

Selection
Interventions
Framework
Decisions
Criteria
Weighted
Stakeholders
Portfolios
Context
Values
Balanced

Deciding and Specifying an Intervention Portfolio



**PUBLIC HEALTH PLANNING
AND PRACTICE IMPROVEMENT**

Deciding and Specifying an Intervention Portfolio



Planning Framework – User Guide

Acknowledgements

This Guide was written by Associate Professor Alan Shiell from the Department of Community Health Sciences, University of Calgary, Canada and the School of Public Health, La Trobe University, Australia.

The document is based on the experience with the nutrition portfolio pilot¹ which was facilitated by Alan Shiell. The research for the pilot was conducted and authored by Ms Margaret Miller and Dr Hargita Stafford who also provided input into the development of this Guide.

Acknowledgements by the Author

Gianfranco Spinoso, Karen Webb and Bev Lloyd each offered extremely useful comments on previous drafts of this report that improved its content considerably. Margaret Miller and Hargita Stafford played an invaluable role assimilating the research evidence on the effectiveness of interventions, helping to facilitate the workshops in which the process was tested, and sharing their thoughts on how the process worked in practice. Table 3 in this Guide has been taken directly from their report to the National Public Health Partnership. The description of the final steps in the portfolio selection process has been adapted from the same report.

Thanks are also due to the members of the Strategic Intergovernmental Nutrition Alliance (SIGNAL) who participated in the case study. Their capacity to see the big picture whilst at the same time maintaining an eye for the detail needed to put the strategy together ensured that the portfolio setting process was fully and fairly tested.

Copyright: National Public Health Partnership, 2000

This work is copyright. This work may be reproduced in whole or in part for research or training purposes subject to the inclusion of an acknowledgment of the source and provided no commercial usage or sale is to be made. Reproduction for purposes other than those indicated above requires prior written permission of the National Public Health Partnership, GPO Box 1670N, Melbourne 3001, Victoria, Australia.

Further copies

Contact the National Public Health Partnership Secretariat, 120 Spencer Street, Melbourne 3001, Victoria, Australia.
Telephone: (61 3) 9637 5512 *Facsimile:* (61 3) 9637 5510 *Email:* nphp@dhs.vic.gov.au *Website:* www.nphp.gov.au

¹ A report on the pilot titled "An Intervention Portfolio to Promote Fruit and Vegetable Consumption – (Parts 1 and 2)" is available from the NPHP Secretariat
National Public Health Partnership, 2000

CONTENTS

Introduction	1
Portfolio planning	3
What is a portfolio?	3
Portfolio thinking and values	3
Advantages of the portfolio approach	3
General principles	4
Steps involved in portfolio selection	5
Step1: Convene a decision-making group	5
Step 2: State the decision context	5
Step 3: Agree on the goals and criteria to be used to select interventions	5
Step 4: Assign a weight to each goal to reflect its relative importance	6
Step 5: Identify a long-list of potential interventions	7
Step 6: Identify a short-list of candidate interventions to be subject to more intensive evaluation	7
Step 7: Evaluate the performance of this shortlist against the criteria	8
Step 8: Calculate the weighted scores for each option and identify priorities	8
Step 9: Consider the resulting list of priorities	9
Questions arising from the portfolio setting process	10
References cited in text	13
Bibliography	15
Appendices	17
1. Case study in portfolio selection	17
2. Lessons from the case study	23
3. Glossary of terms	25

INTRODUCTION

The National Public Health Partnership's (NPHP) *Planning Framework for Public Health Practice* (the Framework) sets out a systematic approach to planning the provision of public health interventions. The approach is based on six inter-related stages (see Box 1 and Figure 1). It is stressed in the Framework that the planning process can begin at any of the six stages depending on the context of the problem being addressed.

Box 1:
Stages in the planning and practice framework

- (1) Identify the determinants of the problem
- (2) Assess the risks and benefits of these determinants
- (3) Identify and assess the intervention options (including for further research)
- (4) Decide the best mix of interventions (the intervention portfolio)
- (5) Implement the portfolio
- (6) Review the portfolio

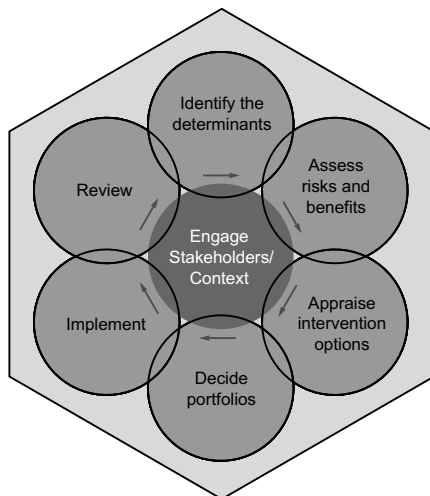


Figure 1 - A Planning Framework for Public Health Practice

Stage 4 of the Planning Framework refers to the specification of a mix of interventions (**a portfolio**) designed to address a particular public health problem. Resources are scarce relative to all that could be done with them. Therefore a selection must be made from among the full range of possible interventions. A smaller, affordable sub-set that *best* meets the needs identified in previous steps of the framework needs to be identified. The portfolio approach ensures that the best available evidence, knowledge and expertise is brought to bear on the problem at hand and that the mix of interventions ensures a comprehensive not a lop-sided approach to addressing the problem.

The aim of this document is to provide a practical guide to portfolio selection for public health decision-makers, which is consistent with the Framework. The portfolio approach provides a structured method involving several distinct steps. These are:

- (1) Convene a decision-making group
- (2) Specify the decision context (the question to be addressed)
- (3) Agree the criteria against which to judge interventions
- (4) Weight the criteria to be used to evaluate the options
- (5) Brainstorm a long-list of interventions likely to fulfil the criteria
- (6) Specify a short-list of interventions for more detailed evaluation
- (7) Evaluate the short-listed interventions against the weighted criteria
- (8) Score and prioritise the interventions
- (9) Reflect on the outcomes of the exercise and refine if necessary.

Each of these steps is discussed in greater detail on pages 5-9 of this guide.

The process described here is an iterative one. It requires interaction, deliberation and reflection by relevant decision-makers. Identifying the intervention portfolio, that is selecting the particular sub-set of all possible interventions to implement, is both a technical exercise and a normative one. It requires both value judgements and technical ones. Values are rarely made explicit in decision making and when they are they are frequently contested. There are no simple answers therefore to the problem of resource allocation and decision-makers who seek such an answer in these pages will be disappointed. Instead, what is offered is a *means* to obtaining an answer that best meets specific needs however these might be defined. The process makes the required value judgements systematic, explicit and subject to scrutiny.

The process is also context-specific. Not only are there no easy answers, there are not likely to be any general one's either. Interventions that might suit a set of needs in one context need not suit similar needs in other contexts. Clarifying the decision context as part of the process of portfolio selection is of utmost importance. Decision contexts will range from those that require choosing a single intervention that best meets a particular need to those requiring a strategic response to a public health issue to be determined.

Specifying the decision context involves considering a range of questions. Who is establishing the portfolio for whom and to what ends? Who is responsible for implementing the results and what control, if any, do the decision-makers have over them? What is the time frame? What are the constraints, especially the budget constraint? Over what range of activities will the portfolio be defined? Addressing questions such as these early and re-addressing them occasionally ensures that the portfolio setting exercise is kept on track.

One approach to establishing a portfolio of public health interventions is outlined in this document. The method is based on explicit economic principles that stress the merits of seeking to redeploy resources to activities that generate the greatest impact for their cost (Mooney et al, 1992). The economic approach can be contrasted with alternative epidemiological or needs-based approaches that give greater emphasis to the significance of the problem being addressed rather than the cost-benefit of its potential solutions. See Brown and Redman (1995) and Redman et al (1997) for examples and Commonwealth Department of Health and Family Services (1997) for a discussion of the alternative approaches. Both approaches are required in applying

the Planning Framework. Epidemiological methods are important in carrying out the first steps of the Planning Framework where the focus is on understanding the dimensions and causes of the problem. Economic approaches are particularly relevant to the decision making stages of the Planning Framework.

The rationale underpinning portfolio planning is outlined on pages 3 and 4 of this guide. Pages 5 to 9 then describe and illustrate the steps involved in the process. Additional information about each of the steps and hypothetical examples to illustrate some of the main points are reported in separate text-boxes. Pages 10 and 11 provide answers to anticipated questions about the portfolio setting approach.

A bibliography is provided in addition to the references cited in the text. Appendix 1 then reports insights obtained from a case study in which the approach described here was used to identify a national portfolio of interventions designed to encourage consumption of fruit and vegetables. A glossary of terms is provided (see Appendix 3). Terms defined in the glossary are shown in bold text.

PORTFOLIO PLANNING

What is a portfolio?

Investment in a **public health intervention** should be supported by evidence of its **cost-effectiveness** and other merits. The quality of available evidence however is likely to vary according to the characteristics of the population served by an intervention. Interventions aimed at ‘hard to reach’ groups are usually also the hardest to evaluate and therefore they are less likely to have high quality evidence in their support. In order to meet the needs of such populations, public health practitioners are often required to be highly innovative in how they adapt and implement interventions to local circumstances. This adds an element of **risk** or uncertainty to their activities since it is difficult to predict in advance what will work and what will not. The risk of failure can be high but the rewards to a successful intervention are also likely to be substantial given the circumstances of the populations being served. If decision making were restricted solely to those interventions for which high quality evidence was available, much of this innovation would be stifled and the allocation of resources would be distorted in favour of interventions that served already advantaged groups (Hawe and Shiell, 1995).²

The notion of a portfolio recognises the merits of balancing investment in tried and tested interventions for which there is sound evidence of effect with prudent investment in ‘high-risk, potentially high-gain’ interventions. A portfolio may be defined therefore as a mix of interventions that best meets specified public health needs within given resources.

Portfolio thinking and values

The notion of portfolio planning in public health was borrowed from the world of financial economics but it would be a mistake to conclude from the language used that only the financial benefits of public health are important. The portfolio approach aims to make the best use of resources. But we have said nothing about what ‘best-use’ means. The approach enables the maximum *value* from society’s investment in public health activities to be derived. It does not prescribe what *types* of value should be considered.

Indeed, a crucial stage in the selection of interventions is discussion and debate and eventual agreement among

relevant decision-makers on the **criteria** for portfolio selection. The goals or values to be pursued in the exercise are specified by the participants. The only demands made by the portfolio approach method are that values are made explicit and that consensus on what is of value (that is the benefits to be achieved) is obtained (see Box 2).

Box 2: The portfolio approach and values

An important step in the determination of a public health portfolio is for decision-makers to agree the specific *goals* that they wish to pursue. Initially all valued outcomes should be specified to ensure that none are excluded prematurely. This includes consideration of *who* benefits as much as by *how much* they benefit. The portfolio approach is strictly neutral on the goals to be pursued or the weight and therefore the value to attach to those goals.

Benefits can be defined as broadly or as narrowly as suit the purpose of the decision-makers. The broader the range of outcomes considered, the more comprehensive will be the evaluation of priorities. Typical dimensions of outcome will include the (cost-) effectiveness of the program, its impact on equity (who benefits and who pays), its acceptability to the community and to other key stakeholders, its feasibility and the time-frame over which costs are incurred and benefits are realised. Other outcomes may be considered important in different contexts.

Advantages of the portfolio approach

The portfolio approach offers several advantages over alternative methods of planning:

- It is highly structured, systematic and thorough;
- It is highly participative and inclusive of stakeholders;
- It brings evidence to inform the choices of the decision-makers;
- It makes explicit the values underpinning the choices made by decision-makers;
- It allows for promising interventions to be considered as well as those which have been proven to be effective;

² A separate NPHP project has been established to formulate guidelines and criteria for the evaluation of evidence on public health interventions

- It strives for a balanced mix of interventions based on careful consideration of all possible actions;
- It “drives” participants to make a decision within a set time; and
- It provides a common language of planning across public health which also has currency outside the public health sector.

The approach seeks to protect innovation in the field while rightfully ensuring that managers and practitioners are held accountable for the resources they deploy.

General principles

The need to specify a portfolio arises because resources are insufficient to meet all the demands placed upon them. It follows that resources should be allocated to where they will have the greatest impact - that is where the cost per unit of outcome (however that is defined) is lowest.

Three general principles follow from this:

- (1) No activity should be provided if its COSTS exceed the VALUE of its benefits.
- (2) If allocating NEW funds, priority should be given to activities where the cost to benefit ratio is lowest.
- (3) If there is scope to re-deploy existing funds, then

resources should be shifted from activities where the cost to benefit ratio is HIGH to activities where the cost to benefit ratio is LOW.

These principles apply equally to situations where the mix of interventions address a single public health problem as well as those in which the interventions address different health problems.

The activities highlighted in the second and third of these principles (those with exceedingly high or low cost to benefit ratios) are termed **marginal activities**.

Marginal in this sense does not mean small or insignificant but refers instead to where *change* may best take place (see glossary). Once ineffective activities have been eliminated from consideration, then efforts should focus on the marginal activities since this is where the biggest gains will be made from any reallocation of resources. Hence, scarce managerial time is best deployed here - at least initially. The process can always be repeated to ensure that no activity escapes managerial scrutiny.

The exercise requires specifying and measuring the benefits and costs of activities designed to improve the public’s health. The steps involved in this are described in more detail in the following section.

STEPS INVOLVED IN PORTFOLIO SELECTION

Step 1: Convene a decision-making group

The process seeks consensus over what might otherwise be contested territory. Step 1 involves convening a **decision-making group** that:

- Has responsibility and is accountable for the decisions it will make;
- Has representation and therefore ownership; and
- Provides diverse views and perspectives on questions to be addressed.

The group must be able to make decisions over resources and so ideally it should involve those who have budgetary responsibility or influence. Other stakeholders may be consulted and may participate in the process as long as this does not distract from the decision-makers' ultimate responsibility to make decisions (see Box 3).

Box 3 Stakeholder involvement in the decision making group

Stakeholder participation in decision-making processes such as this is often seen as one way of encouraging ownership in the resulting priorities. It should also be remembered that stakeholders tend to be those who would benefit from an expansion in (some of) the activities being considered. Decision-makers also have a responsibility to represent the interests of those groups who must bear the **opportunity costs** of the decisions.

The final decisions ought, therefore, to be taken by those who will ultimately be held accountable for the outcomes.

Step 2: State the decision context

A clear statement of the decision context ensures that the final choice of interventions will address the problem at hand.

This step involves considering who is establishing the portfolio, for whom and over what range of activities or interventions? What is the time-range for decision making? What resource constraints are pertinent (i.e.

what is the budget?) Who is to implement the final set of interventions? What leverage if any does the decision-making group have over these players?

These and similar questions will recur throughout the portfolio setting process as the group's deliberations shed further light on the true nature of the problem. If the decision context is not correctly specified then ambiguities will appear in subsequent steps. It will be necessary therefore to revisit the problem being addressed occasionally to ensure that the context has been correctly specified.

Step 3: Agree on the goals and criteria to be used to select interventions

Since the aim is to select those interventions that best meet specified needs, it is important that the decision making group agree on the goals and criteria that will be used to determine the final portfolio. These will reflect the extent to which interventions meet the **portfolio management objectives** that were first formulated in stage 1 of the Framework when the determinants of the particular health problem being addressed were first identified. Initially there is merit in identifying as many desirable portfolio management objectives as possible. This ensures that important ends are not overlooked or omitted prematurely from further analysis. The portfolio selection process, described in this guide, provides an opportunity to review and refine these objectives and to agree the specific portfolio goals and criteria that will guide the decision making process (see Box 4).

Box 4

Portfolio objectives, goals and criteria for selecting interventions

Portfolio Management Objectives (PMOs) - define the broad purpose of the portfolio and help guide the initial search for interventions - the long list. These are based on an epidemiological analysis of the dimensions and causes of the problem. They do not however yet reflect further considerations stemming from a real decision-making context.

Portfolio goals - are consistent with the PMOs but specify in more detail what the portfolio is trying to achieve. They reflect the real decision-making context and therefore the range of values and priorities of the decision-making group. Portfolio goals can help narrow the long list of interventions for the decision-making group to consider for the final portfolio

Criteria for selecting intervention- is the final list of portfolio goals which the decision making group has agreed will inform its final decision on the interventions to be included in the portfolio.

Criteria can be identified by asking the decision making group to consider what specific goals do they ultimately hope to achieve. What would constitute success for example? What would characterise an effective intervention? If an intervention failed to meet its primary goal would it necessarily be considered a failure? What other valued impacts might an intervention have? Answers to such questions must be cognisant of both political imperatives and social values.

Ideally goals should be independent of one another, though in practice this is difficult to achieve. It can often be difficult to disentangle effectiveness from **equity** since the health impact of a successful intervention is likely to be greater the bigger the health needs of the population being served. Since there is a correlation between health need and socio-economic status an intervention may meet both effectiveness and equity goals.

Step 4: Assign a weight to each goal to reflect its relative importance

Some goals will be more important than others. Effectiveness may be paramount for example and so should weigh more heavily than questions relating to (say) the acceptability of the intervention. If best use is to be made of the resources greater recognition may be given to some goals relative to others. The decision making group must consider how important each goal is relative to the others, since it will usually be impossible to meet every goal equally well. What trade-offs are the group prepared to make between goals? For example, how much of one goal would one be prepared to forgo if it meant reaching another goal more readily or more completely?

Each decision-maker must first assign a **weight** to each goal that reflects their view of its relative importance. One way of doing this is to give 10 points to each decision-maker and ask them to allocate the points among the objectives. A goal deemed twice as important as another would receive twice as many points. Once all goals had been scored in this way, the results from each decision-maker should be compared (see Box 5). Any significant differences between weightings may then be used to clarify both the nature of the goals (are they adequately specified and clearly defined?) and the values of individuals.

Box 5

Worked example: weighting criteria

In this simple example there are three decision-makers and three criteria.

Criteria	Decision maker 1	Decision maker 2	Decision maker 3	Initial average	Revised (weight)
Effectiveness	4	6	2	4	5 (0.5)
Equity	4	3	3	3.4	3 (0.3)
Feasibility	2	1	5	2.6	2 (0.2)
TOTAL	10	10	10	-	-

Each decision-maker has assigned his or her ten points across the criteria. Decision maker 1 thinks equity and effectiveness are equally important goals and both are more important than feasibility. Overall, the decision-makers are in close agreement on the value of equity but there is disagreement on the value of feasibility. This may have arisen if decision-maker 3 for example believed that an intervention that was not feasible could not also be effective. This confounds the two dimensions and perhaps misunderstands the nature of feasibility. The discrepancy can be used to clarify what each goal actually means after which a revised scoring can be obtained.

For illustrative purposes, the revised (consensus) averages and final weights are shown in the final column of the table.

Ultimately consensus is sought around the weightings so that they reflect the values of the decision-making group as a whole. The mean weight can then be used to rate the desirability of different interventions.

Weighting criteria - a two stage process

The process of weighting criteria described here has been taken from the economic method of **option appraisal** in which the purpose of the exercise is to select one from a number of mutually exclusive alternatives or options. This is not the question being addressed in portfolio decision making, however, where the aim is to select a number of interventions, policies or investments in infrastructure that *together* best meet a specified public health problem.

In this case a two-stage process is required with weighted criteria agreed for particular interventions and a second set of criteria that might be applied to the portfolio overall. Thus interventions should be effective and timely etc but in addition, the overall portfolio may need to have certain characteristics. A portfolio that is integrated or flexible for example or one that includes both tried and tested interventions and prudent investment in ‘risk-capital’ (interventions which hold promise but which have yet to be fully evaluated) might be desired. Once the main objectives have been met, credit might be given to interventions that add to the diversity of the portfolio or are innovative (and therefore more risky prospects). Similarly, an intervention might be excluded from the portfolio despite fulfilling the criteria if it cannot be well integrated with the rest of the portfolio.

A two-stage evaluation ensures that important synergies and interactions between interventions are also considered. There are benefits for example in a multi-faceted program that are not necessarily reflected in the performance of individual interventions. Secondly, available evidence on the effectiveness of an intervention will reflect the context in which it was evaluated. If supporting interventions and infrastructure are not also part of the portfolio then the intervention in question is unlikely to perform as well as expected.

Step 5: Identify a long-list of potential interventions

This step requires identifying a ‘long-list’ of all possible interventions that might be considered candidates for the portfolio. The aim at this stage is to brainstorm the problem and come up with as wide a range of potential interventions as possible even though many will be later rejected. This ensures that policy is not based on too narrow a range of interventions or a range that is biased by past practice or vested interest.

The long-list can be identified in a number of ways, depending on how the Framework has been applied. The beginnings of a long-list will fall out of the review of intervention options (Figure 1, stage 3) that follows the specification of portfolio management objectives. Alternatively the current pattern of service provision can be used to establish the beginnings of the long-list. In both cases however, it will be necessary to brainstorm the problem being addressed to identify additional interventions that may not have been evaluated (and so may not be reported in the research literature) and that may not be being provided currently.

Once the long-list of interventions has been identified the usefulness of whatever information is readily available on the costs and effects of the interventions can be assessed. How much is known and how applicable is it to local circumstances? What gaps exist in the information?

Step 6: Identify a short-list of candidate interventions to be subject to more intensive evaluation

From the long list of possibilities, a short list of candidate interventions now needs to be specified for more intensive scrutiny of the costs and benefits. This short-list will comprise those interventions that are most likely to be candidates for change i.e. marginal interventions that might be given higher or lower priority for resources.

The short-list can be identified in a number of ways. Some interventions may be excluded easily since they will be dominated by others. A dominated intervention is one that performs worse than another on all criteria. Care needs to be taken however to eliminate only those interventions that are fully dominated by another - that is they perform worse on ALL criteria. In some instances a less ambitious intervention, while likely to be less effective than a more sophisticated alternative, may also be considerably less expensive. In these cases, one must consider how much *more* is achieved by the more effective project and whether the difference in outcome is *worth* the additional resources it requires.

One method for identifying short-listed interventions that has been adopted in priority setting exercises in health services around the world is described in Box 6.

Box 6:**A method of identifying marginal activities**

Marginal activities are those that should be concentrated on first since the benefits of reallocating resources within these activities is the greatest.

To identify activities that might be candidates for additional investment in any reallocation of resources, decision makers can be asked to identify interventions that they are currently not providing, or are not providing enough of, and that they would *expand* first if given (say) a 10% increase in their budget.

To identify candidates for disinvestment, the decision-makers are asked to identify, from among those interventions currently being provided, which ones they would *reduce* first if their budget were to be cut by (say) 10%.

Interventions on the potential disinvestment should then be compared with those on the potential investment list to assess the benefits of redeploying resources from one to the other. In determining this, decision-makers must take into account the available evidence on cost and effectiveness (or their beliefs about the same if no information is available).

If time allows the merits of the short-listed activities should now be evaluated more fully. This should include an evaluation of the likely costs of implementing the interventions.

highly uncertain step as the decision-makers are required to exercise their judgement with imperfect information. This may require that they first clarify what their own values are (see Box 7).

Box 7:**Performance assessment and values clarification**

This step in the process has as much to do with making explicit the values of decision-makers as it has with assessing the relative performance of candidate interventions.

The issue can be addressed from each of two directions. You can start with a coherent expression of your values and after reviewing the evidence decide which interventions best meet your goals or, you can begin with an expressed preference for some interventions over others and try through discussion and debate to make explicit the values that underpin that view.

Though the first is more consistent with the approach outlined here, the second is also useful. The portfolio is identified in the process of moving backwards and forwards between evidence on the impact of each intervention and discussion of the relative importance or value of these effects. In this way, one's values are clarified at the same time as evidence on the merits of rival interventions is assessed.

Step 7: Evaluate the performance of this shortlist against the criteria

Using whatever evidence and information is available, plus professional judgement if necessary, the decision making group must next assess the performance of each short-listed intervention against each of the criteria. Essentially this means assigning a score (say out of 10) reflecting the particular intervention's expected performance against each criterion.

Once each decision-maker has evaluated each intervention against the criteria, the scores can then be discussed and any differences of opinion used to highlight areas of uncertainty or disagreement.

The aim is to reach a consensus about the relative performance of each short-listed intervention. While evidence comes into play here, this step is highly subjective and must be recognised as such. It is also a

It is tempting to resist this step and to hide one's indecisiveness behind a lack of information. It may help to remember however that there is unlikely to be any amount of information about the impact or effectiveness of an intervention that can say whether it will be *worthwhile* implementing. This requires one to decide whether the benefits are worth the costs and while further research might shed more light on what those costs and benefits are, it cannot say whether the one offsets the other. A value judgement has to be made at this stage and for this reason we need *decision-makers*.

Step 8: Calculate the weighted scores for each option and identify the priorities

For each intervention, the mean score assigned to it by the decision-making group for each criterion is multiplied by the mean weight attached to that criterion and the product is then summed across all criteria. The result provides the **weighted score** for each intervention and this may be used to rank interventions. The final

rankings must then be considered against the expected cost of each intervention.

Usually greatest priority would be given to interventions that have the highest weighted score per unit of cost as in general this will ensure that best use is made of the available resources. Care needs to be taken however to avoid too simplistic an interpretation of the rankings and costs. Better overall value may sometimes be obtained from two or three smaller projects that exhaust the available budget rather than a single much larger project even though the latter may appear to be the best.

Both total costs and the incremental costs associated with adding an intervention to an emerging portfolio are important. Interventions that are dominated by others in terms of costs and effects (i.e. they are less effective and cost more) can be disregarded. Of those that remain, are any interventions so expensive as to make them unaffordable? If a better intervention is also more expensive is the extra impact it provides worth the additional cost? Might better value be gained from two less expensive and less effective interventions rather than a single more expensive but better intervention? (see Box 8 for a worked example).

Step 9: Consider the resulting list of priorities.

The final step is for the decision making group to reflect on the results of the exercise (see Box 9). Is the resulting list of priority interventions consistent with the criteria and values expressed in previous steps? If not, have any important factors been excluded? Have any irrelevant or less important factors been included in the

deliberations? Is the priority list internally consistent? Have any important synergies between projects been overlooked? Is there sufficient variety in the priority list to minimise the risks associated with implementation failures?

Box 9 Reflecting on the results

The weighted score and final ranking of interventions may prompt re-consideration of the values on which both are based. Has enough emphasis been given to the nutritional needs of disadvantaged groups, for example? Have the synergies between interventions been fully recognised?

Care needs to be taken not to bring prejudice back into the exercise in the process. Reflection is acceptable but fixing the numbers is not. Remember also that a comprehensive portfolio contains a range of interventions. In the previous example intervention (b) may also be affordable. This favours disadvantaged groups though it is less effective than intervention (a) as a result. The two interventions may, in combination however, meet the required objectives of policy.

Box 8

Worked Example: Calculating the weighted scores

Intervention	Effect (wt=0.5)	Equity (wt=0.3)	Feasibility (wt=0.2)	Weighted score
(a)	8	2	6	5.8
(b)	4	8	4	5.2
(c)	2	2	9	3.4
(d)	6	4	5	5.2

The example takes the criteria and weights from step 4 and assumes there are four interventions being assessed (a-d).

The scores in the table represent the consensus scores assigned by the decision-making group as a whole after discussion of the scores assigned by each individual member. The weighted score is the sum along the rows of the score times the weight. For intervention (a) for example this is $(8*0.5)+(2*0.3)+(6*0.2)=5.8$.

QUESTIONS ARISING FROM THE PORTFOLIO SETTING PROCESS

Isn't this process too long, drawn out, and expensive in terms of its informational needs and managerial time?

The portfolio selection process described here does require significant time and effort from senior management. The question however is whether it places any additional or unreasonable demands on staff time. Two points might be noted. First, the process does not require any more information than that which should inform any planning process. Good decision making should be based on the costs and expected outcomes of activities funded from the public purse. If it is not then the current processes are seriously deficient. Secondly, public health agencies already invest considerable resources into collecting information, much of which is of little value to decision makers. The portfolio setting process described here helps to specify precisely what sorts of information are needed and, where information is unavailable, it provides a framework in which judgement can be exercised instead.

What if decision-makers cannot agree on a set of goals?

There is rarely difference of opinion over the main goals of policy. Whatever the public health problem being addressed, solutions must be efficient, effective, meet socially defined equity objectives, and be feasible and timely to implement. There may also be additional goals that are specific to certain issues such as capacity building or flexibility.

If there is any disagreement, it can often be rectified by better definition of the goals. What precisely is meant by effectiveness? What dimensions of outcome should count? Does equity refer to socio-economic status, ethnic origin, gender etc? Does it include all of these dimensions equally or should preference be given to some dimensions of equity over others?

If there is continued disagreement over what goals to include it can usually be resolved at the next stage when weights must be assigned to the goals. This will reveal how much support there is for each, since a goal that is not regarded will be given a zero weight by decision-makers.

What if decision-makers cannot agree on a set of criteria-weights?

The process described above frequently allows consensus to be reached on the weights to be assigned to the various criteria. If consensus cannot be reached then there may be confusion about the nature of the goals. Further discussion about the precise meaning of those goals for which it is difficult to reach consensus may reveal the source of any misunderstanding. Re-specifying the goals, merging some and dividing others to reduce the variability around each one may help the process.

If there is still genuine, informed disagreement about the value to be assigned to each goal then it may be necessary to consider a majority view or to reconsider the membership of the decision making group. Ultimately, a dominant view may need to be enforced by the chair of the group where, for example, it is impossible to reconcile different vested interests.

What if there is not enough information to make these judgements?

A common complaint on the part of decision-makers is that they lack the information needed to make decisions. There are two points to note here.

First, health planning decisions have always been made with poor information and, in many cases, with information of considerably poorer quality than that which could be provided. Decisions-makers must ask themselves 'how much better is the information with which I would normally make such decisions?'

Secondly, the lack of information adds to the uncertainty surrounding decision making but even complete information would not eliminate the need for decision-making. One should recognise a distinction drawn by Jonathon Lomas (1996) between information-uncertainty and values-uncertainty. The former can be rectified by more information about the size and extent of a problem and the cost-effectiveness of potential solutions. The latter cannot be resolved so easily. If there are contested views on the value of an intervention, then more information on the values attached to it by competing

interests will do little to help the decision-maker decide which course of action is best. More information may help clarify what the different value-stances are but it cannot resolve differences in value.

Ultimately a value judgement is required. The decision-maker must be prepared to state that on the balance of interests, the social good is best served by one course of action or another. This will antagonise some groups and be seen to favour others. It is difficult to make decisions like these. It is however what decision-makers are paid to do.

Is there not a more objective method of establishing priorities?

It cannot be emphasised strongly enough that the process of strategic planning generally (and portfolio selection specifically) is unavoidably a subjective exercise. Judgement is required to interpret the available research evidence, to overcome gaps in the literature and to assess the relative worth of competing options.

The process described here is as much one of values-clarification as it is one of critical assessment of research evidence. The structured approach allows the decision-makers' values to be made explicit and therefore subject to scrutiny. It enables differentiation problems caused by a lack of information from those caused by differences in value. Where information is lacking it allows the decision-maker to better specify what information is needed to help make decisions.

REFERENCES CITED IN TEXT

Brown WJ, Redman S. Setting targets: A three-stage model for determining priorities for health promotion. *Australian Journal of Public Health* 1995; 19: 263-269

Commonwealth Department of Health and Family Services. Priority Setting Methodologies in Health: Summary of Proceedings of a National Seminar held in Canberra, November 1997

Hawe P, Shiell A. Preserving innovation under increasing accountability pressures: the health-promotion investment-portfolio approach. *Health Promotion Journal of Australia* 1995; 5: 4-9

Lomas J. The sound of one-hand clapping. Mimeo, Department of Public Health and Community Medicine, University of Sydney, 1996

Miller M, Stafford H. Framework Trial to Develop an Intervention Portfolio to Promote Fruit and Vegetables. Summary report prepared for the National Public Health Partnership, February 2000

Mooney G, Gerard K, Donaldson C, Farrar S. Priority Setting in Purchasing: Some Practical Guidelines. National Association of Health Authorities and Trusts (NAHAT) Research Paper No 6. 1992

Redman S, Carrick S, Cockburn J, Hirst S. Consulting about priorities for the NHMRC National Breast Cancer Centre: how good is the nominal group technique? *Australian and New Zealand Journal of Public Health* 1997; 21: 250-256

BIBLIOGRAPHY

Guides to critical appraisal of economic evaluations

Drummond MF, Jefferson TO. Guidelines for authors and peer reviewers of economic submissions to the BMJ. *British Medical Journal* 1996; 313:275-283

Drummond MF, Richardson WS, O'Brien BJ, Levine M, Heyland D. Users' guides to the medical literature. XIII. How to use an article on economic analysis of clinical practice. A. Are the results of the study valid? *JAMA* 1997; 277:1552-1557

Drummond MF, O'Brien B, Stoddart GL and Torrance GW. *Methods for the Economic Evaluation of Health Care Programmes*. Oxford, Oxford University Press, 1997

O'Brien BJ, Heyland D, Richardson WS, Levine M, Drummond MF. Users' guides to the medical literature. XIII. How to use an article on economic analysis of clinical practice. B. What are the results and will they help me in caring for my patients? *JAMA* 1997; 277:1802-1806

Russell LB, Gold MR, Siegel JE, Daniels N, Weinstein MC. The role of cost-effectiveness analysis in health and medicine. Panel on Cost-Effectiveness in Health and Medicine. *JAMA* 1996; 276:1172-1177

Siegel JE, Weinstein MC, Russell LB, Gold MR. Recommendations for reporting cost-effectiveness analyses. Panel on Cost-Effectiveness in Health and Medicine. *JAMA* 1996; 276: 1339-1341

Weinstein MC, Siegel JE, Gold MR, Kamlet MS, Russell LB. Recommendations of the Panel on Cost-effectiveness in Health and Medicine. *JAMA*. 1996; 276:1253-1258

Additional references to economic approaches to planning and priority setting

Carter R. A macro approach to economic appraisal in the health sector. *Australian Economic Review* 1994; 2: 105-112

Cohen D. Marginal analysis in practice: an alternative to needs assessment for contracting health care. *British Medical Journal* 1994; 309: 781-784

Donaldson C, Mooney G.H. Needs assessment, priority setting and contracts for health care: an economic view. *British Medical Journal* 1991; 303: 1529-1531

Madden L, Hussey R, Mooney G, Church E. Public health and economics in tandem: programme budgeting, marginal analysis and priority setting in practice. *Health Policy* 1995; 33: 161-168

Mooney G. Priority setting in mental health services. SPHERE Discussion Paper 5/99, Department of Public Health and Community Medicine, University of Sydney, 1999

Mooney G, Wiseman V. Listening to the Bureaucrats to establish principles for priority setting. SPHERE Discussion Paper 1/99, Department of Public Health and Community Medicine, University of Sydney, 1999

Posnett J, Street A. Programme budgeting and marginal analysis: an approach to priority setting in need of refinement. *Journal of Health Services Research and Policy* 1996; 1: 147-153

Segal L, Richardson J. Economic framework for allocative efficiency in the health sector. *Australian Economic Review*, 1994; 2: 89-98

Shiell A, Hall J, Jan S, Seymour J. Advancing health in NSW: planning in an economic framework. CHERE, Dept of Community Medicine, University of Sydney, Discussion Paper No 23, 1993

Wiseman V, Mooney G. Burden of illness estimates for priority setting: a debate revisited. *Health Policy* 1998; 43: 243-251

Wiseman V, Mooney G, Stephenson J. An economic approach to priority setting in health care. SPHERE Discussion Paper 1/98, Department of Public Health and Community Medicine, University of Sydney, 1998

Other useful references

Hawe P. Needs assessment must become more change-focused. *Australian and New Zealand Journal of Public Health* 1996; 20: 473-478

Ontario Ministry of Health. A Guide to Needs/Impact-Based Planning. Final; report of the Needs/Impact-Based Planning Committee to the Ministry of Health, Community Health Division 1996

US Department of Health and Human Services. *For a Healthy Nation: Returns on Investment in Public Health*. US Government Printing Office, Washington, 1994

APPENDIX 1 - CASE-STUDY IN PORTFOLIO SELECTION

Introduction

The feasibility and usefulness of the Planning Framework was tested in a case study that involved selecting a portfolio of interventions to improve the consumption of fruit and vegetables. SIGNAL (the Strategic Inter-governmental Nutrition Alliance) offered to test the framework in its strategic planning. SIGNAL is the public health nutrition arm of the NPHP and provides a mechanism for coordinating and ensuring commitment to a consistent public health nutrition policy across the different levels of government.

The case study tested most aspects of the framework not just the portfolio selection stages discussed here. Margaret Miller and Hargita Stafford acted as 'content researchers' and were commissioned to help specify the determinants of nutrition-related health problems and carry out an extensive review of the literature to assess the magnitude of the risks and benefits of these determinants. The results of the full trial - the process and methods used; the difficulties, successes and modifications made while applying the framework, and final recommendations concerning its use are summarised in a companion report prepared by Miller and Stafford (2000).

The User Guide focuses on step 4 of the framework - the decision making step - though it draws on the information collected in the preceding steps. To test this aspect of the framework a decision-making group was convened by SIGNAL, comprising its members plus selected experts in nutrition. The group met on two occasions at workshops held in August and November 1999. A sub-committee also held two teleconferences prior to each workshop to facilitate their planning. The workshops were facilitated jointly by the author of this guide (acting as technical adviser) and by the two content researchers.

The first workshop was used to introduce the notion of portfolio planning, to agree on the specific goals for the portfolio, to assign weights to the criteria that would be used to assess candidate interventions, and to identify a list of interventions that would warrant more detailed evaluation.

The content researchers used the time between the two workshops to revise their review of the evidence. Greater

emphasis was placed on the effectiveness of interventions rather than the primary determinants of nutrition-related health problems. The time between workshops also meant that the evidence could be put into a form that could be used more readily by the decision-making group. Participants at the second workshop were then presented with a short-list of interventions and after discussion of the evidence each intervention was scored against the agreed objectives and weighted criteria. The final portfolio was determined by aggregating the weighted scores for each intervention across the criteria.

Those present at the workshops are listed below.

PARTICIPANTS IN PORTFOLIO SETTING WORKSHOPS

First workshop

Fidelma Rogers, Commonwealth Department of Health and Aged Care
Nadine Latchco, Commonwealth Department of Health and Aged Care
Kathleen Graham, Commonwealth Department of Health and Aged Care
Lyn Brown, ACT Department of Health and Community Care
Patricia Carter, SA Department of Human Services
Vivienne Hobson, Territory Health Services
Judy Kirkwood, Queensland Health
Jane Moxon, NSW Health
Deborah van Velsen, Tasmanian Health Promotion Task Force
Rowland Watson, Department of Human Services, Victoria
Karen Webb, Expert Representative on SIGNAL
Maree Davidson, Communication consultant to SIGNAL
Wendy Hodge, Consultant; National Public Health Nutrition Strategy (day 2 only)
Margaret Miller, Consultant
Hargita Stafford, Consultant

Second workshop

Fidelma Rogers, Commonwealth Department of Health and Aged Care
Catherine Deeps, Commonwealth Department of Health and Aged Care
Kathleen Graham, Commonwealth Department of Health and Aged Care
Patricia Carter, SA Department of Human Services
Simone Lowson, Queensland Health
Jane Moxon, NSW Health
Judy Seale, Health and Human Services Tasmania (by teleconference)
Rowland Watson, Department of Human Services, Victoria
Maree Davidson, Communication consultant to SIGNAL
Karen Webb, Expert Representative on SIGNAL
Margaret Miller, Consultant
Hargita Stafford, Consultant

Defining the decision context for a portfolio to promote fruit and vegetable consumption

The initial question addressed by the decision-making group was what range of interventions would best contribute to increasing the consumption of fruit and vegetables in the Australian population. As the discussion unfolded it became clear that SIGNAL's capacity to implement the interventions was limited by its access to resources and by its limited responsibilities. The power to act often lay outside of SIGNAL with food producers, the retail industry, school agencies and local government for example.

The question was revised therefore to what could SIGNAL do to encourage these other agencies and organisations to take up interventions that it (SIGNAL) assessed to be good practice. The need to evaluate interventions remained, but the emphasis in the portfolio switched from the choice of interventions per se, to the choice of actions designed to increase activity elsewhere.

Defining the decision context was further complicated because of the funding arrangements adopted in many states and territories. Rather than have a budget allocated to nutrition each new intervention or policy has to be justified from scratch (zero-based budgeting). The size of the budget therefore could not be specified in advance. The better the case, the higher the eventual budget might be. Therefore the portfolio selection process becomes part of the advocacy process since the chances of securing the necessary resources are enhanced if the strategy is based on a stringent assessment of its likely cost and impacts.

Specifying the goals of the portfolio to promote fruit and vegetable consumption

The group very quickly reached agreement about the general goals to be pursued. These were seen to be effectiveness, selectivity (equity), political and community acceptability, feasibility (the capacity to carry out the strategy) and timing (quick results were to be weighted more highly than slow ones).

There was some discussion however, about what these meant in practice. Effectiveness for example could be defined in one of two ways - by the percentage of the population whose consumption of fruit and vegetables increased above the minimum recommended intake or by the percentage increase in serves of fruit and vegetables consumed in the population overall. The difference depends on whether one believes the protective effect of fruit and vegetable consumption is conferred once a minimum threshold for consumption is exceeded or whether there is a dose-response relationship (the greater the consumption the greater the protective effect). In the first case, only the increase in the number of people consuming more than the minimum recommended levels should count. In the latter case, any increase in fruit and vegetable consumption has benefit.

Even if there is a dose-response relationship it need not be a linear one. If there are diminishing returns to increased consumption then the health gains to be made from increasing consumption of fruit and vegetables will be greater, other things being equal, if they occur in people whose current consumption is very low.

The evidence on this matter is not conclusive and in the end the group decided that there probably was a non-linear dose-response suggesting that any increase in consumption is valuable but increases among those people consuming less than the recommended minimum are more valuable.

Credit was also to be given to interventions that were sustainable and helped facilitate capacity building, both of which were considered to be dimensions of effectiveness.

The issue of *whose* consumption also needed to be addressed. The needs of children, people with low socio-economic status and Aboriginal and Torres Strait Islander people were identified as paramount and so greater weight was given to interventions that were effective among these groups. There was some discussion however as to whether separate criteria were needed for both Aboriginal and Torres Strait Islander people and those of lower socio-economic status given the overlap between these two groups. After discussion the group decided that the two criteria should be kept separate (see Box 10).

Box 10
Independence between criteria

The problem arises because the two dimensions of equity are not independent of one another. Issues such as this can be resolved fairly easily by considering the following exercise. Consider two competing interventions that are equal in all respects except one. Both impact equally on low-income groups (using income as our measure of SES) but one favours Aboriginal and Torres Strait Islander people of a given income while the other does not. In this case would you consider the interventions to be of equal value? If you are indifferent between the two interventions then it is SES that is the defining criterion and both interventions perform equally in this regard. If, however you would prefer the intervention that favours Aboriginal and Torres Strait Islander people then weight must also be given to this criterion in addition to low income to reflect your values.

Identifying the long-list of interventions to promote fruit and vegetable consumption

This step proved one of the most challenging in practice. It was difficult to contain interventions to specific portfolio management objectives (PMO) as required by the Framework since a single intervention might address several health-determinants and so would span several PMOs. It also proved difficult to work in the abstract, as interventions such as a 'social marketing strategy' for example meant different things to different participants. Would the mass media element of a social marketing campaign be backed by a supportive community campaign or should it be considered as a stand-alone intervention for example?

Eventually, it was decided to characterise potential interventions according to the typology³ set out in the Framework document (that is whether the intervention was a policy, a program or an infrastructure development) and to map specific interventions according to their intermediate objectives. These were to improve access, availability and affordability; to improve the skills and knowledge of consumers; to improve the skills and knowledge of providers; and to improve public perceptions of fruit and vegetables. In doing this it was recognised that (a) interventions may span more than one intermediate objective; (b) the different elements of a single integrated intervention may be aimed at different objectives; (c) infrastructure investment could be specific to one objective (e.g. human resource skills) or general to all (e.g. unspecified research).

The remaining criteria were more self-explanatory though there was some debate over what length of time constituted the short, medium and long term.

Determining the weights for these goals

The decision-makers involved in the first workshop found little difficulty in weighting the agreed criteria. Participants were given 10 points each to assign to the criteria and in the event all individual ratings were within two points of each other (3-5; 2-4; 1-3; 0-2) (Table 1).

Table 1: Weights assigned to the criteria in workshop 1

RATINGS OF INDIVIDUAL DECISIONMAKERS															
CRITERIA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Mean
Effectiveness	3	4	4	3	4	3	4	4	5	4	3	3	3	3	3.6
Equity	1	2	2	2	2	2	2	2	1	1	1	2	2	2	1.7
Acceptability	3	1	1	2	2	2	1	2	1	2	3	1	3	1	1.7
Timing	0	1	1	1	1	1	1	1	0	2	1	1	0	2	1.0
Feasibility	3	2	2	2	1	2	2	1	3	1	2	3	2	2	2.0

The mean weights were: Effectiveness 3.6; Equity 1.7; Acceptability 1.7; Timing 1.0; Feasibility 2.0.

It was agreed that the mean weights fairly reflected the views of all participants. However, the weight assigned to any one criterion might depend on the expected size of the budget. With a small budget the group wanted to give greater weight to equity. With a larger budget they wanted to see effectiveness playing a more substantial role.

³ The typology of interventions in the Framework has since been elaborated further but it is still consistent with the policy, program and infrastructure categories used in the case study.

The results are shown in table 2.

Table 2 *Map of potential interventions for a portfolio to promote fruit and vegetable consumption (the long-list)*

PORTFOLIO GOALS	POLICY	PROGRAM	INFRASTRUCTURE
General	Position statements		Research
Access - availability - affordability	Economic instruments (GST, diesel, pension Local food policy Food safety policy	Engage providers to increase supply Social mobilisation / advocacy Increase outlets Increase self-grow	Monitoring Coalition building
Skills/ Knowledge - consumers	Education policies Curriculum development (schools)	Small group education Point of sale (demos) "Aussie cuisine" Maternal & child health	
Perceptions - price/quality - convenience	Labeling Regulation of adverts Health claims issue	Social marketing	Coalition building
Skills/Knowledge - producers - practitioners	Curriculum development (vocational)	Risk appraisal and evaluation	Dissemination - opinion leaders - practitioners Advocacy skills
Supply - quantity - quality - sustainability - convenience	Industry standards	Accreditation Product development Increased outlets "Aussie cuisine"	Food handling skills Marketing Retail management

Identifying the short-list of interventions

The long-list was reduced in scope by the content researchers rather than the decision-making group. Interventions in the long-list were first grouped according to the setting in which they took place (community, schools, point of sale etc). The key elements to a successful intervention were then specified and the content researchers' knowledge of the literature used to identify the top two or three interventions within each setting that best met these requirements. The focus therefore switched from specific interventions to constellations of interventions in particular settings. Eight settings were identified in this way - social marketing, schools, point of sale, communities, food service, work sites, health sector and food supply.

The research literature suggested that work-site interventions were unlikely to be effective in promoting

fruit and vegetable consumption and so this setting was excluded from further analysis. Furthermore some settings could be combined, so for example a social marketing campaign might be supported by additional activity in schools or at point of sale for example.

Evaluating the performance of this shortlist

To evaluate the performance of the interventions the participants of the second workshop refined the decision-making criteria. Three criteria, effectiveness, selectivity and timing, were retained and a fourth criterion, 'fertilisation' was added to allow credit to be given to interventions that might have a latent period before their effects became manifest. The revised weights allocated to each of these criteria were - effectiveness 4.2, selectivity 2.2, timing 1.8 and fertilisation 1.8.

Table 3 *Results of the decision-making group's evaluation of best practice interventions by practice setting*

Intervention	Weighted score	Feasibility	Acceptability	Cost over five years	Priority ranking
Social marketing	69.9	H	M	\$25m	1
Schools	54.5	L	H	\$20m	5
Social marketing + schools	75.6			\$40m	
Point of sale		H	H	\$10m	
Community strategies	60.3	M	H	\$15m	4
Food service	46.4	L-M	M	\$ 5m	
Health sector	55.1	M	H	\$ 5m	3
Food supply	62.8	L-M	M-H	\$ 5m	2

A separate judgement was then made about the feasibility and acceptability of each intervention, ranking these as either low, medium or high. The results of the evaluation along with an estimated cost over 5 years are shown in table 3.

On the basis of the evaluation scores and projected costs food supply and supermarket point of sale interventions were excluded from further consideration.

The remaining settings, though given a priority ordering by the decision-making group, complement each other and so the preferred strategy was to retain aspects of them all in the portfolio. Time prevented any further consideration of combinations of interventions. It also prevented the decision-making group finalising the portfolio. Instead the content consultants continued to refine best practice definitions for each setting and to define the policy and infrastructure components needed for coordination and implementation. A draft portfolio was then prepared for consideration by SIGNAL.

The final portfolio is shown in Table 4.

Table 4: Final Portfolio to Promote Consumption of Fruit and Vegetables

Policy Interventions				Program Intervention				Infrastructure Support	
Legislation	Promotion	Food Supply	Initiatives	Schools and Childcare	Health Sector and NGOs	Systems Development	Education & Training		
<p>- Cross government review of legislation affecting f&v supply and development of mechanisms to monitor proposed new legislation.</p> <p>- Enhancement of regulatory frameworks that provide a secure environment for development, assessment and introduction of 'novel' f&v products. Link ANZFA</p>	<p>- Social Marketing awareness and advocacy campaign including point of sale and concurrent community initiatives, (defined by intersectoral involvement and market research).</p> <p>- State and community leaders form their own coalitions to deliver campaigns and other initiatives to promote f&v consumption at the local level.</p> <p>- Co-promotion of f&v with various commodity groups e.g. AMLC, Rice Growers Assoc.</p> <p>- Audit of previous efforts and best practice to promote/increase f&v consumption and dissemination of results: An <i>issues paper on barriers to consumption of f&v and previous efforts to promote an increased consumption of f&v</i>. CSIRO 1999; Portfolio development project.</p> <p>- Link with National Public Health Nutrition strategy to promote general nutrition literacy (NPHN Strategy) – <i>Communication Initiative no. 3: Nutrition literacy.</i></p>	<p>- Mapping and feasibility studies of f&v supply chain to identify and test assumptions about critical factors impacting on price, quality, access, key determinants of consumption and opportunities for product development</p> <p>- Product development to better position f&v in the convenience food market.</p> <p>- Systems to improve communication of market signals and information through f&v supply chain.</p> <p>- Best practice guidelines for the various types of food service settings including work sites and special events catering. Link with NHF & partners re: <i>Takeaway Food Project and Projects in Canteens, Special and Sponsored events.</i></p> <p>- Link with programs promoting sustainable production systems that improve quality and productivity of f&v supply e.g. Forum Sustainable Food Industry Development 1996).</p>	<p>-Nationally funded demonstration projects and seed funding in community settings e.g. Foodcents program, Penrith Food Project</p> <p>-States implement channel specific health promotion programs promoting f&v that support National Social Marketing initiatives. e.g. Fruit n Veg week</p> <p>- Support maintenance and enhancement of local supply chains and increase in availability and accessibility of f&v in disadvantaged areas. Link with NPHN Strategy: <i>Vulnerable people, initiative no. 3: Access to food that meets the dietary guidelines.</i></p>	<p>-2 levels: 1) Incorporated as part of National Social Marketing initiatives, 2)Comprehensive and long-term approach, curriculum based and supported by policy & food service changes, industry and parental involvement e.g. canteen/ tuckshop / foodservice guidelines, f&v industry price incentive schemes.</p> <p>- Link with Health Promoting in Schools program, NHF and NPHN Strategy. <i>Material and child health, Initiative: no.3 Nutrition for children under 5 years old no.4: Nutrition for school- aged children.</i></p>	<p>- Development of patient education and support resources for use by GPs. Secondary prevention focus in collaboration with NHF, Diabetes, Australia and Cancer NGOs.</p> <p>- Link with NGO position papers.</p>	<p>Management: - Organisational structure (e.g. Foundation) to manage intersectoral consultation, promotion strategy and coordinate efforts in areas of overlap including between National, state and local levels.</p> <p>- Public/private partnerships protocols for management: SIGNAL Fruit and Vegetable Working Group: Draft Protocol for intersectoral collaboration – extended to include NGOs.</p> <p>- Templates and resources developed by 'Foundation' to translate material in a consistent way into supporting state and locally relevant intervention strategies.</p> <p>- Needs assessment for dissemination of Best Practice Guidelines to state, regional and local levels.</p> <p>- Establish funding systems & funding selection criteria</p> <p>Information systems: -Enhance research, evaluation & monitoring base. Link NH&MRC funding.</p> <p>-Identification & surveillance of determinants, incl. ongoing monitoring of food supplies in remote areas.</p> <p>-Link to NPHN Strategy. Monitoring and evaluation- <i>Initiative: no. 1: The National food and Nutrition Monitoring System, no. 2: Evaluation plan.</i></p>	<p>- Workforce training and development linked to NPHN Strategy Initiative: no.1 Human resource requirements, no.3 Primary Health care professionals no.4 Non-health workforce (to include f&v and food service industries).</p> <p>-Accreditation/ incentive scheme for suppliers and retailers and transport operators (particularly in rural and remote areas).</p> <p>- Service providers using best practice guidelines and innovative practices. Link NPHN Strategy: <i>Research and Development Initiative: no. 2 Private sector investment in research, no. 3 Promoting innovation.</i></p>		

APPENDIX 2 - LESSONS FROM THE CASE STUDY

Did the process work?

The case study was a real exercise in strategic planning as well as an opportunity to test the Framework and the method of portfolio specification and priority setting within it. It is pertinent to ask therefore whether the process worked. However, only the decision-makers involved in the process can determine this. There is no counterfactual evidence and so we do not know what the strategic plan would have looked like if a more conventional process had been used instead. It is not possible to say therefore whether the resulting priorities are better or worse than would otherwise have been the case.

The portfolio could possibly have been selected more efficiently. However, the process was probably more important than its outcome. This was systematic, inclusive and largely evidence-based. Where value judgments were required they were explicit and subject to scrutiny. Even if the subsequent portfolio was no different than might otherwise have been the case, it is probably more defensible as a result.

There were a number of important lessons to draw from the case study.

The decision context

The first lesson was the importance of specifying the decision context as early as possible in the exercise and then continuing to check the consistency between the interventions being considered and the context for which the portfolio was being determined. In the case study, the decision context shifted from what SIGNAL might do directly to improve fruit and vegetable consumption to what needed to be done to bring about such improvement and therefore to what SIGNAL should do to facilitate the necessary changes.

The shifting focus contributed to a sense of frustration in some of those who participated in the first workshop. It should be acknowledged however that one of the outcomes of the portfolio setting process was a better specification of the policy context and the question to be addressed.

The constraints

The second lesson related to the notion of the budget constraint. The approach to portfolio setting adopted here blends aspects of the economic techniques of program budgeting and marginal analysis (PBMA) and option appraisal (Mooney et al, 1992). PBMA builds on an explicit 'budget' determined by current activity (and therefore expenditure) on the programs of interest. This provides a logical starting point from which to determine the marginal activities and the scope to reallocate resources in order to improve the mix of interventions. This approach is not possible where there is no pre-determined budget (and therefore no obvious budget constraint), which was the situation that applied in the case study.

Option appraisal can start with a blank slate and interventions (or options) can be evaluated against pre-specified criteria, of which cost is one consideration. However, this approach is usually adopted where there are rival or mutually exclusive interventions, out of which the aim is to select the one that is best.

Strategic planning exercises such as the one described here often combine elements of both these activities. A prime objective is to determine the most appropriate mix of interventions but there is not always an explicit budget constraint within which to work. The budget constraint becomes endogenous since the likelihood of securing a given budget allocation will depend to some extent on the scope and integrity of the chosen portfolio. The systematic and explicit nature of the portfolio-setting exercise may therefore increase the likelihood of funding.

In an effort to get around the problem of the lack of a formal budget constraint, the decision-making group agreed initially to work within a notional budget of \$5 million. An alternative approach would be to undertake some contingency planning using a range of notional budgets (small medium and large for example). This would allow one to see quite easily what could be gained from spending more on the problem of interest and at what cost simply by comparing the results of one notional budget with another. It increases the workload for the decision-making group however, as there are as many portfolio-setting exercises as there are notional budgets.

In the event though, the group went back to an option-appraisal format costing each of the interventions that made it onto the short-list

Decision maker involvement in the review of evidence

A third lesson relates to the involvement of the decision-makers in the selection and appraisal of the research literature. It was stressed at the beginning of this guide that portfolio specification is an exercise in judgement. Judgement is needed to interpret the available evidence and to fill the gaps in missing information. It is also needed to rank criteria and to assess the relative performance of interventions - how much better does an intervention have to be in terms of its impact on equity to compensate it for a lower effectiveness rating for example? It is vital therefore that information is presented to decision-makers in a way that facilitates their understanding and acceptance of its content.

This raises the question of whether decision-makers should also be involved in the process of selecting the evidence to be reviewed and the salient features to be extracted from the literature. The roles of content analyst and decision-maker may not be as easily separated therefore. An iterative process may be necessary in which evidence is reviewed and presented to decision-makers, who must then better specify a new set of questions to guide the content researchers' activities.

There is a danger in adopting an overly technical view of the research evidence - that it consists of facts waiting to be distilled and then absorbed by decision-makers. If research evidence is to be acted on by decision-makers then the process by which it is chosen and distilled must be visible to them and controlled by them.

APPENDIX 3 - GLOSSARY OF TERMS

Benefits: is used here to refer to the desired effects or outcomes of an intervention. The range of benefits to be considered is determined by the decision-making group.

Cost-effectiveness: strictly the term refers to the cost of achieving a unit of health outcome measured in naturally occurring units such as the cost per life year saved or cost per case prevented. In more popular usage the term summarises the relationship between the cost and effects of an intervention.

Criteria for selecting interventions: is the final list of portfolio goals that the decision-making group has agreed will inform its final decision on the interventions to be included in the portfolio. Criteria may include how effective is the intervention and for whom is it effective, as well as how acceptable and how timely is it.

Decision-making group: the portfolio process seeks consensus over what might otherwise be contested territory. It is important therefore that the portfolio selection is made by a decision-making group that has responsibility and is accountable for the decisions it will make, has representation and therefore ownership of the problem being addressed and can provide diverse views and perspectives on that problem.

The group must also be able to make decisions over resource use and so ideally it should involve those who have budgetary responsibility or influence. Other stakeholders may be consulted and may even participate in the process as long as this does not distract from the decision-makers' ultimate responsibility to make decisions.

Equity: refers to the perceived fairness with which the costs and benefits of public health activity are distributed among members of society.

Intervention: a (public health) intervention describes an activity undertaken in order to improve the public's health.

Marginal activities: are those interventions that are either currently being provided but that are likely to be of low value or are not being provided but are likely to be of high value. Marginal activities provide the best scope for beneficial redeployment of resources. Better value is obtained overall from shifting resources out of low value activities into high value activities. Marginal does not mean small or insignificant but refers instead to where change may take place.

Opportunity costs: the economic notion of opportunity cost is a measure of sacrifice. It reflects what we must give up in order to use a resource in one way rather than another. The opportunity cost is the value of the

resource in its most valued alternative use. This may, but need not be reflected in any financial expense associated with the resource in question.

Option appraisal: is a technique developed by economists originally for selecting the best of a mutually exclusive set of capital investments such as where to locate a new hospital. The portfolio approach described here borrows some of the best features of option appraisal.

Planning framework: is a method for assessing the impact and analysing the causes of public health issues; defining interventions; implementing them and evaluating the results. It comprises a cycle of six steps that are described in the publication "*A Planning Framework for Public Health Practice*" (available from the NPHP secretariat)

Portfolio: a portfolio refers to a mix of interventions that have related objectives. It represents the best sub-set of all possible interventions, where best is defined in terms of meeting specified needs subject to a resource constraint.

Portfolio goals: are consistent with the portfolio management objectives but specify in more detail what the portfolio is trying to achieve. They reflect the real decision-making context and therefore the range of values and priorities of the decision-making group. Portfolio goals can help narrow the long-list of interventions for the decision-making group to consider for the final portfolio.

Portfolio management objectives: define the broad purpose of the portfolio and help guide the initial search for interventions - the long list in the terminology employed in this User Guide. These are based on an epidemiological analysis of the dimensions and causes of the problem. They do not however yet reflect further considerations stemming from a real life decision-making uncertain. Technically there is a large expected variance around the expected mean outcome. Risk (or more correctly in this case uncertainty) of this sort may be associated with a lack of research evidence on the effectiveness of an intervention.

Weights: are used to denote the relative importance of goals to be achieved by the portfolio. A goal with a mean weight of 4 is deemed to be twice as important as one weighted at 2.

Weighted score: the weighted score for an intervention is obtained by summing across all criteria the product of the mean score given to it by the decision making group for each criteria and the mean weight of that criteria.