2. Competency Standards for the NSW Biostatistical Officer Training Program

2.1 Introduction

The competency standards described in this section have been developed to describe the skills and knowledge required to work as a biostatistician in the health industry. These standards have been developed for the NSW Biostatistical Officer Training Program and for the Work Placement Project unit (WPP) of the Masters degree in Biostatistics at the University of Sydney

2.2 Overview of Competency Units

There are five competency standards units. The first two describe specific biostatistical competencies and are the major technical competencies for a biostatistician. The last three describe the more general competencies and cover the other non-technical abilities necessary for operating as a consulting biostatistician. The five competency units are:

BIO 1 Apply biostatistical methods to the design of studies and use of health data;

BIO 2 Obtain, manage and analyse health data;

BIO 3 Develop and apply professional practice and industry knowledge to work in the health industry;

BIO 4 Communicate with individuals and groups in formal and informal situations;

BIO 5 Apply management skills to work in the health industry.

While the competency units have been prepared for the NSW Biostatistical Officer Training Program, they have been structured so that they may be adopted by other employers providing a work placement opportunity to students in the Masters Degree in Biostatistics.

The Work Placement Project unit for the NSW Department of Health Trainees will be assessed on the basis of the presentation of a Portfolio of Evidence that includes the assessment items identified in these competency standards. The standards include a statement called the "Evidence Guide", which explains what needs to be done to prove that the competency standards have been satisfied.

The specific assessment requirements given in the Evidence Guides of the competency standards are those of the NSW Department of Health. Other organisations employing biostatistical trainees would be expected to develop a set of specific requirements appropriate for someone working in their organisation.

Most of the assessment requirements reflect the actual work that is done as an integral part of the day-to-day work of a biostatistician, but in some cases it will be necessary to reflect on the assessment requirements and produce a brief document explaining how the requirements have been satisfied during the work placement.

2.3 Structure of a Competency Unit

These competencies describe the skills and knowledge needed to work as a biostatistician in the NSW Department of Health and other related organisations. Each competency unit is divided into the sections listed below. All sections apply to the full range of organisations except the text in the boxes, which applies only to the NSW Department of Health.

Title
The Title simply states what the WPP unit is about.

WPP unit descriptor
The WPP unit descriptor gives a brief description of the areas covered by the competency unit. We have also added a key word giving the major focus of that WPP unit.

Element
The Elements are the components that build up to the complete WPP unit.

Performance Criteria
The Performance Criteria describe what a person has to be able to do in order to satisfy the element

Range Statement
This information adds definition to the unit by elaborating critical or significant aspects of the performance requirements of the unit. These aspects are marked by use of italics in the elements or performance criteria for each unit.

Required Knowledge and Required Skills
These give a brief description of the knowledge and skills that underpin the performance of the competency.

Evidence Guide
The Evidence Guide provides advice to inform and support appropriate assessment of this unit. Other organisations using the competencies would need to develop an equivalent specification for what they would require someone to do to satisfy the competency unit.

> **The information in the box for the Evidence Guide applies only to NSW Department of Health**

Other organisations using the competencies would need to develop an equivalent specification for what they would require some to do, to satisfy the competency unit.

2.4 Overview of the content of Competency Units

BIO 1—Apply biostatistical methods to the design of studies and use of health data
Key words - Design and Advise
This unit specifies the outcomes required for someone working with biostatistics across a variety of sectors in the health industry including government departments, the pharmaceutical industry and in clinical research. It covers the application of biostatistical principles and techniques to the design of studies and utilisation of surveillance systems. It also covers the provision of advice to other health professionals on the use of biostatistical methods on a consultancy basis.

BIO 2—Obtain, manage and analyse health data
Key word - Analysis
This unit specifies the outcomes required to obtain, prepare and analyse data from studies and surveillance data collections, and report the results in a clear and comprehensible form. It also describes the requirements for providing advice on management of data collections.

BIO 3—Develop and apply professional practice and industry knowledge to work in the health industry
Key words - Professional Practice
This unit specifies the outcomes required of someone working in the health industry. It includes working within the industry guidelines, legislation, and accepted industry practice and demonstrating an ethical approach at all times. It also includes working within the policy and procedures of an organisation.

BIO 4—Communicate with individuals and groups in formal and informal situations
Key word - Communication
This unit specifies the outcomes required for workplace communication both within and outside the organisation. It includes the requirements for formal reporting of health industry information at conferences and meetings as well as communicating with colleagues and workplace teams and acting as a consultant.

BIO 5—Apply management skills to work within the health industry
Key word - Management
This unit covers the outcomes required for working in a team, managing a project and contributing to the business and strategic planning processes in a health industry or other related context.

BIO 1   Apply biostatistical methods to the design of studies and use of health data

Unit Descriptor

Key Words:
design and advise

This unit specifies the outcomes required for someone working with biostatistics across a variety of sectors in the health industry including government departments, the pharmaceutical industry and in clinical research. It covers the application of biostatistical principles and techniques to the design of studies and utilisation of surveillance systems. It also covers the provision of advice to other health professionals on the use of biostatistical methods on a consultancy basis.

Element	Performance Criteria
1. Apply *biostatistical principles and methods* to the *design of* descriptive or analytical *epidemiological studies*	1.1 Appropriate biostatistical principles and methods for analytical or descriptive epidemiological studies are identified; 1.2 The strengths and limitations of the various biostatistical techniques and methods are identified and the most appropriate approaches for a variety of applications are selected; 1.3 *Health problem* is identified; 1.4 Study design is identified; 1.5 The aims of the descriptive or analytical study are defined and study hypotheses formulated; 1.6 Study population is identified and sampling frame and sampling strategy are selected and applied; 1.7 Most appropriate *biostatistical methods* are selected for a particular study.

Element	Performance Criteria
2. Apply biostatistical principles to utilising health data including data from *surveillance systems* and epidemiological studies	2.1 Objectives of the system/study are identified; 2.2 Characteristics and operation of the system are identified, including population under surveillance and information to be collected and quantitative attributes of the surveillance system as a basis for the application of appropriate methods; 2.3 Appropriate summary statistics or indices are used for analysing health data.
3. Demonstrate understanding of *ethics committee requirements* and processes	3.1 Requirements of ethics committees are identified; 3.2 Applications to ethics committees are evaluated on the basis of understanding of the *relevant legislation*.
4. Advise *other health professionals* about the use of biostatistical methods	4.1 *Other health professionals* are consulted with to clarify their needs and identify appropriate approaches to satisfying their requirements; 4.2 Time frame and other constraints are negotiated and problems and issues are adequately defined; 4.3 Where required, consultancy work is completed to client's satisfaction; 4.4 Health professionals are advised on application of appropriate biostatistical methods for population sampling, design of studies, analysis reporting and interpretation of data; 4.5 Information about uses and limitations of a variety of biostatistical methods and data is provided in accessible terms;

Element	Performance Criteria
4. Advise *other health professionals* about the use of biostatistical methods (continued)	4.6 Advice on appropriate methods for epidemiological components of evaluations of health interventions and policies is provided.

Range Statement

The Range Statement adds definition to the unit by elaborating critical or significant aspects of the performance requirements of the unit. It establishes the range of indicative meanings or applications of these requirements in different operating contexts and conditions, broadening the understanding of what each aspect may involve. The specific aspects requiring elaboration are identified by the use of italics in the performance criteria. General contextual requirements such as Occupational Health and Safety are also elaborated. The nominated applications are indicative and those that may be relevant will depend on the operational or work context.

Epidemiology	• the study of the distribution and determinants of health related states or events in specified populations and the application of this study to the control of health problems (*A Dictionary of Epidemiology - John M Last*);
Biostatistical principles and methods *may* include:	• use of correct sampling procedures; • sampling frame; • sampling strategy; • using appropriate survey questions; • relating the type of sampling to the objectives of the study; • controlling for confounding and other sources of bias or variability.
Epidemiological studies may include the use of	• descriptive methods used to describe and analyse population based data to show: - patterns of disease - risk factors and health outcomes in populations; • analytical methods for: - case control trials - randomised controlled trials - cohort studies - cross sectional studies; • - count/event data analysis from routinely collected data.

Health problems may include:	• health service utilisation; • health outcomes; • environmental health, issues such as air pollution; • child health; • communicable diseases.
Biostatistical methods may include:	• survival analysis; • analysis of linked data; • analysis of complex survey data; • generalised linear modelling / logistic regression; • time series analysis; • graphical methods; • distribution free measures; • sample size calculation.
Surveillance systems may include:	• Inpatient Statistics Collection; • ABS Mortality data; • NSW Central Cancer Registry data; • NSW Midwives Data Collection; • NSW Notifiable Diseases Database; • NSW Health Survey Data; • ABS National Health Survey data.
The legislation may include:	• NSW Privacy and Personal Information Protection Act; • Public Health Act; • NSW Health Administration Act; • Public Sector Management Act; • NSW Health Circulars; • NSW Department of Health Circulars on policy and procedures; • NSW Department of Health Information Privacy Code of Practice; • International conference on Harmonisation: E9 Statistical Principles for Clinical Trials.

Ethics committee requirements may include:	• NHMRC National Statement on Ethical Conduct in Research involving humans; • NHMRC Human Research Ethics Handbook.
Other health professionals may include:	• epidemiologists; • clinicians; • health planners; • health policy analysts; • health information systems managers.

Required Knowledge and Skills

Required underpinning knowledge and under-standing include:	• biostatistical principles;
	• a range of biostatistical methods including:
	  - appropriate sampling strategies
	  - a range of research methods
	  - surveillance system characteristics and how they may be used
	  - appropriate use of statistical distributions;
	• design of epidemiological studies;
	• epidemiological measures;
	• differences between different data sets such as :
	  - purpose specific data;
	  - routinely collected data/surveillance systems;
	• research methodology;
	• information management principles used including:
	  - database design
	  - major disease classification systems.

Required skills and attributes include:	• research and evaluation skills;
	• statistical analysis of routinely collected data/event data ;
	• communication skills to:
	  - give and receive feedback
	  - gather relevant information during research
	  - give biostatistical advice in clear and easily understood English.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

The Evidence Guide provides advice to inform and support appropriate assessment of this unit. It contains an overview of the assessment requirements followed by identification of specific aspects of evidence that will need to be addressed in determining competence. The Evidence Guide is an integral part of the unit and should be read and interpreted in conjunction with the other components of competency.

General Evidence requirements

Assessment of performance must address the outcomes specified in the performance criteria, the aspects of performance elaborated in the Range Statement and the specified requirements for evidence set out below. Assessment should reinforce the integration of generic skills and address the dimensions of competency.

Evidence critical to demonstrate competence as a whole

A person who demonstrates competency in this standard must be able to provide evidence that they have contributed to the design of a range of studies in a number of different health areas and applied biostatistical principles to a range of surveillance systems. The person must demonstrate they can work with and advise other health professionals.
Specific areas of evidence to be addressed are identified below.

> To meet the requirements of the Department of Health, a Portfolio of Evidence should be prepared including each of the following:
> * at least one example of their contribution to the design of an analytical or descriptive epidemiological or health study based on valid and appropriate methods. The evidence must include a clear specification of the person's role in the design of the study and their role in determining the biostatistical methods to be used;
> * documentation showing at least two examples of application of biostatistical principles to use of data from a surveillance system including justification of the biostatistical methods used;
> * documented examples of at least two situations involving different applications of methods and data sources in which advice has been given on the collection, management or analysis and interpretation of health data;
> * evidence that a successful consultancy service was provided to an internal or external client. The evidence needs to have a clear statement of the client's needs and expectations, the problems, issues and scope of the consultancy and the outcome;
> * at least one example of a review of an application to a National Health and Medical Research Council accredited ethics committee.

NOTE: Other industry sectors, such as pharmaceutical companies, could specify equivalent requirements for submission of evidence to satisfy their outcomes.

BIO 2   Obtain, manage and analyse health data

Unit Descriptor

Key Word: analysis

This unit specifies the outcomes required to obtain, prepare and analyse data from studies and surveillance data collections, and report the results in a clear and comprehensible form. It also describes the requirements for providing advice on management of data collections.

Element	Performance Criteria
1. Collect data and/or provide advice on data collection	1.1 The data requirements, both existing and new, are identified; 1.2 *Data gathering techniques* described and justified; 1.3 Data collection instruments, such as questionnaires and case report forms, are designed.
2. Manage data and data collections	2.1 Understanding of database designs (underlying concepts, structure and relationship between data entities) is demonstrated; 2.2 Appropriate *quality control mechanisms* are utilised to protect integrity of data collections; 2.3 *Resources* required to manage large collections of data identified; 2.4 The structure of the *major disease classification* systems used in health data identified; 2.5 Coding systems for study or health surveillance data developed; 2.6 Knowledge of the structure of major health *surveillance systems* is demonstrated; 2.7 Understanding of the principles underlying ethical handling of data is demonstrated.

Element	Performance Criteria
3. Perform biostatistical analyses	3.1 The objectives and proposed outcomes of the analyses are defined; 3.2 Data is cleaned and prepared for analysis; 3.3 Basic descriptive analyses to check the data are performed; 3.4 Appropriate descriptive analyses, summary statistics and graphical methods are chosen; 3.5 *Appropriate statistical methods* for the analysis of the study or surveillance data are determined; 3.6 Data is analysed using the chosen methods.
4. Document the analyses performed	4.1 *Appropriate documentation* for a data set is maintained; 4.2 *Appropriate documentation* to support scrutiny of the methodology is maintained; 4.3 Methods are described concisely in written and oral formats.
5. Report and interpret the results	5.1 The results of the analysis are presented clearly in *written and oral formats*; 5.2 Results interpreted appropriately and concisely; 5.3 The *limitations* on interpreting data from data sets identified and documented ; 5.4 Report including presentation of the data is produced.

Element	Performance Criteria
6. Analyse data sources using appropriate software packages	6.1 *Appropriate statistical software* used to manage and analyse data; 6.2 Health data sources manipulated/interrogated using appropriate *spreadsheets and databases*; 6.3 Efficient programs using *appropriate statistical software* are prepared to analyse large health data sets.
7. Utilise appropriate data sources to describe the health of the population	7.1 Standard population health data sets are accessed using *appropriate sources*; 7.2 The type of data, format, limitation and uses of data from health data collections are analysed and described.

Range Statement

The Range Statement adds definition to the unit by elaborating critical or significant aspects of the performance requirements of the unit. It establishes the range of indicative meanings or applications of these requirements in different operating contexts and conditions, broadening the understanding of what each aspect may involve. The specific aspects requiring elaboration are identified by the use of italics in the performance criteria. General contextual requirements such as Occupational Health and Safety are also elaborated. The nominated applications are indicative and those that may be relevant will depend on the operational or work context.

Surveillance:	Surveillance is defined as systematic ongoing collection, collation and analysis of data and the timely dissemination of information to those who need to know so that action can be taken. (Source: World Health Organization)
Surveillance systems may include:	• Inpatient Statistics Collection; • ABS Mortality data; • NSW Central Cancer Registry data; • NSW Midwives Data Collection; • NSW Notifiable Diseases Database; • NSW Health Survey Data; • ABS National Health Survey data.

Data gathering techniques may include:	• surveys including telephone surveys, face to face, self-administered; • data collected as part of routine administrative or reporting systems; • randomised clinical trials.
Data collections may include:	Routinely collected data such as: • Inpatient Statistics Collection • ABS Mortality data • NSW Central Cancer Registry data • NSW Midwives Data Collection • NSW Notifiable Diseases Database • NSW Health Survey Data • ABS National Health Survey data
Quality control mechanisms may include:	• systematic approach to cleaning and preparing data; • how to handle non responders and missing data; • system for checking program output; • checking of the end product for validity and reliability; • integrity checks/ range limits; • summary tables.
Resources may include:	• appropriate hardware and software; • appropriate staff; • use of backups and security systems.
Major disease classifications may include:	• International Classification of Diseases (ICD); • Notifiable Diseases Database (NDD) classification.
Appropriate statistical methods may include:	• survival analysis; • analysis of linked data; • analysis of complex survey data; • generalised linear modelling/logistic regression/ linear regression; • time series analysis; • graphical methods; • distribution-free methods.

Appropriate documentation may include:	• description and justification of the methodology used; • documentation of the data set; • definitions of the variables including derived variables; • formats; • coding systems; • how questions or fields on the form collecting data relate to variables.
Written and oral formats may include:	• reports—in house and for publication; • presentations at workshops seminars and conferences.
Limitations may include:	• with large data collections, small differences may be statistically significant but not important in practice; • if you make enough comparisons, you will get significant results—'data dredging' • validity of assumptions; • sources of bias; • limited control over data quality or collection techniques; • sources of error.
Appropriate statistical software packages may include:	• SAS; • SPSS ; • STATA; • SUDAAN; • GLIM; • S, S-plus, R.
Appropriate spread sheets and databases may include:	• Microsoft Access; • Microsoft Excel.
Appropriate sources may include:	• HOIST data warehouse; • Health Wiz data warehouse.

Required knowledge and skills

Required underpinning knowledge and understanding include:	• biostatistical principles; • a range of biostatistical methods including descriptive analysis, fitting linear models and generalised linear models, survival analysis, distribution-free methods, analysis of complex surveys; • appropriate sampling strategies; • a range of research methods; • surveillance system characteristics and appropriate use of surveillance systems.

Required skills and attributes include:	• communication skills to
	  - give and receive feedback
	  - gather relevant information during research
	  - give biostatistical advice in clear and easily understood English;
	• use statistical packages such as SAS to:
	  - manipulate the data
	  - analyse the data
	  - programming skills;
	• command line programming, create macros;
	• writing skills to produce clear and cohesive reports on outcomes of studies using plain English;
	• skills for managing secure storage of data.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

The Evidence Guide provides advice to inform and support appropriate assessment of this unit. It contains an overview of the assessment requirements followed by identification of specific aspects of evidence that will need to be addressed in determining competence. The Evidence Guide is an integral part of the unit and should be read and interpreted in conjunction with the other components of competency.

General Evidence Requirements

Assessment of performance must address the outcomes specified in the performance criteria, the aspects of performance elaborated in the Range Statement and the specified requirements for evidence set out below. Assessment should reinforce the integration of generic skills and address the dimensions of competency.

Evidence critical to demonstrate competence as a whole

A person who demonstrates competency in this standard must be able to provide evidence that they have undertaken a range of biostatistical analyses in a number of different health areas and advised on the management of data collections. The person must demonstrate they can work with and advise a range of other health professionals. Specific areas of evidence to be addressed are identified below.

To meet the requirements of the Department of Health, a Portfolio of Evidence should be prepared including:

- at least two examples of biostatistical analyses undertaken, alone or in collaboration with a colleague, and reported in an accepted format including the presentation of the data. The analysis should include the use of appropriate software packages such as SAS, SPSS or STATA. The examples must demonstrate the application of at least two different biostatistical methods and include multivariate analyses with one outcome variable. Documentation to support scrutiny of the methodology and documentation for the data set should also be included in the portfolio. The report should be written in clear and concise language, avoiding jargon, and drawing conclusions based on the outcomes of the analysis;
- a brief for approval to release unit record data to an external group based on understanding of the legislation relating to collection, use and disclosure of personal information;
- documented examples of use of data sources to describe some aspect of the health of the population including the use of HOIST or Health Wiz. This must include a clear statement of the purpose and structure of the data source, the major classifications and coding systems and standard formats.

Note: Other industry sectors, such as pharmaceutical companies, could specify equivalent requirements for submission of evidence to satisfy their outcomes.

BIO 3 — Develop and apply professional practice and industry knowledge to work in the health industry

Unit Descriptor

Key Words:
professional practice:

This unit specifies the outcomes required of someone working in the health industry. It includes working within the industry guidelines, legislation, and accepted industry practice and demonstrating an ethical approach at all times. It also includes working within the policy and procedures of an organisation.

Element	Performance Criteria
1. Work within the health industry guidelines, *legislation and industry practice*	1.1 Work carried out is consistent with existing health industry guidelines; 1.2 Principal acts that determine health practice at a state and federal level applying to the health industry are identified; 1.3 *Contexts* for using legislative structures to protect public health identified.
2. Work within the *organisation's policy, guidelines and procedures*	2.1 Work carried out is consistent with the *organisation's policies, guidelines and procedures.* 2.2 Work conducted reflects an understanding of the philosophy of the organisation and its objectives. 2.3 All work is conducted in compliance with the organisation's *code of conduct.*
3. Demonstrate *ethical behaviour*	3.1 Professional conduct is based on principles of *ethical behaviour* including those related to maintaining confidentiality, duty of care, non-discriminatory practices and conflict of interest.

Element	Performance Criteria
4. Demonstrate commitment to evidence based health practice	4.1 The use of an evidence based approach to decision making in the health industry promoted; 4.2 Critical appraisal skills are used to evaluate evidence on which decisions are made
5. Establish personal goals and set priorities	5.1 Personal work goals and plans reflect the organisational and personal goals; 5.2 Competing demands are prioritised to achieve personal, team and the organisation's goals and objectives using effective time and stress management techniques.
6. Develop and maintain professional competency	6.1 Personal knowledge and skills are assessed against competency standards to determine development needs and priorities; 6.2 Feedback from *clients* and colleagues is used to identify and develop ways to improve competence.
7. Develop indicators related to health policy	7.1 Understanding of procedures for developing health policy is demonstrated; 7.2 Methods of evaluating the impact of a policy are identified; 7.3 *Indicators* which monitor the implementation of health policy are developed.

Range Statement

The Range Statement adds definition to the unit by elaborating critical or significant aspects of the performance requirements of the unit. It establishes the range of indicative meanings or applications of these requirements in different operating contexts and conditions, broadening the understanding of what each aspect may involve. The specific aspects requiring elaboration are identified by the use of italics in the performance criteria. General contextual requirements such as Occupational Health and Safety are also elaborated. The nominated applications are indicative and those that may be relevant will depend on the operational or work context.

Legislation and industry practice may include:	- NSW legislation relating to public health; - NSW Public Health Act; - Health Administration Act; - Occupational Health and Safety Legislation; - Public Sector Management Act; - NSW Health Circulars; - Privacy Legislation and Codes of Practice; - Freedom of Information Act; - Ethics committee procedures; - National Health and Medical Research Council criteria for ethics committees; - International Conference on Harmonisation: E6 Good Clinical Practice; - International Conference on Harmonisation: E9 Statistical Principles for Clinical Trials.
Organisation's *policy, guidelines and procedures* may include:	- NSW Department of Health Circulars on policy and procedures; - NSW Department of Health Code of Conduct; - Guidelines for Policy Development in the NSW Department of Health; - policy for the use of electronic communication, email, Internet; - business planning guidelines; - personnel manual/guidelines.
Contexts may include:	- settings such as schools and workplaces; - industries; - hospitals; - specialist and general practice; - population target groups; - information about particular diseases.
Code of conduct may include:	formal codes of conduct.

Ethical behaviour may relate to:	- confidentiality and integrity of data; - awareness of cultural diversity; - non discrimination; - duty of care; - conflict of interest; - Equal Employment Opportunity; - interest of the individual versus the interest of the public; - individual privacy versus public good.
Clients may be:	Client is used in the sense of any person that one provides a service or information or advice to in the course of performing duties doing a job, either inside or outside the organisation
Indicators may include:	An indicator is a statistic which describes a change which took place in a defined population, setting and period of time. Indicators used in health can be referring to health status and outcomes, determinants of health or to health system performance.

Required knowledge and skills

Required underpinning knowledge and under-standing include:	• the structure of the health industry and the organisational structure; • general understanding of what ethics are and why they are important in professional occupations; • understanding of general topics included in the induction to the workplace such as the Occupational Health and Safety requirements of the workplace, the administrative requirements of the organisation, personnel practices and their responsibilities as an employee.

Required skills and attributes include:	• communication skills to
	   - give and receive feedback
	   - gather relevant information;
	• writing skills to complete the administrative documentation of the organisation.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

The Evidence Guide provides advice to inform and support appropriate assessment of this unit. It contains an overview of the assessment requirements followed by identification of specific aspects of evidence that will need to be addressed in determining competence. The Evidence Guide is an integral part of the unit and should be read and interpreted in conjunction with the other components of competency.

General Evidence Requirements

Assessment of performance must address the outcomes specified in the performance criteria, the aspects of performance elaborated in the Range Statement and the specified requirements for evidence set out below. Assessment should reinforce the integration of generic skills and address the dimensions of competency.

Evidence critical to demonstrate competence as a whole

A person who demonstrates competency in this standard must be able to provide evidence that they have complied with legislation, worked within the industry and the organisation's guidelines, and maintained and developed their professional competency. They must have demonstrated ethical behaviour and a commitment to evidence based health practice. These may need to be validated by managers who have been their line managers in their work placement/s. Specific areas of evidence to be addressed are identified below.

To meet the requirements of the NSW Department of Health, a Portfolio of Evidence should be prepared including at least one example of each of the following as they apply in the workplace:

- how the health industry guidelines, legislation and practice impact on the work they have done in at least one of their work placements. This assessment item requires a brief document of a page or less that includes the identification of the legislation or guidelines or practice, that impacted on their work, how it affected their work, what action they took as a result, and the rationale for their actions;

- the operation of the Code of Conduct of the Department in their section of the workplace, and how it applies to a workplace situation or a job that they have done. This assessment item requires a brief document of a page or less that includes a description of a workplace situation or job where they needed to refer to the Code, what the requirement of the Code of Conduct was, and how it affected what they did;

- how one aspect of ethics has affected their work, including some specific examples. This assessment item requires a brief document of a page or less that includes the identification of a relevant ethical principle, a description of how the principle related to the workplace situation, how it affected their work, what action they took as a result, and why they took that action;

- documentation of the development of population health indicators, either individually or in cooperation with colleagues, to monitor the implementation of health policy. This assessment item requires the production of a brief document that explains the purpose and objectives of the relevant health policy and the measure of the direction and goals of the proposed change.

NOTE: Other industry sectors, such as pharmaceutical companies, could specify equivalent requirements for submission of evidence to satisfy their outcomes.

BIO 4   Communicate with individuals and groups in formal and informal situations

Unit Descriptor

Key Word: communication

This unit specifies the outcomes required for workplace communication both within and outside the organisation. It includes the requirements for formal reporting of health industry information at conferences and meetings as well as communicating with colleagues and workplace teams and acting as a consultant.

Element	Performance Criteria
1. Demonstrate interpersonal and communication skills in working with people at all levels of the organisation	1.1 Effective *communication and interpersonal skills* demonstrated when working with others; 1.2 People at all levels of the organisation, various backgrounds and cultures are treated with dignity and respect; 1.3 Communication skills used as a basis for productive and harmonious cooperation.
2. Prepare *reports, submissions and articles* on biostatistical issues, to a standard acceptable for publication	2.1 Different types of reports identified and an appropriate format for reporting on a particular project, study or issue selected; 2.2 *Appropriate literature* sources are accessed electronically or using other appropriate methods; 2.3 Where data is included in a report, the most appropriate *methods of presenting* the data are selected based on characteristics of the data set and the audience for the report; 2.4 Reports written in clear, concise and easy to understand language, avoiding jargon, and drawing conclusions based on the outcomes of the analysis; 2.5 Reports professionally presented using *appropriate software* to format and display data and present results; 2.6 Short reports and internal briefings are prepared;

Element	Performance Criteria
2. Prepare *reports, submissions and articles* on biostatistical issues, to a standard acceptable for publication **(Continued)**	2.7 In part or whole, comprehensive submissions, reports or policy documents are written; 2.8 Articles in peer review bulletins or professional journals to inform the health community are produced.
3. Prepare and deliver presentations at health related conferences	3.1 Clear, succinct abstracts prepared to meet conference themes; 3.2 Structure and content of presentations to meet conference needs determined; 3.3 Conference paper presented or poster displayed and questions answered.
4. Present to and consult with others in a range of formal settings	4.1 Constructive contributions (which may include organising and chairing the meeting) made to discussions in formal and informal meetings; 4.2 Language, information and cross cultural skills appropriate for the context and audience used; 4.3 Clear communication with *health professionals* used to promote effective collaboration.
5. Contribute to media liaison process	5.1 Organisational policy for media liaison complied with; 5.2 In consultation with manager, interact with the organisation's media unit in relation to interpretation of data for use by the media .

Range Statement

The Range Statement adds definition to the unit by elaborating critical or significant aspects of the performance requirements of the unit. It establishes the range of indicative meanings or applications of these requirements in different operating contexts and conditions, broadening the understanding of what each aspect may involve. The specific aspects requiring elaboration are identified by the use of italics in the performance criteria. General contextual requirements such as Occupational Health and Safety are also elaborated. The nominated applications are indicative and those that may be relevant will depend on the operational or work context.

Communication and interpersonal skills may include:	- using appropriate language and level of language for the audience; - describing statistical concepts in language that can be understood by those who are not statistical specialists; - demonstrating good listening skills; - asking questions to clarify meaning; - taking note of body language; - being aware of cultural differences; - providing feedback to speakers.
Reports, submissions and articles may include	- Ministerial briefings; - internal briefings; - articles in peer reviewed journals; - submissions on policy matters; - chapters of the Chief Health Officer's Report, NSW Health Survey reports.
Appropriate literature sources may include:	- Medline; - CIAP; - other bibliographic databases.
Methods of presenting the data may include:	- tables; - graphs; - diagrams; - charts.
Appropriate software for presentation of reports may include:	- for word processing —Microsoft Word; - for data display and graphs—Microsoft Excel, statistical packages; - for visual aids—Microsoft Powerpoint.

Health professionals may include:	• epidemiologists; • clinicians; • health planners; • health policy analysts; • health information systems managers.

Required Knowledge and Skills

Required underpinning knowledge and understanding include:	• techniques for effective communication; • negotiation and problem-solving strategies; • conventions of report writing; • sources of information for a literature review; • meeting conventions and procedures.
Required skills and attributes include:	• communication and negotiation skills; • skills in using word processing, spreadsheet, database and presentation software; • writing skills to produce clear and cohesive reports; • oral presentation skills; • electronic mail and Internet skills.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

The Evidence Guide provides advice to inform and support appropriate assessment of this unit. It contains an overview of the assessment requirements followed by identification of specific aspects of evidence that will need to be addressed in determining competence. The Evidence Guide is an integral part of the unit and should be read and interpreted in conjunction with the other components of competency.

General Evidence Requirements

Assessment of performance must address the outcomes specified in the performance criteria, the aspects of performance elaborated in the Range Statement and the specified requirements for evidence set out below.
Assessment should reinforce the integration of generic skills and address the dimensions of competency.

Evidence critical to demonstrate competence as a whole

A person who demonstrates competency in this standard must be able to provide evidence that they have prepared a range of documents and presentations for use

within or outside the organisation they work for. Specific areas of evidence to be addressed are identified below.

To meet the requirements of the NSW Department of Health, a Portfolio of Evidence should be prepared including each of the following:

- at least one example of a report or briefing document or conference paper in which appropriate software has been used to support the communication of biostatistical information and ideas;
- at least one example of the presentation of information and ideas to an audience. This can be in house or to an external audience, and it should be include a brief self-evaluation of the success of the presentation. The presentation should be made in language that the audience can understand, avoid jargon, and use plain English (essential technical terms are not jargon, however they should be explained, depending on the audience for the presentation; overuse of unnecessary acronyms and terms without explanation should be avoided).

NOTE: Other industry sectors, such as pharmaceutical companies, could specify equivalent requirements for submission of evidence to satisfy their outcomes.

BIO 5 Apply management skills to work within the health industry

Unit Descriptor

Key Word:
management

This unit covers the outcomes required for working in a team, managing a project and contributing to the business and strategic planning processes in a health industry or other related context.

Element	Performance Criteria
1. Work with *individuals and groups* as a member of a team	1.1 Individual role in the team identified; 1.2 *Clear communication* used to develop and maintain effective working relationships; 1.3 Differences between team members managed through effective negotiation and conflict resolution; 1.4 *Situational leadership* skills used to enhance the achievement of team goals.
2. Manage a project	2.1 Project plans developed to achieve goals of the section and/or the organisation; 2.2 Project timelines developed and milestones, deliverables and deadlines identified; 2.3 Issues clarified with colleagues and, where appropriate, with expert or advisory committees; 2.4 Key elements of budgets and the constraints these impose on a project are identified; 2.5 Strategy for disseminating results of the project is planned; 2.6 During the life of the project, progress is monitored and, on completion, the process and final product are evaluated.

Element	Performance Criteria
3. Demonstrate under-standing of the structures of the organisation and the industry	3.1 *Organisational and regulatory structures* of the health industry and the political, social and economic context in which the industry operates are identified; 3.2 The relationships between different parts of the organisation are described and the lines of responsibility identified; 3.3 The *economic and funding structures* of the industry and organisation, and how they affect the decision making process are identified.
4. Contribute to the business and strategic planning processes of the organisation	4.1 Contributions are made to the management of annual business planning cycles by relating branch/unit goals to those of the organisation as a whole; 4.2 The potential impact of organisational change on the actions and goals of the unit/branch are identified; 4.3 Contributions are made to the strategic planning process.

Range Statement

The Range Statement adds definition to the unit by elaborating critical or significant aspects of the performance requirements of the unit. It establishes the range of indicative meanings or applications of these requirements in different operating contexts and conditions, broadening the understanding of what each aspect may involve. The specific aspects requiring elaboration are identified by the use of italics in the performance criteria. General contextual requirements such as Occupational Health and Safety are also elaborated. The nominated applications are indicative and those that may be relevant will depend on the operational or work context.

Individuals and groups may include:	• peers and colleagues; • other health professionals; • committees; • people from other sections of the organisation and/or industry (eg hospitals); • government departments; • related organisations; • members of the public.

Clear communication may include:	• using appropriate language; • describing biostatistical information so that it is easy for a range of people, including those from other disciplines, to understand; • using good listening asking questions to clarify meaning.
Situational leadership covers:	• exerting leadership of a group by reason of occupational position or special knowledge or expertise.
Organisational and regulatory structures may include:	• the organisational structure; • line management; • government regulatory committees and processes; how they operate; • the procedures that need to be followed to get an initiative through the system.

Economic and funding structures may include:	• sources of funding for the system or organisation:
	   - federal funding
	   - state funding
	   - private funding;
	• mechanisms to gain funding.

Required Knowledge and Skills

Required underpinning knowledge and under- standing include:	• understanding of financial documents necessary for project management; • meeting conventions and procedures; • organisational and regulatory structures of the health industry; • general knowledge of the economic context of public and private organisations; • small group dynamics; • the role of biostatisticians in the organisation in which they work and the wider industry; • business and strategic planning procedures of their organisation; • funding sources for projects—internal or external to the organisation.

Required skills and attributes include:	• communication skills to:
	    - make constructive contributions to meetings and discussions
	    - gather relevant information on financial and planning procedures;
	 • ability to interpret financial documents such as budgets.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

The Evidence Guide provides advice to inform and support appropriate assessment of this unit. It contains an overview of the assessment requirements followed by identification of specific aspects of evidence that will need to be addressed in determining competence. The Evidence Guide is an integral part of the unit and should be read and interpreted in conjunction with the other components of competency.

General Evidence Requirements

Assessment of performance must address the outcomes specified in the performance criteria, the aspects of performance elaborated in the Range Statement and the specified requirements for evidence set out below.Assessment should reinforce the integration of generic skills and address the dimensions of competency.

Evidence critical to demonstrate competence as a whole

A person who demonstrates competency in this standard must be able to provide evidence that they have:

- successfully worked in a team and contributed to achievement of team goals;
- managed a limited project or a section of a larger project.

Specific areas of evidence to be addressed are identified below.

To meet the requirements of the NSW Department of Health, a Portfolio of Evidence should be prepared including:
- Evidence of successful teamwork in achieving a workplace objective such as production of a report or setting up/revising a system. The evidence needs to have a clear statement of the person's role in the team and a general description of their contribution to meeting the team goals. It also needs to include examples of situations where good interpersonal and communication skills have been used to solve a problem, deal with conflict, negotiate a compromise or justify a recommendation;
- Evidence that a limited project or a section of a larger project has been managed. Evidence should be provided giving detail of the processes followed throughout the life of the project or section of a project.

NOTE: Other industry sectors, such as pharmaceutical companies, could specify equivalent requirements for submission of evidence to satisfy their outcomes.