Appendix 1 - List of consultations

Name	Role
Australian Government Department of Health and Ageing	
David Grant	Classification Management and Statistics Section, Healthcare Service Information Branch, Acute Care Division
Kelvin King	Director, Classification Management and Statistics Section, Healthcare Services Information Branch, Acute Care Division
David Martin	Assistant Secretary, Health Care Services Information Branch
Australian Centre for Clinical Terminology and Information (ACCTI), Centre for Health Service Development University of Wollongong	
Kerry Innes	Manager
ACT Health	
Roma Davidson	Coding Team Leader, Calvary John James Hospital
Louise Edmonds	Information Management Unit, ACT Health Department
Sharon Gibbons	Coding Manager, The Canberra Hospital
Lee Miller	Health Information Manager, Clinical Coding Calvary Health Care ACT
NSW Health Department	
Amelia Chee	Clinical Information Specialist, Data Collections and Quality Unit, Demand and Performance Evaluation Branch
Joanne Chicco	
Susan Claessen	
Jane Dimond	Area Advisor Health Information , Management Manager Patient Information & Medical Record Service, Royal Prince Alfred Hospital
Debbie Lane	Area Clinical Coding Manager, Greater Western Area Health Service
Margie Luke	
Robyn Lunt	Area HIM, Greater Southern Area Health Service
Ric Marshall	
Robyn Sheridan	Area HIM, Greater Western Area Health Service
NT Department of Health and Families	
Jill Burgoyne	Health Information Manager, Alice Springs Hospital
Queensland Health	
Kathryn Carmichael	Manager Health Information Services Gold Coast Health Service District
Bonita Findlay	Coding Manager Gold Coast Health Service District
Jane Ingram	Principal Workforce Planner, Workforce Design & Liaison Unit , Clinical Workforce Planning and Development Branch
Corrie Martin	Principal Data Quality Officer, Statistical Standards Unit, Health Statistics Centre
Sandra Martyn	Director, Statistical Standards, Health Statistics Centre
Colin McCrow	Senior Applications Specialist, Decision Support & Analysis Team, InfoOperations Branch

South Australian Department of Health	
Catherin Garvey	A/Chief Health Information Officer, Information Management – Medical Record Advisory Unit
Lesley Ward	
Tasmanian Department of Health and Human Services	
Peter Mansfield	Manager, Clinical Data Services, Information Unit, Policy, Information & Commissioning Unit
Kirstie Mountain	Client Record Advisor Strategic Portfolio Services, Information Support Services
Victorian Department of Health	
Dean Athan	MIS Manager, Peninsula Health
Franco Greco	Project Director, National Reform Projects Funding and Information Policy Branch
Jennie Shepheard	Senior Health Information Manager Health Data Acquisition, Funding and Information Policy Hospital and Health Service Performance
WA Health	
Deborah Yagmich	Principal Coding Trainer, Coding Education, Information Management and Reporting, Health Information Network
Coding Contractors	
Debbie Abbott	Resolutions
Anna Coote	PH Prime Care
Sam Gentile	Rolls Printing
Andrea Groom	Healthcare Management Advisors
Doug Henry	Pavilion Health Pty. Ltd
Keith Holden	The Coding Company
Jude Kratzmann	MediCODE
Louise Matthews	Matthews Health Coding Solutions
Beth Reid	Pavilion Health Pty. Ltd
Educators	
Carolyn Allison	Open Training and Education Network
Kerryn Butler-Henderson	Curtin University of Technology
Kerin Robinson	La Trobe University
Robert Steele	Sydney University
Sue Walker	NCHIRT, Queensland University of Technology
Lyn Williams	Education Services Manager, Health Information Management Association of Australia
Maryann Wood	Queensland University of Technology
Professional Organisations	
Robert Blue	Chief Executive Officer, Health Information Management Association of Australia
Joan Knights	President, Clinical Coders Society of Australia
International	
Ireland	
Deirdre Murphy	Manager, HIPE & NPRS Unit, Health Research & Information Division, ESRI

Canadian	
Kelly Abrams	Vice President, Education & Professional Practice Canadian Health Information Management Association
New Zealand	
Patsy MacAulay	Manager Clinical Coding, Waikato District Health Board
UK	
Lorraine Nicholson	President of International Federation of Health Record Organisations

Appendix 2 – Project scope and objectives

The following is an extract from the Schedule to the Memorandum of Understanding between the Department of Health and Ageing and the Australian Institute of Health and Welfare for the procurement of services in relation to 'A report on the Clinical Coders, Health Information Managers and Costing Specialists (coding workforce) shortfall'.

Project description

Clinical Coding is the translation of narrative descriptions of diseases, injuries and procedures into alphanumeric codes. These codes form part of a data collection that is used for research as well as the provision of information for health service planning and financing decisions.

These codes are derived from the International Classification of Diseases, tenth edition (ICD-10), developed by the World Health Organization.

With the move to ABF, it is likely that new classifications will be developed which will increase the demand for qualified members of the coding workforce.

While the issue of a shortfall in the coding workforce has been raised anecdotally in a number of national forums, no recent study has been done to quantify the scope of the shortfall or a consolidated set of recommendations to address it developed with the jurisdictions.

The schedule's objective is to:

- conduct a survey to provide a quantifiable number of coding staff currently employed and their demographics and also identify projected numbers for the future to cover the anticipated increased demand
- produce a report on the activities currently being implemented in the jurisdictions to address these issues and
- provide recommendations on a way forward for a more consolidated national strategy to address future needs, taking into account e-health and broader developments.

Outline of the project

AIHW will provide the Department with a report on the Clinical Coders, Health Information Managers and Costing Specialist (Coding Workforce) Shortfall.

AIHW will develop the scope, content, instrument, frame estimation and validation procedures for the survey of today's Clinical Coders, Health Information Managers and Costing Specialists workforce.

The scope of the survey is aimed at the Clinical Coders, Health Information Managers and Costing Specialists employed by hospitals and Health Departments.

The survey information collected about the future Clinical Coders, Health Information Managers and Costing Specialists workforce will need to relate to the 'demand side' that is the projected numbers of Clinical Coders, Health Information Managers and Costing Specialists needed to meet the anticipated expansion of coding activity. The report will include illustrative 'what-if' calculations of future workforce supply, based on the population characteristics gathered in the survey and on a range of assumptions about future exit/retention rates.

Appendix 3 – Survey methodology

Survey method and issues

This component of the Coding Workforce Shortfall project describes the methodology used to collect data on the coding workforce. The coding workforce has been defined by DoHA as the occupations of Clinical Coder, Health Information Manager and Costing Specialist. The survey collected data about CCs and HIMs only. The definitions of CCs and HIMs in the survey were based on the ABS standard classification of occupations (ANZSCO).

- *A clinical coder is someone who assigns codes to narrative descriptions of patients' diseases, operations and procedures in accordance with the ICD-10-AM classification to allow for storage, retrieval and analysis of health data.*
- *A health information manager is someone who plans, develops, implements and manages health information services, such as patient information systems, and clinical and administrative data, in order to meet medical, legal, ethical and administrative requirements of health care delivery.*

To enable some comparisons over time, the definitions above, and the scope of health-care facilities in the 2010 study, align with an earlier comprehensive report on CCs and their managers, *The Australian coder workforce: 2002* (McKenzie & Walker 2003).

Data collection

Survey population

Aggregate data about hospital-based CCs and HIMs were collected via a web-based survey of coding managers employed in hospitals and day care facilities. These health-care facilities were identified via the AIHW's Hospital Morbidity Database (AIHW HMDB) which formed the population frame for the survey. The characteristics and activity data for each facility were also extracted and matched by facility to the survey data. This enabled the coder resources (the workforce) to be analysed in combination with a measure of the required volume of clinical coding work (health facility separations).

The survey targeted some 1,170 health establishments with admitted patients in 2008–09 and for which morbidity data had been provided to the AIHW HMDB.

Data for each facility were collected by approaching one person working at the facility, either the coding manager or supervisor, to take part in the survey. Many of the people in these roles were responsible for more than one health facility, and were asked to complete more than one survey form. Given this, the survey questionnaire was kept as short as possible, while still obtaining the necessary information (see Attachment 1).

Survey preparation

Respondent contact

The survey email and follow-up email dispatches, the secure survey site and technical operations were outsourced. Being a web-based survey, the operation required a list of email addresses for contacts in each health facility and because one did not already exist, considerable time and resources were invested in compiling it. State and territory health departments provided support, supplying where they were able, administrative information about public sector facilities. This was used as a base which was supplemented by contact information obtained by 'cold' calls by telephone. Similarly, DoHA provided some contact information about the private sector facilities and this was supplemented with information obtained by telephone. In addition to this activity, the HIMAA and CCSA sent an email, alerting their members to the survey and encouraging their support. This resulted in further additions to the list of contacts from HIMs in both private and public sector facilities.

All hospital contact email addresses were checked by sending an email to each contact, confirming their details and determining all facilities for which they were responsible for clinical coding. The email also contained an explanation of the survey, its purpose, importance and how the data would be used.

Questionnaire

A draft questionnaire was designed to meet the identified data requirements and provided to a small cross-section of clinical coding managers/HIMs for feedback. Before being finalised, the questionnaire and supporting explanatory information were also reviewed by state-based colleagues with expertise in collecting similar data.

Enumeration

The survey was conducted over 5 weeks (from 23 April to 28 May 2010) during which time, query resolution and respondent support was provided by the AIHW team.

Maximising response

All methods of encouragement to participate were important to the final overall response because participation in the survey was voluntary. Pre-survey, the task of compiling the email contact list also served as preparation for gaining a good response to the survey. The email which was sent to facility contacts explaining the purpose of the survey and the importance of quality, reliable results, also established personal links with the AIHW which was important to enlisting survey support. The information which was distributed to all HIMAA and CCSA members was to raise awareness of the survey, but also to enhance support for its completion.

During the survey, response was monitored by state, sector and peer group in order to target follow-up activity and minimise bias in the final data set. Reminder emails were sent to contacts approximately 2 weeks and 3 weeks after the initial survey emails. In addition, targeted follow-up by telephone focused on contacts responsible for multiple facilities because, being geographically clustered, their non-participation was more likely to skew the results. The telephone follow-up was undertaken both by AIHW and colleagues in the state and territory health departments.

Final response

Responding facilities

The overall response to the survey was 75%. Response from public facilities was 86% and from private facilities, 61%. The distribution by jurisdiction, sector and peer group is shown below (Table 16).

Table 16: Per cent survey response: sector and peer group, states and territories, 2010

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Peer group				**Public facilities**					
Large major cities	100	86	100	100	100	. .	100	. .	95
Large regional and remote	86	100	100	75	. .	100	. .	. .	91
Medium (group 1)	100	100	100	80	100	. .	. .	. .	96
Medium (group 2)	88	75	100	100	70	. .	. .	. .	84
Mothercraft	33	33	0	. .	. .	. .	. .	. .	29
Multi-purpose services (MPS)	94	100	89	88	100	100	. .	. .	92
Hospices	. .	. .	. .	. .	. .	100	. .	. .	100
Other non-acute	64	. .	. .	. .	. .	. .	. .	. .	64
Principal referral	92	78	93	100	100	100	100	100	90
Rehabilitation	100	. .	. .	100	100	. .	. .	. .	100
Small non-acute	100	83	95	75	68	100	. .	. .	88
Small regional acute	89	83	89	100	57	100	. .	. .	84
Small remote acute	100	. .	80	92	75	. .	. .	100	87
Specialist women's and children's	100	100	100	100	0	. .	. .	. .	91
Unpeered and other	79	86	78	67	79	100	. .	. .	82
Psychiatric	75	100	100	0	0	. .	. .	. .	69
Total public	89	84	88	85	73	100	100	100	86
				Private facilities[(a)]					
Total private	*62*	*53*	*65*	*49*	*73*	*83*	*50*	*100*	*61*
Total	**77**	**70**	**78**	**73**	**73**	**97**	**67**	**100**	**75**

(a) Peer group is not available for private health-care facilities.

Source: AIHW National Coding Workforce Survey 2010.

Non-responding facilities

There were 96 public and 196 private facilities which did not respond to the survey. For public facilities the distribution across peer group and the proportion of separations they represented in 2008–09 are shown in Table 17. Peer group and hospital separations are not available for private facilities.

Overall, the non-responding facilities had 10.9% of total separations in 2008–09 and this was evenly distributed across peer groups (at around 1% or less) except for principal referral hospitals which had 6.4% of total separations. However, the total number of principal referral hospitals (both responding and non-responding) account for 64% of the total separations across all public facilities in the survey and, although only 7 out of 71 of them did not respond, this appears relatively high in the separations figures when they are actually well represented at the peer group level.

Table 17: Survey non-response for public facilities: sector, peer group and proportion of separations, 2010

	Total number of facilities	Number non-responding	% of separations in peer group	% of total separations
Large major cities	22	2	12.4	1.0
Large regional and remote	22	2	11.4	0.7
Medium (group 1)	27	1	3.4	0.2
Medium (group 2)	62	10	15.9	0.7
Mothercraft	7	5	82.2	0.2
Multi-purpose services (MPS)	75	6	4.7	0.0
Other non-acute	11	4	37.9	0.1
Principal referral	71	7	9.9	6.4
Psychiatric	13	4	40.1	0.1
Small non-acute	76	9	64.5	0.1
Small regional acute	109	17	30.9	0.4
Small remote acute	38	5	5.3	0.1
Specialist women's and children's	11	1	49.8	0.6
Unpeered and other	126	23	4.9	0.2
Total	**679**	**96**	**10.9**	**10.9**

Source: AIHW National Coding Workforce Survey 2010.

Survey estimation

When evaluating whether to estimate for missing survey data in the coding workforce survey, two aspects were examined: population estimation (which accounts for units missing from the population of interest) and imputation (which can reduce the level of item non-response, that is, when respondents provide partially completed questionnaires).

Population estimation is designed to be part of the data processing for a sample survey in which the sample has been scientifically selected before the survey is conducted. It involves applying an expansion factor to each responding unit using known data about the entire population. This enables an estimate of the whole population (not just the respondents) to be produced when aggregate output is generated.

In the coding workforce survey, coding managers for all hospitals/day care facilities within the scope of the survey were sent questionnaires and technically, it was a census. However, not every coding manager responded and the result is a data set based on a very large 'self-selecting sample' of the population. Consequently, the group of facilities in the data set is not a random

selection and the usual measures of variability in survey results (standard errors) are not a suitable means of gauging the reliability of results.

A non-random respondent group also results in some bias in the group's response and underlying characteristics, and the estimation process can only adjust for characteristics which are known for the entire population. Characteristics which are known only for respondents, including any bias in them, will be expanded by the estimation process and not change to any skewness in their profile.

Regarding imputation, the questionnaires received had very little missing information and this could be managed through standard data editing and cleaning.

In summary, survey estimation is not a suitable path because the responding population is not random. Further, because of the very high response to the survey overall and the very low incidence of partially completed questionnaires, the need for estimation is low and would not enhance either the data set or the analysis.

Data collection issues

Before collecting data about CCs and HIMs, the following methodological and operational issues needed to be addressed:

- identifying the target population
- double counting coders
- scope of the data collection
- reference period.

Further, the options for addressing these issues were limited by the time constraints associated with the overall project.

Identifying the target population

As a workforce, CCs have some characteristics which make them difficult to count accurately. An individual Clinical Coder can work in more than one health-care facility, and in both the private and public sectors. Most do this by working as employees of multiple facilities, while others are employees of contract coding companies or are self-employed. HIMs however, seem to move between facilities to a lesser extent, making them easier to measure as a group.

Unlike some other occupations in the health sector, such as nurses, there is no national register of CCs or HIMs. There is a professional association for each of these occupations; however, not all people employed in these professions are members of the associations.

Therefore, the way to find members of the coding workforce needed to be via the health-care facilities for which they code. It was recognised that the most detailed information would be obtained by individually identifying and surveying all CCs and HIMs. However, this was assessed as being not feasible within the project timeline. Instead, one person in each health-care facility was contacted to provide information about all the CCs for that facility. That person was the coding manager or supervisor, and usually an HIM.

The major difficulty with this approach was avoiding double counting coders working in more than one facility or those contracted who would be identified at the facility and through the company employing them.

Double counting

By conducting a facility-based survey, double counting CCs was inevitable because of the highly mobile/flexible way in which they work. In order to limit the double counting, the survey of health facilities included CCs who were employees and excluded CCs working for contract coding companies. The latter group were identified through their employer and excluded from the count for any facility for which they coded.

Overall, some CCs (mainly hospital employees) were counted more than once, while others (self-employed contract CCs) were excluded from the count. Therefore, an FTE figure has been calculated from their hours worked in order to provide a measure which accounts for the double counting.

However, some estimation of the 'headcount' of workers has been included to enable their characteristics as a group to be examined. The figures were difficult to produce from the survey and are based on a manual filtering of survey data aimed at removing duplicates. Headcounts in Tables 1 and 5 must be considered estimates of counts because it is possible not all duplicates were removed.

Scope of the data collection

Clinical Coders

Information was collected by survey about CCs employed by health-care facilities and by five large private agencies which contract out their clinical coding services. All CCs employed by health facilities were in-scope for the survey. CCs employed by small coding businesses were excluded because of the project time constraints. Also generally excluded were self-employed, single coder operations unless they were identified as being the only coder for a facility.

Health Information Managers

Health Information Managers working in health facilities and directly in the coding (and related) processes were in-scope. People work as HIMs in a much larger range of agencies than CCs, including all levels of government and health insurance companies. For the purposes of this project, the work performed by HIMs who are not employed in health facilities or are not directly involved in the coding process, is assumed to be ‘secondary’, or indirect involvement, rather than ‘primary’, or direct involvement, in the clinical coding processes. That is, they may use the data resulting from the clinical coding that occurs in health facilities but have no involvement in the clinical coding process itself. These HIMs were excluded from the coding workforce profile in this report.

Health facilities

To enable some comparisons over time, information collected for the 2010 survey of health facilities was based on the same scope as the 2002 study of CCs by McKenzie and Walker (2003). That is, hospitals/day care facilities which supply unit record morbidity data to their respective state/territory health departments. Facilities which did not have beds/admitted patients, such as community-based care, were excluded from the frame. The rationale was that they were unlikely to have CCs on staff and the time and resources would be better used in targeting facilities which did.

Further, health facilities with beds/admitted patients were a focus of the study in order to compare the volume of coding work (using health facility separations data) with the FTE numbers in the workforce who were undertaking the clinical coding.

Reference period

Data on health-care facility separations, which have been used in the analysis of survey data, were obtained from administrative sources. The most recent administrative data available relate to the 2008–09 financial year and in order to align with this, the survey reference period was also the 2008–09 financial year.

Limitations of the survey data

Conducting a survey of health facilities rather than a survey of CCs and HIMs, has effects on the utility of the data. First, a headcount of CCs and HIMs is very difficult to produce from the data because of the extremely mobile nature of the work. Second, the aggregate data by facility which was collected does not allow the characteristics of the coding workforce to be cross-tabulated, limiting the data to broad level analysis, only. Third, comparisons with earlier surveys are limited because the collection unit in earlier data was the CCs themselves, as well as their managers.

To minimise the headcount problem, some filtering of the survey results has enabled an estimate to be produced for each state and territory. However, it is likely that not all the double counting was adjusted and the figures should be treated as estimates only.

To enable some quantification of the workforce load, a derived FTE figure has been used for the main analysis. The FTE was produced by

Estimated total hours ÷ 38 hour 'standard week'.

Monthly hours were collected in the survey because coding hours per week fluctuate considerably, due to the monthly coding deadlines. The standard week was converted to a monthly figure by using a '46-week year', to adjust for leave periods and public holidays.

It should be noted that some information reported in the survey, such as hours worked, will have been estimated rather than based on records.

Attachment 1: Survey questionnaire

Coding Workforce Survey

The information captured in this survey relates to all employees in your health facility who are clinical coders and health information managers actively involved in the production of coded data, including yourself. The definitions used for this survey are below, as defined in the ANZSCO workforce codes.

A **clinical coder** is someone who assigns codes to narrative descriptions of patients' diseases, operations and procedures in accordance with the ICD-10-AM classification to allow for storage, retrieval and analysis of health data.

A **health information manager** is someone who plans, develops, implements and manages health information services, such as patient information systems, and clinical and administrative data, in order to meet medical, legal, ethical and administrative requirements of health care delivery.

The survey **excludes:**

1. clinical coders engaged from external coding contractors; and
2. health information managers not working in a coding-related role.

Some people undertake tasks which relate to **both** clinical coding and health information management and for this survey they should be assigned to the occupation in which they worked the **most hours**.

If you are responsible for providing coding services for more than one hospital or day procedure facility, you will need to complete a separate survey form for each facility. There should be a link below for each facility you have been identified as responsible for. If this list is not correct, please contact Vicki Bennett at Vicki.bennett@aihw.gov.au urgently.

- Name of Facility 1
- Name of Facility 2 etc

(continued)

Coding Workforce Survey

Please confirm this is the name of the facility for which you are filling out this form.

Facility name (auto-populated)

○ Yes

○ No

If no, please list the name of the hospital or day procedure facility

Please note: data will be produced as aggregate statistics only, and individual facilities will not be identified in the analysis or the reporting of results

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(continued)

Coding Workforce Survey

1. Including yourself, but excluding clinical coders from external contracting companies, how many employees (including casual/non-ongoing staff) were clinical coders and health information managers at 30 June 2009?

Include people who are not primarily coders but who do coding work.
As well as people doing clinical coding work, include people involved in related activities, such as coding audits and training coders.

	Clinical Coders	Health Information Managers
Number of males		
Number of females		
Total	0	0

2. At 30 June 2009, how many of those clinical coders and health information managers were in each of the following age groups?

	Clinical Coders	Health Information Managers
< 25 years		
25 - 34 years		
35 - 44 years		
45 - 54 years		
Over 54 years		

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(continued)

Coding Workforce Survey

3. The following relates to the highest level of training in clinical coding and/or health information fields.

How many of the staff doing clinical coding and health information management in your health facility have the following as their highest level of training?

	Clinical Coders	Health Information Managers
On-the-job training		
Training from Health Information Management Association of Australia (HIMAA) or Open Training Education Network (OTEN)		
A degree in Health Information Management or similar field		
A post-graduate qualification in Health Information Management or similar field		
Other		

If other, please specify:

4. How many people doing clinical coding have less than 2 years experience in coding work?

Include people who are not primarily coders but who do coding work

Clinical Coders and Health Information Managers

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(continued)

Coding Workforce Survey

5 How many of the clinical coders and health information managers were working part-time at 30 June 2009?

Clinical Coders	Health Information Managers

6. The following is about the number of hours usually worked per month by clinical coders and health information managers, including people who are not primarily coders but who do coding work.

	Total Clinical Coders' hours	Total Health Information Managers' hours
a) How many hours per month do the clinical coders and health information managers spend doing clinical coding and related processes, such as coding audits and coding training? *If hours vary from month to month, please provide an average.*	*Please provide one figure which is the total of all hours by all coders, combined.*	*Please provide one figure which is the total of all hours by all HIMs, combined.*
b) How many hours per month do the clinical coders and health information managers spend doing other work, ie work not related to coding? *If hours vary from month to month, please provide an average.*	*Please provide one figure which is the total of all hours by all coders, combined.*	*Please provide one figure which is the total of all hours by all HIMs, combined.*

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(continued)

Coding Workforce Survey

7. How many clinical coder or health information manager positions were vacant at 30 June 2009?

(Please record the full-time equivalent (FTE) number).
If there were no vacancies, please record zero.

Clinical Coder positions FTE	Health Information Manager positions FTE

8 During the financial year ending 30 June 2009, did you utilise any external clinical coding services supplied by contracting companies?

- ○ Yes
- ○ No

9. The *following* question is for *private* hospitals and day procedure facilities, *only*:

	Beds and/or chairs
How many beds are available in your facility? *For day hospital facilities, include chairs, trolleys, recliners and cots which are used mainly for post-treatment recovery purposes.*	

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Coding Workforce Survey

62%

Please use the space below to provide any comments and/or recommendations you may have about shortages in the coding workforce or other related issues that you would like to contribute to the analysis and planning of the future coding workforce.

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Attachment 2: Detailed supplementary tables

Coding Workforce Survey

In this report, estimating the size of the coding workforce focuses on the FTE measure because workers are highly mobile and many work in more than one health-care facility. The FTE measure takes account of the known double counting of workers who were employed in more than one facility. However, a 'headcount' of workers enables their characteristics as a group to be examined and, in order to provide a broad level profile, Table 18 presents *estimates* based on survey data which have been filtered at the facility level. Responses to survey questions and respondents' comments were examined individually and CCs found to be reported against more than one facility were reassigned to just one.

The figures are estimates only, because it is possible that not all duplicates were removed. As well, the figures do not include any estimate of worker numbers employed in facilities which did not respond to the survey. It should be noted too, that these estimates exclude self-employed contract coders because they were out of scope of the survey. The resulting figures appear to be underestimations of the headcount. For this reason, the percentage distribution is shown, rather than counts, because it provides a more reliable overview of workforce characteristics and, with the high survey response, it is reasonable to assume that the CCs and HIMs in the responding group were a fair representation of the overall workforce employed in health facilities.

The data presented in Table 19 through to Table 22 relate to the characteristics of responding health-care facilities in the survey. The tables are based on counts of facilities and their characteristics. Staff numbers are presented as FTE measures in order to account for double counting (see introduction above): coding staff figures were calculated from hours worked and vacant positions were collected as FTEs in the survey.

Table 18: Estimated per cent distribution of characteristics of Clinical Coders and Health Information Managers employed in public sector health-care facilities, states and territories, 2009

Characteristic[(a)]	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Sex									
Male	34	23	20	7	6	4	2	2	99
Female	294	309	216	96	108	20	15	12	1,076
Age group (years)									
<25	5	20	16	7	—	—	—	—	49
25–34	46	90	39	8	10	4	—	1	200
35–44	87	91	58	31	16	3	4	3	293
45+	183	104	123	57	78	17	13	10	589
Qualifications									
On-the-job training	25	4	6	19	10	11	2	0	78
Training from HIMAA or OTEN	166	73	150	46	94	21	11	12	576
Degree or higher qualification in Health Information Management or similar field	130	231	68	36	2	3	3	2	478
Other	10	6	10	7	0	1	1	—	35
Less than 2 years experience	37	51	44	30	8	3	2	2	177
Working part-time	160	167	71	30	50	12	5	1	497
Total	**328**	**332**	**236**	**103**	**114**	**24**	**17**	**14**	**1,175**

(a) Total number includes 7 non-stated responses.

Source: AIHW National Coding Workforce Survey 2010.

Table 19: Private sector health facility characteristics, by size, June 2009

Size (number of beds)	Number of responding facilities	Estimated monthly coding hours	FTE staff coding per month[(a)]	FTE CC and HIM positions vacant at 30 June 2009	Count of facilities with part-time staff	Per cent of health-care facilities using contract coding services
10 or less	80	2,001	13.7	3.3	59	16.3
11–50	78	4,205	28.9	1	65	22.1
51–100	53	6,919	47.5	4	43	34.0
101–200	42	9,847	67.6	11	34	42.9
201–500	10	5,806	39.9	7	9	50.0
More than 500	4	8,636	59.3	11	4	75.0
Not stated	38	806	5.5	2.13	11	18.4
Total	**305**	**38,220**	**262.4**	**39.43**	**225**	**26.6**

Source: AIHW National Coding Workforce Survey 2010.

Table 20: Characteristics of health-care facilities: ASGC remoteness area, June 2009

ASGC	Number of responding facilities	Estimated monthly coding hours	FTE staff coding per month[(a)]	FTE CC and HIM positions vacant at 30 June 2009	Percent of facilities with part-time staff	Per cent using contract coding services
Major cities	351	89.537	614.7	85.6	74.6	28.8
Other	531	40912	280.9	89.8	52.4	13.6
Not stated	7	278	1.9	2.0	42.9	28.6
Total	**889**	**130,727**	**897.4**	**177.4**	**61.1**	**19.7**

Source: AIHW National Coding Workforce Survey 2010.

Table 21: Characteristics of health-care facilities: sector, states and territories, June 2009

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Public sector									
Have coding staff with less than 2 years experience	171	102	83	62	43	17	2	3	483
Have part-time CCs/HIMs	118	88	49	12	35	11	2	1	316
Used contract coding services	20	20	18	22	10	1	2	1	94
Private sector									
Number with less than 2 yrs experience [(a)]	89	61	59	19	32	5	2	1	269
Number working part-time[(a)]	71	57	47	12	32	4	2	1	227
Used contract coding services	33	18	16	9	2	2	1	—	81

(a) Total includes 1 not-stated response.

Source: AIHW National Coding Workforce Survey 2010.

Table 22: FTE Clinical Coder and Health Information Manager positions vacant: sector and ASGC remoteness area, June 2009

Sector and ASGC	Clinical Coder positions	Health Information Manager positions	Total
Public			
Major cities	33.67	23.4	57.07
Other	37.8	43.13	80.93
Total	*71.47*	*66.53*	*138*
Private			
Major cities	17.1	11.43	28.53
Other	3.3	5.6	8.9
Not stated	1	1	2
Total	*21.4*	*18.03*	*39.43*

Source: AIHW National Coding Workforce Survey 2010.

Census

Notes on Census data

In the 2001 ABS Census, occupation data were classified to the ABS ASCO, 2nd edition, whereas the 2006 census data were coded to ANZSCO, a newer classification which enables coding of much more detailed occupations. However, there was no change to the Coding Clerk or HIM occupations and data from the two Census years are comparable. From both classifications, the occupation of Coding Clerk is used in the tables below and is defined as the specialisation of Medical Record Clerk and Clinical Coder combined. Separate figures for Clinical Coders are not available.

In each Census there is a relatively small proportion of respondents who do not supply enough information to determine a precise occupation. There are also respondents for whom an occupation cannot be coded. These factors result in an undercount of people in individual occupations. Counts of persons in an occupation may vary from one table to the next and therefore, totals may not be the same in all tables. Reasons for this include a variation in response rates to individual questions, resulting in some persons being excluded from analysis, and the ABS routinely applies small random changes to cells in order to protect confidentiality; this leads to small differences in total values between tables.

Table 23: Number Coding Clerks and Health Information Managers, by sex and age group, 2001 and 2006

Sex and Age group	Coding Clerks 2001	Coding Clerks 2006	HIMs 2001	HIMs 2006
Male				
<25	38	57	12	8
25–34	38	47	31	57
35–44	59	56	31	40
45–54	39	65	22	50
55+	16	42	3	9
Female				
<25	143	180	113	92
25–34	280	273	262	378
35–44	499	473	238	296
45–54	511	642	125	247
55+	182	349	28	77
Total				
<25	181	237	125	100
25–34	318	320	293	435
35–44	558	529	269	336
45–54	550	707	147	297
55+	198	391	31	86

Note: Totals may not equal the sum of their parts as cells were randomly adjusted to avoid the release of confidential data.

Source: ABS Census of Population and Housing 2001 and 2006, data available on request.

Table 24: Coding Clerks and Health Information Managers, by sector and qualifications, 2001 and 2006

Sector, Qualifications	Coding Clerks 2001	Coding Clerks 2006	HIMs 2001	HIMs 2006
Public				
Postgraduate degree level	—	13	—	67
Graduate Diploma and Graduate Certificate level	—	12	—	52
Bachelor Degree Level	138	173	374	481
Advanced Diploma and Diploma level	—	132	—	86
Certificate level	33	259	3	28
Not stated/inadequately described	135	116	15	10
Total Public	*306*	*705*	*392*	*724*
Private				
Postgraduate degree level	—	16	—	61
Graduate Diploma and Graduate Certificate level	—	16	—	29
Bachelor Degree level	95	193	182	287
Advanced Diploma and Diploma level	0	107	—	56
Certificate level	22	165	3	16
Not stated/inadequately described	73	106	8	12
Total Private	*190*	*603*	*193*	*461*
Total				
Postgraduate degree level	—	29	—	128
Graduate Diploma and Graduate Certificate level	—	28	—	81
Bachelor Degree level	233	366	556	768
Advanced Diploma and Diploma level	0	239	—	142
Certificate level	55	427	6	44
Not stated/inadequately described	211	222	23	22
Total	*499*	*1,314*	*585*	*1,185*

Notes:

1. Total for 2001 includes 3 Coding Clerks who did not state their sector and for 2006, 6 Coding Clerks who did not state their sector.

2. Totals may not equal the sum of their parts as cells were randomly adjusted to avoid the release of confidential data.

Source: ABS Census of Population and Housing 2001 and 2006, data available on request.

Table 25: Coding Clerks and Health Information Managers, by sector and hours worked, 2001 and 2006

Sector and hours worked	Coding Clerks 2001	Coding Clerks 2006	HIMs 2001	HIMs 2006
Public				
0–15	112	172	42	75
16–24	156	208	52	75
25–34	176	182	40	75
35–40	560	561	282	372
41–48	50	47	87	91
49+	39	39	60	70
Hours not stated	15	19	4	9
Total Public	*1,108*	*1,228*	*567*	*767*
Private				
0–15	109	139	31	42
16–24	129	183	37	50
25–34	121	182	45	55
35–40	284	365	122	231
41–48	23	35	42	54
49+	16	31	35	48
Hours not stated	8	13	3	3
Total Private	*690*	*948*	*315*	*483*
Total				
0–15	221	311	73	117
16–24	289	391	89	125
25–34	297	364	85	130
35–40	849	926	404	603
41–48	73	82	129	145
49+	55	70	95	121
Hours not stated	23	36	7	12
Total	*1,807*	*2,180*	*882*	*1,253*

Notes:

1. Totals may not equal the sum of their parts as cells were randomly adjusted to avoid the release of confidential data.

2. 2001 Total includes 9 non-stated numbers for Coding Clerks and for 2006, 4 non-stated numbers for Coding Clerks.

Source: ABS Census of Population and Housing 2001 and 2006, data available on request.

Attachment 3: Classifications

Table 26: Public hospital peer group classification

Peer group	Subgroup	Definition
Principal referral and Specialist women's and children's hospitals	Principal Referral	Major city hospitals with >20,000 acute casemix-adjusted separations, and Regional hospitals with >16,000 acute casemix-adjusted separations per annum.
	Specialist women's and children's	Specialised acute women's and children's hospitals with >10,000 acute casemix adjusted separations per annum.
Large hospitals	Major city	Major city acute hospitals treating more than 10,000 acute casemix-adjusted separations per annum.
	Regional and Remote	Regional acute hospitals treating >8,000 acute casemix-adjusted separations per annum, and Remote hospitals with >5,000 casemix-adjusted separations.
Medium hospitals	Group 1	Medium acute hospitals in Regional and Major city areas treating between 5,000 and 10,000 acute casemix-adjusted separations per annum.
	Group 2	Medium acute hospitals in Regional and Major city areas treating between 2,000 and 5,000 acute casemix-adjusted separations per annum, and acute hospitals treating <2,000 casemix-adjusted separations per annum but with >2,000 separations per annum.
Small acute hospitals	Regional	Small Regional acute hospitals (mainly small country town hospitals), acute hospitals treating <2,000 separations per annum, and with less than 40% non-acute and outlier patient days of total patient days.
	Remote	Small Remote hospitals (<5,000 acute casemix-adjusted separations but not 'multipurpose services' and not 'small non-acute'). Most are <2,000 separations.
Sub-acute and non-acute hospitals	Small non-acute	Small non-acute hospitals, treating <2,000 separations per annum, and with more than 40% non-acute and outlier patient days of total patient days.
	Multi-purpose services	
	Hospices	
	Rehabilitation	
	Mothercraft	
	Other non-acute	For example, geriatric treatment centres combining rehabilitation and palliative care, with a small number of acute patients.
Unpeered and other hospitals		Prison medical services, dental hospitals, special circumstance hospitals, Major city hospitals with <2,000 acute case mix-adjusted separations, hospitals with <200 separations etc.
Psychiatric hospitals		

Source: AIHW Australian hospital statistics 2007–08.

Table 27: Structure of ASGC remoteness areas

	Value	Abbreviation
Major cities of Australia	0	MC
Inner Regional Australia	1	IR
Outer Regional Australia	2	OR
Remote Australia	3	R
Very Remote Australia	4	VR

Source: ABS Outcomes of ABS views on remoteness consultation 2001.

Table 28: Inclusions of qualifications in The Australian Coder Workforce 2002: a report of the National Clinical Coder Survey

2010 survey definitions	Inclusions from 2002 report
On-the-job training	On-the-job
Training from Health Information Management Association of Australia (HIMAA) or Open Training Education Network (OTEN)	Through HIMAA distance education course through HIMAA accelerated course and through OTEN coding course
A degree in Health Information Management or similar field	As part of undergraduate HIM/MRA degree
A postgraduate qualification in Health Information Management or similar field	As part of HIM postgraduate degree
Other	Health department training

Source: The Australian Coder Workforce 2002: a report of the National Clinical Coder Survey; AIHW National Coding Workforce Survey 2010.

Attachment 4: Free text comments from contract coding company managers

Table 29: Comments/ recommendations from five large contract coding companies – telephone interviews, 2010

Issues/problems encountered

Large interest in Victorian private facilities as many don't have proper coding modules in their PAS for collecting and submitting data and existing data submission processes are changing to require electronic submission only.

Harder and harder to get staff.

Hospitals want experienced staff, and see it as an 'expert' service:

- don't want to 'hold someone's hand'
- returning workforce, need to get them to do refresher course
- allow them to work flexible hours (9–3).

Quality an issue.

Staff have kids and don't travel.

Training

1st priority – throughout should be training/quality for all levels of coders.

One provider noted that they take people with medical backgrounds like nurses and medical sciences graduates and train them by speciality. These staff are required to do an HIMAA course and if they pass they are reimbursed half the fees.

Plenty of people doing the HIMAA course but need more training. Won't take them on as a rule.

Affordability – $2,500 for HIMAA course.

Train and then leave.

Some government subsidises are available for trainees, up to $4,000, but the trainee must already be in the job.

Pay

Pay rates range from $35/hour to $70/hr, and some paid on the state award rate

Budgets – cost versus experience

Workplace practices and employment conditions

Every Wednesday from 3–5pm they have online training using Skype, which is used to discuss interesting examples.

Buddy sessions with 10 coders.

Coding meetings 2–3 times a year.

PICQ audits each month.

Scanning would be good but is seen as expensive.

Allows Innovation – remote coding from home but need good internet and PC.

Use existing workforce more flexibly.

Contract staff – fill urgent short-term need and are more convenient.

Only employ casuals or subcontractors.

Older HIMs like to work for private company – more productive. Some subcontract, some employed.

Employ experienced coders with minimum of a couple of years' experience.

Quotes

'If I want Coders I'm going to have to create them myself'.

'In my day…new grads all went to a job to code'.

Source: AIHW National Coding Workforce Survey 2010.

Appendix 4 – Future workforce projection calculations

There is no simple formula for projecting the coding workforce requirements for the future as there are a significant number of factors, many of which are not yet well established, that will influence both the supply of and demand for these workers. Individual health services will differ in their ratios of CCs, HIMs and CSs due to variation in their funding models, specialty profile, volume of services, location, and how the services are managed locally.

For the purposes of this report, a number of different calculations have been undertaken estimating the additional number of coders required due to a range of anticipated changes in the health sector as outlined in Section 3 of this report. These include:

- growth in separations due to an ageing population and rising chronic disease levels
- implementation of ABF for admitted and non-admitted hospital services
- e-health implementation impacts
- national health reform, including the establishment of LHNs.

Baselines and assumptions

For the purposes of calculating the workforce needs for the future a number of assumptions and baselines need to be set. These are not definitive, and could be changed given any further information or decisions about how policies are to be implemented, but they do provide a basis on which to make the calculations outlined below. The assumptions are as follows.

- A 5-year period from 2009–10 to 2013–14 to project the workload increases and changes
- All figures are reported as whole numbers
- Annual coding hours/year/FTE equivalent coder has been calculated using the following methodology:
  - annual coding hours = 38 hours/week x 46 working weeks/year = 1,748 hours
- Historical numbers of separations and OOS, as published in the Australian Hospital Statistics
- A coding throughput rate of 4 records per hour, based on the results of this survey (see Table 31), which is slightly lower that the rate of 4.3 calculated in the 2002 report (McKenzie & Walker 2003)
- An attrition rate of 5% per annum has been used, based on the average coder turnover rate in Queensland Health of 5.3% per annum over the previous 5 years.

No assumptions have been made for the impact of expanded roles based on health reform changes.

Calculations

Inflows expected = 1,792 people

Although it was found that 50.1% of the coding workforce surveyed are currently working part-time and that this figure has continued to rise over the previous 8 years (see Figure 10), there is no current estimation of how many hours these staff are working. Thus it is not possible to estimate the number of FTE equivalent coders that the subsequent calculations will add to the workforce requirements, but it can be assumed to be less than the number of people trained.

Additional HIMs = 300 people

Due to the decrease in the number of academic institutions providing training in HIM, it is assumed that the number of HIMs graduating each year will remain substantially unchanged without further intervention. Thus for the purposes of this report, the calculation of new HIMs is as follows:

2 university programs each graduating 30 students/year x 5 years = **300 HIMs.**

Additional CCs = 1,492 people

HIMAA and OTEN have both demonstrated some growth in the number of new coders trained over the proceeding decade (see Figure 7), with a combined average growth rate of 16.6% in the previous 5 years. If it is assumed that this growth is maintained at the current rate the number of additional CCs trained over the next 5-year period would be **1,492 people** (Table 30).

Outflows expected = 316 people

With 51.8% of the existing coding workforce over the age of 45 years (see Table 12), and with this figure increasing over the preceding 8 years, as well as almost two-thirds of all those learning to code commencing at age 40 years or over (Figure 9), it can be expected that there will be significant attrition in the coding workforce over the next 5 years. This may be due to retirement, or a reduction in hours as coders move towards retirement, but over a 15-year period it would be expected that approximately 50% of the existing workforce will have retired.

Table 5 estimates the current FTE coders as 897.4, with an additional 177.4 FTE vacancies, giving a current national figure of 1,075 FTE coders and HIMs. Given the supplementary role of contract coders, and the small non-response rate to the survey, the figure calculated below, based on the number of FTE staff required to code the number of annual separations nationally of 1,265 FTEs, seems a reasonable estimate (see calculation below).

Using a conservative attrition rate of 5% per annum, as per the Queensland Health report, the numbers of coders leaving the workforce can be calculated as follows:

1,265 FTEs x 5% x 5 years = 316 FTEs.

This makes no estimation of the potential impact of reduced work hours or outward migration.

FTEs required to meet current and future needs = 3101 (high) or 1,757 (low)

Staffing required to code the existing episodes of care = 1,265 FTEs

Using the national average separations coded/hour calculated from this study as 4, and the hours worked by a coder coding full-time in a year as 1,748, an FTE coder is assumed to code 6,440 separations per year, i.e.:

4 records x 38 hours x 46 weeks = 6,440 records coded per year.

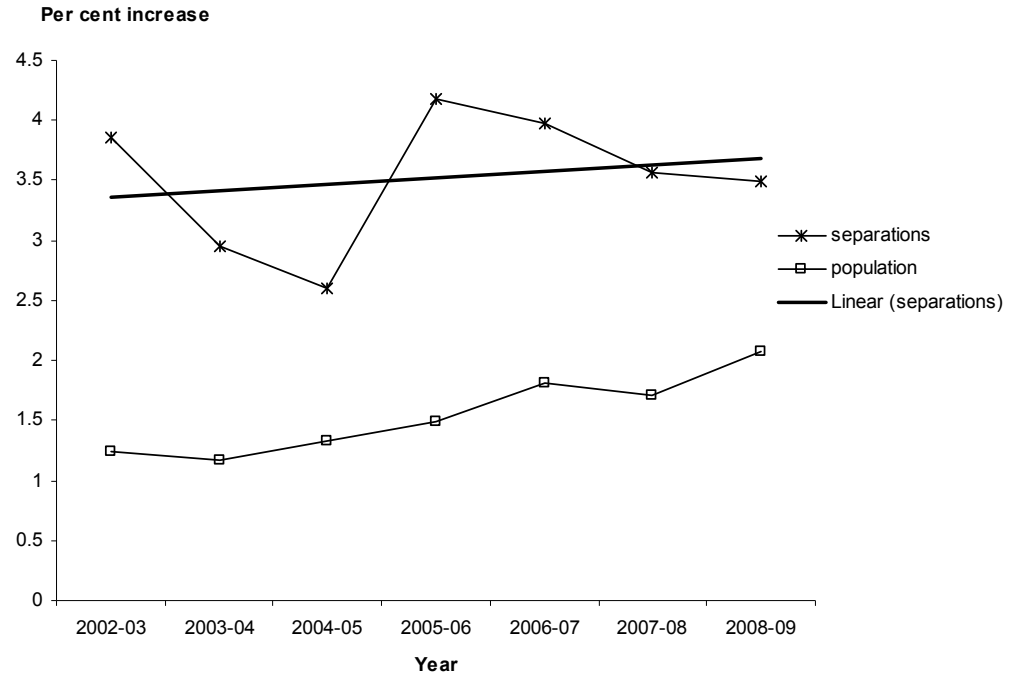
Given the total number of separations for 2008–09 was 8,148,448, the total number of FTEs required to code this number of separations is calculated as:

8,148,448 separations /6,440 separations per FTE = 1,265 FTEs.

Staffing required to code the anticipated increase in admitted episodes of care = 193 FTEs

Over the period 2001–02 to 2008–09 there was, on average, a 3.5% increase each year in the number of hospital separations nationally (see Table 30 and Figure 14). Assuming this trend continues to be relatively stable, the 2008–09 figure of 8,148,448 will have risen to 9,677,800 by 2013–14; an increase of 285,196 separations in the first year, rising to 327,269 additional separations requiring coding in the fifth year.

This current trend line is assumed to be sufficient to adjust for future population ageing, increased incidence of chronic disease and increased utilisation of services.



Note: Population data for years 2006–07, 2007–08 and 2008–09 are preliminary.

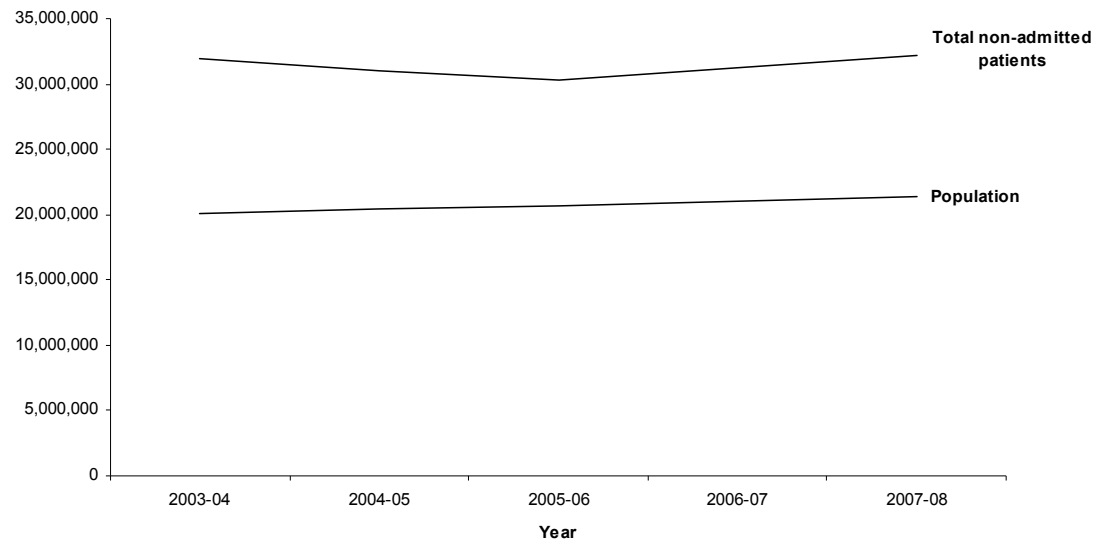
Source: ABS Australian Demographic Statistics 2009, AIHW Australian hospital statistics 2005–06, 2006–07 and 2007–08, AIHW Hospital Morbidity Database.

Figure 14: Percent increase in national hospital separations and population, 2002–03 to 2008–09

Using the figure calculated above for the number of records coded per year per FTE coder as 6,440, Table 30 below shows the numbers of FTE coders required in 2009–10 as 1,310 growing to 1,503 by 2013–14. Even if there is no change in the environment, this equals an additional **193** coders required over the next 5 years.

Staffing required for ABF of OOS= 1,493 (high) or 149 (low)

From 2003–04 to 2007–08 there were on average 31,323,335 OOS per year nationally with no apparent increase or decrease in these numbers over the 5 years (Figure 15), thus for the purposes of this analysis, the number of OOS is assumed to remain constant into the future.



Note: Population data for years 2006–07, 200–-08 and 200–-09 are preliminary.

Source: ABS Australian Demographic Statistics 2009; AIHW Australian hospital statistics 2005–06, 2006–07 and 2007–08; AIHW Hospital Morbidity Database.

Figure 15: National total non-admitted patients and population, 2003–04 to 2007–08

The following calculations are based on the assumption that each OOS takes 5 minutes to code, that is, 12 OOS can be coded per hour. This assumption is made based on expert coder advice.

High range calculations

Assuming that all OOS will require coding:

31,323,335 OOS/12 records per hour = 2,610,278 hours of coding time

1 FTE coder = 1,748 hours per year

To code all OOS = 2,610,278/1,748 = 1,493 FTEs.

Low range

If OOS coding is automated in some way or is undertaken by clinical staff, and only a sample of records are 'checked', for example 10%, the number of extra FTEs required may only be **149**. However, it would probably follow that the skill level of this group may need to be higher as they would be performing an auditing function.

E-health implications and LHN = 150 FTEs

In the Queensland Health report is was assumed that an additional 30 FTEs would be required, based on two FTE staff per health service district, for implementation of expanded roles around e-health and technology and the implementation of ABF. This includes an extra four FTEs for corporate and state-wide functions.

Using the Queensland figures as a model, and based on the fact that Queensland delivers approximately 20% of the total national separations, the additional FTEs required nationally could be calculated as:

30 x 5 =**150 FTEs.**

However, this may be a low end estimation if the new unit of ABF, performance reporting and e-health management will be the LHN, as proposed in the NPA. The number of staff required will be dependant on the number of LHNs created, which is anticipated to be larger than the existing number of districts/area health services.

Increased staffing levels for ABF on admitted patients = ?

Due to the national roll-out of ABF, the focus on the quality and accuracy of the coded data will be increased. This can already be seen in the number of jurisdictions who have outlined plans to commence state-based audits, and the introduction of coding auditor and educator roles. The increased requirement for auditing, reporting and education will create a need for more skilled coders with extended responsibilities.

Victoria provides an existing case study of a coding workforce that has adapted to the use of coded data for case-based payment. The high level of qualifications of those undertaking coding (>75% of all coding performed by HIM university graduates) (Figure 3), and investment made in auditing and education, may be an indication of the need that the other jurisdictions will face with the implementation of ABF. This is will be a significant challenge given the current decline in the number of HIM graduates.

Attachment 1: Projection calculation tables

Table 30: Projected numbers of CCs trained through existing courses

Year	HIMAA	OTEN	Total	% increase on previous year	Average % increase over 5 years
2004	73	19	92	. .	. .
2005	77	25	102	10.9	. .
2006	80	19	99	-2.9	. .
2007	107	33	140	41.4	. .
2008	150	28	178	27.1	. .
2009	161	25	186	4.5	**16.2**
2010	. .	. .	216	. .	. .
2011	. .	. .	251	. .	. .
2012	. .	. .	292	. .	. .
2013	. .	. .	339	. .	. .
2014	. .	. .	394	. .	. .

Note: Total projected CCs trained 2010–14 = 1,492 people.

Source: HIMAA and OTEN.

Separation Projections

Table 31: Hospital separations by state and projected annual increases and FTE Clinical Coders, 2001–02 to 2014–15

Year	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Grand Total	Annual increase	Average annual increase
2001–02	1,953,347	1,669,697	1,287,794	624,511	560,064	150,136	89,131	63,491	6,39,8171	**3.86%**	
2002–03	2,000,150	1,800,946	1,304,330	648,096	571,110	148,191	93,624	78,537	6,644,984	**2.95%**	
2003–04	2,037,680	1,868,335	1,361,060	657,439	585,341	148,885	101,328	81,157	6,841,225	**2.60%**	
2004–05	2,091,444	1,927,696	1,410,607	691,975	577,425	135,720	96,805	87,178	7,018,850	**4.18%**	
2005–06	2,186,362	1,992,825	1,461,848	714,353	597,864	157,118	105,836	95,777	7,311,983	**3.98%**	
2006–07	2,270,505	2,075,659	1,526,644	740,059	619,971	162,655	110,397	97,027	7,602,917	**3.56%**	
200–-08	2,324,657	2,153,463	1,612,264	783,620	611,927	169,301	115,919	102,795	7,873,946	**3.49%**	**3.52%**
2008–09	2,413,183	2,190,644	1,697,281	829,595	630,040	153,119	125,636	108,950	8,148,448	**Annual increase**	**No. of FTE coders**
2009–10	Projections	. .	. .	. .	. .	. .	. .	. .	8,433,644	**285,195.7**	**1,310**
2010–11	Projections	. .	. .	. .	. .	. .	. .	. .	8,728,821	**295,177.5**	**1,355**
2011–12	Projections	. .	. .	. .	. .	. .	. .	. .	9,034,330	**305,508.7**	**1,403**
2012–13	Projections	. .	. .	. .	. .	. .	. .	. .	9,350,531	**316,201.5**	**1,452**
2013–14	Projections	. .	. .	. .	. .	. .	. .	. .	9,677,800	**327,268.6**	**1,503**

Note: Separations are reported by state of hospitalisation and will include patients normally resident in another state/territory.

Source: Australian hospital statistics 2005–06, 2006–07 and 2007–08; AIHW Hospital Morbidity Database.

Table 32: Coding workforce[a] throughput, by peer group and state, at June 2009

Peer group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
				FTEs per month[b]					
Principal referral and Specialist women's and children's hospitals	129.5	72.0	116.7	18.2	26.6	6.3	8.8	9.5	387.6
Large hospitals	23.0	24.7	5.9	4.4	3.1	1.1	3.7	. .	65.9
Medium hospitals	24.1	14.4	9.0	2.8	7.9	. .	. .	. .	58.2
Small acute hospitals	5.8	4.5	3.2	3.7	0.7	—	. .	1.3	19.3
Sub-acute and non-acute hospitals	6.9	2.0	1.7	3.0	1.1	—	. .	. .	14.7
Unpeered and other hospitals	2.1	3.1	0.8	—	—	—	. .	. .	6.3
Psychiatric hospitals	1.3	—	—	. .	. .	. .	. .	. .	1.4
Total	**192.7**	**120.8**	**137.6**	**32.3**	**39.5**	**7.5**	**12.5**	**10.8**	**553.5**
				Average separations per month[c]					
Principal referral and Specialist women's and children's hospitals	76,959	50,088	48,707	9,998	16,347	2,979	5,714	6,675	217,469
Large hospitals	13,237	17,277	4,060	5,834	1,335	755	1,775	. .	44,273
Medium hospitals	14,197	6,749	4,584	2,118	3,155		. .	. .	30,802
Small acute hospitals	3,261	1,829	2,274	2,206	526	155	. .	756	11,007
Sub-acute and non-acute hospitals	2,458	1,775	1,172	828	516	56	. .	. .	6,805
Unpeered and other hospitals	307	970	185	74	26	111	. .	. .	1,673
Psychiatric hospitals	414	0	12	. .	. .	. .	. .	. .	427
Total	**110,833**	**78,687**	**60,996**	**21,059**	**21,905**	**4,056**	**7,489**	**7431**	**312,455**
				Average throughput per month					
Principal referral and Specialist women's and children's hospitals	594	696	418	548	614	473	651	705	561
Large hospitals	575	699	685	1334	432	687	479	. .	672
Medium hospitals	590	470	508	764	397	. .	. .	. .	529
Small acute hospitals	560	407	700	599	717	7518	. .	586	570
Sub-acute and non-acute hospitals	357	876	709	278	472	2731	. .	. .	464
Unpeered and other hospitals	146	309	243	309	1279	5366	. .	. .	266
Psychiatric hospitals	319	0	295	. .	. .	. .	. .	. .	314
Total	**575**	**652**	**443**	**652**	**554**	**543**	**600**	**691**	**564**

(continued)

Table 32 (continued): Coding workforce[(a)] throughput, by peer group and state, at June 2009

Peer group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
				Hourly rate[(d)]					
Principal referral and Specialist women's and children's hospitals	4.46	3.60	6.48	3.04	5.33	3.15	8.77	4.73	4.67
Large hospitals	1.53	1.65	1.18	0.73	1.54	1.10	3.71	—	1.46
Medium hospitals	0.63	0.68	0.75	—	0.66	—	—	—	0.65
Small acute hospitals	—	—	—	—	—	—	—	—	—
Sub-acute and non-acute hospitals	—	—	—	—	—	—	—	—	—
Unpeered and other hospitals	—	—	—	—	—	—	—	—	—
Psychiatric hospitals	—	—	—	—	—	—	—	—	—
Total	**0.87**	**0.86**	**1.08**	**—**	**0.51**	**—**	**6.24**	**2.15**	**0.81**

(a) Includes Clinical Coders and Health Information Managers, excludes Costing Specialists.

(b) FTE total had 0.24 (0.23 for QLD, 0.01 for TAS) non-stated responses for peer group. FTE values have been rounded to 1 decimal place.

(c) Monthly average separations total for state includes 1806.83 (922.00 for large hospitals, 828.42 for medium and 56.42 for small acute hospitals) non-stated responses and 6.00 (Tas) for peer group.

(d) Total includes hourly throughput rate of 1 non-respondent.

Note: Average monthly coding throughput is calculated by dividing the average monthly separations by the FTE.

Source: AIHW National Coding Workforce Survey 2010; AIHW Hospital Morbidity Database.

Appendix 5 – Existing education and training courses

Health Information Management courses

Undergraduate degree courses

Previously, four tertiary undergraduate Health Information Management programs were delivered in Australia at the following institutions:

- La Trobe University, Victoria
- Curtin University of Technology, Western Australia
- Queensland University of Technology, Queensland
- University of Sydney, New South Wales.

From 2011 onwards, undergraduate qualifications in Health Information Management will only be delivered by Curtin University of Technology in Western Australia, and through a double degree program at La Trobe University in Victoria, as follows:

- Curtin University of Technology
  - Bachelor of Health Science (Health Information Management major)
  - This is a 3-year degree program that is available for study both on-campus and via distance.
- La Trobe University
  - Bachelor of Health Sciences and Master of Health Information Management
  - This is a 4-year double degree program only in on-campus mode
  - Bachelor of Information Systems/Master of Health Information Management
  - This is an integrated double degree program completed over 4 years, only in on-campus mode.

Postgraduate courses

From 2011 onwards the following postgraduate courses will be available:

- Curtin University of Technology
  - Masters of Science (Health Information Management)

    2 years full-time on-campus or via distance
- La Trobe University
  - Masters of Health Information Management

    2 years full-time only in on-campus mode (with plans for online delivery).

Other universities, such as QUT, now offer some health information units as part of postgraduate programs in Health Services Management and Health Science. An increasing number of Health Informatics programs have also commenced at various universities around the country, but these do not contain clinical coding training components.

Clinical coding courses

Education and training in clinical coding are provided as either a course component of a broader HIM qualification, or as a course in its own right. Courses currently delivered, or planned for implementation in 2011, are outlined below.

Postgraduate courses

- Curtin University of Technology
  - Graduate Certificate in Clinical Classification: 1 semester full-time internal or fully external course. The entry requirements are bachelor's degree and formal medical terminology training or 2 years relevant work experience
  - Postgraduate Diploma in Clinical Classification: 1 year full-time internal or fully external course. The entry requirements are bachelor's degree or Graduate Certificate of Clinical Classification and Medical Terminology.
- La Trobe University
  - Graduate Diploma in Clinical Coding: planned for commencement in the near future.

The Queensland University of Technology offered a Graduate Certificate in Health Science (Clinical Classification) in 2010 but this has been discontinued from 2011 because of lack of enrolments.

Vocational level courses

- HIMAA

  HIMAA Education Services provide a range of courses approved under the Australian Qualifications Framework via distance education, both nationally and internationally. These include:
  - Comprehensive Medical Terminology – approximately 240 hours of study
  - Introductory ICD-10-AM, ACHI and ACS – approximately 170 hours of study to obtain a Statement of Attainment at the Certificate III level
  - Intermediate ICD-10-AM, ACHI and ACS clinical coding – approximately 70 hours of study to obtain a Statement of Attainment at the Certificate IV level
  - Advanced ICD-10-AM, ACHI and ACS clinical coding – approximately 250 hours of study to obtain a Statement of Attainment at the Certificate IV level. Students who successfully complete this course are also able to undertake an additional examination to obtain the Clinical Coder Certification (CCC)
  - Special Courses/Workshops – HIMAA can also provide fast-tracked (structured) comprehensive medical terminology and introductory clinical coding courses that use the same course content as the courses outlined above but are designed and packaged to meet specific client's needs.

- OTEN
  - Basic coder training
  - OTEN is currently developing a 'study skills package' that will include Interpret and Apply Medical Terminology Appropriately and Produce Coded Clinical Data competencies which should be available in the second half of the year. This course is run through NSW TAFE, and is also offered by distance education. Students obtain a Statement of Attainment at the Certificate III level. OTEN does not plan to offer the higher level coding units at this point; only this first introductory subject as part of this short course to help students get started in the field of clinical coding.
- La Trobe University
  - Short course in Clinical Coding Auditing – this course has been designed to develop skills in the auditing of coded data, and in analysing, reporting and acting on the audit outcomes
  - ICD-10-AM Coding Refresher Course – this course aims to refresh skills and knowledge for those who have previously undertaken coder training but have been out of the workforce for some time.
- Other providers
  - QUT has offered short courses for Queensland Health staff in the past, using a model which included workplace practical experience in additional to face to face instruction
  - NCHIRT and NCCH provide short courses in coding under contract to various organisations on an 'as needs' basis.

Other coding training is often conducted 'in-house' or through continuing professional education sessions provided by employers, or by other consultant private training providers.

Table 33: Graduate numbers for HIM courses: year and university, 1999 to 2010

Year	QUT	Curtin	Sydney	La Trobe	Total
1999	15	. .	. .	. .	15
2000	19	11	33	35	98
2001	24	18	34	35	111
2002	12	20	43	24	99
2003	24	20	25	15	84
2004	22	20	25	36	103
2005	13	22	34	30	99
2006	15	6	22	22	65
2007	8	8	68	37	121
2008	8	21	14	36	79
2009	5	16	34	36	91
2010	14	24	0	36	74

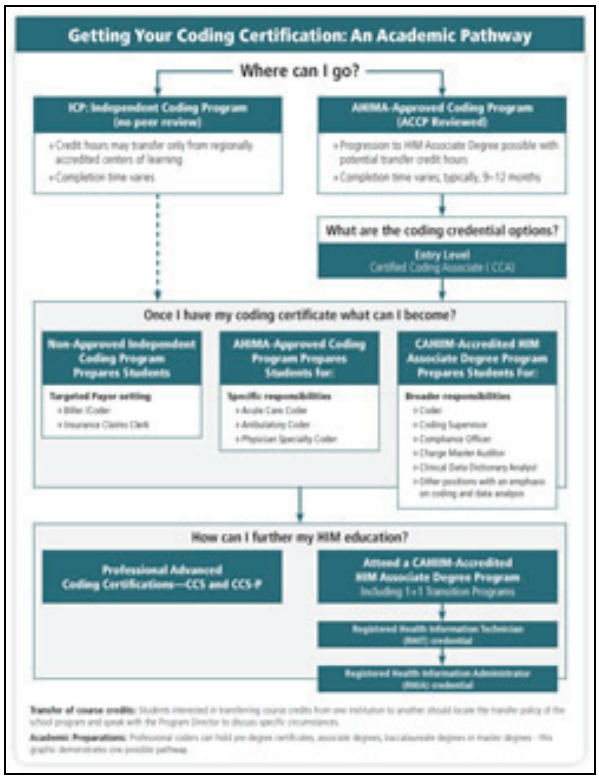
Source: University contacts.

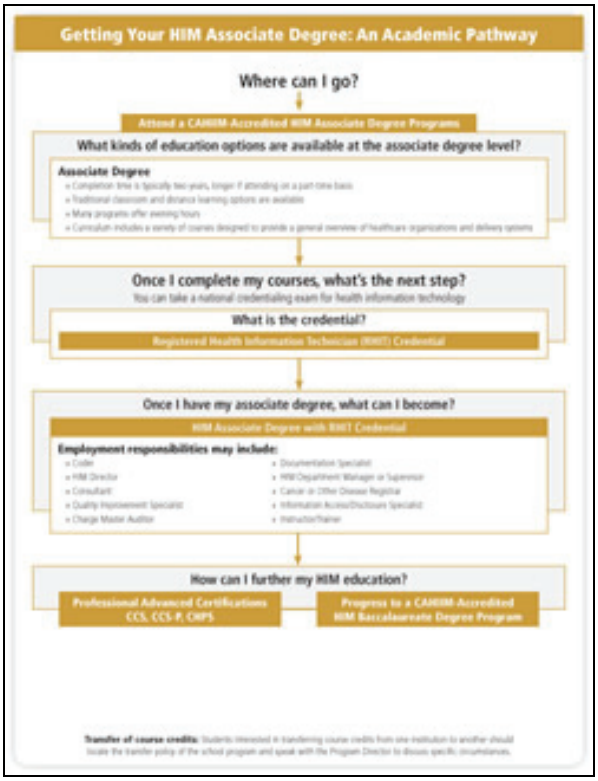
Table 34: Numbers of students completing HIMAA courses by year and course level, 1998 to 2009

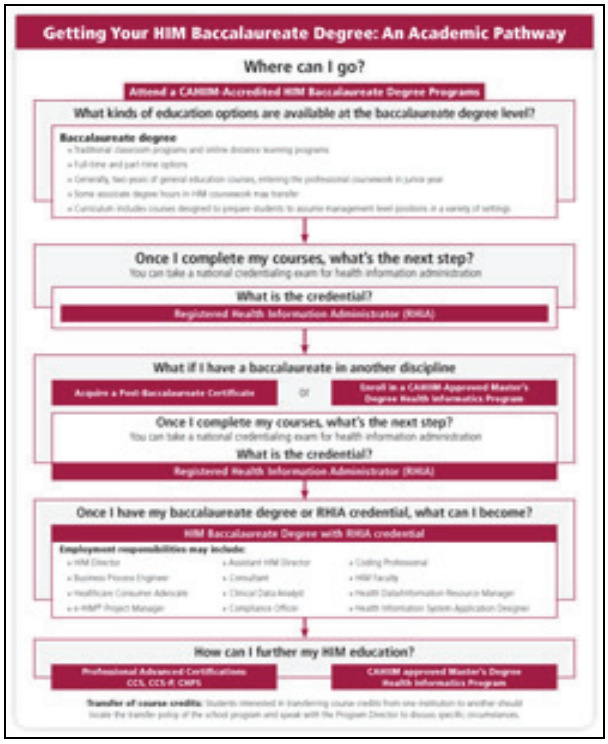
Year	Introductory	Intermediate	Advanced	CCC
1998	11	114	. .	. .
1999	70	112	. .	. .
2000	67	46	. .	. .
2001	70	34	. .	. .
2002	49	27	. .	. .
2003	69	31	. .	. .
2004	73	27	33	. .
2005	77	41	10	32
2006	80	45	16	17
2007	107	38	20	20
2008	150	36	11	15
2009	161	63	19	15

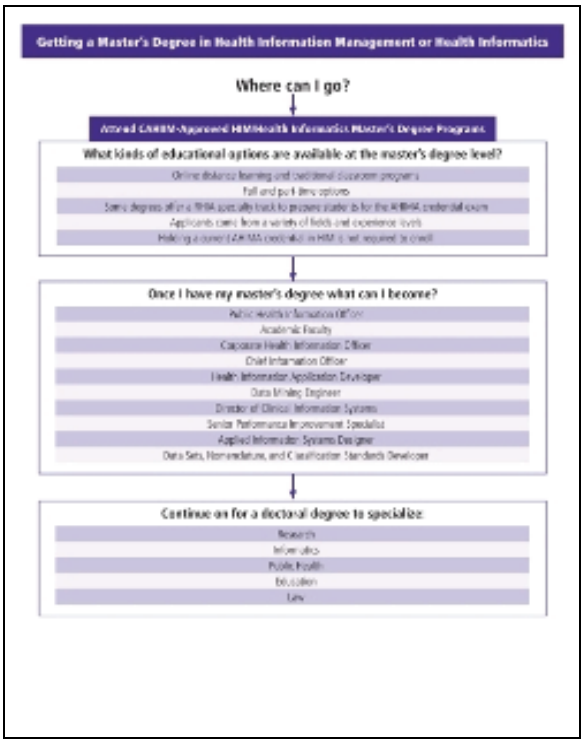
Source: HIMAA and OTEN.

Appendix 6 – American academic pathways examples









Source: AHIMA 2010.

Appendix 7 – Apprenticeship information

What is an apprenticeship?

An apprenticeship or traineeship is a training contract between an employer and an employee in which the apprentice or trainee learns the skills needed for a particular occupation or trade (Skills Victoria 2010). Australian Apprenticeships provide staff with relevant hands-on experience, skills and knowledge through structured (on-the-job and off-the-job) training. Unlike full-time university or college, apprentices and trainees are paid a wage while undertaking their qualification (Queensland Apprenticeship Services 2008).

Australian Apprenticeships encompass all apprenticeships and traineeships. They combine time at work with training and can be full-time, part-time or school-based.

Australian Apprenticeships are available in a variety of certificate levels in more than 500 occupations across Australia, in traditional trades, as well as a diverse range of emerging careers in most sectors of business and industry, including community services and health.

Benefits to the employer

The Australian Government has introduced a number of initiatives to assist employers who take on an Australian Apprentice, particularly where the Australian Apprenticeship is in a trade experiencing a skills shortage. These initiatives provide financial incentives to eligible employers through the Australian Apprenticeships Incentives Program.

Employers of an Australian Apprentice may be eligible for financial assistance through:

- standard, additional and special incentives
- support for adult Australian Apprentices
- assistance for Australian Apprentices with disability
- support for employing a school-based Australian Apprentice
- securing Australian Apprenticeships
- Apprentice Kickstart Extension.

An employer of an existing worker who becomes an Australian Apprentice may attract incentives for a Certificate III, IV or Diploma or Advanced Diploma level qualification where:

- the employee is articulating from an Australian Apprenticeship at the Certificate II level to an Australian Apprenticeship at the Certificate III or IV level (within 12 months)
- the postcode of the employer's workplace and the qualification the Australian Apprentice is undertaking are eligible to attract the special Rural and Regional Skills Shortage commencement incentive; or
- the training contract, as declared by the relevant state/territory training authority specifies that the expected/nominal duration of the Australian Apprenticeship is 2 years or more (part-time employment is prorated).

The eligibility of existing workers to attract incentives also depends on the prior qualifications they hold and whether the Australian Apprentice meets the eligibility requirements of the program.

Employers may attract the standard commencement incentive of $1,500 for existing workers undertaking a Certificate III, IV or Diploma or Advanced Diploma level qualification. In addition, employers may be eligible to receive the standard completion incentive of $2,500 for an Australian Apprentice who successfully completes a Certificate III, IV or Diploma or Advanced Diploma level qualification where the expected/nominal duration of the Australian Apprenticeship is 2 years or more.

Benefits for the employee

Apprenticeships are the best way to combine training and employment and they can lead to a nationally recognised qualification.

Australian Apprenticeships are available to anyone of working age and do not require any entry qualifications. Applicants can be a school-leaver, re-entering the workforce or simply wishing to change careers.

Australian Apprenticeships offer:

- a great way to get a head start in a chosen career
- paid work and structured training that can be on the job, off the job or a combination of both
- 'competency-based' training which means trainees can complete their training faster if they reach the required skills level
- recognition of existing skills and prior experience and course credit granted, potentially reducing formal training time
- availability as full-time or part-time (also available part-time in many schools)
- nationally recognised qualifications and skills which provide the basis for further education and training over the course of a working life
- a pathway from school to work.

A summary of all of the Australian Apprenticeships Incentives Programs (apprentices and trainees) can be found at: <http://www.australianapprenticeships.gov.au/documents/publications/2010/SummaryOfIncentives12May.pdf> (DEEWR 2010a).

Australian Apprentices also may be eligible for income support through Youth Allowance, Austudy or ABSTUDY. More information is available from Centrelink <http://www.centrelink.gov.au/internet/internet.nsf/individuals/st_index.htm> (Centrelink 2010).

National Skills Needs List (NSNL)

The National Skills Needs List (NSNL) identifies trades that are deemed to be in national skills shortage based on research conducted by the Department of Education, Employment and Workplace Relations.

This list is used to determine eligibility for the following Australian Government initiatives:

- Support for Adult Australian Apprentices
- Tools For Your Trade payment
- Rural and Regional Skills Shortage incentive
- Securing Australian Apprenticeships initiative (The Australian Government 2010a).

Types of apprenticeship/traineeship options

In the past, apprenticeships focused on traditional trades and training took at least 3 years to complete. Traineeships, by comparison, covered a much wider range of occupations but the training was shorter, lasting between 1 and 2 years.

Over the last decade, however, the distinction between apprenticeships and traineeships has blurred with many higher level and longer traineeships being introduced. Apprenticeships and traineeships are now referred to nationally as Australian Apprenticeships, although some states and territories still make a distinction.

There are numerous types of Australian Apprenticeships that can be implemented (training.com.au 2010).

Australian school-based apprenticeship

Australian school-based apprenticeship is a mix of vocational, technical and academic education and training and paid employment. It allows students to complete their schooling while starting their Australian Apprenticeship, and get a head start on their career path where they can obtain a senior secondary certificate and credits towards a vocational qualification.

These apprenticeships at an Australian Technical College allow students in Years 11 and 12 to:

- start an apprenticeship while still at school
- participate in a combination of school, paid work and on- and off-site training
- progress towards gaining a nationally recognised qualification
- work towards completing their Year 12 Certificate
- develop business skills
- keep open the option of further education and training.

Australian Technical Colleges are based in all states and territories across Australia with further details at
<http://www.deewr.gov.au/Schooling/australiantechnicalcolleges/Pages/contacts.aspx>
(DEEWR 2010).

Full-time Australian Apprenticeships

Employing an Australian Apprentice full-time means that the employer is responsible for all the on-the-job training. In consultation with the apprentice, the employer is able to choose a training provider for the off-the-job training and determine a flexible training plan to suit the business needs.

Part-time Australian Apprenticeships

Many small to medium sized organisations choose to employ Australian Apprentices part-time. The Australian Apprenticeship/Traineeship Training Contract requires that the Australian

Apprentice receives a guaranteed pattern of work. This means employers must provide a minimum number of hours of on- and off-the-job training per week. The exact time of these requirements vary. In Queensland, for example, the total time spent training at work and with the registered training organisation (RTO) must be at least 15 hours per week.

Group training organisations

Group training organisations (GTOs) allow employers to employ an Australian Apprentice as they need them. The GTO acts as the 'primary employer' of Australian Apprentices and 'contracts' them out to businesses. GTOs may place an Australian Apprentice with more than one business over the life of that Australian Apprentice training contract, offering more flexibility to small businesses.

Existing staff

Existing staff may enter an Australian Apprenticeship. An existing worker is defined as an employee who has been with a business for more than 3 months full-time, or 12 months part-time, or casual. This gives employers the opportunity to upgrade the skills of existing employees who they know and trust with the further benefits of:

- being eligible for Australian Government funding
- a shorter training period due to recognition of previously acquired training, skills and on-the-job experience resulting in cost-effective, targeted training for the business.

Australian Government funding is available for existing employees if they can demonstrate a significant training requirement and:

- are commencing a Certificate III or IV where the full-time training duration is 2 years or more
- are commencing a Certificate III or IV and are eligible for Rural and Regional Skill Shortages commencement incentive of $1,100
- have completed a Certificate II Australian Apprenticeship with the business and commence Certificate III or IV training within 12 months of doing so.

Appendix 8 – Draft international curriculum for HIMs

This draft curriculum is being developed under the auspices of the International Federation of Health Records Organizations (IFHRO), the international body that supports national associations to implement and improve health records and the systems which support them. It is affiliated with the WHO.

TIER 1: Foundation Courses	
Domain I: Biomedical Sciences	**Competencies**
• Anatomy and Physiology • Medical Terminology • Pharmacology • Pathophysiology	1. Understand and be familiar with disease terms and disease processes 2. Familiar with health care surgical procedures, treatments and medications
Domain II: Computer Skills • Basic keyboard skills • File management • Specialized applications	1. Utilize a computer with word-processing, spreadsheet, presentation, database, and internet applications
TIER 2: HIM Core Content	
Domain III: Health data structure, content and standards	
• Content and Use of Health information • Health Record Functions • Health information sources • Retention, storage, and retrieval of information • Collecting, analyzing, and presenting healthcare data	1. Manage health data (such as data elements, data sets, and databases) 2. Monitor use of clinical vocabularies and terminologies used in health information system 3. Maintain processes, policies, and procedures to ensure completion of health record and accuracy of coded data 4. Perform data integrity checks
Domain IV: Health Statistics and Biomedical Research	
• Statistical research and evaluation • Epidemiology • Research design and methods • Data collection	1. Utilize statistical software 2. Analyze and present data for decision making and administrative reports 3. Identify sources of data and collect for analysis

Domain V: Information Technology and Systems/ Health Informatics	
• Computer technology and information systems • Health informatics • Communication technology • Database design and management • Systems development and implementation	1. Implement and manage use of technology to ensure data collection, storage, analysis and reporting of information 2. Perform database querying and data mining techniques to facilitate information retrieval 3. Apply knowledge of database architecture and design to electronic records and information systems 4. Participate in evaluation of existing and potential information systems 5. Apply appropriate standards to achieve interoperability of healthcare information systems 6. Understand and apply the systems development life cycle concepts 7. Formulate administrative reports 8. Enable data security and integrity using appropriate technology 9. Implement and enforce security policies 10. Contribute to the development of organization-wide networks and other administrative applications 11. Apply human factors in user interface design
Domain VI: Organization and Management	
• Management Theories and concepts • Principles of Problem Solving and decision making process • Quality Improvement concepts • Work-flow analysis and redesign • Risk Analysis and Outcomes Measurement • Strategic and business leadership and planning • Change management • Organizational behavior and assessment • Organizational benchmarking • Conflict Management • Team building • Project Management • Meetings Management • Communication skills	1. Organize and coordinate performance improvement programs 2. Conduct and report quality assessment studies 3. Measure Outcome Probability 4. Identify and analyze benchmarking data 5. Apply general principles of management in the administration of health information services 6. Ensure efficient workflow 7. Assign tasks and manage projects 8. Develop strategic and operational goals for information systems 9. Demonstrate and apply principles of organizational behavior to facilitate team building, negotiation, and change management 10. Understand and apply meeting management and group decision-making techniques 11. Evaluate and monitor change process

Domain VIII: Human Resources Management	
• Performance Management • Principles of Human resource management • Employee education and training	1. Facilitate staff recruitment, retention, and supervision 2. Develop and implement staff orientation, training, and continuing education programs 3. Benchmark staff performance data and conduct performance appraisals
Domain IX: Financial and Resource Management	
• Accounting and budgeting principles • Cost/Benefit analysis • Financial Management • Cost Management	1. Understand budgeting methods and accounting principles 2. Prepare and monitor budgets and contracts 3. Demonstrate and apply knowledge of cost-benefit analysis techniques to justify resource needs 4. Conduct resource and business operation reviews
TIER 3: Country Specific Content	
Domain X: Healthcare information requirements and standards	
• Standards and regulations for documentation • Legal aspects of health information	1. Develop health record documentation guidelines 2. Comply with regulations and standards
Domain XI: Clinical Classification Systems	
• Coding principles and Skills • Classification and nomenclature systems • Clinical vocabularies and terminologies • Retrieval and Abstraction of health information • Classification of disease and operations	1. Implement and manage applications and processes for clinical classification and coding 2. Apply the correct uses of classifications, nomenclatures, and terminologies 3. Accurately assign codes in compliance to standards 4. Apply knowledge in coding quality audits
Domain XII: Reimbursement Methodologies	
• Payment systems • Financial systems • Reimbursement management	1. Understand various payment systems 2. Manage the use of clinical data required in reimbursement systems
Domain XIII: Health Services Organization and Delivery	
• Structure and functions of healthcare system • Accreditation, certification, licensure standards • Health care organization and resources	1. Communicate and apply standards related to accreditation, licensure, and certification related to health information 2. Understand the healthcare organization's functions and delivery 3. Analyze and respond to health information needs

Domain XIV: Health care Privacy, Confidentiality, Legal and Ethical Issues	
• Health and medical laws • Health information laws, regulations, and standards • Confidentiality and release of information • Data privacy and security • Ethical issues in medical documentation • Policies and Procedures	1. Promote ethical standards of practice 2. Manage access and disclosure of health information 3. Interpret and comply to country's legal and regulatory requirements in relation to health information services 4. Enforce data privacy and security

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