Informing Public Health Practice - Competencies of the Graduate Diploma of Applied Epidemiology

NSW Public Health Officer Training Program

Foreword

NSW Health has a history of generating and supporting innovative strategies to develop its public health workforce. The NSW Public Health Officer Training Program is one of these strategies. Established in 1990, the Training Program was the first service based postgraduate public health training in Australia and is now acknowledged throughout the country as a respected model for multi-disciplinary public health training.

This document, the first in a series that will describe the training provided through the NSW Public Health Officer Training Program, presents the competencies used to guide the learning of the Public Health Officers. The competency framework presents in detail the skills and knowledge that the Officers are required to attain during their three years of training. While there is some conjecture over the use of competencies at the postgraduate level, our experience in NSW Health is that they are welcomed by the Public Health Officers, their supervisors and assessors.

The Training Program was first accredited by the NSW Vocational Education Training and Accreditation Board (VETAB) in 1994 to award a Graduate Diploma of Applied Epidemiology. The competencies presented in this document were developed for the application for reaccreditation by VETAB in 1999. The preparations for reaccreditation spanned two years and included the development of discussion papers and consultations with public health professionals. I would like to thank the many people throughout NSW who generously contributed to these processes and in particular to the development of the competencies. In April 1999 these competencies were endorsed by VETAB when the Graduate Diploma was reaccredited unconditionally for a further 5 years.

Since then the competencies have created considerable interest locally, interstate and overseas. We are pleased to make them available to our colleagues in this publication and look forward to receiving feedback on their application in other settings.

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Introduction

The New South Wales Public Health Officer Training Program was established in 1990 to contribute to the development of a workforce with the capacity to plan, implement and evaluate public health interventions. The aim of the Training Program is to produce graduates who:

❖ understand the range of public health issues facing the population of NSW

❖ understand how public health professionals in different parts of the health system work to resolve these issues

❖ are competent to work strategically with others to resolve these issues themselves.

The Training Program provides three years of structured competency-based learning for people who have worked in health services and who have already completed postgraduate studies in public health. The multi-disciplinary nature of public health practice is reflected in the professional diversity of the Officers e.g. doctors, nurses, nutritionists. Each Officer is provided with a range of 3-6 supervised work placements of 6-12 months duration. This on-the-job learning is supported by regular structured training sessions.

The Training Program was first accredited by the Vocational Education Training and Accreditation Board of NSW (VETAB) in 1994 to award a Graduate Diploma of Applied Epidemiology. The development of competency areas that reflect the needs of the workforce is a requirement for accreditation and consequently a competency framework for the Graduate Diploma was developed at that time. This was informed by consultations with public health managers throughout NSW who identified the need for a flexible workforce with training and experience in the application of epidemiology and biostatistics to the description and analysis of health service issues. The competencies reflected this need for quantitative skills.

This publication presents the competency framework that was developed for the reaccreditation of the Graduate Diploma of Applied Epidemiology in 1999 by VETAB. The process of developing the new competencies was informed by five years of experience of implementing the first competency framework and two years of consultation, discussion and research. The public health agenda is dynamic and expectations of the workforce change. When employers of graduates of the Training Program were asked what skills they expected graduates to have, they said that they should be able to:

❖ demonstrate management skills and be able to lead and initiate change

❖ plan, develop and implement policy

❖ demonstrate excellent communication skills

❖ develop, maintain and evaluate health surveillance systems

❖ investigate and respond to acute public health problems

❖ work collaboratively with other sectors and health professionals

❖ critically use evidence from a range of sources to support decision-making.

The Graduate Diploma addresses eleven competency areas and a summary is provided in *Table 1* (overleaf). Each competency area is then presented in turn with performance criteria.

The many individuals who contributed are acknowledged at the end of this document and the resources that were drawn upon are listed in the Bibliography.

Table 1: Competencies of the Graduate Diploma of Applied Epidemiology

Competency Area	Unit of Competence	Competency Element
1. PROFESSIONAL PRACTICE	Promotes and monitors own professional practice	1.1. Demonstrates understanding of responsibilities of working within the health service 1.2. Manages professional development and personal workload 1.3. Actively participates in the NSW Public Health Officer Training Program 1.4. Acknowledges and demonstrates ethical behaviour in public health practice 1.5. Applies understanding of public health law to professional practice 1.6. Consistently demonstrates commitment to evidence-based population health practice
2. MANAGEMENT	Applies managerial skills to meet public health objectives	2.1. Understands the organisation of Health Services in NSW and identifies appropriate points to influence decision-making 2.2. Identifies the processes associated with the effective operations of a branch or unit 2.3. Manages effective working relationships at an appropriate level with a variety of individuals and groups 2.4. Manages a project 2.5. Understands the processes supporting the employment of staff
3. EPIDEMIOLOGY & BIOSTATISTICS	Applies epidemiological and biostatistical skills to public health practice	3.1. Demonstrates understanding of the principal forms of epidemiological study design 3.2. Applies epidemiological principles when designing studies 3.3. Manages data collection 3.4. Performs epidemiological analyses 3.5. Applies epidemiological principles to establish/ evaluate a surveillance system 3.6. Advises other health professionals about the use of epidemiological data methods
4. INFORMATION MANAGEMENT	Manages health information	4.1. Prepares written reports that include the descriptive presentation of data 4.2. Analyses data sources using appropriate software packages 4.3. Utilises appropriate data sources to describe the health of the population 4.4. Communicates using electronic media
5. COMMUNICATION	Applies communication skills to meet public health objectives	5.1. Prepares reports, submissions and articles on public health issues to a standard acceptable for publication 5.2. Prepares and delivers presentations at public health related conferences 5.3. Presents and consults with others in a range of formal settings 5.4. Engages effectively with the media
6. POLICY	Analyses and develops health policy	6.1. Influences health policy to ensure it promotes, protects and supports the maintenance of the health of the population 6.2. Determines whether a new policy or guideline is required to address specified public health issues 6.3. Prepares a policy or guideline for submission or approval 6.4. Demonstrates understanding of policy implementation 6.5. Evaluates the impact of a policy or guideline

Competency Area	Unit of Competence	Competency Element
7. HEALTH PROMOTION	Promotes the health of populations	7.1. Demonstrates an understanding of the history and contribution of health promotion to defining and solving public health problems 7.2. Describes the components of an effective health promotion intervention 7.3. Enables individual and community participation in action to promote health 7.4. Works in partnership to achieve health outcomes 7.5. Influences the policy and practices of other sectors/organisations to promote, protect and support the health of the population 7.6. Acts as an advocate for action to identify and solve public health problems
8. HEALTH CARE EVALUATION	Evaluates public health interventions	8.1. Demonstrates understanding of the role of health services evaluation in gathering data for the purposes of judging value, undertaking comparisons and making better informed practical decisions 8.2. Plans the evaluation of a health intervention 8.3. Evaluates a health intervention using quantitative and qualitative evaluation techniques 8.4. Involves consumers in the evaluation of a health intervention 8.5. Implements the results of an evaluation to improve health policy or practice
9. INFECTIOUS DISEASES	Manages the prevention, surveillance and control of infectious diseases	9.1. Demonstrates understanding of common infectious diseases, in particular notifiable infectious diseases 9.2. Recognises the public health benefit of accurate surveillance of notifiable infectious diseases 9.3. Responds appropriately to outbreaks of infectious diseases 9.4. Liaises with intrasectoral and intersectoral groups responsible for the control of infectious diseases in NSW
10. RISK ASSESSMENT/ MANAGEMENT	Assesses and manages public health risks	10.1 Identifies hazards 10.2 Assesses the risk 10.3 Manages the risk 10.4 Communicates the risk
11. HEALTH ECONOMICS	Understands the contribution of economic evaluations to public health interventions	11.1 Demonstrates an understanding of the key concepts of economics and applies these to the public health context 11.2 Appreciates how economics fits into multi-disciplinary analysis of public health problems 11.3 Appraises economic evaluations relevant to public health issues 11.4 Discusses equity in public health from an economics perspective 11.5 Interprets the value judgements and ethical issues underlying an economic framework for public health

Competency Descriptions

1. Professional Practice

Competency element	Performance criteria
1.1 Demonstrates understanding of responsibilities of working within the health service	• Uses cross cultural awareness and sophisticated interpersonal skills in working with others • Treats people at all levels of the organisation with dignity and respect • Understands and complies with the NSW Health Department code of conduct • Completes in a timely and responsible fashion human resource requirements of employment e.g. flex sheets, subsistence claims
1.2 Manages professional development and personal workload	• Manages self to achieve organisational and personal goals, utilising effective time and stress management skills • Participates in a performance management structure to support the learning and performance of others • Demonstrates skills to maintain ongoing professional development • Clarifies personal limitations
1.3 Actively participates in the NSW Public Health Officer Training Program	• Demonstrates understanding of competency based training and the competencies of the Graduate Diploma of Applied Epidemiology • Works with supervisor to apply these to the determination of learning contracts • Maintains documentation necessary for describing progress on the Training Program, including documentation required for assessment • Participates in mandatory placements as required by the Chief Health Officer • Attends regular off-the-job training sessions • Organises delivery of off-the-job training for peers, specifically infectious diseases seminars
1.4 Acknowledges and demonstrates ethical behaviour in public health practice	• Demonstrates understanding of ethical dilemmas faced in public health practice e.g legislation v personal choice, group v individual perspective • Consistently demonstrates ethical behaviour in professional conduct e.g observes rules of confidentiality • Identifies the different approaches available to guide bioethics

1. Professional Practice

1.5 Applies understanding of public health law to professional practice	• Outlines the principal Acts that determine public health practice at a state and federal level • Identifies contexts for using legislative structures to protect public health
1.6 Consistently demonstrates commitment to evidence-based population health practice	• Encourages that decisions regarding the care of individuals and the allocation of resources be made on the basis of verifiable evidence and an explicit statement of values • Uses critical appraisal skills to evaluate evidence • Demonstrates understanding of the components of an effective research and development strategy • Recognises ways in which to enhance the likelihood of research findings being integrated into policy development and practice

2. Management

Competency element	Performance criteria
2.1 Understands the organisation of Health Services in NSW and identifies appropriate points to influence decision-making	• Identifies the major organisational structures which make up NSW Department of Health and health services of NSW and understands how these influence decision-making • Recognises the political, social and economic forces which influence the function of the Health Department/health services • Identifies the main source of funding for Health Services in NSW and for the public health structures that lie within these • Appreciates the infrastructure required to support branch/unit activities • Describes how the branch/unit relates to other parts of the organisation • Relates effectively to lines of responsibility in decision-making
2.2 Identifies the processes associated with the effective operations of a branch or unit	• Contributes to the management of annual business planning cycles by relating branch/unit goals to those of the organisation as a whole • Recognises the potential impact of organisational change on the actions and goals of the unit/branch • Participates in strategic planning exercises
2.3 Manages effective working relationships at an appropriate level with a variety of individuals and groups	• Utilises situational leadership skills appropriately to enhance the performance of others • Communicates clearly to develop and maintain effective working relationships using a range of skills • Develops high performance teams to address specific tasks • Manages differences between team members through effective negotiation and conflict resolution
2.4 Manages a project	• Develops project plans to achieve branch/unit goals and Departmental goals • Develops project timelines • Works with expert or advisory committees to clarify issues • Chairs meetings or assists the chair by contributing effectively to meetings • Identifies the key elements of budgets and the constraints these impose on a project • Plans the appropriate dissemination of results of the project

2. Management

2.5 Understands the processes supporting the employment of staff	- Liaises appropriately with Human Resource Services - Prepares a job description to support an identified task/position - Participates as an effective member of an interview panel - Provides relevant orientation for new employees

3. Epidemiology and Biostatistics

Competency element	Performance criteria
3.1 Demonstrates understanding of the principal forms of epidemiological study design	• Considers the uses and limitations of epidemiological methods • Uses appropriate methodologies to address public health problems
3.2 Applies epidemiological principles when designing studies	• Identifies a public health problem • Formulates a study hypothesis • Identifies the study population • Selects an appropriate study design
3.3 Manages data collection	• Utilises appropriate database designs • Identifies the need for new or existing data • Describes and justifies data gathering techniques • Designs data collection instruments such as questionnaires • Ensures that appropriate quality control mechanisms are utilised to protect integrity of data collections • Identifies the resources required to manage large collections of data
3.4 Performs epidemiological analyses	• Defines the objectives and proposed outcomes of the analyses • Cleans and prepares the data for analysis • Performs basic descriptive analyses to verify the data • Determines an appropriate level and method of analysis for the study • Presents the results of the analysis in written and verbal formats • Maintains appropriate documentation to support scrutiny of the methodology
3.5 Applies epidemiological principles to establish/evaluate a surveillance system	• Determines the objectives of the system • Defines how the system will operate e.g the population under surveillance, information to be collected • Describes the quantitative attributes of the surveillance system
3.6 Advises other health professionals about the use of epidemiological data and methods	• Describes uses and limitations of epidemiological data and methods in accessible terms • Identifies appropriate study design and methods for epidemiological components of evaluations of health interventions and policies

4. Information Management

Competency element	Performance criteria
4.1 Prepares written reports that include the descriptive presentation of data	• Accesses literature sources available through Med-line and CD-Rom software • Professionally presents reports using word processing software • Displays data in a summarised form i.e. tables and graphs, using appropriate software e.g. Microsoft Excel • Prepares visual aids to support verbal presentations e.g Microsoft PowerPoint

4.2 Analyses data sources using appropriate software packages	• Interrogates public health data sources using:
	  - spreadsheets e.g. Microsoft Excel
	  - databases eg Paradox, Microsoft Access
	  - biostatistical packages e.g. SAS, HOIST
	  - purpose specific packages e.g. Epi-info
	  - qualitative methods e.g. NUDIST

4.3 Utilises appropriate data sources to describe the health of the population	• Analyses and describes the type of data, format, limitations and uses of data sets from at least two of the following:
	  - Inpatients Statistics Collection
	  - Australian Bureau of Statistics (ABS) death data
	  - NSW Cancer Registry Data
	  - Midwives Data Collection
	  - NSW Notifiable Diseases Surveillance System
	  - ABS National Health Survey
	  - Health Promotion Survey 1997
	  - NSW Health Survey

4.4 Communicates using electronic media	• Identifies the policies that determine the use of electronic communications by an organisation • Accesses electronic mail, Intranet and Internet appropriately

5. Communication

Competency element	Performance criteria
5.1 Prepares reports, submissions and articles on public health issues to a standard acceptable for publication	• Prepares reports using appropriate printed or electronic form • Prepares short reports including Ministerial briefings and internal briefings • Prepares, in part or whole, comprehensive submissions or reports such as CHO report, policy documents, outbreak reports, summaries of survey results • Produces articles in peer review bulletins or professional journals (including NSW Public Health Bulletin) to inform the public health community
5.2 Prepares and delivers presentations at public health related conferences	• Prepares clear, succinct abstracts to meet conference themes • Determines structure and content of presentation to meet conference needs • Identifies and manages preparation of appropriate presentation aids to support presentation • Presents paper and answers questions with confidence and expertise
5.3 Presents and consults with others in a range of formal settings	• Chairs and/or presents at board meetings as appropriate • Organises and chairs intersectoral committees • Presents and conducts consultation with community groups and government sectors to inform and understand perspectives • Identifies and uses presentation aids appropriate to the context and audience • Uses language, information and cross cultural skills to meet the context and audience • Communicates clearly with clinicians, technical professionals and health professionals to promote effective collaboration
5.4 Engages effectively with the media	• Complies with organisational policy for media liaison • Writes an effective press release • Demonstrates understanding of media priorities and principles for being involved with the media • Uses strategies to gain the support of the media • Conducts self, credibly and ethically, in interviews with media • Uses media to persuade communities, organisations and individuals to adopt positive health practices

6. Health Policy

Competency element	Performance criteria
6.1 Influences health policy to ensure it promotes, protects, and supports the maintenance of the health of the population	• Recognises how health policy influences the health of populations • Recognises the steps and key stakeholders in health policy development • Works to influence/change health policy using evidence to support the direction and goals of the proposed change • Works to influence health policy to ensure that it contributes to reducing inequalities in the health of the population • Acknowledges the time and resources needed to influence health policy
6.2 Determines whether a new policy or guideline is required to address specified public health issues	• Analyses issues to define the problem • Uses appropriate quantitative and qualitative methodology to describe the issue • Clarifies the limitations of existing data sets used in defining the issue • Clarifies the need for the policy and its potential contribution • Identifies and interprets related policy documents
6.3 Prepares a policy or guideline for submission or approval	• Identifies a range of options to address the issue and their implications • Conducts consultative processes for option appraisal by stakeholders • Prepares reports and draft policy statements to inform and support the policy development process • Supports policy development and approval through the bureaucratic structure
6.4 Demonstrates understanding of policy implementation	• Identifies the key audience groups of a/the policy • Facilitates the communication and discussion of policy • Identifies the key strategies that enable the successful implementation of policy • Identifies factors that lead to the failure of policy implementation
6.5 Evaluates the impact of a policy or guideline	• Uses appropriate epidemiological study design to evaluate the impact of a policy on the health of the population • Takes a population perspective of the implications of policies/guidelines • Communicates results of evaluation

7. Health Promotion

Competency element	Performance criteria
7.1 Demonstrates an understanding of the history and contribution of health promotion to defining and solving public health problems	• Recognises the role of health promotion problem definition and interventions in improving the health of populations • Identifies evidence that confirms that it is effective to use health promotion strategies to improve the health of populations • Identifies theories and infrastructural factors that have been found to underpin effective health promotion practice
7.2 Describes the components of an effective health promotion intervention	• Defines the need for and focus of an intervention using appropriate research methods quantitative and qualitative • Identifies the comprehensive range of strategies required to address the needs • Describes the evidence that supports the selection of strategies • Identifies the resources (financial and human) that are required to implement and evaluate the intervention • Identifies the stages of evaluation that are required to ensure that an intervention is efficacious and effective
7.3 Enables individual and community participation in action to promote health	• Supports or encourages the development of structures and mechanisms to consult with and enable community members to participate in the planning, implementation and evaluation of interventions • Facilitates small effective small group interaction • Works through groups to influence knowledge, skills and practices
7.4 Works in partnership to achieve health outcomes	• Identifies the values and relevant needs of potential health promotion partners • Identifies a framework for effective intersectoral action • Works with communities to ensure satisfaction and acceptance of interventions • Identifies forms of partnership that are appropriate to the goals of working in partnership

7. Health Promotion

7.5 Influences the policy and practices of other sectors/organisations to promote, protect and support the health of the population	• Recognises how the policy and practices of other sectors/organisations influences the health of the population • Appreciates the importance of building effective working relationships with other sectors and organisations • Works to influence/change the policy and practices of other organisations • Acknowledges the time and resources required to create change in another organisation s policy and practices • Communicates effectively with other sectors to promote positive and appropriate collaboration
7.6 Acts as an advocate for action to identify and solve public health problems	• Ensures that their constituencies' have legitimised their role as an advocate on the issue • Identifies the key elements of an effective public health advocacy campaign • Identifies key channels and mechanisms through which to undertake effective public health advocacy • Appreciates the values and needs of the different organisations and populations involved in the advocacy process

8. Health Care Evaluation

Competency element	Performance criteria
8.1 Demonstrates an understanding of the role of health services evaluation in gathering data for the purposes of judging value, undertaking comparisons and making better informed practical decisions	• Considers the differences and similarities between evaluation and pure research • Identifies evaluation theories and definitions of quality in health care • Identifies public health problems which require an evaluation approach • Identifies key evaluation types and perspectives
8.2 Plans the evaluation of a health intervention	• Defines the purpose of evaluation and identifies the users of the evaluation results • Determines the intervention to be evaluated and the desired outcomes of the intervention • Conceptualises and formulates evaluation questions • Identifies and negotiates with key stakeholders • Identifies the boundaries and dimensions of the evaluation • Selects appropriate comparison groups

8.3 Evaluates a health intervention using quantitative and qualitative evaluation techniques	• Considers the benefits and limitations of qualitative evaluation methods
	• Utilises one or more of the following qualitative methods as a component of an evaluation:
	  - document evaluation/discourse analysis
	  - interviews
	  - focus groups
	  - observational methods
	  - Applies appropriate epidemiological study design to the evaluation

8.4 Involves consumers in the evaluation of a health intervention	• Considers the research on the involvement of consumers in health care evaluations • Incorporates consumers assessments of interventions
8.5 Implements the results of an evaluation to improve public health policy or practice	• Utilises research evidence on factors which produce changes in clinical and managerial practice • Identifies potential barriers to effective evaluations and implements strategies to address these • Works with others to implement evaluation results

9. Infectious Diseases

Competency element	Performance criteria
9.1 Demonstrates understanding of common infectious diseases, in particular notifiable infectious diseases	• Identifies the common infectious diseases of public health importance, in particular the notifiable infectious diseases that public health professionals address • Responds appropriately to enquiries regarding infectious diseases and initiates prevention and control action where necessary • Identifies notifications requiring prompt action • Consults with experts when appropriate
9.2 Recognises the public health benefit of accurate surveillance of notifiable infectious diseases	• Describes the types of data used to monitor notifiable infectious disease • Enters data into or interrogates the Notifiable Diseases Database (NDD) • Ensures that data of a high quality is available to support health service decision-making in infectious disease issues
9.3 Responds appropriately to outbreaks of infectious disease	• Defines what constitutes an outbreak • Describes public health responsibilities in the management of outbreaks, as defined by the Public Health Act • Actions the key steps in the investigation of a disease outbreak • Describes the role of professional groups involved in outbreak investigations • Describes strategies for informing the public about infectious disease outbreaks • Practices appropriate time, personnel and record management for an outbreak • Applies appropriate methods of investigation including questionnaire development
9.4 Liaises with intrasectoral and intersectoral groups responsible for the control of infectious diseases in NSW	• Describes the organisation of infectious disease management:- - in NSW - nationally • Uses appropriate communication skills to facilitate intersectoral liaison

10. Risk Assessment/Management

Competency element	Performance criteria
10.1 Identifies hazards	• Defines what constitutes an environmental hazard • Understands the utility of public health surveillance in hazard identification, particularly in exposure to environmental hazards • Accesses the toxicological literature, as appropriate • Understands the limitations of epidemiological and toxicological research data
10.2 Assesses the risk	• Understands the principles of quantitative risk assessment • Assesses the likely magnitude and nature of the risk • Identifies the importance of the context of the risk and the factors that may modify its impact • Recognises the alternatives to quantitative risk assessment, such as consensus
10.3 Manages the risk	• Defines appropriate risk management objectives • Identifies existing policies, infrastructure and programs across all sectors intended to manage the risk • Identifies options for managing the risk with other sectors and in particular the community • Identifies what is acceptable risk and whose values define this i.e political, scientific, community • Works with other sectors to achieve public health outcomes through implementing policy and programs or establish infrastructure • Evaluates the outcomes of interventions including costs
10.4 Communicates the risk	• Develops strategies for informing the public, including the timing of information • Assesses the level of public interest/concern • Develops strategies for public consultation • Develops material to inform stakeholders (e.g. press releases, information kits) communicating appropriate level of concern (e.g. insignificant risk and high public outrage, small but significant risk) • Describes risk education strategies that are currently in place

11. Health Economics

Competency element	Performance criteria
11.1 Demonstrates an understanding of the key concepts of economics and applies these to the public health context	• Explains the principles of microeconomics i.e. efficiency, opportunity cost, the margin, discounting and priority setting in a public health context • Identifies key issues in costing, measuring and valuing benefits in health • Demonstrates an understanding and is able to interpret common health status measures including quality adjusted life years and willingness-to-pay • Demonstrates an understanding of the major forms of economic evaluation: cost minimisation analysis, cost effectiveness analysis, cost utility analysis, cost benefit analysis
11.2 Appreciates how economics fits into multi-disciplinary analysis of public health problems	• Identifies situations in which different types of economic evaluation may be used • Identifies situations in which economic evaluation may not be useful • Recognises how issues in costing, measuring and valuing impact on priority setting in health
11.3 Appraises economic evaluations relevant to public health issues	• Recognises the key steps in critically appraising economic evaluations presented in course literature • Prepares a report describing an economic analysis
11.4 Discusses equity in public health from an economics perspective	• Discusses the ways in which equity can be analysed • Discusses the trade off between equity and efficiency • Discusses the forces influencing decisions regarding resource allocation in health
11.5 Interprets the value judgements and ethical issues underlying an economic framework for public health	• Demonstrates understanding of how achieving the health of the population can conflict with maximising the health of individuals • Demonstrates understanding of the debate on whose values to consider in economic analyses of public health issues

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