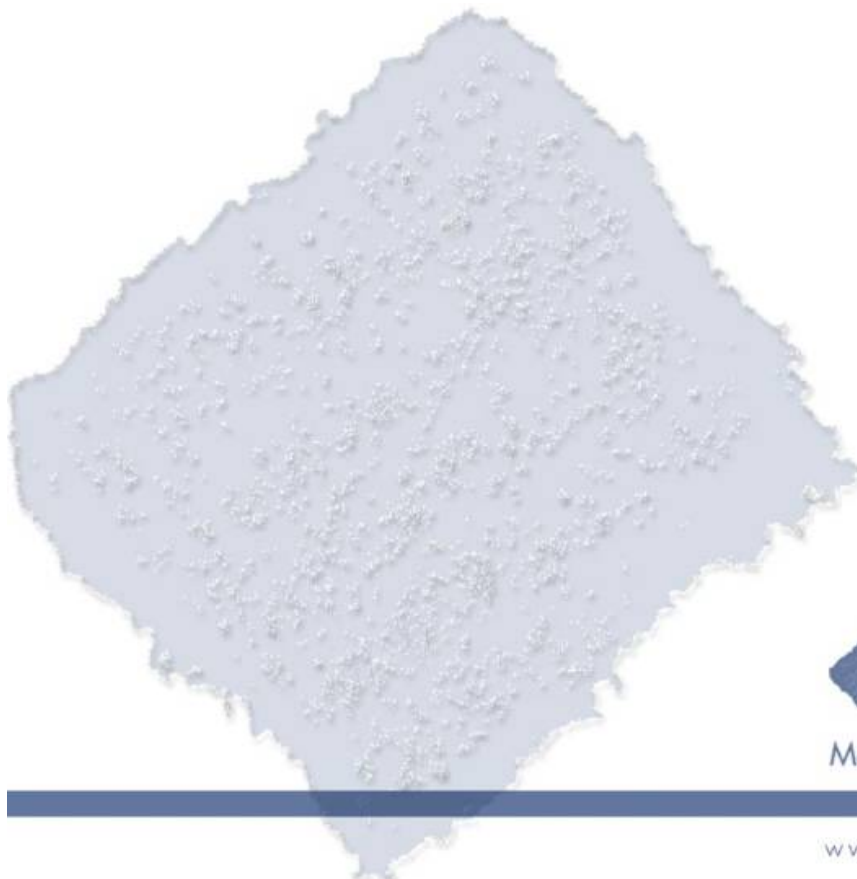


final report

**a national food and  
nutrition monitoring and  
surveillance system:  
a framework and a  
business case**

April 2006



 **Nexus**  
Management Consulting

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# National food and nutrition monitoring and surveillance system: a framework and a business case

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April 2006.

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## executive summary

An adequate and varied diet is important for normal growth and development, maintenance of good health and the prevention of chronic disease; as is the need for up-to-date, reliable and timely data to provide a basis for informed decision making and regulation by government. Despite this, and clear evidence for the contribution of nutrition to the considerable burden of preventable ill health, Australia's policy makers do not have adequate information to develop cost-effective food and nutrition policy and regulation.

The need for a national food and nutrition monitoring and surveillance system has long been recognised and it has been identified as a priority in several public health nutrition, obesity, physical activity and chronic disease-related policy documents.

This report provides a framework and cost estimates for establishing a national food and nutrition monitoring surveillance system (FNMS). The development of the framework follows extensive consultation with a diverse range of stakeholders: Australian, State and Territory Governments, non-government organisations, professional associations and industry bodies. The framework was also informed by a review of selected international approaches to food and nutrition monitoring.

Overwhelming support for an *ongoing*, sustainable FNMS emerged from these consultations. Government agencies, policy makers, regulators and industry representatives state that they do not have adequate information on the following:

- the nutritional adequacy of the food supply;
- equity of food access;
- effects on health of changes in the composition of foods in the food supply;
- use of nutritional supplements and their effect on nutrient intake, nutritional status and health;

- differences in nutritional status between different population sub-groups;
- alignment of food and nutrient intakes in the population with dietary targets and guidelines and nutrient reference values developed for Australia and New Zealand;
- trends in eating patterns and their effect on food industry growth and innovation;
- implications of technological and regulatory changes on the composition of the food supply; and
- risks associated with exposure to bioactive compounds in foods at current levels of consumption.

The consultation process also identified a range of significant costs and risks associated with not having an ongoing system, including:

- reduced ability to appropriately develop, target and monitor the outcomes of public health nutrition interventions;
- late detection of new, or accelerating, nutrition problems in the community, and the lack of trend information about the possible causes;
- increasing reliance on outdated data to undertake effective risk assessment for food additives, fortification with vitamins and minerals, chemical residues etc; and
- an inability to monitor the objectives of public health nutrition policies and programs.

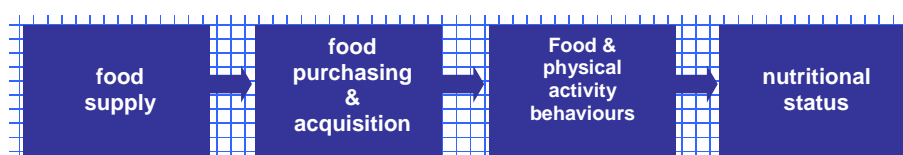
For the majority of stakeholders the costs and risks of not having a system far outweighed the costs of establishing an ongoing monitoring system.

## THE FRAMEWORK

The framework presented in this report provides a basis for providing the information identified by stakeholders as necessary for making informed decisions about food and nutrition policy in Australia. The framework, depicted in figure 1, contains four elements:

- **food supply:** information on the availability of foodstuffs and the composition of Australian foods;
- **food purchasing/acquisition:** information on expenditure on food, types of food purchased, price and quantities bought; food security;
- **food and physical activity behaviours:** 24-hour recall data, short questions about selected food habits and measures of physical activity;
- **nutritional status:** information on individuals' biological measures.

**Figure 1 – framework for a national food & nutrition monitoring system**



During the consultations there was remarkable consistency among the diverse range of stakeholders on one point: a comprehensive, national system requires ongoing information on each of the elements.

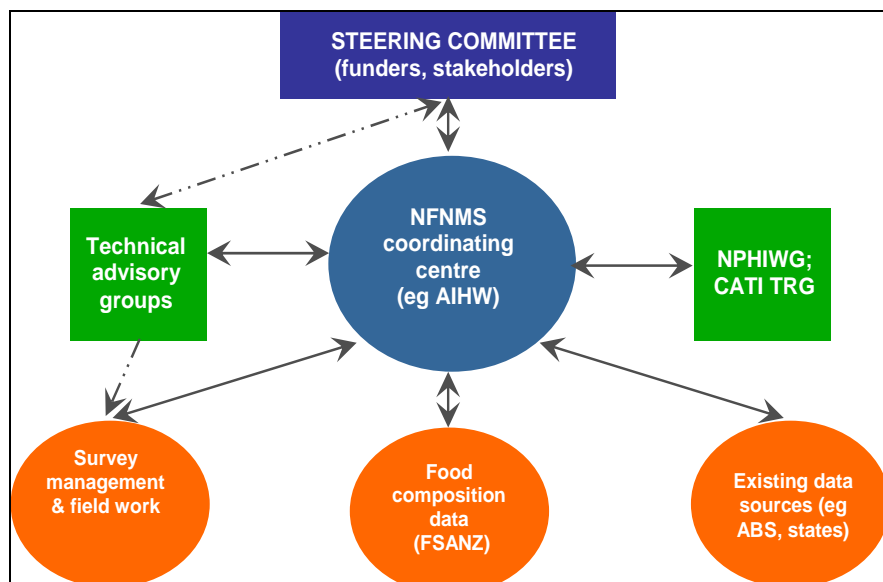
The framework does not purport to address *all* of the information needs and suggested priorities that emerged from consultations on a draft framework. Rather, a 'minimalist' or baseline model that could be built upon over time is proposed. This baseline framework comprises seven recommendations for improving data on food and nutrition, of which the key proposal is the establishment of an ongoing program of comprehensive dietary surveys:

1. establish a continuous, comprehensive dietary survey program which includes measurement of weight and height as well as assessment of physical activity;
2. reinstate the compilation and reporting of the *Apparent Consumption of Foodstuffs* time series data;
3. strengthen the ongoing maintenance and updating of food composition data;
4. conduct routine secondary analyses of household expenditure data;

5. develop methods for monitoring community food access security and food security;
6. develop short survey questions on selected food and physical activity behaviours; and
7. include appropriate biological measures of nutritional status in the ongoing survey program.

To be sustainable, the system requires a permanent, dedicated coordinating centre comprising four to five staff with skills in food and nutrition monitoring, public health nutrition, data analysis and reporting, and epidemiology and biostatistics. The primary purpose of the centre would be to oversee and coordinate the core activities. It is not proposed that the centre would undertake the dietary survey program but it would produce national food and nutrition monitoring reports based on existing and new data sources, liaise with the organisation responsible for conducting the survey program and with Food Standards Australia New Zealand in relation to their role in updating the food composition data, and provide technical advice on food and nutrition monitoring to other bodies and jurisdictions.

**Figure 2 – A model of governance and institutional arrangements for a national food and nutrition monitoring and surveillance system**



As shown in figure 2, a steering committee comprising the funders and stakeholders oversee the centre with

technical and scientific advice provided by relevant existing and newly established expert groups.

## COSTING THE SYSTEM

Several options for conducting the comprehensive dietary survey program are considered. The option that has been costed is based on surveying every year a nationally representative sample of 2,000 individuals. Data on food intake would be collected using a 24-hour recall instrument (similar to that used in the 1995 NNS) with a second 24-hour recall conducted by telephone interview on all respondents. Physical activity would be assessed using a short set of standardised questions and height and weight measured for the full sample. The basic option also allows for the collection of relevant biological measures of nutritional status (such as iodine, folate, iron, blood lipids, blood pressure) on 25% of the total sample in each survey year. The basic option is estimated to cost \$1.2 million annually.

The cycle of survey activities includes a pilot of the survey in year 1, data collection in year 2, analysis in year 3 and reporting in year 4. The second cycle of data collection would begin in year 3, with a sample of adults. Table 1 shows the time sequence of survey activities for the years 2006-2013.

**Table 1 Comprehensive dietary survey program activities for the period 2006-2013 based on the baseline option.**

Survey group	Preparatory work	Data collection	Analysis	Reporting
	Year			
Children	2006	2007	2008	2009
Adults	2007	2008	2009	2010
Children	2008	2009	2010	2011
Adults	2009	2010	2011	2012
Special group eg 0-2 years	2010	2011	2012	2103

Note that the table includes preparatory and planning work associated with each stage of cycle. This does not necessarily mean a pilot study in each year. Indeed, the

whole purpose of an ongoing program is to minimise 'set-up' costs, including pilot survey costs. For example, if children were surveyed in successive years (i.e. 2007 and 2008), there would obviously be no pilot costs in 2007 for the 2008 survey. Additional pilot costs in 2008 for a children's survey in 2009 will only be necessary if there are changes to survey specifications.

Pilot costs in 2007 for the adult survey in 2008 would also be expected to be minimal given that the methodology will be essentially the same as that used for children. However, there could be significant pilot costs in 2010 for the 'special' group to be surveyed in 2010.

The proposed annual sample size of 2,000 will enable reporting of national level data by NRV age/sex group for *all* survey measures including intake of foods classified at the major food group level in the first reporting cycle.

More detailed reporting of food intake will be possible after the second cycle for both children and adults. Reporting of data by state will be possible for adults, without any over-sampling, after the second cycle except for Tasmania and the Territories.

Several alternative options have also been costed. These involve over-sampling specific population sub-groups or increasing the number of recall days from two to four. This adds approximately \$0.4-\$0.6 million to the survey's annual costs. Omitting the biological measures from 25% of the sample in a survey year reduces the survey cost by approximately \$0.2 million.

Other major annual costs include approximately \$0.5 million for the national coordination centre and \$0.25 million to enhance the food composition database. A smaller annual amount is also allocated to maintaining the *Apparent Consumption of Foodstuffs* data series.

## glossary

<b>ABS</b>	Australian Bureau of Statistics	<b>NATSINSAP</b>	National Aboriginal and Torres Strait Islander Nutrition Strategy and Action Plan
<b>AFNMU</b>	Australian Food and Nutrition Monitoring Unit	<b>NHMRC</b>	National Health and Medical Research Council
<b>AGPS</b>	Australian Government Publishing Service	<b>NHPC</b>	National Health Performance Committee
<b>AIHW</b>	Australian Institute of Health & Welfare	<b>NHS</b>	National Health Survey
<b>ANDB</b>	Australian Nutrient Data Bank	<b>NNS</b>	National Nutrition Survey
<b>CATI</b>	Computer Assisted Telephone Interviewing	<b>NPHIWG</b>	National Public Health Information Working Group
<b>CATI TRG</b>	Computer Assisted Telephone Interviewing Technical Reference Group	<b>NPHP</b>	National Public Health Partnership
<b>CSIRO</b>	Commonwealth Scientific and Industrial Research Organisation	<b>NRV</b>	Nutrient Reference Values
<b>DOHA</b>	Department of Health & Ageing	<b>NUTTAB</b>	Australian nutrient reference database
<b>EWA</b>	Eat Well Australia	<b>OECD</b>	Organisation for Economic Co-operation and Development
<b>FAO</b>	Food & Agriculture Organisation of the United Nations	<b>SEIFA</b>	Socio-Economic Indexes for Areas
<b>FNMS</b>	Food and Nutrition Monitoring and Surveillance System	<b>SIGNAL</b>	Strategic Inter-Governmental Nutrition Alliance
<b>FSANZ</b>	Food Standards Australia New Zealand	<b>SIGPAH</b>	Strategic Intergovernmental Forum for Physical Activity & Health
<b>HES</b>	Household Expenditure Survey	<b>TGA</b>	Therapeutic Goods Administration
		<b>WHO</b>	World Health Organization

## introduction

In late 2004, Nexus Management Consulting was engaged by the Australian Government Department of Health and Ageing, on behalf of the Strategic Inter-Governmental Nutrition Alliance (SIGNAL), to develop a framework and business case for an ongoing, sustainable national food and nutrition monitoring and surveillance system (see appendix 1 for an overview of the project and terms of reference).

This report has been prepared following extensive consultation with a range of national stakeholders (see appendix 2 for a list of stakeholders consulted, appendix 3 for a summary report on the submissions on a discussion paper prepared during the project, appendix 4 for a summary of the international consultations and appendix 5 for a summary of the expert panel consultations).

The report is structured as follows:

- section 1 states the need for a national food and nutrition monitoring and surveillance system
- section 2 sets out a proposed framework for a national system
- section 3 provides details on priorities for each of the elements of the proposed framework:
  - food supply
  - food purchasing/acquisition
  - food and physical activity behaviours
  - nutritional status
- section 4 proposes the governance arrangements for a national system;
- section 5 suggests steps for implementing the framework;
- section 6 costs the proposed framework and system; and
- section 7 provides indicative costs for a series of optional variations to the proposed framework.

# 1 the need for a national system

An adequate and varied diet is important for normal growth and development, maintenance of good health and the prevention of chronic disease; as is the need for up-to-date, reliable and timely data to provide a basis for informed decision making and regulation by government. Despite this, and clear evidence for the contribution of nutrition to the considerable burden of preventable ill health, Australia's policy makers do not have adequate information to develop cost-effective food and nutrition policy and regulation.

For example, policy makers, regulators and others do not have ready access to the information needed to answer questions such as:

- Is a nutritionally adequate food supply available and accessible to all segments of the Australian population?
- Are there structural barriers to equitable food access within Australia that need to be addressed?
- Is the composition of foods in the food supply changing and are the changes associated with increased or decreased risk of nutrition related ill health?
- What are the implications of technological and regulatory changes on the composition of the food supply, for population health and for Australia's food industry?
- Are the risks of exposure to bioactive compounds in food acceptable, at current levels of consumption?
- Is the composition of the overall diet changing and is this associated with increased or decreased risk of morbidity, chronic disease and mortality?
- Are food habits and nutrient intakes of the population changing in line with dietary targets and guidelines and nutrient reference values developed for Australia and New Zealand?
- What are the current trends in eating patterns that may affect food industry growth and innovation?

- Is the nutritional status of the population changing and is this associated with increasing or decreasing risk of morbidity, chronic disease and mortality?
- Is nutritional status different for different population sub-groups and what environmental, socio-economic and personal factors are associated with these differences?
- Is the use of nutritional supplements changing, and what are the implications for nutrient intake, nutritional status and the health of the population?

### 1.1 THE CONTEXT

The need for a national food and nutrition monitoring and surveillance system has long been recognised. Regular monitoring of the food and nutrition system was identified as one of four priority objectives of the *Food and Nutrition Policy for Australia* adopted in 1992. A number of Australian Government-funded initiatives have contributed towards this objective since 1992, including:

- *Australia's Food and Nutrition*, AGPS, 1994
- *Plan for a National Food and Nutrition Monitoring Program*, AIHW, 1995
- *National Nutrition Survey Australia 1995*, ABS 1997-1998 (4801.0 to 4805.0)
- *Australian Food and Nutrition Monitoring and Surveillance Project*, AFNMU/DOHA, 1999-2001.

The need for a national food and nutrition monitoring and surveillance system has also been acknowledged in a number of relevant policy documents developed since 2001.

- *Blueprint for Nation-Wide Surveillance of Chronic Diseases and Associated Determinants*. Prepared by National Public Health Information Working Group (NPHIWG) for the National Public Health Partnership in June 2005, this document sets out the essential elements of a national surveillance system and highlights as a *high priority* the development of integrated data on nutrition,

physical activity and physical and biomedical measurements<sup>1</sup>.

- *Healthy Weight 2008: The National Action Agenda for Children and Young People and their Families*. This document set as a national action in 2004 to 'scope and develop specifications for national nutrition and physical activity monitoring and surveillance systems'<sup>2</sup>.
- *Rural, Regional and Remote Health. Information Framework and Indicators, Version 1, 2003*<sup>3</sup>. This document outlined a framework for describing rural health information and a set of indicators against which to report on rural health, modelled on the National Health Performance Framework<sup>4</sup>.
- *A proposal for the Australian Health Measurement Survey Program*. This document proposed a series of cross-sectional health measurement surveys that include physical and biochemical measures of health status and potentially modifiable risk factors and determinants of health including nutrition<sup>5</sup>.
- *Eat Well Australia A Strategic Framework for Public Health Nutrition 2000/2010 (EWA)*: this document, developed by Strategic Inter-Governmental Nutrition Alliance (SIGNAL) for the NPHP, describes key action areas for public health nutrition including the need for monitoring progress in food and nutrition<sup>6</sup>.
- *National Aboriginal and Torres Strait Islander Nutrition Strategy and Action Plan 2000/2010 (NATSINSAP)*, developed by SIGNAL for the NPHP as a companion document to *Eat Well Australia*: this document addresses key action areas for ATSI populations

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<sup>1</sup> *Blueprint for nation-wide surveillance of chronic diseases & associated determinants, NPHIWG, 2005, p.17*

<sup>2</sup> *Healthy Weight 2008, DOHA, 2003. p.19.*

<sup>3</sup> *Rural, Regional and Remote Health. Information Framework and indicators. Version 1 AIHW, PHE No 44, 2003, pp.18-35.*

<sup>4</sup> *National Health Performance Framework Report, NHPC, Queensland Health, 2001.*

<sup>5</sup> *A proposal for the Australian Health Measurement Survey Program. AHMS Working Paper Series No. 8. PHIDU, Adelaide, 2003.*

<sup>6</sup> *Eat Well Australia A Strategic Framework for Public Health Nutrition 2000/2010. NPHP, 2001.*

including the need for national food and nutrition information systems<sup>7</sup>.

- *National Public Health Information Development Plan*, prepared jointly by AIHW and NPHIWG: the purpose of this document was to identify the actions needed to improve public health information in Australia<sup>8</sup>.
- *Be Active Australia: A Framework for Health Sector Action for Physical Activity 2005-2010*: a national physical activity action plan developed by the Strategic Intergovernmental Forum for Physical Activity and Health (SIGPAH) for the NPHP aims to provide a national focus on physical activity for health that responds to the need for urgent action to support all Australians in achieving improved and sustainable health outcomes.

As recently as March 2005, the Australia and New Zealand Food Regulation Ministerial Council asked the Australian Health Ministers' Conference to consider the establishment of a national food and nutrition monitoring and surveillance system as a high priority. This was in recognition of their need to have up-to-date data to assist in formulating food regulation policy.

Despite these long-standing and regular calls for a national system, the collection and reporting of food and nutrition information remains *ad hoc* and un-coordinated in Australia.

Numerous countries with similar public health problems to those currently encountered in Australia already have in place an ongoing program of food and nutrition monitoring. While the specific details of these programs vary from country to country, a program of regular national nutrition surveys is central to all of them. For example, health and food regulatory authorities in New Zealand, the United Kingdom, the Netherlands and the United States of America all consider that such a program provides the only reliable means of

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<sup>7</sup> *National Aboriginal and Torres Strait Islander Nutrition Strategy and Action Plan 2000/2010*, NPHP, 2001.

<sup>8</sup> *National Public Health Information Development Plan*. AIHW, Cat. No. HWI 22, 1999.

collecting the detailed data on individuals needed for the development of soundly based food and nutrition policy and regulation (see appendix 4).

## 1.2 COSTS AND RISKS ASSOCIATED WITH NO SYSTEM

Stakeholders consulted during the development of the framework noted a number of significant costs and disadvantages of not having a national FNMS.

Firstly, a number of stakeholders commented that, in the absence of current information, there is a reduced ability to appropriately *develop, target and monitor* the outcomes of public health nutrition interventions. While health authorities, nationally and internationally, are promoting evidence-based policies and practice, Australia is often reliant on data collected in 1995 as evidence to support the development of recommendations and practice some ten years later.

A related risk is the late detection of new, or accelerating, nutrition problems in the community, and the lack of trend information about the possible causes. For example, *are changes in obesity levels linked to changes in certain diet patterns or exercise or both? Is there an emerging problem with, for instance, Vitamin D, iodine or folate?*

Secondly, a number of stakeholders highlighted particular concern that food regulatory decisions are being based on increasingly outdated data from the 1995 National Nutrition Survey. Effective risk assessment for food additives, fortification with vitamins and minerals, chemical residues, novel foods and so on cannot be carried out without current data on food and nutrient intake. This is because risk analysis depends on accurate dietary exposure assessments which are only possible if there is current knowledge of food intake and composition, particularly of foods which have emerged recently in the marketplace.

From industry's standpoint, there is a concern that the introduction of new technologies, initiatives or innovations may be inhibited because, in the absence of current data, risk assessments must err on the side of caution.

Thirdly, given the considerable resources that have been allocated to developing and implementing initiatives such as *Healthy Weight 2008* and *Eat Well Australia*, it is imperative that changes in the food and nutrition situation are monitored over time, and that these trends are related to the objectives of national public health policies and programs.

Other risks arising from the absence of a coordinated food and nutrition monitoring and surveillance system include:

- the 'invisibility' of some food and nutrition problems
- an inability to develop policy and program responses leading to policy inertia
- an inability to determine clear priorities for resource allocation
- ineffective/inappropriate food regulation
- lack of credibility of public health messages
- an inability to properly assess existing policy initiatives and programs
- an inability to reliably determine trends over time.

Moreover, in the past decade, experience has shown that reliance on ad hoc and stop-gap approaches, despite considerable expenditure of resources, has led not only to loss of corporate memory and staff with the unique skills required for nutrition monitoring but also to an increasingly inadequate information base for evidence-based decision making.

For the overwhelming majority of the wide range of stakeholders consulted during the development of this report, the costs and risks of not having a system far outweighed the costs of establishing an ongoing and sustainable food and nutrition monitoring and surveillance system.

### 1.3 HOW TO SELL THE CASE FOR AN ONGOING SYSTEM

The international consultations revealed that there were several critical factors when trying to sell the case for an ongoing food and nutrition monitoring system/survey program:

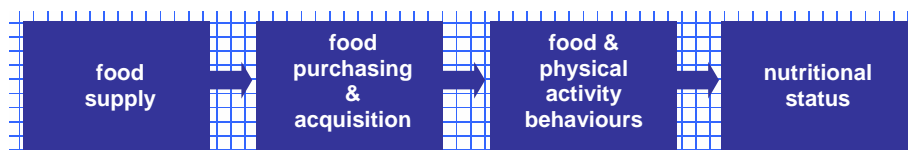
- the need to show clearly that the information that will be collected cannot be provided from another source;
- the need to highlight and list ALL the ways in which the data can be used with examples of topical issues;
- the need to find champions within the principal funding agency/ies;
- the need to get key stakeholders talking to relevant Ministers; and
- the need to start small.

## 2 the framework for a national system

This section sets out a framework for a national food and nutrition monitoring and surveillance system. The framework is derived from the conceptual model of the relationship between food and health that was published in the 1995 plan for a national food and nutrition monitoring program<sup>9</sup>. The model, depicted in figure 1, contains four elements:

- **food supply:** information on the availability of foodstuffs and the composition of Australian foods
- **food purchasing/acquisition:** information on expenditure on food, types of food purchased, price and quantities bought; food security
- **food and physical activity behaviours:** information on food and nutrient intakes; physical activity
- **nutritional status:** information on individuals' biological measures.

**Figure 1 – framework for a national food & nutrition monitoring system**



During consultations on the development of this report, there was remarkable consistency among the diverse range of stakeholders on one point: a comprehensive, national system requires ongoing information on each of the elements.

There was also general support for a number of principles to guide the development of the system:

- start off with a minimalist-baseline model with the most important elements that can be built upon over time
- fundamental to the system is the establishment of an ongoing comprehensive dietary survey program

<sup>9</sup> Coles-Rutishauser, I & Lester, I *Plan for a National Food and Nutrition Monitoring Program*. Australian Institute of Health & Welfare, November 1995.

- the system should include the collation and secondary analysis of existing data collections
- to be sustainable, the system requires a permanent, dedicated coordinating unit.

The framework in this report is founded on these principles. The framework does not purport to address *all* of the information needs and suggested priorities that emerged from consultations on a draft framework. Rather, a ‘minimalist’ or baseline model that could be built upon over time is proposed. This baseline framework comprises seven broad proposals for improving data on food and nutrition. A set of institutional and governance arrangements is proposed to underpin the system’s viability and sustainability.

**Figure 2 - Summary of proposals for implementing a baseline national food & nutrition monitoring**

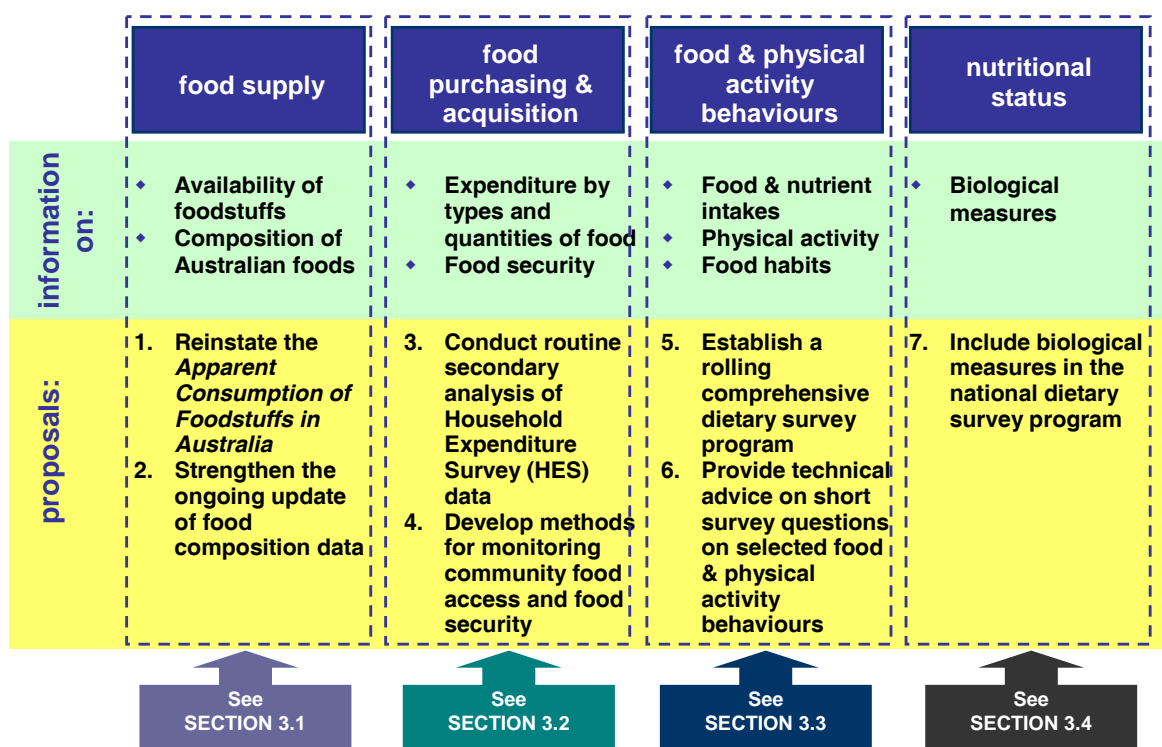


Figure 2 provides an at-a-glance summary of proposals, under each element, for the development of a national food and nutrition monitoring and surveillance system. The information on the proposals in figure 2 is elaborated in section 3.

## 2.1 USES OF A NATIONAL SYSTEM

The potential stakeholders in, and uses of data from, an ongoing coordinated FNMS are shown in table 1. These uses have been adapted from work by the Ministry of Health in New Zealand and incorporate feedback from stakeholders and the steering committee during the development of this framework.

**Table 1 Potential users and uses of data from a food & nutrition monitoring system<sup>10</sup>**

Stakeholder	Uses
Commonwealth Government	<p>Food:</p> <p>Development, monitoring and enforcement of food regulations and standards (food safety risk assessment, food composition database maintenance and labeling requirements), development of fortification and health claims policy, and other food regulation policy issues, contribution to international food standards (Codex), provision of Ministerial advice.</p> <p>Nutrition:</p> <p>Development of national food and nutrition guidelines, nutrient reference values, nutrition goals and targets, nutrition policies, strategies and programs (e.g. EWA &amp; NATSINSAP), health promotion, provision of nutrition services, Ministerial advice.</p> <p>Nutrition related health status:</p> <p>Development of health strategies (e.g. for chronic disease prevention and addressing inequalities between population sub-groups), meeting international reporting obligations (OECD/WHO/FAO).</p>
State & Territory & public health units & primary care providers	<p>Strategic development of public health nutrition</p> <p>Development of nutrition education, health promotion programs</p> <p>Enforcement of food standards</p> <p>Development of regional and specific settings food and nutrition health policies and strategies</p> <p>Guidance for service planning, resource allocation, and a basis for client advice.</p>

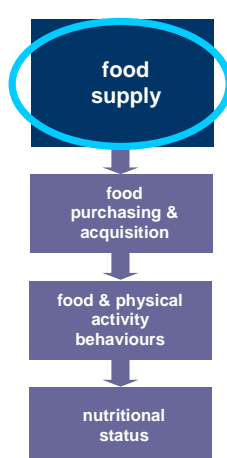
<sup>10</sup> Adapted from Food and Nutrition Monitoring in New Zealand, Public Health Intelligence Occasional Bulletin No 19, Ministry of Health, Wellington 2003 (<http://www.moh.govt.nz>)

Stakeholder	Uses
Food industry ('paddock to plate')	Guiding primary produce research and development and marketing and distribution strategies Food product development, labeling, and marketing (Australia and overseas) Research, development and innovation
Non-government and consumer organisations	Basis for nutrition and health promotion policies and programs and provision of advice to the general public
Research and academic institutions	Identifying relevant directions for applied research including methods research for health and nutrition monitoring and for health professional training

### 3 proposals for the core elements of a food and nutrition monitoring and surveillance system

As noted in section 2, the framework presented in this report is a baseline model for a minimum data set to meet user needs. Accordingly, the proposals described in this section can be regarded as core elements that could be expanded and built on over time.

The proposals are considered in turn for each of the four elements of the framework introduced in section 2.



#### 3.1 THE FOOD SUPPLY

Information on food supply falls into two categories:

- information on changes in foodstuffs available for consumption
- information on changes in the composition of foods.

These two elements are considered in turn.

##### 3.1.1 Foodstuffs available for consumption:

In Australia, the primary time series data for describing quantitative changes in the food supply over the last half-century has been the *Apparent Consumption of Foodstuffs and Nutrients* series, published by ABS from the mid-1930s until 1993-94 (ABS Catalogue No. 4306.0, 1997). AIHW took over responsibility for publication of the nutrient data from 1994-95 onwards while the ABS continued producing the *Apparent Consumption of Foodstuffs* series until the year 1998-99 (ABS Catalogue No. 4306.0, 2000).

The series was based on a compilation of data from a wide range of sources, the scope and coverage of which differed for different data items. Sources included not only ABS statistical collections such as the Agricultural Commodity Survey and the Survey of Inventories and Production—Food and Beverage Manufacturers, but also data from industry associations and government regulatory authorities. The original purpose of the series was to produce national food balance sheet data, which take account of annual production, imports, exports and non-food uses to

estimate the amount of all food available for consumption in Australia in kg per head of population, per year.

While much of the basic commodity data are still collected and published (Agricultural Commodities, ABS Catalogue No. 7121.0), and used for international reporting purposes, an ABS review of the sources and resources needed to compile reliable data on the total available food supply led to the Apparent Consumption of Foodstuffs compilation being discontinued from 2000. During consultations on the development of this report, a number of stakeholders saw the reinstatement of this series as a priority for a national monitoring and surveillance system. This was in recognition of the value that a long-standing time series has as a tool for monitoring key changes in the overall Australian food supply.

#### **PROPOSAL 1:**

**Reinstate the compilation and reporting of time series data *Apparent Consumption of Foodstuffs in Australia* from 2000/03.**

##### **Key features:**

- **Publication:** five yearly, to reflect changes in the frequency/sample size of some of the statistical collections used by ABS to compile the data.
- **Nutrient estimates:** Once the series has been re-instated, investigate the need and feasibility of using the data to estimate macronutrients and alcohol available for consumption (e.g. fat, carbohydrates and protein).

(Note: Estimation of micronutrients from this collection is more difficult because of the need to identify foods in greater detail than is available from the majority of commodity surveys).

### **3.1.2 Food Composition Data**

A wide range of stakeholders noted the fundamental importance of accurate food composition data to:

- identify trends in the nutrient (and non-nutrient) composition of the food supply over time
- derive nutrient intakes of the population from dietary survey data
- estimate risks of overexposure to specific compounds in food.

While FSANZ currently has responsibility for maintaining the Australian Nutrient Data Bank (ANDB), this is not its core function, which is the development of food standards. FSANZ has only been able to direct limited funds from its core budget for analytical work to fill data gaps for nutrients or other bioactive substances that are the subject of applications or proposals to amend the food standards code.

Accordingly, there is a need for an ongoing program of regular food composition data review and food analyses. Specifically, this could entail:

- updating ANDB and the 1995 survey database AUSNUT with key new foods and data for existing foods available in various fortified forms for use in the first round of the proposed rolling survey program (see section 3.3)
- acceleration of the program for date stamping and archiving of food composition data
- commissioning 'catch up' analyses to fill gaps for the baseline data set
- commissioning analyses for new foods reported in the rolling survey program
- instituting a program for regular analysis of key foods to assess trends in composition in the food supply.

#### PROPOSAL 2:

##### Strengthen the ongoing maintenance and updating of food composition data.

###### Key features:

This proposal is over and above the responsibilities and functions of FSANZ in maintaining and updating the Australian Nutrient Data Bank (ANDB), and other food composition data bases derived from it (e.g. NUTTAB).

- **Preparation of baseline survey data base and regular updates for priority nutrients, non-nutrients and key foods** should be on a 'key foods basis'; that is, where composition data are lacking for foods that are commonly consumed, as identified in previous surveys or market information, or for foods which may present a food safety risk. Among 'key foods', the highest priority for updates are for nutrients or non-nutrients of current or emerging public health concern. This would include chemical analyses of fortified foods to verify their nutrient content, given their potential to contribute substantially to intakes of particular nutrients. It is recommended that criteria for determining priorities for updating food composition data be based on those recommended for New Zealand.

- **Acceleration of 'date-stamping' and archiving** of survey databases rather than continual substitution of latest figures, so that changes in food composition between survey reports can be identified and monitored over time.
- **Collaboration with New Zealand:** Because food standards for both Australia and New Zealand are now developed by FSANZ the food composition database programs of both countries could be coordinated to provide considerable savings, and avoid duplication of effort and gaps in database priorities.



### 3.2 FOOD PURCHASING/ACQUISITION

Information required on food purchasing and acquisition falls into two categories:

- information on changes in expenditure, types of food and quantities of food purchased and price
- information on food security<sup>11</sup>.

These two elements are considered in turn.

#### 3.2.1 Expenditure, types, price and quantity

In Australia, information about household expenditure on food is collected at periodic intervals as part of the ABS Household Expenditure Survey (economic survey program). The data from this survey are currently under-utilised for food and nutrition monitoring in part because the HES does not include data on the quantity of foods purchased and because the description of foods is not sufficiently detailed to derive nutrient/non-nutrient content.

Recognising the value of information about household food purchasing to an understanding of trends in household food security across socioeconomic strata, and the potential value of the ABS periodic *Household Expenditure Survey* and the ABS social survey program for this and related purposes, it is proposed that secondary analyses of data from the HES be routinely included as part of the food and nutrition monitoring system.

<sup>11</sup> Food security refers to 'the accessibility and availability of nutritionally adequate and culturally acceptable food for all people by socially acceptable means'

**PROPOSAL 3:****Conduct routine secondary analyses of Household Expenditure Survey data****Key features:**

Routine secondary analyses of household expenditure survey data could provide estimates, over time, of total household expenditure on food and selected food groups, and the proportion of income spent on food and particular food groups by household characteristics (e.g. level of disadvantage, region, etc)<sup>12</sup>. The proposed national coordination centre (see section 4) could undertake such analyses, commission ABS to do so, or liaise with another group to conduct and report these analyses.

- **Explore with ABS the potential to extend the collection and reporting of HES data:** to include quantities of foods purchased, and to report finer food categories suitable for nutrition purposes. New survey technologies may support this addition with little extra cost. Such data would enable the comparisons of quantities of various types of foods purchased across households with different characteristics, as well as calculation of prices paid by households for similar foods, and the estimation of household 'diet quality' by nutrients available for consumption in households of various types. Such data would enable reporting of the extent to which household food purchasing habits are changing relative to population nutrition recommendations, (e.g. dietary guidelines, the *Australian Guide to Healthy Eating*) and the types of households most at risk of food insecurity<sup>1</sup>.

### 3.2.2 Food security

Over the last decade there has been a growing focus on factors at the community level, which may limit access to an affordable and quality food supply for some households. This is often described in terms of food security.

While some food access issues (e.g. the prices of basic foodstuffs in various types of food outlets, and the price of a market basket of foods which meet the dietary guidelines) are well described for some rural and remote communities, including those with a high proportion of Indigenous residents, there is limited

<sup>12</sup> similar to ad hoc secondary analyses reported previously by Powles J et al Health related expenditure patterns in selected migrant groups: data from the Household Expenditure Survey 1984. *Community Health Studies* 1990;XIV(1):1-7; and by Stickney et al Food and Nutrition in NSW; a catalogue of data, NSW Health Dept. 1994

*national* information on aspects of food access that directly relate to food security. In fact, the only current national information about food insecurity in Australia comes from one question in the 1995 National Nutrition Survey and national health surveys.

During stakeholder consultations on the proposed framework, the inclusion of strengthened national information on food security was seen to be a priority. However, it was acknowledged that food access and security issues are highly localised and may be beyond the purview of a national monitoring and surveillance system.

Accordingly, in line with the principle that the proposed framework represents a 'minimalist' model, the following proposal is developmental in nature and suggests drawing on the New Zealand experience.

#### **PROPOSAL 4:**

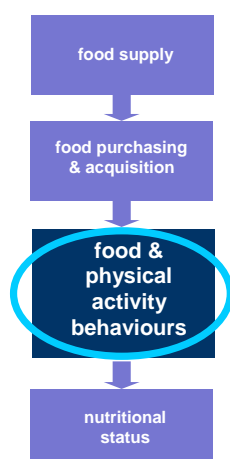
#### **FNMS coordinating unit develop methods for monitoring community food access security and food security**

##### **Key Features:**

The proposed national coordination centre (see section 4) working with other groups towards the use of appropriate and comparable methods for monitoring community food 'access' in a range of communities across Australia and potentially linking with the index of retail price surveys.

Survey questions on household and individual food insecurity similar to those used in New Zealand need to be developed and tested. This could involve:

- liaison with ABS in association with a research group to undertake the testing of the food security survey questions used in new Zealand ;
- liaison with ABS regarding integration of these questions into the most appropriate survey (e.g. the social survey program); and/or
- liaison with NPHIWG and the national CATI technical reference group on recommendations for food security monitoring in states and territories.



### 3.3 FOOD AND PHYSICAL ACTIVITY BEHAVIOURS & NUTRIENT INTAKE

It is proposed that information on food and physical activity behaviours in the national food and nutrition monitoring and surveillance system comprise two components:

- a continuous program of comprehensive dietary surveys
- short survey questions/modules included in health and other population surveys on behaviours related to food and physical activity.

These two elements are considered in turn.

#### 3.3.1 Continuous dietary survey program

The overwhelming majority of stakeholders consulted expressed the need for an ongoing, comprehensive dietary survey program, including physical activity measures, as the fundamental component of a monitoring system. Indeed, for many stakeholders, a nutrition survey was synonymous with a food and nutrition monitoring and surveillance system.

The continuous survey program proposed differs from previous surveys conducted in Australia in that a sample would be recruited every year rather than once every five or ten years. The advantages of this approach are that once established the program would be ongoing, allow the retention of critical expertise and be flexible enough to accommodate emerging issues. Because recruitment is ongoing the size of the proposed annual sample is much smaller than for a one-off survey, but would generate data for 10,000 individuals after 5 years and 20,000 after ten years.

A continuous survey program was seen as the only way to obtain regular, detailed information for use in monitoring progress in chronic disease prevention, as well as to formulate and update regulations to protect the safety of the food supply, and to identify emerging health and nutrition issues that require new policy responses.

To date, there has been no systematic or coordinated approach to the collection and reporting of information about the food and physical activity behaviours or the nutritional content of the diets of the Australian population. The only nationally representative data on food and nutrient intakes was collected in the 1995 National Nutrition Survey (NNS), information which is now outdated for policy development, and for estimating current risks of proposed changes in food regulations.

While various agencies including the ABS and state and territories collect limited information in health surveys and have established mechanisms to work towards better selection and standardisation of survey measures, such groups have no ongoing access to technical expertise in food and nutrition monitoring and surveillance. Consequently, as noted by many stakeholders, there is no standardised approach to the measurement or reporting of these behaviours, limiting their comparability and use in monitoring trends over time.

While there was widespread agreement on the need for a continuous comprehensive dietary assessment survey, there was considerable diversity of views on the structure and design of the survey program. In line with the principle that the FNMS be sustainable and be likely to win funding support, the proposed continuous survey program represents a baseline model, which is elaborated in proposal 5 below:

The model is based on a sample of 2,000 adults or children recruited every year from all states and territories throughout the year to provide at least 200 individuals in the primary sub-groups of interest (e.g. nutrient reference value age-sex groups, SEIFA quintiles by sex).

The content of the survey will involve:

- a 24 hour multiple pass recall procedure followed by a second 24 hour recall conducted by telephone interview
- a short set of standardised questions on food and physical activity behaviours

- measured weight and height.

This baseline model is costed in section 6.

It is important to note that the baseline model is not totally comprehensive. It does not include special groups for whom different approaches for sampling and/or dietary assessment are required (e.g. for the 0-2 year age group, particularly on infant feeding practices; Indigenous Australians; people with physically and intellectual disabilities; hard-to-reach disadvantaged groups).

Moreover, as discussed in section 5, the proposed baseline sampling methodology will not yield sufficient numbers for reliable estimates to be made for the territories, smaller states and some population sub-groups after the first round. Further, the baseline survey structure would require two rounds for adults and three rounds for children before reliable estimates for infrequently consumed foods will be possible.

Section 5 provides some options for ways in which these issues could be addressed:

- over-sampling smaller jurisdictions
- over-sampling key migrant groups.
- increasing the number of 24 hour recalls from two to four in the first survey round for children.

Section 5 also considers the possibility of a fourth option of collecting biological samples only in every second sampling year. This approach could be advantageous particularly during the first two years of the survey program by reducing the demands on both survey staff and respondents until the first population sampling cycle has been completed.

The indicative costs associated with these four options are described in section 6. Cost estimates for special groups such as 0-2 years will need to be developed individually to take account of the differences in approaches for sampling and/ or dietary assessment required for each group.

**PROPOSAL 5:**

**Establish a continuous comprehensive dietary survey program, including assessment of physical activity (see section 6 for description of basic option and options for modifying)**

**Key Features:**

- **Design:** A sample of 2,000 adults or children will provide national estimates of food and nutrient intakes after one year for males and females:
  - by the age groups defined by NHMRC nutrient reference values for Australia.
  - by SEIFA quintiles
  - by remote, rural and urban place of residence
  - by season AND
  - some regional and population sub-group estimates.
- **Data collection:** should be continuous, that is, not a one-off survey with no plans for a repeat. This could be achieved either by:
  - sequential surveying of specific sub-groups e.g. children in selected years, adults in others) or by
  - surveying of representative samples of the whole population with reporting on population sub-groups when the sample size is adequate for that purpose.The costings in section 6 are based on the first of these two approaches.
- **Reporting cycle:** A child/adult sequential survey program could report every three-five years as per the schedule in section 5.
- **Stand-alone or linked:** The survey program could either be stand-alone or 'added onto existing surveys that have continuous data collection', such as the ABS National health survey. A stand-alone survey has been costed in section 6.

**Survey content**

- **Dietary assessment:** would be based on the 24 hour multiple pass recall procedure used for the 1995 NNS with a second 24 hour recall conducted by telephone interview on all respondents (CATI). This would provide more precise information for determining the population distribution of usual intake for foods, as well as nutrients, and enable the food regulatory agency to obtain more stable estimates of the proportion of the adult population at risk of over-consumption of selected bioactive compounds of interest. (NB: development of specialised methods would be required for sampling and to collect information about dietary intake for the 0-2 year age group and other groups not included in the baseline model).
- The 24 hour recall will include all foods and beverages consumed including nutrient supplements and water and the TGA number will be used to identify supplements.
  - A food frequency questionnaire will be included to assess usual frequency of intake of foods and to identify non-consumers of specific foods.

- **Physical activity:** a short set of standardised questions of known validity, capable of at least classifying individuals into sedentary, light, moderate or vigorous physical activity. In the context of 24-hour recall dietary assessment, the usual level of physical activity information is useful for interpreting information about energy intake (i.e. to assess under-reporting). The consultation phase, however, also indicated a strong call for a physical activity component to be included in the monitoring system because of its importance as an independent predictor of health status (see section 3.3.2).
- **Demographic and anthropometric information:** to enable description of population sub-groups, and weight status (measured height, weight, waist circumference). Blood pressure measurements would also be desirable.

### 3.3.2 Short survey questions and modules on selected food & physical activity behaviours.

Short survey questions are useful for monitoring *specific* aspects of food and physical activity behaviour as well as progress towards dietary and physical activity recommendations. The short survey questions can be used in a wide range of survey vehicles, including CATI surveys and as part of existing health surveys.

However, to be useful for *national* nutrition monitoring the same questions need to be used over time and between surveys. For this reason it is proposed that existing mechanisms for the development of such questions be strengthened with technical input from the national FNMS coordination centre.

Moreover, it is crucial that short survey questions about food habits are periodically evaluated/re-evaluated against more detailed dietary assessment methods to assess their performance and how this may change over time. For this reason, it is proposed that the comprehensive dietary survey program discussed in section 3.3.1 include approximately six to 10 questions on selected food behaviours.

There was strong support during consultations on the draft framework for the inclusion of short questions on physical activity, both to monitor trends in key behaviours as outlined in national policy guidelines on physical activity, and to assist in interpreting the dietary intake data (particularly to assess under-reporting of energy intake). The key goals would be to develop age-appropriate short questions on both food and

physical activity behaviours, validate them periodically, maintain consistency over time to enable trends to be determined over the long-term, and to move towards standardisation of survey questions on food and physical activity behaviours, across surveys with similar objectives.

Standardised approaches to analysis and reporting would also be desirable, e.g. for infant feeding practices as measured in the NHS and by State CATI surveys. Physical activity questions should be selected in consideration of instruments available and those in use currently (see appendix 5). The validity of the physical activity survey questions selected should be assessed and periodically re-evaluated, using a relatively simple but more detailed physical activity assessment in a sub-sample of the survey population, such as daily pedometer readings (see appendix 5).

#### **PROPOSAL 6:**

##### **FNMS coordination centre provide technical advice on short survey questions on selected food and physical activity behaviours**

###### **Key Features:**

**Process:** FNMS provide technical expertise to set priorities for food and physical activity behaviours to be monitored, and develop/select appropriate questions or modules for these for inclusion in national and state/territory population health and school surveys. This should enable frequent reporting on selected behaviours, including comparisons between regions, and population sub-groups.

This could be achieved through establishing links between the proposed national coordination centre and the agencies and coordinating groups who plan or oversee chronic disease-related monitoring, e.g. NPHIWG, or particular data collections or surveys, e.g. NPHP National CATI technical reference group, ABS National Survey Programs, state and territory health and education surveys.

**Validity Testing/calibration:** Recommend and/or undertake periodic testing of food and physical activity survey questions against more detailed measures of food and nutrient intake (preferably include food habits questions in the national comprehensive dietary surveys, along with independent measures of physical activity, e.g., pedometer checks) to assess their validity and how this may change over time. Report findings and make recommendations regarding questions, response categories, analysis and reporting.



### 3.4 NUTRITIONAL STATUS

Dietary surveys can only identify dietary inadequacies/excess by comparison with nutrient reference values (NRV). Moreover, for some nutrients dietary assessment is not a good indication of nutritional status. Biological measures of nutritional status are therefore needed to assess/confirm the extent of the adverse effects on the health of the population. For this reason it is proposed that the national monitoring and surveillance system include relevant biological measures of nutritional status and that these are best collected in the context of a comprehensive dietary survey.

#### PROPOSAL 7:

**Include biological measures in the ongoing dietary survey program.**

##### Key Features

**Criteria for selection of biological measures:** for biological measures other than weight and height, which are fundamental to the interpretation of dietary data, inclusion of such measures is on the basis of a set of agreed criteria, and with advice of a committee with technical expertise in nutritional status measurement and surveying, chronic disease prevention, and policy development.

The following criteria are suggested to guide the selection of biological measures:

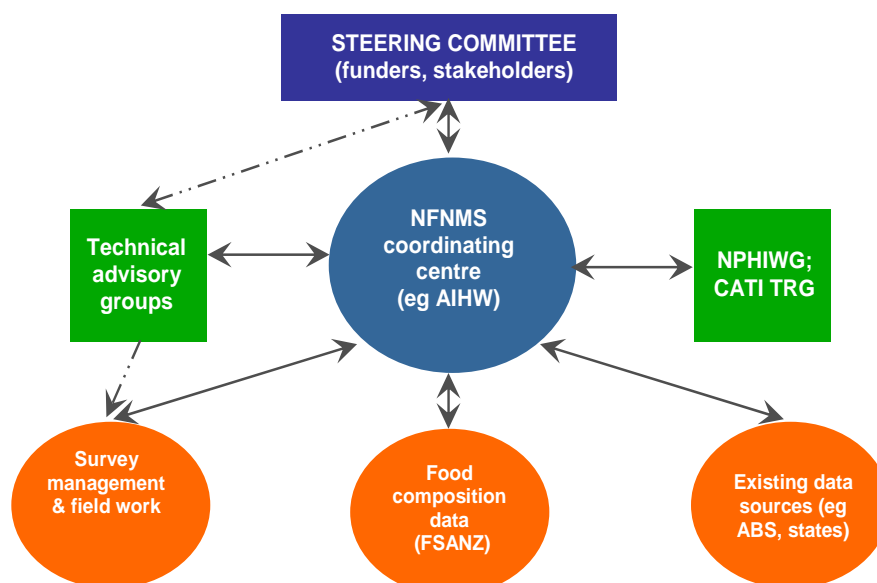
- nutrients for which there is reliable evidence of inadequacy in a significant proportion of one or more population sub-groups (e.g. iodine)
- recognised risk factors for diet related chronic disease (e.g. blood lipids, waist circumference, blood pressure)
- nutrients of public health significance for which factors other than diet (e.g. supplement intakes, biological variation, smoking, diseases, drug-nutrient interactions, etc) influence nutritional status ( e.g. folate and iron)
- for nutrients where there are problems in estimating appropriate/adequate intake from food intake data (e.g. sodium, carotenoids).

**Sample restriction:** In recognition of the tendency of biological measures to reduce survey response rates, particularly when conducted in association with other surveys, and the high cost of blood collection, handling and assays, it is recommended that biological measures be conducted on the smallest sample required to show key differences of interest, and that measures only be done on relevant population sub-groups, e.g. not everyone should be tested for iron, or iodine. We have assumed a sample of 500 for costing-see appendix 7.

## 4 institutional and governance arrangements

Figure 3 depicts a model of institutional and governance arrangements for the proposed national food and nutrition monitoring and surveillance system.

**Figure 3 – A model of governance and institutional arrangements for a national food and nutrition monitoring and surveillance system**



The key features of the model are:

- a small national coordination centre or unit with responsibility for coordination of the system, reporting and dissemination
- a steering committee comprising the funders and stakeholders
- technical groups to advise on special aspects of the FNMS (e.g. survey design, sampling)
- a contractual relationship with a specialist agency to manage and conduct the rolling survey program
- coordinating relationships with other agencies that provide data for the FNMS (e.g. FSANZ – food composition data; ABS – national health survey data)
- advisory links with existing bodies responsible for the development of health data standards and collections (e.g. NPHIWG, CATI TRG).

Each of these key features shall be elaborated.

#### 4.1 FNMS COORDINATION CENTRE

It is proposed that a small coordination centre or unit is established with responsibility for the maintenance and development of the ongoing food and nutrition monitoring and surveillance system. This is in line with one of the most consistent themes emerging from consultations on the development of this report: the need for a permanent, dedicated unit that can ensure the sustainability of the system.

The specific role and functions of the unit would need to be determined as part of the formalisation of the governance arrangements, possibly via a contract with the funding bodies. Broadly, it is proposed that the role encompass:

- producing national food and nutrition surveillance reports drawing on existing and new data sources
- liaising with the agency responsible for the day-to-day administration of the rolling dietary survey program.
- liaising with FSANZ on the food composition data and food regulation matters pertinent to the monitoring system
- convening technical advisory groups on the development and implementation of the system
- providing technical advice on food and nutrition monitoring and surveillance to other bodies such as the National Public Health Information Working Group
- liaising with ABS and other data providers on data collections relevant to the FNMS (e.g. national health survey).

Critically, it is *not* proposed that the centre will actually manage the dietary survey program or other data collections; nor it is anticipated that the centre have responsibility for technical oversight of the dietary survey. Rather, it is seen as a small coordinating and reporting body comprising four to five staff with skills and experience in:

- food and nutrition monitoring and surveillance
- public health nutrition

- nutrition data analysis and reporting
- epidemiology and biostatistics.

Possible candidates for housing the unit include existing bodies such as the Australian Institute of Health and Welfare. The role of the proposed coordination centre is consistent with the mandate of the Institute as the national agency for health statistics and information. The Institute already has established working relationships with relevant bodies and staff with expertise in data collation analysis and reporting. Appointment of staff with the above expertise would be required.

#### 4.2 STEERING COMMITTEE

The coordination centre will report to a steering committee comprising representatives of the funding bodies and other key stakeholders. The centre's relationship with the steering committee will be complemented by a performance agreement or contract with the principal funding agency.

The governance arrangements would ideally integrate with pre-existing arrangements if the centre were to be located, as proposed, within an Australian government agency (e.g. AIHW) or in an agency with an existing contractual relationship with the Australian government.

The role of the steering committee will be to:

- provide direction to the centre in its coordination of the FNMS
- approve and monitor the coordination centre's work program
- review the coordination centre's reports.

Ideally, the steering committee would include public health expertise, in order to be able to make an assessment of the utility and practicability of the advice received from the technical advisory groups.

To ensure national relevance, it is also important to have representation from all relevant jurisdictions and the National Public Health Partnership.

### 4.3 TECHNICAL ADVISORY GROUPS

Technical advisory groups will provide advice to the centre on the development of the FNMS and, in particular, the continuous dietary survey program.

The groups will comprise panels of experts including academics, researchers and state/territory representatives on technical aspects of food and nutrition monitoring and surveillance including, for example, survey design, sampling, data analysis and reporting.

### 4.4 CONTINUOUS SURVEY PROGRAM ADMINISTRATION

As noted above, it is not proposed that the coordination centre be responsible for the day-to-day administration of the survey program. This will be the responsibility of a specialist agency, such as the Australian Bureau of Statistics or CSIRO, who would be contracted to carry out the survey fieldwork.

### 4.5 RELATIONSHIPS WITH DATA PROVIDERS

The framework proposed in section 3 provides for the FNMS to:

- draw on data from existing data providers and collections (e.g. for food supply monitoring; general health surveys; state and territory data)
- strengthen or supplement the food and nutrition data collected in existing collections (e.g. FSANZ's food composition data, ABS's national health survey).

Accordingly, the FNMS coordination centre will need to maintain and manage formal relationships with other agencies that contribute data to the national monitoring system.

## 5 options for structuring the dietary survey program

A number of options for structuring the ongoing dietary survey program have been considered. The basic option adopted for costing purposes assumes an annual nationally representative sample of 2,000 individuals. The sample could include individuals of all ages or be from a different major sub-group of interest each year. For example children and adults could be sampled in alternate years of the program. The options described below assume this approach is adopted but the data outcomes and costs would be essentially the same if 2,000 individuals of all ages were sampled each year.

### 5.1 NUTRIENT INTAKE DATA BY AGE/SEX SUB-GROUP

If the sample is stratified by the 16 age/sex groups needed to allow comparisons with Nutrient Reference Values (table 5.1). A nationally representative sample of 2,000 children or adults would yield data for ~250 children or adults per NRV age/sex group. This number per sub-group, is generally considered adequate for reporting purposes.

2,000 children would yield ~250 children per NRV age/sex group after one year and ~ 250 adults per NRV age/sex group after 2 years of operation of the survey program.

**Table 5.1 Nutrient reference value (NRV) age groups**

NRV age groups
Boys 1-3 years and 4-8 years
Girls 1-3 years and 4-8 years
Boys 9-13 years and 14-18 years
Girls 9-13 years and 14-18 years
Men 19-30 years, 31-50 years, 51-70 years and >70 years
Women 19-30 years, 31-50 years, 51-70 years and >70 years

In the 1995 NNS the age/sex group with the smallest number of respondents (16-18 years) consisted of 215 male and 218 females.

Based on data from the 1995 NNS (ABS Catalogue No. 4805.0, 1998), an effective sample of 250 respondents for each age/sex group would give estimates of mean

intake with relative standard errors (RSE) of between 1 and 2.5% for energy and 4-8% for pro-vitamin A. These nutrients usually represent the extremes of variability in nutrient intake. A sample of 2,000 children or adults would generate sufficient data for reporting at national level against NRV criteria by age and sex; and for SEIFA quintile, rural, remote and urban residence and season by sex only.

## 5.2 NUTRIENT INTAKE DATA BY MAJOR POPULATION SUB-GROUPS (ADULTS)

Table 5.2 shows for key population sub-groups, the expected number of respondents that would be generated from a sample of 2,000 adults (19 years and over) after 1, 2 and 3 years of sampling, based on 1995 estimates for population distribution in the relevant sub-groups (ABS, 1998).

**Table 5.2 Cumulative number of respondents expected from a sample of 2000 adults after one, two and three years of sampling**

Population sub-group	Expected number of adult respondents (men and women) at end of:		
	1 Year	2 Years	3 Years
<i>State &amp; Territory:</i>			
New South Wales	687		
Victoria	503		
Queensland	365		
South Australia	161	322	
Western Australia	186	372	
Tasmania	51	101	152*
Northern Territory	16	32	48*
Australian Capital Territory	30	60	90*
<i>Part of State</i>			
Capital city	1284		
Rest of State	716		
<i>Rural, remote and metropolitan:</i>			
Metropolitan (centres with population of ≥100,000)	1437		
Rural centre (areas with an urban centre ≥ 10,000)	235		
Rural and remote (all areas with centres < 10,000)	328		
<i>Region of birth:</i>			
Australia	1480		
UK, Ireland and NZ	239		
Other European countries	128	256	
East Asia (includes SE and NE Asia)	66	132	188*
Other countries (nec)	87	176	263

\* less than 200 adult respondents after 3 years

It is clear from table 5.2 that the number of respondents in the states with the smallest population, in the territories and in the smallest country of birth group is likely to be less than 200-250 even after three years of sampling. For nutrient intake data by sex even more years of sampling are required.

While increasing the annual sample size is an option, it is much less efficient than over-sampling the relevant sub-groups, since even a 50% increase in the annual sample would not yield an adequate number of respondents (200) for the territories and the smallest country of birth group after three years of sampling. For the costings of enhancement options in section 7, we have estimated the cost of over-sampling to obtain 200-250 adult respondents of each sex for all population sub-groups in table 5.2, in each year that adults are sampled.

### 5.3 ESTIMATES OF FOOD INTAKE

Unlike nutrients, most foods are not consumed on a daily basis and therefore the number of respondents required to obtain mean estimates of intake for individual foods with similar precision to those obtained for nutrient intake requires either a much larger number of respondents or more days of food intake data. Experience with the 1995 NNS and recommendations from the European Food Consumption Survey Method (EFCOSUM) project (Volatier et al, 2002) suggests that ~ 2000 respondents per group are needed to provide reliable estimates of mean intake for most foods of interest including those that are not commonly or frequently consumed.

In the 1995 NNS, for example, while estimates of mean intake for all major food groups had acceptable relative standard errors (RSE) for all age/sex groups, the RSEs for male and female adolescents aged 16-18 years were greater than 25% for 37 and 40 respectively of the 86 sub-major food groups reported (~200 respondents per group). In contrast, only 5 of the 86 estimates of mean intake for sub-major food groups had RSE >25% for men and women aged 25-44 years (~ 2,000 respondents per group). All of these were for foods consumed by 2% or less of the respondents.

Collecting a second day of food intake data for all individuals in the sample will increase the proportion of consumers of less frequently consumed foods, and thus the number of individuals for whom there is data but will not eliminate the problem of unreliable estimates for foods consumed by 10% or less of the population sub-group of interest **unless** the sample size is around 2,000 per group.

Both the basic option and the over-sampling option are expected to provide an adequate sample of adults for reliable estimates of mean intake for most sub-major food groups by sex after two years of sampling (~4,000 respondents). For children, for whom data are required for regulatory risk assessment purposes in three age groups (1-4 years, 5-12 years and 13-17 years), 2,000 respondents per age group will only become available with ~6,000 respondents or after three years of sampling. An alternative approach for children might thus be to collect additional days of food intake e.g. four days of intake per child instead of two as for adults in order to have sufficient data to give reliable estimates of mean food intake by age group for most foods. This option is costed in section 7.

#### 5.4 BIOLOGICAL MEASURES

The basic survey option includes biological measures on a proportion of respondents in each survey year. The rationale for this is that not all biological measures are relevant to all age sex groups (eg iron status is usually of concern only for pre-school children and women of reproductive age).

Another option would be to delay the collection of the biological measures until later in the comprehensive dietary survey program, such as year 3. This approach could be advantageous particularly during the first two years of the survey program by reducing the demands on both survey staff and respondents until the first population sampling cycle has been completed. Unlike the over-sampling option for adults and the option to collect more days of intake for children, as shown in section 7, this option will reduce the basic annual survey cost.

### 5.5 DATA AVAILABILITY AND REPORTING

Table 5.3 summarises the years in which data will become available for children and adult survey program activities. Note that the table includes provision for a special group survey in year 6 (e.g. a survey of 0-2 year olds).

Table 5.4 illustrates the kinds of data that will become available for children and adults in the first and second reports from the survey program with the baseline option costed in section 6.

**Table 5.3 Survey activities by FNMS program year for baseline model**

Program year	1	2	3	4	5	6	7
<b>Children:</b>							
Survey program activity	Pilot	Field 1	Analyse 1	Field 2 Report 1	Pilot for special group Analyse 2	Field Special group (e.g. 0-2 yr group) Report 2	Field 3 Analyse Special group
<b>Adults:</b>							
Survey program activity	-	Prepare	Field 1	Analyse 1	Field 2 Report 1	Analyse 2	Report 2

**Table 5.4 Data reportable with different survey options**

Children:	Report 1 (program year 4)	Report 2 (program year 6)
<b>Survey option:</b>		
Baseline	Nutrient intake and weight, height and BMI status by NRV age/sex groups and for SEIFA quintiles, rural, remote and urban residence and season by sex only. Proportion of nutrients from selected food groups (those which contribute 1.5% or more of total) for male and female children and adolescents Percentile distributions for nutrients adjusted for within person variation by NRV age/sex groups For frequently consumed foods percent consuming and mean daily intake by NRV age/sex groups Biological measures for relevant age/sex groups	As for <b>Report 1</b> PLUS percent consuming and mean daily intake by NRV age/sex groups for most sub-major food groups reported in NNS 1995.

Children:	Report 1 (program year 4)	Report 2 (program year 6)
<b>Survey option:</b>		
Four 24hour recalls in round 1	As above PLUS percent consuming and mean daily intake by NRV age/sex groups for most sub-major food groups reported in NNS 1995.	As above but with increased precision for infrequently consumed foods
Biological measures in round 2 only	As above but MINUS biological measures	Option not applicable
Adults:	Report 1 (program year 5)	Report 2 (program year 7)
<b>Survey option:</b>		
Baseline	<b>By:</b> <b>Sex</b> <b>NRV age groups</b> <b>Remote,rural,urban</b> <b>SEIFA quintiles</b> <b>Season</b> <b>Jurisdictions -NSW,VIC QLD only</b> <b>Key migrant groups -UK/NZ only</b> Nutrient intake; Weight, height and BMI status Proportion of nutrients from selected food groups (those which contribute 1.5% or more of total) Percentile distributions for nutrients adjusted for within person variation Percent consuming and mean daily intake for frequently consumed foods Biological measures for relevant age/sex groups	As for <b>Report 1 PLUS</b> <b>By:</b> <b>Jurisdiction also for WA and SA PLUS</b> Percent consuming and mean daily intake for a greater number of less frequently consumed foods
Over-sampling of smaller jurisdictions	As above PLUS <b>By: smaller states and territories</b>	As above PLUS <b>By: smaller states and territories</b>
Over-sampling of key migrant groups	As above PLUS <b>By: other key migrant groups</b>	As above PLUS <b>By: other key migrant groups</b>
Biological measures in round 2 only	As above but MINUS biological measures	Option not applicable

Australian Bureau of Statistics (1998), *National Nutrition Survey Nutrient Intakes and Physical Measurements, Australia 1995*, Catalogue Number 4805.0, ABS, Canberra.

Volatier JL, Turrini A and Welten D (2002), *Some statistical aspects of food intake assessment*. European Journal of Clinical Nutrition 56 (Supplement 2), S46-S52.

## 6 costing the system

This section presents the estimated costs for the proposals in section 3 and for the governance arrangements in section 4.

Costs were estimated for the following components of the FNMS:

- reinstatement of the compilation and reporting of time series data, *Apparent Consumption of Foodstuffs in Australia*
- enhancement of the food composition database
- advice on survey questions on food and physical activity behaviours incorporated into health surveys
- the comprehensive dietary assessment survey program
- the FNMS national coordination centre.

Estimates were limited to additional costs over and above existing investments. For example, current expenditures by FSANZ in maintaining a food composition database for Australia have not been included, but additional costs have been included related to: enhancing the food analysis program, enhancing the utility of the databases, progressing date stamping and archiving processes, and updating the databases needed for the comprehensive dietary assessment survey.

Costs for the comprehensive dietary assessment survey program were estimated using a bottom-up understanding of the requirements for this survey. The results were tested against information obtained from the United Kingdom and New Zealand on the costs of surveys in their systems. The key cost drivers are the sample size and the number of follow-up interviews.

The components are now considered in turn.

### 6.1 RE-INSTALEMENT OF THE *APPARENT CONSUMPTION OF FOODSTUFFS*

Re-instatement of the compilation and reporting of the ABS time series publication *Apparent Consumption of*

*Foodstuffs in Australia*, which was discontinued in 2000, is estimated to cost \$200,000 over the first five years. In order to allow for initial updating of the series for 2000-2004, \$100,000 is required for the first year and \$25,000 in each of the next four years for preparation of the 2005-2009 publication.

## 6.2 ENHANCEMENT OF THE FOOD COMPOSITION DATABASE

FSANZ is responsible for food composition surveillance in Australia. FSANZ maintains the Australian Nutrient Data Bank (ANDB), the primary source for published food composition data such as NUTTAB and for updating the 1995 survey database (AUSNUT). FSANZ currently invests approximately \$330,000 per annum in these activities (\$290,000 in staffing and \$40,000 in analysis).

In order to contribute to enhanced reporting on food composition and to implement an ongoing comprehensive dietary assessment survey program, this investment needs to be increased by \$260,000 per annum (\$200,000 in staffing and operational costs and \$60,000 to extend the analysis program.)

Key tasks, over and above the current FSANZ responsibilities, that need to be undertaken before a comprehensive dietary assessment survey program can proceed are:

- updating AUSNUT to provide a baseline survey database for agreed nutrients for use in the first survey round
- acceleration of the date stamping and archiving program (FSANZ is currently undertaking a review of ANDB data so that electronic records of the data source, date of analysis, sampling procedures etc are captured in the ANDB system)
- assessment of data gaps (e.g. if folate and iodine intakes are to be reported, FSANZ does not currently have data lines for all foods for these nutrients)
- commissioning of analyses to fill data gaps for the baseline data set
- commissioning of analyses for new foods reported in surveys, where it is not appropriate to derive data by other techniques

- institution of a key foods program so these foods are regularly analysed to assess trends in food composition in the food supply (this includes the identification of key foods that are major contributors to each nutrient to be reported and commissioning of an ongoing nutrient analysis program).

**Table 6.1 Estimated additional costs for the FSANZ food composition monitoring program to meet FNMS needs**

	Current per annum	Future per annum
<b>Staffing</b> (Assumes 18% super weighting)	0.5 EL1 \$ 46 218 2 APS6 \$ 150 918 1 APS4 \$ 59 208 IT \$ 35 000	1 EL1 \$ 92 436 3 APS6 \$ 226 377 2 APS4 \$ 118 416 IT \$ 55 000
Staff total cost	<b>\$ 291 344</b>	<b>\$ 492 229</b>
<b>Analysis</b>	<b>\$ 40 000</b>	<b>\$ 100 000</b>
<b>Total</b>	<b>\$ 331 344</b>	<b>\$ 592 229</b>
<b>Additional funding required :</b>	Staff Analysis	<b>\$ 200 885</b> <b>\$ 60 000</b>

Additional funding of \$260,000 will be required in the first and subsequent years of the new system.

The extra funding required in the first year includes \$200,000 in staff start costs and additional IT programming costs to prepare the baseline database for the new survey; plus \$100,000 for catch up analyses so that this database has complete data lines for all nutrients (total \$300,000). FSANZ already has \$40,000 set aside for the 2005/06 financial year for an iodine and/or folate analysis program.

Additional funding needs to be continued at the same level as the first year for staffing (an additional \$200,000), to enable to key foods program to be introduced in the second year, with staff splitting their time between preparing the database for the next survey to be assessed (including date stamping and archiving, IT programming) and commissioning/managing the key foods program with subsequent data entry into the ANDB.

It is expected that a key foods program to update data on a regular basis plus catch up analyses required for

new foods as reported in the ongoing comprehensive dietary assessment survey will cost \$100,000 year. FSANZ may be able to contribute \$40,000 towards these costs as has been the case in recent years (total additional funding required \$60,000).

Analysis costs will depend on the decisions by the steering committee on the number and type of nutrients to be reported. For example, folate analysis can cost up to \$ 300 per sample, iodine analysis \$80 per sample.

### **6.3 ADVICE ON SURVEY QUESTIONS ON FOOD AND PHYSICAL ACTIVITY BEHAVIOURS INCORPORATED INTO HEALTH SURVEYS**

This advice will be the responsibility of the FNMS national coordination centre and is incorporated in estimates for the Centre's recurrent allocation.

### **6.4 COMPREHENSIVE DIETARY ASSESSMENT SURVEY PROGRAM**

The key features of the basic survey program are:

- a continuous program with children and adults surveyed in alternate years
- 24 hour recall method, with an initial face to face interview followed by a repeat interview by CATI for all respondents.

After accounting for establishment costs, the sample size for the survey and the number of follow-up interviews are the main factors affecting cost. Costs on the baseline ongoing survey program are estimated using the assumption that 2,000 final subjects will be surveyed each year, with an initial face-to-face interview followed by one CATI interview.

The establishment costs have been estimated and allocated to the first year of the FNMS program. It is assumed that during the first year a range of tasks will need to be undertaken leading to the commencement of data collection for the comprehensive dietary assessment survey in Year 2. These tasks include undertaking a pilot survey.

For year 2 and subsequent years fixed and variable costs have been estimated so that the costs of expansion of the sample size can be readily estimated.

#### **A. Survey Preparation**

Survey preparation includes some tasks that will be carried out by the national coordination centre and have been costed in section 6.5, such as:

- survey specification (guided by an expert group)
- liaison with survey staff on development of survey protocols, training manuals and other survey materials
- specification of edit checks.

Survey preparation also includes the development of the survey food composition and related databases, which will be undertaken by FSANZ and is costed in section 6.2.

Other establishment costs include:

- the preparation of survey materials (\$200,000 in the first year, with ongoing update and maintenance estimated at \$50,000 per year)
- programming to develop/adapt applications for computer-aided data collection and processing, estimated at \$100,000 in the first year and \$50,000 in subsequent years. Costs in subsequent years will be required to update and maintain the programs
- survey publicity and promotion, including the development of a website: \$100,000 in the first year with an ongoing allocation of \$20,000.

Total survey preparation costs (over and above the contribution of the national coordination centre and FSANZ) are estimated at \$400,000 in the establishment year with ongoing maintenance/update costs of \$120,000 per annum.

#### **B. Recruitment of the sample**

Costs for the recruitment of the sample will vary depending on whether the sample is drawn directly from the population, or is taken as a sub-sample of another survey such as the National Health Survey.

These costs are associated with drawing a sample of potential subjects, undertaking the initial approach, either by telephone or mail, and securing their initial agreement to participate in the survey.

The Australian Health Measurement Program proposal was based on taking a sample drawn from participants in the National Health Survey, and estimated costs of drawing this sample at \$11.40 per subject (\$170,000 for a final set of 14,900 subjects). Applying this rate to the current proposal, total costs for recruitment of a sample of 2,000 are estimated to be \$25,000 when drawn from participants in another survey, once cost escalation is taken into account.

Recruiting an entirely new sample will entail additional costs, and is estimated to be \$100,000 per 2,000 final subjects. The costings presented below are based on this second estimate.

### C. Field Costs

Field costs include expenditures on the recruitment, training and employment of interviewers, travel costs for interviewers, supervision of interviewers, costs of computers and equipment required during interviews, telecommunications, accommodation, insurances and other operational costs. Costs associated with biological measures are considered separately in section D following.

For the establishment year, costs will be incurred in recruiting and training interviewers, purchase of equipment and undertaking a pilot study. The cost of interviewers for the pilot study has been estimated at one third of the ongoing costs of undertaking the survey (see below), with travel and telecommunications estimated at 50% of the ongoing costs. Costs for the establishment year are estimated to be \$516,000.

Costs for recruitment and training of interviewers will be highest during the establishment year (\$10,000 for recruitment and \$20,000 for training). In subsequent years these costs will be less, although due to the ongoing nature of the survey program

there will need to be continuous training of interviewers to reflect possible changes in questionnaire design and survey staff.

The major component of field costs in subsequent years will be the employment of interviewers to undertake face-to-face and telephone interviews. These costs have been estimated based on estimates for the Australian Health Measurement Survey (AHMS) which utilised estimates prepared by the ABS for the National health survey for 2004. For the AHMS estimated costs of interviewers were approximately \$50.60 per hour (including on-costs), with an estimate 1 hour and 30 minutes of interviewer time per final subject. This estimate includes costs for travel and time associated subjects that refuse to participate, subjects that have to be re-contacted or are unable to be contacted and interviews that are not able to be incorporated into the final sample for other reasons.

For the comprehensive dietary assessment survey, interviewer costs per hour were estimated to be \$58.73 (the AHMS rates escalated by 16% to account for wage increases over a four year period from the initial the year in which AHMS costs were estimated to the year in which the comprehensive dietary assessment survey will commence – year 2.)

It was assumed that for the survey an average of 3 hours per final subject is required. Compared to the AHMS survey, an additional 30 minutes will be required for the first interview to allow time for the 24hr multiple pass recall procedure. A further additional hour per subject is needed for the follow-up CATI interview.

Based on a sample of 2,000 final subjects, it is estimated interview costs will be \$355,000 per annum (\$58.73 by 3 hours by 2000 subjects – rounded up). This equates to 5 full time equivalent interviewers. Around 400 subjects will be interviewed each year for each full time equivalent interviewer.

Costs for an initial pilot survey are estimated at one half of these costs (\$180,000). A major advantage of an ongoing survey program is minimising set up

costs, including pilot survey costs. In future rounds piloting costs are likely to be minimal, except for survey years in which special needs groups are targeted.

Travel costs (for interviewers to travel to the homes of subjects) were estimated as \$26.10 per subject (based on the AHMS estimate of \$22.5 per subject plus escalation of 16%) – a total of \$52,000 for the 2,000 subjects in the second year of the program. Travel costs for the establishment year, associated with the pilot study, are estimated at half that cost - \$26,000.

It is estimated that one supervisor will be required for the interviewers, with an estimated cost of \$80,000 (The Australian Health Measurement proposal estimated supervision costs would be 25% of interviewer costs, which for the dietary survey amount to \$89,000.)

Other field costs include:

- purchase of computers for field and telephone interviews – estimated at \$100,000 in year 1 and \$30,000 in subsequent years. Whilst there will be an estimated 5 full-time equivalent interviewers, in practice this is likely to equate to around 10 part-time interviewers each requiring a lap-top computers. The supervisor will also require a lap-top computer. A local area network with at least five workstations will be required for the base through which the CATI interviews are conducted. Five workstations will be required for staff managing and editing data, the biostatistician, and the survey manager. Licences for basic applications on each of these computers will be required, along with software for managing the local area network. A range computing accessories will also be required.
- purchase of other equipment (e.g. scales and other anthropometric equipment and blood pressure monitors) estimated at \$10,000 in year 1 and \$5,000 in subsequent years.
- telecommunications – \$30,000 in the first year and \$60,000 in subsequent years.
- office Accommodation – \$30,000 per year.

- office establishment costs – \$30,000 in the first year only.
- insurances - \$20,000 per year.
- other operational costs –\$20,000 per year.

Total field costs for the establishment year (including the pilot collection) are estimated to be \$516,000. For the second year field costs are estimated to be \$669,000.

Field costs will vary with the number of subjects interviewed, with the exception of accommodation costs (\$30,000) and office establishment costs (\$30,000).

#### **D. Collection of Biological Measures for a subset of the sample**

Biological assessments are to be undertaken for a subset of the sample. For this report it is assumed biological measurements will be undertaken on 25% of the total sample – that is 500 subjects of the annual sample of 2,000. In the AHMS pilot study the response rate for subjects asked to provide blood samples was 58% (222 out of 380 eligible subjects). Response rates were lower in the 12-17 year age group (24%), the 18-50 year age group (39%), and higher for the 51-74 year age group (69%). For urine samples the response rate was 55%. This suggests that to achieve a final sample of 500 subjects around a half of the 2,000 final subjects in the sample need to be asked to provide a biological sample. Over time, better response rates for biological measures are likely to be achieved as better strategies for approaching this component of the survey are identified and implemented. Response rates for biological measurements components of many dietary assessment surveys in other countries are around 50% of subjects.

The methods for collection of the biological samples may need to vary for different regions of the country and for different target groups. In the pilot study for AHMS, subjects agree to attend a pathology collection centre. However the report on the pilot study indicated that '[c]onsideration should be given to promoting more actively the domiciliary

blood testing service as an alternative to visiting a pathology collection centre, and to making it available from 7.00am onwards (noting the expected cost implications)'. In the pilot study costs were not assessed for either the collection centre approach or domiciliary collection. Domiciliary collection is not likely to be feasible in all parts of the country. However in most Australian cities, domiciliary collection services do exist, and could be contracted to undertake this aspect of the survey. In practice, the survey managers will need to work through the optimal strategies to achieve appropriate levels of participation."

The costs for the biological measures component of will also be influenced by the nature and range of analyses of samples to be undertaken. These issues will be governed by methodological considerations and recommendation of the proposed expert group.

The business case for the AHMS estimated costs for biological measurements to be \$153 per participant. For that study a range of laboratory analyses were considered. For blood these included: serum lipid levels, C-reactive protein, homocysteine (fasting), glucose (fasting), oral glucose tolerance, HbA1c, Insulin (fasting), serum creatinine, red cell folate, carotenoids; for urine: albumin/creatinine ratio. Additional measures are likely to be required in a nutrition survey, for example iron status and urinary iodine, and will increase the cost per subject.

The pilot study for AHMS also identified that travel costs were often a barrier to subjects volunteering to participate in the biological measurement component of the survey. In estimating costs, we have made an allowance for travel costs, such as a taxi voucher, for survey participants.

Taking the additional costs of nutritional analysis, travel costs and cost increases since the development of the AHMS business case, it is estimated that biological measures will cost \$400 per final subject, a total of \$200,000 for 500 subjects.

### **E. Survey data handling and analysis**

Data review costs for dietary surveys are considerable and have been estimated at 1.5 hours per respondent, a total of \$180,000 for 2,000 respondents. Whilst computer aided collection methods will automate many aspects of data collection and processing, the volume and complexity of food intake data, together with the time associated with identifying and obtaining food composition data for new foods, make data review and editing significantly more expensive than for other surveys.

These costs are estimated to be \$90,000 in the first year of the program, increasing to \$180,000 in year 2.

Data analysis costs (calculation of sample weights, preparation of basic tables, preparation of unit record data set for analysis by other agencies, documentation of datasets), will largely occur from the second year of the survey, although some analysis of the pilot survey will be required in the establishment year. It is estimated that the equivalent of a full-time bio-statistician will be required for these tasks from Year 3, costed at \$110,000 per annum (including on-costs). Establishment year costs are estimated at \$50,000.

Report preparation, which would be performed in collaboration with the national coordination centre, is estimated to cost \$100,000 per annum from year 2.

### **F. Management of Survey Team**

A full time manager for the survey team will be required, with estimated costs of \$120,000 per year (including on-costs) from Year 2. Costs for the establishment year are estimated at \$60,000.

### **G. Cost Recovery**

Cost recovery associated with purchase of reports and unit record data sets is estimated to be \$20,000 per year commencing in year three. This is based on estimating revenue from reports at \$4000 per year (200 reports sold at \$20 per report), and from

unit record data sets – an average of 4 datasets per year at \$4,000 per dataset.

Table 6.2 presents details of the estimates for the key components of the survey. In summary:

- establishment costs are estimated to be \$1,266,000 in the first year
- operational costs for the first full year of the survey following commencement of data collection are estimated to be \$1,599,000, equivalent to \$800 per final subject; these comprise of fixed costs of \$540,000 (costs that will not vary as the number of final subjects is increased) and variable costs of \$1,059,000 or \$530 per final subject
- over five years, the average cost per final subject, is estimated to be \$958 including establishment costs but excluding the contribution of the national coordination centre and FSANZ and cost escalation estimates.

**Table 6.2 Costs for comprehensive dietary assessment survey with final sample of 2,000 subjects**

	Year 1	Year 2	Year 3	Year 4	Year 5	Variable Costs (impacted by sample size)
<b>A. Survey Preparation</b>						
Survey specification		Coordinating Centre				
Specification of survey protocols, tr		Coordinating Centre				
Preparation of Coding Manuals		Coordinating Centre				
Specification of edit checks		Coordinating Centre				
Preparation of survey databases		FSANZ				
Preparation of survey materials	200,000	50,000	50,000	50,000	50,000	
Programming for computer aided ir	100,000	50,000	50,000	50,000	50,000	
Survey publicity & promotion, web :	100,000	20,000	20,000	20,000	20,000	
<i>Subtotal</i>	<b>400,000</b>	<b>120,000</b>	<b>120,000</b>	<b>120,000</b>	<b>120,000</b>	
<b>B. Recruitment of sample including non-response follow-up</b>						
<i>New sample</i>	<b>100,000</b>	<b>100,000</b>	<b>100,000</b>	<b>100,000</b>	<b>100,000</b>	<b>100,000</b>
<b>C. Field costs</b>						
Recruitment of interviewers	10,000	2,000	2,000	2,000	2,000	2,000
Training	20,000	15,000	15,000	15,000	15,000	15,000
Costs to undertake home visits and CATI interviews		355,000	355,000	355,000	355,000	355,000
Pilot Study*	180,000					
Travel	26,000	52,000	52,000	52,000	52,000	52,000
Interviewer Supervisor	40,000	80,000	80,000	80,000	80,000	80,000
Computers	100,000	30,000	30,000	30,000	30,000	30,000
Other Equipment	10,000	5,000	5,000	5,000	5,000	5,000
Telecommunications	30,000	60,000	60,000	60,000	60,000	60,000
Office Accommodation	30,000	30,000	30,000	30,000	30,000	
Office establishment costs (eg furn	30,000					
Insurances	20,000	20,000	20,000	20,000	20,000	20,000
Other Operational costs	20,000	20,000	20,000	20,000	20,000	20,000
<i>Subtotal</i>	<b>516,000</b>	<b>669,000</b>	<b>669,000</b>	<b>669,000</b>	<b>669,000</b>	<b>639,000</b>
<b>D. Biological Measurements</b>						
	<b>50,000</b>	<b>200,000</b>	<b>200,000</b>	<b>200,000</b>	<b>200,000</b>	<b>200,000</b>
<b>E. Survey Analysis**</b>						
Output processing and data handliir	90,000	180,000	180,000	180,000	180,000	120,000
Data Analysis	50,000	110,000	110,000	110,000	110,000	
Report Preparation		100,000	100,000	100,000	100,000	
<i>Subtotal</i>	<b>140,000</b>	<b>390,000</b>	<b>390,000</b>	<b>390,000</b>	<b>390,000</b>	<b>120,000</b>
<b>F. Survey manager</b>						
	<b>60,000</b>	<b>120,000</b>	<b>120,000</b>	<b>120,000</b>	<b>120,000</b>	
<b>Total</b>	<b>1,266,000</b>	<b>1,599,000</b>	<b>1,599,000</b>	<b>1,599,000</b>	<b>1,599,000</b>	<b>1,059,000</b>
<i>Costs per Subject</i>					800	530

Based on this analysis (and excluding establishment costs in the first year), table 6.3 shows estimates of costs associated with increasing sample size within one year.

**Table 6.3 Estimates of costs associated with increasing sample size**

<b>Sample Size:</b>	2,000	2,500	3,000	3,500	4,000	4,500
<b>Costs \$'000</b>	1,599	1,864	2,129	2,393	2,658	2,923

## 6.5 NATIONAL COORDINATION CENTRE

The proposed national coordination centre is assumed to include four staff members - a director (at \$100,000 per year), together with three research staff (at \$75,000 per year). With 25% on-costs, this equates to a salary and related budget of \$405,000 per annum.

It is assumed that the centre will be based within a larger organisation, and that other support (secretarial, administrative), will be provided by that organisation. Operational costs (estimated at \$150,000 per annum) for the centre include provision for an administrative levy for these support costs and for the work of the centre in supporting aspects of the other components of the FNMS.

The total annual costs for the national coordination centre are estimated at \$555,000 per annum.

In the first year of operation is estimated that costs for the National Centre will be 75% of ongoing annual costs (\$416,000).

## 6.6 SUMMARY

Table 6.4 summarises the estimated total costs of the baseline model of the proposed FNMS. Allowances are made for cost escalation (from year 3) and cost recovery. The table does not include pilot costs for any special group surveys that might be undertaken after year 5 of the program.

**Table 6.4 Summary of Basic Cost Estimates for the proposed FNMS**

	Year 1 (Establishment)	Year 2 (Children)	Year 3 (Adults)	Year 4 (Children)	Year 5 (Adults)
Re-instate Apparent Consumption of Foodstuffs	100,000	25,000	25,000	25,000	25,000
Enhance food composition database	260,000	260,000	260,000	260,000	260,000
Comprehensive dietary assessment survey	1,266,000	1,599,000	1,599,000	1,599,000	1,599,000
National Coordination	416,000	555,000	555,000	555,000	555,000
<b>Total</b>	<b>2,042,000</b>	<b>2,439,000</b>	<b>2,439,000</b>	<b>2,439,000</b>	<b>2,439,000</b>
Escalated for Inflation 3%	2,042,000	2,439,000	2,512,170	2,587,535	2,665,161
Cost Recovery			20,000	20,000	20,000
<b>Net Funding</b>	<b>2,042,000</b>	<b>2,439,000</b>	<b>2,492,170</b>	<b>2,567,535</b>	<b>2,645,161</b>

## 7 additional costs associated with options for modifying the baseline comprehensive dietary assessment survey program

As noted in section 3.3.1, the baseline model for the national dietary survey program is not totally comprehensive. It does not include special groups for whom different approaches for sampling and/or dietary assessment are required (e.g. for the 0-2 year age group, particularly on infant feeding practices; indigenous Australians; people with physically and intellectual disabilities; hard-to-reach disadvantaged groups).

Moreover, as discussed in section 5, the proposed baseline sampling methods will not yield sufficient numbers for reliable estimates to be made for the territories, smaller states and some population sub-groups after the first round. Further, the baseline survey structure would require two rounds for adults and three rounds for children before reliable estimates for infrequently consumed foods will be possible.

Section 5 discussed some options for addressing these issues and this section provides indicative costs associated with each of the following options.

- **Option 1:** *increasing the number of days on which data is collected for children from two to four.* Including two additional computer aided telephone interviews for the child sample will increase the interviewer time per final subject to 5 hours. Additional expenses will also be incurred for telecommunications, output processing and data handling.
- **Option 2:** *over-sampling smaller jurisdictions* in order to achieve jurisdiction level estimates for adults by sex for nutrient intake after one year of sampling. To achieve in one year a minimum sample size of 200 adult men and women in each state and territory an additional 1,600 final subjects need to be included in the sample. This increase will be sufficient to allow nutrient intake estimates by sex to be developed for

metropolitan regions, rural centres and 'rural and remote' regions.

- **Option 3: over-sampling country of birth (COB) groups** in order to achieve estimates for adults by sex for nutrient intake after one year of sampling. Over-sampling for country of birth groups will increase sample recruitment costs. An additional 1,000 final subjects are required.

The costs of these three options are compared with the baseline model in Table 7.1 which also shows a fourth option, delaying the introduction of the biological measures component of the comprehensive dietary survey program.

**Table 7.1 Summary of cost estimates for options**

	Year 1 (Establishment)	Year 2 (Children)	Year 3 (Adults)	Year 4 (Children)	Year 5 (Adults)
Basic proposal - 2000 subjects per year	2,042,000	2,439,000	2,492,170	2,567,535	2,645,161
Option 1 – Increase 24hr recall days from 2 to 4 for children (years 2 and 4)	2,042,000	2,854,000	2,907,170	2,982,535	3,060,161
Option 2 – Over-sample to achieve nutrient intake estimates by sex and jurisdiction level for adults - additional 1,600 subjects (years 3 and 5)	2,042,000	3,286,200	3,339,370	3,414,735	3,492,361
Option 3 – Over-sample to achieve nutrient intake estimates by sex for country of birth groups - additional 1,000 subjects (years 3 and 5)	2,042,000	3,068,500	3,121,670	3,197,035	3,274,661
Option 4 - Only include biological measurements from year 4	2,042,000	2,239,000	2,292,170	2,567,535	2,645,161

Note that table 7.1 does not show cost estimates for surveys of special groups, such as 0-2 year olds, which will need to be developed individually to take account of the differences in approaches for sampling and/ or dietary assessment required for each group.

The details of the estimates of additional costs associated with options 1 to 4 are provided in table 7.2. Estimates for each of the options has been based on year 2 costs, and escalated for the appropriate year to which the option applies.

Table 7.2 Detailed summary of cost estimates for options

	<b>Option 1 - Increase 24hr recall days from 2 to 4 for children (years 2 and 4)</b>	<b>Option 2 – Over-sample to achieve nutrient intake estimates by sex and jurisdiction level for adults - additional 1,600 subjects (years 3 and 5)</b>	<b>Option 3 – Over-sample to achieve nutrient intake estimates by sex for country of birth groups - additional 1,000 subjects (years 3 and 5)</b>
<b>A. Survey Preparation</b>	-	-	-
<b>B. Recruitment of sample</b>	-	80,000	150,000
<b>C. Field costs</b>			
Recruitment of interviewers		1,600	1,000
Training		12,000	7,500
Interviewers	235,000	284,000	177,500
Travel		41,600	26,000
Interviewer Supervisor		64,000	40,000
Computers		24,000	15,000
Other Equipment		4,000	2,500
Telecommunications	60,000	48,000	30,000
Insurances		16,000	10,000
Other Operational costs		16,000	10,000
<i>Subtotal</i>	295,000	511,200	319,500
<b>D. Biological Measurements</b>		160,000	100,000
<b>E. Survey Analysis</b>	120,000	96,000	60,000
<b>F. Survey Manager</b>			
<b>Total (Year 2)</b>	<b>415,000</b>	<b>847,200</b>	<b>629,500</b>
<i>Year 3</i>	427,450	872,616	648,385
<i>Year 4</i>	440,274	898,794	667,837
<i>Year 5</i>	453,482	925,758	687,872

## 8 implementing the framework

This section of the report sets out a brief schedule of tasks to implement the proposed framework. Broadly, implementation would involve:

1. formalising the institutional and governance arrangements including:
  - securing funding commitments for the system
  - establishing a steering committee
  - managing a tender process, if applicable, for auspicing the proposed coordinating unit
  - managing a tender process, if applicable, for auspicing the management of the continuous comprehensive dietary assessment program.
2. establishing the FNMS coordination centre.
3. detailed planning for the introduction of the continuous dietary survey program (*Proposals 5 & 7*):
  - establishing technical advisory groups to advise on survey design, sampling and associated issues
  - pilot testing of the survey.
4. commissioning the FNMS coordination centre to commence work with other agencies including:
  - liaison with ABS about the reinstatement of the *Apparent Consumption of Foodstuffs in Australia (Proposal 1)*
  - liaison with FSANZ about the update of food composition data (*Proposal 2*)
  - liaison with the CATI TRG, NPHIWG and other groups on the development of methods for monitoring community food access/food security (*Proposal 4*) and on short survey questions on selected food and physical activity behaviours (*Proposal 6*).
5. commissioning the FNMS coordination centre to undertake secondary analysis of HES data (*Proposal 3*)

In summary, following the establishment of the funding and governance mechanisms, the priority would be to establish the FNMS coordination centre and commence detailed implementation planning for the rolling dietary survey program. In parallel, work could commence, in consultation with other agencies, on progressing the other elements of the framework.

## appendix 1 project overview

The Australian Government Department of Health and Ageing commissioned Nexus to undertake a project on behalf of the National Public Health Partnership's Nutrition Working Group, the Strategic Inter-Governmental Nutrition Alliance (SIGNAL), to develop a framework and business case for an ongoing national food and nutrition monitoring and surveillance system in Australia.

The project seeks to bring together previous work undertaken in the field of food and nutrition monitoring and surveillance. Collectively, this work provides an insight into what a monitoring and surveillance system might look like.

### THE OBJECTIVES

The objectives of the project are to develop a recommended framework and business case for an ongoing national food and nutrition monitoring and surveillance system. The project will:

- outline the purpose and potential uses of such a system
- describe the proposed elements comprising a ten-year rolling cycle, including how each model will provide attention to specific population groups
- describe and assess the costs and risks associated with developing and implementing a comprehensive national monitoring and surveillance system, and provide insight into any risks and costs associated with the absence of a comprehensive system
- develop a potential model for operating and funding a system over the long term
- describe the potential roles for the Australian government, states and territories, the Australian Bureau of Statistics, Foods Standards Australia and New Zealand and the Australian Institute of Health and Welfare.

## METHODS

The project comprised six components:

1. review and analysis of relevant documents on a national food and nutrition monitoring and surveillance system
2. initial individual and group consultations with key stakeholders on the development of a draft framework and business case.
3. research on international approaches to food and nutrition monitoring and surveillance.
4. consultation on a discussion paper setting out a draft monitoring and surveillance framework, including consultation with a panel of experts contracted by Nexus.
5. preparation of a draft report for the steering committee.
6. preparation of this final report incorporating steering committee and stakeholder feedback on the draft report.

## THE TEAM

- Mr Greg Masters, Director, Nexus Management Consulting
- A/Professor Geoff Marks, Head, Nutrition Program of the School of Population Health, University of Queensland
- Dr Karen Webb, Senior Lecturer, and co-director, NSW Centre for Public Health Nutrition, School of Public Health, and School of Molecular and Microbial Biosciences, University of Sydney
- Dr Ingrid Coles-Rutishauser, Honorary Fellow School of Health Sciences, Deakin University Geelong
- Mr Jim Pearse, Director, Health Policy Analysis Pty Ltd.

The project was oversighted by a steering committee comprising:

- Ms Lesley Paton – Department of Health and Ageing/SIGNAL (chair)
- Ms Janis Baines - FSANZ
- Professor Colin Binns - SIGNAL
- Mr John Glover – Public Health Information Development Unit, The University of Adelaide
- Dr Mandy Lee - SIGNAL
- Mr Colin Sindall - Department of Health and Ageing
- Ms Usha Sriram-Prasad –Department of Agriculture, Fisheries and Forestry

The DoHA project manager was Ms Bonnie Field.

## appendix 2 list of stakeholders consulted

### INITIAL CONSULTATIONS (group and individual)

- Australian Bureau of Statistics
- Australian Food and Grocery Council
- Australian Institute of Health and Welfare
- Department of Agriculture, Fisheries and Forestry
- Department of Health and Ageing
- Food Standards Australia and New Zealand (FSANZ)
- Therapeutic Goods Administration

### SUBMISSION RECEIVED ON DISCUSSION PAPER

#### Australian Government agencies

- Australian Bureau of Statistics
- CSIRO
- Department of Health and Ageing
- Food Standards Australia and New Zealand (FSANZ)
- National Health and Medical Research Council

#### State and Territory Government agencies

- ACT Health
- Northern Territory Department of Health and Community Services
- NSW Food Authority
- NSW Health
- Queensland Department of Health
- South Australian Department of Health
- Victorian Department of Human Services
- Western Australian Department of Health

### **Non-government organisations**

- Australian Beverage Council
- Australian Breastfeeding Association
- Australian Chronic Disease Prevention Alliance
- Australian Consumers' Association
- Australian Public Health Nutrition Academic Collaboration
- Australian Society for the Study of Obesity
- Cancer Council Australia
- Dairy Australia
- Dieticians' Association of Australia
- National Heart Foundation of Australia
- Nutrition Australia
- Osteoporosis Australia
- Public Health Association of Australia
- VicHealth (Victorian Health Promotion Foundation)

### **Individual submissions**

- Karen Cashel, University of Canberra
- Sharon Friel, National Centre for Epidemiology and Population Health, ANU
- Beverley Wood, consultant in food, nutrition and dietetics

### **Expert panel consultations**

- Adrian Bauman
- Karen Cashel
- Heather Greenfield
- Alan Lopez

## International consultations

### Netherlands

- Dr Karin FAM Hulshof, Project Manager, Food and Chemical Risk Analysis, TNO Quality of Life.
- Dr Marga C Ocke, Project Director Food Consumption Surveys, Centre for Nutrition and Health National Institute for Public Health and the Environment

### UK

- Dr Gillian Swan, Diet and Nutrition Surveys Branch, Nutrition Division, Food Standards Agency

### New Zealand

- Elizabeth Aitken, Senior Advisor (Nutrition), Non Communicable Diseases Policy, Public Health Directorate, Ministry of Health,
- Maria Turley, Senior Advisor (Epidemiology/Nutrition), Public Health Intelligence, Public Health Directorate, Ministry of Health

### USA

- Cliff Johnson, Director, NHANES Program, NCHS/CDC
- Richard P Troiano, Risk Factor Monitoring and Methods Branch, Applied Research Program, Division of Cancer Control and Population Sciences, National Cancer Institute

## appendix 3 summary of submissions on discussion paper

This appendix summarises some of the key themes emerging from the submissions on a discussion paper that was prepared by the Nexus team and distributed for national consultation during the early stages of the project.

The discussion paper set out the following questions on a number of issues:

- ***the mandate and need for a national food and nutrition monitoring and surveillance system:***
  - Are there other drivers or recommendations for a national food and nutrition monitoring and surveillance system [FNMS system] (including state and territory reports)?
  - What other key policy questions would an ongoing FNMS system be able to answer?
  - What are the costs or disadvantages of not having a national monitoring and surveillance system?
  - In the absence of an ongoing FNMS, what other information sources, or options, are available to stakeholders?
  
- ***the framework for a national system:***
  - Are the four elements in the discussion paper a useful way of thinking about/organising a national food and nutrition monitoring and surveillance system?
  - Are there any essential elements missing?
  - Where should measures of physical activity be incorporated in a national food and nutrition monitoring and surveillance system (e.g. as part of dietary assessment) or should they be managed separately?
  - Do you have any other suggestions about how a national food and nutrition monitoring and surveillance system might best be established and sustained (eg infrastructure needed, where located, funding sources)?

- ***Comprehensive dietary assessment***
  - Do you support the proposal to have an ongoing survey program as opposed to a one-off national nutrition survey?
  - Are there other advantages or disadvantages other than those noted?
  - Is there another option you would recommend?
  - With regard to the proposed model, do you agree with the proposed features (i.e. 24 hour recall including supplement intake, repeat recall on sub-sample; food frequency questionnaire)?
  - Are there any concerns with the proposed model or suggestions for improvement?
  - Which organisation(s) are best placed to provide the infrastructure needed to (a) manage and (b) conduct an ongoing dietary survey program?
  - What kind of collaborative arrangements are likely to be most effective?
  
- ***Biological measurements***
  - Do you support the proposal that biological measures of nutritional status are best collected in the context of a dietary survey?
  - Are there advantages/disadvantages that need to be considered that are not noted?
  - Are there any other options that you would recommend for obtaining data on biological measurements?
  - Do you agree with the criteria for the selection of nutrient related measures and risk factors?
  - Do you consider that biological measures of nutritional status are more, equally or less important than comprehensive dietary assessment in the context of establishing a food and nutrition monitoring system for Australia?
  - Which kinds of organisation(s)/agencies (eg NGO, commercial, government, research) do you think are best placed to manage public

concerns about the collection of biological data?

- ***Food and supplement consumption habit surveys***

- Do you support the proposed links with the ABS National Health Survey program and with CATI surveys as opposed to designing/commissioning a food habits survey?
- Do you agree with the proposed features of the two approaches?
- Is standardisation of questions in state and territory CATI surveys achievable?
- Do you have any concerns with the proposed options or suggestions for improvement?
- Is there another option that you would recommend?
- Which organisation(s) could be candidates for collaborating with the ABS and the CATI Technical Reference Group on planning the food and supplement habits questions and analysis?

- ***Food supply monitoring***

- Do you support the proposals for monitoring food supply issues?
- Do you have any specific concerns about these proposals?
- Are there other practical alternatives to monitoring the quantity, quality of, and access to, the food supply?
- Are you aware of advantages and disadvantages, other than those listed?
- Are there organisation(s)/agencies, other than those currently involved in collecting and reporting food supply data, that could contribute to this area?
- Which organisations are best placed to further the development of standard methods for measuring food access/security?

This appendix, which summarises feedback on the discussion paper, comprises two parts:

- a thematic summary of the submissions
- a tabulated summary of response for each of the above sets of questions in the discussion paper.

These summaries do not purport to be a comprehensive summary of the issues raised; rather they aim to highlight major areas of commonality and general themes.

### A3.1 THEMATIC SUMMARY

There was overwhelming support for a national food and nutrition monitoring and surveillance system and strong support for an integrated system, rather than isolated elements.

While endorsing the proposed drivers and mandate for the system, a number of stakeholders noted that better information to support evidence-based regulation of food supply is a priority need

There was also strong support for a dedicated, permanent infrastructure to be responsible for the system.

A number of submissions warned against a 'Rolls Royce model' and advocated a staged approach to implementation.

#### The Framework

- There was general support for the four elements although a number of stakeholders argued the need for a conceptual model to link the elements together. In particular, a number of submissions proposed a model *starting* with food supply as the first element.
- There was some confusion over the differences between element 3 and element 4 in the discussion paper.
- There was commonly seen to be a need for stronger reinforcement that height and weight measurements

were a fundamental component of the comprehensive dietary survey.

- A number of submissions argued for increased emphasis on food composition data in the model
- A number of submissions argued for increased priority to be given to food supply and access (ie food security issues)
- A number of respondents argued that there was an over-emphasis on food supplements at the expense of information on basic foods (although FSANZ, a major stakeholder, saw data on supplement use, in addition to detailed data on food intake, as central to an FNMS).

### **Dietary Assessment**

- Comprehensive dietary assessment was widely seen to be the most pressing need in the monitoring and surveillance system.
- In general there was strong support for a rolling survey program for the reasons argued in the discussion paper.
- ABS argued that the distinction between the one-off survey and rolling survey was too sharply drawn. It cites the example of the household survey program which includes large, detailed surveys (special social surveys) supplemented by smaller, more flexible surveys more suited to ongoing or continuous surveys.
- There does not appear to be a consensus on whether it is desirable for the ongoing survey to be a whole population survey or population sub-groups.
- A number of stakeholders were strong advocates for the inclusion of physical activity data as central to the system and while there did not appear to be a consensus assessment on how to best measure physical activity, a number of submissions noted that, ideally, it should be linked to dietary assessment data.

### Biological Measurements

- for many respondents biological data, collected as part of the dietary assessment process, was seen to be a critical element of FNMS
- a number of other respondents, however, were concerned that it was expensive and may detract from the more fundamental need to establish comprehensive dietary assessment (ie seen as getting towards the Rolls Royce end)
- some respondents argued for biomedical measurements to be taken on a sub-sample of the full dietary survey respondents (and Beverley Wood noted that it should be called a nutrition survey if it includes biological parameters).

### Food & Supplement Consumption

- There appeared to be some confusion about this element and its relationship to the comprehensive survey.
- There appears to be general support for questions in the NHS and/or CATI surveys although not at the expense of comprehensive dietary assessment.
- FSANZ argues strongly that food supplement information should be part of the comprehensive survey (while, as noted earlier, others felt its importance was overstated).

### Food Supply

- A number of submissions argued strongly that the system should start with the element of food supply: 'it provides the broad context in which the individual lives and eats.... and trickles the framework concepts down from the Australian food and nutrition policy'
- Some respondents were, similarly, strong advocates of the HES and apparent consumption surveys, notwithstanding their shortcomings.

### Governance

- Funding was seen by many stakeholders to be a core government responsibility and while a small

number of stakeholders were antagonistic to industry involvement, others were more welcoming of an industry contribution to funding.

- There was overwhelming support for a permanent, dedicated unit with the responsibility for developing, coordinating and managing the FNMS and there was also a common proposal for a steering committee or governance arrangement that includes all relevant stakeholders
- AIHW and ABS were most commonly cited as possible homes for the 'unit'.

### A3.2 TABULATED RESPONSES TO DISCUSSION PAPER BOXES OF QUESTIONS

#### Box 1: Mandate for a national system

Other drivers	Other KEY policy questions	Cost/Risks	Other sources/options
<p>NRV especially AI development</p> <p>Food and nutrition policy</p> <p>Review of national guidelines eg AGHE</p> <p>Evaluation of national programs eg F&amp;V obesity</p> <p>Food industry</p> <p>Research</p> <p>Loss of apparent consumption series</p> <p>WHO Global Strategy on Infant and Child Feeding</p> <p>AFNMU 2001 Report</p> <p>Breastfeeding Leadership Plan 2004</p> <p>Cancer Prevention Policy 2005/6</p> <p>Increasing number of people living in poverty</p> <p>NATSINSAP</p> <p>Food standard development</p> <p>State &amp; territory reports/initiatives/plans</p> <p>Ministerial policies on fortification and health claims</p> <p>Inability of FSANZ to evaluate proposals with available data (-25%)</p>	<p>AI for nutrients</p> <p>Barriers to local food access</p> <p>Sub-group differences (eg ATSI, SES, culturally and linguistically different)</p> <p>Consumer understanding of claims/fortification</p> <p>Whether national guidelines need revision</p> <p>Policy impact evaluation</p> <p>Trends in composition of food supply</p> <p>Environmental factors influencing food choices</p> <p>Relationship with chronic diseases</p> <p>If systemic /infrastructure barriers influence nutritional status</p> <p>Availability/cost of "healthy" food</p> <p>Trends in within/between person variations in intake</p>	<p>Late detection of new problems/existing problems increasing</p> <p>Problems remain invisible</p> <p>Reduced ability to plan/target/assess policy interventions</p> <p>Incorrect assumptions affect PHN interventions eg mandatory folate</p> <p>Impossible to have evidence-based PHN without good information</p> <p>Policy inertia</p> <p>Inefficiency of jurisdictions doing own surveys</p> <p>Less capacity to analyse change</p> <p>Ineffective/unnecessarily restrictive food regulations</p> <p>Unable to undertake accurate cost/benefit analysis</p> <p>Cannot prioritise issues</p> <p>Waste of public money</p> <p>Lack of credibility of public health messages</p> <p>No trend data</p> <p>No data to inform policy development</p> <p>No data to evaluate effects of policy</p> <p>4.3 billion over 3 years spent on lifestyle disease prevention without effective evaluation</p> <p>State monitoring is costly/inefficient</p> <p>Lack of standardisation of monitoring activities</p> <p>Information vacuum</p> <p>Lack of data to support advocacy for increased investment in nutrition</p> <p>Disjunction between Australia and New Zealand surveys</p>	<p>Very little</p> <p>Out of date data</p> <p>Small ad hoc non-comparable surveys</p> <p>State data, other countries, opinion</p> <p>No other recommended options</p> <p>Food and alcohol purchase data</p> <p>Data from State CATI health surveys</p> <p>Is an area of unmet need but cannot be addressed without adequate funds</p> <p>None of the available data sources provide a valid and reliable alternative</p> <p>MCCS, Child and Adolescent PA and N Survey 2003, Childhood Growth and Development Study WA</p> <p>Healthy Food Access Basket (HFAB) surveys</p> <p>No other sources equivalent to 1995NNS for FSANZ</p>

**Box 2: Framework for a national system**

Are four elements OK	Missing elements	Physical activity	Other suggestions for establishment
<p>Order illogical Yes but consider together Relative value depends on policy priorities/budget/opportunities Need a flow chart to link potential components Elements are NOT alternatives DAA concerns re equal priority Dietary assessment priority for FSANZ Need to include environmental factors Have not captured availability/affordability of accessible food supply</p>	<p>Food preparation skills/health behaviours Dental health Physical activity Information about NZ Food composition database critical No reference to consumer KAB Identify and define groups with special needs Identify importance of social and economic context Need to harmonize with NZ Link two or more components as far as possible Links with existing systems on health status eg NTDs Small area data analysis Food marketing/advertising Need to include physical activity as an element</p>	<p>Depends on nature of PA information needed Part of a risk factors surveillance system Depends on scope of FNMS but useful in conjunction with diet Integrate – presumably with other individual measures Highly desirable to link with diet but needs consultation Everywhere! With dietary assessment ideally With diet if does NOT compromise dietary assessment Ideally with nutrition data but measures may need to be population specific Managed separately using same sampling strategy An indicator of PA with dietary assessment and more detailed PA data from other sources</p>	<p>ABS prepared to take leading role in elements requiring large population surveys IF funding can be identified Needs to be run by a recognised body eg ABS. AIHW NCEPH or other able to co-ordinate nationally Located outside statistical offices with wide stakeholder representation Avoid any unnecessary duplication *European Health Monitoring Model Ensure information available quickly, widely and free! Needs long -term commitment Responsibility of DOHA but unit better situated in AIHW Integrate with other exposures so not easily picked off – need integrated population health surveillance system Embed as part of ongoing programs eg NHS Wide ranging stakeholder steering committee Standalone FNMS seen as vulnerable Well resourced co-ordinating unit with ‘task’ specific hubs Source mainly from Fed and State funds eg Fed core plus State buy in Not be dependent on Food Industry funding Infrastructure with capacity to archive data Dedicated unit AFNMU model Dedicated unit within a research facility eg CSIRO/Uni under aegis of NHMRC/FSANZ</p>

**Box 2: Framework for a national system continued**

Are four elements OK	Missing elements	Physical activity	Other suggestions for establishment
			<p>Agreement on lead agency</p> <p>Ongoing agreements with DAFF/DOHA (?other) for funding plus</p> <p>and on resourcing and line of reporting for core unit plus Ministerial support</p> <p>Federally funded building of existing expertise within ABS/AIFS with incentives to States/LGA to use same framework</p> <p>Government funding is critical</p> <p>Stakeholder funding may assist but needs to be carefully governed</p> <p>Unit within FSANZ</p> <p>Some areas could be outsourced by central unit</p> <p>Link with NHS using resources within S&amp;T with demonstrated experience (eg govt, academic research)</p> <p>Joint Federal-State commitment with responsibility vested in existing govt unit or NGO</p>

**Box 3: Comprehensive dietary assessment**

Ongoing / one-off	Disadvantages/ advantages	Other options	Features	Concerns	Organisations	Collaborative arrangements
<p>Ongoing more efficient</p> <p>Ongoing strongly supported</p> <p>Yes but with targeted surveys of at risk groups</p> <p>Ongoing government supported similar to UK</p> <p>ABS if involved could consider both options</p> <p>Sequential offers possibility of earlier data and targeting</p>	<p>One-off not necessarily more timely</p> <p>Main advantage of any system is current and accurate data</p> <p>Ongoing more manageable</p> <p>One-off maybe easier to analyse/ distribute data</p> <p>Larger survey able to collect detailed data for sub-populations and need not be one-off</p> <p>? May miss/have inadequate data on disadvantaged groups</p>	<p>Consider mix of ongoing plus rotating sub-groups</p> <p>Harmonization with NZ</p> <p>Alternate large scale 'lifestyle' survey with smaller targeted/ detailed F&amp;N more regularly</p> <p>Incorporating 'tie-in' surveys for calibration may assist 'buy in'</p> <p>No support for small rolling sub-group surveys</p> <p>Range or mix of options could be considered</p> <p>For infants need oversampling or NHS approach</p>	<p>FFQ important for assessing usual intake</p> <p>Limited validated FFQ useful</p> <p>Some rationale for extended day record methods</p> <p>Reasonable but may not be appropriate for all age groups</p> <p>UK survey components</p> <p>Not clear whether would work in ABS-GSS context</p> <p>Need accurate definition of breastfeeding</p>	<p>Food composition database important</p> <p>Raises difficulties with sub-group comparisons</p> <p>24hr recall &amp; FFQ not sufficiently robust to relate to nutritional status</p> <p>Emphasis on ongoing may limit other options if not supported</p> <p>Need adequate sample of children &gt; than 1995 NNS</p> <p>Validity of self-reported measures needs to be assessed</p>	<p>Special unit in University, CSIRO, NHMRC, FSANZ</p> <p>Permanent team at AIHW/ABS</p> <p>Role of government – DOHA/AIHW</p> <p>Uni with strong PHN program</p> <p>ABS/AIHW</p> <p>National Nutrition Surveillance Centre? housed in AIHW</p> <p>Women's Health Study model</p> <p>NOT based in industry, uni or consultancy company</p>	<p>Need virtual centre with Reference Group to determine work program</p> <p>Funded assistance from partnership organisations required for integrated approach</p> <p>Fed govt lead agency with close collaboration with S&amp;T sustainability not served by other arrangements</p> <p>No support for industry funding</p> <p>Uni with ABS/AIHW</p> <p>NNSC with broad steering committee supported although a disseminated structure may assist support from broader base</p> <p>Link with NHS</p>

**Box 3: Comprehensive dietary assessment continued**

Ongoing / one-off	Disadvantages/ advantages	Other options	Features	Concerns	Organisations	Collaborative arrangements
<p>Sequential option preferred for risk assessment</p> <p>Ideally both one-off and ongoing with more in-depth data/sub-groups</p> <p>As long as sub-group and remote populations captured</p>	<p>Ongoing enables building capacity of technical expertise</p> <p>Ongoing supports constant improvement &amp; flexibility</p> <p>One-off time lag in reporting</p> <p>Ongoing would assist in updating of FC data by FSANZ</p> <p>One-off dependent on NPP which may take 1-2 years for approval by D of Finance</p> <p>One-off sample size may not provide robust data for some sub-groups</p>	<p>Longitudinal design</p>	<p>Need at least two 24 hour recalls</p> <p>Include biomarker data in sub- group</p> <p>Need to include some food habits data</p> <p>FFQ needs to cover whole food supply with same level of detail</p> <p>FSANZ- needs three 24hr recalls for 100% of population Day 2 and 3 could by CATI</p> <p>Supplement data with intake using TGA number</p> <p>Water intake should be included</p> <p>FFQ data needed for all ages</p>	<p>Need for detailed supplement data</p> <p>Reliability of methods for some groups (eg CALD &amp; Indigenous)</p> <p>Need consistent approach to food grouping/coding/ recipe definition</p> <p>Improvements in portions size estimation</p>	<p>Commonwealth funded agencies</p> <p>Consider Irish model ie NN co-ordinating centre in academic dept</p> <p>Manage- FSANZ/AFNMU</p> <p>AIHW with stakeholder input</p> <p>Conduct - regional/state collaborations &amp; NGOs</p> <p>ABS has infrastructure but there are special issues related to food and nutrition</p> <p>Precedents for ABS/DOHA collaboration for surveys not fully funded by ABS</p> <p>Manage:</p> <ul style="list-style-type: none"> <li>➤ ABS/AIHW</li> </ul> <p>Conduct :</p> <ul style="list-style-type: none"> <li>➤ S&amp;T population health units</li> </ul> <p>Dedicated unit housed in organisation with sufficient nutrition, epi and stats experience</p>	<p>Commonwealth/S&amp;T</p> <p>NNSC with S&amp;T representation</p> <p>National co-ordination between govt sectors and outsourcing to relevant groups</p> <p>ABS, DAFF, FSANZ</p> <p>NZ and S&amp;T</p> <p>Need to develop communication and information processes</p> <p>O/S consultants from countries such as UK/NZ which have ongoing programs</p> <p>Co-ordinating unit in one agency with executive team across agencies plus steering group representative of</p> <p>Need to ensure access to adequate governance arrangements</p> <p>FSANZ/DAFF</p> <p>DOHA/AIHW</p> <p>ABS/TGA</p> <p>May need legislative changes</p>

**Box 4: Biological measurements**

With dietary data	Advantages/disadvantages	Other options	Criteria for selection	Importance	Public concerns
Likely to be most relevant context	NHS link – potential impact on NHS	Include in several surveys to lessen burden	Insufficient information to respond – inappropriate examples	Less important than dietary assessment (FBDG)	Health Services Australia, NHF, AMA
Yes but need to consider impact on response	Development and testing required	Obtain on sub-sample of dietary survey +	Also consider food contamination	Equally important ++	O/S consultants from countries such as UK/NZ which have ongoing programs
In principle yes but in practice may have unwanted outcomes	Stand alone – main disadvantage response	Need specific context for this	Nutrients present in excess from fortification	Essential together	Government agencies ++
Not necessarily except for height weight Hb and a few others in NHS	Need strategies to address response	Selection of test may be very important in response	Cost-benefit analysis	Unnecessary to choose between them	Need for secure sample storage
Ideally would also include health outcomes	Need to include outcomes of options in different contexts	Linkage with non-food issues may enhance sustainability	No – too much emphasis on chronic disease	Consider constraints to ensure other aspects of FNMS not compromised	Not a problem if included in NHS
Consider archiving to link with future outcomes	May not focus on nutrition issues	Health service data	Need parameters reflecting general health eg growth/maintenance of health	Global measures of nutritional status more important	NHMRC, NHF, CCs, Diabetes Australia, CSIRO, AMA – all have good public esteem
Not essential for FSANZ except for weight	Ownership of samples maybe a complicating issue for linked surveys	Useful to have agreed methodologies	Alter to “reliable evidence of dietary inadequacy”	(eg wt/ht)	AIHW/DOHA
Yes but only minimum number of measures in the context of FN monitoring	Less chance of linking with social, economic & health data	Expand options to include community settings other than schools eg workplaces aged care facilities	Focus on priority measures only	Complementary	Govt organisations but need to consider IP issues
Supported but not at expense of dietary data	Standalone may reduce response because context not appreciated	MCH Centres and schools for weight and height	Anthropometric measures could be given a higher profile	Depends on context	Pathology labs and medical centres
Supported but concerns about response			Limit to at risk population groups	Empirically more important but in context of FN only a few needed	Agencies responsible for collection should manage this
			Include ref to new NRV	Equal because assist data validation	
				Anthropometric measures most important with others on sub-sample	

**Box 5: Food and supplement consumption habit surveys**

NHS/CATI	Features	Standardisation	Concerns	Other options	Collaborating Organisations
<p>? Is separate collection defensible if included in main survey program</p> <p>Breastfeeding may need separate targeted approach</p> <p>Supplement use should be linked with food intake FNMS should monitor total intake</p> <p>CATI is state-based with varying methodology</p> <p>Strongly support</p> <p>Options not mutually exclusive</p> <p>No to CATI option does not provide a national picture</p> <p>Needs to be addressed in national survey</p> <p>Good use of ongoing surveys</p> <p>NHS not necessarily optimal solution but makes sense in principle to include within ABS HSP</p> <p>As infant feeding a priority need to collect in every survey</p> <p>FSANZ support for food habit questions but not supplement data</p>	<p>Have misgivings – theoretically possible but difficult in practice. If agreed to have rolling FN surveys why not included as part of these rather than as a separate item attached to CATI or NHS</p> <p>Combine with dietary assessment section</p> <p>Inclusion of nutrition questions likely to be a recommendation of current NHS review</p> <p>FSANZ does not use food habits questions and other data of more relevance</p>	<p>Provided there is strong leadership</p> <p>Would query whether this has been demonstrated for such a complex issue as nutrition</p> <p>Need to include in core nutrition survey</p> <p>Yes – see European DAFNE initiative</p> <p>Unknown – but does not address S&amp;T who do not use CATI</p> <p>Achievable but may be difficult without SIGNAL</p> <p>ABS is working closely with CATI to facilitate</p> <p>Possibly</p>	<p>Many unanswered issues</p> <p>Needs to be clear that this does NOT replace rest of program</p> <p>Important to assess need for ‘stand alone’ questions</p> <p>Limitations of NHS as a nutrition vehicle</p> <p>Loss of link between diet and biological measures</p> <p>Supplement data should be collected with dietary intake data</p>	<p>Should be part of rolling FN survey – not outside the process</p> <p>Include in core survey or possibly with second recall in sub-sample</p> <p>Other established networks in S&amp;T should collect this information</p> <p>Include key aspects in main survey</p> <p>Conduct as independent survey</p>	<p>TGA for supplement data</p> <p>Permanent team inside ABS to lead the charge!</p> <p>Government responsibility DOHA/AIHW</p> <p>NSW Centre for PHN</p> <p>Needs an organisation with that understands data and users APHNAC could play a role</p> <p>DOHA &amp; AIHW if option supported</p> <p>NNSC to prevent fragmentation eg at AIHW</p>

**Box 6: Food supply monitoring**

Proposals	Concerns	Practical alternatives	Advantages/ Disadvantages	Other Organisations	Methods development
Change of HES methodology requires wider consultation user consultation for 2009/10 will occur in 2008	Feasibility and support yet to be assessed	Food access and security best assessed at state and regional level	Commodity availability not able to be linked directly to individuals/households	NNSC needs to be integrated with other aspects	Numerous agencies inc NGO and academic including economics and geography depts
DAFNE II demonstrated amounts not required	Proposal not fully comprehensive	Include:	Doubts that scanned retail sales data provides accurate information on composition of food supply	*See Irish model	
NB Only for Ireland was this approach used	Upstream drivers not as fully developed as dietary assessment	Food policy data produced by ABARE		AFGC	
Much neglected aspect of monitoring	Consider best practice overseas	Scanned retail sales data for grocery items	Possibility of looking at food security aspects in HES	ASA	ABS in conjunction with health depts with input from ACOSS, IHI and NSW CPHN
Food supply monitoring is core of ongoing FNMS	Audit of agricultural and production statistics needed	Food marketing	HES cannot provide data on national food supply	? Social Security and welfare agencies	Universities with PHN experience (APHNAC)
Support Apparent Consumption	Need to be more directive about development of community based FS methods	Include HFAB surveys	Not all stores have scanners especially in rural/remote areas	Government responsibility DOHA/AIHW should develop expertise if none now	Included in brief of the group chosen to auspice national surveys
HES and ongoing monitoring of food composition	Insufficient detail for assessment of these issues	Possibility to develop indicator for FS that could be used in GSS		Need separate unit with senior nutrition experts in team	Government Should be part of FNM Unit brief
Need greater focus on access, availability and quality	Need more emphasis on food composition	Apparent Consumption data despite limitations		AFGC and growers associations	State and community groups working in the area
Apparent Consumption needed	Food composition database limitations	Barcode readers for supplements		LGA, local producers, welfare and emergency relief organisations	Access Economics
HES proposal excellent	Need individual and household data	Further development of community based methods critical		DAFF monitors cost nationally	NATSEM
Include production as well as availability	Scanned retail sales data dependent of food industry	Use broad base of community settings		FSANZ can contribute food composition data	
Not supported	Too much emphasis on supplements and formulated foods				
Food supply is most important element in framework					

**Box 6: Food supply monitoring continued**

Proposals	Concerns	Practical alternatives	Advantages/ Disadvantages	Other Organisations	Methods development
<p>While many issues are important could be covered in ongoing survey</p> <p>HES most feasible option</p>	<p>Introduce environmental sustainability</p> <p>Apparent Consumption/ HES surrogates for more detailed data not previously available</p> <p>Food supplement use must be part of ongoing NNS</p> <p>Food databases need more prominence</p> <p>Food composition data a priority for FSANZ</p>	<p>Standardised food outlet density/km</p> <p>Standardised market basket surveys and food cost</p> <p>Retail sales data biased towards packaged foods</p>			

## appendix 4 summary of international consultations

Consultations were conducted with senior staff from agencies closely involved with food and nutrition monitoring in four countries (The Netherlands, New Zealand, United States of America and United Kingdom). These countries were selected because all had a history of food and nutrition monitoring and/or had recently reviewed their programs and were thus in a position to provide useful advice in this area. The international consultations were based on a common set of questions and this appendix provides a summary of the responses.

### BACKGROUND

#### How long have you had a national food and nutrition monitoring system in place?

Only the USA currently has an integrated food and nutrition monitoring "system or program" - the *National Nutrition Monitoring and Related Research Program*, established (though without allocated funded) by an Act of Congress in 1990.

Country	Survey program	National surveys since~1980
Netherlands	Dutch National Food Consumption Survey (DNFCS)	1987/88 1992 1997/98 2003 Pilot for new program
UK	National Diet and Nutrition Survey (NDNS)	1986/87 Adults 19-64 1992/93 Children 1.5-4.5 1995/96 Older adults 65 and over 1997/98 Adolescents 14-18 2000/01 Adults 19-64
New Zealand	National Diet Survey (NHFNZ) Life in New Zealand (LINZ) National Nutrition Survey (sub-sample of 1996-97 NZHS) National Children's Nutrition Survey (NCNS)	1977 Adults 20-74  1989 Population 15 and over  1997 Population 15 and over  2002 Children aged 5-14

Country	Survey program	National surveys since ~1980
USA	National Food Consumption Survey (NFCS) and Continuing Survey of Food Intakes by Individuals (CFSII) National Health and Nutrition Examination Surveys (NHANES)	1977-78 1987-88 1989-91, 1994-96, 1998  1976-80 NHANES II 1988-94 NHANES III Continuous from 1999

In all four countries national nutrition surveys are the cornerstone of food and nutrition monitoring and the only means of collecting reliable and specific data on food and nutrient intake at an individual level. In the UK and New Zealand these surveys also include physiological and biochemical measurements of nutritional status (e.g. anthropometry, blood pressure blood and urine samples). In the Netherlands sub-studies of at risk groups identified on the basis of the dietary survey data have included relevant biochemical and physiological measurements. In the USA dietary intake has previously been monitored both in an ongoing program of national food consumption surveys (NFCS/CFSII) conducted by USDA and as part of National Health and Nutrition Examination Surveys (NHANES), which include physiological and biochemical measures of nutritional status conducted by DHHS. Since 2002, however, the NFCS/CFSII has been integrated with NHANES.

### What were the triggers for the survey program?

#### *Netherlands*

Concerns about high fat intake together with lack of information on food and nutrient intake of the population on which to base nutrition policy and program development.

#### *United Kingdom*

Little information available on eating habits of adults in Great Britain despite evidence of considerable changes in eating habits and concern about relationships between diet and health.

*New Zealand* – 1995NPAN and need to monitor food and nutrition targets and obesity as well as a need for up-to-date knowledge about food and nutrient intake and nutritional status of the population at a time of rapid change in the NZ food supply.

#### *USA*

Originally concerns about nutritional status of the US population in response to reports about hunger and malnutrition.

### **How is the information used?**

#### *United Kingdom*

The range of uses to which the NDNS data are put is illustrated by the following taken from a technical report ([www.food.gov.uk/science/101717/ndnsdocuments](http://www.food.gov.uk/science/101717/ndnsdocuments)) which describes the “Background , purpose and research design of the 2000/01 National Diet & Nutrition Survey of Adults aged 19 to 64 years:

- provide detailed quantitative information on the food and nutrient intakes, sources of nutrients and nutritional status of the population under study as a basis for Government policy;
- describe the characteristics of individuals with intakes of specific nutrients that are above and below the national average;
- provide a database to enable calculation of likely dietary intakes of natural toxicants, additives and other food chemicals for risk assessment;
- measure blood and urine indices that give evidence of nutritional status or dietary biomarkers and to relate these to dietary, physiological and social data;
- provide height, weight and other measurements of body size on a representative sample of individuals and examine their relationship to social, dietary, health and anthropometric data as well as data from blood analyses;
- monitor the diet of the population under study to establish the extent to which it is adequately nutritious and varied;

- monitor the extent of deviation of the diet of specified groups of the population from that recommended by independent experts as optimum for health, in order to act as a basis for policy development;
- help determine possible relationships between diet and nutritional status and risk factors in later life;
- assess physical activity levels of the population under study; and
- provide information on oral health in relation to dietary intake and nutritional status.

### *New Zealand*

A similar list of uses is given for data from the 1997 National Nutrition Survey for New Zealand in *Food Comes First: Methodologies for the National Nutrition Survey of New Zealand*, Public Health Group, Ministry of Health, Wellington, 1997.

- provide data on nutrient and food intakes that are suitable for risk assessment required for setting and reviewing national and international regulatory food policies;
- assist in the development of food policy and regulation related to food composition and safety, and in the provision of information related to food production, manufacture and sales;
- monitor food and nutrient intakes against food and nutrition guidelines and compare nutrient intakes with RDIs and assist with future revision of RDIs;
- provide baseline data on the nutritional status and food security of the population for comparison with future surveys;
- assess changes in dietary habits over time and provide a basis for comparison with future surveys;
- assist with the ongoing development of, and monitor the impact of, New Zealand's nutrition policy, monitor health goals and targets for nutrition and diet related diseases and assist in the revision of future goals and targets;

- provide information on the inter-relationship of health, social, economic and nutrition variables in selected population sub-groups for policy development, including health promotion;
- provide a basis for nutrition education and other strategies to improve nutrition, and to provide a means of measurement of existing nutrition programs;
- facilitate the development of nutritional status and dietary intake indicators which could be used for more regular surveillance;
- provide this much needed information to external users such as dietitians, nutritionists, the food industry and health providers.

### **Obstacles to continuing, and consequences of stopping, national nutrition survey program**

All those consulted acknowledge that it is always likely to be difficult to ensure ongoing funding because of shifting political support and budgetary priorities. Moving to a continuous program or a longer term strategic plan with assured funding (e.g. The New Zealand Health Monitor) has both the advantage of reducing the amount of funding that needs to be allocated at any one time and allowing for more effective and coordinated forward planning.

#### *Netherlands*

Most likely would lead to questions in parliament, which the relevant Ministers would then be obliged to answer based on evidence. A requirement to set quantitative targets for all kinds of topics, including nutrition also helps. It is difficult to give an indication of how strenuously users might object if no continuing survey program was funded. Before continuation of the program, clear calls were received from food industry, health organisations and nutrition professionals asking for new data.

#### *United Kingdom*

Discontinuing the survey program would threaten the Food Standards Agency's ability to assess and respond appropriately to chemical food safety and nutrition

issues. An independent review of the NDNS in 2003 concluded that discontinuing the NDNS was not considered an option.

*New Zealand*

National nutrition surveys provide the only reliable and specific data on current food and nutrient intake, which are needed for the various purposes outlined above.

*USA*

Non-continuation of NHANES unlikely but funding a continuing problem because about one third of funds from 25 government agencies who support components of the survey of interest to them while CDC funds the remaining two-thirds of NHANES. Dietary aspects funded by USDA.

**What are the main components of national food and nutrition monitoring?**

The 1986 recommendations made by the Netherlands Nutrition Council for national food and nutrition monitoring included three components and the 1990 USA National Nutrition Monitoring and Related Research Act five (see table).

Dutch nutrition surveillance system 1986	United States National Nutrition Monitoring System 1987
<p><b>Food consumption</b>                      -food balance sheet                      -household budget survey                      -national food consumption survey</p> <p><b>Health Status</b>                      -morbidity and mortality data                      -data from health information systems  <i>Surveys on dietary intake and nutrition status</i></p>	<p><b>Food consumption measurements</b></p> <p><i>Food supply and demand determinations</i></p> <p><b>Nutritional and health status measurements</b>  <i>Food composition measurements and nutrient data banks</i>  <i>Dietary knowledge and attitude measurements</i></p>

## How is the system/survey program managed?

### *Netherlands*

The Health Council of the Netherlands is an independent advisory body whose task is to advise Ministers and Parliament in the field of public health (similar to NHMRC). Ministers ask the Health Council for advice on which to base policy decisions. In addition the Health Council has an "alerting" function, which also allows it to give unsolicited advice. The HC has a Standing Committee on Nutrition and its current work program in health and nutrition includes organisation of national food consumption surveys after 1998. Until 1998, the DNFCS was jointly funded by the Ministry of Health, Welfare and Sport and the Ministry of Agriculture, Nature Management and Fisheries. Recently the latter has withdrawn its support. RIVM and TNO collaborate in survey design and preparation of survey materials. In recent years RIVM has become more involved in food consumption surveys because it is the "in house" research institute for the Ministry of Health, Welfare and Sport. This relationship means that the flow of money is to some extent guaranteed because it is easier for the Ministry to allocate funding for the food consumption surveys rather than to make separate calls for tenders.

### *United Kingdom*

The Food Standards Agency and the Department of Health are jointly responsible for funding and managing the program. Two to three full-time staff in the FSA and probably a similar number in DoH are involved throughout the process from planning to final analysis and publication

### *New Zealand*

In NZ the nutrition surveys are an integral part The New Zealand Health Monitor, a ten-year strategic plan for a coordinated national population survey programme run by the Ministry of Health and an annual budget allocation of 3 million \$NZD. As part of the NZHM an adult and a child nutrition survey are planned every ten years.

The Ministry of Health is responsible for nutrition and health policy development and monitoring and the

Public Health Directorate undertakes most nutrition and health monitoring activities within the Ministry of Health. The Ministry of Health funded and managed both the 1997 National Nutrition Survey (conducted on a sub-group of participants in the 1996-97 NZHS) and the 2002 National Children's Survey, which was a stand-alone survey. For both surveys, the development of survey methodology, fieldwork and analysis were put out to tender.

Food and Nutrition Monitoring in New Zealand (Public Health Intelligence, Occasional Bulletin No 19, 2003) reviews current food and nutrition monitoring activities in New Zealand and outlines future directions.

#### *USA*

USDA and DHHS jointly implement and co-ordinate the activities of the NNMRRP.

An Interagency Board for Nutrition Monitoring and Related Research jointly chaired by an Assistant Secretary from the USDA and from DHHS with representatives from Public Health Service, DHHS agencies, USDA agencies, the Agency for International Development, the Bureau of Labour Statistics, the Census Bureau, the Department of Defences and the Veterans Administration is responsible for planning, co-ordination and communication among agencies engaged in nutrition monitoring and assisted by a National Nutrition Monitoring Advisory Council of nine voting members who are not federal employees. Interpretation, data analysis and preparation of regular reports is carried out under contract by a scientific body such as the National Academy of Sciences.

#### **Has the system/program changed in recent times?**

##### *Netherlands*

A new program is currently under consideration by the Health Council. "The new system of surveys needs to focus on food consumption from the perspectives of both health promotion (healthy eating) and health protection (safe eating)".

After the second survey there were question about whether the earlier program should be continued in the same way but decided to complete the 3rd survey to be able to describe 10-year trends. Reasons for considering new methodology included:

- previous records provided insufficient detail about foods for food safety issues
- consecutive day intake data limited ability to estimate usual intake distribution
- eating patterns more individual and household-based sampling less appropriate
- EFCOSUM recommendations for use of 24hr recall for European studies.

Also important were the large fluctuations in financial/personnel resources needed under the old system. A small-scale survey to trial new dietary methodology carried out in 2003. A continuous dietary survey program is currently being considered for individuals aged 7 years and over. For other groups e.g. children 6 years and under, ethnic minorities, institutionalised elderly, pregnant women for whom 24hr methodology not appropriate to be studied at 4-6 year intervals.

#### *United Kingdom*

Review of existing NDNS program prompted by:

- lack of timeliness in current approach (5 years from planning to publication)
- lack of flexibility to respond quickly to policy needs
- practical issues such as declining response rates and data quality (under-reporting)
- the cost of individual surveys is significant and increasing and approach needs to be cost-effective

Proposal is to move to a rolling program since this is the only approach that addresses the issues of timeliness and flexibility. The nature of the rolling program will also provide an opportunity to develop a national identity for the survey, which might be helpful in addressing practical issues. Survey management also expected to

be more cost-effective eliminating the need for repeated planning and set-up costs.

#### *New Zealand*

No major changes in management, methodology or content are currently planned for the 2007-08 national nutrition survey of adults. However, as a result of the 2003 report on Food and Nutrition Monitoring in New Zealand (see above) the Public Health Intelligence branch within the MOH plans to investigate secondary sources that may be useful for monitoring food supply at national and household level and to develop a reporting schedule and networks to improve dissemination of food and nutrition monitoring data.

#### *USA*

Since 1999 the NHANES programme has been conducted on a continuous basis with a nationally representative sample of 5000 individuals, newborns and older being examined annually. Reporting is on a two-year cycle e.g. 1999-2000, 2001-2002 etc. Since 2002, the Continuing Survey of Food Intakes of Individuals (CSFII) conducted by USDA has been fully integrated with the NHANES survey program conducted by DHHS. Under the integrated framework DHHS is responsible for the sample design and data and USDA is responsible for the survey's dietary data collection methodology, maintenance of the database used to code and process the data, and data review and processing. The decision to move from periodic surveys to a continuous survey program, was motivated primarily by funding issues, timeliness and flexibility to respond to emerging issues. Getting major funding for periodic surveys was more difficult than a smaller annual commitment to a continuous program. Identification of an ongoing, sustained funding base for NHANES field operations, however, is still a challenge for the program. The continuous survey design is also a challenge since it requires the same group of people to work on all aspects of the survey from planning to data release continuously and at the same time. It was found necessary to develop a clear plan for the continuous survey. At present sample is selected on an annual basis but planning, data collection and release is biennial.

## Have you made use of technological developments or advances?

### *Netherlands*

Computer assisted telephone interviews for 24hr recall based on EPIC-SOFT software together with a picture booklet for assessment of portion sizes.

Propose to use internet-based questionnaires on very large samples (50,000) for foods supplements consumed by very few people

### *United Kingdom*

Probably will include at least one telephone interview remainder face-to-face. Doubly- labelled water validation study for energy intake from 7-day record in the 2000/01 survey.

### *New Zealand*

A computer assisted data-entry system was developed for the 1997 NNS and also used in the 2002 Children's Survey. This has many advantages compared paper and pencil technology not least of which is the saving in coding time and standardisation of the interview process. A pilot study to validate the dietary methodology for CNS 2002 was conducted using doubly labelled water. The possible use of digital cameras to assist with portion size estimation is under consideration.

### *USA*

Automated methods for collecting and processing food intake data have been developed by the Food surveys Research Group at USDA to improve the quality and efficiency of food intake surveys. These automated methods are part of a four-component dietary intake data system, which consists of three computer systems and four technical food databases. The computer systems are the automated multiple pass method (AMPM) for collecting food intake data, the post interview processing system (PIPS) for re-formatting data and assigning food codes, and Survey Net for final coding, quality review and nutrient analysis. The four databases are food codes and descriptions, food

weights and measures, recipes and formulas and the survey nutrient database.

A doubly labelled water study to validate the AMPM and a physical activity questionnaire used in NHANES was conducted by USDA on 520 adults in 2002.

### **How best to sell the case for an ongoing program?**

- Need to show clearly that the information needed cannot be provided from another source
- Highlight and list ALL the ways in which the data from national surveys can be used with examples of topical issues.
- Find champions within the principal funding agency/ies
- Get key academics talking to Ministers.
- Start small and crawl before you run!

## **DESCRIPTION OF THE SURVEY PROGRAM**

### **Survey details**

#### *Netherlands*

*Sample* – Previously stratified probability sample of non-institutionalised households (~2800 household/~6000 households) per survey. Proposed 4000 individuals aged 7 years and over per 3-year analysis and reporting cycle. See above for children and other special groups.

*Content* –Previously 2-day household dietary record and questionnaire on body weight, height, use of nutritional supplements, special dietary practices, meal-patterns. FFQs specially designed for particular nutrients only used to identify individuals for follow-up studies of diet and biological measurements. Proposed two independent 24hr recalls by telephone and follow-up studies of special groups, which include dietary and biological assessment two years after main survey.

*Response rate* – Only 42% in pilot survey in 2003 compared with ~80% in initial household survey in 1987/88.

*Cost* –The 1997 dietary survey cost 1.4 million Euros or ~250 Euros per respondent whereas the 2003 dietary methodology pilot survey with an effective sample of only 750 respondents cost ~1000 Euros per respondent. About 10% of this was needed simply for updating food and recipe databases and collecting and adding data not available in the existing food composition database.

#### *United Kingdom*

*Sample* -People aged 18 months and over living in private households and representative of the UK population including Northern Ireland. Proposed 1000 people per year either adults or children building a sample size of 1500-2000 over two years for analysis. This would give 125-170 for adults and 150-200 for children per DRV sex/age group. An additional sample of 400 would allow analysis for one ethnic group per year though not by age/sex groups. Sample would also need to be boosted to 400 per region to allow comparisons for Scotland, Wales and Northern Ireland with UK average.

*Content*- 2000/01 NDNS a face-to-face interview to collect information on socio-demographic and lifestyle characteristics; a 7-day weighed-intake record with estimated portion sizes for foods eaten outside the home; and measurements of weight, height, waist circumference, blood pressure, a 24-hr urine and a venous blood sample; a record of physical activity over 7 days and a self-count of the number of teeth and amalgam fillings. Proposed for the future four independent 24 hr recalls (three face-face and 1 by telephone) together with all other previous components but a simpler approach to physical activity assessment. Also blood and urine samples will be alternated to reduce respondent burden.

*Response rate* – 47% for dietary records and 36% for blood sample in the 2000/01 NDNS survey compared with 70% and 53% respectively in the 1986/87 survey.

When tested in a low -income group survey the proposed new dietary methodology had a response rate of 56% and this is likely to be higher in a general population sample.

*Cost* – 2000/01 Survey 2,500 pounds sterling per respondent. The number of field visits has a major impact on in the field cost but not on overall survey cost.

### *New Zealand*

*Sample* –A representative sample of about 4,600 New Zealanders living in private households aged 15 years and over who had participated in the 1996/97 NZHS. The 2002 CNS was a nationally representative school-based sample of children aged 5 to 14 years selected with over-sampling to give ~ 1000 children from Maori, Pacific and NZEO groups to enable ethnic-specific analysis.

*Content* – The 1997 National Nutrition Survey included a 24 hr recall, a self completed FFQ, questions on food preparation habits, dietary supplements, barriers to change and self-assessment of household food security, physical measurements including weight, height, 3 circumferences and 2 skinfolds, blood pressure and a blood sample. A small number of questions on environmental chemicals were also included at the request of the Ministry for the Environment.

The 2002 CNS included a 24hr recall interview (in most cases at home) questions on demography, eating patterns, household food security, physical activity and dental health. A qualitative FFQ was also completed. Anthropometry, and blood and urine samples were obtained at school for children attending urban schools only because of budget constraints.

*Response rate* – 80% of NZHS participants consented to personal information being passed on for the 1997 NNS and of these 85% participated in NNS. The overall response rate including response to the NZHS was 50%. In the 2002 children's survey response rate varied with ethnicity from 74% of Pacific children to 65% of Maori children.

*Cost* – The total cost for the 1997 survey was just over 3 million NZD or ~650NZD per respondent. For the 2002 CNS the total cost was 5 million NZD including ~ 1million for development work. Including the development

component the cost of the 2002 CNS was ~1500NZD per respondent.

#### *USA*

*Sample* – A nationally representative sample of 5000 individuals (newborns and older) sampled annually. Persons currently over-sampled include African Americans, Mexican Americans, adolescents, persons over 60, pregnant women and low-income Caucasian Americans.

*Content*- NHANES is designed to assess the health and nutritional status and combines personal interview with standardized physical examinations, diagnostic procedures and laboratory tests. In addition to diet and nutritional status it provides information on diseases, health risk factors, genetics and health, oral health, environmental exposures, obesity and physical fitness.

*Response rate* – No overall data obtained through e-mail contacts. Will vary for different NHANES components.

*Cost* – No data obtained through e-mail contacts but probably not particularly relevant to our situation because NHANES is very complex and covers a very large range of physical measures.

### **Food Habits & Supplement Information**

Most of the national dietary surveys described above, include information on food habits and on nutrient supplements obtained by questionnaire.

Limited information on food habits/supplements is also collected as part of other national surveys e.g. in the UK in the Health Survey for England (HSE). The UK consultation, however, also indicated that while there may be scope to expand the existing dietary module of the HSE it could never be made sufficiently detailed to meet the FSA's needs. Similarly information about intake of supplements is unlikely to be obtained in the context of population surveys with a broader focus than food and nutrition.

In New Zealand the 2002-03 NZHS includes questions on fruit and vegetable consumption. It is hoped to expand the module on nutrition in the next NZHS and/or include questions in other appropriate surveys e.g. Health Behaviours Surveys to enable key aspects of dietary behaviour to be monitored in the years between national nutrition surveys. These questions should also be included in the periodic national nutrition surveys. In New Zealand breastfeeding data purchased by the MOH from the Plunket Society are used to monitor breastfeeding rates. The Plunket data provide information on the proportion of babies fully breastfed at 5-6 weeks, 3 months, and 4-6 months and partially breastfed at 4-6 months.

### **Food Supply Monitoring**

#### *Netherlands*

The 1986 recommendations for a Dutch nutrition surveillance system included food balance sheets and household budget surveys as components. The consultation, however, indicated that information from food balance sheets is now of limited use in addressing questions related to healthy eating and food safety. Similarly in the Netherlands household budget surveys are of limited value for nutrition surveillance because they provide only food expenditure data without quantities. As in Australia attempts have been made to change this but so far without success.

An independent group within TNO is responsible for updating food composition data and the maintenance of the Dutch food composition tables (NEVO) with funding of ~150,000 Euros annually from the Ministry of Health. In recent years funding has decreased.

TNO has done some work on looking at comparability between household food-consumption data and scanned food purchase data for a few types of foods. Results were promising only for spreads and cooking fats and not for confectionery and vegetables.

#### *United Kingdom*

The National Food Survey, which dates back to 1940 was replaced in 2001 by the Expenditure and Food

Survey (EFS). The EFS is a continuous survey of 1600-1700 households per quarter commissioned by the Office for National Statistics and Department of the Environment, Food and Rural Affairs with the primary purpose of providing weights for the Retail Price Index. It collects data on expenditure, consumption and the nutritional content of food brought into the home and details of meals eaten out. Data are available by region, income and household composition. This survey and other surveys such as the HSE and ad hoc census, polling and market research studies " contribute valuable information that can be used in alongside NDNS data. However, whether taken individually or together they do not provide viable alternative data sources to NDNS

([www.food.gov.uk/multimedia/pdfs/fsa050203.pdf](http://www.food.gov.uk/multimedia/pdfs/fsa050203.pdf))

FSA is responsible for funding and managing the regular updating of food composition data. Currently between 100,000 and 200,000 pounds sterling are spent on this annually. The program is currently under review. FSA commissions laboratories for the analyses and works in conjunction with IFRI on preparation of the data.

#### *New Zealand*

Food supply monitoring, which depends on secondary data (data collected for another purpose) is recognised as currently inadequate. From 1977 to 1996 Statistics New Zealand collected Food Balance Sheet (FBS) data through a number of surveys including the Agricultural Production Survey. In 1997 this and several other surveys were discontinued or scheduled less frequently and FBS compilation discontinued. In 1999 the MOH contracted NZ Institute for Crop and Food Research Ltd (ICFR) to determine the feasibility of re-establishing the collection. Despite a number of possible options (Burlingame & Hicks, 1999) the production of FBS has not resumed. The fact that the Ministry of Agriculture and Forestry has recently received funding to develop and ongoing program to collect agricultural statistics in partnership with Statistics New Zealand, provides an opportunity for resumption of FBS in the future.

Other potential sources of NZ food supply data, which could be explored further for food supply monitoring

e.g. industry surveys, market research data and Statistics New Zealand's Household Economic Survey are described in Food and Nutrition Monitoring in New Zealand [www.moh.govt.nz/phi/publications](http://www.moh.govt.nz/phi/publications) (PHI Occasional Bulletin No 19, 2003).

The MOH contracts the ICFR to maintain and develop the New Zealand Food Composition Database (NZFCD). The NZFCD was established in 1980 and currently includes ~2600 foods analysed for 48 nutrients. The NZFCD also includes some data on dietary supplements, although these are largely based on label rather than analytical data. An audit of the NZFCD Service was conducted for MOH in 2003 ([www.moh.govt.nz/phi/publications](http://www.moh.govt.nz/phi/publications) - Audit of the New Zealand Food Composition Database (NZFCD) Service). The annual MOH contribution for this service is \$450,000 currently on a three-year contract ending June 2007.

## appendix 5 summary of expert panel consultations

We consulted four experts in the specialty areas of food composition data, national nutrition monitoring and surveillance, physical activity monitoring and measurement, and the use of nutrition data for estimating nutrition-related burden of disease. Key points arising from the consultations are summarised below.

### Food composition data

- The food supply, and the composition of processed foods is changing at a rapid rate requiring a significant enhancement to current food composition analyses undertaken by FSANZ.
- Comprehensive dietary intake data is only as good as the data used to derive the nutrient and non-nutrient estimates.
- The food composition work needs to be on-going just as a nutrition survey needs to be on-going to serve the purpose of monitoring trends over time.
- Priorities for updating food composition data would be similar to the recommendations made in a review conducted for the New Zealand Food Composition Data, see references below. The priorities for supporting a nutrition survey are "Key Foods", i.e. those that are commonly eaten, and the nutrients of most importance for analyses are those of current or emerging public health concern.
- There are possible benefits to stronger links between the Australian and New Zealand Food composition updates- if both countries require data for food standards regulation (both under one organisation- FSANZ), and if Australia institutes an ongoing nutrition survey program similar to that of New Zealand's, there may be economies to closer liaison on the survey and the food composition data updates.
- There are some technical issues that should be identified and addressed: a nutrition survey data base such as AUSNUT, developed for the 1995 Nutrition Survey, is a purpose and time-specific data base, compiled from a range of sources. NUTTAB, on the other hand, is the Australian reference data

base largely comprising chemical analyses of nutrients and non-nutrients in foods, and regularly updated by FSANZ, in accordance with the budget available for analyses. For each nutrition survey undertaken, or in the case of a rolling survey, survey specific food composition data bases should be "date-stamped", so that changes in the composition of foods can be identified between surveys. This is important for the interpretation of differences seen over time in the nutrient intakes of the population.<sup>13</sup>

### National Nutrition Monitoring and Surveillance

- The discontinuation in 2003 of the ABS series *Apparent Consumption of Foodstuffs in Australia* is a major loss of information about the food supply and the food available for consumption in Australia over 50 years. It provided an independent estimate of trends in "apparent" consumption of various food groups over the long term. This should be reinstated, with attempts to recapture some of the estimates of macronutrients available for consumption from the estimates on foodstuffs. The information does not replace that obtained from monitoring dietary surveys.
- The value of further analyses and perhaps collection of information from the ABS Household expenditure survey should be emphasised in the system components. It is a valuable source of information about what households purchase in terms of foods, and could be of even greater use if quantities purchased by households were documented.
- A detailed dietary intake survey is the cornerstone of a monitoring system, and should be on-going. The technical expertise required to mount a survey of this kind is enormous, and involves many different kinds

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<sup>13</sup> 1. Greenfield, H. (2003) *Audit of the New Zealand Food Composition Database Service*. Wellington: Ministry of Health.  
[http://www.moh.govt.nz/moh.nsf/Files/NZFCDFinalAuditReport/\\$file/NZFCDFinalAuditReport.pdf](http://www.moh.govt.nz/moh.nsf/Files/NZFCDFinalAuditReport/$file/NZFCDFinalAuditReport.pdf) (only available on-line)

2. Greenfield, H. A quarter century of food composition work in Australia: lessons learned, future directions. *Food Austr.* 56 (12) 601-603.

3. Greenfield, H. & Southgate, D.A.T. (2003) *Food composition data. Production, management and use*. Rome: FAO. 288 pp.  
See FAO/INFOODS website for purchase. For hard copy contact: Dr Barbara Burlingame on: [Barbara.Burlingame@fao.org](mailto:Barbara.Burlingame@fao.org) *Austr.* 56 (12) 601-603.

of skills, which are dissipated and lost from corporate memory when the survey is over, if there is no on-going program, which retains the skills and capacity built up over the survey period.

- The food supply aspects of the framework need more careful definition.

### Physical Activity Measurement and Monitoring

- Physical activity is usually measured in population surveys via self-report (questionnaires, interviews) or by self monitoring through PA diaries/logs. There are several dimensions to PA- leisure time, occupation related, transport related, incidental, etc. Aspects of PA that are often of interest are: duration, intensity, and type of PA.
- The gold standard against which to assess the validity of self reports, is, ideally, doubly labelled water, which measures energy expenditure. Other proxy measures of validity include: Heart rate monitoring (more expensive, respondent burden); accelerometer- movements plus intensity- good for use in attempting to categorise energy expenditure- but not precise enough for PAL- \$300-400/subject; or Pedometer- Total vol of PA, but no intensity measures - \$20/subject.
- Some existing measures of PA, internationally include:
  - IPAQ - international physical activity questionnaire 8 items short form and takes 3-4 minutes maximum; 34 items in the IPAQ long form – 10-15 minutes ; both IPAQ forms developed and validated internationally (Craig C, Marshall A, Sjostrom M, Bauman A et al MSSE 2003); tested in an International Prevalence study 2003 (Bauman et al 2005)
  - GPAQ - 15 min; developed by WHO in their STEPS program,
  - BRFSS - developed by CDC for US states, through CATI surveys 1986 onwards; questions modified 2001. (same measures for at least a decade)
  - Other population surveillance systems – Finbalt measures 1979-present; PAMS survey in

Canada since 1981; Cindi/ Monca project measures.

- In Australia, PA is not being monitored in a consistent way at present. Different questions, no standard survey vehicle, except national health survey. We conducted 'Active Australia' surveys in 1997, 1999 and 2000. CATI surveys, using the AA instrument, in some states fill a gap (most use AA instrument, but questions not standardised; used in WA, NSW with trend data available since 2000).
- National surveys which have been repeated, but are not on-going include: Active Australia conducted in 97, 99 and 00. May be repeated in 05/06 by DoHA; earlier surveys were conducted by AIHW, DHAC, Sports Commission;
- ABS national health survey has used a consistent set of questions in their surveys since 1979 which concentrate on the intensity of leisure time activity.
- The biggest problems with current physical activity monitoring are lack of standardisation of questions, no commitment to on-going surveys to monitor change, lack of validity checks built into surveys, and no routine reporting of PA or trends in SES groups.
- Highest priorities for future monitoring are: regular on-going surveys, standardise questions/modules across surveys conducted by different sectors, e.g. sport and recreation surveys, travel surveys, time use, etc, so to obtain comparable information on different population groups over time (Merom 2003); interviewer administered, validation of measures on a sub-sample using accelerometer or pedometer.
- The most practical measure to include in a national nutrition survey may be the GPAQ. No short questionnaire is ideal or will allow the measurement of physical activity level, or even accurate classification of sub-groups into light, moderate, or vigorous activity. The GPAQ is used internationally, has domain specific estimates, is reliable and valid cross culturally, takes 10 mins per subject, and it could be validated on a sub-population to assess

misclassification error using an accelerometer, or pedometer.<sup>14</sup>

### Using Dietary Survey Data in Burden of Disease Estimates

- Nutrition data are useful for calculating burden of disease from nutrition related exposures of risk and protection, e.g. obesity, fruit and vegetable intakes, etc.
- There are few data sources for this work and longitudinal data are rare but would be more valuable than cross sectional data in refining estimates of attributable risk, etc. For example, in compiling cumulative estimates of risk exposure to tobacco in China, longitudinal data are informative. There is likely to be similar value in having continuous dietary data for assessing cumulative risk in terms of food safety and development of chronic disease.
- Not familiar with the availability of such data for Australia.

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<sup>14</sup> Bauman A. Physical activity measurement in Australia: a discussion paper. Commonwealth Dept of Health and Aged Care, 2000.

Bauman A, Merom D. Measurement and surveillance of physical activity in Australia – an introductory guide. *Australasian Epidemiologist* 2002;9.2:2-5.