National Public Health Education Framework Project

Final Report

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Health and Ageing July 2002*

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1. INTRODUCTION

1.1 Background

The Public Health Education and Research program (PHERP) is a Commonwealth Department of Health and Aged Care initiative. It provides funding to support universities and other organisations across Australia to develop and deliver population health education, training and research.

The program is designed to achieve these outcomes:

1. building on existing public health education and research infrastructure and providing leverage for more extensive public health work;
2. strengthening the basis for high-level and consistent quality education and research programs;
3. fostering innovation to ensure emerging population health education, research and workforce development needs are addressed;
4. supporting population health workforce development and education initiatives which focus on the needs of Indigenous Australians;
5. fostering co-operation and collaboration across the population health education and research sectors, including linkages to government and the public health workforce;
6. fostering multi-disciplinary approaches to population health education and research.

PHERP was reviewed extensively in 1991and 1992, and subsequently in 1997 and 1998. The latter review, published in 1999 (Nolan, Bryson & Lashoff, 1999) identified a number of issues that required attention in order to strengthen the education and training efforts of the program. These included:

- Too much duplication across universities in relation to the development and implementation of the curriculum;
- Uneven quality of current public health curriculum and methods to build on best practice in the field;
- Absence of benchmarks to establish minimum quality standards;
- Inability to compare core public health units across universities to establish similarities or differences in the structure and content of courses
- Absence of an articulation process between the vocational, undergraduate and postgraduate sectors;
- Defined core competencies for public health education have yet to be agreed on nationally and their relationship to international curriculums;
- Inefficiencies in the development and implementation of curriculum as a result of the dispersed nature of the PHERP network;
- Difficulties in maintaining and updating knowledge and expertise across the industry;
- Teaching methodology is inconsistent with current research in relation to adult learning;

- More effective use of information technology to improve access to latest developments in curriculum and to enhance learning;

- Identification of the core skills, knowledge and competencies required at each level of public health education;

- The development of a more flexible teaching model is required based on general principles that underpin public health education to meet diverse needs in and outside of health.

1.2 Purpose and Principal Focus of the National Public Health Education Framework Project

To begin to address the issues outlined above in a substantive, cohesive and useful manner, the Commonwealth commenced the current project to elaborate a framework for public health education nationally, with a focus on the core component of the Master of Public Health program. The purpose is to determine the principles, objectives and outcomes of public health education, which would provide a model to guide public health education efforts within the context of existing public health education and curricula.

The national public health education framework aims to:

- Provide some consistent understanding of a core set of competencies in key areas to underpin curriculum development across public health degrees to strengthen the public health workforce including clinicians, policy makers, managers and allied public health workers

- Minimise duplication of effort

- Assure students of the quality and standards

- Provide a basis for program delivery

- Provide a mechanism for improved sharing and dissemination of curriculum materials and resources in Australia, and

- to ensure employers that graduates have a foundation of public health knowledge and skills that reflect the core functions of public health

The primary outcome of the project is a set of learning outcomes for the MPH core. These are designed to meet the stated aims of the project. The project links also with other PHERP activities and programs, including the quality enhancement program and the collaborative learning project, by providing the basis for high-quality curriculum models based on mutually recognised key areas of learning and learning outcomes.

The applied nature of the MPH and related degrees requires emphasis on both public health practice and academic disciplines. This reflects public health education and training

priorities articulated throughout the 1990's in Australia, the US, and Europe (Clark & Weist, 2000; Loos, 1995; Rotem et al, 1995; Rotem, Hine & Hodgkinson, 1999; Sorensen & Bialek, 1991). The model designed to develop the core education framework included workforce competencies to represent the public health workforce perspective, and key academic disciplines to represent the academic perspective. The final framework for the learning outcomes was developed with reference to the Core Functions of Public Health identified by the National Public Health Partnership (NPHP, 2000; NPHP, undated) (Appendix A), to ensure that education for public health meets the goals of public health practice in Australia, and to provide a framework for maintaining and improving links between public health education and practice sectors.

The learning outcomes represent the foundation for the compulsory or core component of the MPH degree. Although extensive, they are intended to provide flexibility among institutions with respect to depth of coverage and areas of content. For example longer MPH programs (those requiring two full time years to complete the degree) which have a more extensive core component may cover the outcomes in greater depth, providing the opportunity for academic institutions to highlight areas of expertise and excellence within a framework of common outcomes.

The learning outcomes have been developed independently of curriculum with respect to specific areas of content, teaching methods and student learning experiences, resources and assessment. It is intended that these curriculum issues remain within the jurisdiction of academic institutions, State-based consortia, and collaborations arising from the PHERP Innovations Program.

The project has a number of potential benefits for public health education, training and practice, and provides the opportunity to meet the requirements of key stakeholders in the public health enterprise. These stakeholders include students, academic institutions, public health employer organisations and the Commonwealth Department of Health and Ageing. A summary of the potential benefits of the project is given below.

Benefits of the NPHEF Project

- to provide a basis for design and delivery of the MPH program core within and across both traditional and new curriculum models,

- to provide students with a set of realistic expectations about the knowledge and skills that will be acquired from the core program component,

- to ensure student confidence that expectations about the core knowledge and skills acquired in public health education are commensurate with those of employers,

- to ensure employers that graduates have a foundation of public health knowledge and skills that reflect the core functions of public health

- to facilitate flexibility of enrolment by improving the process of developing mechanisms for credit transfer and increasing the ease of cross-institutional elective enrolment,

- to facilitate the recognition of prior learning as a result particularly of informal and formal on-the-job training by forming the basis for a system of credit (Nolan, Bryson & Lashoff, 1999),

- to ensure that all MPH graduates have an understanding of the scope of public health knowledge, skills and practice,

- to serve as guidelines for quality review of programs,

- to provide a basis for the recognition of public health as a profession,

- to provide guidelines for the development of public health components in health and welfare education at post-secondary level (Madden & Salmon, 1999)

- to reflect the requirements of the public health workforce with respect to the professional roles and functions of public health practitioners (Rotem et al, 1995),

- to facilitate communication between public health academic and practice sectors

- to provide learning outcomes for the development of specialist award courses (for example graduate certificates in research methods for population health)

1.3   The definition and purpose of core

The MPH program may be characterised as a 'degree for postgraduates' rather than a 'postgraduate degree', with student intake from a variety of clinical and non-clinical disciplines and occupations. It is thus both inevitable and appropriate that a substantial core or foundation component is included in the curriculum. The requirement for core knowledge and skills is recognised in Europe and the United States as well as in Australia.

Core in academia

In academia, 'core' refers usually to an essential component of a program of study. For example the University of Sydney defines a core unit of study as "[A] unit of study that is compulsory for the course or subject area"[1]. This generic definition that suggests that the purpose of core is to provide foundation knowledge in a course or subject area.

Core in MPH programs

In Australian MPH degrees, core is defined variously as

- 'a foundation for further study.[2]';
- a compulsory program component 'which grounds students in the specialities that comprise Public Health'[3],
- or, more generally, as units that 'provide the basic knowledge and skills'[4].

In the US, the Council on Education for Public Health (CEPH) refers to "five areas of knowledge considered basic to public health"[5], the purpose of which is to "provide depth of training in each … sufficient for a student to pursue a professional degree, concentration or major, depending upon the terminology used by the institution." The accreditation criteria of the US Council for Education on Public Health require that programs facilitate the development of an understanding in the five areas of knowledge, and acquire "skills and experience in the application of basic public health concepts and of specialty knowledge to the solution of community health problems".

US universities interpret this definition variously, for example:

- Core is a component of the course from which students "obtain a general understanding of the areas of knowledge basic to public health."[6]
- Core provides students with the breadth of knowledge in health public as a criterion for admission to the MPH[7].
- "The core courses provide the basic skills and knowledge necessary *for a career* in public health (emphasis added).[8]"

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[1] University of Sydney, Glossary of Terms Use at the University Of Sydney
[2] UNSW
[3] University of Melbourne
[4] University of Sydney
[5] The five areas of knowledge are biostatistics, epidemiology, environmental health sciences, health services administration, and the social and behavioral sciences. These are discussed further below.
[6] University of California, Berkeley
[7] University of California, Berkeley School of Public Health
[8] Boston University School of Public Health.

- Core is 'designed to prepare public health professionals to be knowledgeable about current and emerging health problems, and to be able to work effectively with other public health professionals, citizens in the community, and political leaders"[9]

In summary, core performs two primary functions, reflecting the interests of academia and practice sectors. It comprises subject units that provide students with common public health knowledge and skills that will prepare them to:

- undertake a generalist or specialist progression through the MPH degree, and

- engage in tasks and roles relevant to the core functions of public health.

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[9] University of Michigan, School of Public Health

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2. CORE LEARNING OUTCOMES FOR PUBLIC HEALTH EDUCATION IN AUSTRALIA

The primary outcome of the project is a set of core learning outcomes for public health education. These are presented in this section. A description of the process for their development is presented in Parts 3 to 5 of this report. In brief, the process involved:

- Identification of competencies for public health to provide the workforce perspective;

- Identification of a set of key public health disciplines;

- Identification of a set of outcomes for each key discipline; and,

- Identification of the final outcomes with reference to the core functions of public health in Australia developed by the National Public Health Partnership (Appendix A).

The core learning outcomes are arranged in the following categories: Public Health in Context; Quantitative and Qualitative Methods for Public Health; Foundation and Theoretical Knowledge and Skills; Applied Public Health Skills; and, Generic Skills. Within each category, general outcome statements are presented. In Column 1, specific outcomes related to the general outcome statement are then identified. In Column 2, each specific outcome is referenced to one or more core functions of public health (see box below) to which it relates (Column 2). In Column 3 the disciplinary or subject areas in which the student *may* be expected to attain the outcome are listed. The core functions of public health are listed in the box below. A detailed list of the practice elements of each function is in Appendix A.

Core Functions of Public Health – National Public Health Partnership

F1. Assess, analyse and communicate population health needs and community expectations

F2. Prevent and control communicable and non-communicable diseases and injuries through risk factor reduction, education, screening, immunisation and other interventions

F3. Promote and support healthy lifestyles and behaviours through action with individuals, families, communities and wider society

F4. Promote, develop and support healthy public policy, including legislation, regulation and fiscal measures

F5. Plan, fund, manage and evaluate health gain and capacity building programmes designed to achieve measurable improvements in health status, and to strengthen skills, competencies, systems and infrastructure

F6. Strengthen communities and build social capital through consultation, participation and empowerment

F7. Promote, develop, support and initiate actions which ensure safe and healthy environments

F8. Promote, develop and support healthy growth and development throughout all life stages

F9. Promote, develop and support actions to improve the health status of Aboriginal and Torres Strait Islander people and other vulnerable groups

A. Public Health in Context

A1. The Health System **Understands health system structures and the drivers of health system change**	Core Function/s	Disciplinary or Subject Area
1. The health system Describe the structure and dynamics of the health system and the key dimensions of health system performance.	All	General introductory Health services
2. Health system development Describe the major trends in health system development and identify their implications for society.	All	General introductory Health services
3. Healthcare financing Describe financing arrangements and mechanisms for funding health.	All	General introductory Health services Health economics

A2. Public Health **Identify the scope, role and functions of public health in relation to the health system, other sectors and to society**	Core Function/s	Disciplinary or Subject Area
1. Public health functions Identify and define the core functions of public health and identify the individual and organisational responsibilities within health and other sectors that fulfil these functions.	All	General introductory
2. Public health history Describe the historical development of public health and assess the implications of historical developments for current practice.	All	General introductory History of Public Health
3. Public health in a system Describe the interaction of public health with social and bureaucratic systems (including the health care system) to promote the health of populations.	All	General introductory Health services

A3. Politics and Institutions **Identify the political and institutional context of population health**	Core Function/s	Disciplinary or Subject Area
1. Systems and institutions Describe the structure and dynamics of the political and bureaucratic systems and identify the roles of various institutions (government and non-government) in shaping health policy.	F4 F6	General introductory Health services
2. Government and legislation Describe how structures of government and legislation impact on health programs, including international contexts.	F4	General introductory Health services
3, Global factors Describe the ways in which global institutions and relationships shape the conditions for health.	F4	General introductory Health services

B. Quantitative and Qualitative Methods for Public Health

B1. Biostatistics **Understands and applies foundation biostatistical methods**	Core Functions	Disciplinary or Subject Area
1. Statistical concepts Interpret correctly published results involving confidence intervals, significance tests and power showing an understanding of the role of random variation and the effects of sample size.	F1 F5	Biostatistics
2. Comparison of two groups Correctly conduct a statistical analysis of data from two groups (independent or matched) where the measurements are either categorical or continuous, and present the results in a report that includes an interpretation of the findings and a discussion of their strengths and limitations.	F1 F5	Biostatistics
3. The relationship between two variables Investigate by graphical and simple linear regression models the relationship between two continuous measurements and present the results in a report that includes an interpretation of the findings.	F1 F5	Biostatistics
4. Sample size and power estimates For a given study design involving one or two groups, obtain the information required to estimate sample size or power, carry out the calculations and report the findings taking into account the practical implications for implementation of the study.	F1 F5	Biostatistics
5. Statistical Software Competently use a statistical software program, for example SPPS, including defining data types, selecting appropriate forms of analysis and interpreting the output (in order to demonstrate the other learning outcomes.)	F1 F5	Biostatistics

B2. Qualitative Inquiry **Understands the methods of qualitative inquiry and competently applies at least one method of qualitative inquiry**	Core Function/s	Disciplinary or Subject Area
1. Qualitative inquiry Describe the range and purpose of different approaches to qualitative inquiry and identify their theoretical foundations.	F1 F5	Qualitative Methods Sociological Foundations
2. Qualitative data collection Identify the range of qualitative data collection techniques and demonstrate competence in at least one.	F1 F5	Qualitative Methods
3. Qualitative data analysis Describe the range of data analytic techniques and demonstrate competence in at least one.	F1 F5	Qualitative Methods
4. Interpretation Describe the range of data interpretation methods and models and interprets an analysis.	F1 F5	Qualitative Methods
5. Software for qualitative research Competently use a qualitative data management and analysis software program, for example NUD*IST or Ethnograph.	F1 F5	Qualitative Methods

B3. Descriptive Epidemiology **Understand the basic principles and concepts of descriptive epidemiology**	Core Function/s	Disciplinary or Subject Area
1. Routine data collection List the major administrative data collections (e.g. mortality collections), their common uses and identify their strengths and limitations for various purposes.	F1 F2 F5 F7	Epidemiology Demography
2. Morbidity and mortality Describe the major causes of mortality and morbidity in Australia at present and identify trends over the last 50 years, and the projected trends among sub-groups including age, sex, ethnicity and SES.	F1 F2 F5 F7	Epidemiology Demography
3. Study design (health status) Describe the principle designs used to collect data for assessing population health status, the determinants of health and health system usage and identify their strengths and limitations.	F1 F2 F5 F7	Epidemiology Demography

B4. Analytical Epidemiology **Demonstrates competency in the basic methods of analytical epidemiology**	Core Function/s	Disciplinary or Subject Area
1. Study design (causality) Describe appropriate study designs to investigate causal factors (personal or environmental) for acute diseases such as food poisoning and also for chronic diseases such as cardiovascular disease or cancer and intervention studies.	F1 F2 F5	Epidemiology
2. Measures of frequency and association Given the relevant data calculate and interpret measures of disease occurrence (e.g. incidence), measures of association between exposures and disease (e.g. relative risk) and measures of public health impact (e.g. population attributable risk) and state the designs for which the various calculations are appropriate.	F1 F2 F5	Epidemiology
3. Study bias Give examples of how the three major types of bias (selection, information and confounding) may arise in a study using any of the principle designs and describe what impact they have on interpreting the results.	F1 F2 F5	Epidemiology
4. Chance and significance Interpret the role of chance on the measure of effect and distinguish between statistical significance and public health/clinical significance.	F1 F2 F5	Epidemiology
5. Confounding and effect modification Discriminate between effect modification and confounding.	F1 F2 F5 F9	Epidemiology
6. Calculation of mortality and morbidity rates Given the relevant data calculate age-adjusted rates using the direct and indirect methods and interpret the result.	F1 F2 F5	Epidemiology
7. Diagnostic test evaluation Assess the validity of a diagnostic test by calculating the sensitivity and specificity, describe its relative usefulness in various populations (positive predictive value) and to describe the criteria that should be present for deciding whether a population screening program is worthwhile.	F1 F2 F5	Epidemiology

C. Foundation and Theoretical Knowledge and Skills

C1. Biological Sciences Knowledge Understands the contribution of the biological sciences to understanding the health of populations	Core Function/s	Disciplinary or Subject Area
1. Biological determinants of health Describe and identify the biological factors that determine the health status of individuals and populations	All	General introductory
2. Models of disease causation Describe basic models of disease causation for communicable and non-communicable disease	All	General introductory

C2. Environmental Knowledge Understands the contribution of environmental sciences to the health of populations	Core Function/s	Disciplinary or Subject Area
1. Environmental determinants of health Define and identify the main environmental determinants of health and disease in the environment and describe how these factors contribute to disease prevention.	All	Environmental Health General introductory
2. The risk framework Describe the contribution of epidemiology, toxicology and ecology to environmental risk assessment and risk management and identify the principles of risk assessment, risk management and risk communication.	All	Environmental Health General introductory
3. Paradigms of environmental health Describe paradigms pertaining to the discipline of environmental health (eg transition from traditional through industrial to ecological systems approaches).	All	Environmental Health General introductory

C3. Behavioural Knowledge Understands the contribution of the behavioural sciences to understanding the health of individuals and populations	Core Function/s	Disciplinary or Subject Area
1. Behavioural determinants of health Describe and identify behavioural factors that influence individual health behaviour, health status and utilization of health services.	All	Behavioural Foundations Health Promotion General introductory
2. The individual in a social environment Describe and identify social and cultural factors, including the mass media, which influence the health behaviour of individuals.	All	Behavioural Foundations Health Promotion
3. Behavioural theories Understand the theoretical basis of individual behaviour and behaviour change, describe some of the main theories, and recognise their importance to public health practice.	All	Behavioural Foundations Health Promotion

C4. Social/Cultural Knowledge Understand the contribution of the social science disciplines (sociology, anthropology, political science) to understanding of the health of populations	Core Function/s	Disciplinary or Subject Area
1. Social determinants of health Describe and identify the social and cultural factors that influence individual health behaviour, health status and utilisation of health services.	All	General introductory Social Foundation
2. Theoretical foundations Identify the sociological, anthropological and political science underpinnings of health leading to these determinants.	All	General introductory Social Foundation
3. Social context Identify the role of cultural and social factors in communities, organisations and policy arenas.	All	General introductory Social Foundation

C5. Economics Knowledge Describe the contribution of economics concepts and principles to public health	Core Function/s	Disciplinary or Subject Area
1. Key economic concepts Describe the principles of opportunity cost, marginal analysis, efficiency and equity and identify how these are applied in public health.	All	Health economics General introductory
2. Financial incentives Identify how financial incentives promote or create barriers to health at individual and institutional levels.	All	Health economics General introductory

D. Applied Public Health Skills

D.1 Applied Research and Evaluation Skills **Is able to identify and use appropriate methods and interpret evidence for policy, programming, evaluation and management.**	Core Function/s	Disciplinary or Subject Area
1. Using information Understand the uses of information for decision-making and collects, summarises and interprets information relevant to policy, planning, management and evaluation of programs.	All	Policy and planning Health promotion Evaluation
2. Applied quantitative and qualitative methods Apply quantitative and qualitative research methods in policy, programming, evaluation and management.	All	Policy and planning Health promotion Evaluation
3. Evidence Identify the role of evidence in developing health policies and programs and appropriately apply evidence.	F1 F2 F3 F4 F5 F7	Policy and planning Health promotion Evaluation
4. Assessment and economic evaluation Select and apply the various tools for social assessment.	F1 F2 F3 F4	Policy and planning Health promotion Evaluation
5. Performance monitoring and program evaluation Describe methods of performance monitoring and program evaluation and is able to develop mechanisms to monitor and evaluate programs for their effectiveness and quality.	F1 F2 F3	Policy and planning Health promotion Evaluation
6. Economic evaluation Distinguish the methods of health economic evaluation and identify their appropriate application.	F1 F2 F3	Policy and planning Health promotion Evaluation

D2. Disease prevention and control **Apply methods and theories to prevent and control disease**	Core Function/s	Disciplinary or Subject Area
1. Disease surveillance and monitoring Identify the contribution of disease surveillance and monitoring to policy and program planning and evaluation.	F1 F2	General introductory Policy and planning
2. Disease outbreaks Identify and apply the procedures undertaken by public health units to investigate and control an outbreak of communicable disease.	F1 F2	General introductory Epidemiology
3. Levels of Prevention Analyse a health problem and identify the appropriate level/s at which to target the disease, condition or determinant.	F2 F3	General introductory Epidemiology Policy and planning Health promotion

D3. Priority Setting and Policy Analysis Set priorities and develop policy	Core Function/s	Disciplinary or Subject Area
1. Priority setting Identify, contrast and apply the primary approaches for setting priorities in health.	F2 F3 F6	Policy and planning
2. Determinants and theories Include biological, behavioural, social/cultural and environmental factors and relevant models and theories in policy analysis.	F2 F3 F4 F6	Policy and planning
3. Policy analysis Describe and apply the components and processes of a major policy analysis using epidemiological, economics and social science tools.	F2 F3 F4	Policy and planning
4. Presents policy options Write policy options and state the feasibility and expected outcomes of each policy option.	F2 F3 F4	Policy and planning

D4. Program Planning, Organisation and Management Apply the principles and processes of program planning and management	Core function/s	Disciplinary or Subject Area
1. Intervention Planning Identify and apply the principles of public health intervention planning and develop a plan for a specified population, including the evaluation of objectives.	F3 F5	Health promotion Policy and planning Management Evaluation
2. Management Describe and apply the procedures involved in translating policy into organisational structures and plans.	F3 F4 F5	Policy and planning Management
3. Human resource management Describe human resources principles for organizational development, conflict resolution, and motivation of personnel.	F3 F4	Policy and planning Management
4. Financial management Describes financial management for health programs, including budgeting.	F3 F4	Policy and planning Management

D5. Health Promoting Interventions Design a health promoting intervention for an individual, community or organisation using theory and evidence to guide the selection of strategies and the identification of outcomes.	Core function/s	Disciplinary or Subject Area
1. Health promoting strategies Describe the range of health promoting strategies and methods, and for each strategy and method define appropriate groups for whom the strategy or method is designed.	F2 F3	Health promotion
2. Theoretical application Apply relevant behavioural and social science theories to a selected health promotion intervention, and review and evaluate the adequacy of the approach(es) selected for practice.	F3	Health promotion
3. Resources Identify training needs and resources and organisational and agency needs that would allow an intervention to be effectively implemented.	F2 F3 F5	Health promotion

D6. Participation/Involvement	Core function/s	Disciplinary or Subject Area
1. Advocacy and lobbying Describe the principles of advocacy and lobbying to support and enhance the health of population.	F4	Health promotion
2. Capacity building Identify and apply the principles of capacity building (including workforce development for population health and community development).	F2 F5	Health promotion
3. Intersectoral Action Identify the principles of effective intersectoral action and apply to population health activity.	F3 F4 F6	Health promotion

E. Generic Skills

Generic Knowledge and Skills for Public Health
1. Research paradigms Discriminate between deductive and inductive reasoning and identity the strengths and limitations of different research paradigms.
2. Information on determinants of health Locate, evaluate and interpret information about the key determinants of health.
3. Information on theory, assessment and intervention Locate, evaluate and interpret behavioural, and social science theories and models relevant to public health activity, and current paradigms for assessment and intervention.
4. The role of data Identify how data illuminates ethical, political, scientific, economic and overall public health issues.
5. Reading critically Identify ideas and evaluate arguments in texts relevant to public health and apply understanding to various aspects of public practice.
6. Critical appraisal Integrate information from a paper describing how a study was conducted to assess if flaws affect the interpretation of the results and whether the results are biased towards or away from the null.
7. Presentation of data Given a study question and relevant data choose appropriate forms of presentation of the data for an oral or written report to summarise the information relevant to the study question.

Personal Transferable Skills
1. Communication Demonstrate effective written and oral communication in a range of contexts.
2. Teamwork Facilitate group/team work and operate effectively as a member of a group or team
3. Information literacy Collect and evaluate and interpret information from a variety of traditional and new technology sources
4. Information technology Use information technology to effectively communicate, locate information and analyse data
5. Decision-making Use analytical, critical thinking, and problem-solving skills to make decisions effectively.
6. Cultural awareness Appreciate the need to communicate effectively across social groups in diverse cultures and sub-cultures and understands cultural obstacles to effective communication.

Professional Attitudes and Values
1. Population health Understand that areas of human health need to be organised at a population level to achieve improved health outcomes.
2. Values Identify the values and principles that underlie public health policy debates, organisational practices, and program planning and evaluation.
3. Collaboration Collaborate with individuals, communities and organisations, and encourages their participation.

3. METHOD and DEFINITIONS

3.1 Method

Literature Reviews

- Review of the literature on:

    - Public Health Training and Education internationally;

    - Public health curricula internationally, with particular emphasis on the core components of public health programs;

    - Australian employer and workforce perspectives on public health education.

    A summary of the review is in Appendix B

- Literature review of work on competencies in the public health workforce, and in education and training. This was a sub-contracted task undertaken by Professor Arie Rotem of the University of New South Wales, with the assistance of Dr John Dewdney (Appendix C). A list of all sub-contractors involved in the project is in Appendix D.

Employer Survey

- A survey of key public health employer groups, represented by senior staff, was undertaken by the Contractor to identify the expectations of senior employers of MPH graduates (Appendix E).

Model for development of the Framework

- One-day Disciplinary Group workshop was in held Canberra, in September 2000, attended by academics from public health academic institutions (A list of workshop participants is in Appendix D). The workshop was supported by DHA. The objectives of the workshop were:

    - To agree on a set of public health workforce competencies for this project

    - To agree on the key disciplinary areas of academic public health for this project.

- Refinement of the public health competencies for the project. This work was sub-contracted to Professor Peter O'Rourke, University of Queensland

- Identification of the structure and content of Australian public health programs.

- Identification of core learning outcomes within each key disciplinary area, with respect to the workforce competencies identified for this project. This was sub-contracted to six disciplinary expert groups.

- Identification of an integrating framework for the learning outcomes with respect to the Core Functions of Public Health, identified by the National Public Health Partnership (NPHP).

Further details on the model are discussed in Sections 5.1 to 5.4 below.

3.2 Definitions

The following definitions were adopted for this project.

Core Competency

Competencies describe skills and/or applied knowledge generic to an occupation or discipline. In the current context a core competency refers to skill and/or applied knowledge required of all MPH graduates to undertake work in public health settings, and are thus linked to the core functions of public health.

Curriculum

A curriculum is a plan for a sustained process of teaching and learning. Curricula are commonly designed with reference to a model that may include aims, objectives, content, learning experiences, resources and assessment.

Discipline

The term discipline is defined pragmatically as the current subject-based organisation of public health education in academic settings in Australia.

Education Framework

In the present context, the term *education framework* describes the components (learning outcomes) of the continuum of public health education. Educational framework is distinguished from curriculum (below).

Learning Outcome

Learning outcomes are statements of desired outcomes of learning expressed in terms that make it clear how assessment will be achieved. Learning outcomes focus on the knowledge and skills that students are expected to demonstrate at the end of a unit of study (Ducker, undated; Melton, 1997).[10]

Public Health Core

Public health core comprises subject units that provide students with the common public health knowledge and skills that will enable them to:

- undertake a generalist or specialist progression through the MPH degree, and

- engage in tasks and roles relevant to the core public health functions.

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[10] Note: In the US the term 'competency' is used interchangeably to refer to learning outcomes for public health education, and to competencies required by the public health workforce.

4.   SUMMARY OF LITERATURE REVIEW AND EMPLOYER SURVEY

4.1 Public health education and public health practice

- In the US, the Institute of Medicine (IOM) report *The Future of Public Health* observed that schools of public health were isolated from then current issues and from public health practice. The report recommended that strong linkages be developed between educational institutions and organisations involved in public health practice by agency and faculty exchange, and the institution of a practicum to public health educational programs (Fineberg et al, 1994).

- The Faculty/Agency Forum (Sorensen & Bialek, 1991) investigated the links between public health education and practice in 1989. The study was undertaken by the Johns Hopkins School of Hygiene and Public Health and the Association of Schools of Public Health (and sponsored by the CDC and the US Bureau of Health Professionals). The Forum recommended that:

    - the [public health] curriculum should be structured around competencies universally required of public health practitioners, and

    - schools of public health should establish broad cooperative agreements with major local, regional and state agencies.

- To facilitate linkages between academia and practice sectors, the Faculty/Agency Forum (Sorensen & Bialek, 1991) recommended that public health program curricula are structured within public health disciplines with reference to the universal competencies for public health. A subsequent report on public health education and training in the US in the late 1990's (USDHHS, undated) repeated this recommendation, observing that US schools of public health continued to develop curricula on the basis of content.

- In Australia, weak links between public health education and practice were also observed by the PHA (1990) report on public health education and training. Particular educational deficits were noted in the areas of policy, planning, administration and health service provision.

Changing public health practice

- Public health practice has been in a state of change in the last two decades and must reflect new knowledge in a range of areas. Clark and Weist (2000) summarise some of the major changes:

    - An increasing emphasis on social and political inequalities in health and the social and physical environments

    - Increasing knowledge in genomic science due to the Human Genome Project, and an acceleration of basic science knowledge in molecular and biological sciences. These raise ethical, legal and social issues regarding the potential for health improvement

    - New communication technologies provide a vehicle for both information and misinformation. Public health professionals must have the ability to analyse information and apply it to their work

- National and international curriculum models are being designed in Europe (Section 4.4.1) and the US (Section 4.4.3) respectively to reflect these changes.

Roles and functions of the public health workforce

- The Public Health Workforce, Education and Training Study (Rotem et al, 1995) asked current public heath and related employees to nominate their main public health functions. The functions most frequently nominated were management, clinical, administrative support, health promotion, and policy and planning advice.

- The consultation undertaken by NSW Health on behalf of the NPHP identified three types of public health worker: the generalist, the specialist and other workers whose role requires some public health related skills. The respondents supported the role of generalist public health workers. It was also noted that multi-skilled public health personnel were required in services such as drug and alcohol services, Aboriginal health services, corrections health and non-government organisation.

Deficits

- The Rotem et al (1995) study of workforce training needs observed that workforce training was required in applied areas such personnel management and counselling, health services management and knowledge of the health system.

- The employer survey undertaken for the current project found that MPH senior public health employers considered that graduates were not adequately prepared for public health practice, one respondent observing that 'graduates can't hit the ground running'.

4.2   Competencies for the public health workforce

The report on public health competencies undertaken for this project is attached as Appendix C.

4.3   Key skills required by students and graduates

Employer Survey

In the survey conducted for the current project, senior public health employers (n =24) in government and non-government organisations were requested to nominate their shared knowledge and skills that they would expect of a graduate of an MPH degree. The domains of knowledge and skill nominated by the respondents are shown in Table 1.

Table 1. Core knowledge and skills expected of MPH graduates

Core Knowledge and Skills	Frequency
Research - design and implementation	22
Public Health - definition, scope	15
Epidemiology • general Epidemiological skills • evaluation of evidence (critical appraisal) • applied epidemiology	8 7 6
Communication	16
Generic skills	13
Biostatistics	10
Policy and planning	7
Infectious diseases	7
Health promotion	7
Organisations and management	6
Political awareness	5
Program planning and evaluation	5
Social and behavioural sciences	5
Health economics	4
Determinants of health	4
Environmental health	3
Other	16

Respondents were also requested to nominate knowledge and skill deficits among MPH graduates. These are shown in Table 2.

Table 2: Knowledge and skill deficits of public health graduates

Knowledge and Skills Deficits	Frequency
Applied Epidemiology	5
Research skills	4
Management skills	2
Communication skills	2
Political awareness	1
General public health content	1
Programming skills	1
Organisations and management	1
Understanding the media	1
Generic problem-solving skills	1

Public Health Workforce and Training Study (Rotem et al, 1995)

In 1993, Rotem and colleagues undertook the most comprehensive study of student and graduate requirements of the MPH to date (Rotem et al, 1995). The survey listed 28 key

public health areas of skills and knowledge which students and graduates of MPH and related degrees rated according to their importance to their present employment.

- The following areas of knowledge and skill were rated by 80% or more of students and/or graduates of public health and related programs as *very important* or *of some importance* to their present work.

    - work effectively in multidisciplinary teams

    - critically appraise published literature

    - identify social and cultural factors which influence public health

    - identify environmental factors which influence public health

    - communicate effectively on health matters including effective use of the media

    - identify demographic factors which influence public health

    - evaluate the effectiveness of health programs and services

    - identify economic and political factors which influence public health

    - identify major ethical issues relating to health programs and services

- The report also compared the self-rated importance of skills among PHERP and non-PHERP students and graduates.

    - PHERP graduates were significantly more likely than graduates of other courses to indicate that epidemiology, computer software and report preparation were *very important* to their present work. PHERP graduates were most likely to rate interpret health laws and regulations and demonstrate a working knowledge of behavioural change as *not important* to their work.

    - PHERP funded students were more likely to report that knowledge and skills in computer software, literature appraisal, epidemiology, and report preparation were *very important* to their present work. PHERP funded students were more likely to rate identify environmental factors which influence public health, access threats to health from the physical environment, demonstrate a working knowledge of models of behavioural change, design and conduct a health promotion/education campaign, plan and manage health programs and services and facilitate and participate in community development activities as *not important* to their work.

The scope of public health

- The PHA report (1990) observed the scope of public health knowledge, skills and practice did not appear to be understood, resulting in "misconceptions about public health and a lack of understanding about the contribution it can make".

- A theme arising from consultations undertaken by the NPHP on public health training needs concerned the need to demonstrate the way public health principles contribute to public health outcomes, to facilitate an understanding of the public health components of the work of the individual.

- Respondents to the employer survey undertaken for this project (Lloyd) observed that understanding the scope of public health (including community mobilisation and social action) within a clear conceptual framework is an important part of MPH graduate knowledge.

4.4   Frameworks for public health education

The literature review identified three approaches to the elaboration of frameworks for public health education.

- Key or core disciplinary areas of public health, with no or little specification of student learning outcomes. While providing little guidance for the design of a framework for the current project, this provided information about the disciplinary areas of considered essential to public health education in the US, Europe and Australia.

- Lists of learning outcomes (referred to as academic competencies in the US) for the key disciplines with reference to the core competencies of the public health workforce. This work has been undertaken in the US.

- A conceptual framework from which to identify MPH graduate competencies or outcomes. Work currently being completed in the US provides the only example of this approach (Clark & Weist, 2000)

These are discussed in turn below.

4.4.1 Core disciplinary areas of public health

Europe

According to the Association of Schools of Public Health in the European Region (ASPHER) report *Training programs in public health and health promotion in Europe: A literature review* (ASPHER, undated), undertaken on behalf the European Commission, the base subjects of the majority of European public health programs, were (in 1993):

- epidemiology and biostatistics
- behavioural sciences
- health management and health administration.

In recent years European Commission has supported the development of a European Master in European Public Health (EMEPH). The project is being undertaken by ASPHER. The program is simultaneously a European Master in PH (EMPH), in that it must be guaranteed that the scope and level of competencies are equivalent across institutions, and a Master in European PH (MEPH), in that it covers public health issues in Europe and EU related policies (ASPHER, 1999). The core units are as follows: Introduction to Public Health and to Europe; Policy, Management and Economics; Epidemiology and Statistics; Environment and Health; and Health Promotion/Health Education, Social Sciences.

The United States

In the US, five key public health disciplines were identified by the Faculty/Agency Forum (Sorensen & Bialek, 1991). The inclusion of these disciplines (referred to as key areas of public health knowledge) is mandatory for public health programs accredited with the Council on Education for Public Health (CEPH). The disciplines are:

1. Biostatistics - collection, storage, retrieval, analysis and interpretation of health data; design and analysis of health-related surveys and experiments; and concepts and practice of statistical data analysis.

2. Epidemiology - distributions and determinants of disease, disabilities and death in human populations; the characteristics and dynamics of human populations; and the natural history of disease and the biologic basis of health.

3. Environmental health sciences - environmental factors including biological, physical and chemical factors which affect the health of a community;

4. Health services administration - planning, organization, administration, management, evaluation and policy analysis of health programs; and

5. Social and behavioral sciences - concepts and methods of social and behavioral sciences relevant to the identification and the solution of public health problems.

CEPH specifies that these disciplines should be interpreted within the broader context of the mission of public health academic education, particularly the roles and tasks of public health practitioners

The requirement for this core component does not however limit institutions to provision of this core content alone. At Boston University School of Public Health, for instance, students are required to complete an additional core unit Introduction to Health Law. Similarly at Harvard School of Public Health, students complete a unit in ethical basis of public health practice. There the health services administration component may be selected from a number of options relevant to students' area of concentration (stream).

Australia

The available literature on Australian public health programs indicates that biostatistics, epidemiology and health promotion and health education are the most frequently represented key disciplines in public health core curricula. Biostatistics and Epidemiology are taught universally. Studies by the PHA (1990) and Rotem et al (1995) noted that public health programs were strongest in these areas. Rotem et al (1995) observed that the four key disciplines in Australian public health and related programs are epidemiological studies, statistics and information systems, health services management, policy and planning, and behavioural sciences including health promotion and education. This is consistent with

current MPH core subject units in PHERP-funded consortia. Weaknesses in MPH and related program content have been identified in two Australian reports (PHA, 1990; Rotem et al, 1995). These include health economics, social science, and services/program evaluation.

4.4.2 Learning outcomes developed with reference to workforce competencies

In the US several projects have developed learning outcomes of public health education by linking the public health core competencies developed by the Faculty/Agency forum to the five key areas of knowledge and skills (disciplines). These include CEPH and the Tulane School of Public Health (Tulane University, undated).

The most extensive project was undertaken by Loos (1995). Loos developed competencies for public education and training. The competencies were developed for nine public health instructional domains, which include the five disciplinary areas identified by the Faculty/Agency Forum (Sorensen & Bialek, 1991), maternal and child health, health education, nutrition and gerontology. The project provided 455 elements of competence in these areas, and includes generic competencies.

4.4.3 A conceptual framework for public health education

In response to changes to public health practice and its context, US ASPH is undertaking a project to identify learning outcomes (referred to as competencies) for public health education (Clark & Wiest, 2000). The framework is being designed to reflect three dimensions of public health practice or 'domains of competence in a master's degree in public health'. The domains are skills, perspectives and applications, which together form a three-dimensional grid (a cube). The dimensions of each domain are as follows. At this stage a set of learning outcomes is currently written for each cell of the cube. The work is currently incomplete, but due for publication in 2003.

5. MODEL FOR THE IDENTIFICATION OF CORE LEARNING OUTCOMES

Taking into consideration the issues summarised in Section 4, the framework for public health learning outcomes for academic core was developed in several stages, outlined below. Figure 1 summarises the process.

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┌─────────────────────────────────────────────────────────────────────────┐
│  ┌─────────────────────────┐          ┌─────────────────────────┐        │
│  │ Identification of       │          │ Identification of       │        │
│  │ competencies for public │          │ public health academic  │        │
│  │ health practice         │          │ disciplines             │        │
│  └─────────────────────────┘          └─────────────────────────┘        │
│                                                                           │
│            ┌──────────────────────────────────┐                          │
│            │ Identification of learning        │                          │
│            │ outcomes within key               │                          │
│            │ disciplinary areas                │                          │
│            └──────────────────────────────────┘                          │
│                                                                           │
│            ┌──────────────────────────────────┐                          │
│            │ LEARNING                          │                          │
│            │ OUTCOMES                          │                          │
│            │ FOR PUBLIC                        │                          │
│            │ HEALTH CORE                       │                          │
│            └──────────────────────────────────┘                          │
│                                                                           │
│            ┌──────────────────────────────────┐                          │
│            │ Core functions of public          │                          │
│            │ health                            │                          │
│            └──────────────────────────────────┘                          │
└─────────────────────────────────────────────────────────────────────────┘
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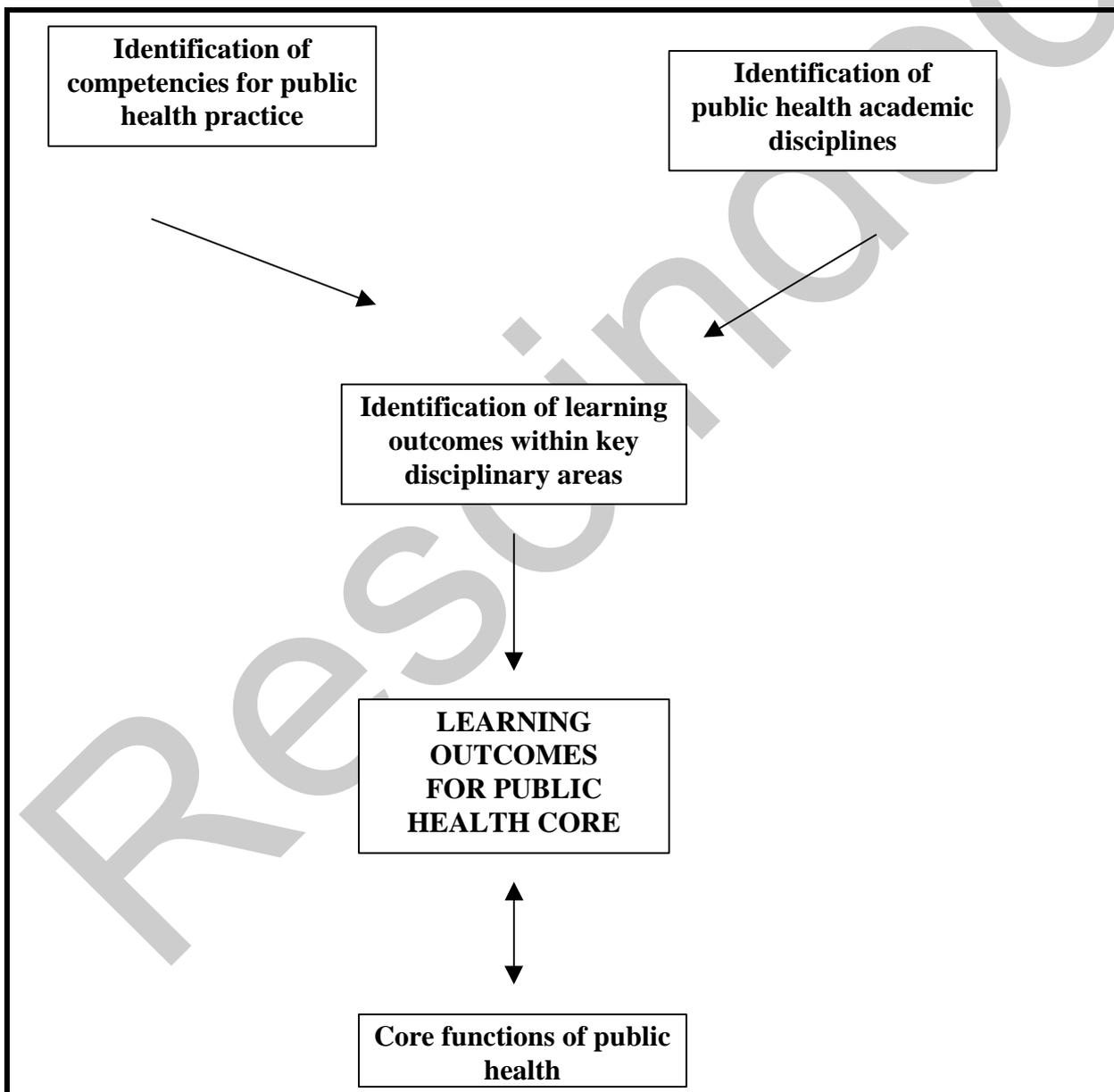
5.1 Competencies for public health practice

The competencies were identified with reference to

- The literature review of work on competencies in public health workforce, education and training undertaken by Arie Rotem with the assistance of John Dewdney (Appendix C).

- A brief review of the available literature on public health training and education projects in the US (See Appendix B).

- Employer expectations of MPH graduates. Literature review and short employer survey undertaken for this project (See Appendix E).

Competencies were discussed by the Executive and at the Disciplinary Group workshop (see Section 3.1 Methods). A summary of the discussions is given below as a list of criteria for the selection of an existing set of competencies to be adapted for this project.

- Competencies may be easily adapted to the individual graduate.

- The competencies should reflect the functions of public health.

- The competencies should reflect employer expectations of MPH graduates.

- The list of competencies should not be large, for example no more than forty.

- Competencies should be listed in broad competency areas (rather than a list of unrelated items).

- The competencies should relate to public health academic disciplines.

Existing lists of competencies examined included Loos (1995), Rotem et al (1995) and Sorensen & Bialek (1991) and the US Council on Linkages between Academia and Public Health Practice. The latter were deemed most consistent with the criteria noted above by the Disciplinary Group Workshop. Sorensen and Bialek (1991) identified six competencies "the Universal Six" for the US Faculty/Agency Forum, which the US Council on Linkages subsequently updated to eight competency groupings. The competency groupings are shown in Table 3.

Table 3. US Public Health Competencies

'Universal Six'	Analytic/Assessment skills
	Communication skills
	Policy development/Program planning skills
	Cultural competency skills
	Basic public health sciences skills
	Financial planning and management skills
New Competencies	Leadership and systems thinking skills
	Community dimensions of practice skills

The elements of each competency grouping (not shown) were simplified by the multidisciplinary group of public health academics at the Disciplinary Group Workshop. The orientation of the competencies were changed to reflect the Australian health system making reference to core function of public health, identified by the NPHP. Subsequently Professor Peter O'Rourke of the University of Queensland revised the competencies for this project. The full list of modified domains of competency and their elements are shown in Appendix F.

5.2 Public health academic disciplines

The Disciplines were identified with reference to

- a literature review of public health program content in Australia, the US and Europe (See Appendix B)
- identification of areas of strength and weakness in public health education (see Appendix B)
- employer expectations of MPH graduates (See Appendix E)

The academic public health disciplines identified for the project are shown in Table 4.

Table 4. Key public health academic disciplines

Epidemiology
Biostatistics
Health Promotion and Health Education
Environmental Health
Public Health Policy, Evaluation and Management
Social Sciences and Qualitative Inquiry

5.3 Learning Outcomes for Public Health Key Disciplines

Six groups of public health academics were sub-contracted to write learning outcomes for their discipline with reference to the competencies modified for the project. The requirements of the sub-contractors and their reports are attached as Appendix G. This provided an extensive list of within-discipline learning outcomes on which to base the final framework.

5.4 The final framework

The final framework was developed in two stages.

Stage 1. Writers' Workshop.

The purpose of the Writer's workshop was to explore the use of the core functions of public health identified by the National Public Health Partnership (NPHP, 2000; NPHP, undated) as

a benchmark against which to rate the learning outcomes to ensure that the outcomes are consistent with the public health enterprise in Australia. Each set of within-discipline learning outcomes were examined for their fit with the core functions. This provided the opportunity to note areas of overlap between within-discipline learning outcomes, to consider excluding outcomes, to include outcomes that may have been overlooked, and to consider the appropriateness and feasibility of using the core functions as an organising framework.

Stage 2 Integrating the outcomes

The final process integration took account of the following issues:

- gaps in the learning outcomes identified at the Writers' Workshop, particularly the absence of applied epidemiological knowledge and skills;

- agreement among the participants that descriptive and analytical epidemiology could be separated

- agreement that some skills could be regarded as 'generic' to public health

- alternative domains of competence suggested by the Public Health Policy, Evaluation and Management Group. These are

  - The observation that the core functions of public health reflect public health practice, but that they do not specify the underlying or foundation knowledge and skills required to undertake the core functions of public health, for example biostatistical skills, theoretical knowledge.
  - The observation that the learning outcomes should reflect public health practice across disciplines as well as within academic disciplines.
  - The requirement for an integrated understanding of public knowledge, skills and practice for students of public health

With reference to the Writers' Group a hierarchical framework was developed. This provides a systematic approach to the explication of the learning outcomes, and reduces the redundancies of the separate disciplinary learning outcomes. The view was taken that a research methods and theoretical foundations provide a within-core foundation from which the student can develop a basic, yet comprehensive, understanding of the public health enterprise to achieve both aims of core, ie, to prepare students to:

- undertake a generalist or specialist progression through the MPH degree, and

- engage in tasks and roles relevant to the core public health functions.

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Appendix A

Public Health Practice in Australia Today: A Statement of Core Functions, prepared by the National Public Health Partnership

1. Assess, analyse and communicate population health needs and community expectations

Established practice
- monitor physical, mental and social morbidity and the causes of mortality
- research and monitor the determinants of health
- assess population health needs and risks
- undertake research to identify the causes of and solutions to
- health problems in populations

Emerging practice
- conduct public health program evaluation and outcome research
- evaluate health services and conduct research on the outcomes of health services
- conduct cross-disciplinary and multi-method research

2. Prevent and control communicable and non-communicable diseases and injuries through risk factor reduction, education, screening, immunisation and other interventions

Established practice
- conduct disease, injury and risk factor surveillance
- conduct disease outbreak investigation and control
- screen for selected communicable and non communicable diseases
- implement comprehensive communicable disease control programs including the provision of immunisation
- treat cases of infectious disease
- provide public health laboratory services
- provide veterinary public health services
- enable and encourage communities and individuals to adopt and maintain healthy practices such as appropriate diet, moderate alcohol intake, physical activity, no smoking and improved oral health (including fluoride supplementation)
- provide individual and community education to promote behaviours which reduce the risk of injury
- advocate, legislate for, develop and promote safer products and environments

Emerging practice
- monitor, research and respond to newly emerging disease threats (eg nosocomial infections including antibiotic resistance)
- address the social and economic determinants of non-communicable diseases
- address risk factors for intentional injuries

3. Promote and support healthy lifestyles and behaviours through action with individuals, families, communities and wider society

Established practice

- undertake personal and mass media education and advocacy for tobacco, nutrition, drugs, alcohol, physical activity and healthy sexuality
- provide health information and education, which is sensitive to language and culture, to develop individual health knowledge, attitudes and behaviours
- use social marketing to complement education and community development strategies to promote health

Emerging practice

- shift focus from action at the level of the individual to broader societal and structural issues eg food supply

4. Promote, develop and support healthy public policy, including legislation, regulation and fiscal measures

Established practice

- contribute to the development of and promote the implementation of healthy public policy
- evaluate the impact of health and other public policy on
- population health, with particular emphasis on identifying inequalities
- provide evidence based advice for policy and program initiatives for health protection and promotion
- advocate for and work in partnership with all sectors to develop legislation & regulations that protect and promote health
- review, formulate, enact and enforce health legislation and regulations
- ensure sustainable financing for health protection and promotion

Emerging practice

- conduct health impact assessments of other sectors' policies and actions
- develop fiscal strategies that support health improvement
- develop financial incentives to encourage preventive health care
- promote public policy measures to reduce inequalities in health
- promote access to health services according to need

5. Plan, fund, manage and evaluate health gain and capacity building programmes designed to achieve measurable improvements in health status, and to strengthen skills, competencies, systems and infrastructure

Established practice

- undertake strategic and operational planning
- directly manage and contract for service provision

- develop resource allocation and priority setting systems
- improve the quality and scope of public health information
- ensure adequate public health knowledge and skills in the health workforce
- ensure that the public health workforce participates in continuing professional development
- build organisational structures and processes for public health within agencies
- build links between the health sector and other sectors
- build organisational links between health agencies

Emerging practice

- develop and implement quality assurance processes for public health
- develop strategic alliances and partnership agreements
- develop performance management systems

6. Strengthen communities and build social capital through consultation, participation and empowerment

Established practice

- promote community and consumer participation in decisions affecting their health
- develop community capacity to identify and act on public health problems
- fund community programmes
- consult on planning and priorities of services

Emerging practice

- work with communities and other sectors to enhance social networks and contribute to building social support in communities

7. Promote, develop, support and initiate actions which ensure safe and healthy environments

Established practice

- protect and ensure water quality
- vector control
- promote food access and quality and ensure safety
- control hazardous environmental substances and wastes
- control radiation
- ensure drainage, sewerage and solid waste disposal
- control atmospheric pollution
- control drugs and poisons and the quality of therapeutic goods and appliances

Emerging practice

- promote safe and healthy working conditions
- promote environments which promote physical, mental and social health

- promote ecologically sustainable development

8. Promote, develop and support healthy growth and development throughout all life stages

Established practice

- provide public health services for mothers and children
- provide services for early childhood development and care
- provide school health services including dental health
- provide school health education including drug and sex education
- provide prenatal and neonatal screening
- provide women's health and family planning services

Emerging practice

- provide mental health promotion programs
- provide public health services for older people
- provide genetic screening and counselling services

9. Promote, develop and support actions to improve the health status of Aboriginal and Torres Strait Islander people and other vulnerable groups

Established practice

- provide public health services and advocate for health care for indigenous peoples
- provide emergency and natural disaster services to protect health
- provide public health services and advocate for health care for refugees, the homeless and disabled

Emerging practice

- provide public health services and advocate for health carefor victims of violence and other crises
- provide public health services and advocate for health care of multicultural diverse communities
- advocate for occupational health services
- advocate for mental health care services

Appendix B

Public Health Training and Education

1. Australia

Public Health Training: Review of Postgraduate Public Health Training in Australia 1988 (1990)

PHA (1990) *Public Health Training: Review of Postgraduate Public Health Training in Australia, 1988*. Canberra: PHA

This review was commissioned by the PHA to document postgraduate education in public health. Fourteen public health and related courses offered by 11 institutions were reviewed. Data collection included a questionnaire to all department heads, interviews with key academic staff and observation of facilities; interviews with key people in health authorities; a two-day workshop attended by key employers and academics to develop a consensus statement on postgraduate public health training.

Program Content
Major findings relating to the content of postgraduate public health programs were:
* all course include a core component of epidemiology and biostatistics but vary in their inclusion of other public health areas. Courses appear to be strongest in epidemiology, biostatistics and computing in core curriculum and weakest in social science, health economics, demography and the more traditional public health subjects.

* In spite of the diversity no course appears to be developing a specific focus in the traditonal areas of public health including toxicology, disease surveillance and the investigation of infectious diseases

* As areas of specialisation social science, health economics, international health and Aboriginal health appear to be underdeveloped within Australian public health courses.

Core Skills Required in Public Health
The workshop enumerated the following list of core skills for masters graduates:
(i) plan and implement small research projects under supervision;
(ii) gather, analyse and synthesise the necessary data to describe the state of health of a defined population including the critical evaluation and synthesis of information from published studies on health problems
(iii) Demonstrate a working knowledge of disease of major public health importance - including an understanding that the definition of 'health problems' (diseases) is itself a social process

(iv) Analyse the social, behavioural, cultural, political, economical and institutional context of the health problems of the population and intervene effectively, either alone of by collaboration and employ the appropriate managerial and team skills

(v) Make provisional assessments of threats to health arising from the physical environment, communicable disease, and be able to obtain further help in their assessment and management

(vi) design, implement and evaluate a small public health program for a defined community and be informed by previous proved effective programs

(vii) demonstrate an adequate understanding of the organisation of health services to operate effectively within them

(viii) Work with communities, governments and non-government agencies to set priorities for action based on competing needs and current policies

(ix) Effectively communicate public health matters in both oral and written form.

The Public Health Workforce Education and Training Study 1993 (Rotem et al, 1995)

Rotem A, O'Connor K, Bauman A, Black D, Dewdney J, Hodkinson A (1995). *The Public Health Workforce Education and Training Study*. Report of a Project commissioned by The Department of Human Services and Health, Canberra: AGPS

Rotem A, O'Connor K, Bauman A, Black D, Dewdney J, Hodkinson A (1995). *The Public Health Workforce Education and Training Study*. Overview of Findings. Canberra: AGPS

The Public Health Workforce Education and Training Study surveyed graduates and students of public health and related courses. From data on student and graduate subject selection, and identification by graduate of course coverage of 28 key public health areas of skills and knowledge, four core disciplinary areas in Australian public health and related courses were identified:

∗ epideimological studies, including identification of factors contributing to health status
∗ statistics and information systems
∗ health services management, policy and planning
∗ behavioural sciences including health promotion and health education.

The report noted the study of sub-populations and environmental sciences as emerging core areas, and observed that further review should determine the emphasis on:
∗ health economics
∗ ethics
∗ services/program evaluation
∗ communications (including advocacy, use of the media).

Disciplinary areas in Australian public health program core - PHERP funded programs

A brief review of eight PHERP funded MPH programs gives the following list of disciplines (and their frequencies) in core subject units. (Note these are counts of disciplines in unit names. It is likely therefore that some disciplines not accurately represented due to the existence of multi-disciplinary subjects)

Epidemiology	8
Biostatistics	8
Management	5
Health Promotion	5
Environmental Health	5
Health Care Systems/Organisation	3
Demography	3
Health Economics	3
Research Methods	3
Approaches to Problems	2
Introduction to /Foundations of Public Health	2
Public Health Policy	2
Sociology	2
Communication Skills	1
Critical Appraisal	1
Health Information	1
History and Philosophy of Public Health	1
Prevention Principles	1
Tropical Medicine	1

2. The United States

In the United States the report of the Faculty/Agency forum (Sorenson & Bialek, 1993, reported in Fineberg et al, 1994) identified the universal competencies (the 'universal six')
and five disciplinary areas:
- public health administration
- epidemiology
- biostatistics
- behavourial sciences
- environmental public health.
(full list is in the table on the following page)

The report emphasised the need for public health program curricula to be structured around the universal competencies.

The US Association of Schools of Public Health (ASPH) added
- program management
- occupational health and safety
- nutrition
- biomedical and laboratory sciences

to the list in 1993 (in ASPHER Inventory of public health and health promotion training in the European Union)

Professional Competencies in Public Health (Faculty/Agency Forum)

Universal Competencies
* Analytical skills
* Communication Skills
* Policy development/program planning skills
* Cultural skills
* Basic public health science skills
* Financial planning and management skills

Public Health Administration
* Policy analysis/strategic planning skills
* Communication skills
* Team leadership
* Financial management
* Human resources management
* Program planning and administration
* Organisational management/positioning
* Cultural competence
* Basic health sciences

Epidemiology and Biostatistics
Individual competencies in epidemiology
* Situation analysis
* Study design
* Study implementation
* Data management and analysis
* Presentation of health information

Individual competencies in biostatistics
* Data requirements
* Database management
* Descriptive statistics
* Statistical inference
* Statistical reporting

Behavioural Sciences
* Awareness and ability to implement behaviour change strategies for primary, secondary, and tertiary health promotion/disease prevention activities in the public health setting
* Ability to disseminate knowledge of behavioural and social concepts and methods
* Cultural sensitivity and understanding of how culture effects behaviour and health status
* Ability to conduct an ongoing community mental health and medical needs assessment, individually or as part of a team
* Knowledge of the public health system and policy and regulation development
* Evaluation skills
* Leadership skills
* Communication skills

Environmental Public Health
* Risk assessment skills
* Risk management skills
* Risk communication skills
* Epidemiology of acute and chronic disease associated with environmental stresses
* Biostatistics
* Basic Sciences
* Communicable/chronic disease
* Economic considerations in environmental public health
* Environmental law

The accreditation criteria of the US Council on Education for Public Health (CEPH) demands that MPH or equivalent degrees include the key areas of public health knowledge, based apparently on the Faculty/Agency forum subject area competencies:

1. **Biostatistics** - collection, storage, retrieval, analysis and interpretation of health data; design and analysis of health-related surveys and experiments; and concepts and practice of statistical data analysis.

2. **Epidemiology** - distributions and determinants of disease, disabilities and death in human populations; the characteristics and dynamics of human populations; and the natural history of disease and the biologic basis of health.

3. **Environmental health sciences** - environmental factors including biological, physical and chemical factors which affect the health of a community;

4. **Health services administration** - planning, organization, administration, management, evaluation and policy analysis of health programs; and

5. **Social and behavioral sciences** - concepts and methods of social and behavioral sciences relevant to the identification and the solution of public health problems.

Neither the depth nor breadth of coverage of these key areas is defined by CEPH.

Summary of US Public Health Training and Education Projects

This document provides a summary of work undertaken to elaborate frameworks for public health education in the US.

1. **The Public Health Faculty/Agency Forum**
This work was undertaken in 1989 by the Johns Hopkins School of Hygiene and Public Health and the Association of Schools of Public Health (and sponsored by the CDC and the US Bureau of Health Professions). It was initiated in response to the Institute of Medicine (IOM) report *The Future of Public Health* which had observed that schools of public health were isolated from issues and practice. The IOM report recommended linkages between public health academic and practice organisations, agency and faculty exchange and the addition of a practicum to public health educational programs (Fineberg et al, 1994; Sorensen & Bialek, 1991). Following this line of thinking the Faculty/Agency Forum recommended that:
* the [public health] curriculum should be structured around competencies universally required of public health practitioners, and
* schools of public health should establish broad cooperative agreements with major local, regional and state agencies.

Strengthened ties between academia and agencies would be achieved by
* practicum experiences - all students should obtain practical public health experience as an integral part of their academic training
* collaboration and communication - all schools of public health should develop technical assistance and research agendas. Public health agencies should integrate School of Public Health faculty and students in their respective programs so that the gap between academe and practice may be bridged more effectively
* education and teaching methods - public health practitioners should be appointed clinical faculty so that the teaching of public health practice may be integrated into the curriculum
* human and fiscal resources - in addition to the efforts of agencies and schools to develop human and fiscal resources to implement these recommendations, it is essential that the federal government provide funding to realise these goals.

The Faculty/Agency Forum identified five groups of professional public health competencies: Universal Competencies; public health administration; epidemiology and biostatistics; behavourial sciences; environmental public health. The Universal Six competencies are: analytic skills; communication skills; policy development/program planning skills; cultural skills; basic public health science skills; financial planning and management skills.

The Public Health Workforce: An Agenda for the 21st Century
This project is the work of the Subcommittee on Public Health Workforce, Training and Education of the Public Health Functions Project. It builds on the *Public Health in America* (1994) consensus statement which enumerated 10 essential services for public health. Its aims were

∗ to describe the current public health workforce in public health functions positions, and assess future changes in workforce roles;
∗ identify training and education needs for core practice/essential public health services; and
∗ develop a strategic plan for distance learning.

The report outlines proposed action steps in five key areas:
∗ national leadership,
∗ state and local leadership,
∗ workforce composition,
∗ curriculum development
∗ distance learning.

The curriculum development actions are arranged in two parts: competencies and curriculum.

Competencies. Organisational competencies, ie, "those required for the entire workforce deployed within a given public health setting" (page 13) were developed by a Competency-Based Curriculum Work Group, who "began with the universal competencies developed by the Public Health Faculty/Agency Forum (Sorenson & Bialek, 1991), divided them into the 10 essential services of public health framework, and added new competencies" (page 29). In addition, some universal competencies were modified and updated. The report recommended that 'the statement of competencies … should be refined and validated, with the subset(s) of competencies associated with each of the various disciplines identified" (page 13).

Curriculum Development. The report recommends that curriculum development (and enhancement) be guided by key competencies, and observes the challenges inherent to moving from curricula developed on the basis of content to competency-based curricula. According to the report "competencies are derived from an analysis of the performance of proficient practitioners with concentration on skills and abilities rather than on activities" (page 14). Among a list of 11 proposed action steps the report recommends the following: "Conduct an analysis of the competency statements an make revisions for their most effective use in curriculum development" (page 14).

The Council of Linkages Between Academia and Public Health Practice Competencies Project
The Council on Linkages grew out of the Public Health Faculty/Agency Forum, its overarching objective 'to improve the relevance of public health education to practice', by refinement and implementation of the Forum's objectives. The Council encourages the incorporation of the public health competencies into curricula of Council on Education for Public Health (CEPH) accredited programs.

The Council's current competencies Project resulted from the Public Health Workforce Project (above). The Council is revising the Universal Six which been expanded to include two new competencies: community dimensions of practice and leadership and systems. My understanding is that these are derived from the 'new' competencies that emerged from the PH Workforce project, and an extensive literature review. The project aims to identify generic competencies for individual public health practitioners working at different professional levels. Through a variety of mechanisms (print-based reviews, the website, focus groups, sessions at conferences etc) feedback is received from reviewers. Reviewers are asked to

indicate if the elements or skills within each competency grouping apply to three categories of staff (entry level professional to managerial, supervisory and senior level), and indicate the level of expertise expected (awareness, working knowledge). Completion of this project is expected in December 2000.
 www.trainingfinder.org/competencies/print.htm

Minimum competencies for public health personnel
Greg Loos (1995) developed a list of 455 competencies for public health education and training. These competencies appear to correspond to learning outcomes, as we have defined them. The competencies were developed in nine public health instructional domains: epidemiology, biostatistics, management, behavioural sciences, environmental health, maternal and child health, health education, nutrition and gerontology. In addition there is one universal (cross-cutting) competencies list (the Universal Six).

A matrix has been developed to evaluate the MPH course units in the nine instructional domains and the universals on the basis of 4 criteria (which are composites of time critera, ie the level of the course, and a level of cognition criteria, derived from Bloom's Taxonomy of Education Objectives). The matrices are available on an Excel spreadsheet, with examples from the application of the evaluation scheme from the University of Hawaii).

Association of Schools of Public Health (Education and Practice Programs). A Conceptual Framework for Considering MPH Competence.

This is an Association of Schools of Public Health (ASPH) project, reported in the *American Journal of Public Health* (Clark & Weist, 2000). Unlike the projects reviewed above, it is not based on the Universal Six (or its derivatives) competencies for public health practice, or on competencies of the skilled public health practitioner. The authors of this paper argue that such projects have not dealt with the issue of the educational goals of MPH programs or the program core. The project addresses some interesting and important questions which take account of the dynamic nature of public health. These include:

- What competencies should be reflected in the core so that changes in practice, including those related to electronic communications, data management, and other technological and scientific advances, may be fully acknowledged?
- How can learning experiences (classroom and other forms) be organised and sequenced to achieve core competency?
- How are competency and proficiency best assessed?

The ASPH deans developed a conceptual framework for the domains of competence for master's degrees to guide the process of reviewing core competency needs. Three general domains of public health competence were identified: skills (determinants of health and disease; analytical problem-solving decision-making and evaluation; leadership and communication), perspectives (population; systemic/ecological/comprehensive; moral ethical) and applications (diverse communities; public sector; public sector). This is arranged as a three-dimensional matrix. The current step in the process concerns the identification of the competencies related to each cell.

3. Public Health Program Content in Europe

According to the recent Association of Schools of Public Health in the European Region (ASHPHER) report Training programs in public health and health promotion in Europe: A literature review, undertaken on behalf the European Commission, the base subjects of the majority of European public health programs, were (in 1993):
- epidemiology and biostatistics
- behavioural sciences
- health management and health administration.

In recent years work on a European Master in European Public Health (EMEPH) has been supported by the European Commission. The project is undertaken by ASPHER. The program is simultaneously a European Master in PH (EMPH), in that it must be guaranteed that the scope and level of competencies are equivalent across institutions, and a Master in European PH (MEPH), in that it covers public health issues in Europe and EU related policies (EMEPH Final Report, 1998-1999)

The program model comprises the following core units:
- Introduction to Public Health and to Europe
- Policy, Management and Economics Level 1
- Epidemiology and Statistics Level 1
- Environment and Health Level 1
- Health Promotion/Health Education, Social Sciences Level 1

References

ASPHER. Inventory of Public Health and Health Promotion Training in the European Union. www.ensp.fr/aspher/invent.htm Accessed August 2000

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Appendix C

Public Health Competencies Sub-contractor Report

Competencies – An Interim Report - Where Do We Go From Here?

Ari Rotem and John Dewdney

The competency movement

In the US[1], UK[2], Australia[3], New Zealand[4] and no doubt elsewhere considerable efforts have been directed to identifying and delineating 'competencies' (knowledge, skills) required of people working in the broad field of public health.

These activities have been directed along several different lines, including

- identifying 'core' or 'essential' competencies required of all professional public health workers [5] – see Tables 1 and 1a;
- linking competencies to 'core' or 'essential' public health service functions[6];
- linking competencies to 'disciplines' taught in Schools of Public Health[7] (See table 5 at end of this section)
- linking competencies to the areas of teaching required for accreditation as a School of Public Health by the US Council on Education for Public Health[8];
- identifying competencies required of personnel working in particular areas of public health such as public health nursing, community dentistry and health promotion[9,10,11];
- specifying competencies required in order to obtain some sort of 'ticket' as a member of the public health 'profession'[12];
- identifying inadequacies in the past training of people in the public health workforce [3];
- assessing the degree to which current MPH programs equip their students with competencies adequate in both scope and depth of coverage[13].

Table 1 – Six Universal Competencies in Public Health

1. Analytic Skills
2. Communication Skills
3. Policy Development/Program Planing Skills
4. Cultural Skills
5. Basic Public Health Skills
6. Financial Planning and Management Skills

Source: Reference 5.

Very recently the Universal Six have been elaborated and expanded by the US Council on Linkages to eight clusters of skills as shown in Table 1a.

Table 1a. Eight Essential Competencies (Skills Clusters) from the US Council on Linkages Competency Project

1. Analytic/Assessment Skills
2. Communication Skills
3. Policy Development/Program Planning Skills
4. Cultural Competency Skills
5. Basic Public Health Sciences Skills
6. Financial Planning and Management Skills
7. Leadership and Systems Thinking Skills
8. Community Dimensions of Practice Skills

Concurrently with these attempts to formulate inventories of requisite competencies efforts have been directed to identifying and delineating 'core' or 'essential' service activities within the field of public health[14, 15]. As noted above, there have been some attempts to link lists of competencies with lists of service activities.

Table 2 lists the 10 essential services identified by a high-level working group in the US – a listing which has been used in a number of projects aimed at linking competencies to functions.

Table 2. The Ten Essential Public Health Services

1. Monitor health status to identify community health problems
2. Diagnose and investigate health problems and health hazards in the community
3. Inform, educate, and empower people about health issues
4. Mobilise community partnerships to identify and solve health problems
5. Develop policies and plans that support individual and community health efforts
6. Enforce laws and regulations that protect health and ensure safety
7. Link people to needed personal health services and assure the provision of health care when otherwise unavailable
8. Assure a competent public health and personal health care workforce
9. Evaluate effectiveness, accessibility, and quality of personal and population-based health services
10. Research for new insights and innovative solutions to health problems

Source: Reference 14

Australian studies

In 1993 the Commonwealth Department of Human Services and Health commissioned The Public Health Workforce Education and Training Study. The study sought answers to five basic questions –

1. What do people in the public health workforce actually do – job title and functions?
2. What competencies are required to do your job?
3. How competent are you?

4. How relevant was your training?
5. What further training do you need?

These questions were put to three groups – some 400 recent graduates from MPH and related programs, nearly 900 students in these programs, and a similar number of other public health personnel.

Students and graduates were presented with the list of 28 competencies shown in Table 3. This list served as the basis for their rating of the relative importance of competencies, their own competence and their need for further training.

(A document containing relevant findings from this study are attached as Appendix A)

In January 2000 a report on the findings of the National Delphi Study on Public Health Functions in Australia was published. This study identified 11 core groups of public health activities. In the course of this Delphi study 86 distinct functions were identified. Also recently the National Public Health Partnership has produced a list of nine core public health functions. The Delphi study and NPHP lists are compared with two lists from the US in Table 4.

The ever-growing competency inventory

The product of all these competency identification/delineation efforts is an ever-growing number of inventories of competencies. These are usually set out as a list of specific, operationally defined items of knowledge and/or skills (eg "ability to . . ., knowledge of . . ., understanding of . . .') grouped under broader headings such as 'analytic skills', 'communication skills', 'basic public health sciences'.

Inevitably with all this activity going on the overall inventory of competencies keeps growing. Thus in 1995 the US government supported Faculty/Forum listed some 40-odd competencies under six major headings – by 1998 this list had been reviewed and revised with some alteration to the wording of some of the original listings and the additional of more than 40 'new' competencies[6].

Three major groups of competencies

From the review of all the material referred to above there emerge three major groupings of competencies:

1. Generic 'bureaucratic' competencies which relate to 'competent" professional practice but by no means only to practice in the field of public health;

2. Competencies which one might expect of anyone who is to be regarded as a 'competent' professional working in the field of public health;

3. Competencies which relate to 'competent' performance in a specific area of public health concern.

A tentative listing of headings and sub-headings within these three groups is presented here, with a few examples of specific items from some of the listings referred to above.

Three groups of competencies - tentative listing

Group 1. Generic bureaucratic competencies
Group 2. Public Health competencies
Group 3. Function/job specific competencies

Group 1. Bureaucratic competency areas, including
1. Multidisciplinary teamwork
2. Locate/appraise literature
3. Qualitative analysis
4. Quantitative analysis
5. Write reports, submissions
6. Ethics
7. Advocacy
8. Budgeting and financial control
9. Communication and cultural sensitivity
10. Computing skills
11. Research methods – example of competencies:
    Ability to:
    generate hypothesis/research questions
    identify clear aims and objectives
    choose best methods, weighing strengths and weaknesses of different methods available
    analyse date effectively
    interpret his/her own findings in the light of previous findings
    appropriate recommendations from the conclusions of the research findings
    identify steps for the implementation of recommendations where appropriate and possible (from Faculty of Public Health Medicine RITA program, RCP, UK)
12. Program planning, management and evaluation

Group 2. Public Health competencies
1. Understanding of determinants of health and illness
2. Knowledge of health service structure and functions
3. Interpretation and evaluation of public health (epidemiological etc) data and literature

Group 3. Function/job specific competency areas including
1. Disease prevention and control (surveillance, preventive medicine etc)
2. Health promotion
3. Policy development and analysis
4. Women's health
5. Maternal and child health
6. Men's health
7. Community development
8. Environmental health
9. Occupational health and safety
10. Drug abuse
11. Health economics
12. Community dentistry
13. Trans-cultural health activities

14. Geriatrics
15. Health service management
16. Health services law
17. Health service planning
18. Health facility planning
19. Nutrition

Obviously much thought and discussion will be required to flesh out, or totally replace, this skeletal framework.

Where do we go from here?

The 'competency movement' is not without its critics both within and outside the public health field[16], but there appears to be a considerable body of opinion that competency listing provides at least a useful tool in the development and appraisal of training programs.

The grouping of competencies into the three groups suggested above, and the specific competencies to be included into each grouping, may provide a basis for developing some form of guide to the pattern, direction and content of future training activities – at least it may provide a starting point for discussion.

On the broader front, one notes that within Australia, as in the US, much of the interest in competency listing relates to MPH programs offered in universities. However, for Australia, one has to question how far can the Schools of Public Health, with their limited course offerings and a rather small pool of appropriately trained and experienced academics, offer training covering the extremely long and diverse lists of competencies that have to be exercised in the provision of public health services?

Interest in the US and UK also extends beyond the confines of teaching within the confines of the traditional MPH program to the development of short in-service courses, adequately supervised practicums, mentorships and well structured programs of continuing professional development. The developers of a framework for training of public health personnel in Australia will need to give attention to such means of producing a 'competent public health workforce'.

Table 3. Competencies – *The Public Health Workforce Education and Training Study 1995*

1. Identify demographic factors which influence public health
2. Identify social and cultural factors which influence public health
3. Identify economic and political factors which influence public health
4. Identify environmental factors which influence public health
5. Design and conduct epidemiological studies to assess health status of a population
6. Identify public health targets and priorities for Australians
7. Use quantitative analysis in assessment of public health programs and services
8. Use qualitative approaches to describe and analyse public health programs and services
9. Use computer software packages for statistical data analysis
10. Critically appraise published literature
11. Prepare reports and articles on public health issues
12. Design and conduct economic analyses of public health programs and services
13. Interpret heath related laws and regulations in Australia
14. Identify public health targets and priorities for special population groups (eg. Aboriginal and Torres Strait Islanders, NESB)
15. Describe current issues in international health
16. Explain how public health programs operate at different levels of the health system (i.e. national, state and local)
17. Describe the particular issues relating to mental health programs and services
18. Demonstrate a working knowledge of diseases of major public health importance
19. Make provisional assessments of threats to public health arising from the physical environment
20. Work effectively in multidisciplinary teams
21. Communicate effectively on health matters including use of the media
22. Advocate effectively with government to influence health policy
23. Demonstrate a working knowledge of models of behaviour change
24. Design and conduct a health promotion /education program
25. Identify major ethical issues relating to health programs and services
26. Plan and manage health programs and services
27. Evaluate the effectiveness of health programs and services
28. Facilitate and participate in community development activities

Table 4. Australia's 9 Core Public Health Functions, Australia's Delphi 11, the US 10 Essential Services, US Public Health Expenditure Guide 9

Australia's NPHP 9	Australian Delphi 11	US 10 Essential	US Public Health Expenditure Allocation Guide
1. Assess, analyse and communicate population health needs and community expectations	1. Research, monitoring and assessment	1. Monitor health status to identify community health problems	1. Health-related data, surveillance, and outcomes monitoring
2. Prevent and control communicable and non-communicable diseases and injuries through risk factor reduction, education, screening, immunisation and other interventions	2. Ensuring healthy and safe environments	2. Diagnose and investigate health problems and health hazards in the community	2a. Investigation and control of diseases, injuries, and response to natural disasters (non-clinical services) 2b. Investigation and control of diseases, injuries and response to natural disasters (public health clinical services)
3. Promote and support healthy life styles and behaviours through action with individuals, families, communities and wider society	3. Health education and community development	3. Inform, educate, and empower people about health issues	3. Protection of environment, housing, food, water, and the workplace
4. Promote, develop and support healthy public policy, including legislation, regulation and fiscal measures	4. Health policy and public policy development and implementation	4. Mobilise community partnerships to identify and solve health problems	4. Laboratory services
5. Plan, fund, manage and evaluate health gain and capacity building programmes designed to achieve measurable improvements in health status, and to strengthen skills, competencies, systems and infrastructure	5. Public health education ad training	5. Develop policies and plans that support individual and community health efforts	5. Public information, and education and community mobilisation
6. Strengthen communities and build social capital through consultation, participation and empowerment	6. Public health management	6. Enforce laws and regulations that protect health and ensure safety	6. Targeted outreach and linkage to personal services
7. Promote, develop, support and initiate actions which ensure safe and healthy environments	7. Prevention, surveillance and control of communicable diseases	7. Link people to needed personal health services and assure the provision of health care when otherwise unavailable	7. Accountability/quality assurance
8. Promote, develop and support healthy growth and development throughout all life stages	8. Prevention, surveillance and control f non-communicable diseases	8. Assure a competent public health and personal health care workforce	8. Training and education
9. Promote, develop and support actions to improve the health status of Aboriginal and Torres Strait Islander people and vulnerable groups	9. Prevention, surveillance and control of injury	9. Evaluate effectiveness, accessibility, and quality of personal and population-based health services	9. Leadership, planning, policy development and administration
	10. Healthy growth and development programs and services	10. Research for new insights and innovative solutions to health problems	
	11. Programs and services directed at specific population groups and individuals		

Table 5. Examples of Competencies v Discipline Matrices – using the five disciplines prescribed for program accreditation by US Council on Education for Public Health

US Faculty/Agency Forum – Six universal competencies -	US Council on Education for Public Health – Five areas of knowledge considered to be basic to public health (These areas are essentially "disciplines")				
	Biostatistics	Epidemiology	Environmental Health	Health Services Administration	Social and Behavioural Sciences
1. Analytic Skills	+	+	+	+	+
2. Communication Skills	+	+	+	+	+
3. Policy Development/Program Planning Skills		+	+	+	+
4. Cultural Skills		+	+	+	+
5. Basic Public Health Sciences Skills		+	+	+	+
6. Financial Planning and Management Skills		+	+	+	+

Tulane School of Public Health – Competencies which should characterise graduates of the MPH program-	US Council on Education for Public Health – Five areas of knowledge considered to be basic to public health (These areas are essentially "disciplines")				
	Biostatistics	Epidemiology	Environmental Health	Health Services Administration	Social and Behavioural Sciences
1. Epidemiology	+	+	+	+	+
2. Biostatistics	+	+	+	+	+
3. Research methodology	+	+	+	+	+
4. Health informatics, computer skills	+	+	+	+	+
5. Health services planning and management		+	+	+	+
6. Communication skills and health education		+	+	+	+

End notes and references

1. The reports of meetings of the US Council on Linkages between Academia and Public Health Practice provide a running commentary on the progress of activities relating the development of lists of public health competencies. Access at http://www.phf.org/Link/meetings.htm.

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14. Council on Linkages between Academia and Public Health Practice. Competencies Project. Accessed August 2000 at http.trainingfinder.org/competenciews/about.htm

Appendix D

Project Sub-contractors and Participants

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Appendix E

Public Health Employer Survey

Employer Survey

To gather information about employer expectations of MPH shared or core skills a short employer telephone survey was conducted. Participants were directors and managers of state health departments, NGOs, and one inner urban area health service. There were 24 participants (see Table 1).

Organisation Type	Number of Participants
NGO	5
State/Territory Health Department	17
Area Health Service	2
Total	24

Table 1 Organisational Affiliation of Survey Participants

The objectives of the survey were

1. to establish employer expectations (off the cuff) of the core (shared) skills provided to students by the MPH program, and

2. to establish whether or not employer expectations for these skills are being met.

Shared Skills and Knowledge

The first question asked employers to identify the core skills expected of a MPH graduate. Knowledge and skills identified by the respondents included (in order of frequency):

- an understanding of the scope of public health within a clear conceptual framework;

- research skills including data management and analysis and qualitative and quantitative methods;

- oral and written communication skills;

- other generic skills including team work, building partnerships and networking,

- political awareness including 'savvy' about the system

- knowledge of the determinants of health;

- policy skills related to development and administration of key public health programs;

- epidemiological principles, critical appraisal skills and their application;

- infectious disease epidemiology;

- health promotion processes and principles;

- design and implementation of public health programs;

- applied epidemiology;

- program evaluation;

- health economics, including priority setting;

- consumer behaviour and social marketing,

- knowledge of health priority areas.

Are your expectations being met?

The second question asked employees if their expectations for these skills was being met. Of the ten respondents who answered this question directly, two said their expectations were not being met, four said they were being met, and the remainder were equivocal. Two of those who said their expectations were being met noted that they did not expect an MPH to provide highly specialised skills. Another clarified the response by adding that expectations were met largely by part-timers with previous experience. One respondent observed that the MPH remains too biomedical. Three respondents observed that the question was not relevant because no MPH graduates had been employed.

Knowledge and Skills deficits
A number of respondents noted knowledge and skill deficits among MPH graduates. General areas included:
- applied epidemiology;

- research skills;

- management skills;

- communication skills;

- political awareness;

- general public health content;

- program skills;

- understanding how organisations (bureaucracy) functions;

- understanding how the media works;

- generic problem-solving skills.

Other Issues
MPH graduates are at the beginning of a cycle of learning. Specialisation requires further work. Employers and employees have different expectations. Employers don't know what graduates want, but as Public Health employers they want graduates to be involved in program evaluation and in clincial services. Trends about the sort of person who is highly

valued has changed: movement away from generalist manager to technically competent employee for example may undervalue MPH Students who enter an MPH may not have the ability to engage in analytical thinking - program may not be attracting these people. MPH is in the middle of Honours and a PhD - doesn't give it any weight [as a degree that prepares students for research careers]. Individuals get skills from MPH, but ability to apply them is related to the person, their work experience and discipline. Graduates want to do research not practice. Graduates can't hit the ground running

Appendix F

Competencies for public health core (US)

Competencies are derived from workforce competencies identified by the US Public Health Faculty/Agency Forum and modified by the US Council on Linkages Between Academia and Public Health Practice.

Domain A. Analytic/Assessment Skills	
Elements	
A1	Defines a problem
A2	Determines appropriate uses and limitations of data
A3	Selects and defines variables relevant to defined public health problems
A4	Makes relevant inferences from data
A5	Identifies relevant and appropriate data and information sources
A6	Applies ethical principles to the collection, maintenance, use, and dissemination of data and information
A7	Evaluates the integrity and comparability of data and identifies gaps in data sources
A8	Understands data collection process, information technology applications, transmission capability and computer systems storage/retrieval capacities. (Desirable)
A9	Understands how the data illuminates ethical, political, scientific, economic, and overall public health issues (Desirable)
A10	Obtains and interprets information regarding risks and benefits to the community (Desirable)
Domain B. Basic Public Health Sciences Skills	
Elements	
B1	Understands basic research methods used in public health
B2	Applies the basic public health sciences including behavioural and social sciences, biostatistics, epidemiology, environmental public health, and prevention of chronic and infectious diseases and injuries
B3	Knows how to identify and access current relevant scientific evidence
B4	Understands individual's and organization's responsibilities within the context of the essential Public Health services and core functions (Desirable)

B5	Defines, assesses, and understands the health status of populations, determinants of health and illness, factors contributing to health promotion and disease prevention, and factors influencing the use of health services (Desirable)
B6	Understands the historical development, structure, and interaction of public health and health care systems (Desirable)
B7	Develops a lifelong commitment to rigorous critical thinking (Desirable)
B8	Understands the limitations of research and the importance of observations and interrelationships (Desirable)
Domain C.	**Cultural Competency Skills**
Elements	
C1	Identifies the role of cultural, social, and behavioural factors in determining the delivery of public health services
C2	Develops and adapts approaches to problems that take into account the cultural, physical and socio-economic aspects of indigenous health issues
C3	Learns appropriate methods for interacting sensitively, effectively, and professionally with persons from diverse cultural, socioeconomic, educational, racial, ethnic and professional backgrounds, and persons of all ages and lifestyle preferences (Desirable)
Domain D.	**Communications Skills**
Elements	
D1	Communicates effectively both in writing and orally
D2	Leads and participates in groups to address specific issues
D3	Effectively presents accurate demographic, statistical, programmatic, and scientific information for professional and lay audiences
D4	Solicits input from individuals and organizations (Desirable)
D5	Advocates for public health programs and resources (Desirable)
D6	Uses the media, advanced technologies, and community networks to communicate information (Desirable)
D7	Listens to others in an unbiased manner, respects points of view of others, and promotes the expression of diverse opinions and perspectives (Desirable)
Domain E.	**Community Dimensions of Practice Skills**
Elements	
E1	Establishes and maintains linkages with key stakeholders
E2	Understands how public and private organizations operate within a community

E3	Utilizes leadership, team building, negotiation, and conflict resolution skills to build community partnership (Desirable)
Domain F.	**Resource Planning and Management Skills**
Elements	
F1	Manages programs within resource constraints and monitors program performance
F2	Develops strategies for determining priorities and prepares proposals for funding
F3	Applies basic human relations skills to the management of organizations, motivation of personnel, and resolution of conflicts
F4	Manages information systems for collection, retrieval, and use of data for decision-making
F5	Understands cost-effectiveness, cost-benefit, and cost utility analyses (Desirable)
Domain G.	**Leadership and Systems Thinking Skills**
Elements	
G1	Identifies internal and external issues that may impact on delivery of essential public health services (i.e. strategic planning)
G2	Understands the theory of organizational structure and its relation to professional practice (Desirable)
G3	Contributes to development, implementation, and monitoring of organizational performance standards (Desirable)
G4	Promotes team learning and organizational development (Desirable)
G5	Helps create key values and shared vision and uses those principles to guide action (Desirable)
G6	Uses the legal and political system to affect change (Desirable)
G7	Facilitates collaboration with internal and external groups to ensure participation of key stakeholders (Desirable)
Domain H.	**Policy Development/Program Planning Skills**
Elements	
H1	Collects, summarizes, and interprets information relevant to an issue
H2	States policy options and writes clear and concise policy statements
H3	Develops a plan to implement the policy, including goals, outcome and process objectives, and implementation steps
H4	Translates policy into organizational plans, structures, and programs

H5	Develops mechanisms to monitor and evaluate programs for their effectiveness and quality
H6	Articulates the health, fiscal, administrative, legal, social, and political implications of each policy option (Desirable)
H7	Identifies, interprets, and implements public health laws, regulations, and policies related to specific programs (Desirable)

Appendix G

Disciplinary Sub-Contractor Reports

Obligations and work to be performed

1. Define the scope of the discipline in MPH core

This will require specification of coverage in the core MPH and assumed background and prior knowledge of the discipline to produce the required outcomes in terms of quality and standards.

2. Identify core learning outcomes

Identify core learning outcomes for Epidemiology and map these against the elements of competency identified for the project (See Appendix F). Thus each learning outcome should be identified *with reference to one or more elements of competency*. No more than eight outcomes should be identified for this discipline.

The statement of each learning outcome should include
- its status as **essential** or **desirable** in MPH core
- level of performance and assessment criteria.

Essential and desirable outcomes

Essential   Demonstration of this learning outcome is required for all MPH students at the completion of core

Desirable   (i) Demonstration of this learning outcome is desirable only.
              (ii) Performance at a different (higher) level is desirable, but not required.

Level of Performance and assessment criteria

Learning outcomes should be identified with respect to the highest level of performance or proficiency appropriate to core, and criteria for assessment of performance should be specified. The specification of levels of performance will differ between disciplines, and levels are, in practice, not mutually exclusive. The following serves as a guide.

1. Describes a concept or procedure and defines the conditions under which it is appropriately applied (What is a t-test? To what data would a t-test be applied? What are the assumptions under which the test is carried out?)

2. Identification and application of techniques and strategies, and demonstration of appropriate application in public health research and practice (Analyse this data – select, carry out and interpret the appropriate statistical test?)

3. Demonstrates the ability to solve problems, plan and evaluate. (Identifies a problem, and suggests a strategy for its solution – define a problem, identify a hypothesis and select, carry out and interpret the appropriate statistical test).

3.   Review competencies

Comment and suggest changes to the elements of competence so that they relate more appropriately to the requirements of the Australian public health workforce and the functions from the core MPH.

4.   Compile and submit a report

Produce a report that

- describes the methods used to complete the tasks

- describes the scope of Epidemiology within MPH core

- identifies the set of learning outcomes for Epidemiology mapped to the elements of competency.

- suggests modifications, if any, to the elements of competency.

BIOSTATISTICS

The Scope of Biostatistics in public health core

Core biostatistics teaching in public health should cover:
1. Data summary and presentation
2. Probability and probability distributions only to the extent necessary to understand random variation and other concepts
3. Confidence intervals
4. Statistical significance tests, p-values, type I and II errors
5. Sample size in relation to confidence intervals and power (but not necessarily calculations of sample size and power)
6. Statistical methods for comparing means and proportions of two groups, either independent or matched
7. Correlation and regression to describe the relationship between two continuous variables
8. Use of statistical software, data quality and data structures, as well as facilitating statistical calculations.

Assumed/Prerequisite Knowledge and Skills

Most MPH programs in Australia implicitly assume that students are competent in:

1. Basic arithmetic, including negative numbers, fractions and scientific notation
2. Basic algebra, including representing numbers generically by symbols and performing arithmetic functions with these
3. Familiarity with the use of personal computers with an operating system such as Microsoft Office and associated programs.

Core Learning Outcomes

Learning Outcome	
Essential	**Competence/s**
1. Presentation of data Given a study question and relevant data choose appropriate forms of presentation of the data for an oral or written report to summarise the information relevant to the study question.	A2, A3, A4, A5, A6, A10 B2, B5, B8 D1, D3
2. Use of statistical concepts Interpret correctly published results involving confidence intervals, significance tests and power showing an understanding of the role random variation and the effects of sample size.	A4, A6, A9, A10 B2, B3, B5, B8 H1
3. Comparison of two groups Correctly conduct a statistical analysis of data from two groups (independent or matched) where the measurements are either categorical or continuous and present the results in a report which includes an interpretation of the findings and a discussion of their strengths and limitations.	A2, A3, A4, B2, B8 H1

Essential con't	Competence/s
4. Use of statistical software Competently use some statistical software program, including defining data types, selecting appropriate forms of analysis and interpreting the output in order to demonstrate the other learning outcomes.	A3, A6, A8 F4 H5
Highly desirability	
1. Examination of relationship between two variables Investigate by graphical and simple linear regression models the relationship between two continuous measurements and present the results in a report which includes an interpretation of the findings.	**A2, A3, A4,** B2, B8 H1
Desirable	
1. Calculation of sample size and power estimates For a given study design involving one or two groups, obtain the information required to estimate sample size or power, carry out the calculations and report the findings taking into account the practical implications for implementation of the study.	A4, A6, A9, A10 B2, B3, B8 H1

EPIDEMIOLOGY
The scope of Epidemiology in public health core

Core epidemilogical teaching in public health should cover:

1. Routine collections (mortality, hospitalisation, perintal, cancer etc) and how they are used to describe the health of the population
2. Measures of disease occurrence (cummulative incidence, incidence density, prevalence) and association (relative risk, odds ratio, SMR, attributable risk, population attributable risk)
3. Study designs (ecological, cross-sectional, case-control, cohort, randomised controlled trials etc) – most appropriate uses, strengths and weaknesses
4. Examples of how the potential causes of disease (acute and chronic) can be identified using the study designs and appropriate measures
5. Causality and alternative explanations for an observed association – biases (selection, information, confounding), chance
6. Assessment of the validity of a screening test (sensitivity, specificity) and , positive predictive value)
7. Applying the above information to assessing published work.

Assumed/Prerequisite Knowledge and Skills

1. Well-informed lay-person's level of familiarity with common diseases and medical terminology
2. Well-informed lay-person's level of familiarity with the most important causes of the most common diseases experienced by western adults
3. Algebra at Year 10-12 level

Core Learning Outcomes

Learning outcome	Competence/s
Essential	
1. Routine data collection List the major administrative data collections (e.g. mortality collections), their common uses and *identify* their strengths and limitations for various purposes.	A2, A5, A7
2. Study design (health status) Describe the principle designs used to collect data for assessing population health status, determinants of health and health system usage and *identify* their strengths and limitations.	(A2) B1
3. Study design (causality) Describe appropriate study designs to investigate causal factors (personal or environmental) for acute diseases such as food poisoning and also for chronic diseases such as cardiovascular disease or cancer (*and intervention studies - see below Desirable 3*)	A1, A3, B1, B2

Essential (cont)	
4. Measures of frequency and association Given the relevant data calculate and interpret measures of disease occurrence (e.g. incidence), measures of association between exposures and disease (e.g relative risk) and measures of public health impact (e.g. population attributable risk)and state which designs the various calculations are appropriate for. (And *see below Desirable 3*)	A4, (A9) B1,
5. Study bias Give examples of how the three major types of bias (selection, information and confounding) may arise in a study using any of the principle designs and describe what impact they have on interpreting the results.	A2, A4, A7
6. Calculation of mortality and morbidity rates *Given the relevant data* calculate age-adjusted rates using the direct and indirect methods and interpret the result.	B1
7. Chance and significance Interpret the role of chance on the measure of effect and distinguish between statistical significance and public health/clinical significance.	A2 (A4) (A9) B1
8. Diagnostic test evaluation Assess the validity of a diagnostic test by calculating the sensitivity and specificity, describe its relative usefulness in various populations (positive predictive value) and to describe what criteria should be present for deciding whether a population screening program is worthwhile.	A4 (A9), (A10) B1, (B2)
9. Critical appraisal Integrate (at a basic level) information from a paper describing how a study was conducted to assess if flaws affect the interpretation of the results. (*and see below Desirable 5*)	B1
Desirable	
1. Describe the major causes of death and morbidity in Australia at present	A5, B3, B5
2. Describe trends in Australia over the last 50 years, and the projected trends, in mortality and morbidity in different age-sex groups and in important equity groups.	B5
3. Describe how methods used in epidemiology can be applied to health services research and health promotion evaluation.	A1, A3, B2
4. Understand the smiliarities and differences between effect modification and confounding.	A4
5. Integrate information from a paper describing how a study was conducted to assess if flaws affect the interpretation of the results and whether the results are biased towards or away from the null.	

ENVIRONMENTAL HEALTH

The Scope of Environmental Health in public health core

An appreciation of environmental determinants of health and an understanding of how the paradigm of risk is used in the context of environmental issues.

Assumed/Prerequisite Knowledge and Skills

1. An understanding of basic epidemiology (or concurrent development of this knowledge and skills).
2. Basic toxicology/microbiology.

Core learning outcomes

Learning Outcome	Competence/s
Essential	
1. Awareness of the concept of environmental determinants of health. Understands the historical development and current paradigms pertaining to the discipline of environmental health (eg. Transition from traditional through industrial to ecological systems approaches)	B6
2. Fundamental appreciation of the main physical determinants of health in the environment eg water, air, solid waste, radiation, food safety. Defines, assesses and understands the determinants of health and disease and the factors contributing to disease prevention)	B5 D1
3. Awareness of other non-physical (social) determinants of health in the environment e.g. global sustainable development, rural & remote issues, indigenous health justice – context specific hazards, governance, community development Defines, assesses and understands the health status of populations, determinants of health and illness specific to populations, factors contributing to disease prevention and environmental health promotion. Identifies the role of cultural, social and behavioural factors in determining delivery of public health services. Develops and adapts approaches to problems that take into account cultural, physical and socio-economic aspects of indigenous environmental health issues)	B5, C1,C2
4. Basic literacy in the languages of the major disciplines associated with EH: epidemiology, toxicology and ecology. Understands and applies the basic research methods used in environmental health including epidemiology, toxicology and ecology. Understands the limitations of research and the importance of observations and interrelationships	B1,B2,B8

Highly Desirable	Competence/s
1. Understanding of the 'risk framework'. Collects, analyses, summarises and interprets information relevant to an issue. Manages information systems for collection retrieval and use of the data for decision making. Develops a lifelong commitment to rigorous critical thinking	B7,F4,H1
Desirable	
1. Critical appraisal/assessment of risks associated with environmental exposures using information from many applied sources. Defines the problem and determines appropriate uses and limitations of data, making relevant inferences where possible. Can identify and access current relevant scientific evidence. Identifies gaps in data sources and evaluates integrity of data. Obtains information regarding risks and benefits to community. Communicates effectively both in writing and orally	A1,A2,A4,A5,A7,A10, B3, B7, D1
2. Identification and evaluation of appropriate management options for dealing with risks from environment, including communication issues surrounding environmental hazards. Applies ethical principles to collection, maintenance, use and dissemination of data and understands how data illuminates ethical, political, scientific, economic and overall public health issues. Understands individual and organisational responsibilities within the context of PH services and functions. Communicates effectively and leads and participates in groups to address specific issues. Effectively presents information for both professional and lay audiences. Uses media and others to communicate information. Establishes and maintains links with stakeholders and understands how organisations operate within a community. Uses negotiation skills to build community partnership. Facilitates collaboration to ensure participation of key stakeholders. Develops strategies for determining priorities. Develops a plan to implement policy and mechanisms to monitor and evaluate programs for effectiveness and quality.	A6,A9, B4, D1,D2,D3,D6, E1,E2,E3,F2, G7, H3,H5

HEALTH PROMOTION AND HEALTH EDUCATION

The Scope of Health Promotion and Health Education in Public Health Core

Role of HP in public health, distinguished from other areas of public health practice. Knowledge of principles of health promotion practice, and their application in practice.

Assumed/Prerequisite Knowledge and Skills

Nil specific to this discipline.

Core Learning Outcomes

Learning Outcomes	Competence/s
Essential	
1. Theoritical foundations of Health Promotion Practice *Ensure that theoretical approaches to health promotion are understood and utilised to inform health promotion practice through a clear knowledge of theories and principles that inform health promotion practice.* Describe the components of a range of theoretical approaches to health promotion, apply relevant theoretical components of health promotion and/or health education to a selected intervention, review and evaluate the adequacy of the approache(s) selected for practice.	B2
2. Program planning and evaluation *Develop health promotion plans that are based on sound theoretical principles and that have direct application to the needs of particular groups and selected settings in practice.* Develop a health promotion plan for a selected group in a particular setting, design appropriate health promotion strategies for the evaluation of the program, evaluate at least a component of the program using the selected health promotion strategies.	F1, F4, F5 H7
3. Strategies and Methods (and Resources) *Implement health promotion strategies and methods that are based on a sound understanding of the needs of the group or community, that rely on adequate resources and training, and that are within the ability of the organisation or agency to provide.* Describe a range of health promotion strategies and methods, for each strategy and method defined appropriate groups for whom the strategy/method is designed, identify training needs and resources that would allow appropriate application, identify organisational or agency needs that would allow appropriate application.	F1, F4, F5 H7

Learning Outcomes	Competence/s
Desirable	
4. Advocacy and Lobbying *Advocate and lobby for individuals, groups and the community in urban, rural and remote locations through the use of a range of individual, group, community and organisational strategies.* Devise an advocacy strategy for a group or community in a selected location, develop a set of strategies designed to lobby for that group or community, identify and define the individuals or groups to whom the lobbying would be directed.	D3, D4, D5, D6

PUBLIC HEALTH POLICY, EVALUATION AND MANAGEMENT

The scope of Public Health Policy, Evaluation and Management in public health core

The conceptual basis for defining the core competencies for public health management revolves around the notion that public health practitioners work within organisations, in a health system, a polity, and society/community. While different countries and different organisations use slightly different words and lists to describe the core competencies, there is underlying agreement that public health practitioners need to be able to understand the social and political environments, the design and operation of the health systems, and how to work effectively within organisations and in delivering programs.

Assumed/Prerequisite Knowledge and Skills

Nil specific to discipline
All entrants to MPH programs are assumed to have a reasonable level of verbal and written communication skills. Analytical skills are also assumed to be included in all disciplines.

Alternative Public Health Competencies

In relation to the eight US competencies, Workshop participants agreed that public health management discipline contributed significantly to the following 3 competencies: policy development and program planning, leadership and systems thinking, financial planning and management. Public health management training was also important in contributing to the other 5 other competencies: analytic methods, communication skills, community dimensions of practice, cultural competency, and basic public health sciences.

Workshop participants did not agree that the US definition of competency domains and elements were necessarily suitable to the Australian context. Therefore, a different list was drawn up.

Based on this understanding, the following domains and elements of competence are suggested:

DOMAIN OF COMPETENCE	ELEMENTS OF COMPETENCE
Organisational skills	Interpersonal communications
	Organisational behaviour
	Human resources management
Management skills	Information management
	Financial resources management
	Program/project planning, management and evaluation
Health system knowledge	Organisation
	Financing
	History
Political environment	Policy structures and processes
	Policy analysis
	Advocacy skills
Social environment	Values and ethics
	Communication and consultation skills
	Ethnicity, class, gender, and place

It is recognised that other core public health disciplines also contribute to these competencies. For instance, health promotion contributes to a range of organisational skills, communication skills, and advocacy skills. Similarly, planning and evaluation skills come from epidemiology, biostatistics as well as health promotion, while epidemiology and health promotion may also cover issues related to ethnicity, class, gender, and place.

Learning Outcomes	Suggested Competencies
Essential 1a Able to communicate in a range of contexts, tailor messages to desired audience and present them effectively 1b Able to work with groups and participate in teams 2a Understands organisations and relation to practice 2b Understand how public and private organisations operate within community 2c Able to translates policy into organisational structures and plans 3a Understands HR principles for organisational development, conflict resolution, and motivation of personnel **Desirable** Operate effectively as member or leader of a team	**Organisational Skills** 1. interpersonal communications 2. organisational behaviour 3. human resources
Essential 4a Understands uses of information for decision-making 4b Collects, summarises and interprets information relevant to policy, planning, administration, and evaluation of programs 5a Understands economic concepts of priority-setting, trade-offs, and evaluation 5b Understands financial management for health programs, including developing budgets 6a Able to develop plan to implement policies and programs 6b Understands performance monitoring of programs 6c Understands uses of evidence in developing health policies and programs 6d Understands appropriate choice of evaluation methods from a range of alternatives **Desirable** Design, implement and evaluate health programs	**Management Skills** 4. Information management 5. Financial resources management 6. Program/project planning, management, and evaluation
Essential 7a Understands structure and dynamics of health system 7b Understands key dimensions of health system performance 8a Understands financing arrangements and incentives for health system 9a Understands historical development and interaction of public health and health care systems 9b Understands major trends in health system development and implications for society **Desirable** Develop realistic system change strategies to achieve public health objectives	**Health Systems** 7. Organisation 8. Financing 9. History

Essential	Political Environment
10a Identifies the roles of various institutions and interests in shaping health policy 10b Understands how structures of government and legislation impact on health programs, including international contexts 11a Articulates the health, economic, administrative, social, legal, and political implications of policy options 11b Able to state policy options and write concise policy proposals and statements 11c Understands how to match policy options with community needs 12a Effectively presents scientific information for a range of audiences 12b Understands the range of tools and strategies that can be deployed to effect change 12c Understands how to maintains linkages with stakeholders and build coalitions **Desirable** Develop and critique policy options in any health area	**10. Policy structures and processes** 11. Policy analysis 12. Advocacy skills
Essential	**Social Environment**
13a Identifies values and principles that underlie public health policy debates, organisational practices, and program evaluation 13b Understands the role of cultural, social, and behavioral factors in organisations and policy arenas 14a Able to solicit and listen to diverse views and support participation 14b Able to use a range of communication methods for interacting with people of different backgrounds 14c Able to use a range of leadership, team building, negotiation and conflict resolution skills to build partnerships 15a Understand that social and cultural factors that determine health status and shape utilisation of health services 15b Able to develop policy and programs that take into account diversity **Desirable** Design and manage stakeholder involvement processes	13. Values and ethics 14. Communication and consultation skills 15. Ethnicity, class, gender, and place

SOCIAL SCIENCES AND QUALITATIVE INQUIRY

The Scope of Social Sciences and Qualitative Inquiry in public health core

From the **academic** perspective, the **disciplinary area** of Social Science and Qualitative Inquiry would be founded on the more basic study areas of anthropology, sociology and social psychology, and the wider applied areas of education, management, political science and economics. The whole arena of scientific inquiry would also underpin this disciplinary area. The core disciplinary areas for study by an MPH student would be a condensation of these basics into those aspects of relevance and importance to public health.

From the **employer** perspective, graduates would be required to attain a **level of competence** in applying core knowledge of the social sciences in relation to public health, with much of their competence being dependent on them appreciating the meaning of a social view of health and how that appreciation would influence their work. They would also need to demonstrate appropriate skills in qualitative inquiry and appreciate the nature of multiple constructions of reality.

Assumed/Prerequisite Knowledge and Skills

Nil specific to discipline.

Learning Outcomes	Competence/s
Group 1 Social and cultural awareness for public health practice	**A1, A3, A10** **C1** **H1**
Essential	
(a) Define health in social terms and identify social determinants of health State definitions and nominate list of key social determinants *(b) Understand the sociological, anthropological, psychological and political science underpinnings of health leading to these determinants* Describe how these social science disciplines contribute to an understanding of the health of populations *© Understand the consequent impact of social determinants on health status* Describe the impact of the social determinants of health *(d) Understand use of social and structural change to modify social determinants* Demonstrate the ability to describe social/structural change and indicate advantages of this approach *(e) Appreciate in principle the addition of qualitative inquiry methods to the range of inquiry methods available to investigate the dynamic and contextual dimensions of social determinants* Appraise methods of investigating the dynamic and contextual dimensions of set cases studies	

Learning Outcomes	Competence/s
Group 2 –Achieve cultural competence in public health practice	**B5** **C1, C2, C3** **D1, D7** **E1, E3** **G5** **H3**
Essential	
(a) Awareness of diversity in human perception and experience Describe meaning of diversity and its impact on health and quality of life *(b) Appreciate the need to communicate effectively across social groups in diverse cultures and sub-cultures* Recognise cultural obstacles to effective communication	
Desirable	
(c) Work with various sub-populations in culturally safe and sensitive ways Identify and harness those factors which promote work in a culturally safe manner *(d) Apply skills of influencing, advocating, facilitating and enabling for better public health outcomes* Define each skill and to demonstrate the difference between them during community placement	

Learning Outcomes	Competence/s
Group 3 – Appreciate the role of qualitative inquiry in public health practice	A2, A4, A8, A10 B1, B5, B7, B8 C3
Essential	
(a) Discriminate between deductive and inductive reasoning ability to discriminate between reasoning methods *(b) Distinguish between theories underpinning qualitative research* Compare and contrast various underpinning theories *(c) Appreciate the range and purpose of different inquiry approaches* Describe different inquiry methods **(d) Identify the range of qualitative data collection techniques** Describe the range of techniques and determine when each is appropriate *(e) Identify the range of data analysis techniques and their appropriate application* Describe various analysis methods and indicate when appropriate	
Desirable	
(f) Apply data analysis techniques Carry out qualitative data analysis in project or field placement *(g) Present findings appropriately* Present findings concisely and coherently	