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Which competencies do health information managers working in public hospitals perceive to be important for effective performance?

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Abstract

The aim of this study was to ascertain which competencies health information managers (HIMs) working in public hospital positions perceived were important for effective performance. A health information management competency model was developed based on the Boyatzis (1982) managerial competency model and modified to take into account previous health information management competency documents and competency studies in the Australian health service management literature.

A questionnaire, administered between July 1995 and June 1996, asked a sample of 306 health information managers (HIMs) from 71 New South Wales and Victorian public hospitals to rate the importance of managerial competencies for effective performance in their current roles. The study sample was split, post survey, into two groups, 'managerial HIMs' and 'coder HIMs,' in order to reflect important role differences.

The results showed that the *Personal and interpersonal skills* competency cluster, which included *leadership, motivation, problem solving, managing change and negotiation skills*, was ranked as most important by managerial HIMs in NSW, and the *Clinical classification skills* competency cluster was ranked as most important by Victorian managerial HIMs. This difference was thought to be due to the casemix-based funding environment in Victoria at the time of data collection. Nearly all the competencies listed were perceived to be of 'high' to 'medium' importance (on a scale of 'low', 'medium' and 'high') by managerial HIMs from both states. Coder HIMs from both states perceived fewer competencies included in the developed model to be important; this highlights the divergent roles undertaken by 'coder HIMs' and 'managerial HIMs'.

Further work is required on competencies of HIMs in roles other than hospital-based positions.

Keywords: changing role of health information managers; health information managers; managerial competencies; clinical coder competencies

Background

There are a number of reasons why it is important to investigate which competencies health information managers (HIMs) perceive are necessary for effective performance. Educators, the health information management professional

association and employers have a vested interest in knowing what knowledge and skills HIMs require in their current roles. Identifying competencies will enable educators to review and develop curricula appropriate to the needs of their students. The Health Information Management Association of Australia (HIMAA) Ltd can develop continuing education programs and educational material to target the specific needs of their members. The professional association will also be interested in keeping the accreditation requirements current for the universities which graduate HIMs. Employers will be more aware of what skills HIMs have and how they can be best utilised by their organisations.

The changing role of HIMs has also provided added impetus for revisiting the existing HIMAA competencies (1991). With the development of the electronic medical record and increasing use of information technology (IT) in the management of health-related information, the future role of HIMs needs consideration and direction. The importance of health informatics was recognised back in 1988 when Mitchell (1998:10) proposed a set of information technology competency standards. The importance of information to health is recognised by state, territory and federal health departments as fundamental to ensuring the efficient and effective delivery and management of health care (Australian Department of Health and Aged Care, 1997; NSW Department of Health, 1999). HIMs need to ensure that they possess competencies in these areas to support their changing role in the information age.

The policy on competencies for HIMs in Australia is currently under revision by the HIMAA (Smith, 2000:107). The existing competency document was produced in 1991 and is outdated (HIMAA). More recent competencies for clinical coders have been produced (HIMAA, 1996), with seven competency areas for clinical coders and ten competency areas identified for senior clinical coders. This document recognises two levels of competence for coders, namely the beginning practitioner and the more experienced coder, and it will also be important to consider this issue when developing HIM competencies. Coders, however, form only a portion of the health information management workforce. Competencies need to be developed to encompass "the breadth and depth of professional practice in health information management in Australia" (Smith, 2000: 107).

Definition of competency

Competence implies the application of skills, within the occupation or industry, to a certain level or standard of performance. Competencies for managers are defined as those skills, knowledge, beliefs and values, and personality characteristics, which they need to possess if they are to be effective (Boldy, Jain & Harris 1990: 271-287). Burgoyne (1989: 57) emphasises that competency concerns "doing and action rather than the mere possession of knowledge." Burgoyne also dismisses the notion that competence implies a minimal level of ability, as in "just scraping through" (1989: 57), and suggests rather that it refers to an ability related to excellent rather than adequate performance.

Aim of study

The aim of this study was to identify and rank the level of importance of competencies that are perceived by HIMs working in public hospitals to be required for effective performance. The differences in perceived competencies between the two states, Victoria and New South Wales, are also explored.

Method

A cross-sectional survey was designed. The population consisted of 143 HIMs from 41 NSW public hospitals and 166 HIMs from 30 Victorian public hospitals. It was decided to poll the whole population due to the relatively small numbers involved. It was anticipated that a high response rate would be obtained, an expectation which was realised (99% response rate) and which reflected the support for the study within the profession. Three HIMs declined to participate in the survey, two from NSW and one from Victoria, giving a study sample of 141 HIMs from 41 NSW public hospitals and 165 HIMs from 30 Victorian hospitals.

The public hospitals were those with more than 140 beds (Hospitals and Health Services Year Book 1994/95). This number of beds was chosen as HIMs employed in hospitals with fewer than 140 beds are generally part-time and/or consultant HIMs. One research assistant administered all questionnaires by telephone between July 1995 and June 1996.

Today, HIMs work in a variety of roles, ranging from employment in health information systems departments in public and private health facilities to positions such as systems analyst, data manager, information systems support, research assistant, clinical trials co-ordinator, and management positions in health funds, hospitals and government bodies. For the purposes of this study, qualified HIMs are those with an undergraduate (or equivalent) qualification in health information management from a tertiary educational facility accredited by the HIMAA. They are also those who hold positions, usually located in health information service departments, with any of the following titles: in-charge/deputy HIM; assistant HIM; coder; and area/district HIM. These roles are generally referred to as *traditional* roles for HIMs. Casemix co-ordinators were also included in the study.

Survey instrument

The few previous Australian studies investigating health industry managerial competencies have tended to focus on asking managers to describe (using questionnaires or focus groups) what they do and which competencies are perceived to be relevant for their jobs (Rawson 1986; Lawson 1989; Boldy, Cloher & Barraclough 1989; Boldy, Jain & Harris 1990; Harris & Bleakley 1991; Lloyd 1994; Lee 1996). Another method is to use structured observation, much in line with the approach adopted by Mintzberg in the 1970s and subsequently (1975: 49-61). As little work has been undertaken on ascertaining the managerial competencies required by HIMs, both in Australia and overseas (AHIMA 1992; AHIMA 1996; HIMAA 1991; HIMAA 1994), self-reporting was adopted for this study, using a telephone-administered questionnaire.

A competency model for HIMs was developed (Box 1) based broadly on the model developed by Boyatzis (1982) in a study

of over 2000 managers in 12 organisations in the United States. The specific competencies were taken from the recent Australian health management competency literature (Rawson 1986; Boldy, Jain & Harris, 1990; Harris & Bleakley, 1991; Lloyd 1994; Lee 1996) and competency documents developed by the Australian and American health information management professional associations (AHIMA 1992; AHIMA 1996; HIMAA 1991; HIMAA 1994). The competencies were then modified using the curricula of all four undergraduate health information management programs offered in Australia (in Victoria, Queensland, New South Wales and Western Australia). They were then tested on a convenience sample of HIMs and changed to reflect current practice. The questionnaire pilot testing was undertaken in March 1995 on a total of 11 HIMs. These consisted of all three HIMs employed in the Australian Capital Territory in similar roles to those defined for the study population and eight HIMs employed in NSW and Victoria but working outside the role defined for this study (namely, educators or HIMs working in senior 'generalist' management positions in health facilities).

1: Managerial competency model for health information managers

<u>Competency clusters for health information managers</u>	<u>Competencies for health information managers</u>
Communication skills	Report writing skills Letter/memo writing skills Public speaking Education skills (eg, oral presentation skills and teaching) Talking and listening to individuals and groups Public relations
Personal and interpersonal skills	Leadership ability Motivation of staff Motivation of self Working in teams Working with health professionals Working with management Managing change Problem solving Time management Professional ethics Dealing with conflict and stress Negotiation skills
Industrial relations/human resource management knowledge and skills	Industrial relations concepts, implications and laws Awards (structure and provisions) Conflict resolution methods Enterprise bargaining Personnel administration (eg, recruitment, staff appraisal)
Financial management knowledge and skills	Accounting principles and methods in health services Preparation and analysis of budgets Analysis of financial information
Medical record service planning	Planning principles and processes Workforce planning (staffing needs) Operational planning (day-to-day) Strategic planning (long-term) Environmental design (medical record department design) Consumer participation in planning
Computing skills	Use of software packages (eg, spreadsheets) Patient administration systems (PMI/ATS/DI)* Programming Database design Systems analysis Computer application in health services (including optical disc imaging)

Analytical methods and research skills	Understanding and interpreting statistical data Research methods Understanding and interpreting epidemiological information
Clinical classification/coding skills	ICD-9-CM** skills Computerised coding (encoders) Grouping (Australian National Diagnosis Related Group)
Quality assurance (QA) knowledge and skills	Principles and methods of QA and outcome measures Accreditation Critical pathways Total quality management Utilisation review
Health information systems knowledge and skills	Structure of health record, patient identification, record numbering, filing and control systems Retention and storage Special purpose records (eg, general practice, dental records) Forms design
Medical terminology knowledge	Medical terms abbreviations and laboratory tests
Medical science knowledge	Knowledge of disease processes and surgical and medical treatments
Casemix measurement systems	Diagnosis Related Groups (specifically Australian National Diagnosis Related Groups) Casemix funding models Casemix costing Casemix education of others Producing casemix reports Casemix classification systems in acute, non-acute and ambulatory
Medico-legal knowledge	Australian legal system Health legislation (Commonwealth and State) State health department policies and procedures Subpoena of records and rules of evidence

* PMI/ATS/DI - Patient Master Index/Admissions, Transfers and Separations/Disease Index

** ICD9CM - International Classification of Diseases, 9th Revision, Clinical Modification (replaced by ICD-10-AM after the survey was administered).

The competency model covered 14 main competency areas, and within each area several component competencies were identified. In all, 66 individual competencies were listed. For example, the competency area of 'communication skills' was further categorised into report writing, letter/memo writing, public speaking, educational skills (for example, oral presentations and teaching), talking and listening to individuals and groups, and public relations. For each competency respondents were asked: "Do you require this competency in your current position? If yes, how important is the competency to enable you to perform effectively in your current position?", with a response set of "high", "medium", "low" or "not required" (Box 2). They were also asked to list the five most important competencies in order of importance, from 1 (most important) to 5 (least important). An open-ended question was also included to give the respondents the opportunity to add other knowledge and skill areas which did not fit into the given categories.

2: Sample telephone administered competency questionnaire

Do you require this competency in your current position?
If yes, how important is the knowledge area and/or skill to enable you to perform effectively in this position?

A High B Medium C Low D Not required

A. Communication skills

- | | |
|---|-----|
| 1. Report writing | [] |
| 2. Letter/memo writing | [] |
| 3. Public speaking | [] |
| 4. Education skills (eg, oral presentations and teaching) | [] |
| 5. Talking and listening to individuals and groups | [] |
| 6. Public relations | [] |

The final questionnaire consisted of 31 closed and open-ended questions, with the competency question consisting of 66 items.

Statistical analysis

Due to the important differences in the roles of HIMs, the study sample was split into two groups post survey — 'managerial HIMs' and 'coder HIMs.' This split was based on their job titles. 'Managerial HIMs' have more administrative/managerial roles, with position titles such as in-charge/deputy HIM, assistant HIM, area/district HIM and casemix co-ordinator. The 'coder HIMs' undertake classification duties for the majority of their work time and have titles such as clinical coder and HIM coder. There were 109 managerial HIMs in NSW and 113 managerial HIMs in Victoria. There were 32 coder HIMs in NSW and 52 coder HIMs in Victoria.

The data were analysed using MINITAB (1994). After the data were entered into the MINITAB worksheet, checks were made on the accuracy of transcription from the questionnaire to the data sheet and from the data sheet to the statistical package. Every tenth interview was checked (10% of questionnaires) and no errors were found.

Results

Rank of importance of managerial competency clusters

The competency clusters ranked as most important by the NSW managerial HIMs were

- personal and interpersonal skills (28%)
- communication skills (27%)
- health information systems knowledge and skills (15%) (Box 3).

In contrast, more Victorian managerial HIMs ranked *clinical classification/coding skills* as first (36%), followed by *communication skills* (24%) and *personal and interpersonal skills* (18%). It can be seen from Box 3 that a significantly larger proportion of Victorian managerial HIMs (36%) ranked clinical classification/coding skills as first (chi square = 22.60, df = 4, P < 0.001) compared to NSW managerial HIMs (10%).

3: Competencies ranked first by managerial HIMs from NSW and Victorian public hospitals (n=222)

Managerial HIMs	
NSW	Victoria

Competency cluster	<i>n</i>	%	<i>n</i>	%
Communication skills	29	27	27	24
Personal and interpersonal skills	31	28	20	18
Clinical classification/coding skills	11	10	41	36
Health information systems skills	16	15	9	8
Others	22	20	16	14
Total	109	100	222	100

Chi square = 22.60, df = 4, P < 0.001

For coder HIMs, there was no significant difference between NSW and Victoria, with both groups ranking *clinical classification/coding skills* as the most important competency (84% and 90% respectively).

Competencies required by respondents in NSW and Victoria

Nearly all the competencies listed were perceived to be of 'high' or 'medium' importance for the majority of managerial HIMs in both Victoria and NSW. None of the competencies listed were perceived as 'not required' by managerial HIMs from Victoria and NSW to carry out their jobs effectively.

Those competencies perceived to be of 'low importance' by managerial HIMs from both States were:

- programming
- data base design
- enterprise bargaining
- accounting principles in health services
- preparation and analysis of budgets
- understanding and interpreting epidemiological information.

In addition to the competencies listed above, Victorian managerial HIMs also identified a number of competencies to be of 'low importance' in their current roles. These 'low importance' competencies were:

- consumer participation in planning
- the Australian legal system
- analysis of financial information
- critical pathways
- industrial relations concepts
- implications and laws
- research methods
- special purpose records.

Fewer competencies were perceived to be important to coder HIMs than managerial HIMs. Those perceived as being of 'high' to 'medium' importance by both NSW and Victorian coder HIMs were:

- DRGs
- talking and listening to individuals and groups
- self motivation
- working in teams
- working with health professionals
- working with management
- problem solving

- managing change
- time management
- professional ethics
- ICD-9-CM coding
- computerised coding
- grouping (AN-DRGs)
- structure and systems of health records (including record numbering, filing and control systems)
- use of software packages
- patient administration systems (PMI, ATS and DI).

Comparison of some key competency clusters

The competency clusters of

- casemix measurement systems
- communication skills
- personal and interpersonal skills
- clinical classification skills
- computing skills
- analytical methods and research skills
- medical terminology knowledge
- medical science knowledge

are presented below in Boxes 4 to 11. The significant differences are shown by the **bold** P values.

Casemix measurement systems competency cluster

The differences in perceived importance of the competencies in the casemix measurement systems cluster are shown in Box 4.

4: Comparison between NSW and Victoria of perceived importance of the casemix measurement systems competency cluster for managerial and coder HIMs

Competency	Managerial HIMs			Coder HIMs		
	NSW median*	VIC median*	P value**	NSW median*	VIC median*	P value**
Casemix measurement systems						
DRGs (specifically AN-DRGs)	1	1	0.0067	2	1	0.0015
Casemix funding models	2	2	0.0085	3	2	0.0012
Casemix costing	2	2	0.0031	3	2	0.0009
Casemix education of others	2	1	0.0098	4	2	<0.0001
Producing casemix reports	2	2	0.02	4	3	0.0010
Casemix classification systems in acute, non-acute and ambulatory care	2	2	0.075	4	2	0.0073

* Importance of competency - median: 1=high; 2=medium; 3=low; 4=not required.

** P value from Mann Whitney test to compare NSW and Victoria.

Victorian managerial HIMs rated the competency entitled *DRGs (specifically AN-DRGs)* as significantly more important than did their counterparts in NSW. The same pattern was evident for the competencies of

- casemix funding models
- casemix costing

- casemix education of others and
- producing casemix reports.

The coder HIM data also showed significant differences in the *casemix measurement systems* cluster (Box 4), with Victorian coder HIMs rating all the competencies in this cluster as significantly more important than did the NSW coder HIMs.

Communication skills competency cluster

The differences in perceived importance of the competencies in the communication skills cluster are shown in Box 5.

5: Comparison between NSW and Victoria of perceived importance of the communication skills competency cluster for managerial and coder HIMs

Competency cluster	Managerial HIMs			Coder HIMs		
	NSW median*	VIC median*	P value**	NSW median*	VIC median*	P value**
Communication skills						
Report writing skills	1	2	0.01	4	3	0.007
Letter/memo writing skills	1	1	0.001	4	2	0.006
Public speaking	2	2	0.83	4	3	0.09
Education skills (eg, oral presentations and teaching)	2	2	0.23	3.5	3	0.08
Talking and listening to individuals and groups	1	1	0.003	2	2	0.54
Public relations	2	2	0.31	3	3	0.49

* Importance of competency - median: 1=high; 2=medium; 3=low; 4=not required.

** P value from Mann Whitney test to compare NSW and Victoria.

In the communication skills competency cluster NSW managerial HIMs rated

1. report writing
2. letter and/or memo writing
3. talking and listening to individuals and groups

as significantly more important than did the Victorian managerial HIMs.

The coder HIM data showed significant differences in the competencies in the report writing and letter/memo writing skills cluster, with NSW coder HIMs rating these two competencies as significantly less important than did Victorian coder HIMs.

Personal and interpersonal skills competency cluster

The only significant differences in perceived importance of the competencies for managerial HIMs in the personal and interpersonal skills cluster were in the two areas of leadership ability and time management (Box 6).

6: Comparison between NSW and Victoria of perceived importance of the personal and interpersonal skills competency cluster for managerial and coder HIMs

Competency cluster	Managerial HIMs			Coder HIMs		
	NSW median*	VIC median*	P value**	NSW median*	VIC median*	P value**

Personal & interpersonal skills						
Leadership ability	1	1	0.04	3	3	0.52
Motivation of staff	1	1	0.13	3	3	0.84
Motivation of self	1	1	0.70	1	1	0.32
Working in teams	1	1	0.89	2	1.5	0.81
Working with health professionals	1	1	0.36	2	2	0.23
Working with management	1	1	0.73	2	2.5	0.51
Managing change	1	1	0.59	2	2	0.47
Problem solving	1	1	0.12	2	2	0.30
Time management	1	1	0.007	1	1	0.61
Professional ethics	1	1	0.88	2	1	0.37
Dealing with conflict and stress	1	1	0.71	2	3	0.18
Negotiation skills	1	2	0.08	3	3	0.54

* Importance of competency - median: 1=high; 2=medium; 3=low; 4=not required.
 ** P value from Mann Whitney test to compare NSW and Victoria.

NSW managerial HIMs rated leadership ability and time management as significantly more important than did the Victorian managerial HIMs. There were no significant differences between the States in the importance of any of the competencies in the personal and interpersonal skills cluster for the coder HIMs.

Clinical classification/coding skills competency cluster

The significant differences in perceived importance of the competencies in the clinical classification/coding skills cluster for the managerial HIMs are in the competency areas of ICD-9-CM skills and Grouper (AN-DRG) skills (Box 7).

Competency cluster	Managerial HIMs			Coder HIMs		
	NSW median*	VIC median*	P value**	NSW median*	VIC median*	P value**
7: Comparison between NSW and Victoria of perceived importance of the clinical classification/coding skills competency cluster for managerial and coder HIMs						
Clinical classification/coding skills						
ICD-9-CM skills	1	1	0.01	1	1	1.0
Computerised coding (encoders)	2	2	0.78	1	1	0.003
Grouping (ANDRG)	1	1	0.006	1	1	0.83

* Importance of competency - median: 1=high; 2=medium; 3=low; 4=not required.
 ** P value from Mann Whitney test to compare NSW and Victoria.

Victorian managerial HIMs rated ICD-9-CM coding skills and Grouping (AN-DRG) skills as more important to their current positions than did NSW managerial HIMs. Computerised coding was considered of medium importance to both NSW and Victorian managerial HIMs.

All coder HIMs in both States rated ICD-9-CM coding skills and Grouping (AN-DRG) skills as 'high' in importance (Box 7). Interestingly, coder HIMs in NSW rated computerised coding skills as more important than did the Victorian coder HIMs.

Computing skills competency cluster

The significant differences in perceived importance of the competencies in the computing skills cluster between managerial HIMs and coder HIMs in NSW and Victorian public hospitals are shown highlighted in Box 8.

8: Comparison between NSW and Victoria of perceived importance of the computing skills competency cluster for managerial and coder HIMs

Competency cluster	Managerial HIMs			Coder HIMs		
	NSW median*	VIC median*	P value**	NSW median*	VIC median*	P value**
Computing skills						
Use of software packages (eg, spreadsheets)	1	1	0.03	2	2	0.83
Patient administration systems (PMI/ATS/DI)	1	1	0.35	1	1	0.23
Programming	3	3	0.16	4	4	0.29
Data base design	3	3	0.04	4	4	0.79
Systems analysis	2	2	0.83	4	4	0.34
Computer applications in health services (including optical disc)	2	2	0.68	4	4	0.99

* Importance of competency - median: 1=high; 2=medium; 3=low; 4=not required.
 ** P value from Mann Whitney test to compare NSW and Victoria.

In the computing skills competency cluster NSW managerial HIMs rated the use of software packages (for example spreadsheets) and data base design as more important than did the Victorian managerial HIMs. There were no significant differences in the ratings for managerial HIMs in NSW and Victoria in the areas of patient administration systems (PMI/ATS/DI), programming, systems analysis and computer applications in health services (Box 8).

The coder HIMs from both States did not rate the competencies differently with

- programming
- data base design
- systems analysis and computer applications in health services

all being rated as 'not required' (Box 8).

The two competency skills which the coder HIMs from both States thought important were:

- use of software packages and
- patient administration systems (PMI/ATS/DI).

Analytical methods and research skills competency cluster

The differences in perceived importance of the analytical methods and research skills competency cluster between managerial HIMs and coder HIMs in NSW and Victorian public hospitals are shown in Box 9.

9: Comparison of perceived importance of the *analytical methods and research skills* competency cluster between managerial and coder HIMs working in NSW and Victorian public hospitals with more than 140 beds

Competency cluster	Managerial HIMs			Coder HIMs		
	NSW median*	VIC median*	P value**	NSW median*	VIC median*	P value**
Analytical methods & research skills						
Understanding and interpreting statistical data	2	2	0.84	4	3	0.0005
Research methods	2	3	0.06	4	3	<0.0001
Understanding and interpreting epidemiological information	3	3	0.93	4	3	0.004

* Importance of competency - median: 1=high; 2=medium; 3=low; 4=not required.

** P value from Mann Whitney test to compare NSW and Victoria.

There were no significant differences in the importance of competencies in the analytical methods and research skills cluster for managerial HIMs from NSW and Victoria. Victorian coder HIMs rated the competencies of

- understanding and interpreting statistical data
- research methods
- understanding and interpreting epidemiological information

as significantly more important than did NSW coder HIMs.

Medical terminology competency cluster

There were no significant differences in the rating of importance of competencies in the medical terminology competency cluster for managerial HIMs from NSW and Victoria or for coder HIMs from NSW and Victoria (Box 10). Most HIMs from both States rated this competency as 'high' importance.

10: Comparison between NSW and Victoria of perceived importance of the *medical terminology knowledge* competency cluster for managerial and coder HIMs

Competency cluster	Managerial HIMs			Coder HIMs		
	NSW median*	VIC median*	P value**	NSW median*	VIC median*	P value**
Medical terminology knowledge						
Medical terms, abbreviations and laboratory tests	1	1	0.56	1	1	1.0

* Importance of competency - median: 1=high; 2=medium; 3=low; 4=not required.

** P value from Mann Whitney test to compare NSW and Victoria.

Medical science competency cluster

Similarly, for the medical science knowledge competency cluster, there were no significant differences between

managerial HIMs from NSW and Victoria or between coder HIMs from NSW and Victoria (Box 11). All coder HIMs from both States rated this competency as 'high' importance.

11: Comparison between NSW and Victoria of perceived importance of the medical science knowledge competency cluster for managerial and coder HIMs

Competency cluster	Managerial HIMs			Coder HIMs		
	NSW median*	VIC median*	P value**	NSW median*	VIC median*	P value**
Medical science knowledge						
Knowledge of disease processes and surgical and medical treatments	1	1	0.34	1	1	1.0

* Importance of competency - median: 1=high; 2=medium; 3=low; 4=not required.

** P value from Mann Whitney test to compare NSW and Victoria.

Discussion

Managerial HIM competencies

For managerial HIMs from both States nearly all the competencies listed were perceived to be of 'high' or 'medium' importance and none were perceived as 'not required.' The HIM competency model developed for the study therefore reflects quite closely the competencies that managerial HIMs currently require in the traditional role in the public hospital sector. A number of the competencies in the model are generic, and reported in other health service management competency literature as necessary, such as communication skills and personal and interpersonal skills (Rawson 1986; Boldy, Jain & Harris 1990; Harris & Bleakley 1991; Prideaux 1993; Lloyd 1994; Lee 1996). Some skills, however, are organisation and/or role specific to HIMs, for example medical record service planning and health information system knowledge and skills.

Some of the competencies were regarded as of 'low importance' by managerial HIMs from both States, namely:

- programming
- data base design
- enterprise bargaining
- accounting principles in health services
- preparation and analysis of budgets
- understanding and interpreting epidemiological information.

Identification of these 'low importance' competencies will have implications for educators when designing curricula for HIMs, as these subject areas may not be necessary in a general HIM qualification. Educators will need to consider streaming and the development of postgraduate courses in areas that are not generally necessary for the majority of HIM graduates. However, when considering the 'low importance' competencies, it should be noted that the survey sample were only those HIMs working in traditional roles in public hospitals. Australian and US studies (eg, Robinson, Ell, Simpson, & Grain 1990; Teulan & Favelle 1990; Mitchell & Allen 1993; Picukaric 1993; Eichenwald 1994) indicate that an increasing number of HIMs are employed in non-traditional areas such as information

systems, clinical trials and research, where competencies such as epidemiology and data base design, for example, would be considered essential.

When asked to rank the competencies required in their current roles in order of importance, most Victorian managerial HIMs ranked clinical classification/coding skills as first, whereas in NSW more managerial HIMs ranked personal and interpersonal skills as most important. This result indicates the importance of clinical classification skills to HIMs in a casemix-based funding environment, whereas in NSW all the skills associated with managing people and departments, such as leadership, motivation and change management, were identified as most important. This focus by NSW managerial HIMs on departmental or service competencies was also highlighted in the significant differences displayed in the medical record service planning and medico-legal competency clusters. All the competencies in these two clusters were ranked as significantly more important by the NSW managerial HIMs. Victorian managerial HIMs rated competencies in the clusters more directly related to casemix, namely casemix measurement systems and clinical classification/coding, as significantly more important than their NSW counterparts. This no doubt reflects the casemix-based funding environment in Victoria at the time of data collection.

In the clinical classification/coding skills competency cluster, significantly more Victorian managerial HIMs rated ICD-9-CM coding skills and grouping (AN-DRG) skills as of 'high' importance to their current positions than the NSW managerial HIMs. These competencies are specifically related to casemix-based funding, as it is the ICD-9-CM codes which are the key data items necessary to allocate a DRG. Grouping skills also relate directly to allocating DRGs. American studies have supported these results by identifying clinical classification as one of the key competency areas for HIMs which is affected by the use of casemix measurement systems (Grimaldi, Micheletti & Zipkas 1983; Flanagan & Sourapas 1983; Bernstein 1985; Wendler & Slovensky 1987). Kemp (1994: 100) stated that Australian HIMs will need to "upgrade and maintain coding and casemix related competencies in order to retain control of this process" and to be able to function effectively in a casemix-based funding environment. Coding quality and timeliness and its importance in relation to casemix have also been emphasised by a number of Australian studies (Reid 1991; Donoghue 1992; Lloyd 1990; Department of Health and Community Services 1995; Cook 1997). Robinson et al (1990) identified coding activities associated with DRGs as a major area of responsibility for HIMs.

Coder HIM competencies

Coder HIMs from both States perceived fewer competencies included in the competency model developed for this study to be important. All the competencies in the competency clusters of

- medical record service planning skills
- medico-legal knowledge
- financial management
- industrial relations/human resource management knowledge

were not required by coder HIMs. A number of other competencies included in the competency clusters of

- communication skills
- computing skills
- quality assurance knowledge and skills
- analytical and research skills
- health information system knowledge and skills

were also perceived as not required or of low importance to coder HIMs. The HIM competency model developed for this study therefore does not reflect the competencies which coder HIMs currently require. It is too broad for the specific clinical classification roles which they currently perform. The clinical coder national competency standards developed by the HIMAA (1996) are more relevant to their specific needs. This result questions the education of coder HIMs, who currently undertake the same university qualification as managerial HIMs.

Those competencies perceived as being of 'high' to 'medium' importance by both NSW and Victorian coder HIMs were:

- DRGs
- talking and listening to individuals and groups
- motivation of self
- working in teams
- working with health professionals
- working with management
- problem solving
- time management
- professional ethics
- ICD-9-CM coding
- computerised coding
- grouping (AN-DRGs)
- structure and systems of health records (including record numbering, filing and control systems)
- use of software packages
- patient administration systems (PMI, ATS and DI).

Again this will have implications for educators, as the competencies required by the two groups of HIMs, managers and coders, are quite different.

The coder HIM data showed significant differences in the casemix measurement systems competency cluster, with significantly more Victorian coder HIMs rating all the competencies in this cluster of 'high' importance compared to the NSW coder HIMs. NSW coder HIMs rated all the competencies in this cluster except *DRGs* as 'not required' or 'low' in importance. This highlights the need for coder HIMs to have competencies in casemix measurement systems and an understanding of the relationship between ICD-10-AM codes and casemix applications when working in a casemix-based funding environment. The clinical coder national competency standards (HIMAA, 1996), which do not specifically mention casemix as a competency, may need to take this into account.

Not surprisingly, all the coder HIMs rated ICD-9-CM coding as of 'high' importance. The competencies of medical terminology

and medical science knowledge were also rated as 'high', as both these areas support the clinical classification function. This demonstrates the inter-relatedness of some competencies where managers do not necessarily require one skill independently of others (Carlopio, Andrewartha & Armstrong 1997:16). Interestingly, significantly more coder HIMs from NSW (91%) rated computerised coding skills as 'high' in importance compared to the Victorian coder HIMs (59%). This result could be due to differences in the composition of coders between the two States. There are more non-HIM trained clinical coders in NSW than in Victoria, and hence there may be a perception that coding is not necessarily a skill which only HIM-trained coders can perform. The marketing of computerised coding may also have been different in the two States. Computerised coding may now be present in Victoria at similar levels to NSW.

Implications of the results

Few studies have been published on the perceptions of HIMs in relation to the competencies necessary for them to carry out their jobs in the public hospital sector. This study has developed a competency model for HIMs and tested this model on a sample of HIMs from two States. It has been found that, particularly in the competency areas of clinical classification and casemix measurement systems knowledge and skills, there are role-specific competencies which are crucial for the effective practice of HIMs. There are also a number of generic competencies, such as communication skills and personal and interpersonal skills, which are necessary for all managers. Other studies have focused on the impact which developments in information technology are having on HIMs (Picukaric 1993; Eichenwald 1994; Mitchell 1988; Robinson, Ell, Simpson & Grain 1990). HIM educational institutions and professional associations need to consider these competencies when designing and implementing curricula and continuing education programs.

Identifying a set of competencies for HIMs is also useful in selection, promotion and appraisal. Assessment of competencies could be incorporated into the selection process of managerial and coder HIMs. Boyatzis (1982: 250) makes a distinction between the assessment of ability to perform a job and the assessment of competencies. He states that it is important to assess generic competencies (eg, delegation or team building), as well as ability to perform job functions, so as not to overlook the person who has demonstrated these competencies in a different setting. Promotion procedures should also be competency based to ensure that the most suited and skilled person is chosen. Performance appraisal is another area where competencies can be used. To appraise an employee one must first identify the competencies related to effective performance in the job and also develop a way for the employee to demonstrate the competency.

The results of the study also highlighted the divergent roles which HIMs undertake. These roles are expanding and it becomes increasingly more difficult to cater for the education needs of HIMs in these divergent roles. It is clear from this study that the roles of managerial HIMs and coder HIMs are quite different, as are the competencies they require.

The health information management profession and educational institutions need to consider the future direction of the profession. The literature reviewed both in Australia and the United States, where the health information management professions are well developed, points to a shifting paradigm where managing health information rather than managing a medical record department is paramount. Information is viewed as a "corporate resource as well as a necessity for decision making" (Johns 1991: 59). Johns also states that in the future HIMs will need to:

- employ effective and efficient search strategies
- use a variety of database languages
- synthesise information across domains
- subject data to advanced statistical tests and models, and
- disseminate appropriate information in appropriate formats to a range of clients (1991: 60).

"Effective information management is also not just about collecting and storing information but rather using it to support better health and good health care" (NSW Department of Health 1999: 5). More information is needed about which managerial competencies are required by HIMs to carry out these new roles to ensure their needs can then be reflected in the formal education programs for HIMs and in continuing education offered by the professional bodies.

Areas for further research

There are three areas which require further investigation. Firstly, further study of the competencies of HIMs in roles other than hospital-based positions is needed. Secondly, as the study used self-reporting by the respondents on those competencies perceived to be necessary for their current positions, there could have been an overestimation of the need and importance of certain competencies. It would be useful to employ other methodologies in combination with the self-reporting survey, such as structured observation, focus groups, case studies and analysis of diaries kept by managers.

Finally, further studies could investigate the relationship between what managers do and what they achieve — that is, how effective they are. Performance indicators for HIMs could be developed and related to a HIM competency model.

The changing role of HIMs is evident by the variety of employment positions they now occupy. "The development of national competency standards provides a means of clearly describing the breadth and depth of professional practice in health information management in Australia and thereby exemplifying the uniqueness of this profession" (Smith 2000: 107).

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