment has been breastmilk but the infant may also have received water and water-based drinks (sweetened and flavoured water, teas, infusions etc); fruit juice; oral rehydration solution; drop and syrup forms of vitamins, minerals and medicines; and ritual fluids (in limited quantities). All other food-based fluids are excluded, in particular non-human milk.

Breastfeeding duration

The total length of time an infant received any breastmilk at all from initiation through until weaning is complete.

Complementary feeding

The child has received both breastmilk and nutrient-containing foods (this may include any food or liquid including non-human milk).

Comprehensive approach

Using a range of integrated public health strategies to create supportive environments, strengthen community action, reorient services and develop personal awareness, knowledge, skills and self-efficacy to promote health. These strategies include supportive policy, legislation

and regulation; collaborative partnerships within and between sectors; community participation and empowerment; preventive services; and education programs and campaigns for service providers, community and individuals.

Diet

Usual food intake and way of eating. Inclusive of but not limited to diets for weight control or other therapeutic purposes.

Disadvantage

Limitation of life opportunities in health or in social or economic wellbeing.

Disordered eating

An abnormal pattern of eating usually associated with dissatisfaction with body size but without clinical presentation as anorexia nervosa or bulimia.

Eating disorder

Defined clinical disorder associated with dissatisfaction with body size and abnormal eating in an otherwise physically healthy person. Principal disorders are anorexia nervosa and bulimia.

Energy density

Amount of food energy provided per volume of food.

Equality

Equality in health implies an equal share of health resources and access to services for everyone, regardless of need.

Equity

Equity is about equal access to services for equal need, equal utilisation for equal need and equal quality of care or services for all, with a focus on health outcomes.

Food access

Access to quality food in local communities which is safe, affordable at competitive prices, culturally acceptable and nutritious, and provides the opportunity for healthy food choices.

Food security

Access at all times to sufficient food for an active and healthy life.

Health services

Refers to the 17 Area Health Services, Corrections Health Service and the Children's Hospital at Westmead.

Healthy weight

Body mass index 18.5 to 24.9

Incidental physical activity

Physical activity that occurs as part of day-to-day life, excluding planned sport and leisure activities.

Infant

Refers to < 12 months old. 'Children' are ≥ 12 months.

Obesity

A condition of abnormal or excessive fat accumulation in adipose tissue, to the extent that health may be impaired (usually indicated by body mass index $> 30 \text{ kg/m}^2$).

Overweight

Excess weight relative to height (usually indicated by a body mass index $\geq 25 \text{ kg/m}^2$).

Passive over-consumption

Excessive unintended consumption of food energy due to high energy density of foods.

Relative poverty

Lack of resources to have the living conditions or to participate in activities as expected in the society in which an individual lives.

Vulnerable

Vulnerability is the increased susceptibility to adverse health events that may be experienced in times of life transitions (such as adolescence, pregnancy), through chronic health problems (such as mental illness or diabetes), or which may arise from exposure to adverse social, economic or physical environments (such as discrimination or poverty).

Weaning

The period during which infants are introduced to breastmilk substitutes and/or solid foods with the intention of ceasing breastfeeding.

List of tables and figures

- | | | | |
|----------|---|-----------|---|
| Table 1. | Framework for achievements | Figure 1. | National physical activity guidelines for Australians |
| Table 2. | Classification of overweight adults according to BMI | | |
| Table 3. | Framework for achievements | | |
| Table 4. | Performance of Eat Well Australia priorities against Eat Well NSW priority selection criteria | | |
| Table 5. | Match of public health nutrition priorities to other action plans and policies | | |
| Table 6. | DAA membership work areas 2001 | | |
| Table 7. | Public health nutrition workforce delineation framework | | |

Executive summary

Background

The relationship between diet and health is irrefutable. Good nutrition throughout the lifespan is a major factor affecting not only an individual's growth and development but also general physical and mental health and quality of life.

Poor nutrition and related factors contribute significantly to the total burden of disease in NSW. Dietary studies provide evidence of poor diet, notably a low consumption of vegetables and fruit among the NSW population and a trend for young people to eat less fruit and vegetables than other population groups. Rates of overweight and obesity are high amongst both sexes and across all life stages. The increase in these rates in recent years is alarming.

Investing in nutrition can reduce human suffering and release pressure on the acute health care sector through reduced rates of diet-related illness. Sound nutrition can also have major economic and social benefits because a healthy population is vital for economic development and social cohesion.

Purpose

Eat Well NSW provides a clear statement of health sector priorities for public health nutrition in NSW. Its purpose is to guide measurable population food and nutrition improvements.

Framework for planning and action

The vision of Eat Well NSW is to provide better health for all people in NSW through effective and focused public health action to promote healthy eating and good nutrition.

The public health nutrition priorities identified for action in NSW in 2003-2007 are:

- promoting healthy weight
- promoting increased consumption of vegetables and fruit
- promoting breastfeeding
- achieving improved food security
- achieving effective and sustainable action in public health nutrition.

Priorities were selected in consideration of Eat Well Australia, the national agenda for action in public health nutrition, the companion *National Aboriginal and Torres Strait Islander Nutrition Strategy and Action Plan* and a set of criteria relevant to a population approach in NSW.

The Eat Well NSW priorities are highly relevant to the main issues of a number of important NSW public health policies and strategies, particularly *Healthy People 2005*, *the New Directions for Public Health in NSW* and the *NSW Health and Equity Statement*. The guiding principles of Eat Well NSW reflect those of Public Health and Health Promotion in NSW. These are:

- adopt a population and prevention focus
- reduce health inequities
- take action relevant and acceptable to the community affected
- work in partnerships using a comprehensive approach
- use effective and sustainable actions
- support innovation.

Eat Well NSW makes a strong commitment to reduce health inequities. Achieving a positive impact on equity was one of the selection criteria for all Eat Well NSW priorities as well as the focus for the priority concerning improved food security. The special attention given to improved food security acknowledges that while NSW generally has an abundant food supply, there are groups of people who have insufficient food for an active and healthy life.

Table 1 presents a framework for achievements for 2003-2007 in terms of early wins, maturing investments and long-term gains. Selection of specific strategies and methods of monitoring of implementation will occur at both the state and Area Health Service level (in consultation with key partners including the community) and will be supported by products from the NSW Centre for Public Health Nutrition.

Strategic management and implementation

The NSW Centre for Health Promotion at the NSW Department of Health will coordinate management of implementation of Eat Well NSW. It will establish a strategic implementation management group involving key partners, researchers and independent experts to guide implementation. Processes surrounding the implementation of resolutions from the NSW Childhood Obesity Summit held in 2002 will assist implementation of actions associated with promotion of healthy weight.

The NSW Nutrition Network will play a crucial role in contributing expertise, providing leadership and advocacy at health service level and facilitating communication, dissemination of information and workforce development.

Supporting products and resources

NSW Health will fund the NSW Centre for Public Health Nutrition to produce a range of products and services to support implementation of Eat Well NSW including:

- reports that identify a range of actions that represent 'best buys' within selected priority areas
- reports that identify a 'menu of options' of strategies and outcome measures for priority areas. These will include reviews of the evidence to justify intervention, the evidence of effectiveness of potential interventions and outcome indicators and measures
- workforce development workshops to disseminate reports
- other products and services developed in consultation with NSW Health, the NSW Centre for Public Health Nutrition Advisory Committee and Area Health Services.

These reports will be guided by the strategic implementation and evaluation group and released progressively from mid 2003. Consultations will be undertaken to ensure the supporting products and resources meet user needs and link closely with the Eat Well NSW strategic directions.

Additional funding for specific interventions and workforce development identified by the implementation working groups will be sought through the routine NSW Health funding process and through appropriate external funding bodies.

NSW Health will explore a process for linking work on common issues in the *NSW Aboriginal Health Strategy* and Eat Well NSW such as promoting breastfeeding and improving food security.

Measuring progress

The implementation process as well as intermediate and final outcomes will be measured. The implementation working groups will develop indicators for each of the priority areas in consultation with the NSW Centre for Public Health Nutrition and the Area Health Services.

Table 1. Framework for achievements

| Early wins by 2003 | Maturing investments 2005 | Long term gains by 2007 |
|--|--|--|
| Promoting healthy weight | | |
| <ul style="list-style-type: none"> • Monitoring report on weight status produced and disseminated. • Menu of evidence-based options for promoting healthy weight produced and disseminated. • Systems for monitoring healthy eating, physical activity, healthy weight and interventions implemented. • Hosting of the NSW Childhood Obesity Summit. • Increased health sector will and commitment to achieve healthy population weight. • Sectors outside health engaged. | <ul style="list-style-type: none"> • State and local evidence based options implemented. • Ongoing implementation of <i>Government Action Plan 2003-2007: Prevention of Obesity in Children and Young People</i>. • Joint initiatives between health and non health sectors. • Health sector capacity for promotion of healthy weight increased. | <ul style="list-style-type: none"> • Ongoing implementation of <i>Government Action Plan 2003-2007: Prevention of Obesity in Children and Young People</i>. <p>Reduced:</p> <ul style="list-style-type: none"> • environmental exposure to risk factors for weight gain during vulnerable periods of life • factors leading to passive over-consumption of energy-dense food • sedentary behaviours. |
| Promoting vegetables and fruit | | |
| <ul style="list-style-type: none"> • Monitoring report on vegetable and fruit consumption produced and disseminated. • Develop a research model to assess supply pathways and associated barriers. • Disseminate evidence-based options for promoting fruit and vegetable consumption. | <ul style="list-style-type: none"> • Audit vegetable and fruit supply pathways and associated barriers at the state level. • Engagement of sectors outside health. • State and local evidence-based interventions to promote fruit and vegetables. | <p>Increased:</p> <ul style="list-style-type: none"> • knowledge of recommended intakes • knowledge, skills and confidence in selection and preparation of vegetables. <p>Increased:</p> <ul style="list-style-type: none"> • proportion of population eating vegetables and fruit everyday • consumption of fruit and vegetables by low consumers • variety of vegetables and fruit consumed • access to quality fruit and vegetables, especially for rural and remote communities. |
| Promoting breastfeeding | | |
| <ul style="list-style-type: none"> • Monitoring report on breastfeeding produced and disseminated. • Disseminate options for promotion of breastfeeding as the normal and most beneficial method of infant feeding. • Negotiate for application of national standards in state monitoring. • Interventions to shift community attitudes. | <p>Increased:</p> <ul style="list-style-type: none"> • supportive health workforce attitudes and practices • supportive community attitudes and practices • knowledge and understanding of breastfeeding supports and issues by families • application of national standards in state monitoring • Increased support for working mothers to breastfeed • state and local evidence based interventions implemented. | <p>Increased:</p> <ul style="list-style-type: none"> • exclusive breastfeeding to six months • breastfeeding to 12 months • support of breastfeeding by health system • community support of breastfeeding. <p>Decreased introduction of solids before six months.</p> |

| Early wins by 2003 | Maturing investments 2005 | Long term gains by 2007 |
|--|--|---|
| Achieving improving food security | | |
| <ul style="list-style-type: none"> • Develop a planning framework. • Menu of options for improving food security produced and disseminated. • Initiate Aboriginal consultation. | <ul style="list-style-type: none"> • Measure who is at risk and determinants. • Adapt model initiatives to meet local needs. • State and local projects implemented and evaluated. • Develop workforce skills in coalition building. • Range of evidence based interventions identified and disseminated. | <ul style="list-style-type: none"> • Increased evidence-based interventions in place. • Improved access to food for disadvantaged groups. |
| Achieving effective and sustainable effort in public health nutrition | | |
| <ul style="list-style-type: none"> • Identify and disseminate promising/ evidence-based options for initiatives in priority areas. • Public health nutrition workforce development in line with Eat Well NSW implementation. • Advocacy for public health nutrition role in creating health gain. • Review/reorient nutrition workforce structures. • Review resource allocation for public health nutrition. • Establish and develop a public health nutrition centre to facilitate implementation. | <ul style="list-style-type: none"> • Integration of public health nutrition action into relevant policies, programs and services. • Ongoing public health nutrition workforce development. • Submit recommendations for public health nutrition resource allocation. | <ul style="list-style-type: none"> • Greater capacity of health workforce to address public health nutrition priorities. |

1 Investment in public health nutrition

Reasons to invest in public health nutrition

The relationship between diet and health is well established.¹ Good nutrition is now acknowledged as a major factor affecting not only an individual's growth and development but also general physical and mental health and quality of life.

Burden of diet-related disease

Poor nutrition is a well established risk factor for development of chronic and life-threatening diseases and conditions such as cardiovascular disease (including coronary heart disease and stroke), some cancers, obesity, high blood pressure and Type 2 diabetes.

Cardiovascular disease is the leading cause of death in NSW, accounting for approximately four in 10 deaths each year. It also accounts for more than one-third of years of life lost due to premature death.² Forty-five percent of deaths from cardiovascular disease are estimated to be due to poor nutrition.³ Important nutritional risk factors are imbalance of saturated and polyunsaturated fat,⁴ low consumption of vegetables and fruit,⁵ high intake of sodium⁶ and excess body weight.⁷

Cancer is the second leading cause of death in NSW, accounting for just over one in four deaths each year.⁸ Nutrition has been linked to cancers of a number of different sites and is estimated to contribute to 30 to 40 percent of cancers.^{9,10} A low consumption of vegetables and fruit is the best-established dietary risk factor, and alone, it is estimated to account for 11 percent of deaths and disability from cancer in Australia.¹¹ Overweight and inadequate physical activity are also significant risk factors.

Diabetes is an emerging epidemic in Australia with rates in adults trebling since 1981.¹² In NSW in 2000, eight percent of deaths had diabetes as an underlying or contributing cause. Self-reported diabetes or high blood

sugar was nearly four percent for men and just over three percent for women.¹³ However, experts estimate that half of cases of Type 2 diabetes are undetected. A recent survey showed that almost one in four Australians aged 25 years and over has either diabetes or impaired glucose metabolism; conditions that significantly increase the risk of heart disease, kidney failure, blindness, amputations and birth defects.¹⁴ The majority of older people with diabetes have Type 2 diabetes.¹⁵ Family history is relevant but overweight and low levels of physical activity are the major risk factors and important means of prevention and management.¹⁶ A diet high in plant foods, with a moderate glycaemic load and low in saturated fat has a significant role in managing diabetes to prevent the complications listed above.

Other major contributors to diet-attributable morbidity in NSW¹⁷ and other parts of Australia¹⁸ are constipation and haemorrhoids, gallbladder diseases, osteoporotic fractures in older people, dental caries, obesity, eating disorders and anaemia.

Breastfeeding is associated with improved general health, growth and development of infants and protection against a number of acute and possibly chronic diseases. Reviews of research^{19,20} provide evidence that breastfeeding decreases the incidence and/or severity of several short-term illnesses in infants and young children: including gastrointestinal infections, lower respiratory infection, otitis media, bacteraemia, bacterial meningitis, botulism, urinary tract infection and necrotising enterocolitis. Breastfeeding reduces the risk of SIDS²¹ and has been suggested as a possible protective factor for a range of chronic disorders in childhood and later in life. These include cow's milk allergy, asthma, obesity, Type 1 (insulin dependent) diabetes, inflammatory bowel disease, atherosclerosis and lymphoma.^{22,23} Breastfeeding has also been related to possible enhancement of cognitive development. Further work is required to draw definitive conclusions on the longer term effects of breastfeeding.²⁴

Costs of poor diet

There are considerable social and economic costs of poor nutrition to individuals and society. Experts conclude that inadequate consumption of vegetables and fruit, obesity and high blood cholesterol (related mainly to high saturated fat intake) contribute significantly to the total burden of disease and disability in Australia.²⁵

Estimates of direct health care costs attributable to poor diet (costs of hospitals, medical expenses, allied health professional services, pharmaceutical expenses and nursing homes) and indirect costs (due to sick leave and foregone earnings due to death) are available for Australia although they are now over 10 years old.²⁶ The direct cost was estimated to be \$1.4 billion and the indirect cost \$0.6 billion. Diet-related conditions included in these estimates were cardiovascular disease, hypertension, stroke, Type 2 diabetes, some cancers, osteoporosis, diverticular disease, constipation, haemorrhoids, gallbladder diseases, dental caries, and anaemia.

The potential cost-saving to the healthcare system in Australia if obesity (BMI \geq 30) was reduced by 20 percent between 1992 and 2000 was estimated to be \$59 million and a saving of 2,300 years of life.²⁷ This included the cost of obesity related to diabetes, coronary heart disease, high blood pressure, breast and colon cancers and gallstones but excluded the cost of interventions to achieve these targets.

Considerable savings could be made on health care costs each year in Australia if the prevalence of breastfeeding at three months (13 weeks) was increased from 60 percent to 80 percent.²⁸ Savings would arise due to reduction in the costs of hospitalisation due to gastrointestinal illness and necrotising enterocolitis, outpatient and general practitioner treatment for eczema, educational costs associated with neurodevelopmental impairment and costs in NSW for children and adolescents with Type 1 diabetes.

Cost-of-illness studies that focus on health and economic indicators do not capture the costs of reduced quality of life for individuals. The reduced quality of life for obese individuals, for example, includes fewer social opportunities, and discrimination in employment and many aspects of life.^{29,30} Continual dieting and other weight loss procedures also have considerable financial and emotional costs for individuals.³¹

Health inequities related to poor diet

Socioeconomic disadvantage is an important predictor of premature mortality in Australia, contributing an estimated seventeen percent of the burden of disease and injury.³²

Groups with lower socioeconomic status experience higher rates of diet-related illness throughout the life cycle including low birth weight babies, childhood and infant anaemia, lowered immunity from infectious diseases, dental caries, obesity, hypertension, Type 2 diabetes, heart disease and stroke.³³ With regard to Aboriginal people, high rates of diabetes coupled with limited access to appropriate services, results in high rates of hospital admissions for complications of the disease. Age adjusted hospital separation rates for diabetes are about six times higher for Aboriginal people.³⁴ Aboriginal people consistently have higher rates of cardiovascular disease compared with non Aboriginal people.³³

Food and nutrition affect more than just the physical aspects of our health and wellbeing. Buying, preparing and eating food are part of everyday life. For many, food is a focus for interaction with friends and family. For some it is also an economic concern. Food insecurity, or lack of access to adequate food, has a high cost to individuals, families and society due to reduced physical, mental, spiritual and social health and wellbeing.³⁵

Food insecurity due to limited resources affects at least five percent of the general population and is much higher amongst some groups³⁶ including those in remote areas, indigenous people, homeless people, injecting drug users and those on low or insecure incomes. Young people, older people, single person households, unemployed people, people with disabilities and some immigrants and their families are also likely to be at higher risk due to relative poverty.

Dietary patterns and trends

Healthy diet is defined by NHMRC dietary guidelines for three groups; all Australians,³⁷ older Australians³⁸ and children and adolescents.³⁹ Although they vary slightly for each group, the essence of the guidelines for all groups for good nutrition and health is the same and includes advice to eat a variety of healthy foods, eat plenty of vegetables (including legumes), fruit and cereal foods, include lean meat, fish, poultry or alternatives and reduced fat dairy foods (but full fat for young children), only moderate intake of saturated fat, salt, sugars and alcohol, breastfeed infants, observe food safety practices and control body weight with physical activity and appropriate food intake. The core food groups⁴⁰ and the *Australian Guide to Healthy Eating*⁴¹ define appropriate quantities of foods for different age groups.

The *1995 National Nutrition Survey*, based on 24-hour recall, provides the most recent comprehensive data on eating habits in Australia and NSW.⁴² The survey highlights low intakes of fruit by males and primary-school aged children, low intakes of vegetables by almost all groups, low intakes of cereal foods by women, low intakes of dairy foods by adolescents and women, low intakes of iron by adolescent girls and women, higher frequency of skipped meals amongst adolescents, more meals eaten away from home amongst adolescents and adult males, and greater fat content of foods consumed away from home.

The *1997/98 NSW Health Survey*⁴³ of persons 16 and over also found vegetable, fruit and cereal food intakes significantly below the recommended intakes. The only trend data available were for low fat milk consumption. Since 1994, five percent more men and seven percent more women in consumed low fat milk.

Both the *National Nutrition*⁴⁴ and the *NSW Health Surveys* found high and increasing rates of overweight and obesity in all ages and sexes.^{45,46}

It is difficult to assess breastfeeding initiation and cessation trends in NSW because there is no routine monitoring at a national or state level and inconsistent terminology and methods of assessment.⁴⁷ Macro-analysis and comparison of state-based surveys suggests that breastfeeding rates fell to an all-time low in the 1970s but rose again to plateau at current levels since the mid-1980s.⁴⁸

Building on strong foundations

Significant public health nutrition action has occurred in NSW in response to the previous strategic directions statement *Food and Nutrition: Directions for NSW 1996-2000*.⁴⁹

Formal networks have been established. Policies, training packages for non-nutrition workers, and other resources have been developed and implemented and increased our capacity to address nutrition issues in childcare, schools, and hospital food service.

Ongoing funding of the NSW School Canteen Association has helped sustain state level programs, including a school canteen award (accreditation) and healthy product registration program. Strategy guidelines for promoting breastfeeding in NSW have been developed and disseminated.⁵⁰

NSW nutrition monitoring was significantly improved with the development of a state monitoring plan, the development of modules for measuring key aspects of food habits and food intakes in population-based surveys in NSW, incorporation of key nutrition questions in relevant population health surveys, eg *NSW Health Survey*, validation of monitoring instruments and methods and through commissioning reports on a NSW subsample of the *1995 National Dietary Survey*.

Capacity for planning, managing and evaluating public health nutrition interventions has also increased with the establishment of the NSW Centre for Public Health Nutrition through NSW Health funding. The Centre has been established in collaboration with the Sydney University Research Foundation and is located on the university campus. The Centre's purpose is to assist the public health workforce in NSW to use research evidence, creativity and principles of good management to plan, implement and evaluate better population nutrition policies and programs.

A NSW Nutrition Network with representation from NSW Health, each Area Health Service and some non-government organisations meets regularly for planning, training and exchange of information. The network maintains a register of recent and current public health nutrition projects in NSW.

NSW Health is also a member of the Strategic Governmental Nutrition Alliance (SIGNAL). This is a national partnership of government health authorities. Established as the nutrition arm of the National Public Health Partnership, the primary goal of SIGNAL is to provide strategic direction and coordination of national nutrition priorities. SIGNAL has the capacity to work cooperatively with the food industry, professional associations, government and non-government organisations and consumer groups at a national level. Hence, SIGNAL is an important national structure that can support public health nutrition action in NSW.

Opportunities for action

Food and nutrition are integral to many aspects of the daily life and health of people at all life stages from different backgrounds and in different settings. Nutrition is relevant to many health and social policies and actions. This document aims to identify ways that nutrition priorities can be integrated into existing programs and policies.

The focus in this document is on policies within the health sector. The next step will be to identify opportunities to integrate nutrition action into policies and programs in other sectors. We have identified potential key partners for each of the priority areas.

Purpose of Eat Well NSW

The overall purpose of this statement of strategic directions for public health nutrition in NSW is to guide and facilitate measurable population food and nutrition improvements in NSW.

The statement provides:

- directions for integrating food and nutrition into public health policies and programs in NSW
- a guide to modifying or re-orienting current public health nutrition policies, strategies and programs
- priorities for new work and new investment in public health nutrition programs
- guiding principles for selecting public health approaches to improve nutrition
- a basis for negotiation with non-health sectors about the impact of their policies and programs on food and nutrition issues.

Development process

Development of Eat Well NSW was auspiced by the NSW Department of Health's Centre for Health Promotion and guided by a steering committee comprised of representatives of key nutrition, public health, health promotion and food industry organisations (Appendix 1).

The development process (Appendix 2) included consideration of the priorities identified in the national public health nutrition strategic plans Eat Well Australia⁵¹ and NATSINSAP, review of progress with the previous NSW strategic directions statement for 1996-2000,⁵² preparation of a discussion paper and three rounds of consultation to develop and refine the proposed goals, objectives and actions.

Participants in consultations included experts, peak consumer organisations, members of the NSW Nutrition Network and their strategic partners, relevant senior managers and planners in health services and other sector partners named in the document or considered relevant to its implementation.

The NSW Centre for Public Health Nutrition was an ongoing source of valuable technical support and strategic advice throughout the development process. In particular, the NSW Centre for Public Health Nutrition led the priority setting exercises, conducted a selected literature review and prepared the first draft of the strategy for discussion by the steering committee.

About this document

Eat Well NSW was developed for use within the NSW public health system to plan public health nutrition action relevant to broader health policies. The relevance of the key priorities identified for public health nutrition in NSW to key NSW health-related policies and action plans is presented in detail in Appendix 5.

The main users are expected to be the nutrition workforce and health service planners within health services. However, the priorities and recommended actions are relevant to the work of NSW Health personnel working in many areas including public health, health promotion, primary care, community health, maternity, child and

family health, youth health, women's health, men's health, aged care, chronic diseases and continuing care, Aboriginal health and mental health.

The document should also be useful to other health sector organisations such as Divisions of General Practice, the Heart Foundation – NSW Division, Diabetes Australia, NSW Branch and the NSW Cancer Council and will provide a basis for discussion and negotiation with other sectors.

An important principle of Eat Well NSW is to build on and develop partnerships between disciplines within the health sector and between the health and other sectors.

2 Framework for planning and action

Vision

Better health for all people in NSW through effective and focused public health action to promote healthy eating and good nutrition.

Guiding principles

The guiding principles for the development and implementation of Eat Well NSW reflect the guiding principles for public health⁵³ and health promotion⁵⁴ in NSW as well as issues unique to food and nutrition. These are:

- population and prevention focus
- reduction of health inequities
- relevance and acceptability to the community
- work in partnerships, comprehensive approach
- effective and sustainable actions
- support of innovation.

More details are given in Appendix 3.

Priorities for 2003-2007

The following public health nutrition priorities have been identified for action in NSW in 2003-2007:

- promoting healthy weight
- promoting increased consumption of vegetables and fruit
- promoting breastfeeding
- achieving improved food security
- achieving effective and sustainable action in public health nutrition.

The process and criteria for priority selection are described in Appendix 4.

Strategic directions for priorities

About this section

This section of the document describes each priority and strategic direction in detail. It includes key elements for planning such as justification as a priority, goals, objectives, areas for action and potential partners.

Specific strategies and outcome indicators are not defined. Reviews of evidence to identify 'best buy' interventions and development of indicators to measure progress at both the state and local level will provide guidance and will be products of the first stage of implementation of Eat Well NSW.

Selection of specific strategies and methods of monitoring of implementation is expected to occur at both the state and Area Health Service level in consultation with key partners including the community. Examples of current food and nutrition initiatives by NSW Area Health Services and other key agencies are available from the NSW Nutrition Network register through the NSW Centre for Health Promotion of NSW Health.

Promoting healthy weight

Overview

Healthy body weight is desirable for optimal physical and mental health at all ages. Overweight and obesity are far more prevalent than underweight in NSW.

Overweight and obesity have serious social and health consequences but are largely preventable through lifestyle changes. The global epidemic of obesity is related to technological, social, economic and environmental changes that have reduced physical activity and increased food access and passive energy consumption.^{55,56}

Effective prevention of weight gain and management of overweight and obesity will require a population rather than individual focus involving sustained action in many sectors of society.

Public health action to promote healthy weight in children and to prevent weight gain in adults should minimise potential adverse effects, particularly disordered eating, and/or stigmatisation of those outside the healthy weight range.

Key facts

Overweight and obesity

- The body mass index (BMI) provides the most useful method for classifying overweight and obesity in adults⁵⁷ (see Table 1) and the most appropriate method for children and adolescents (see Appendix 7).
- Only a third of the adult population in NSW are of healthy body weight (defined by BMI 18.5 to 24.9).^{58,59}
- Overweight and obesity affect over half of the adult population in NSW. Estimates vary depending on the survey, age of participants and use of measurement or self-report.^{60,61} The best estimate from measurement by a trained interviewer in the National Nutrition Survey is that 54 percent of women (19 years and over) and 63 percent of men in NSW were overweight or obese in 1995.⁶²
- The prevalence in 1997 of overweight and obesity in NSW school children aged 7 to 15 years was 19 to 23 percent.⁶³
- Underweight (BMI < 18.5) affects less than one percent of men and three percent of women in NSW.⁶⁴
- Rates of overweight and obesity in Australian adults and children are increasing at almost one percent per year (10.7-11.7% in 1985 to 19.5-21.1% in 1995 for 7-15 year old)⁶⁵ (47.6% in 1980 to 65.0% in 2000 for men 25-64 years and 26.7% in 1980 to 44.8% in 2000 for women 25-64 years).⁶⁶
- The prevalence of obesity (BMI 30) doubled in Australian adults⁶⁷ and tripled in Australian children⁶⁸ in the 10 years to 1995.
- Obesity is a disease in its own right but it is also a key risk factor for Type 2 diabetes, coronary heart disease, hypertension, dyslipidaemia, insulin resistance, some cancers, hyperuricaemia, breathlessness, sleep apnoea, impaired fertility, osteoarthritis of the knees and low back pain.⁶⁹
- Overweight and obesity contributed over four percent to the total burden of illness and disability in Australia in 1996.⁷⁰
- The direct cost of obesity in Australia, such as cost of hospital admission and management was \$510 million in 1992.⁷¹ Indirect costs such as time lost from work and premature death were an additional \$330 million.
- The health benefits and quality of life improvements seen with moderate weight loss among those overweight are substantial.⁷² Direct clinical benefits include improvement of glycaemic control, reduced blood pressure, reduced blood cholesterol and improved fertility. Quality of life benefits include improvements in social interaction, anxiety, depression and mental wellbeing.

Table 2. Classification of overweight in adults according to BMI

| Classification | BMI (kg/m ²) | Risk of co-morbidities |
|-------------------|--------------------------|---|
| Underweight | <18.5 | Low (but risk of other clinical problems increased) |
| Normal range | 18.5-24.9 | Average |
| Overweight | ≥ 25.0 | Increased Moderate Severe Very severe |
| • Pre-obese | 25.0-29.9 | |
| • Obese class I | 30.0-34.9 | |
| • Obese class II | 35.0-39.9 | |
| • Obese class III | >40.0 | |

Source: WHO, 2000

Note: These BMI categories are independent of age and sex. However, because of differences in body proportions, BMI values may not correspond to the same degree of fatness in all individuals and populations.

Diet

- Some traditional foodstuffs are being replaced by high-fat, high energy-dense food that is appetising, packaged attractively, pre-processed for convenience, widely advertised and relatively inexpensive.
- Up to a third of food energy consumed in Australia is derived from foods prepared by commercial and institutional food services and consumed away from home.⁷³
- Foods consumed away from home may contribute more fat to the Australian diet than foods prepared at home.⁷⁴
- Food prepared in commercial/institutional food services may be served in larger portion sizes than desirable for weight reduction and weight maintenance.⁷⁵
- There is good evidence to suggest that exposure to television food advertising^{76,77} and eating meals in front of television⁷⁸ influences food selection amongst children and adolescents. Television advertising of foods in Australia is predominantly for energy dense drinks, snack foods, 'take away' foods and confectionary.^{79,80}

Physical activity

- There are no specific recommendations for the level of physical activity required for the maintenance of healthy body weight. Current public health recommendations for physical activity are for 30 minutes of moderate intensity physical activity each day, which provides substantial health benefits for sedentary adults.⁸⁹ Recent recommendations from the Institute of Medicine in the US have advised that adults try to build up to 60 minutes of moderate intensity per day.⁸¹ Exercise at this level may reduce the risk of weight gain over time, and provide additional health benefits beyond 30 minutes of activity per day.
- In Australia, the *National Physical Activity Guidelines* for Australians have been established.⁸⁹ These guidelines recommend physical activity at levels to promote health and wellbeing, rather than specifying activity levels required for the maintenance of body weight. The Guidelines are shown in Figure 1.
- Based on review of over 40 national physical activity studies worldwide, it has been suggested that adults should sustain a Physical Activity Level^c of 1.75 or more to avoid weight gain. Physical Activity Level of sedentary people living in cities is typically 1.55-1.60 and falling.⁸⁰
- An investigation has recently been performed using the NSW data from the 1997, 1999 and 2000 *Active Australia surveys*. This analysis shows that the proportion of those who could be considered 'sufficiently active' for health (where sufficiently active is defined as 150 minutes of moderate intensity physical activity per week) has decreased slightly in both men and women during the 1997-2000 period.⁸² These declining trends however, are generally smaller than those observed in other Australian states and territories.⁸³
- Representative data on the physical activity levels of children and adolescents is limited,⁸³ but estimates indicate that approximately 20 to 25 percent are insufficiently active for health benefit, including the prevention of overweight.⁸⁴

- In children, sedentary behaviours are key to the understanding of overweight in young people. Research has consistently indicated that television and video viewing is directly related to levels of overweight and obesity in children.^{85,86,87} Moreover, short-term and sustained weight losses appear to be greater in children who are instructed to decrease sedentary behaviour compared to increasing exercise.⁸⁸

Figure 1. National Physical Activity Guidelines for Australians⁸⁴

| National Physical Activity Guidelines for Australians |
|---|
| Think of movement as an opportunity, not an inconvenience. |
| Be active every day in as many ways as you can. |
| Put together at least 30 minutes of moderate intensity activity on most, if not all days of the week. |
| If you can, also enjoy some regular vigorous exercise for extra health and fitness. |

Mental health

- The *Australian Women's Longitudinal Health study* found that two-thirds of the young women aged 18-23 years had a BMI within the healthy weight range. However, only 22 percent of these women were happy with their weight and almost half had dieted to lose weight in the last year.⁸⁵
- A study of over 1,300 Australian secondary students showed that 57 percent of girls and 18 percent of boys had dieted at some time. Higher frequency of dieting and earlier dieting onset among young women are associated with poorer physical and mental health (including depression), more disordered eating (bingeing and purging), weight and shape dissatisfaction and more frequent general health problems.⁸⁶
- Providing information about inappropriate weight control methods has been found to be ineffective in the prevention of disordered eating behaviours among adolescents and has in fact been shown to have undesirable effects such as the promotion of weight control methods and the glamorisation of eating disorders. More effective prevention strategies have been based on improving self-esteem and problem solving skills.⁸⁷

Groups most affected

- At every age, men in NSW are more likely to be more overweight than women.⁸⁸
- Younger men experience more abdominal obesity and the increased associated risks such as cardiovascular disease but abdominal obesity is also an issue in older women.⁸⁹
- Higher rates of overweight and obesity in NSW are associated with socioeconomic disadvantage (especially for women) and living in rural areas.⁹⁰
- Aboriginal and Torres Strait Islander women have higher rates of overweight and obesity than the general population.⁹¹
- Vulnerable periods of life for development of future obesity have been identified.⁹² These include during foetal life, the period of 'adiposity rebound' between five and seven years of age, adolescence, early adulthood, pregnancy and menopause.
- Children are at greater risk of obesity when their parents are overweight. In a longitudinal Australian study⁹³ there was a four-fold increase in risk of obesity at age 18 in sons and daughters of obese fathers and an eight-fold difference in risk if their mothers were obese. Physical inactivity was the strongest predictor of increased BMI.
- Pre-adolescent and adolescent girls are the most vulnerable to development of poor body image, which may lead to a lifetime of disordered eating and inappropriate dieting to lose weight.⁹⁴

Context for action

- The causes of overweight and obesity are complex. They include inherited characteristics, social and psychological factors, but the base cause is an imbalance between energy intake and expenditure.
- The WHO has described overweight and obesity as a global epidemic. The findings and recommendations for prevention are the basis of the *WHO Technical Report Series 894 Obesity: Preventing and Managing the Global Epidemic 2000*.⁹⁵

- Overweight and obesity have been identified as a priority for action in health plans for Australia (*Chronic Diseases Strategy, National Diabetes Strategy, Eat Well Australia, NATSINSAP, Acting on Australia's Weight*) and NSW (*HP 2005*) as a means for reducing diet-related chronic disease.
- The increasing rates of obesity are probably the result of gradual but significant decreases in physical activity and passive over-consumption of food as a result of modern lifestyles.^{96,97}
- Reported success rates for long-term weight loss are low^{98,99} and dieting has been implicated as a risk factor for eating disorders.¹⁰⁰ The best prospect for reducing obesity is prevention of weight gain.¹⁰¹
- Reducing sedentariness and increasing incidental activity as part of daily life as well as reducing food portion sizes and energy density of foods (from fat, alcohol and sugar) are likely to have the most effect on prevention of weight gain¹⁰² and weight management.^{103,104}
- Psychosocial factors such as self-esteem and self-efficacy are important predictors of success in achieving and maintaining a healthy diet and other health behaviours.^{105,106,107}
- Consultations to guide the development of this strategy highlighted the need for shared responsibility for interventions across the health sector as well as with consumers, communities, food industry and governments.
- Public health action to promote healthy weight in children and to prevent weight gain in adults should minimise potential adverse effects, particularly disordered eating and/or stigmatisation of those outside the healthy weight range.^{108,109,110}

Reviews of effectiveness of action

- The *WHO Consultation Report* on preventing and managing obesity¹¹¹ observed that two types of public health intervention strategies can generally be used to tackle obesity, namely those that aim to improve the knowledge and skills of individuals in the community and those that aim to reduce the exposure of populations to the underlying environmental causes of obesity.
- To date virtually all public health interventions aimed at control of obesity in the population have used the former approach using mass media, workplace interventions, school-based programs and skills training through community networks. Generally community awareness and participation is high and short term success is experienced by individuals but the impact on the average BMI and prevalence of obesity is minimal.

Concentration on the latter approach, to deal with environmental and societal factors such as transportation, urban design, advertising and food pricing to help reduce sedentariness, increase physical activity levels and improve the quality of the diet was recommended by the WHO report and others.¹¹² However, few of these approaches have been tried or evaluated for their effectiveness with regard to obesity prevention.
- A population-based intervention portfolio for promoting active transport in Australia has been devised, based on literature review and expert consultation, but has still to be implemented.¹¹³
- A systematic review of intervention studies on eating disorders prevention found few that targeted social, political and environmental influences on disordered eating at the population level.¹¹⁴

Potential partners

| | |
|---|--|
| State government department | Community Services, Sport and Recreation Education, Social services, Transport, Infrastructure, Planning and Natural Resources, Women, Local Government. |
| Non government or organisations | National Heart Foundation-NSW Division, Cancer Council, Diabetes Australia NSW Branch, Dietitians Association of Australia, Australian Society for the Study of Obesity, NSW School Canteen Association, Nutrition Australia (NSW Branch), Australian Dental Association. |
| Local government | Sports facilities, parks. |
| Sport and recreation sector | Gyms, sports clubs. |
| Food service sector | Takeaway/restaurants, schools, childcare centres. |
| Food manufacturers | |
| Food suppliers | |
| Weight loss sector | Respected commercial weight loss groups, eg Weight Watchers. |
| Academic/education sector | Schools, academics, TAFE/adult education, Smart Food Centre. |
| Health sector | Dietitian-nutritionists, physical activity coordinators, mental health, GPs, cardiologists/endocrinologists, diabetes educators, health service treatment based services (clinical/community health), existing weight loss services, health care funds, drug companies, Aboriginal/ethnic health, aged care. |
| Transport sector | Public and private transport. |
| Community sector | Community organisations, eg Rotary, Country Womens' Association. |
| Media/advertising sector and consumer sector | Local media, Consumer groups for action on public transport, cycling, walking, better nutrition etc, community representatives. |

| |
|---|
| Goal |
| To promote healthy weight in children and adolescents and prevent weight gain in adults. |
| Objectives |
| 1 To reduce environmental exposure to risk factors causing weight gain during vulnerable periods of life. |
| 2 To reduce the prevalence of eating patterns that lead to passive over-consumption of energy from food. |
| 3 To decrease time spent engaged in sedentary behaviours (watching TV or videos, using computers or video games, inactive transport). |
| 4 To increase the prevalence of physical activity patterns providing sufficient daily energy expenditure to prevent weight gain. |
| 5 To minimise any unintended effects of weight management strategies that encourage disordered eating. |
| Areas for action |
| <ul style="list-style-type: none"> • Increase the will, capacity and commitment of the health sector to initiate and sustain public health action on physical activity and healthy eating to achieve healthy population weight. • Identify and disseminate information about effective population strategies to support healthy eating, adequate physical activity and positive mental health to prevent weight gain. • Engage sectors outside those directly related to nutrition and physical activity to address environmental and social determinants of weight gain. • Implement systems for monitoring healthy eating, physical activity and healthy weight and the effectiveness and health outcomes of interventions to address them. |
| Health policy/strategy links |
| Acting on Australia's Weight, Eat Well Australia, NATSINSAP, NSW Aboriginal Health Strategic Plan, NSW Government Action Plan 2003-2007: Prevention of Obesity in Children and Young People, Chronic diseases prevention/continuing care, RACGP Red Book, National Diabetes Strategy, National Cancer Prevention Policy, NSW Health Eating Disorders Policy, Health and Equity Statement, Families First, Getting Australia Active: towards better practice for the promotion of physical activity, National Physical Activity Guidelines for Australians. |
| NSW Health example |
| Undertake the NSW Childhood Obesity Summit to make recommendations for action in the context of a whole of government approach, community participation and collaboration of key stakeholders and assist in implementation of the NSW Government obesity action plan. |
| Area Health Service example |
| Work with the community, local government, food retailers, food services and others to improve local opportunities for physical activity and healthy food choices. |

Promoting increased consumption of vegetables and fruit

Overview

There is growing and consistent epidemiological and clinical evidence that as well as contributing to good nutrition and general health, an adequate consumption of vegetables and fruit protects against a number of common chronic diseases.

The recommended daily intake is at least four serves for children and seven serves for adults.¹¹⁵ On average, most groups in the population eat less than the recommended amounts, particularly of vegetables.

Consumption is influenced by cultural, attitudinal, cognitive, behavioural, environmental and structural factors.¹¹⁶ Achieving increased consumption will require identification of the key influences for specific groups and effective action to address these. This may require a comprehensive, consistent effort across a wide range of sectors to influence fruit and vegetable supply, access and consumer demand.

Key facts

- Increasing consumption of vegetables and fruit decreases risk of major chronic diseases¹¹⁷ such as coronary heart disease,¹¹⁸ hypertension,¹¹⁹ stroke,¹²⁰ Type 2 diabetes¹²¹ and many forms of cancer.¹²²
- Because vegetables and some fruits are high in folate, maternal diets high in vegetables and fruit contribute significantly to dietary folate intake. A high intake of folate helps to prevent major birth defects such as spina bifida.¹²³ There is also emerging evidence of a possible protective effect of vegetables and fruit against recurrent infections¹²⁴ and development of cataracts in older people.^{125,126}
- The bulk and low energy content of vegetables and fruit may have specific benefits in weight control by displacing other foods, particularly those high in fat and energy.
- The texture and high fibre content of many vegetables and fruit have potential benefits for oral health. Chewing encourages healthy jaw development in children. The abrasive action of fibre helps to reduce plaque build-up. However, dried fruit that stick to teeth are cariogenic and people with chewing disabilities may require vegetables and fruit of modified texture.

- Different vegetables and fruit contain different amounts and types of nutrients, antioxidants and other phytochemicals. There is no firm evidence that any single vegetable or fruit is protective; consumption of a wide variety is desirable. All forms including fresh, frozen, canned and dried are acceptable.
- Inadequate consumption of vegetables and fruit accounts for around three percent of the total burden of disease and disability in Australia.¹²⁷
- Supply- and demand-related factors that limit vegetable and fruit consumption are summarised in the *NSW Health Fruit and Vegetable Tool Kit*.¹²⁸
- Availability, quality and price are important immediate determinants of vegetable and fruit consumption.^{129,130,131} Intermediate determinants include transport practices and costs, particularly in remote areas; handling and promotion at retail level, and access issues in urban fringe areas.
- Attitudinal and behavioural limitations on consumption include perceptions of already eating enough; perceived high cost particularly of fruit; perception that vegetables are time consuming to prepare; personal and family eating preferences and habits that are difficult to change; and lack of skills in preparation of tasty and convenient fruit and vegetable dishes.^{132,133,134,135,136}
- Almost half (47%) of those in NSW aged 12 years and older eat less than the recommended minimum intake of fruit and the majority eat less than the minimum recommended intake of vegetables. A third of vegetable intake is potato, including hot chips.¹³⁷

Groups most affected

- At a national level, adolescents and younger adults have the lowest intakes of vegetables (other than potatoes).¹³⁸
- More males (51%) than females (44%) eat less than the recommended minimum two serves of fruit each day.¹³⁹
- The percentage of people reporting consumption of less than the recommended two serves of fruit rises sharply in adolescents and young adults, particularly in males. This low level of consumption continues into their 30s and early 40s with over 55 percent of men in these age groups usually consuming sub optimal levels of fruit or none at all.¹⁴⁰

- Unemployed people in NSW and those with less than 10 years of education appear to be the least likely to eat some fruit.¹⁴¹ The reasons for low consumption by these specific groups have not been identified.
- There are some differences across Area Health Services in the percentage consuming the minimum recommended intake of vegetables (11-38%) and fruit (32-57%), but intakes are generally low across all Area Health Services.¹⁴²
- Area Health Service consultations suggest that vegetable and fruit access issues are important in remote areas, isolated rural areas and urban fringe areas and are compounded by low income.
- Access issues relevant to urban fringe areas include a deficit of food retail shopping facilities in new housing developments, inadequate public transport to supermarkets, and growth of takeaway and convenience food stores that rarely include a range of healthy foods, particularly vegetables and fruit.¹⁴³
- Significant media and point-of-sale campaigns that have been conducted in Western Australia,¹⁴⁸ Victoria,¹⁴⁹ and nationally,¹⁵⁰ provide insights for intervention to increase demand for vegetables and fruit in the Australian context.
- A number of programs and strategies have been implemented at Area Health Service level in NSW to increase demand eg the Fruit and Vegetable Toolkit,¹⁵¹ Tooty Fruity Vegie Project,¹⁵² and supply/access, eg Mt Druiitt Food Project,¹⁵³ Hawkesbury Food Program,¹⁵⁴ Sydney Fresh Food Bowl Network, Penrith Food Project.¹⁵⁵ These may be adaptable for use in other Area Health Services.
- Planning of action to address barriers to supply of quality, affordable produce requires knowledge of vegetable and fruit supply pathways and consumption at state and local level. Consultations revealed that the public health workforce in most Area Health Services had little knowledge of local pathways. The Australian Food and Nutrition Monitoring Unit is considering national standards for monitoring the food system. It would be desirable to collect data at state and local level that is consistent with agreed national standards and based on existing routine data collections.

Context for action

- *The Australian Guide to Healthy Eating* recommends at least two serves of fruit (300g) and four to five serves (300-375g) of vegetables per day for adults and one to three serves fruit and two to nine serves of vegetables per day for children and adolescents depending on age.¹⁴⁴ As indicated above, current population intakes are significantly lower than recommended and variety of intake is limited.
- Promotion of vegetables and fruit is identified as a priority for action in national health plans (*Eat Well Australia, National Cancer Prevention Policy 2001-2003*) and NSW (*Healthy People 2005*).
- SIGNAL identified vegetable and fruit promotion in its priority work plan¹⁴⁵ and appointed a project officer to facilitate national and state-level action on fruit and vegetable promotion.
- SIGNAL has developed guidelines for promoting increased consumption of vegetables and fruits. These guidelines emphasise consumption of a variety of non-starchy vegetables.¹⁴⁶ This approach reflects limited data on consumption of potatoes, the dominance of potatoes in the Australian diet and the need to encourage variety of consumption.¹⁴⁷

Reviews of effectiveness of action

- A review of interventions in various settings to promote vegetables and fruit¹⁵⁶ and a planning process commissioned by SIGNAL and the NPHP has identified a portfolio of best practice interventions to promote fruit and vegetable consumption in Australia.¹⁵⁷ As part of the review, best practice for promoting vegetables and fruit through social marketing and through each of the following settings was defined; supermarkets, schools, worksites and food service.
- The 5-a-Day program in the United States¹⁵⁸ made a significant commitment to identifying effective interventions to promote vegetables and fruit. The process and outcome evaluation of interventions with a range of target groups in different settings are reported in a dedicated edition of the *Journal Health Education and Behaviour*.¹⁵⁹ Settings include primary and high schools, rural African American churches, women, infants and children's programs (WIC) and worksites.

Potential partners

| | |
|--------------------------------|---|
| Supplier sector | Growers, grower associations, Australian Horticulture, Department of Agriculture regional officers, producers of canned, frozen and other vegetable and fruit products. |
| Distribution sector | Fruit and vegetable markets, local fruit and veg shops, supermarkets, food coops/charity organisations. |
| Transport sector | |
| Food service sector | Restaurants/takeaways, workplaces, childcare facilities, aged care facilities, NSW School Canteen Association, sporting, worksite and school canteens. |
| Education sector | TAFE, schools-home economics. |
| Promotion sector | Non-government organisations, regional food promotion groups, local government/tourism/farm gate, sponsors. |
| Media | Journalists, professional and business media. |
| Community | Community representatives. |
| Local government sector | Health workers, Area Health Services, Oral Health, Aboriginal Medical Services. |

Goal

To increase the daily vegetable and fruit consumption of the NSW population.

Objectives

- 1 To increase the proportion of the NSW population that consumes vegetables and fruit every day.
- 2 To increase the average daily amount and variety of vegetables and fruit consumed by the NSW population, particularly low consumers.

Areas for action

- Increase consumer knowledge of the recommended minimum intake of vegetables (other than potatoes) and encourage self-assessment of intake so that awareness of need to eat more and greater variety is increased.
- Increase the knowledge, skills and confidence of people to select and prepare fresh and processed vegetables and fruit in ways that are convenient, low cost and tasty.
- Increase the availability of quality fresh and processed vegetables and fruit at affordable prices, especially for segments of the population disadvantaged by location, eg rural, remote and urban fringe.
- Audit fresh and processed vegetable and fruit supply pathways at state and local level to identify barriers to and facilitators of supply of quality, affordable produce.
- Identify existing routine data collection on fresh and processed vegetable and fruit supply with a view to augmenting for monitoring purposes.
- Disseminate evidence-based options promoting fruit and vegetable consumption.

NSW Health example

Establish partnerships to review the fruit and vegetable supply system to investigate assumptions on critical factors impacting on cost, quality and access especially for people disadvantaged by location. identify barriers to supply and increased consumption; and provide statewide leadership to overcome these barriers.

Health policy/strategy links

Dietary Guidelines for Australians, Dietary Guidelines for Children and Adolescents, Dietary Guidelines for Older Australians, Eat Well Australia, NATSINSAP, NSW Government Action Plan 2003-2007: Prevention of Obesity in Children and Young People, NSW Aboriginal Health Strategic Plan, HP2005, NSW Health Chronic Diseases Prevention Strategy, NSW Health and Equity Statement, Families First, The Start of Good Health: Improving the health of Children in NSW, 1999, Young People's Health: Our Future, Healthy Aging Framework.

Area Health Service example

Work with local councils and in institutional settings such as schools, child care centres, worksites, nursing homes to explore opportunities for vegetables and fruit promotion and increased access.

Promoting breastfeeding

Overview

Breastfeeding is the physiological norm for feeding infants. Exclusive breastfeeding is recommended for the first six months with introduction of complementary foods and continued breastfeeding thereafter until at least 12 months of age.

Breastfeeding is associated with improved general health, physical growth and mental development of infants and protection against a number of acute and chronic diseases during childhood and adult life.

Influences on initiation and maintenance of breastfeeding vary. Initiation of breastfeeding is high in most but not all population groups in NSW but early cessation is also high. Achieving higher rates of sustained breastfeeding will require changes in societal and health sector attitudes and supports for breastfeeding as well as supports for individual families.

Key facts

- As well as providing the nutritionally ideal food for human infants, human breastmilk also contains many components that facilitate optimum development and function of the infant's immature digestive, vascular, neural, renal, hepatic and immune systems.¹⁶⁰
- Breastfeeding promotes optimum growth as well as other developmental benefits for infants including reduced malocclusion due to the effects of suckling on jaw shape and development, improved visual acuity and psychomotor development due to polyunsaturated fatty acids in the milk, and higher IQ scores either due to factors in the milk or greater cognitive stimulation.¹⁶¹
- Reviews of research^{162,163} suggest that breastfeeding decreases the incidence and/or severity of several short-term illnesses in infants and young children: gastrointestinal infections, lower respiratory infection, otitis media, bacteraemia, bacterial meningitis, botulism, urinary tract infection and necrotising enterocolitis.
- Breastfeeding reduces the risk of SIDS¹⁶⁴ and has also been suggested as a possible protective factor for a range of chronic disorders in childhood and later in life. These include: cow's milk allergy, asthma, obesity, Type 1 diabetes, inflammatory bowel disease, atherosclerosis and lymphoma.^{165,166}
- Exclusive and predominant breastfeeding provide greater protection for infants than partial breastfeeding, but any breastfeeding provides greater immunologic and nutritional benefits than no breastfeeding at all.¹⁶⁷ Benefits occur to infants from all socioeconomic groups.
- Breastfeeding is usually beneficial to women's physical and mental health.^{168,169} Breastfeeding women have less bleeding postpartum, contraceptive benefits of delayed resumption of ovulation, improved bone remineralisation postpartum, and less ovarian and premenopausal breast cancer. The maternal hormones of prolactin and oxytocin reduce response to stress and stimulate the development of maternal behaviour and bonding.¹⁷⁰
- Maternal nutrition before and during pregnancy is important to ensure adequate nutrient stores during lactation. The nutritional status of undernourished mothers may be further compromised by lactation, particularly in the case of closely spaced pregnancies.^{171,172} When maternal dietary intake of protein, fat, energy and calcium is inadequate during lactation, the mother will draw on body stores in fat, muscle and skeleton.
- The nutritional status of the mother appears to influence the fatty acid composition and immunological properties of breastmilk. Some nutrients such as the vitamin C, folate and the B group vitamins are not stored in large amounts in the body so levels in breastmilk will fall if the mother's dietary intake is not adequate during lactation.¹⁷³
- A WHO Expert Consultation¹⁷⁴ has recommended that breastmilk is the only source of nutrition of healthy infants until they are six months old. WHO¹⁷⁵ also recommends that children should continue to be breastfed up to two years of age or beyond while receiving nutritionally adequate and safe complementary foods.
- Initiation of breastfeeding is high but early cessation is also high in NSW – rates in 1995 for exclusive breastfeeding were 78 percent at hospital discharge, 57 percent at 13 weeks, and 17 percent at 25 weeks; partial and exclusive breastfeeding at 13 weeks was 60 percent and at 25 weeks was 44 percent.¹⁷⁶
- Breastfeeding rates in NSW compared to most other states are at the low end of the range for all indicators of initiation and duration.¹⁷⁷

- Substantial savings could be made each year if the prevalence of exclusive breastfeeding at three months (13 weeks) was increased from 60 percent to 80 percent.¹⁷⁸ These savings result from reduction in the costs of hospitalisation due to gastrointestinal illness and necrotising enterocolitis, outpatient and general practitioner treatment for eczema, educational costs associated with neurodevelopmental impairment and costs in NSW for children and adolescents with Type 1 diabetes. A recent report from the USA estimates huge potential savings that could arise with increased breastfeeding rates in line with recommendations by the Surgeon General.¹⁷⁹
- Early cessation of breastfeeding is attributable to many factors including the views and experience of breastfeeding mothers, the influence of their significant others, and an environment in which there are many disincentives, and few incentives to continue breastfeeding during the first year of life.¹⁸⁰
- The decision to breastfeed is made before or early in pregnancy.¹⁸¹ Establishment of breastfeeding as the social norm through school-based education, antenatal education, social marketing and public policy is important.
- Mother's return to paid employment is a key determinant of breastfeeding duration in the United States, particularly amongst lower income women.¹⁸⁶ Comparable data is not available for Australia but the issue is of sufficient concern for development by the Commonwealth Government of an information package and guidelines for women and workplaces, *Balancing Breastfeeding and Work*.¹⁸⁷
- Working mothers who have convenient access to their infant for breastfeeding during the working day breastfeed for longer than those who were separated from their infants.¹⁸⁸ Similarly, working mothers who express breastmilk at the time of missed feeds breastfeed for a longer duration than mothers who do not express at work.

Groups most affected

- Some groups of mothers have been identified as being at risk of low breastfeeding rates.¹⁸² These include mothers less than 25 years old, single mothers, mothers with no post-school qualifications, mothers residing in lower socioeconomic areas (SEIFA quintile 1) and mothers born in countries/regions other than Australia, Oceania, Europe or America.
- The groups least likely to initiate breastfeeding and continue to breastfeed at three months and six months are younger mothers and those with less than 12 years of education.^{183,184}
- In Australian culture, the father's influence is important in the decision to breastfeed, and indirectly with the length of time that a mother continues to breastfeed.¹⁸⁵ Therefore fathers need a full understanding of reasons to breastfeed and appropriate supports of breastfeeding, particularly when difficulties are experienced.
- Former recommendations in Australia and NSW encouraged exclusive breastfeeding for the first four to six months and then continued breastfeeding while complementing with other foods/drinks until at least 12 months of age.¹⁸⁹ The revision of the NHMRC dietary guidelines for children and adolescents and infant feeding guidelines¹⁹⁰ has followed the lead of the WHO and has changed the recommended duration of exclusive breastfeeding to six months.
- There are very few situations where breastfeeding is absolutely contraindicated. The Guidelines provide specific information for assisting women to overcome difficulties with breastfeeding, including limited milk supply. Breastfeeding is not recommended for a very small percentage of mothers including those who are HIV positive, have active TB, have brucellosis, or untreated syphilis. These conditions are rare in Australia. Certain other difficult situations need to be considered in tailoring recommendations on infant feeding method such as mothers who are using drugs, or who are seriously ill or have seriously ill infants.¹⁸⁹

Context for action

- A number of projects that may be applicable in NSW have been developed as part of the *1997 National Breastfeeding Strategy*.¹⁹¹ These include breastfeeding projects related to indigenous health services; professional education including an antenatal education package and factual information about breastfeeding problems for general practitioners and other health workers, national accreditation standards for child and family health services; promotional materials for families, including disadvantaged families; employer and employee workplace support; and development of indicators to monitor breastfeeding.
- NSW Health supports the Baby Friendly Hospital Initiative (BFHI) which is a joint UNICEF and WHO project aimed at encouraging a global standard for maternity services, defined as baby-friendly care. Implementation of the BFHI provides a best practice model for promoting and supporting the initiation of breastfeeding in hospital. Based on the 10 Steps for Successful Breastfeeding, it provides maternity units specific and measurable criteria for both staff and parental support in the early postpartum period.^{192,193,194} The Royal Hospital for Women is the first tertiary referral hospital to receive BFHI accreditation in NSW. The NSW Midwives Association is the BFHI state coordinating body for NSW.
- A number of NSW government, non-government and community organisations have policies and provide services for breastfeeding promotion and support but Area Health Service consultations suggest that these may not be well known or integrated at local level.
- Implementation of NSW government policy including the NSW Child Health Strategy, Families First and new legislation requiring employers to accommodate employees' carers' responsibilities provide opportunities for promotion of breastfeeding, particularly increased duration of breastfeeding.
- Anti-discrimination laws prohibit discrimination on the basis of carer responsibilities, including breastfeeding.¹⁹⁵
- There are existing intersectoral national guidelines on mother-friendly, breastfeeding-friendly workplaces.¹⁹⁶
- Provision of longer paid maternity leave (12 months) so mothers can stay at home longer and breastfeed children is one of a number of factors believed to contribute to sustained high rates of breastfeeding at six and 12 months in Scandinavia.¹⁹⁷ Similar provisions recently introduced in some work sectors in Australia, eg Catholic universities, provide important precedents for other workplaces. Universal provision of paid maternity leave may be desirable to avoid increasing inequities between women of different employment status.
- Local governments and other community organisations have a role to play and have become involved in breastfeeding. For example, the 'Parenting Facilities Policy' developed as part of the Penrith Food Project provides a model for provision of breastfeeding support at local government level.
- The Australian Food and Nutrition Monitoring Unit has prepared a document outlining a nationally standardised approach to monitoring breastfeeding practices in Australia. It recommends several breastfeeding indicators for Australia, to be monitored through the National Health Survey program and State and Territory health surveys. The recommendations also cover standardised definitions of breastfeeding terms, and methods for measuring and calculating the indicators.¹⁹⁸

Reviews of effectiveness of action

- Reviews^{199,200} of the effectiveness of strategies to increase duration and/or initiation of breastfeeding recommend five types of initiative; health education initiatives that provide factual information (eg small groups and problem based literature), health service initiatives that improve professional practice (eg policies and education) and delivery of services (eg maternity ward and hospital policies such as BFHI accreditation), peer support programs that advise and support mothers, media campaigns that challenge social norms, motivate and promote positive images, and community based initiatives that focus on children and families and address underlying social deprivation and exclusion.

- A 1995 overview of strategies to promote breastfeeding, commissioned by NSW Health,²⁰¹ provided a description of a wide range of strategies that could be used by public health agencies to promote breastfeeding, particularly to extend the duration of breastfeeding. This review recommended that an intersectoral approach that considers 'key' (not all) factors that undermine breastfeeding would be worthwhile considering in NSW.
- Scandinavian countries have the highest breastfeeding initiation and duration rates in the world. Although strategies have not been systematically evaluated, commentators^{202,203} attribute the high rates to the combination of a range of interventions including provision of problem-based information, social norms and peer-support from the majority of women who have successfully breastfed, maternity ward practices that increase mother-infant contact and autonomy and paid maternity leave for 12 months with guaranteed return to previous employment.

Potential partners

| | |
|-----------------------------|---|
| Health professionals | Lactation consultants, GPs, pharmacists/pharmacies, obstetricians, midwives, Aboriginal medical services, women's health, speech pathologists, child and family health services, Midwives Association, dietitian-nutritionists. |
| Community sector | Australian Breastfeeding Association, Aboriginal elders, playgroup associations/ parent groups, community representatives. |
| Work places | Managers/supervisors, staff welfare committees, staff counselling and support services, occupational health and safety. |
| Local government | Town planners/social planners/community development officers, community services section of councils. |
| Local business | Chambers of commerce, shopping centre management. |
| Child welfare sector | Childcare providers. |
| Media | Journalists, local media. |

| |
|--|
| Goal |
| To increase the initiation and duration of breastfeeding. |
| Objectives |
| 1 To increase proportion of mothers who breastfeed infants exclusively to six months. |
| 2 To increase the proportion of mothers who breastfeed infants to 12 months. |
| 3 To decrease the proportion of mothers who introduce solids to infants before six months. |
| 4 To increase support for breastfeeding at all levels of the NSW health system. |
| 5 To increase support for breastfeeding in the wider community in NSW. |
| Areas for action |
| <ul style="list-style-type: none"> • Promote breastfeeding as the normal and most beneficial method of infant feeding. • Foster realistic family expectations about the breastfeeding experience and knowledge of appropriate supports. • Shift public attitudes, knowledge and behaviours towards appropriate support for breastfeeding. • Shift health decision maker and service provider attitudes, knowledge and behaviours toward appropriate support for breastfeeding. • Reduce barriers to breastfeeding for working mothers, particularly those with lower status employment. • Use nationally agreed standards to monitor key breastfeeding practices in NSW and consider this data in planning interventions to promote breastfeeding. |
| Health policy/strategy links |
| NHMRC Infant Feeding Guidelines, Dietary Guidelines for Australians, Dietary Guidelines for Children and Adolescents, Eat Well Australia, NATSINSAP, NSW Aboriginal Health Strategy, HP2005, NSW Health Chronic Diseases Prevention Strategy, NSW Government Action Plan 2003-2007: Prevention of Obesity in Children and Young People RACGP Breast Feeding Position Statement, NSW Health Equity Statement, Families First, NSW Start of Good Health: Improving the Health of Children in NSW, 1999, Young People's Health: Our Future, Child and Family health Services. |
| NSW Health example |
| Provide leadership to develop policies and programs that foster favourable public and health professional attitudes towards breastfeeding as the normal and most beneficial method of infant feeding. |
| Area Health Service example |
| Develop a coordinated approach to breastfeeding promotion and support within the Area Health Service that is linked to existing services and initiatives (such as maternity services, child and family health services, Families First initiatives, initiatives for pregnant teenagers and RACGP policies concerning breastfeeding promotion in general practice) and informed by best practice guidelines (eg NHMRC infant feeding guidelines). |

Improved food security

Overview

Food security is defined as access at all times to sufficient food for an active and healthy life.²⁰⁴

At a minimum, food security involves the ready availability in local communities of nutritionally adequate food that is safe, culturally acceptable and affordable at competitive prices. Sustained food access should be assured in socially acceptable ways without resorting to emergency food supplies, scavenging, stealing and other coping strategies.

Food security is determined by peoples' local food supply and their own ability and resources to access and use that food. Determinants of food supply include the location of food outlets, price, quality, variety and marketing. Access to food depends on factors such as people's financial resources, transport, knowledge, skills, storage, preparation and cooking facilities.

Promotion of healthy food choices through traditional nutrition education assumes that a choice is available. This is not always the case. While nutrition education has an important role when nutritious options are available, it has little relevance when nutritious foods are not available, or when other barriers such as high prices and poor quality limit true choice.

Groups known to experience food insecurity include those in remote areas, indigenous Australians, homeless people, injecting drug users and those on a low or insecure income. Young people, older people, one-person households, unemployed people, people with disabilities and some immigrants and their families are likely to be at higher risk of food insecurity due to relative poverty.

The contributing factors to food insecurity are numerous and interact in a complex way. Many are related to social issues linked to a cycle of poverty. As such, the development of solutions and strategies to alleviate the problem will be a slow process and will require action across many sectors.

Key facts

- Food insecurity is closely related to poverty. In Australia, homeless people and some Aboriginal communities are known to experience absolute poverty.²⁰⁵
- Relative poverty, or lack of resources to have the living conditions or to participate in activities as expected in the society in which they live, affected one in six (16.7%) of Australians in 1990. Single parent families, people aged 15 to 24 years, unemployed people, Aboriginal people and some immigrants were most affected.
- People on low incomes spend a greater proportion of their money on food compared to those on higher incomes.²⁰⁶
- In NSW in 2001, parents from low income areas were three times more likely to report that they had run out of food and could not afford to buy more than parents from wealthier areas (10 percent versus three percent).²⁰⁷
- Groups with lower socioeconomic status have poorer intakes of micronutrients, fibre, vegetables and fruit.²⁰⁸
- The *1995 National Nutrition Survey* showed that people at high risk of food insecurity (in the last 12 months ran out of food and had no money to buy more) had significantly higher intakes of milk and milk products but significantly lower intakes of meat and fruit. Energy intakes were not affected but intakes of iron, folate and vitamin C were lower, suggesting poorer dietary intakes.²⁰⁹
- In the short-term food insecurity causes hunger, fatigue and mental anguish.²¹⁰ In the long-term it has a high cost to individuals, families and society due to reduced physical, mental, and social health and wellbeing.²¹¹
- Groups with lower socioeconomic status experience higher rates of diet-related illness throughout the lifecycle including low birth weight babies, childhood and infant anaemia, lowered immunity from infectious diseases, dental caries, obesity, hypertension, Type 2 diabetes, heart disease and stroke.²¹²
- Socioeconomic disadvantage is an important predictor of premature mortality in Australia.²¹³ Seventeen percent of the burden of disease and injury is estimated to be due to socioeconomic disadvantage. Food insecurity and poor nutrition is one of a number of possible contributors to ill health associated with socioeconomic disadvantage.

Groups most affected

A review of food insecurity in Australia identified the following groups as at high risk of food insecurity.²¹⁴

- Low income households including unemployed and self-funded retirees.
- Residents of rural and remote areas due to lower income and higher food costs.
- Aboriginal families living in remote, rural and inner city areas due to isolation, poverty and cultural transition.
- Homeless people including youth, due to poverty, unreliable food access and lack of food storage and preparation facilities.
- People with a disability/disabilities due to employment exclusion, income deprivation, social service inadequacy (all leading to poverty) and physical inaccessibility.
- Older people due to low income, disability and increasing need with age, even if not disabled, for assistance with everyday activities.
- Political asylum seekers and migrants on resettlement programs due to unfamiliarity with foods and financial difficulties.

Groups and individuals are considered at risk of poor food access²¹⁵ when there is:

- no local food supply within 2.5km (walking distance)
- no real choice in local food outlets
- limited local food choice (food type, unit size, packaging, quality cost)
- absence of local food outlets that sell low cost cooked or prepared meals
- disability or illness that limits walking, reading labels, selecting, preparing food (trauma, physical disability or injury, mental illness, ageing)
- addictive behaviour (alcoholism, drugs, gambling) or food faddism
- low income and need for careful budgeting to pay essential household bills
- no food garden
- limited choice of housing and limited access to food storage and preparation facilities
- low food preparation skills
- low literacy and numeracy skills and education level.

Low income or rural or remote area residence combined with one or more of the factors listed above significantly increases risk of poor food access.

- Indicators of socioeconomic status include employment and income, home ownership and education. Aboriginal people in NSW in 1996 had unemployment rates three times higher than the general population and were almost twice as likely to have an income less than \$400 a week. They were also twice as likely to live in rented accommodation and half as likely to have post-secondary educational qualifications.²¹⁶
- Aboriginal people who report worrying about food are 1.6 (women) to 1.9 (men) times more likely to have lower self-rated health status than those without such worries.²¹⁷

Context for action

- The World Food Summit 1996²¹⁸ declared 'the right of everyone to have access to nutritious food, consistent with the right to adequate food and the fundamental right of everyone to be free from hunger'.
- Data is limited on the extent of food insecurity in NSW but there are large numbers of people in the groups at high risk. Measurement of food insecurity is problematic.^{219,220} Reliable indicators and routine monitoring are needed and are being considered at the national level by the AFNMU.
- There is limited understanding of the term 'food insecurity' or 'food security' in Australia. At a community, media and often, professional level, it is usually assumed that people can act upon 'healthy' food messages and can access 'healthy' food. Choice is assumed, but it does not always exist and when people eat 'unhealthy' foods, victim blaming can occur. There is a need to provide factual information about the nature and extent of food insecurity and its implications for food choice.
- The widespread recognition of social conditions as major determinants of health^{221,222} has raised the profile of food insecurity as an important area for action to achieve health gain.²²³

- The contributing factors to food insecurity are numerous, deeply rooted in social structures and interact in complex ways. There are no quick solutions but action to understand and address key issues should begin. Community-led, comprehensive, intersectoral strategies are indicated.²²⁴
- The development of a NSW Health and Equity Statement to address health inequities provides an opportunity to advance issues related to food security.
- The *National Aboriginal and Torres Strait Islander Nutrition Strategy and Action Plan (NATSINSAP)* provides an outline for addressing food supply in remote and rural communities, nutrition issues in urban areas, food security and socioeconomic status, and family focused nutrition promotion.
- NATSINSAP was developed with wide consultation of indigenous populations around Australia. There is a need for consultation with NSW Aboriginal communities on the implementation of the action plans in NSW.
- Environmental policies including Sustainable Agriculture in NSW²²⁵ and a *Strategic Plan for Sustainable Agriculture in the Sydney Region*²²⁶ acknowledge the health and nutrition significance of linking the community with its food supply.
- Multi-strategy intersectoral projects that focus on community food and nutrition systems help to improve food security for disadvantaged communities. Examples of such projects in NSW include the Mt Druitt Food Project,²²⁷ Hawkesbury Food Program²²⁸ and Penrith Food Project.²²⁹ These projects require leadership by the public health nutrition workforce, substantial commitment by local government councils and members of the community and sustained effort over a number of years.
- Within these projects and in other contexts it has been important to implement strategies that address the needs of groups at high risk as well as system-wide reforms. When interventions are universal rather than targeted there may be improvements in the overall health of the population generally but a growing health inequality between those who are the most and the least disadvantaged.²³⁰
- Emergency relief strategies such as food banks, food parcels and soup vans are valid responses to crisis situations as part of a comprehensive range of strategies in a continuum of responses. They have been criticised for being short term and distracting effort from long-term food security.²³¹

Reviews of effectiveness of action

- Interventions to improve food access and food security have evolved largely from community development approaches and adaptations of models that have appeared to provide social and nutritional support. Although there have been some formative, process and reflective evaluations of system-wide interventions and outcome evaluation of specific components of projects, there is little indication of the effect on sustainable food security and health outcomes.
- The lack of impact and outcome evaluation has been attributed to a number of factors,²³² including insufficient resourcing and time allowed by funders for the long-term follow-up needed to demonstrate outcomes, the complexity of the interventions and the tensions concerning which outcomes (eg coalition building or nutrient intake) to measure and how to measure them. There is general agreement^{233,234} that relevant indicators are needed and that these should capture the range of effects that were intended for the intervention.
- A review of 25 food projects that aimed to reduce health and social inequities in the United Kingdom found that six elements were required to make food programs work. These were: flexibility; community ownership where local people are regarded as equal partners in the project; patience; committed backup; training and support and access to funding that was long term and not only focused on innovation.²³⁵

Potential partners

| | |
|--------------------------------|---|
| Health sector | Area Health Services (primary health, community care, acute care) drug, alcohol and mental health groups, Corrections Health, Aboriginal Medical Services, dietitian-nutritionists. |
| Non-government agencies | Welfare agencies-refuges, Centrelink, neighbourhood centres, religious groups and ministers of religion, financial advisors, National Council of Social Services. |
| Government sector | Department of Housing, transport authorities (transport to shops), Department of Community Services, Department of Infrastructure, Planning and Natural Resources, Premier's Department, Department of Ageing, Disability and Home Care. |
| Local government | Local councils, social planners, community transport, community gardens, markets. |
| Aboriginal sector | Community development and employment programs/Aboriginal and Torres Strait Islander Commission and local aid councils, Aboriginal and Torres Strait Islander community councils, land councils. |
| Community sector | Community organisations and consumers from vulnerable groups, eg culturally and linguistically diverse groups, refugees, older people, drug, alcohol and mental health support groups, people with disabilities, community representatives. |
| Business sector | Retailers-transport to shops, Small Business Associations |
| Academic/education | Schools, TAFE, university academics, Centre for Health Equity Training Research and Evaluation. |
| Media funding bodies | |

| |
|---|
| Goal |
| To improve food security in NSW. |
| Objectives |
| 1 To increase access to, and supply of, healthy food for groups disadvantaged by their circumstances, particularly location, disability and/or socioeconomic status. |
| 2 To improve food access and nutrition of indigenous groups in urban, rural remote and remote NSW. |
| Areas for action |
| <ul style="list-style-type: none"> • Develop a planning framework and options for action. • Measure and monitor who is at risk and issues that limit food access and food security. • Advocate amongst key decision makers for food security issues in NSW. • Develop and initiate a process for consultation with disadvantaged communities on food access and nutrition issues. • Develop skills amongst health and other workers to work intersectorally and particularly with the community to solve-multi-sector problems that affect food security. • Identify effective initiatives, disseminate details, adopt or adapt to meet local needs, initiate targeted interventions. |
| Health policy/strategy links |
| Eat Well Australia, NATSINSAP, NSW Aboriginal Health Strategy, HP2005, NSW Health Chronic Diseases Prevention Strategy, the draft NSW Health and Equity Statement, Families First, The Start of Good Health Improving the Health of Children in NSW, 1999, Young People's Health: Our Future, Healthy Aging Framework, NSW Health Partners in Health initiative. |
| NSW Health example |
| Advocate for improved food security within NSW. This could include: Compilation and dissemination of information related to food insecurity; review and dissemination of evidence of effectiveness of interventions to improve food access and food security; development of monitoring tools for routine collection of data about food access and food security; and support of training of the nutrition workforce in coalition building, community development and advocacy to improve food security. |
| Area Health Service example |
| Develop partnerships with local councils and other key stakeholders to promote local food system reforms that improve access to safe, nutritious and affordable food. Activities may include a community audit of the food supply system to identify barriers to food security; establishment of community gardens, food cooperatives and local farmers' markets to strengthen links between the community and local food production and distribution; development and implementation of local planning policies that promote improved access to food retail outlets and related transport services. The Mt Druitt Food Project, Hawkesbury Food Program and Penrith Food Project are useful models. |

Achieving effective and sustainable effort in public health nutrition

Overview

Improving nutrition of the population requires multi-level, multi-sectoral interventions and long-term sustained effort.

Capacity to meet objectives for public health nutrition will depend on adequate workforce and resources to implement programs, knowledge and skills of the workforce, leadership to provide direction and motivation and organisational support and partnerships to sustain effort.²³⁶

The size of the nutrition workforce varies across Area Health Services in NSW and will require input from other partners to achieve the objectives of Eat Well NSW. The main opportunity for implementation of nutrition action lies with integration into existing policies, programs and services and inclusion in Area Health Service Public Health plans. For the most effective use of resources, planning of nutrition action should be evidence-based.

Key facts

- Nutrition services provided in the NSW health system range from clinical dietetics, through community dietetics, community nutrition to public health nutrition (Appendix 6). Delineation between services is not absolute, but the community and public health nutrition workforce are most relevant to sustained implementation of Eat Well NSW.
- At least 750 dietitians (Table 1, Appendix 6) were employed in NSW in 2001 but only 10 percent were employed in predominantly public health nutrition roles (community health centre and government).
- The estimated public health nutrition workforce per head of population is less in NSW (12.2 per million) than the Australian average (15.4 per million) (Table 1, Appendix 6).
- The size, roles and organisational structure of the nutrition workforce varies across Area Health Services in NSW but the number per head of population and the distribution between clinical, community and public health nutrition in each Area Health Service is not routinely collated.

- Comprehensive nutrition action is strongest in Area Health Services where there is a critical mass of trained nutrition workforce, a public health nutrition coordination role, continuity of staff and funding and long term planning.

Current context

- There is strong emphasis in health service planning on evidence-based practice and measurement of outcomes. This is based on the need to know what works and which are the best investments of limited resources in public health.
- The NSW Centre for Public Health Nutrition has been funded to review literature regarding the range of strategies, evidence of effectiveness, and implications for implementation of nutrition policies and programs. This material will form the published evaluations of the effectiveness of nutrition policies and programs and to produce authoritative documents and guidelines to steer nutrition interventions in NSW.
- The main opportunity for implementation of nutrition action lies with integration into existing policies, programs and services. Enrolment of others in the health workforce to integrate nutrition action into their roles needs to be justified by wider policies and inclusion of nutrition priorities in three-year Area Health Public Health Plans. Realistic goals and feedback on short-term intermediate outcomes are important to maintain support and interest.
- The nutrition workforce in some Area Health Services²³⁷ is already reviewing and reorganising organisational structure and communication.
- The nutrition workforce is already attempting to address some or all of the priority areas of this strategy²³⁸ but some injection or reallocation of funds or other resources will be needed if there is to be a significant increase in public health nutrition action.
- Grants for joint research with clinical services or universities and special project funds, eg Commonwealth Child Health Nutrition grants have provided opportunities to develop new nutrition initiatives. Significant investment has helped in the adoption of other public health strategies, eg physical activity, falls prevention.

- There is a need for advocacy in some area health services concerning the potential role of nutrition action in increasing health gain, the role of the trained nutrition workforce in public health nutrition, and the evidence for effective intervention.
- Strategic planning and coordination of others inside and outside the health sector requires considerable time. A dedicated position is needed in each Area Health Service to coordinate planning and implementation of public health nutrition action.
- The NSW Nutrition Network provides an implementation structure for public health nutrition workforce training and collection and dissemination of local program information.
- There is varying capacity for effective public health nutrition action across the health system in NSW.

Reviews of effectiveness of action

- Capacity building is an important element of effective public health practice but it is sometimes described as the 'invisible' work of health promotion because it has not traditionally been documented as a method or measured as an outcome of public health action.
- NSW Health has published *A Framework for Building Capacity to Improve Health*.²³⁹ The Framework draws on a number of developmental projects in capacity building. It describes the principles that underpin practice, provides a basis for action and gives examples of activities that might help in capacity building.

Potential partners

| | |
|---------------------------------|--|
| Academic/training sector | NSW Centre Overweight and Obesity, NSW Centre for Public Health Nutrition, NSW Centre for Physical Activity and Health, Australian Centre for Health Promotion, Nutrition and Public Health training programs. |
| Nutrition sector | NSW Nutrition Network, Area Health dietitians/nutritionists, Dietitians Association of Australia, Nutrition Australia. |
| Health sector | NSW Physical Activity Networks, non-government organisations, health promotion officers, Aboriginal Health management and staff, Community Health staff, Area Health management, Public Health Unit management and staff, NSW Health Public Health, Health Promotion management. |
| Food sector | Food producers, manufacturers, distributors, retailers; food service industry and sites. |
| Other sectors | School principals and teachers, voluntary agencies, community service organisations. |

| |
|--|
| Goal |
| To achieve effective and sustainable effort in public health nutrition in NSW. |
| Objectives |
| 1 To increase the capacity of the health workforce to address food and nutrition priorities in NSW. |
| Areas for action |
| <ul style="list-style-type: none"> • Advocacy concerning the potential role of nutrition action in increasing health gain. • Integration of nutrition action into existing policy frameworks, programs and services. • Identification, documentation and dissemination of evidence of effectiveness of interventions and appropriate outcome measures. • Review and reorganisation of nutrition workforce allocation, management and communication structures to promote sustained public health nutrition action. • Review of NSW Health and Area Health Services resource allocation for public health nutrition in the context of public health expenditure. |
| Health policy/strategy links |
| Eat Well Australia, NATSINSAP, HP2005, Health Framework for Building Capacity to Improve Health, NSW Health Chronic Diseases Prevention Strategy, the draft NSW Health and Equity Statement, Families First, NSW Aboriginal Health strategy, The Start of Good Health Improving the Health of Children in NSW, 1999, Young People's Health: Our Future, Healthy Aging Framework, Partners in Health, Health Promoting Schools. |
| NSW Health example |
| Development, inservicing and dissemination of workforce support products such as: |
| <ul style="list-style-type: none"> • Reviews of evidence for effectiveness of PHN strategies to address priority areas. • Good practice guidelines for aspects of public health nutrition (eg advocacy, building and working in partnerships); reports on the state of food and nutrition in NSW. • Review of workforce models for nutrition action in Area Health Services. |
| Area Health Service examples |
| Cooperative projects between Area Health Services. |
| Assessment of area and local level workforce development needs for planning and implementing initiative to address NSW Nutrition Priorities for 2003-2007. |
| Inclusion of nutrition priorities in Area Health Service three-year Public Health Plans. |

3 Strategic management and implementation

Introduction

Eat Well NSW is a statement of strategic direction for public health in NSW. It has been developed for use within the NSW Health system to plan public health nutrition action relevant to broader health policies.

The NSW Centre for Health Promotion of the NSW Department of Health has auspiced the development of the document and will continue to manage the implementation.

The NSW Centre for Health Promotion will establish a strategic implementation management group involving representatives of NSW Health, Area Health Services, NSW Centre for Public Health Nutrition, the NSW Nutrition Network, non-government organisations, consumers and independent experts. The role of the strategic implementation management group will be to ensure a coordinated approach to the implementation and evaluation of the strategy. Implementation will be staged to take account of current government directions and available resources.

In recognition of the increasing urgency for dealing with the epidemic of overweight and obesity, the NSW Government held the NSW Childhood Obesity Summit in 2002. The three-day Summit proposed 145 resolutions contained in the NSW Childhood Obesity Summit Communiqué. The response of the NSW Government to this Communiqué will provide strong direction for the implementation of Eat Well NSW, particularly with regard to the area of promoting healthy weight. A senior officers coordinating committee was set up to develop a whole of government action plan to progress the Summit's resolutions. The Eat Well NSW Strategic Implementation Management Group will establish mechanisms to liaise with the sectors responsible for the implementation of the *NSW Government Action Plan 2003-2007: Prevention of Obesity in Children and Young People*.

The strategic implementation management group will need to consider the varying capacity among health services and other agencies to respond to the public health nutrition issues. A flexible menu of opportunities is desirable to allow agencies to adopt strategies that match their capacity to respond, that are consistent with the strategic directions and which also address local determinants. Cooperative projects between agencies and pilot projects will be encouraged.

Consumer participation will be actively encouraged at state and local level in line with NSW Health commitments.²⁴⁰ Specific areas of consumer involvement will include consumer representation on Eat Well NSW implementation working groups.

The principles and checklist in *The NSW Health Aboriginal Health Impact Statement and Guidelines*²⁴¹ will be applied in the development of all major strategy initiatives during the implementation of Eat Well NSW.

Role of the NSW Nutrition Network

The NSW Nutrition Network and its members will play a crucial role in the management and implementation of Eat Well NSW.

Members will be encouraged to seek inclusion of Eat Well NSW priorities in planning and resource allocation decisions at Area Health Service level and provide leadership in developing, implementing and evaluating interventions.

The Network will continue to provide a structure for communication and workforce training.

Supporting products and resources

NSW Health will fund the NSW Centre for Public Health Nutrition to produce a range of products and services to support implementation of Eat Well NSW including:

- reports that identify a range of actions that represent 'best buys' within selected priority areas
- reports that identify a 'menu of options' of strategies and outcome measures for priority areas. These will include reviews of the evidence to justify intervention, the evidence of effectiveness of potential interventions and outcome indicators and measures
- workforce development workshops to disseminate reports
- other products and services developed in consultation with NSW Health, the NSW Centre for Public Health Nutrition Advisory Committee, and Area Health Services.

These reports will be guided by the strategic implementation and evaluation group and released progressively from early 2003. Consultations will be undertaken to ensure the supporting products and resources meet user needs and link closely with the Eat Well NSW strategic directions.

NSW Health will explore a process for linking work on common issues in the NSW Aboriginal Health Strategy and Eat Well NSW.

Measuring progress

Just as improving the nutrition of the population will require action of different types at different levels and at different times, measuring progress with implementation of the strategy to achieve this goal will also require different types of measurement at different levels and at different times.

Healthy People 2005 refers to a framework of early wins, maturing investments and longer term gains as a way of thinking about achievement during the course of implementation. Application of this framework for each of the priority areas in Eat Well NSW is shown in Table 2.

It will be important to monitor the process of implementation as well as the intermediate and final outcomes. Specific indicators for each of the outputs and endpoints will need to be defined and appropriate measures identified in consultation with key partners. This work will be undertaken in consultation with the strategic implementation management group, the NSW Centre for Public Health Nutrition, Area Health Services and other relevant groups.

Table 2. Framework for achievements

| Early wins by 2003 | Maturing investments 2005 | Long term gains by 2007 |
|--|--|--|
| Promoting healthy weight | | |
| <ul style="list-style-type: none"> Monitoring report on weight status produced and disseminated. Menu of evidence-based options for promoting healthy weight produced and disseminated. Systems for monitoring healthy eating, physical activity, healthy weight and interventions implemented. Hosting of the NSW Childhood Obesity Summit. Increased health sector will and commitment to achieve healthy population weight. Sectors outside health engaged. | <ul style="list-style-type: none"> State and local evidence based options implemented. Ongoing implementation of <i>Government Action Plan 2003-2007: Prevention of Obesity in Children and Young People</i>. Joint initiatives between health and non health sectors. Health sector capacity for promotion of healthy weight increased. | <ul style="list-style-type: none"> Ongoing implementation of <i>Government Action Plan 2003-2007: Prevention of Obesity in Children and Young People</i>. <p>Reduced:</p> <ul style="list-style-type: none"> environmental exposure to risk factors for weight gain during vulnerable periods of life factors leading to passive over-consumption of energy-dense food sedentary behaviours. |

| Early wins by 2003 | Maturing investments 2005 | Long term gains by 2007 |
|--|--|---|
| Promoting vegetables and fruit | | |
| <ul style="list-style-type: none"> • Monitoring report on vegetable and fruit consumption produced and disseminated. • Develop a research model to assess supply pathways and associated barriers. • Disseminate evidence-based options for promoting fruit and vegetable consumption. | <ul style="list-style-type: none"> • Audit vegetable and fruit supply pathways and associated barriers at the state level. • Engagement of sectors outside health. • State and local evidence-based interventions to promote fruit and vegetables. | <p>Increased:</p> <ul style="list-style-type: none"> • knowledge of recommended intakes • knowledge, skills and confidence in selection and preparation of vegetables. <p>Increased:</p> <ul style="list-style-type: none"> • proportion of population eating vegetables and fruit every day • consumption of fruit and vegetables by low consumers • variety of vegetables and fruit consumed • access to quality fruit and vegetables, especially for rural and remote communities. |
| Promoting breastfeeding | | |
| <ul style="list-style-type: none"> • Monitoring report on breastfeeding produced and disseminated. • Disseminate options for promotion of breastfeeding as the normal and most beneficial method of infant feeding. • Negotiate for application of national standards in state monitoring. • Interventions to shift community attitudes. | <p>Increased:</p> <ul style="list-style-type: none"> • supportive health workforce attitudes and practices • supportive community attitudes and practices • knowledge and understanding of breastfeeding supports and issues by families • application of national standards in state monitoring • increased support for working mothers to breastfeed • state and local evidence based interventions implemented. | <p>Increased:</p> <ul style="list-style-type: none"> • exclusive breastfeeding to six months • breastfeeding to 12 months • support of breastfeeding by health system • community support of breastfeeding. <p>Decreased introduction of solids before six months.</p> |
| Achieving improved food security | | |
| <ul style="list-style-type: none"> • Develop a planning framework. • Menu of options for improving food security produced and disseminated. • Initiate Aboriginal consultation. | <ul style="list-style-type: none"> • Measure who is at risk and determinants. • Adapt model initiatives to meet local needs. • State and local projects implemented and evaluated. • Develop workforce skills in coalition building. • Range of evidence-based interventions identified and disseminated. | <ul style="list-style-type: none"> • Increased evidence-based interventions in place. • Improved access to food for disadvantaged groups. |

| Early wins by 2003 | Maturing investments 2005 | Long term gains by 2007 |
|---|---|---|
| Achieving effective and sustainable effort in public health nutrition | | |
| <ul style="list-style-type: none"> • Identify and disseminate promising/evidence-based options for initiatives in priority areas. • Public health nutrition workforce development in line with Eat Well NSW implementation. • Advocacy for public health nutrition role in creating health gain. • Review/reorient nutrition workforce structures. • Review resource allocation for public health nutrition. • Establish and develop a public health nutrition centre to facilitate implementation. | <ul style="list-style-type: none"> • Integration of public health nutrition action into relevant policies, programs and services. • Ongoing public health nutrition workforce development. • Submit recommendations for public health nutrition resource allocation. | <ul style="list-style-type: none"> • Greater capacity of health workforce to address public health nutrition priorities. |

Acknowledgments

We would like to acknowledge the valuable contribution(s) to the various states of the production of the document made by many people, including:

Staff from the NSW Centre for Public Health Nutrition

Dr Karen Webb

Prof Ian Caterson

Dr Tim Gill

Ms Beth Stickney

Ms Liz Story

Consultant

Ms Margaret Miller (Marg Miller Health Consulting)

The Eat Well NSW Steering Committee

- 1 A representative from the Centre for Equity, Training, Research and Evaluation (Dr Elizabeth Harris)
- 2 A representative from Wentworth Area Health Service (Ms Michelle Noort)
- 3 A representative from the University of Wollongong (Dr Peter Williams)
- 4 Two representatives from the NSW Centre for Public Health Nutrition (Ms Beth Stickney, Dr Karen Webb)
- 5 A representative of NSW Health (Mr Philip Vita)
- 6 Nominee of Aboriginal Health Branch, NSW Health (Ms Margaret Scott)
- 7 Project manager, NSW Health (Ms Edwina Macoun)
- 8 A representative from the NSW Nutrition Network (Ms Judith Leahy)
- 9 A representative from the Australian Centre for Health Promotion (Ms Marilyn Wise)
- 10 A representative of Directors of Health Promotion (Ms Jo Mitchell)
- 11 A representative from the NSW Cancer Council (Ms Lesley King/ Ms Julie Anne Mitchell)
- 12 A representative from National Heart Foundation, NSW Division (Ms Barbara Eden)
- 13 A representative from Diabetes Australia, NSW Branch (Mr Alan Barclay)
- 14 A representative from the Dietitians Association of Australia, NSW Branch (Ms Yvonne Eade)
- 15 A representative from the Australian Food and Grocery Council (Ms Wendy Morgan)

Other key informants

| | | | | |
|--------------|----------|------------|--|--|
| Ms | Jillian | Adams | Public Health Nutritionist | Northern Rivers Area Health Service |
| Ms | Joy | Allen | External Affairs | Coles Supermarkets |
| Ms | Jo | Alley | D/Director | Health Promotion Unit Central Sydney Area Health Service |
| Ms | Sue | Amanatidis | Program Manager Community Nutrition Services | Central Sydney Area Health Service |
| Mr | Sami | Azad | Area Adviser for Nutrition | South Western Sydney Area Health Service |
| Ms | Lilliana | Barone | Dietitian | Illawarra Area Health Service |
| Mr | Rudi | Bartl | Public Health/ Community Nutritionist | Central Coast Area Health Service |
| Ass. Prof | Louise A | Baur | Assoc Prof/Consultant Paediatrician/Specialist | Sydney University, Department Paediatrics & Child Health in Clinical Nutrition |
| Ms | Vicki | Beaton | Public Health Unit Administrative Assistant | New England Area Health Service |
| Mr | Geoff | Bell | CEO | Sydney Markets Ltd |
| Mr | Andrew | Bernard | General Manager Bankstown Health Service | South Western Sydney Area Health Service |
| Mr | Andrew | Binns | Director | Northern Rivers Area Health Service Div GP |
| Dr | Vida | Biokas | Area Advisor Psychology | Illawarra Area Health Service |
| Dr | Michael | Booth | Coordinator | NSW Centre for Advance of Adolescent Health |
| Ms | Patsy | Bourke | CVD Area Coordinator Health Promotion | New England Area Health Service |
| Ms | Delys | Brady | Manager Program and Partnership Development and Health Service Planning and Performance | Hunter Area Health Service |
| Ms | Amanda | Bray | Sector Health Promotion Manager | South Western Sydney Area Health Service |
| Mr | Tony | Brown | Director Population Health | Macquarie Area Health Service |
| Ms | Carolyn | Bunney | Public Health/ Community Nutritionist | Central Coast Area Health Service |
| Dr | Hugh | Burke | Director of Population Health | Far West Area Health Service |
| Mr | Tony | Byrnes | Northern Sector Director | New England Area Health Service |
| Mr | Grant | Carey Ide | Manager Community Health Services Southern Network | Mid North Coast Area Health Service |
| Ms | Sue | Carter | Lower Hunter Primary Health Unit | Hunter Area Health Service |

| | | | | |
|--------------|----------|-----------|--|---|
| Ms | Anne | Carvalho | Manager Dietetics Royal Prince Alfred Hospital | Central Sydney Area Health Service |
| Mr | Wah | Cheung | A/Director Department of Diabetes and Endocrinology Westmead Hospital | Western Sydney Area Health Service |
| Dr | Stephen | Christley | CEO | Northern Sydney Area Health Service |
| Ms | Penny | Church | Senior Planner | Western Sydney Area Health Service |
| Ms | Marian | Clark | President | Child & Family Health Nurses Association (CAFHNA) |
| Dr | Clare | Collins | Lecturer in Nutrition & Dietetics | University of Newcastle |
| Ms | Lara | Cooke | Community Nutritionist | South Western Sydney Area Health Service |
| Ms | Julie | Cooper | Manager Child & Family Health | Macquarie Area Health Service |
| Mr | Gordan | Cope | Area Community Development Officer | New England Area Health Service |
| Mr | Paul | Corben | Population Health | Mid North Coast Area Health Service |
| Ms | Claire | Corbett | Health Services Policy | NSW Department of Health |
| Dr | Pippa | Craig | Nutritionist | Centre for Health Equity, Training, Research and Evaluation |
| Mr | Chris | Crawford | CEO | Northern Rivers Area Health Service |
| Ass. Prof | David | Crawford | Associate Professor School of Health Sciences | Deakin University |
| Ms | Emma | Craythorn | Manager Health Promotion Unit | Macquarie Area Health Service |
| Ms | Kay | Crompton | Midwife/lactation consultant Orange Base Hospital | Mid Western Area Health Service |
| Ms | Jodie | Crouch | Dietitian | Illawarra Area Health Service |
| Ms | Owen | Curtis | Exercise Science Program Coordinator | Illawarra Area Health Service |
| Ms | Leanne | Daggar | A/Centre Manager Tresillian Family Care Centre | Wentworth Area Health Service |
| Ms | Justine | Daly | Project Officer Hunter Centre for Health Advancement | Hunter Area Health Service |
| Ms | Lindy | Danvers | Nurse Manger Child and Family Health Chatswood | Northern Sydney Area Health Service |
| Ms | Lynda | Davies | Dietitian-Nutritionist | Department of Nutrition and Dietetics, Northern Sydney Area Health Service |
| Ms | Rosemary | Davis | CEO PDHPE | Department of Education and Training |
| Ms | Gina | Davis | Community Nutritionist | Northern Rivers Area Health Service |

| | | | | |
|----|-----------|---------------|---|--|
| Mr | Michael | Daytner | Clinical Stream Leader Chronic and Continuing Care | Western Sydney Area Health Service |
| Ms | Dee | Dempsey | Nurse Manager Ryde Child and Family Health Centre | Northern Sydney Health |
| Ms | Uta | Dietrich | Manager Health Promotion | Northern Rivers Area Health Service |
| Ms | Sue | Dodd | Promotions Consultant | Sydney Markets Ltd |
| Ms | Sara | Downs | Population Health | Mid North Coast Area Health Service |
| Ms | Deanne | Drage | Acting Manager Health Promotion | Greater Murray Area Health Service |
| Ms | Veronique | Droulez | | Nutrition Consultant |
| Ms | Lynda | Dryden | Acting Manager Community Health Services Greater Newcastle Sector | Hunter Area Health Service |
| Ms | Susan | Dumbrell | Public Health Nutritionist | Northern Sydney Health |
| Ms | Kerith | Duncanson | Community Nutritionist | Mid North Coast Area Health Service |
| Ms | Louise | Duursma | | Australian Breastfeeding Association |
| Ms | Louise A | DuVernet | Food Tech Lecturer | Australian Catholic University |
| Ms | Karen | Edwards | Director | Community & Mental Health Services |
| Ms | Caroline | Egberts | Principal Policy Officer | NSW Department of Local Government |
| Ms | Natalie | Evans | North West Slopes Div GPs | New England Area Health Service |
| Mr | Franc | Facci | Coordinator of Multicultural Health | Illawarra Area Health Service |
| Ms | Kylie | Finigan | Development Consultant | NSW Department of Sport and Recreation |
| Dr | Peter | Finlayson | Director of Medical Services | New England Area Health Service |
| Mr | Fergus | Fitzsimmons | Director of Corporate Services | New England Area Health Service |
| Mr | Greg | Flint | Southern Sector Director | New England Area Health Service |
| Ms | Janet | Franklin | Dietitian | Metabolism & Obesity Services |
| Mr | Peter | Frendin | Director Primary Health Care | Macquarie Area Health Service |
| Dr | Siun | Gallagher | Director Service Development and Population Health | Western Sydney Area Health Service |
| Ms | Mavis | Golds | Manager Aboriginal Health | Northern Rivers Area Health Service |
| Ms | Jane | Goodwin-Moore | Nutrition Access Project Officer | Meals on Wheels |
| Ms | Jane | Gordon | Executive Director Clinical Services | Wentworth Area Health Service |
| Mr | Paul | Gorrick | Manager Tamworth Community Health | New England Area Health Service |
| Ms | Heather | Gough | Nurse Manager Family and Child Health Services | Northern Sydney Health |

| | | | | |
|----|----------|-----------|---|--|
| Ms | Kathleen | Graeme | Ass. Director Population Health Division | Department Health & Aged Care |
| Ms | Rachael | Graham | Nutrition Program Manager Health Promotion Unit | Western Sydney Area Health Service |
| Ms | Ros | Gribble | Allied Health Manager Community Health Services Greater Newcastle Sector | Hunter Area Health Service |
| Ms | Lyn | Hamilton | Director of Primary Health | Far West Area Health Service |
| Mr | Matt | Hanrahan | Executive Officer | Central Coast Division GP |
| Ms | Deanne | Harris | Department Head of Dietetics | New England Area Health Service |
| Ms | Katie | Hartley | Community Dietitian | Mid North Coast Area Health Service |
| Ms | Robyn | Henderson | DG | Department for Women |
| Ms | Tracy | Herlihy | Community Dietitian | Far West Area Health Service |
| Ms | Julie | Hill | Community Dietitian | Mid North Coast Area Health Service |
| Ms | Anne | Hills | Community Dietitian | Mid North Coast Area Health Service |
| Ms | Margaret | Holyday | Dietitian in charge Department of Nutrition and Dietetics Prince of Wales and Prince Henry Hospital | South Eastern Sydney Area Health Service |
| Dr | Philip | Hoyle | Director of Clinical Strategy | Northern Sydney Health |
| Ms | Theresa | Hoynes | A/Director Health Services Development | Illawarra Area Health Service |
| Ms | Anna | Huddy | Project Coordinator Tooty Fruity Vegie | Northern Rivers Area Health Service |
| Ms | Michele | Hughes | Dietitian in charge Department of Nutrition and Dietetics St George Hosp | South Eastern Sydney Area Health Service |
| Ms | Helen | Jackson | Manager Nutrition and Dietetics Department Cessnock Hospital | Hunter Area Health Service |
| Ms | Ros | Johnson | Community and Consumer Participation | NSW Department of Health |
| Ms | Di | Johnson | Maternal Child & Family Health Coordinator- Population Health Unit | Far West Area Health Service |
| Ms | Kim | Johnstone | Stream Leader Primary and Community Health | Western Sydney Area Health Service |
| Ms | Helen | Jones | | Central Sydney Area Health Service |
| Mr | John | Jones | Dietitian | Mid North Coast Area Health Service |
| Ms | Therese | Jones | A/Manager Health Improvement Team | Mid Western Area Health Service |

| | | | | |
|--------|-------------------|-----------|---|---|
| Ms | Julianne | Julianne | Director Public Health Unit | Southern Area Health Service |
| Ms | Nina | Karen | Dietitian | Mid North Coast Area Health Service |
| Ms | Ruth | Kharis | Community Nutritionist Community Health Services | Central Sydney Area Health Service |
| A/Prof | Sue | Kirby | General Manager Community Health | Illawarra Area Health Service |
| Mr | Nick | Knowles | Health Promotion Officer Junee Community Health Centre | Greater Murray Area Health Service |
| Ms | Cathryn Finney | Lamb | Research Officer | NSW Refugee Health Service |
| Mr | Graham | Lane | Manager Youth Health | Central Coast Area Health Service |
| Ms | Karen | Lawson | Community Nutritionist | New England Area Health Service |
| Ms | Trish | Lear | PR Manager | Canned Food Advisory Service |
| Ms | Amanda | Lee | Public Health Nutritionist | Queensland Health |
| Ms | Lyn | Leece | Dietitian Goulburn Base Hospital | Southern Area Health Service |
| Mr | Peter | Lemon | Director of Planning Population Health and Assets | Northern Sydney Health |
| Ms | Karen | Lenihan | Associate Director Population Health | Wentworth Area Health Service Nepean Hospital Campus |
| Dr | Peter | Lewis | Manager Public Health Unit | Central Coast Area Health Service |
| Ms | Jeannine | Liddle | Director, Public Health Unit | Mid Western Area Health Service |
| Ms | Ruth | Loseby | Health Promotion Planning/ Policy Officer | New England Area Health Service |
| Ms | Teresa | Luland | Manager, Population Health and Counselling Services, Hawkesbury District Health Services | Wentworth Area Health Service |
| Ms | Elizabethe | Lusby | Midwife/Lactation Consultant | Greater Murray Area Health Service |
| Ms | Lynda | Lynott | Director AC and Nursing | Far West Area Health Service |
| Ms | Carol | Madge | Director Population Health Division | Southern Area Health Service |
| Ms | Mandy | Mandy | Director of Health Promotion | South Western Sydney Area Health Service |
| Ms | Melanie | Martin | Dietitian Orange Base Hospital | Mid Western Area Health Service |
| Ms | Sue | Mathieson | A/Manager Service Policy and Standards | Department of Ageing Disability and Home Care, Disability Services Directorate |
| Ms | Rhonda | Matthews | PHN Program Coordinator | Centre for Health Promotion, NSW Department of Health |
| Ms | Karen | McCavana | Project Officer Penrith Food Project | Wentworth Area Health Service |
| Ms | Trish | McDermott | Acting Assistant Director Child, Family, Youth and Community Health Services | Wentworth Area Health Service |

| | | | | |
|------|-----------|---------------|---|--|
| Ms | Liz | McDonald | Manager of Integrated Health Care and Allied Health | Far West Area Health Service |
| Ms | Felicity | McLean | Area Professional Director for Nutrition and Dietetics | Hunter Area Health Service |
| Ms | Brenda | McLeod | Manager Allied Health Division | Central Coast Area Health Service |
| Mr | Wayne | McMahon | Director of Finance | New England Area Health Service |
| Ms | Patricia | McVeigh | Lactation Consultant | Sydney University |
| Mr | Andrew | Milat | Director | Health Promotion Western Sydney Area Health Service |
| Ms | Marianna | Milosavljevic | Area Advisor Nutrition and Dietetics | Illawarra Area Health Service |
| Dr | | Moses | Director of Diabetes | Illawarra Area Health Service |
| Ms | Jeanette | Moss | Rep on Nutrition Issues | Western Sydney Intellectual Disability Support Group Inc |
| Ms | Kristine | Moxley | Team Leader CDT | Child Development Team, NSW Health |
| Ms | Gillian | Mulvaney | Dietitian in charge Department of Nutrition and Dietetics Sydney Hospital/ Sydney Eye Hospital and Royal Hospital for Women | South Eastern Sydney Area Health Service |
| Dr | Raghu | Murthy | Director of Medical Services | Illawarra Area Health Service |
| Ms | Radhi | Murti | Dietetics Department Ryde Hospital | Northern Sydney Health |
| Ms | Sue | Myler | Community Midwife Bathurst Community Health Centre | Mid Western Area Health Service |
| Ms | Deborah | Nemeth | Clinical Nurse Consultant | Karitane |
| Prof | Sallie | Newell | Research and Evaluation Coordinator Health Promotion Unit | Northern Rivers Area Health Service |
| Ms | Maine | Norberg | Community Nutritionist | Central Sydney Area Health Service |
| Mr | Mat | O'Neil | Nutrition Consultant | Bodyscoop |
| Ms | Julie | Parkinson | Public Health Nutritionist | Illawarra Area Health Service – Kiama Community Health Centre |
| Ms | Tracey | Patricks | Dietitian | Mid North Coast Area Health Service |
| Ms | Sarah | Pennell | Senior Marketing Manager | Australian Horticulture Association |
| Ms | Alison | Peters | Deputy Assistant Secretary Community Affairs | Labour Council of NSW |
| Ms | Mary-Kate | Pickett | Manager Health Promotion | Illawarra Area Health Service |
| Ms | Jo | Piper | Injury Area Coordinator Health Promotion | New England Area Health Service |
| Ms | Jennie | Pomplun | Dietitian | Mid North Coast Area Health Service |

| | | | | |
|------|-----------|--------------|---|--|
| Ms | Michelle | Powers | Acting Manager Community Nutrition Unit Community Health Services | Hunter Area Health Service |
| Ms | Joanne | Prendergast | Manager Department of Nutrition Royal North Shore Hospital | Northern Sydney Health |
| Ms | Polly | Price | A/Director Health Promotion Unit | South Eastern Sydney Area Health Service |
| Ms | Kiersty | Purs | Dietitian | Mid North Coast Area Health Service |
| Ms | Shanti | Raman | Area Paediatric Adviser | Western Sydney Area Health Service |
| Prof | Beverley | Raphael | Director Centre for Mental Health | NSW Department of Health |
| Ms | Jenny | Ravens | Area Manger of Nutrition and Dietetics | Central Sydney Area Health Service |
| Mr | Ian | Raymond | Senior Project Officer | Health Promotion Strategies, NSW Health |
| Ms | Monica | Reardon | Nurse Manager Early Childhood Health Services | Greater Murray Area Health Service |
| Ms | Lizz | Reay | Dietician | Nepean Division of General Practice |
| Ms | Leigh | Reeve | Program Manager (Marketing) | Dietitians Association of Australia |
| Mr | David | Rhodes | Director of Allied Health Services | Hunter Area Health Service |
| Ms | Debbie | Richards | Area Manager Primary Health Care | Southern Area Health Service |
| Ms | Vanessa | Richardson | Health Improvement Officer | Wentworth Area Health Service |
| Mr | David | Riches | Director Area Health Promotion | Western Sydney Area Health Service |
| Mrs | Sheila | Rimmer | Immediate Past President | Council on the Ageing |
| Ms | Heather | Ritchie | Community Health Manager Young District | Southern Area Health Service |
| Ms | Angie | Robinson | Allied Health Manager Lower Hunter Sector | Hunter Area Health Service |
| Ms | Christine | Robinson | Director of Population Health and Planning | New England Area Health Service |
| Mr | Greg | Rochford | CEO | Ambulance Service of NSW |
| Ms | Julie | Rogers | Nurse Manager Hornsby Child and Family Health | Northern Sydney Health |
| Ms | Marjo | Roshier-Taks | Senior Community Dietitian | Greater Murray Area Health Service |
| Mr | Richard | Sager | Community Development Planner | Mid Western Area Health Service |
| Ms | Jan | Sanderson | Manager Community Development | Mid Western Area Health Service |

| | | | | |
|------|----------|-----------|--|--|
| Ms | Lyn | Saville | Food Program Officer Health Promotion | Hawkesbury District Health Service |
| Ms | Virginia | Schmied | Project Leader Healthy Start to Life | National Breastfeeding Strategy University of Technology Sydney |
| Mr | Stuart | Schneider | Chief Executive Officer | New England Area Health Service |
| Mr | Bill | Sexton | Dietetics Advisor | Northern Rivers Area Health Service |
| Mr | Greg | Seymour | General Manager | Aust Mushroom Growers Association |
| Mr | Alex | Shaw | CEO | Royal Freemason Benevolent Institute |
| Mr | K | Sheridan | DG | NSW Agriculture |
| Ms | Sarah | Simpson | Project Research Officer | Centre for Equity, Training, Research & Evaluation |
| Ms | Sharon | Simpson | A/Western Sector Director | New England Area Health Service |
| Ms | Kathy | Skinner | Midwife/Lactation Consultant Orange Base Hospital | Mid Western Area Health Service |
| Ms | Carmel | Smart | Manager Nutrition and Dietetics Department John Hunter Children's Hospital | Hunter Area Health Service |
| Ms | Kerry | Smith | Dietitian Parkes Health Service | Mid Western Area Health Service |
| Dr | Titia | Sprague | Senior Clinical Psychiatrist | Mental Health Branch, NSW Health |
| Dr | Rosemary | Stanton | | Nutrition Consultant |
| Ms | Rosemary | Stapleton | Health Improvement Team | Mid Western Area Health Service |
| Ms | Neroli | Stayt | Health Promotion Coordinator | Far West Area Health Service |
| Ms | Lyn | Stewart | Consultant Dietition-Nutritionist | Nutrition Consultant |
| Ms | Sandra | Strong | A/Director of Nursing | New England Area Health Service |
| Ms | Ruth | Sykes | Eating Disorders – Shoalhaven | Illawarra Area Health Service |
| Prof | Linda | Tapsell | Managing Director | Smart Food Centre, University of Wollongong |
| Ms | Ngarla | Tetley | Human Resources | Illawarra Area Health Service |
| Ms | Sarah | Thackaway | Director of Public Health | Illawarra Area Health Service |
| Ms | Margaret | Thomas | Manager Strategic Research and Development Unit | NSW Department of Health |
| Ms | Glenda | Thomas | Deputy Director Community Health Services | Central Sydney Area Health Service |
| Ms | Jane | Thompson | National Co-ordinator | Australian Lactation Consultants Association Inc |
| Mr | Peter | Ticehurst | Dietitian, Lithgow Hospital | Mid Western Area Health Service |
| Ms | Alison | Tickle | Dietitian | Sanitarium Health Food Company |
| Ms | Roslyn | Tokley | Area Services Manager Health Promotion | Mid North Coast Area Health Service |
| Ms | Anne | Toquero | Senior Project Officer | WA Breastfeeding Action Group WA Health Department |

| | | | | |
|----|-----------|-------------|--|--|
| Ms | Dian | Tranter | Coordinator Nutrition team Health Promotion Unit | South Eastern Sydney Area Health Service |
| Ms | Katie | Tull | Dietitian | Mid North Coast Area Health Service |
| Mr | Doug | Tutt | Manager Health Promotion Unit | Central Coast Area Health Service |
| Mr | Tim | Usherwood | Professor of General Practice, WSDGP/University of Sydney | South Western Sydney Area Health Service |
| Ms | Dawn | Vanderkroft | Manager Nutrition Department | Central Coast Area Health Service |
| Ms | Kay | Vine | Director Division of Child Youth & Family Sutherland Hospital | South Eastern Sydney Area Health Service |
| Ms | Emily | Wah Day | Dietitian | Northern Rivers Area Health Service |
| Ms | Carole | Wallace | Manager Health Improvement | Southern Area Health Service |
| Ms | Frances | Warnock | SIGNAL Vegetables and Fruit Program Manager | NSW Department of Health |
| Ms | Sue | Watkins | Child & Family Health | Hunter Area Health Service |
| Ms | Emily | Watson | Snr Policy Analyst | Aboriginal Health Branch, NSW Department of Health |
| Mr | Bill | Wedgwood | Dietitian | Northern Rivers Area Health Service |
| Ms | Judy | Wellins | Community Nutritionist | Southern Area Health Service |
| Dr | Ian | White | Manager Health Promotion | Southern Area Health Service |
| Mr | Pete | Whitecross | | Northern Sydney Health |
| Ms | Mandy | Williams | Director Health promotion | South Western Sydney Area Health Service |
| Ms | Jane | Wilson | Senior Health Promotion Officer – CVD | Illawarra Area Health Service |
| Dr | Beverley | Wood | Consultant in Food Nutrition & Dietetics | Consultant in food, nutrition and dietetics |
| Ms | Caroline | Wraith | Senior Policy Analyst | Primary Health and Community Branch, NSW Health |
| Mr | Andrew | Young | A/Dietitian in charge Department of Nutrition and Dietetics Sutherland Hosp | South Eastern Sydney Area Health Service |
| Ms | Rosemary | Young | Dietitian Dubbo Community Health Centre | Macquarie Area Health Service |
| Ms | Christine | Zingle | Manager Diabetes Education Service | Wentworth Health Diabetes Service |

Development process for Eat Well NSW

Eat Well Australia

Auspiced by SIGNAL, Eat Well Australia was developed through a rigorous process that involved a background framework report, extensive needs analysis, an audit of existing nutrition initiatives, integration of other key national strategies such as Acting on Australia's Weight and Active Australia, and extensive consultation with key stakeholders around Australia.

The NSW Department of Health, as a member of SIGNAL, played an active role in the development of Eat Well Australia and is committed to transforming the Eat Well framework into action to benefit the population of NSW.

NSW working group and steering committee

The process of refining priorities and identifying strategic directions to implement Eat Well Australia in NSW was led by a working group comprising representatives of the Nutrition and Physical Activity Branch, NSW Department of Health and the NSW Centre for Public Health Nutrition. The working group was advised by a steering committee of 15 members including experts in public health and nutrition and representatives from key non-Government organisations including the food industry (Appendix 1).

Steps involved

The development process involved the following steps to ensure a rigorous and transparent process with opportunity for input from key stakeholders.

1 Review of the former NSW public health nutrition strategy 1996-2000

Informants included current and former members of the NSW Nutrition Network (comprised of nutrition representatives of Area Health Services and selected non-government organisations) as well as a representative of the NSW Centre for Public Health Nutrition. The findings from this review have informed the process of development of the new nutrition strategy.

2 Identification of priorities and development of a strategic directions consultation paper

The NSW Centre for Public Health Nutrition led the priority setting exercises of the working group and the steering committee and prepared the initial draft of the strategy, supported by a literature review which was refined through extensive consultation with key stakeholders. Focus groups were conducted with experts in the priority areas to refine the rationale and proposed goals, objectives, and actions. A workshop was also held with members of the NSW Nutrition Network.

3 Feedback on the consultation paper from the field

The consultation paper was circulated widely and feedback sought through Nutrition Network members and a series of consultation workshops held with senior managers in each Area Health Service. The purpose of the consultations was to obtain input to the content and advice concerning the relevance and feasibility of implementation of the proposed strategic framework. The results were used to transform the consultation document into a draft Eat Well NSW strategic directions document.

4 Feedback on the draft Eat Well NSW strategic directions document.

The draft was circulated by email (or mail if required) to all participants in the previous consultations as well as to other sector partners named in the document or considered relevant to its implementation. Feedback was invited and incorporated in the final document.

Guiding principles provide a basis for decision-making and practice in priority setting, program planning, strategy selection and implementation.

The guiding principles for this strategic directions statement for public health nutrition reflect the guiding principles for public health²⁴² and health promotion²⁴³ in NSW as well as issues unique to food and nutrition.

The following principles should underpin public health nutrition action in NSW.

Population focus

A population approach aims to improve the nutrition-related health status of the whole population and vulnerable sub-groups by addressing determinants of poor nutrition at a societal rather than individual level.

Focus on prevention

Public health nutrition action gives priority to preventing ill health, promoting good health, and enhancing healthy years of life. It aims to identify and address the underlying social, environmental and individual determinants of poor nutrition.

Reduction of health inequities

A focus on health inequities aims to reduce differences in nutritional health status between groups due to avoidable and unjust determinants of poor nutrition in vulnerable groups. This includes determinants of inequities in access to foods, nutrition information and nutrition services.

Relevance and acceptability to the community

Nutrition policies and actions will be developed in consultation with the community members and decision-makers most affected by them and will be sensitive to cultural and other concerns.

Work in partnerships

Addressing the determinants that affect public health nutrition will require strong partnerships both within and outside the nutrition and health fields, with shared directions, shared decision-making, and collective action.

Comprehensive approach

Successful public health nutrition action requires a comprehensive approach using a range of integrated public health strategies to create supportive environments, strengthen community action, reorient services and develop personal awareness, knowledge, skills and self-efficacy. These strategies may include supportive policy, legislation and regulation; collaborative partnerships within and between sectors; community participation and empowerment; preventive services; and education programs and campaigns for service providers, community and individuals.

Sustainable actions

Changing determinants of nutrition and nutrition behaviours requires investment in sustainable, long-term interventions as part of a comprehensive approach.²⁴⁴

Effective actions

Public health nutrition action should be based on the best available evidence of effectiveness and should continue to build on the evidence. Appropriate evaluation of the interventions will vary.²⁴⁵ Contextual issues need to be considered for interpretation and wider implementation.²⁴⁶

Support of innovation

Innovation may be needed to address recalcitrant and emerging public health nutrition problems. Trial and evaluation of new approaches will help to develop the evidence base for effective interventions. The merits of balanced investment in proven as well as high-risk but potentially high-gain innovative interventions is well recognised.^{247,248}

Criteria for selecting priorities

The selection process complemented the process for priority setting in public health in NSW.²⁴⁹

The following criteria were applied to select public health nutrition priorities for NSW from the range of priorities identified in Eat Well Australia, NATSINSAP and Healthy People 2005. Issues selected as NSW public health nutrition priorities met several or most of the criteria.

Importance

- Scientific evidence demonstrates that the proposed priority is a key protective factor for a range of common diseases.
- Diet-related diseases, to which the priority relates, are among the leading causes of premature death and disability in NSW.
- Relevant population data is currently available, and shows that the priority food or nutrition issue selected is a prevalent food/nutrition-related problem in NSW.

Impact on equity

- Healthy food and exercise choices are made more difficult through lack of availability/promotion, higher prices (supply factors) and reduced resources (demand factors, eg information, disposable income, leisure time, and other resources) among disadvantaged groups and communities.
- Intervention focuses effort on increasing
 - the supply of healthy choices/opportunities to disadvantaged communities and groups
 - accessibility to a healthy food supply
 - community and household resources to acquire/take advantage of healthy choices available.

An emerging problem or current gap

- The proposed priority is an underdeveloped area of effective public health nutrition action and investment in NSW.

Amenability to and feasibility of action

- A 'starter list' of concrete objectives, actions and/or model policies/effective programs that address the priority can be identified for state and/or local level action.

Effectiveness/positive benefit to cost

- Information is available from evaluation of relevant health promotion and nutrition interventions about what works and the conditions, including the resource requirements, conducive to greater program effectiveness.
- Potential exists to evaluate existing interventions to obtain information about effectiveness, benefits and costs.

Policy context and opportunity to strengthen partnerships (see also Appendix 5)

- The proposed priority for NSW is in line with priorities for nutrition action, internationally, nationally, and within states and territories in Australia.
- The priority is identified in/closely relates to the principles and priorities of the public health plan of action for *NSW: Healthy People 2005*.

Table 4. Performance of Eat Well Australia priorities against Eat Well NSW priority section criteria

| | Vulnerable groups | Healthy weight | Vegetables and fruit | Maternal/child health | Nutr preg/lact women | Breast-feeding | Infant nutrition | Nutrition for children |
|--|-------------------|----------------|----------------------|-----------------------|----------------------|----------------|------------------|------------------------|
| Protective against range of common diseases | NA | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ |
| Leading cause of premature death and disability in NSW | NA | ✓ | ✓ | | X | X | X | X |
| Data available and prevalent problem in NSW | X | ✓ | ✓ | | X | ✓ | X | ✓ |
| Issue among vulnerable groups in NSW | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ |
| Underdeveloped area effective public health action in NSW | ✓ | ✓ | Minimal | | ✓ | ✓ | ✓ | X |
| Starter list of objectives/actions/model policies/effective programs identified for state/local level action | X | ✓ | ✓ | | X | ✓ | X | X |
| In line with priorities international/national/other states in Australia | ✓ | ✓ | ✓ | | At risk | ✓ | X | X |
| Identified in/closely relates to priorities in HP 2005 | ✓ | ✓ | ✓ | | ✓ | ✓ | X | ✓ |
| Other | | Keen group | National action | | | Breast feeding | | |

Policy context

Eat Well NSW builds on past effort and achievements in public health nutrition in NSW as well as current policies and plans at national and state level. Of particular significance are:

- *Food and Nutrition Directions for NSW 1996-2000*,²⁵⁰ the NSW Health statement of priorities in food and nutrition promotion that has guided public health nutrition effort for the five years until 2001.
- *Eat Well Australia*,²⁵¹ the national strategic framework for public health nutrition for 2000 to 2010 developed by SIGNAL for implementation by all Australian states and territories.
- The *National Aboriginal and Torres Strait Islander Nutrition Strategy and Action Plan 2000-2010* developed in conjunction with Eat Well Australia to provide a focus on the nutrition needs of indigenous people.
- *Strategic Directions for Health 1998-2003*,²⁵² published by NSW Health to define the key medium term directions for the NSW Health system.
- *Healthy People 2005 – New Directions for Public Health in NSW*,²⁵³ published by NSW Health to provide a framework for planning public health activities in 2000-2005.
- *The (draft) NSW Health and Equity Statement*,²⁵⁴ developed by NSW Health to address the gap between the health of those who are most and least disadvantaged in NSW (particularly the gap in health between indigenous and non-indigenous people) while continuing to improve the health of all people in NSW.

These documents provided the framework for the vision, principles and priorities of the 2003-2007 strategic directions for public health nutrition. The relevance of Eat Well NSW priorities to these and other important NSW public health policies and action plans is presented in detail in Table 4.

Table 5. Match of public health nutrition priorities to other action plans and policies

| Policy or strategy | Issue | Healthy weight | Vegetables and fruit | Breast feeding | Food security | Effective sustainable effort |
|---|--|----------------|----------------------|----------------|---------------|------------------------------|
| Eat Well Australia | | | | | | |
| | Promote vegetables, fruit | | ✓ | | ✓ | |
| | Promote healthy weight | ✓ | | | | |
| | Nutrition of mothers and children | ✓ | ✓ | ✓ | | |
| | Nutrition of vulnerable groups | ✓ | ✓ | ✓ | ✓ | |
| | Structural barriers to safe, healthy food | ✓ | ✓ | | ✓ | |
| | Public health nutrition research | | | | ✓ | ✓ |
| | Improve effectiveness | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Build human resource capacity | | | | | ✓ |
| | Communication | ✓ | ✓ | ✓ | | |
| | Monitoring and evaluation | ✓ | ✓ | ✓ | ✓ | |
| National ATSI Nutrition Strategy | | | | | | |
| | Remote and rural food supply | ✓ | ✓ | | ✓ | |
| | Food security and low SES | | | | ✓ | |
| | Family focused nutrition | | | ✓ | | |
| | Nutrition in urban areas | | ✓ | | ✓ | |
| | Environment and household | | | | ✓ | |
| | ATSI nutrition workforce | | | | | ✓ |
| | Food/nutrition information systems | | | | | ✓ |
| Healthy People 2005 | | | | | | |
| | Chronic disease prevention | ✓ | ✓ | ✓ | ✓ | |
| | Healthier childhood | ✓ | ✓ | ✓ | ✓ | |
| | Promotion and prevention in mental health | ✓ | | | ✓ | |
| | Oral health promotion | | ✓ | | ✓ | |
| | Falls prevention | ✓ | | | | |
| | Health promoting schools | ✓ | ✓ | ✓ | | |
| | ATSI environmental health | | | | ✓ | |
| | Review of best buys | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Intersectoral partnerships | ✓ | ✓ | ✓ | ✓ | ✓ |
| | AHS three-year public health plans | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Regional public health plans with local councils | ✓ | ✓ | ✓ | ✓ | ✓ |

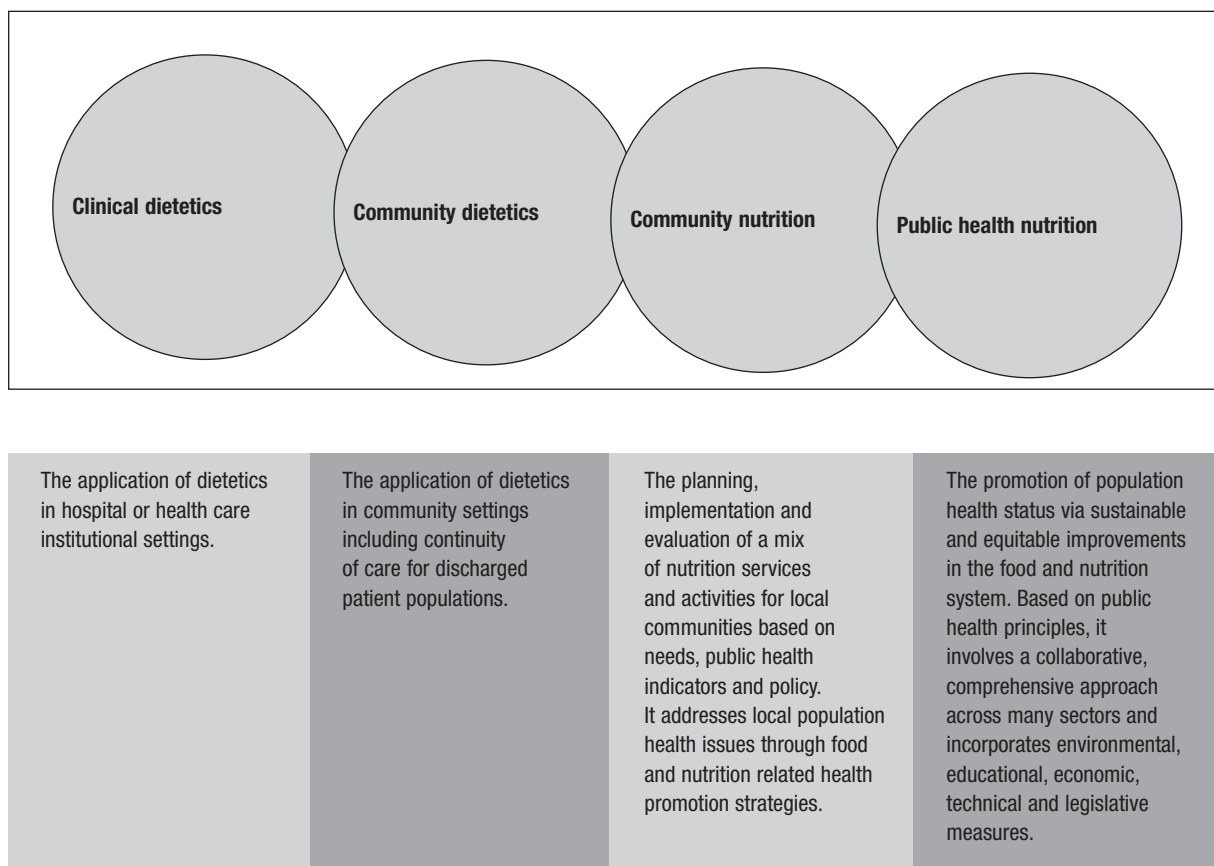
| Policy or strategy | Issue | Healthy weight | Vegetables and fruit | Breast feeding | Food security | Effective sustainable effort |
|---|--|----------------|----------------------|----------------|---------------|------------------------------|
| Healthy People 2005 cont'd | Public health research plan | | | | ✓ | ✓ |
| | Workforce development and training | | | | | ✓ |
| Draft NSW Health and Equity Statement | Strong beginnings – antenatal to eight years old | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Consumer and community participation | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Focus on place and living environments | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Regional planning and intersectoral action | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Organisational development | | | | | ✓ |
| | Resources | | | | | ✓ |
| Simply Active Every Day | Increased participation in regular physical activity | ✓ | | | | |
| Families First and Start to Good Health NSW Child Health Strategy | Reduce the frequency of preventable mortality | | | ✓ | ✓ | ✓ |
| | Reduce the impact of disability | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Reduce the impact of adult conditions | ✓ | ✓ | ✓ | ✓ | ✓ |
| Young People's Health: Our Future | Nutrition and physical activity | ✓ | ✓ | | ✓ | ✓ |
| | Mental health | ✓ | | | ✓ | ✓ |
| | Alcohol | ✓ | ✓ | | ✓ | ✓ |
| | Illicit drugs | | ✓ | | ✓ | ✓ |
| | Sexual health | | ✓ | ✓ | ✓ | ✓ |
| Aged Health and Disability | Physical access to facilities | | ✓ | | ✓ | |
| | Accommodation and support | ✓ | ✓ | | ✓ | |
| Aboriginal Health Strategic Plan | Addressing identified health issue: Disease prevention (diabetes, CVD) | | ✓ | | ✓ | |
| | Addressing identified health issue: Maternal, infant and child health | ✓ | ✓ | ✓ | ✓ | |
| | Improving social and emotional wellbeing | | | | ✓ | |
| | Increasing effectiveness of health promotion | | | | | ✓ |
| | Creating an environment supportive of good health | | ✓ | | ✓ | |
| NSW Action Plan for Health Chronic and Complex Care Program | Clinical service framework: Cardiovascular disease | ✓ | ✓ | | ✓ | ✓ |
| | Clinical service framework: Diabetes | ✓ | ✓ | | ✓ | ✓ |
| | Clinical service framework: Respiratory disease | ✓ | ✓ | | ✓ | ✓ |

Public health nutrition services in NSW

Nutrition services in NSW

A spectrum of nutrition services is provided in the NSW health system, ranging from clinical dietetics, through community dietetics, community nutrition to public health nutrition (Figure 1). Delineation between services is not absolute but a number of features of public health nutrition practice make it stand out from clinical dietetic services. Public health nutrition is about prevention rather than treatment, population level versus individual reach, and involves a broader range of strategy approaches relating to food and nutrition systems.

Figure 1. Spectrum of nutrition services and definitions (adapted from Hughes and Somerset)²⁵⁵



Workforce categories in public health nutrition

A number of workforce categories within the field of public health nutrition have been suggested.^{256,257} These are:

- 1 Public health specialists/academics involved in teaching public health nutrition or in senior government department positions who advise on and develop policy and major initiatives in public health nutrition.
- 2 Specialist/designated public health nutrition practitioners who generally provide direct public health/community nutrition services to the public and work for government departments, non-government organisations and community health centres.
- 3 Community nutritionists/dietitians who provide a range of nutrition services usually in community based preventive services and ambulatory care services.
- 4 Dietitians/adjunctive nutritionists are clinically based but have generalist responsibilities in nutrition promotion.
- 5 General health and associated workers whose job involves public health nutrition tasks as a side issue in service delivery.

More details of roles and functions, employment settings, training and experience and examples in NSW are provided in Table 5.

Public health nutrition workforce statistics in NSW

Public health nutrition workforce statistics are not routinely collated in NSW. The best estimates come from membership statistics of the Dietitians Association of Australia (DAA). DAA is the main professional body of nutrition professionals, with membership of an estimated 70 percent of qualified dietitians working in Australia.

DAA statistics (Table 6) show that 751 members were employed in NSW in 2001 and around two-thirds of these were employed in clinical or institutional settings. Less than 10 percent were employed in community health centres and even in that setting the role may include individual or group education. Less than three percent were employed

by state or local governments, the main providers of public health nutrition services. About eight Eat Well NSW members were employed by the food or food service industries and in that role have significant potential to influence food choice.

These figures are likely to be an underestimate of the public health nutrition workforce in categories 1 to 4 above because public health nutritionists are less likely to join the DAA. However, the figures still indicate a low level of employment of dietitians in NSW in public health nutrition compared to clinical positions. The figures also show that the public health nutrition workforce (community health centre and government) per head of population is less than the Australian average.

There is no information to estimate the number of general health and associated workers whose job involves public health nutrition tasks as a side issue in service delivery (category 5 above). The types of workers who could have a significant role include health promotion officers, primary health care workers, community nurses, child and family health workers, general practitioners, environmental health officers, oral health professionals, Aboriginal and ethnic liaison officers, youth health workers, mental health workers. Consultations suggested that many of these groups were under-utilised in public health nutrition.

Table 6. DAA membership work areas 2001

| Category | NSW Number (%) | Australia Number (%) |
|--|-------------------|-------------------------|
| Hospital/clinic/nursing home | 501 (66.7) | 1,423 (67.4) |
| Community health centre | 67 (8.9) | 222 (10.5) |
| Commonwealth/state/local govt | 11 (1.5) | 70 (3.3) |
| Food service/industry | 57 (7.6) | 91 (4.3) |
| Educational institution | 36 (4.8) | 103 (4.9) |
| Other | 79 (10.5) | 201 (9.5) |
| TOTAL | 751 | 2,110 |
| Population (million) June 30 1999 ²⁵⁸ | 6.4 | 19.0 |
| DAA members/million pop. | 117.0 | 111.0 |
| Community health centre and government/million population | 12.2 | 15.4 |

Management structure for public health nutrition services in NSW

Public health nutrition services are provided predominantly through Area Health Services. Non-government health organisations such as the National Heart Foundation-NSW Division and Diabetes Australia, NSW Branch also employ nutritionists with a public health focus.

Nutritionists in the NSW Centre for Health Promotion of the Health Department take a lead role in statewide policy development, coordination and workforce support. The NSW Centre for Public Health Nutrition has been funded to review literature regarding the range of strategies, evidence of effectiveness, and implications for implementation of nutrition policies and programs. This material will form the published evaluations of the effectiveness of nutrition policies and programs and to produce authoritative documents and guidelines to steer nutrition interventions in NSW. Other university-based public health practitioners have a variable role in workforce development, policy analysis and research.

The size, roles, job titles, job descriptions and organisational structure of the nutrition workforce vary across Area Health Services in NSW. The number per head of population and the distribution between clinical, community and public health nutrition in each Area Health Service is not routinely collated. Management and coordination vary. Some report to the Manager or Director Public Health, some to the Manager Primary Care, some to the Director Clinical Services.

In most Area Health Services, but particularly in rural and remote areas where there are only one or two nutritionists/dietitians, there are competing demands to provide administrative, clinical, community and public health services. In services where there are distinct public health and clinical positions, there is variable liaison and coordination of public health effort.

Comprehensive nutrition action is strongest in Area Health Services where there is a critical mass of trained nutrition workforce, continuity of staff and funding, long term planning and at least one individual with a defined role to coordinate public health nutrition effort.

Table 7. Public health nutrition workforce delineation framework

| Workforce category | Description and location | Role and functions | Characteristics | Example in NSW |
|---|---|---|---|--|
| Public health nutrition academics | Academics actively participating in public health nutrition scholarship (research, teaching or practice). Usually based in universities and involved in faculties with nutrition and public health workforce training at undergraduate and post-graduate level. Includes researchers in one or more areas of public health nutrition (PHN), including higher degree research students. Includes academics actively consulting in public health network intervention, planning and evaluation. | Nutrition education and training of future (undergraduate programs) and existing workforce (post graduate and short course professional development). Research specific to public health nutrition knowledge and practice. Critically reviewing public health nutrition practice via intervention research and scholarship. Community service related to public health nutrition, eg Advocacy for public health nutrition issues. | Usually extensive experience. Higher degree graduates in nutrition, dietetics or public health related field. Usually have entry level qualifications in nutrition and/or dietetics (although not all). | NSW Centre for Public Health Nutrition. |
| Designated public health nutritionists | Public health nutritionists employed in state or commonwealth government departments (usually with PHN title) with broad national, statewide, regional or broad coordination and advisory roles. Includes NGO based PHN specialists. | Provide statewide or zonal leadership and coordination roles within government and NGO health agencies. Contribute to policy development and take a lead role in intervention management at population level. | Usually (but not exclusively) graduates from nutrition and dietetic programs with considerable experience in PHN practice. Increasing number with higher degree qualifications in public health or related field. | Nutritionists in NSW Centre for Health Promotion and in Area Health Service Public Health Units. |
| Community nutritionists | Local level nutritionists usually working from health promotion teams, community health centres or community and ambulatory care services. | Provide a mix of nutrition services including local level community and public health strategy development and implementation. Provide local level leadership in nutrition facilitation and capacity building. | Usually dietitians. | Nutritionists in Area Health Service Public Health Units Community Health positions. |
| Adjunctive nutritionists | Usually hospital or institution based clinical dietitians, including private practitioners providing clinical services. May have area service responsibilities with hospital service sector (area health services). Includes designated health promotion practitioners who have generalist responsibilities in nutrition promotion as part of their work portfolio. | | Coordination with designated public health nutritionists often limited. A significant component of the public health nutrition workforce in terms of numbers. | |
| Supplemental health workforce | Health professionals with nutrition as a side issue in service delivery and no specific competencies in this field. | General practice, community nurses, oral health professionals | Large population reach and potential source of nutrition education and promotion activity. | |

Adapted from Hughes R. *Public Health Nutrition Workforce Development Needs in Australia. PHD Confirmation Paper, School of Health Sciences, Griffith University, 2001.*

International body mass index cut-offs

International body mass index cut-offs for overweight and obesity by sex between 2 and 18 years, defined to pass through body mass index 25 and 30 at age 18.

| Age (years) | Body mass index 25 | | Body mass index 30 | |
|----------------|--------------------|-------|--------------------|-------|
| | Boys | Girls | Boys | Girls |
| 2 | 18.4 | 18.0 | 20.1 | 19.8 |
| 2.5 | 18.1 | 17.8 | 19.8 | 19.5 |
| 3 | 17.9 | 17.6 | 19.6 | 19.4 |
| 3.5 | 17.7 | 17.4 | 19.4 | 19.2 |
| 4 | 17.6 | 17.3 | 19.3 | 19.1 |
| 4.5 | 17.5 | 17.2 | 19.3 | 19.1 |
| 5 | 17.4 | 17.1 | 19.3 | 19.2 |
| 5.5 | 17.5 | 17.2 | 19.5 | 19.3 |
| 6 | 17.6 | 17.3 | 19.8 | 19.7 |
| 6.5 | 17.7 | 17.5 | 20.2 | 20.1 |
| 7 | 17.9 | 17.8 | 20.6 | 20.5 |
| 7.5 | 18.2 | 18.0 | 21.1 | 21.0 |
| 8 | 18.4 | 18.3 | 21.6 | 21.6 |
| 8.5 | 18.8 | 18.7 | 22.2 | 22.2 |
| 9 | 19.1 | 19.1 | 22.8 | 22.8 |
| 9.5 | 19.5 | 19.5 | 23.4 | 23.5 |
| 10 | 19.8 | 19.9 | 24.0 | 24.1 |
| 10.5 | 20.2 | 20.3 | 24.6 | 24.8 |
| 11 | 20.6 | 20.7 | 25.1 | 25.4 |
| 11.5 | 20.9 | 21.2 | 25.6 | 26.1 |
| 12 | 21.2 | 21.7 | 26.0 | 26.7 |
| 12.5 | 21.6 | 22.1 | 26.4 | 27.2 |
| 13 | 21.9 | 22.6 | 26.8 | 27.8 |
| 13.5 | 22.3 | 23.0 | 27.2 | 28.2 |
| 14 | 22.6 | 23.3 | 27.6 | 28.6 |
| 14.5 | 23.0 | 23.7 | 28.0 | 28.9 |
| 15 | 23.3 | 23.9 | 28.3 | 29.1 |
| 15.5 | 23.6 | 24.2 | 28.6 | 29.3 |
| 16 | 23.9 | 24.4 | 28.9 | 29.4 |
| 16.5 | 24.2 | 24.5 | 29.1 | 29.6 |
| 17 | 24.5 | 24.7 | 29.4 | 29.7 |
| 17.5 | 24.7 | 24.8 | 29.7 | 29.8 |
| 18 | 25.0 | 25.0 | 30.0 | 30.0 |

From: Establishing a standard definition for child overweight and obesity worldwide: international survey.
 Cole, T. J., Bellizzi, M. C., Flegal, K. M., Dietz, W. H. *BMJ* 2000 320: p.1240-1240.

References

- 1 Lester IH. Nutritional Status and Health – Chapter 5. *Australia's Food and Nutrition*. Australian Institute of Health and Welfare, AGPS, Canberra, 1994.
- 2 Public Health Division. *The Health of the People of New South Wales – Report of the Chief Health Officer*. NSW Department of Health, Sydney, 2002.
- 3 Crowley S, Antioch K, Carter R et al. *The cost of diet-related disease in Australia: a discussion paper*, Australian Institute of Health and Welfare, Australian Government Printing Service, Canberra 1992.
- 4 National Heart Foundation of Australia. A review of the relationship between dietary fat and cardiovascular disease. *Australian Journal of Nutrition and Dietetics*, 1999, 56:4 Supplement.
- 5 Ness AR, Powles JW. Fruit and vegetables and heart disease: a review. *International Journal of Epidemiology*, 1997, 26:1-13.
- 6 Law MR. Epidemiological evidence on salt and blood pressure. *American Journal of Hypertension*, 1997, 10:42S-45S.
- 7 Rimm EB, Stamper MJ, Giovannucci E et al. Body size and fat distribution as predictors of coronary heart disease amongst middle-aged and older US men. *American Journal of Epidemiology*, 1995, 141:1117-1127.
- 8 Public Health Division. *The Health of the People of New South Wales – Report of the Chief Health Officer*, NSW Department of Health, Sydney, 2002.
- 9 World Cancer Research Fund and American Institute of Cancer Research. *Food, Nutrition and Prevention of Cancer: A Global Perspective*, American Institute for Cancer Research, Washington DC, 1997.
- 10 United Kingdom Department of Health. Nutritional Aspects of the Development of Cancer. *Report of the Working Group on Diet and Cancer of the Committee on the Medical Aspects of the Food Supply*, The Stationary Office, Norwich, 1998.
- 11 Mathers C, Vos T and Stevenson C. *The Burden of Disease and Injury in Australia*, Australian Institute of Health and Welfare, Canberra, 1999.
- 12 Dunstan D, Zimmet P, Welborn T et al. Diabetes and Associated Disorders in Australia 2000. The Accelerating Epidemic. *Australian Diabetes, Obesity and Lifestyle Report*, International Diabetes Institute, Melbourne 2001.
- 13 Public Health Division. *The Health of the People of New South Wales – Report of the Chief Health Officer*, NSW Department of Health, Sydney, 2002.
- 14 Dunstan D, Zimmet P, Welborn T et al. Diabetes and Associated Disorders in Australia 2000. The Accelerating Epidemic. *Australian Diabetes, Obesity and Lifestyle Report*, International Diabetes Institute, Melbourne, 2001.
- 15 Lester IH. Nutritional Status and Health – Chapter 5. *In Australia's Food and Nutrition*, Australian Institute of Health and Welfare, AGPS, Canberra 1994.
- 16 Colagiuri S, Colagiuri R and Ward J. *National Diabetes Strategy and Implementation Plan*, Diabetes Australia, Canberra, 1998.
- 17 Lester IH. Nutritional Status and Health – Chapter 5. *In Australia's Food and Nutrition*. Australian Institute of Health and Welfare, AGPS, Canberra, 1994.
- 18 Codde J and Unwin E. Diet-attributable mortality and hospitalisation in Western Australia. *Australian Journal of Nutrition and Dietetics*, 1998, 55:101-106.
- 19 Heinig MJ, Dewey KG. Health advantages of breastfeeding for infants: a critical review. *Nutrition Research Reviews*, 1996, 9:89-110.
- 20 RACGP Breastfeeding Position Statement. 2000 Appendix J. *NHMRC Dietary Guidelines for Children and Adolescents*, Draft Revision, 2001. www.nhmrc.gov.au/advice/diet.htm
- 21 McVea KL, Turner PD and Pepler DK. The role of breastfeeding in sudden death syndrome. *Journal of Human Lactation*, 2000,16(1):13-20.
- 22 NHMRC Dietary Guidelines for Children and Adolescents. *Incorporating the Infant Feeding Guidelines for Health Workers*, Draft Revision, 2001.
- 23 Cox SE. The foetal origins hypothesis: An overview and implications. *Nutrition Abstracts and Reviews*, 1999, 69(10):929-937.

- 24 Webb KL, Marks GC, Lund-Adams M, Rutishauser IHE, Abraham B. Towards a national system for monitoring breastfeeding: proposed indicators, definitions and next steps. *Australian Food and Nutrition Monitoring Unit*, Canberra, Dept of Health and Aged Care, 2001.
- 25 Mathers C, Vos T and Stevenson C. *The Burden of Disease and Injury in Australia*, Australian Institute of Health and Welfare, Canberra, 1999.
- 26 Crowley S, Antioch K, Carter R et al. *The cost of diet-related disease in Australia: a discussion paper*, Australian Institute of Health and Welfare, Australian Government Printing Service, Canberra, 1992.
- 27 NHMRC. *Acting on Australia's Weight: A Strategic Plan for the Prevention of Overweight and Obesity*, Commonwealth of Australia, Canberra, 1997.
- 28 Drane D. Breastfeeding and formula feeding: a preliminary economic analysis. *Breastfeeding Review*, 1997, 5(1): 7-15.
- 29 Rand CSW, MacGregor AMC. Successful weight loss following obesity surgery and the perceived liability of morbid obesity. *International Journal of Obesity*, 1991,15:577-579.
- 30 Klem ML et al. A descriptive study of individuals successful at long term weight maintenance of successful weight loss. *American Journal of Clinical Nutrition*, 1997, 66:239-246.
- 31 Eckersley R. Losing the battle of the bulge: causes and consequences of increasing obesity. *Medical Journal of Australia*, 2001, 174:590-592.
- 32 Mathers C, Vos T and Stevenson C. *The Burden of Disease and Injury in Australia*. AIHW cat no. PHE 17, Australian Institute of Health and Welfare, Canberra, 1999.
- 33 James WPT, Nelson M, Ralph A, Leather S. Socioeconomic determinants of health: the contribution of nutrition to inequalities in health. *British Medical Journal*, 1997, 314:1545-9.
- 34 Public Health Division. *The Health of the People of New South Wales: Report of the Chief Health Officer, 2000*, NSW Department of Health, 2002.
- 35 Hamelin AM, Habicht JP, Beaudry M. Food insecurity: consequences for the household and broader implications. *Journal of Nutrition*, 1999, Suppl:525S-8S.
- 36 Booth S and Smith A. Food security and poverty in Australia-challenges for dietitians. *Australian Journal of Nutrition and Dietetics*, 2001, 58:150-156.
- 37 *NHMRC Dietary Guidelines for Australians*, Draft Revision, 2001. www.nhmrc.health.gov.au
- 38 *NHMRC Dietary Guidelines for Older Australians*, 1999. www.nhmrc.health.gov.au
- 39 *NHMRC Dietary Guidelines for Children and Adolescents*, Draft Revision, 2001. www.nhmrc.health.gov.au
- 40 Cashel K and Jeffreson S. *The Core Food Groups. Scientific Basis for Developing Nutrition Education Tools*, NHMRC, AGPS, 1994.
- 41 *ADHAC Australian Guide to Healthy Eating*. www.health.gov.au/pubhlth/strateg/food/guide/index.htm
- 42 *ABS National Nutrition Survey Selected Highlights Australia 1995*, ABS cat.no 4802.0 ABS, Canberra, 1997.
- 43 NSW Health Surveys 1997 and 1998. Epidemiology and Surveillance Branch, NSW Department of Health reported in the *Report of the Chief Health Officer 2000*, NSW Health, 2002.
- 44 *ABS National Nutrition Survey Nutrient Intakes and Physical Measurements Australia 1995*, ABS cat.no 4805.0, ABS, Canberra, 1998.
- 45 NSW Health Surveys 1997 and 1998. Epidemiology and Surveillance Branch, NSW Department of Health reported in the *Report of the Chief Health Officer 2000*, NSW Health, 2002.
- 46 Magarey, AM; Daniels, LA; Boulton TJC. Prevalence of overweight and obesity in Australian children and adolescents: reassessment of 1985 and 1995 data against new standard international definitions. *Medical Journal of Australia*, 2001,174(11): 561-564.

References

- 47 Webb K, Marks G, Lund-Adams M, Abraham B. *Towards a national system for monitoring breastfeeding in Australia: A discussion paper*, Australian Food and Nutrition Monitoring Unit, Commonwealth of Australia, 2001.
- 48 Lester IH. Nutritional Status and Health – Chapter 5. *In Australia's Food and Nutrition*, Australian Institute of Health and Welfare, AGPS, Canberra, 1994.
- 49 Martin S and Macoun E. *Food and Nutrition: Directions for NSW 1996-2000*, Health Promotion Branch, NSW Department of Health, State Health Publication No: (HP) 96-0116, 1996.
- 50 *NSW Department of Health Strategies to promote Breastfeeding. An overview*, NSW Health, State Health Publication No: (HP) 950142, 1995.
- 51 SIGNAL. *Eat Well Australia: an agenda for action for public health nutrition 2000-2010 incorporating the National Aboriginal and Torres Strait Islander Nutrition Strategy and Action Plan 2000-2010 (NATSINSAP)*. www.nphp.gov.au/nutstrat/index.htm
- 52 Martin S and Macoun E. *Food and Nutrition: Directions for NSW 1996-2000*. Health Promotion Branch, NSW Department of Health, State Health Publication No: (HP) 96-0116, 1996.
- 53 Public Health Division. *Healthy People 2005. New Directions for Public Health in NSW*, NSW Department of Health, Sydney, 2000. www.health.nsw.gov.au
- 54 NSW Health. *Framework for Health Promotion in New South Wales 2000-2005*. Discussion Document, July 2000.
- 55 French SA, Story M, Jeffery RW. Environmental influences on eating and physical activity. *Annual reviews of Public Health*, 2001, 22:309-35.
- 56 Booth SL, Sallis JF, Ritenbaugh C et al. Environmental and societal factors affect food choice and physical activity: rationale, influences, and leverage points. *Nutrition Reviews*, 2001, 59;S21-39.
- 57 NSW Centre for Public Health Nutrition. *Report on the weight status of NSW*, NSW Department of Health, Sydney, 2003.
- 58 ABS 1995 NNS data tables for NSW Health. Unpublished.
- 59 Public Health Division. *The Health of the People of New South Wales – Report of the Chief Health Officer*, NSW Department of Health, Sydney, 2002.
- 60 Flood V, Webb K, Lazarus R, Pang G. Use of self-report to monitor overweight and obesity in populations. Some issues for consideration. *Australian Journal of Public Health*, 2000, 24:96-99.
- 61 Public Health Division. *The Health of the People of New South Wales – Report of the Chief Health Officer*, NSW Department of Health, Sydney, 2002.
- 62 ABS 1995 NNS data tables for NSW Health. Unpublished.
- 63 Booth M, Wake M, Armstrong T et al. The epidemiology of overweight and obesity among Australian children and adolescents, 1995-97. *Australian and New Zealand Journal of Public Health*, 2001, 5:162-9.
- 64 ABS 1995 NNS data tables for NSW Health. Unpublished.
- 65 Magarey, AM; Daniels, LA; Boulton TJC. Prevalence of overweight and obesity in Australian children and adolescents: reassessment of 1985 and 1995 data against new standard international definitions. *Medical Journal of Australia*, 2001, 174(11): 561-564.
- 66 Dunstan D, Zimmet P, Welborn T et al. Diabetes and Associated Disorders in Australia 2000. *The Accelerating Epidemic. Australian Diabetes, Obesity and Lifestyle Report*, International Diabetes Institute, Melbourne, 2001.
- 67 AIHW. *Australia's Health 2000: the seventh biennial health report of the AIHW*, AIHW, pp164-167, Canberra, 2000,
- 68 Magarey, AM; Daniels, LA; Boulton TJC Prevalence of overweight and obesity in Australian children and adolescents: reassessment of 1985 and 1995 data against new standard international definitions. *Medical Journal of Australia*, 2001, 174(11): 561-564.
- 69 WHO Consultation on Obesity. Part II In Obesity: Preventing the global epidemic: report of a WHO consultation. *WHO technical report series: 894*, Geneva, 2000.

References

- 70 Mathers C, Vos T and Stevenson C. *The Burden of Disease and Injury in Australia*. Australian Institute of Health and Welfare, Canberra, 1999.
- 71 NHMRC. *Acting on Australia's Weight. A strategic plan for the prevention of overweight and obesity*. Commonwealth of Australia, AGPS, Canberra, 1997.
- 72 WHO Consultation on Obesity. Obesity: Preventing the global epidemic: report of a WHO consultation. *WHO technical report series:894*, Geneva, 2000.
- 73 ABS National Nutrition Survey Selected Highlights 1995. ABS cat no 4802.0 Commonwealth of Australia, Canberra, 1997.
- 74 ABS, 1997, Ibid.
- 75 French SA, Story M, Jeffery RW. 2001 Environmental influences on eating and physical activity. *Annual reviews of Public Health*, 2001, 22:309-35.
- 76 Taras HL, Gage M. Advertised foods on children's television. *Archives Pediatric and Adolescent Medicine*, 1995, 149(6):649-652.
- 77 Woodward D, Cumming F, Ball P and Williams H. Does television effect teenagers' diets? *Proceedings of the Nutrition Society of Australia*, 1992, 17:48.
- 78 Coon KA, Goldberg J, Rogers BL, Tucker KL. Relationship between use of television during meals and children's food consumption patterns. *Pediatrics*, 2001, 107(1):E7.
- 79 Hill JM, Radimer KI. Content analysis of food advertisements in television for Australian children. *Australian Journal of Nutrition and Dietetics*, 1997, 54(4):178-181.
- 80 Hammond KM, Wyllie A, Casswell S, The extent and nature of televised food advertising to New Zealand children and adolescents. *Australian and New Zealand Journal of Public Health*, 1999, 23(1):49-55.
- 81 Institute of Medicine. *Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids*. 2002. www.iom.edu/iom/iomhome.nsf/Pages/Recently+Released+Reports (accessed November 26, 2002).
- 82 Bauman A. Approaches to constructing NSW data for trends from Active Australia surveys November 1997, 1999, and 2000. NSW Centre for Physical Activity and Health (unpublished data). 2002.
- 83 Bauman A, Armstrong T, Davies J, Owen N, Brown W, Bellew B, and Vita P. *Trends in physical activity participation and the impact of integrated campaigns among Australian adults*.
- 84 *National Physical Activity Guidelines for Australians*. Commonwealth Department of Health and Aged Care, 1999.
- 85 *Women's Health Australia. What do we know? What do we need to know?: Progress on the Australian Longitudinal Study on Women's Health 1995-2000*. Brisbane, 2001.
- 86 Kennedy J, Brown W, Vogt E. *Dieting and Health in Young Australian women*. www.newcastle.edu.au/centre/wha/public/papers/shape.html
- 87 O'Dea J. Nutrition education to prevent eating problems: First do no harm. *Eating Disorders*, 2000: 8:123-130.
- 88 ABS. 1995 NNS data tables for NSW Health. Unpublished
- 89 WHO Consultation on Obesity. Part II In Obesity: Preventing the global epidemic: report of a WHO consultation. *WHO technical report series:894*, Geneva, 2000, p9-10.
- 90 Public Health Division. *The Health of the People of New South Wales – Report of the Chief Health Officer*. NSW Department of Health: Sydney, 2002.
- 91 ABS. *National Health Survey: Aboriginal and Torres Strait Islander results*, Australia, 1995. ABS cat. No. 2039.0 ABS, Canberra, 1999.
- 92 WHO Consultation on Obesity. Part II In Obesity: Preventing the global epidemic: report of a WHO consultation. *WHO technical report series:894*, Geneva, 2000, p139-140.
- 93 Burke V, Beilin LJ, Dunbar D. Family lifestyle and parental body mass index as predictors of body mass index in Australian children: a longitudinal study. *International J of Obesity*, 2001, 25:147-157.
- 94 O'Dea JA. Body image and nutritional status among adolescents and adults-a review of the literature. *Australian Journal of Nutrition and Dietetics*, 1995, 52:56-67.

References

- 95 WHO Consultation on Obesity. Obesity: Preventing the global epidemic: report of a WHO consultation. *WHO technical report series:894*, Geneva, 2000.
- 96 NHMRC. Acting on Australia's Weight. *A strategic plan for the prevention of overweight and obesity*. Commonwealth of Australia, AGPS Canberra, 1997.
- 97 WHO Consultation on Obesity. Obesity: Preventing the global epidemic: report of a WHO consultation. *WHO technical report series:894*, Geneva, 2000.
- 98 Crawford D, Jeffery RW, French SA. Can anyone successfully control their weight? Findings of a three year community-based study of men and women. *International Journal of Obesity Related Metabolic Disorders*, 2000, 24:1107-1110.
- 99 Wing RR, Hill JO. Successful weight loss maintenance. *Annual Reviews of Nutrition*, 2001, 21:323-341.
- 100 Austin SB Population-based prevention of eating disorders: an application of the Rose prevention model. *Preventive Medicine*, 2001, 32:268-283.
- 101 WHO Consultation on Obesity. Obesity: Preventing the global epidemic: report of a WHO consultation. WHO technical report series:894, Geneva, 2000, p198.
- 102 Hill JO, Peters JC. Environmental contributors to the obesity epidemic. *Science*, 1998, 280:1371-4.
- 103 Wing RR, Hill JO. Successful weight loss maintenance. *Annual Reviews of Nutrition*, 2001, 21:323-341.
- 104 Jackson M, Ball K and Crawford D. Beliefs about the causes of weight change in the Australian population. *International Journal of Obesity and Related Disorders*, 2001, 25:1512-1516.
- 105 AbuSabha R, Achterberg C. Review of self-efficacy and locus of control for nutrition- and health-related behaviour. *Journal American Dietetic Association*, 1997, 1122-1132.
- 106 Clark NM, Dodge JA. Exploring self-efficacy as a predictor of disease management. *Health Education and Behaviour*, 1999, 72-89.
- 107 Rimal RN. *Closing the knowledge-behaviour gap in health promotion: the mediating role of self-efficacy*, 2000, 12:219-237.
- 108 O'Dea J. Nutrition education to prevent eating problems *primum laedere noli* ('first do no harm'). *Nutrition Issues and Abstracts*, 1998, 17. www.sugar.org.au/health_pro_frames.html
- 109 NHMRC. *Acting on Australia's Weight. A strategic plan for the prevention of overweight and obesity*. Commonwealth of Australia, AGPS Canberra 1997, p4, 149-155.
- 110 WHO Consultation on Obesity. Obesity: Preventing the global epidemic: report of a WHO consultation. *WHO technical report series:894*, Geneva, 2000, p179.
- 111 WHO Consultation on Obesity. Part IV Obesity: Preventing the global epidemic: report of a WHO consultation. WHO technical report series:894, Geneva 2000
- 112 Booth SL, Sallis JF, Ritenbaugh C et al. Environmental and societal factors affect food choice and physical activity: rationale, influences, and leverage points. *Nutrition Reviews*, 2001:59;S21-39
- 113 SIGPAH. Promoting Active Transport. An Intervention Portfolio to Increase Physical Activity as a Means of Transport. *Planning Framework – Case Study*. National Public Health Partnership, Melbourne, 2001. www.nphp.gov.au/pp1/planning/active.pdf
- 114 Austin SB. Prevention research in eating disorders: theory and new directions. *Psychological Medicine*, 2000, 30:1249-1262.
- 115 Kellett, E, Smith, A and Schmerlaib Y. *The Australian Guide to Healthy Eating*. Commonwealth of Australia, 1998.
- 116 NPHP. An Intervention Portfolio to Promote Fruit and Vegetable Consumption. Part 1 – The Process and Portfolio. *Public Health Planning and Practice Improvement*, NPHP, 2000. www.nphp.gov.au/nphppubs.htm
- 117 WHO Diet, Nutrition and the Prevention of Chronic Diseases. Report of a WHO Study Group, *Technical Report Series 797*. Geneva, 1990.
- 118 Ness AR, Powles JW Fruit, vegetables and heart disease: a review. *International Journal of Epidemiology*, 1997, 26: 1-13.

References

- 119 Svetky LP, Simons-Morton D, Vollmer WM et al. Effects of dietary patterns on blood pressure: Subgroup analysis of the DASH randomised clinical trials. *Archives Internal Medicine*, 1999, 159: 285-293.
- 120 Gillman MW, Cupples LA, Gagnon D et al. Protective effect of fruit and vegetables on development of stroke in men. *Journal American Medical Association*, 1995, 273 (14):1113-1117.
- 121 Williams DE, Wareham NJ, Cox BD et al. Frequent salad consumption is associated with reduction in the risk of diabetes mellitus. *Journal of Clinical Epidemiology*, 1999, 52: 329-335.
- 122 World Cancer Research Fund and American Institute for Cancer Research Vegetables and Fruits. In *Food, Nutrition and Prevention of Cancer: a global perspective*.
- 123 Lumley J, Watson L, Watson M and Bower C. Periconceptual supplementation with folate and /or multivitamins for preventing neural tube defects (Cochran Review). *The Cochrane Database Systematic Review*, CD001056.
- 124 Chandra RK The effect of vitamin and mineral supplementation on immune response and infection in elderly subjects. *Lancet*, 1992, 340: 1124-27.
- 125 Chandra RK Ibid
- 126 Brown L, Rimm EB, Seddon JM, Giovannucci EL, Chason-Taber L, Spiegelman D, Willett WC, Hankinson SE. A prospective study of carotenoid intake and risk of cataract extraction in US men. *American Journal of Clinical Nutrition*, 1999, 70: 517-24.
- 127 Mathers C, Vos T, Stevenson C. *The Burden of Disease and Injury in Australia*. Australian Institute of Health and Welfare, Canberra, 1999.
- 128 NSW Health Background Information. In *Fruit and Vegetable Tool Kit. A guide to local tasting events*. NSW Health, 2001, pp 118-121.
- 129 Yuen CMC, Caffin N, Hunter K et al. Consumer consumption patterns, purchasing habits and attitudes to fruit and vegetables. *Food Australia*, 1994, 46(10): 455-458.
- 130 Australian Horticultural Corporation. *Consumer study of the fruit and vegetable market*, 1990. Horticultural Research and Development Corporation, 1990.
- 131 Webb K, Hawe P, Noort M. Collaborative intersectoral approaches to nutrition in a community on the urban fringe. *Health Education and Behaviour*, 2001, 28:306-319.
- 132 Radimer KL, Harvey P, Lytle L. Correspondence of self-reported fruit and vegetable intake with dietary intake data. Australian and New Zealand. *Journal of Public Health*, 1997; 21: 703-10.
- 133 Cox DN, Anderson AS, Lean ME and Mela DJ. UK consumer attitudes, beliefs and barriers to increasing fruit and vegetable consumption. *Public Health Nutrition*, 1998, 1: 61-68.
- 134 La Forge RG, Greene GW, Prochaska JO. Psychosocial factors influencing low fruit and vegetable consumption. *Journal of Behavioural Medicine*, 1994, 17: 361-374.
- 135 Reicks M, Randall JL, Haynes BJ. Factors affecting consumption of fruit and vegetables by low income families. *Journal of the American Dietetic Association*, 1994, 94: 1309-1311.
- 136 Thompson RL, Margetts BM, Speller VM, McVey D. The Health Education Authority's health and lifestyle survey 1993: who are the low fruit and vegetable consumers? *Journal of Epidemiology and Community Health*, 1999, 53: 294-299.
- 137 *ABS National Nutrition Survey Foods Eaten Australia 1995*. Supplementary tables on the National Nutrition Survey, produced for the NSW Department of Health.
- 138 *ABS National Nutrition Survey. Foods Eaten Australia 1995*, p38. ABS cat no 4804.0, Commonwealth of Australia, 1999, Canberra.
- 139 *ABS National Nutrition Survey Foods Eaten Australia 1995*. Supplementary tables on the National Nutrition Survey, produced for the NSW Department of Health.
- 140 NSW Health Current Consumption of Fruit and Vegetables Fig 1, *Fruit and Vegetable Tool Kit. A guide to local tasting events*. NSW Health, 2001, p112-113.

References

- 141 Macoun E, Bauman A. Food habits and weight status in NSW: analysis of responses to the nutrition questions from the *1994 NSW Health Promotion Survey*. NSW Department of Health. State Health Publication No:980073.
- 142 *NSW Health Survey 1997*, Epidemiology and Surveillance Branch, NSW Department of Health. www.health.nsw.gov.au/public-health/
- 143 Webb K, Hawe P, Noort M. Collaborative intersectoral approaches to nutrition in a community on the urban fringe. *Health Education and Behaviour*, 2001, 28:306-319.
- 144 CDHFS. *The Australian Guide to Healthy Eating. Background information for consumers*. Commonwealth of Australia, 1998. ISBN 0 642 27257 3.
- 145 *SIGNAL Work Priorities* www.nphp.gov.au/signal/priority.htm
- 146 *SIGNAL Guidelines for Promoting Increased Consumption of Vegetables and Fruit*, SIGNAL, October 2002.
- 147 Baghurst P, Beaumont-Smith N. *The Relationship Between the Consumption of Fruits and Vegetables and Health Status*, Report to Department of Health and Aged Care and SIGNAL, SIGNAL, 1999. www.dhs.vic.gov.au/nphp/signal
- 148 Miller M, Pollard C, Paterson D. A public health nutrition campaign to promote fruit and vegetables in Australia. In Worsley A (ed) *Multi-disciplinary Approaches to Food Choice*. Proceedings of Food Choice Conference. Adelaide 1993, University of Adelaide, 1996, pp152-158.
- 149 Dixon H, Borland R, Segan C et al. Public reaction to Victoria's '2 Fruit 'n' 5 Veg every day campaign and reported consumption of fruit and vegetables. *Preventive Medicine*, 27, 572-582, 1998
- 150 Coles and Dietitians Association of Australia. *Coles Fruit and Vegetable Index*, November 2000. DAA Tel. (02) 6282 9555.
- 151 *NSW Health Fruit and Vegetable Tool Kit. A guide to local tasting events*. NSW Health, 2001
- 152 Miller M, Newall S, Huddy A et al. Tooty Fruity Veggie Project: Process and Impact Evaluation Report, July 2001 Health Promotion Unit, Northern Rivers Area Health Service, Lismore
- 153 Western Sydney Area Health Promotion Nutrition Program. *The Mt Druitt Food Project. Foodchain*, 2001, 5:8-9. www.dhs.vic.gov.au/nphp/signal/fdchain.htm
- 154 Hawksbury District Health Service, Hawksbury Food Program. *Foodchain*, 2001, 6:9-11. www.dhs.vic.gov.au/nphp/signal/fdchain.htm
- 155 Webb K, Hawe P, Noort M. Collaborative intersectoral approaches to nutrition in a community on the urban fringe. *Health Education and Behaviour* 2001; 28:306-319
- 156 NPHP. *An Intervention Portfolio to Promote Fruit and Vegetable Consumption. Part 2 – Review of Interventions*. Public Health Planning and Practice Improvement, NPHP, 2000. www.nphp.gov.au/nphppubs.htm
- 157 National Public Health Partnership 2000. *An Intervention Portfolio to Promote Fruit and Vegetable Consumption. Part 1 – The Process and Portfolio*. Public Health Planning and Practice Improvement, NPHP, 2000. www.nphp.gov.au/nphppubs.htm
- 158 National Cancer Institute. *5 A Day for Better Health Program*. National Institutes of Health, 2001. www.5aday.gov/pdf/masimaxmonograph.pdf
- 159 *Health Education and Behaviour*, 2000, 27 (2), April. Abstracts are available at www.sph.umich.edu/hbhe/heb/Abstracts/v27i2abs.html
- 160 NHMRC. Dietary Guidelines for Children and Adolescents incorporating the Infant Feeding. *Guidelines for Health Workers*. Draft Revision 2001
- 161 NHMRC, 2001, *Ibid*.
- 162 Heinig MJ, Dewey KG. Health advantages of breastfeeding for infants: a critical review. *Nutrition Research Reviews* 1996, 9:89-110.
- 163 RACGP. Breastfeeding Position Statement 2000, Appendix J, *NHMRC Dietary Guidelines for Children and Adolescents*. Draft Revision, 2001. www.nhmrc.gov.au/advice/diet.htm

References

- 164 McVea KL, Turner PD and Peppler DK. The role of breastfeeding in sudden death syndrome. *Journal of Human Lactation*, 2000, 16(1):13-20.
- 165 NHMRC Dietary Guidelines for Children and Adolescents. incorporating the Infant Feeding Guidelines for Health Workers. Draft Revision, 2001.
- 166 Cox SE. The foetal origins hypothesis: An overview and implications. *Nutrition Abstracts and Reviews*, 1999, 69(10):929-937.
- 167 Raisler J, Alexander C, O'Campo P. Breastfeeding and infant illness: a dose response relationship? *American Journal of Public Health*, 1999, 89(1):25-30.
- 168 Heinig MJ, Dewey KG. Health effects of breastfeeding for mothers: a critical review. *Nutrition Research Reviews*, 1997, 10:35-56.
- 169 NHMRC, Dietary Guidelines for Children and Adolescents. Incorporating the Infant Feeding Guidelines for Health Workers. Draft Revision, 2001.
- 170 Unva-Moberg K, Eriksson M. Breastfeeding: physiological endocrine and behavioural adaptations caused by oxytocin and local neurogenic activity in the nipple and mammary gland. *Acta Paediatr Scand*, 1996, 85:525-530.
- 171 Rogers IS, Golding J, Emmett PM. The effects of lactation on the mother. *Early Human Development*, 1997, 49 Suppl:S191-203.
- 172 Heinig MJ, Dewey KG Health effects of breastfeeding for mothers: a critical review. *Nutrition Research Reviews*, 1997, 10:35-56.
- 173 Emmett PM and Rogers IS Properties of human milk and their relationship with maternal nutrition. *Early Human Development*, 1997, 49 Suppl:S7-28.
- 174 WHO. *The Optimal Duration of Exclusive Breastfeeding: Results of a WHO systematic review*. Note for the Press No 7, 2 April 2001. <http://www.who.int/inf-pr-2001/en/note2001-07.html>.
- 175 WHO. The World Health Organisation's infant-feeding recommendations: www.who.int/child.adolescenthealth/NUTRITION/infant.htm, November 2001.
- 176 Donith A, Amir LH. Rates of breastfeeding in Australia by State and socioeconomic status: Evidence from the 1995 National Health Survey. *Journal of Paediatric and Child Health*, 2000, 36(2):164-168.
- 177 Donith A and Amir LH. 2000 Ibid
- 178 Drane D. Breastfeeding and formula feeding: a preliminary economic analysis. *Breastfeeding Review*, 1997, 5(1): 7-15.
- 179 Weimer JP (2001) The Economic Benefits of Breastfeeding: A Review and Analysis. *Food Assistance and Nutrition Research Report No. 13*. 1800 M Street NW. Washington DC 20036-5831, March 2001. Economic Research Service, USDA.
- 180 McIntyre E, Hiller JE, Turnbull D. Attitudes towards infant feeding amongst adults in a low socio-economic community: what social support is there for breastfeeding? *Breastfeeding Review*, 2001, 9(1).
- 181 Scott JA, Aitken I, Binns CW, Aroni RA. Factors associated with the duration of breastfeeding amongst women in Perth, Australia. *Acta Paediatr Scand*, 1999, 88(4):416-421.
- 182 Webb K, Marks G, Lund-Adams M, Abraham B. *Towards a national system for monitoring breastfeeding in Australia: A discussion paper*. Australian Food and Nutrition Monitoring Unit, Commonwealth of Australia, 2001.
- 183 NSW Health Promotion Survey 1994. NSW Department of Health.
- 184 ABS. *National Health Survey – Summary of Results – Australia, 1995*. ABS, Canberra, 1997.
- 185 Scott JA, Aitken I, Binns CW, Aroni RA. Factors associated with the duration of breastfeeding amongst women in Perth, Australia. *Acta Paediatr Scand*, 1999; 88(4):416-421
- 186 Visness CM, Kennedy KI. Maternal employment and breastfeeding: Findings from the 1988 National Maternal and Infant Health Survey. *American Journal of Public Health*, 1997;87:945-950
- 187 *Balancing Breastfeeding and Work*, Commonwealth of Australia, AusInfo, Canberra, 2000.

References

- 188 Munro S. *Returning to work after maternity leave-women's breastfeeding experiences*. MPH treatise: Sydney University, 1997
- 189 NHMRC *Infant Feeding Guidelines for Health Workers*, 1996.
- 190 NHMRC *Dietary Guidelines for Children and Adolescents. Incorporating the Infant Feeding Guidelines for Health Workers*, 2003.
- 191 CDHAC. *National Breastfeeding Strategy Summary Report*. Commonwealth of Australia, 2001.
- 192 WHO. Evidence for the ten steps to successful breastfeeding, 1998.
- 193 Philipp, B et al. Baby-friendly hospital initiative improves breastfeeding initiation rates in a US hospital. *Pediatrics*, Vol.108:3:pp 677-681.
- 194 Fairbank, L, O'Meara, S, et al. A systematic review to evaluate the effectiveness of interventions to promote the initiation of breastfeeding. *Health Technology Assessment*, 2000;4(25): 26-27.
- 195 www.lawlink.nsw.gov.au/adb.nsf/pages/carersguide
- 196 *Balancing Breastfeeding and Work*. Commonwealth of Australia, Ausinfo, Canberra, 2000.
- 197 Brundtland GH. WHO. *Director-General's Speech on Infant Feeding*. In WHO:2000. www.who.int/director-general/speeches/2000/20000313_infant_feeding_html
- 198 Webb KL, MarksGC, Lund-Adams M, Rutishauser IHE, Abraham B. 2001. *Towards a national system for monitoring breastfeeding: proposed indicators, definitions and next steps*. Australian Food and Nutrition Monitoring Unit. Canberra: Dept of Health and Aged Care.
- 199 HEBS. Nutrition in the Under Fives. *Evidence in to Action*. HEBS, Glasgow, 2001. www.hebs.com
- 200 Fairbank L, O'Meara S, Renfrew MJ et al. A systematic review to evaluate effectiveness of interventions to promote the initiation of breastfeeding. *Health Technology Assessments*, 2000;4(25):1-171. www.ncchta.org
- 201 Stickney B nad Webb K. *Strategies to promote Breastfeeding. An overview*. State Health Publication No: (HP) 950142, NSW Department of Health, 1995.
- 202 Fairbank L, O'Meara S, Renfrew MJ et al. A systematic review to evaluate effectiveness of interventions to promote the initiation of breastfeeding. *Health Technology Assessments*, 2000;4(25):1-171 www.ncchta.org
- 203 Brundtland GH. WHO. *Director-General's Speech on Infant Feeding*. In WHO:2000. www.who.int/director-general/speeches/2000/20000313_infant_feeding_html
- 204 Kendall A, Kennedy E. Position of the American Dietetic Association: domestic food and nutrition security. *Journal of the American Dietetic Association*, 1998, 98: 337-342.
- 205 Saunders P. Poverty and deprivation in Australia. In: *Australian Bureau of Statistics Year Book*, (ABS Catalogue no. 1301.0). Canberra, 1996.
- 206 Australian Bureau of Statistics. *Detailed expenditure items – 1993-4 household expenditure survey*. Canberra: Australian Government Printing Service, 1996.
- 207 NSW Centre for Epidemiology and Research. *NSW Child Health Survey*. 2001 (HOIST).
- 208 Smith Am and Baghurst KI. Dietary vitamin and mineral intake and social status. *Australian Journal of Nutrition and Dietetics*. 1993, 50:163-71.
- 209 Marks G. Measuring food security in Australia. *Foodchain 2001*; 5: 7-8. www.dhs.vic.gov.au/nphp/signal/fdchain.htm
- 210 Hamelin AM, Habicht JP, Beaudry M. Food insecurity: consequences for the household and broader implications. *Journal of Nutrition*, 1999, Suppl:525S-8S.
- 211 Blaylock JR, Blisard WN. Food security and health status in the United States. *Applied Economics*, 1995, 27:961-6.
- 212 James WPT, Nelson M, Ralph A, Leather S. Socioeconomic determinants of health: the contribution of nutrition to inequalities in health. *British Medical Journal*; 1997;314:1545-9
- 213 Mather C, Vos T and Stevenson C. *The Burden of Disease and Injury in Australia*. AIHW cat no. PHE 17; Australian Institute of Health and Welfare, Canberra, 1999.

References

- 214 Booth S and Smith A. Food security and poverty in Australia-challenges for dietitians. *Australian Journal of Nutrition and Dietetics*, 2001, 58:150-156.
- 215 Wood B Food security for all. Building Healthier Communities. *FoodChain 2001*, 5: 1-3 www.dhs.vic.gov.au/nphp/signal/fdchain.htm
- 216 Public Health Division. *The Health of the People of NSW – Report of the Chief Health Officer*. NSW Department of Health, Sydney, 2002.
- 217 Cunningham J, Sibthorpe B, Anderson I 4707.0 *Occasional paper: Self assessed health status, indigenous Australia, 1994*. Canberra, Australian Bureau of Statistics, 1997.
- 218 World Food Summit 1996 Rome Declaration on World Food Security. www.who.int/
- 219 Booth S and Smith A. Food security and poverty in Australia-challenges for dietitians. *Australian Journal of Nutrition and Dietetics*, 2001, 58:150-156.
- 220 Marks G. Measuring food security in Australia. *Foodchain*, 2001, 5: 7-8 www.dhs.vic.gov.au/nphp/signal/fdchain.htm
- 221 Marmot M. Social determinants of health: from observation to policy. *Medical Journal of Australia*, 2000, 172: 379-382.
- 222 Turrell G and Mathers CD. Socioeconomic status and health in Australia. *Medical Journal of Australia*, 2000, 172: 439-438.
- 223 Williams P. Sustainability and sustenance. Editorial. *Australian Journal of Nutrition and Dietetics*, 2001, 58: 145-147.
- 224 Booth S and Smith A. Food security and poverty in Australia-challenges for dietitians. *Australian Journal of Nutrition and Dietetics*. 2001, 58:150-156.
- 225 NSW Agriculture. Sustainable Agriculture in NSW. www.agric.nsw.gov.au/reader/3180
- 226 NSW Agriculture. Strategic Plan for Sustainable Agriculture in the Sydney Region.
- 227 Western Sydney Area Health Promotion Nutrition Program. The Mt Druitt Food Project. *Foodchain*, 2001; 5:8-9. www.dhs.vic.gov.au/nphp/signal/fdchain.htm
- 228 Hawksbury District Health Service, Hawksbury Food Program. *Foodchain*, 2001; 6:9-11. www.dhs.vic.gov.au/nphp/signal/fdchain.htm
- 229 Webb K, Hawe P, Noort M. Collaborative intersectoral approaches to nutrition in a community on the urban fringe. *Health Education and Behaviour*, 2001, 28:306-319.
- 230 NSW Health. *NSW Health and Equity Statement*, 2001.
- 231 Toronto Food Policy Council. Reducing urban hunger in Ontario: Policy responses to support the transition from food charity to local food security. *Toronto Food Policy Council Discussion Paper Series No 1*, Toronto, 1994.
- 232 Webb KL, Pelletier D, Maretzki AN, Wilkins J. Local food policy coalitions: Evaluation issues as seen by academics, project organisers, and funders. *Journal of Agricultural and Human Values*, 1998, 15: 65-75.
- 233 Webb K, Hawe P, Noort M. Collaborative intersectoral approaches to nutrition in a community on the urban fringe. *Health Education and Behaviour*, 2001, 28:306-319.
- 234 McGlone P, Dobson B, Dowler E, Nelson M. Food projects and how they work. *York: YPS for the Joseph Rowntree Foundation*, 1999.
- 235 McGlone P, Dobson B, Dowler E, Nelson M. 1999, *Ibid*.
- 236 NSW Health. *A Framework for Building Capacity to Improve Health*. www.health.nsw.gov.au/public-health/health-promotion/pdf/framework/framework.htm
- 237 Community Nutrition Planning Group Northern Sydney Health. *Better Nutrition for the Harbour to the Hawksbury*, 2001.
- 238 NSW Nutrition Network. Register of Nutrition Projects, 2001.
- 239 NSW Health. *A Framework for Building Capacity to Improve Health*. *Health Promotion Branch*. www.health.nsw.gov.au/public-health/health-promotion/pdf/framework/framework.htm April 2001

References

- 240 NSW Health. *Partners in Health: Report of the Consumer and Community Participation Implementation Group: NSW Government response*. NSW Health, 2001.
- 241 NSW Health. *NSW Health Aboriginal Health Impact Statement and Guidelines*, NSW Health, 2003.
- 242 Public Health Division. *Healthy People 2005. New Directions for Public Health in NSW*. NSW Department of Health, Sydney, 2000. www.health.nsw.gov.au
- 243 NSW Health. *Framework for Health Promotion in New South Wales 2000-2005*. Discussion Document, July 2000.
- 244 Glanz K, *Theory at a Glance National Institutes of Cancer*. http://rex.nci.nih.gov/NCI_Pub_Interface/Theory_at_glance/HOME.html
- 245 Truswell AS. Levels and kinds of evidence for public-health nutrition. *Lancet*, 2001, 357: 1061-62.
- 246 Rychetnik L and Frommer M. *A proposed schema for Evaluating Evidence on Public Health Interventions*. A discussion paper prepared for the National Public Health Partnership, May 2000, National Public Health Partnership. www.nphp.gov.au
- 247 Hawe P, Shiell A. Preserving innovation under increasing accountability pressures: the health-promotion investment-portfolio approach. *Health Promotion Journal of Australia*, 1995, 5:4-9.
- 248 National Public Health Partnership. *Deciding and specifying an intervention portfolio: Planning framework – User guide*. Melbourne, Victoria, National Public Health Partnership, 2000. www.nphp.gov.au
- 249 Public Health Division. *Setting Priorities for Public Health*. www.health.nsw.gov.au
- 250 Martin S and Macoun E. *Food and Nutrition: Directions for NSW 1996-2000*. Health Promotion Branch, NSW Department of Health, 1996, State Health Publication No: (HP) 96-0116.
- 251 SIGNAL. *Eat Well Australia: an agenda for action for public health nutrition 2000-2010 incorporating the National Aboriginal and Torres Strait Islander Nutrition Strategy and Action Plan 2000-2010* (NATSINSAP). www.nphp.gov.au/nutstrat/index.htm
- 252 Policy Division, *Strategic Directions for Health 2000-2005*, NSW Department of Health, Sydney, 2000. www.health.nsw.gov.au
- 253 Public Health Division. *Healthy People 2005. New Directions for Public Health in NSW*, NSW Department of Health, Sydney, 2000. www.health.nsw.gov.au
- 254 NSW Health. *NSW Health and Equity Statement (draft)*, 2001.
- 255 Hughes R and Somerset S. Definitions and conceptual frameworks for public health and community nutrition: a discussion paper. *Australian Journal of Nutrition and Dietetics*, 1997, 54:40-45.
- 256 Campbell K, Steele J, Woods J, Hughes R. *Developing a public health nutrition workforce in Australia: Workforce issues*, 1997 National Specialty Program in Public Health and Community Nutrition, Deakin University, Melbourne.
- 257 Hughes R, Public Health Nutrition Workforce Development Needs in Australia. PHD Confirmation Paper, School of Health Sciences, Griffith University, 2001.
- 258 ABS. *Population-population size and growth*. www.abs.gov.au/ausstats 6 November 2001

