

Evaluation of complex interventions to improve health: implications for health inequalities

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11th October, 2007

Evaluation of complex interventions

Aims and introduction

- To provide an overview of process evaluation methodology
- To illustrate its relevance, particularly for the evaluation of interventions to address health inequalities
- Provides some illustrations of the application of process evaluations

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Rationale – why do we need process evaluations

- We know a lot about the size and consequences of health inequalities
- We know a fair bit about general causes, although there is less consensus about the interplay between specific factors
- But there is a gap in the evidence base regarding what works and how well in reducing health inequalities
- So there is a clear need for evaluations of any interventions to find out if they work and what the size of any effects/impacts might be and for who

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Rationale – why do we need process evaluations

- As well as evaluating impact, however, we also need to know how and why interventions do/don't work.
- Firstly because interventions to address health inequalities are **complex**:

health interventions that are non-pharmacological or clinical ... and typically comprise more than one active ingredient or component (Campbell et al 2000)

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Rationale – why do we need process evaluations

- As such, their success or impact is dependent upon real world context and where, who and how they are implemented - ie the process is part of the intervention (Hawe et al 2005; Oakley et al 2006)
- So we need to understand how effect(s) are modulated by context and the process of implementation
- This has implications for assessing whether a particular intervention can be replicated in another context and/or scaled up

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Rationale – why do we need process evaluations

- A second and related reason is the gap in our understanding about how different types of intervention and their component parts actually work in terms of producing change.
- This is particularly relevant to health inequalities (Whitehead 2007)

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Background

These points have been argued in a number of different arenas that are starting to converge.

Within the health promotion and public health nutrition – the models by change is expected to occur are rarely articulated and often there is the implicit assumption of the KAP model.



See for example: BNF 2005; Bunton et al 1991; Roe et al 1997.

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Background

The epidemiological/public health literature

This report from the MRC (2000) is a key publication.

This argues the need for a phased approach ...



**A FRAMEWORK FOR
DEVELOPMENT AND
EVALUATION OF
RCTs FOR COMPLEX
INTERVENTIONS TO
IMPROVE HEALTH**

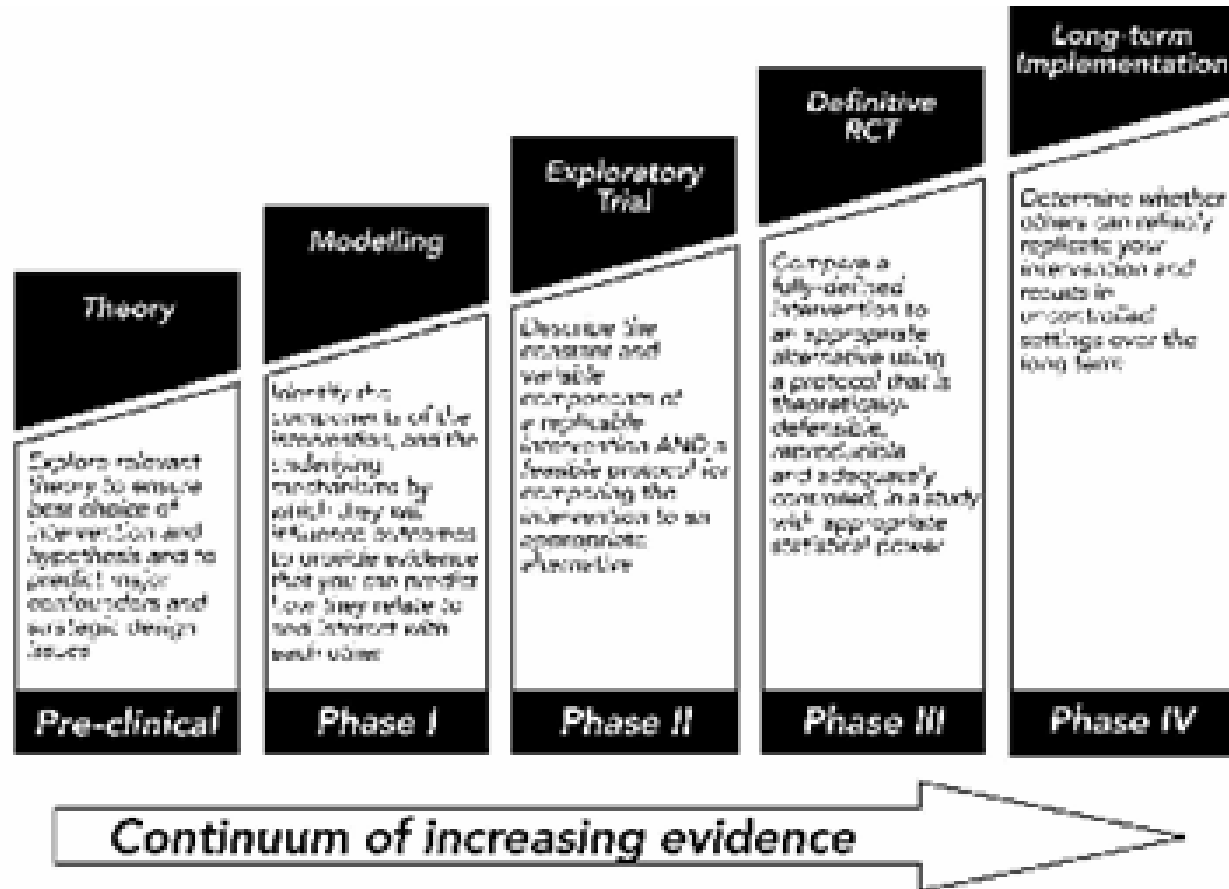
This document is a discussion document drafted by members of the MRC Health Services and Public Health Research Board. It is intended to provide a framework for individuals considering the evaluation of a complex intervention. It does not set out a set of required steps in carrying out trials in this area.

April 2000

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Background

The MRC framework



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Background

Although the language is different and the term process evaluation is not always used, the argument is the same - ie the need to understand how an intervention is implemented and how it works.

We need to take the lid off the black box .

We can do this with process evaluations.



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Definition of process evaluations

1. The conventional definition: *Examining the implementation and operation of program components. Sample question: Was the program administered as planned?* (Often as used in RCTs to assess implementation or type III error)
2. The extended definition: *looking at how a product or outcome is produced rather than looking at the product itself, that is, it is an analysis of the processes whereby a program produces the results that it does* (Patton 1987)

The latter implies a programme theory/programme logic/conceptual modelling/causal modelling, even if this is provisional or developmental.

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Application

So how do we go about this?

We have developed a process evaluation matrix based on the logical-framework analysis and evaluation framework of the World Bank.

This incorporates the anticipated causal pathways (how inputs -> outputs) as well as the defined indicators of these and their means of measurement.

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Application - 1) the empowerment of CHWs in Uganda

- What: a participatory action research project in central Uganda
- Aim: to improve the effectiveness of CHWs and ultimately child health
- Programme theory: to empower the CHWs via training and other inputs to enhance their economic status etc and which were defined by the CHWs
- Methods: participatory methods for the programme implementation, qualitative methods for the process evaluation (FGDs, IDIs, observations and case-studies)

These were summarized thus in our evaluation matrix ...

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Application - 1) empowerment of community health workers in rural Uganda

Anticipate causal pathway:					
1. Constraints to WHCP effectiveness	2. Interventions ->	3. Empowerment -> & capacity building	4. Increased -> performance (capacity & effectiveness)	5. Changes in the -> community	6. Goal
Inadequate skills and knowledge for health promotion	Training. Specific topics decided by CHWs.	New knowledge and skills acquired; confidence	What and how has new knowledge and skills been utilized?	Changes in household environments	Improved maternal child health and survival
Home environment and sanitation	Grants for home improvements, with inputs from CHWs	Access to basic household facilities; change in perception	No. of CHWs improving their homes.	Community perception of CHWs; community acting without grants	
Low family incomes and poor food security	Grants for income generation and home food production, with inputs from CHWs	Engaged in income generation.	CHW assessments of their income generating projects; managerial abilities	Community interest in income generation	
Poor access to formal and informal resources and networks	Social mobilization to create enabling environment: links to resource providers, CHW networking, building partnerships	Increased access to technical and social networks; increased recognition of CHWs from formal resource providers; CHWs stronger voices	Meetings of CHWs for mutual support and skill-sharing; utilization of local resource persons and services	Increased trust in CHWs by local leadership; increased involvement of men and children; increased community participation	

(simplified version)

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Application - 1) empowerment of community health workers in rural Uganda

Findings:

- The CHWs were empowered
- This empowerment was complex with several interlocking domains –technical, psychological, economic and social
- The latter was unforeseen and unexpected
- In terms of process, some of the empowerment (esp. psychological) was attributed to the participatory implementation of the programme
- The pathways to the different types of empowerment was complex and iterative...

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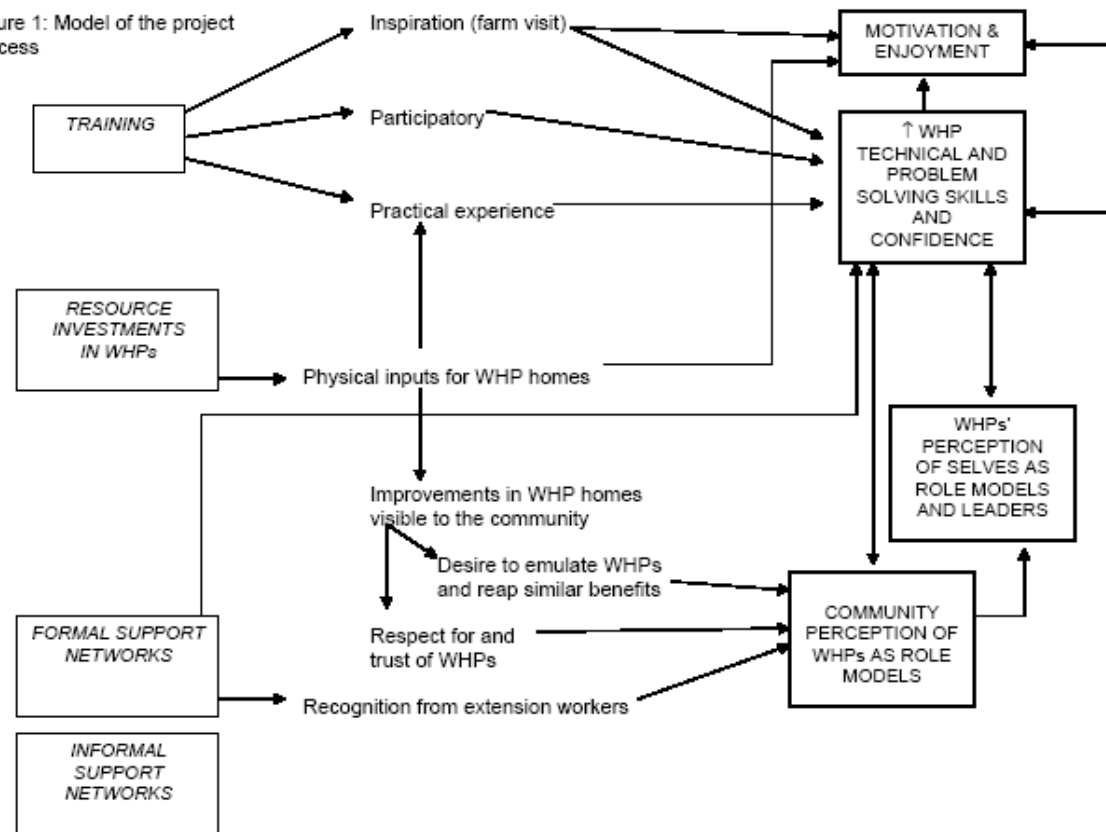
Application - 1) empowerment of community health workers in rural Uganda

Findings:

The pathways to the different types of empowerment

This helped to fill some of gaps in theory.

Figure 1: Model of the project process



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Application - 1) Uganda

While pigs for empowerment may not be an appropriate input for inner city London:

- The evaluation method is transferable
- It captured important and unexpected findings regarding the nature of empowerment
- Implications for community health trainers?



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Application – 2) a salt reduction project in South London

What: a community-based intervention among residents of a housing association (on-going)

Aim: to reduce salt intakes among residents, also to develop good practice methods for housing associations to promote healthy eating more broadly

Programme theory: food security theory as applied to the UK (LIPT report 1996), used to identify factors influencing salt intakes and thus the appropriate interventions, also empowerment of residents to change dietary patterns

Methods: quantitative and qualitative methods for the baseline appraisal and to identify barriers to change, qualitative methods for the process evaluation (FGDs, IDIs)

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FRAMEWORK FOR EVALUATION AND CONCEPTUAL MODELLING OF FOOD COMMISSION PROJECT

OVERALL AIM	BASELINE INDICATOR(S) (of overall aim)	SPECIFIC AIMS	OBJECTIVES (activities)	INDICATORS			MEANS OF MEASUREMENT (of indicators)	OUTCOME INDICATORS (of overall aim)
				Of specific aims		Of objectives		
				BASELINE	PROCESS	OUTPUT		
improve salt eating patterns	Salt consumption residents & staff (FFQ)	1. Raise awareness of residents and staff about salt	<p>a. Provide workshops</p> <p>b. Provide information sessions for staff/tenants</p> <p>c. Provide good quality information</p>	<p>Residents' and staff's knowledge, skills & awareness of salt – effect and food contents</p> <p>Salt consumption</p> <p>Analysis of known information & access</p> <p>Communication mechs/ barriers</p> <p>Analyse readability of info.</p>	<p>No. of people attending</p> <p>Residents enjoy the workshops</p> <p>All sections of the community attend</p> <p>Report more positive feelings about changing diet</p> <p>* Report aware of where to get information & happy about doing it</p> <p>* All sectors of community report: - understanding of material - Seeking information on salt/other aspects of healthy eating - report discussing w. friends/relatives</p>	<p>No. posters displayed</p> <p>No. articles in mags</p> <p>No. Tenants' & Staff handbook delivered</p> <p>No. of sessions</p> <p>Learning – questionnaire</p> <p>No. information sessions</p> <p>No of visits to web site</p> <p>No. leaflets distributed</p> <p>Website hits</p> <p>No of reports of +ve effects of articles</p>	<p>Record of project notebook</p> <p>Focus groups</p> <p>Staff diaries</p> <p>Questionnaires</p> <p>Evaluation forms</p> <p>FFQ</p> <p>Records of project notebook</p> <p>Questionnaires</p> <p>Focus groups</p> <p>Notebook</p> <p>Questionnaires</p> <p>Records</p>	(?) Salt consumption residents & staff (FFQ)
		2. motive & ↑ ability to reduce salt consumption	<p>a. store tours</p> <p>b. provide cookery classes</p>	<p>0</p> <p>No. adding salt</p> <p>No. cooking</p>	<p>No people attending</p> <p>No attending /+ve feedback cookery</p>	<p>No. tours</p> <p>No questionnaires filled</p> <p>No. cookery classes</p> <p>No recipes requested</p>	<p>Record in notebook</p> <p>Record FGI</p>	
		3. Provide support to residents & staff to implement change	<p>a. help with label reading</p> <p>b. Build good partnerships between residents and staff</p>	<p>initial knowl of salt</p> <p>Comments on communication & support received</p>	<p>Report look at labels</p> <p>No. of +ve comments</p> <p>No. of reports of support</p>	<p>Labels commented on</p>	<p>Questionnaire FGI</p> <p>FGIs</p> <p>Staff notebooks</p> <p>Questionnaires</p>	

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Application – 2) a salt reduction project in South London

Findings

The project is on-going, so we cannot as yet report on the success in reducing participants' salt intakes. But:

- the evaluation framework is working well
- it is providing a data trail for the tracking of individual inputs or “active” ingredients, also modifications to these
- and finally their relative impact/effectiveness in reducing residents' salt intakes

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Conclusions

- Process evaluations can make an important contribution to our understanding of how to address health inequalities (↑ the evidence base) - which interventions work?
- They can provide insight into the processes whereby change achieved and the importance of context (again ↑ the evidence base) – are they replicable?
- Should be considered as an adjunct to impact/outcome evaluations

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References

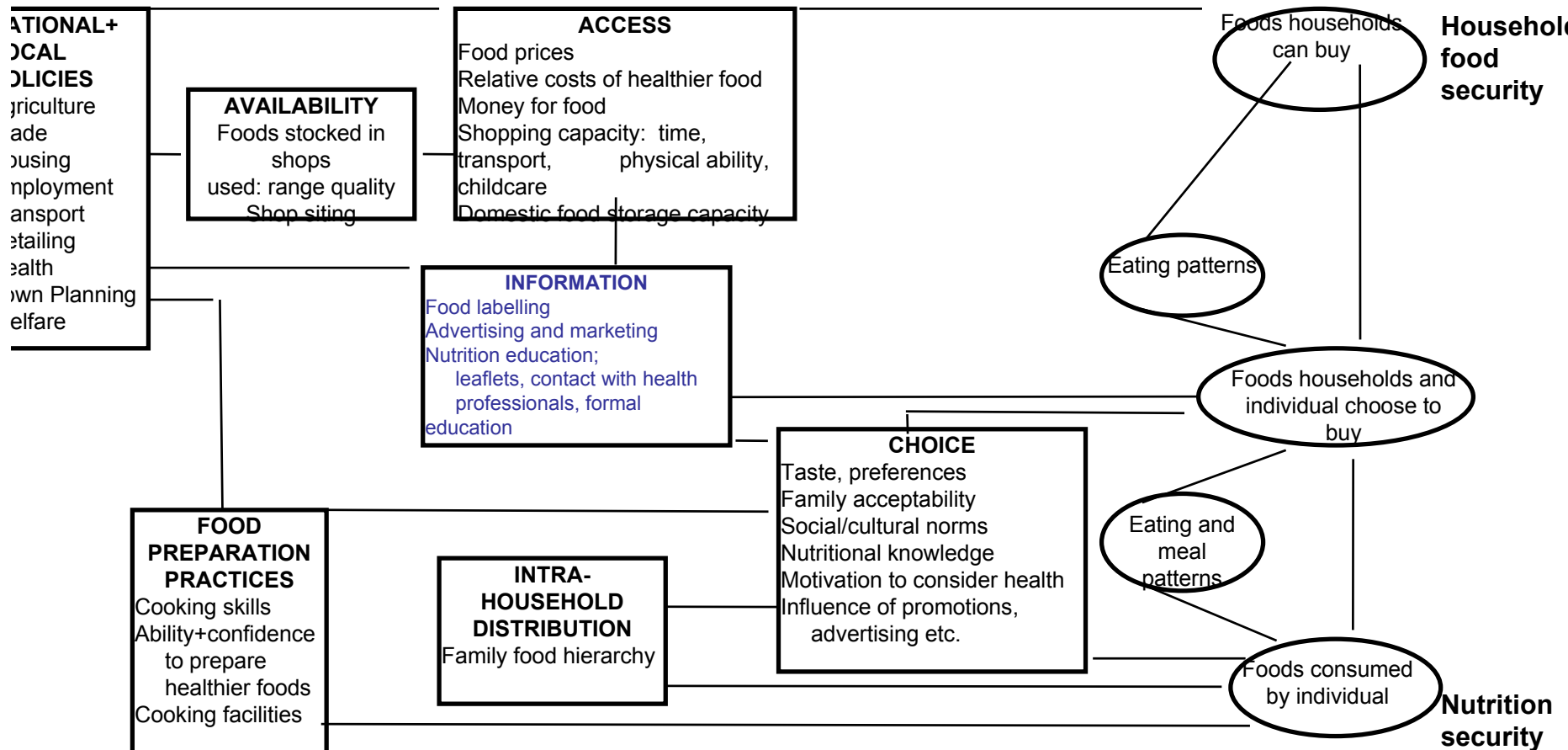
- British Nutrition Foundation (2004). A Critical Review of the Psychosocial Basis of Food Choice and Identification of Tools to Effect Positive Food Choice: A Summary. Summary of the Main Findings of the Report Commissioned by the Food Standards Agency. British Nutrition Foundation, London.
- Bunton, R., Murphy, S. & Bennett, P. (1991) Theories of behavioural change and their use in health promotion: some neglected areas. Health Education Research, **6**, 153 -162.
- Hawe, P. Shiell, A., Riley, T. & Gold, L. (2004). Methods for exploring implementation variation and local context within a cluster randomised community intervention trial. Journal of Epidemiology and Community Health, **58**, 788-793.
- Levinson, F.J., Rogers, B.L., & Hicks, B.L. (1999). Monitoring and Evaluation: A Guidebook for Nutrition Project Managers in Developing Countries. World Bank, Washington DC.
- Low Income Project Team (1996). Low income, food, nutrition and health: strategies for improvement. Dept Health, London..

Evaluation of complex interventions

References

- Medical Research Council (2000). A Framework for Development and Evaluation of RCTs for Complex Interventions to Improve Health. MRC, London
- Oakley, A., Strange, V., Bonell, C. et al (2006). Process evaluation in randomised controlled trials of complex interventions. British Medical Journal, **332**, 413-416.
- Patton, M.Q. (1987). How to Use Qualitative Methods in Evaluation. Sage Publications Inc., Newbury Park Ca.
- Roe, L., Hunt P., Bradshaw H., Rayner M. (1997). Health Promotion Interventions to Promote Healthy Eating in the General Population – A Review. Health Education Authority, London.

Framework of the determinants of food and nutrition security in the U



Modified from DoH (1996) Low Income, Food, Nutrition and Health: Strategies for Improvement. A Report by the Low Income Project Team for the Nutrition Task Force.