Agenda

Introduction to Health Informatics

Michael Legg

What is health informatics?
What is the role of information in health and what is its importance?

Who works in health informatics and what do they do?
How many are there?
How are they represented?
Current workforce issues and an approach to address them?

Prof Anthony Maeder

With a people emphasis
A real world CIO makes a difference
Implementation
Plans for the new Peter Mac

Katerina Andronis

Informatics
Health
Engineering
Management
Humanities
Educational Options
A Review of the Australian Health Informatics Workforce

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What is health informatics?

• Health informatics is a knowledge domain in its own right that sits at the intersection of health and informatics

• This is an emerging field in Australia and its participants are in the process of self-identification

• The definition of health informatics is not yet universally agreed and is still evolving

• The most contentious area is probably the perception of a difference between ‘health informatics’ and ‘health information management’
HISA has approached the definition of health informatics in three ways

• By formal definition

• By describing a health system that has best-practice health informatics in place; and

• By what the people in health informatics know and do
Health informatics is the science and practice around information in health that leads to informed and assisted healthcare.
Vision

• ‘A Vision for an Australian Healthcare System Transformed by Health Informatics’ (2007)

• Consensus view of more than 200 respondents

• Characteristics of the Australian health system if health informatics was put to best use.

Vision

- Engaging Consumers
- Transforming Care Delivery at the Point of Care
- Improving Population Health (Data sharing capabilities and initiatives)
- Aligning Financial and Other Incentives
- Managing Privacy Security & Confidentiality
- Policy and Implementation
Engaging consumers

• Patients are fully engaged in their own healthcare, supported by information and tools that enable informed consumer action and decision making, working hand-in-hand with healthcare providers.

• Tools that support consumer engagement are well designed and customised to the diversity of consumers.

• These tools are integrated into the delivery of care, and are also conveniently available outside healthcare settings.
Transforming care delivery at the point of care

- Australian patient care is high quality, patient centred, for a lifetime, and reflects a coordinated and collaborative approach.
- Complete, timely and relevant patient-focused information and clinical decision support tools are available as part of the provider’s workflow at the point of care.
- High quality and efficient patient care is supported by the deployment and use of interoperable health IT and secure data exchange between and across all relevant stakeholders.
Improving population health

Electronic healthcare data and secure health information exchange are utilised to:

• facilitate the flow of reliable health information among population health and clinical care systems
• to improve the health status of populations as a whole
Improving population health

Information is used to

• enhance healthcare experiences for individuals
• eliminate health disparities
• measure and improve healthcare quality and value
• expand knowledge about effective improvements in care delivery and access
• support public health surveillance, and
• assist researchers in developing evidence-based advances in areas such as diagnostic testing, illness and injury treatment, and disease prevention.
Aligning financial and other incentives

• Healthcare providers are rewarded appropriately for managing the health of patients in a holistic manner.
• Meaningful incentives help accelerate improvements in quality, safety, efficiency and effectiveness.
• Quality of care delivery and outcomes are the engines that power the payment of providers.
Managing Privacy, Security and Confidentiality

• In Australia's fully-enabled electronic information environment designed to engage consumers, transform care delivery and improve population health, consumers have confidence that their personal health information is private, secure and used with their consent in appropriate, beneficial ways.

• Technological developments have been adopted in harmony with policies and business rules that foster trust and transparency.
Managing Privacy, Security and Confidentiality

- Organisations that store, transmit or use personal health information have internal policies and procedures in place that protect the integrity, security and confidentiality of personal health information.

- Policies and procedures are monitored for compliance, and consumers are informed of existing remedies available to them if they are adversely affected by a breach of security.

- Consumers trust and rely upon the secure sharing of healthcare information as a critical component of high quality, safe and efficient healthcare.
Policy and implementation

- Policies and procedures are
  - monitored for compliance, and
  - consumers are informed of existing remedies available to them if they are adversely affected by a breach of security.

- Consumers trust and rely upon the secure sharing of healthcare information as a critical component of high quality, safe and efficient healthcare.
Policy and implementation

• Policy development and implementation bodies, both government and private deliver clear and insightful leadership of e-health programs within the health sector.

• They have a deep understanding of the cultural and operational complexities of the area and ensure that programs are appropriately structured and funded to be successful.
A map of the health informatics knowledge domain
Importance

• From the safety and quality arena, Donald Berwick, the President and CEO of the Institute for Healthcare Improvement (US)
  – has gone so far as to say ‘information is care’

• Sir Muir Gray, the Chief Knowledge Officer of the NHS (UK)
  – ‘knowledge is the enemy of disease’
  – *The application of what we know already will have a bigger impact on health and disease than any drug or technology likely to be introduced in the next decade* and ‘a common core of quality assured knowledge must be delivered to professionals and patients; clean clear knowledge is as important as clean clear water’

• Gray M - Keynote address at MedInfo, hosted by HISA in Brisbane 2007
What’s in a name?

Health informatics is the science and practice around information in health that leads to informed and assisted healthcare

• The definition is broad enough to embrace the body of knowledge described and to be inclusive of all those who work on information-related activities in healthcare.

• This is not a universally held view

• It is an issue that the lack of agreement on the words that should be used leads to confusion and misunderstanding
How many are there?

• **We don’t know!**
  – our best estimate is there are **12,000**

• Apply the ‘health information manager’ proportion of responses from the survey to the census data:
  $\frac{3,434}{372} \times 1,279 = \mathbf{11,806}$ health informaticians in Australia

• Apply the ‘IT, engineering or science professional’ proportion of responses from the survey to the ACS data:
  $\frac{3,198 \times 0.63}{236} \times 1,279 = \mathbf{10,919}$ health informaticians in Australia

• Assume a ratio in Australia of 1:50 (slightly less than UK but a bit more than Gartner in the US) and apply the workforce numbers.
  – whole health workforce as the comparator
    $\frac{753,800}{50} = \mathbf{15,076}$ health informaticians in Australia
  – health workers as the comparator
    $\frac{447,800}{50} = \mathbf{8,956}$ health informaticians in Australia
Survey response

- 75% or more 'time spent' in one work area (n=866)
- 75% or more 'time spent' across work areas (n=261)
- 50%-75% 'time spent' across work areas (n=62)
- Less than 50% 'time spent' (n=90)
Work categories

• The categories of information work are divided into two kinds:
  – In the system
  – On the system
In the system

- **Records** - Capturing information about a consumer and their interactions with the healthcare system and managing that information.

- **Analysis** - Information analysis for care, retrieving and analysing information for direct patient care or population health.

- **Direct** - Direct care using information science and technology for the direct provision of healthcare for example the reconstruction of images, the delivery of psychiatric therapy or the use electronic games for rehabilitation.

- **Decision** - Decision support gaining access to knowledge, helping with workflow and automating processes such as provision of clinical alerts and warnings.

- **Communications** - Meaningful exchange of health information between clinicians and clinical systems within a practice or facility and with others outside the facility including consumers and other health services.

- **Training** - Direct vocational training for purposes such as changing work practices.
On the system

- **Systems** - The development, implementation and management of information and organisational systems
- **Infostructure** - Policy development, terminology, structured information, architecture and standards development
- **Improvement** - Retrieving and analysing information to improve processes at every level; from care of the individual consumer through to public health and health policy
- **Education** - eLearning from knowledge presentation and assessment, through to simulation training for both consumers and workers
- **Research** - Including biomedical, informatics and management research
- **Administration** - Of the business of healthcare including logistics, human resources, planning and finance
Survey results

With which title do you most closely identify from the following list?

- Health information manager: 317 (25%)
- IT, engineering or science professional: 236 (19%)
- Health informatician: 225 (18%)
- Manager: 221 (17%)
- Nurse: 83 (7%)
- Medical practitioner: 71 (6%)
- Allied health professional: 61 (5%)
- Support worker: 19 (2%)
- Pharmacist: 17 (1%)
- Other healthcare provider: 14 (1%)

0 50 100 150 200 250 300 350
Survey results

In what domain was your first training?

- Health informatics - Health information management, library science... 290 (23%)
- Health - Nursing - e.g. midwifery, theatre, occupational, psychiatric... 212 (17%)
- Health - Other - e.g. dentistry, science, pharmacy, allied health... 153 (12%)
- Informatics - e.g. mathematics, statistics, information science, library science, computer science... 147 (12%)
- Science and Engineering (non-biology) - e.g. software, biomedical, electrical, communications, process, physics... 123 (10%)
- Health - Medicine - e.g. GP, specialist 119 (9%)
- Other, please specify 117 (9%)
- Humanities - e.g. psychology, sociology, law... 58 (5%)
- Management - e.g. organisational change, contract management, risk, health administration, project management... 56 (4%)
Survey results

Organisation Type

Could you now tell us about the type of organisation that you work for. Click on the box which best fits your organisation:

- I work for a healthcare provider organisation: 527 (42%)
- Other, please specify: 213 (17%)
- I work for a government department: 201 (16%)
- I work for a university: 160 (13%)
- I work for a healthcare systems vendor: 109 (9%)
- I work for a healthcare services supplier: 59 (5%)
Survey results

Organisation Size Click on the box which best describes the number of staff in your organisation:

- Less than 10: 109 (9%)
- 11 to 50: 144 (11%)
- 50 to 200: 116 (9%)
- 200 to 1000: 186 (15%)
- Greater than 1000: 718 (56%)
Survey results

Age

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 20</td>
<td>127</td>
<td>10%</td>
</tr>
<tr>
<td>20-30 years</td>
<td>246</td>
<td>19%</td>
</tr>
<tr>
<td>30-40 years</td>
<td>421</td>
<td>33%</td>
</tr>
<tr>
<td>40-50 years</td>
<td>451</td>
<td>36%</td>
</tr>
<tr>
<td>More than 65 years</td>
<td>20</td>
<td>2%</td>
</tr>
</tbody>
</table>
Survey results

How much longer do you expect to work?

- **Less than 5 years**: 103 (8%)
- **5-10 years**: 231 (18%)
- **10-15 years**: 294 (23%)
- **15-20 years**: 242 (19%)
- **More than 20 years**: 392 (31%)
Survey results

- 696 (55%)
- 569 (45%)
Survey results

Do you consider yourself a health informatician?

- Yes: 733 (59%)
- No: 500 (41%)
- Additional Comment: 

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Survey – Full-timers

- Systems
- Records
- Improvement
- Research
- Decision
- Comms
- Analysis
- Training
- Infostructure
- Admin
- Education
- Direct
HIM – HI work comparison

Health Information Manager

Health Informatician
What education and training do they have?
Most health informaticians

- Are women
- Work in large organisations that provide healthcare
- Are aged 45 or more and expect to work for more than 10 years
- Work broadly across 12 areas of work but are more likely to work full-time in systems, records or improvement related activities
- Have post-graduate qualifications
- Have education and training in two or more distinct domains of knowledge with their first training most likely to be in a health discipline
Characteristics by work type - Records
## Job titles - Records

**Records**

This work category includes tasks like capturing information about a consumer and their interactions with the healthcare system and managing that information.

Job titles for this work category from consultation:

- Clinical coders
- Clinical Trials
- Data entry clerk
- FGI officer
- Health records manager
- Medical record administrator
- Privacy officer

Job titles for this work category from the survey:

<table>
<thead>
<tr>
<th>Administration Manager</th>
<th>Administration Officer</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADDN Nursing Information &amp; Management support</td>
<td>Advanced Clinical Coders</td>
</tr>
<tr>
<td>Analyst</td>
<td>Assistant Data manager</td>
</tr>
<tr>
<td>Assistant Health Information Manager</td>
<td>Assistant Manager Clinical Coding</td>
</tr>
<tr>
<td>Auditors</td>
<td>Business Analyst</td>
</tr>
<tr>
<td>Cancer Information Manager</td>
<td>Center Registry Data Manager</td>
</tr>
<tr>
<td>Clinical Coder</td>
<td>Certified coder</td>
</tr>
<tr>
<td>Chief Health Information Manager</td>
<td>Clinical Audit Coordinator</td>
</tr>
<tr>
<td>Clinical Codes</td>
<td>Clinical code - Health information manager</td>
</tr>
<tr>
<td>Clinical Coder and Client Services Administrator</td>
<td>Clinical Coder, Health Information Services</td>
</tr>
<tr>
<td>Clinical Coder/Health Information Manager</td>
<td>Clinical Coding</td>
</tr>
<tr>
<td>Clinical Coding Manager</td>
<td>Clinical Data Coordinator</td>
</tr>
<tr>
<td>Clinical Data Services Officer</td>
<td>Clinical Information Codes</td>
</tr>
<tr>
<td>Clinical Nurse Specialist/Health Advisor</td>
<td>Clinical Research Coordinator</td>
</tr>
<tr>
<td>Clinical Transcriptionist</td>
<td>Clinical Trial Coordinator/HIM</td>
</tr>
<tr>
<td>Coding Manager</td>
<td>Consultant Data Management Analyst</td>
</tr>
<tr>
<td>Coordinator Clinical Coding</td>
<td>Data Manager/Clinical Trial Coordinator</td>
</tr>
<tr>
<td>Data Manager</td>
<td>General Practitioner</td>
</tr>
<tr>
<td>Doctor</td>
<td>General Practitioner</td>
</tr>
<tr>
<td>Gynaecologist</td>
<td>Health Advisor</td>
</tr>
<tr>
<td>Health Information Manager</td>
<td>Health Information Manager - Clinical Coder</td>
</tr>
</tbody>
</table>

**FINAL DRAFT Health Informatic: Workforce Review**

- Health Information Manager - HSCIS & medico-legal
- Health Information Release Manager
- Health Systems Business Analyst
- Information Manager
- Lecturer
- Manager - Medical Record Services
- Manager Health Information Services
- Patient Health Information Services Coordinator
- Project Manager
- Psychiatric Nurse
- Research Manager
- Senior Business Analyst Clinical Systems
- Senior Clinical Systems Analyst
- Senior Health Information Officer
- Senior Laboratory Information Technology Officer
- Software Engineer
- Unique Patient Identifier (UPI) Systems Manager

The characteristics of respondents working full-time in this work category are presented graphically below.
# Health Informatics Professional Career Matrix

## Levels

<table>
<thead>
<tr>
<th>Level</th>
<th>Clinical &amp; Health Sciences</th>
<th>Canadian Health System</th>
<th>Project Management</th>
<th>Organizational &amp; Behavioural Management</th>
<th>Analysis &amp; Evaluation</th>
<th>Information Management</th>
<th>Information Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 Master</td>
<td>Chief Medical Informatics Officer</td>
<td>Chief Information Officer</td>
<td>Practice Director</td>
<td>Research &amp; Analysis Vice President</td>
<td>Chief Privacy Officer</td>
<td>Chief Technology Officer</td>
<td></td>
</tr>
<tr>
<td>4 Expert</td>
<td>Clinical Informatics Director</td>
<td>Senior Policy Analyst</td>
<td>Program Management Office Director</td>
<td>Change &amp; Evaluation Services Director</td>
<td>Senior Methodologist</td>
<td>Chief Quality Officer</td>
<td>Architecture Director</td>
</tr>
<tr>
<td>3 Proficient</td>
<td>Clinical Informatics Manager</td>
<td>Business Development Analyst</td>
<td>Project Director</td>
<td>Engagement Manager</td>
<td>Senior Researcher</td>
<td>Privacy Specialist</td>
<td>Data Architect</td>
</tr>
<tr>
<td>2 Competent</td>
<td>Clinical Analyst</td>
<td>Business Analyst</td>
<td>Project Manager</td>
<td>Product Specialist Trainer</td>
<td>Benefits &amp; Evaluation Analyst</td>
<td>Data Integrity Analyst</td>
<td>Data Modeller</td>
</tr>
<tr>
<td>1 Emerging Professional</td>
<td>Clinical Coordinator</td>
<td>Junior Business Analyst</td>
<td>Project Coordinator</td>
<td>Product Support Analyst Training Coordinator</td>
<td>Research Analyst</td>
<td>Operations Assistant</td>
<td>Help Desk Coordinator</td>
</tr>
</tbody>
</table>

**Notes:**
- The matrix is color-coded to highlight different levels and roles.
- Each level represents a progression in career development.
- The matrix includes roles from Clinical & Health Sciences to Information Technology, covering a comprehensive range of competencies.
- The roles listed are designed to provide a clear path for individuals interested in a career in health informatics.
What are the issues?

• There are too few health informaticians for the current workload and this will be a major barrier in the future to implementing the National E-Health Strategy in particular and health reform more generally.

• Too little is known about the health informatics workforce - we know neither how many we have nor how many we need and there is no indication that it is yet part of national workforce strategies and the remit of the National Health Workforce Agency.
What are the issues?

• There is a fundamental breakdown between the market, education providers and potential workforce entrants with a strong demand by employers for workers on the one hand, and yet a failure to attract students leading to the closure of well-regarded university courses on the other.

• Because it is emerging, health informatics does not have wide recognition as a discipline in its own right; there is a poor understanding of the knowledge domain in Australia; and many of the workers do not yet self-identify despite them working in clearly related jobs.
What are the issues?

• There is no career structure for health informaticians in Australia and competencies and job names and their descriptions are not standardised

• There will be a long lag time to produce new health informaticians because of the multi-disciplinary nature of the education and the complexity of the discipline

• A contributing factor to the lack of needed recognition and action is the fragmented representation of those in the discipline
What can be done?

- Increase the supply of workers by
  - Improving recruitment
  - Increasing the opportunities for education and training
  - Retaining the workforce longer
  - Attracting re-entry of those who have exited
  - Outsource internationally

- Redistribute the workforce from areas of lower to higher priority

- Improve the productivity of the workforce by
  - Standardisation
  - The introduction of new technology including software and knowledge tooling
  - Improved work environment
  - Consolidation

- Reduce the demand by
  - Design
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