

NSW GOVERNMENT ACTION PLAN

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**NSW Health Strategy for the  
Electronic Health Record**

*NSW EHR\*Net*

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**Report of the Health Information Management  
Implementation Coordination Group**

Report

*involving the  
community in  
their health*

*care*

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February 2002

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# Letter to the Minister

**The Hon Craig Knowles**

Minister for Health

Level 33

Governor Macquarie Tower

1 Farrer Place

SYDNEY NSW 2000

Dear Minister

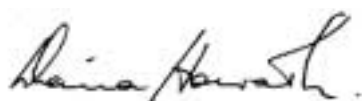
On behalf of the *Information Management Implementation Co-ordination Group*, we commend to you the NSW Electronic Health Records Strategy.

We have welcomed an opportunity to plan for the development of an Electronic Health Record for NSW. The effective use of Information Management and Technology and the implementation of core standards, applications and support networking will promote an environment where necessary information about a patient will be available to clinicians when and where it is needed. The exchange of information will be undertaken within a system wide privacy and security framework, with the application of standards to ensure the consistency, quality and timeliness of the information so that it can be used confidently in the process of diagnosis and treatment planning and monitoring.

There have been a number of key developments since the Health Council set the objective of a NSW EHR by 2010. Notably this includes Health Ministers in principle endorsement of the proposal for a National Health Information Network (*HealthConnect*). The objectives established by the Health Council remain appropriate. The EHR strategy sets the direction to be taken by NSW Health to ensure that those objectives can be met, while taking advantage of initiatives occurring at the national level. The strategy also takes account of the report of the Ministerial Advisory Committee on Privacy and Health Information which endorsed the general approach taken by this strategy subject to appropriate controls over the privacy and security of information, including the draft legislation which has been released for public comment.

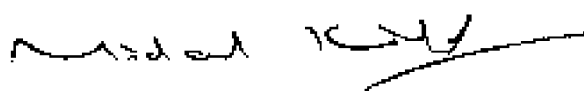
The success of the strategy will not be determined by the deployment of the technology but by measurable improvements in the quality and outcomes of care and public health.

As Co-Chairs we would like to thank all members of *the Group*, and its associated working groups for their enthusiasm, energy and willing participation. We would particularly like to thank the NSW Health Department secretariat, Dianne Ayres, for her hard work on this committee.



Dr Diana Horvath

Co-Chair



Professor Michael Kidd

Co-Chair

# Executive summary

In March 2000 the NSW Health Council set an objective for the NSW health system to implement the Electronic Health Record (EHR) by 2010, with significant progress in at least two Area Health Services within the first three years. There have been a number of key developments since that time, most notably Health Ministers in principle endorsement of the proposal for a National Health Information Network (*HealthConnect*). The objectives established by the Health Council remain appropriate. The EHR strategy sets out the direction to be taken by NSW Health to ensure that those objectives can be met, whilst taking advantage of initiatives occurring at the national level. The strategy will take account of the recent report of the Ministerial Advisory Committee on Privacy and Health Information. This committee endorsed the general approach taken by this strategy subject to appropriate controls over the privacy and security of information.

The success of the strategy will not be determined by the deployment of the technology but by measurable improvements in the quality and outcomes of care and public health.

While the concept of prompt secure electronic access to authorised information to support more effective service provision can be readily accepted, the technical complexities and ambiguity of scope associated with that objective can be a barrier to progress. The strategy has adopted the definition of the EHR proposed by *HealthConnect*.

An electronic longitudinal collection of personal health information, usually based on the individual, entered or accepted by health care providers, which can be distributed over a number of sites or aggregated at a particular source. The information is organised primarily to support continuing, efficient and quality healthcare. The record is under the control of the consumer and is stored and transmitted securely.<sup>1</sup>

This definition is very broad and the achievement of this vision necessitates an incremental approach in the implementation of information systems at the point of care. It is also important to recognise that the fundamental building blocks of the EHR comprise:

*An Integrated Clinical Information Program (ICIP) which includes:*

- the implementation of technological innovations that integrate the source information (patient administration, clinical point-of-care, community health, unique patient identifier)
- a commitment to roll out state wide on-going current initiatives including Cancer Management, GP Discharge Referrals, Ambulatory Infrastructure, and Telehealth
- putting into practice change management processes necessary to realise the benefits of program implementation

An information management framework related to:

- adoption of the Unique Patient Identifier
- addressing the privacy and security issues
- implementation of an efficient and effective telecommunications infrastructure
- availability of an appropriately skilled information management and technology workforce within both the health system and the vendor community which supports it.

Several of these issues are being dealt with under the broad umbrella of the Integrated Clinical Information Program Steering Committee and as such are not considered in any detail. However, these are all fundamental to achieving the vision.

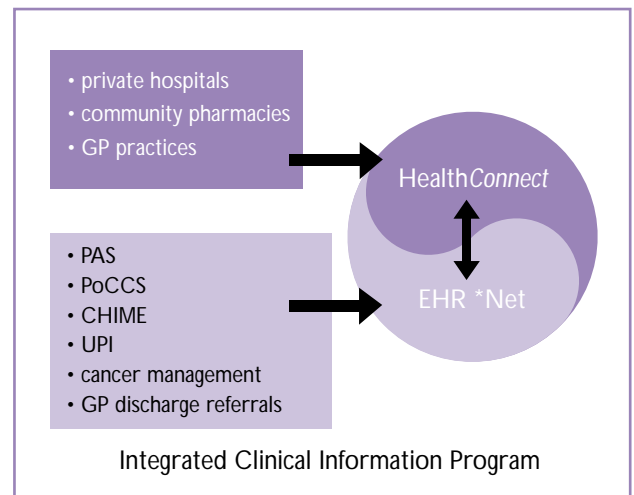
The NSW EHR\*Net will be a system providing authorised web-enabled access to the personal clinical information held by the NSW public health system. The system will provide substantial clinical information across the continuum of care, in formats appropriate to the needs of the various users and will be the repository for event/outcome summaries. The system will integrate data from the Patient Administration System (PAS), clinical support systems (pathology, radiology etc) and other point of care clinical systems (PoCCS). PoCCS is a term that describes any clinical information system comprising modules which include results reports, order management, patient history, care planning, clinical pathways, alerts, consultations and discharge referrals. The implementation of PoCCS will contribute to a reduction in adverse events, duplication, errors and costs within the acute patient setting. The EHR\*Net will enable a better coordination and quality of service between Areas and across the continuum of care.

PAS, PoCCS, Unique Patient Identifier (UPI) and the Community Health Information System (CHIME) are essential foundations for the NSW EHR\*Net as these information systems will provide the source data to create the event summaries and outcome information. EHR\*Net requires a system that can collate the data stored in a range of systems and support the provision of the required information in a range of formats such as for disease management and event summaries.

EHR\*Net must be able to support interoperability and information sharing between Area Health Services.

At the time of writing there are no definitive timelines for HealthConnect which is in a research and development phase. Therefore this strategy cannot state definitive timelines associated with engaging in any national initiatives. There is the clear intent, however for NSW Health to take a leading role, which will complement National objectives. As the national agenda is clarified, these initiatives will be incorporated into the NSW EHR strategy.

Once core systems and the related information management strategies are in place the overall conceptual model will be as shown below.



**Diagram 1. Electronic Health Record development framework**

A basic requirement for the success of the strategy is a clear articulation of the benefits to be achieved from implementing the NSW EHR\*Net and the source systems. Benefits will accrue at both the individual level through improved service delivery and at the population health level through greatly improved understanding of the outcomes of care. A benefits project is underway which views benefits across the core infrastructure programs within the ICIP. The outcome of this project will be the identification of benefits, measurements, target outcomes and performance indicators that can be adopted by the NSW Health System.

It is essential that the strategy be driven from a consumer and clinical benefits perspective rather than being driven by any technology imperative. The scale and ground breaking nature of the project requires an incremental approach to ensure that the benefits are realised. The investment of capital and time is considerable and needs to be managed to confirm success.

In addition to the NSW EHR\*Net infrastructure programs, there are two initiatives that meet the HealthConnect criteria for lead site projects. These are the introduction of event summaries within the Statewide program of Chronic and Complex Care Projects, and the development of a Child Health Information Network. NSW Health has sought federal funding to undertake feasibility studies into the potential of these sites to be part of the cluster of HealthConnect national lead projects.

It is important to recognise that the detailed information architecture underpinning this model must be established. There are potential candidate architectures based on international experience and supported by Australian expertise, but this is a significant task and will need to be undertaken in

close collaboration with national initiatives. Linkage to General Practice will be a critical interface to deliver discharge referrals, event notification of admission and separation to GPs and will initially be one way communication to GPs until such times as General Practice are in a position to exchange information electronically via HealthConnect.

Within this architecture, there is a need to establish and enforce a comprehensive suite of information and data standards, including defining the event summaries associated with patient encounters.

The scale of change inherent in building the EHR\*Net necessitates that the rate of implementation allows sufficient time to appropriately engage consumers and clinicians in understanding, endorsing and progressing the strategy. Marketing, communications, education and training are key activities that must be a high priority to gain clinician and consumer buy in to support the program and achieve maximum benefits on what will be a major investment in funds and resources.

# Scene

## Setting the scene

### 1 Introduction

The NSW Health Council recommended that

**... the Department should co-operate closely with the Area Health Services and the Commonwealth Government to revise its IMT&T strategy to set out a statewide strategy to develop an Electronic Health Record for every individual in NSW<sup>2</sup>**

(Recommendation 21)

In addition, the NSW Health Council recommended that

**... the IMT&T strategy should set a timeframe for staging an Electronic Health Record for the Priority Health Care programs and for two Area Health Services ...<sup>3</sup>**

(Recommendation 23)

To address these recommendations, the Information Management Implementation Coordination Group (IMICG) established a Working Group to develop a strategy and implementation plan for a NSW EHR that would inform and complement the National Electronic Health Record strategy (*HealthConnect*).

The goals of the National EHR are to:

- improve the delivery of health care and achieve better health outcomes for all Australians by improving the quality and safety of care through better access to information while respecting the privacy and confidentiality of their personal health information
- empower consumers to be able to take greater responsibility for their own health care and be better informed about the choices available to them in respect of their health care
- provide a flexible, seamless and integrated process of care through the sharing and better exchange of clinical information

- build a best-practice, evidence based health system
- encourage better, more targeted health initiatives
- inform research, learning and training<sup>4</sup>

In developing the NSW strategy to achieve these goals, the EHR Working Group reviewed the report of the National EHR Taskforce and identified and documented the implications for NSW Health. NSW Health IM&T initiatives were aligned with the National EHR strategy and processes identified to achieve an appropriate operational environment for implementation of a NSW EHR network (to be known as NSW EHR\*Net). This included the need to develop an information and technology architecture for NSW EHR\*Net which can be viewed as the NSW node of the National Electronic Health Record. In developing the strategy many other factors were considered including a benefits plan, privacy, consent and medico-legal issues.

As introducing EHR\*Net will have a significant impact on the health workforce, strategies for managing change were addressed. These included identifying critical success factors, communications and marketing, creating an information culture and addressing work practice issues and barriers to implementation.

A review of AHS readiness to implement an EHR has been conducted. This preliminary review aimed to identify the source information currently available to electronically provide the content required for an Event/Outcome Summary. The outcome of that survey is presented in the full report available at [www.health.nsw.gov.au](http://www.health.nsw.gov.au).

## Background Information

### Definitions

#### *Electronic Health Record*

The definition adopted by the National Electronic Health Record Taskforce, (the *HealthConnect* proposal), is as follows:

An electronic longitudinal collection of personal health information, usually based on the individual, entered or accepted by health care providers, which can be distributed over a number of sites or aggregated at a particular source. The information is organised primarily to support continuing, efficient and quality healthcare. The record is under the control of the consumer and is stored and transmitted securely.<sup>5</sup>

While there are a range of definitions for an EHR, most are similar to that used in the UK:

Electronic Health Records is used to describe the concept of a longitudinal record of patient's health and health care – from cradle to grave. It combines both the information about patient contacts with primary health care as well as subsets of information associated with the outcomes of periodic care held in the Electronic Patient Records.<sup>6</sup>

#### *NSW EHR\*Net*

This term refers to the NSW Electronic Health Record Network that potentially will be the NSW node of *HealthConnect*, the National Electronic Health Record. EHR\*Net is a component of the

Integrated Clinical Information Program and is the repository for event/outcome summaries. It is underpinned by rules, standards and network infrastructure.

#### *Integrated Clinical Information Program*

The Integrated Clinical Information Program (ICIP) incorporates the systems for Patient Administration, Point of Care, Community Health, Cancer Management and the Chronic and Complex Care Trials as well as the supporting Unique Patient Identification and Telecommunications infrastructure required to achieve the Government's Action Plan objectives for health system reforms. Incorporated in the ICIP is EHR\*Net which is the repository for the event/outcome summaries. These programs will provide the core content from which the event/outcome summaries will be generated and accessed within the NSW EHR\*Net.

The NSW EHR\*Net needs to be differentiated from the *HealthConnect* proposal. It is similar in concept with the same end goals but differs in scope. In summary, the differences are:

- The NSW EHR\*Net will be based upon the public health system's information systems and will, initially, be a mechanism of providing clinical information to Health Care Providers within the Area Health Services. As well as providing information in the form of discharge referrals and event/outcome summaries from the public health system, EHR\*Net will be a repository for event/outcome summaries from the trials for co-ordinated care and the paediatric network that all support the provision of care across the clinical continuum.
- *HealthConnect* is the national EHR which will have nodes connected across the country. *HealthConnect* will receive information from sources such as general practice, community pharmacies and private hospitals. These projects all have different information requirements.

# Now

## What is happening now

### 2 Privacy

The privacy and confidentiality of patient/clients information is protected under the Privacy and Personal Information Protection Act which establishes a number of enforceable privacy principles. These include principles directed at ensuring appropriate security and storage of information, and principles to prevent improper disclosure. NSW Health has an established information privacy policy, distributed as the Information Privacy Code of Practice, second edition, which is designed to ensure personal health information is managed in compliance with the information privacy principles. In addition, it has been recommended by the Ministerial Advisory Committee on Privacy and Health Information that health-specific privacy legislation is developed to supplement the State privacy legislation. The draft Health and Information Privacy Bill has been released for public consultation.

### Security

An Information Security Policy, associated Standards, implementation guidelines and Management Action Plan for Implementation of the policy was issued in August 2001. Compliance with the policy will safeguard the accuracy and completeness of information, ensure only authorised persons have access to information, ensure dependant privacy policy and related legislation are upheld, and information is stored and handled in a secure manner. Implementation of the policy will ensure information related to consumers' health encounters will be protected from any unauthorised access when the EHR is deployed.

### Enterprise architecture

Work has begun on the development of an Enterprise Architecture to support the Integrated Clinical Information Program and the EHR. The Enterprise Architecture incorporates the business, information, technical and application architecture. This architectural framework will enable NSW Health to better manage and control a range of complex projects to support the implementation of an EHR and to manage and protect NSW investments in IM&T. The benefits that will be gained from this work will include:

- improved integration across areas and Alliances
- improved data exchange and inter-operability
- reduced costs of operation.

### ICIP

Implementation of the ICIP represents the first stage in the statewide implementation of the Electronic Health Record (NSW EHR\*Net), which is a key requirement of the Government Action Plan. The first component of ICIP includes the implementation of PAS, the UPI and CHIME across NSW. Implementation of an adequate telecommunications infrastructure and rationalisation of data centres are critical prerequisites to support these systems. The second component will involve the implementation of Point of Care Clinical systems and GP Referral systems across NSW.

The following components are included in the ICIP, and are prerequisites for the NSW EHR\*net:

- Unique Patient Identifier
- Patient Administration Systems
- Community Health Information System
- Point of Care Clinical Systems
- GP Referral system

## Scope of the NSW Electronic Health Record Strategy

The scope of this strategy is to establish a framework for a phased approach to implementing the NSW EHR\*Net that is consistent with the Health Council recommendations and meets the goals of NSW Health. The strategy also aligns with national directions agreed by Health Ministers as part of the national Health*Connect* initiatives including the Better Medication Management System (BMMS).

The framework includes defining the core components of EHR\*Net in terms of overall information architecture, content and technical infrastructure. It also includes strategies to address the issues of change management, work practices, overcoming barriers to implementing an EHR and marketing and communications. Success of the strategy will be dependent on meeting the business needs of clinical users and a clear articulation of the benefits that can be achieved from implementing the strategy. This includes the incremental benefits that will be derived from the source systems that comprise EHR\*Net such as order management with decision support.

In terms of content sourced from within the NSW Public Health System, data will be derived from a number of key information systems within the Integrated Clinical Information Program for which strategies are either already in place or in an advanced stage of development, including:

- the Unique Patient Identifier
- Patient Administration Systems
- Point-of-Care Clinical Systems
- Ambulatory Information Systems
- Community Based Health Information Systems

In addition to content, key building blocks for the NSW EHR\*Net include:

- privacy, confidentiality and security
- standards
- health identifier
- provider identifier
- event summaries
- telecommunications infrastructure
- a skilled health sector and industry IM&T workforce
- use of information and communication technologies by providers

The strategy proposes an incremental approach to ensure that there is a learning process to provide for the maximum return on the high level of investment that will be necessary to achieve its aims. It will also build on existing initiatives that fit within the scope of the planned outcomes.

A key factor in selecting lead sites for implementation of the full vision of the EHR or to pilot components of the EHR will be their ability to source the content of the NSW EHR\*Net.

Two such initiatives are the introduction of event summaries within the Statewide program of Chronic and Complex Care Projects, and the development of a Child Health Information Network in the Greater Western Sydney region. The latter involves developing cross border information governance structures to promote a more holistic approach to the provision of services within the Greater Western of Sydney. NSW Health has sought federal funding to test and evaluate these EHR building blocks.

- 3** Whilst progressing lead sites for HealthConnect will be essential, there is a more critical need to build up the basic infrastructure as defined in the ICIP as this provides the core content for the NSW EHR\*Net and ultimately HealthConnect. The data content provided by the ICIP within the NSW health system will be derived from the implementation of a number of related strategies:
- the Unique Patient Identifier which provides the linking mechanism that underpins the EHR
  - completing the rollout of the new hospital Patient Administration Systems (PAS) to all Areas
  - progressive implementation of the Point of Care Clinical Solution across the State, including results reporting, order management, clinical documentation and decision support
  - the rollout of the CHIME system to community based services in all Areas
  - implementation of the Ambulatory Infrastructure Project to incorporate consistent non-admitted patient information into the strategic systems.

The source content from the above strategic systems will populate the repository of episode/outcome summaries that will form the NSW EHR\*Net. In this initiative, NSW Health will take a lead role in establishing the NSW node of the National EHR, HealthConnect.

## Recommendations of the EHR Strategy

To progress implementation of Electronic Health Records across NSW, the Electronic Health Strategy recommends:

### **Definition Recommendations**

- NSW Health adopt the definition of an EHR as described by the National Electronic Health Record Taskforce
- NSW Health proceed towards establishing NSW EHR\*Net in alignment with the National EHR project.

### **Benefits Realisation Recommendations**

- the implementation of an EHR must be benefits driven and will be supported by a benefits plan
- NSW Health develops an evaluation process that progressively demonstrates the benefits of the strategy to inform future investment

### **Lead Site Recommendation**

- NSW Health seek funding support for EHR\*Net initiatives while effectively engaging in the national HealthConnect and Better Medication Management initiatives in seeking to establish lead sites for those projects in NSW.

### **Information Management Infrastructure Recommendation**

- a detailed EHR Information Architecture be established to provide an unambiguous and agreed framework for the development of associated information and data standards and implementation of lead site initiatives. This should take account current national and international developments.

### **Technological Infrastructure Recommendations**

- NSW Health commences a pilot implementation of EHR\*Net that is innovative and supports the following principles:
  - ▼ standard definitions and vocabularies
  - ▼ integration hubs that allow for key trigger events to be managed and routed
    - HL7 and XML protocols
  - ▼ develops standards across NSW Health to support the pilot EHR\*Net implementation, including
    - technologies (with a focus on telecommunications)

- ▼ minimises the proprietary nature of clinical data storage and associated business rules
  - the Internet will be a key data delivery mechanism
- ▼ develops a plan for the development and/or acquisition of skilled resources and expertise to support the implementation of required technologies fundamental to the EHR\*Net implementation.
- ▼ develops a plan to ensure access to relevant information by authorised users
  - hardware
  - security profiles (security policy)
  - public key encryption

#### **Event Summary Recommendations**

- the discharge referral standard prepared by NSW Health be reviewed as a potential source for the event summary for EHR\*Net within the context of the agreed information architecture
- NSW Health procures a discharge referral system that is flexible and easily enhanced to meet any additional information requirements of an event summary.

#### **Governance Recommendations**

- issues related to the governance of EHR\*Net should be determined at the level of the entire IM&T strategy but take into account:
  - ▼ the closely coupled relationship between the EHR strategy and related initiatives including the UPI, PAS, POCCS and CHIME
  - ▼ an effective mechanism to interface with the national HealthConnect and Better Medication Management projects.

#### **Medico-Legal Recommendation**

- NSW Health develop and maintain a medico-legal framework checklist, incorporating existing regulations at a State and Commonwealth level, to guide the implementation and on-going use of the EHR. This should be cross-referenced to the

Department's Information Privacy Policy and Security Policy.

#### **Privacy and Consent Recommendation**

- the Privacy Working group develop a final report on privacy issues and recommended guidelines which take account of the recommendations of the Ministerial Advisory Committee by March 2001.

#### **Information Culture Recommendations**

- a program sponsor, who is respected and valued by their peers, is appointed to guide the implementation of the EHR
- education and training programs are established to ensure that health professionals and professional organisations understand the value of the EHR for the care process and adopt its use
- users are involved in the formulation of policies and guidelines to foster a culture of participative decision making.

#### **Work Practice Recommendations**

- Area Health Services (AHS) commit to reviewing work practices and endorse the changes required to implement the EHR for maximum efficiency gains
- there is staff participation in defining the new work practices and developing policies and guidelines to promote user ownership and increase compliance
- the IMICG Working Group on Education and Training develop strategies to address the work practice issues identified in this report including the perceived lack of an adequately skilled IM&T work force to support the process of change and establish a clinical workforce skilled in using IM&T.

#### **Marketing and Communications Recommendations**

- a comprehensive marketing and communications strategy is developed by Health Public Affairs in consultation with key stakeholders by July 2001.

## 3

### **Risk Management Recommendations**

- a risk management strategy is developed to address the barriers of implementing EHR\*Net
- NSW Health takes account of recommendations of the Ministerial Advisory Committee on the Privacy of Health Information prior to any decision to implement EHR\*Net
- management of consent is addressed by developing, standardising and implementing consent policies and guidelines
- adequate funding is available to provide the source applications, hardware infrastructure and implementation resources & that a funding/financial management plan be developed to incorporate ongoing needs
- sufficient skilled resources are available to provide project management for implementation and on-going support
- the IM&T Training and Education Strategy addresses the need to develop a skilled workforce in the use of information management and technology
- a marketing strategy to promote the benefits of EHR\*Net to consumers and health care providers, is developed and implemented.

### **Critical Success Factor Recommendations**

- a legislative framework addressing the privacy of health information is in place with appropriate policies for consent, disclosure and security access
- the implementation of EHR\*Net is benefits driven and is supported by a benefits plan

- NSW Health develops an evaluation process that progressively demonstrates the benefits of the strategy to inform future investment
- a participative change management strategy is a core element of the implementation process
- an Education and Training strategy is in place to ensure that there is a workforce skilled in the use of information systems and technology
- consistent standards are adopted across the health system
- lead sites establish the standards infrastructure for other Area Health Services to follow to ensure consistency across NSW Health.

### **Timeframes**

There are a large number of detailed recommendations included in the report. The major milestones to be achieved are summarised in the following table. The summary includes a number of milestones which are dependent on initiatives partially outside the control of NSW Health but over which it can and should exercise significant influence.

The scale of change inherent in building the EHR\*Net necessitates that the rate of implementation allows sufficient time to appropriately engage consumers and clinicians in understanding, endorsing and progressing the strategy. Marketing, communications, education and training are key activities that must be a high priority to gain clinician and consumer buy in to support the program and achieve maximum benefits on what will be a major investment in funds and resources.

**Table 1. Schedule of major deliverables for Electronic Health Record**

Milestones	Date
Security policy for electronic health information	Oct 2001
CHIME community health system available for rollout	Oct 2001
Tender for "Supernet" telecommunications strategy	Nov 2001
NSW health privacy legislation enacted	Dec 2001
Publication of EHR Strategy	Jan 2002
Commence deployment of electronic discharge summary	Feb 2002
Finalisation of Enterprise Architecture (including EHR*Net)	Feb 2002
Point-of-Care Clinical Systems selected	Jun 2002
Finalisation of national HealthConnect architecture	Jun 2002
Commence EHR*Net for Chronic Disease Management CCT	Sep 2002
Complete statewide deployment of Unique Patient Identifier	Dec 2002
Commence EHR*Net for Greater Western Sydney CHIN	Jan 2003
Complete statewide Telecommunications Strategy	Dec 2003
Complete deployment of electronic discharge summary	Dec 2003
Complete Point-of-Care Clinical Systems in two Areas.	Dec 2003
Complete EHR*Net for Chronic Disease Management CCT	Dec 2003
Complete EHR*Net for Greater Western Sydney CHIN	Dec 2004
Commence deployment of general EHR*Net	Jun 2005
Complete statewide data centre rationalisation strategy	Dec 2005
Statewide deployment of new Patient Administration Systems	Dec 2006
Statewide deployment of Results Reporting	Dec 2006
Statewide deployment of CHIME community health system.	Dec 2006
Complete deployment of general EHR*Net	Jun 2007
Complete point-of-care clinicals in all Metropolitan Areas	Jun 2007

### 4 Problems with the current environment

The Report of the NSW Health Council, building on problems identified in key Department of Health IM&T Strategic documents, identified significant problems with the current system. Implementation of an Electronic Health Record across NSW will remove or reduce the impact of these deficiencies in the current system.

- source systems in hospitals and community health for Electronic Records are not widely available or not integrated
- there is a reliance on paper records to communicate information between providers
- communication of discharge referrals to GPs and community health occurs too long after discharge
- no linkage of patient records across an Area Health Service leading to inefficiencies, duplication and errors.
- orders are duplicated when a paper test result is not available or lost
- patients are inconvenienced when tests are repeated because results are lost
- records are frequently lost or results do not reach the paper record in a timely manner
- results are currently available from multiple locations requiring the user to have multiple IDs and passwords
- information is duplicated on paper records which is inherently inefficient
- orders are transcribed by clerical staff increasing the margin for transcription errors and taking up staff time in data entry
- limited information on treatment patterns and outcomes is available
- there is limited ability to disseminate and enforce the use of standard care plans and Evidence Based Medicine
- there is an increased risk of adverse events due to lack of automated decision support functionality
- the paper record is institution specific and only one person can view the information at any given time
- poor security of the paper record
- inability to ensure availability of paper based records (e.g. lost, misfiled, records removed from authorised area)
- information availability and dissemination is not timely e.g. discharge referral may take a week to reach a GP by mail
- paper drug reference manuals do not automate drug interaction checking increasing the chance of error.
- paper drug reference material is only available to one person at any one time.
- prescribers are not prompted to use cheaper, generic drugs at the time of ordering reducing the opportunity to reduce drug costs.
- multiple disparate data collection systems with duplication of data collection
- limited information on clinical issues and management patterns and client and population outcomes
- minimal quantity and quality of information about community based services and their contribution to health care.

## Quality framework

The EHR will improve health outcomes, population health and management of health resources and services by:

- improving outcomes through better co-ordination of care across the continuum
- providing better information for clinicians to make decisions about treatment and care planning
- supporting a best practice, evidence based health system
- increasing access to information for audit purposes
- providing decision support to allow clinicians to make the best treatment decisions for their patients.
- availability of medical alert and prescription decision support to reduce adverse events.
- providing information to support an understanding of service utilisation patterns and better service planning.

## The goals of NSW Health in the EHR Strategy

The prime reason to implement an EHR is to improve the health and wellbeing of those who elect to participate. This improvement in the health of participants will have the benefit of reducing the cost of health care by improving access to information at the point of care, reducing adverse events, reducing duplicate or redundant tests and improving warnings and alerts. The benefits NSW Health can expect from EHR\*Net specifically relate to the quality and cost effectiveness of care delivery and include improved co-ordination of care, improved access to information (at encounter and population level), reduced adverse events and reduced costs through fewer orders for diagnostic tests. However, these goals can only be realised if the source systems (PAS, PoCCS, CHIME and UPI) are in place to provide the source data for EHR\*Net. For example, reduced adverse events in hospitals will only be achieved through rules based order management, clinical documentation and decision support.

The goals of EHR\*Net are to:

- improve the delivery of health care and achieve better health outcomes by improving the quality and safety of care through better access to information within a security and privacy framework
- empower consumers to be able to take greater responsibility for their own health care and be better informed about the choices available to them in respect of their health care
- provide a flexible, seamless and integrated process of care through the sharing and better exchange of clinical information
- build a best-practice, evidence based health system
- encourage better, more targeted health initiatives
- inform research, learning and training.

# Expected benefits

5 The following key benefits will be gained from the implementation of Electronic Health Records in NSW.

## Benefits to consumers

Key benefits to consumers will include :

- better information about their health status
- better access to and control of their health record
- active involvement in the creation of their health record
- patients will not be dependent on remembering details of prescriptions, immunisations etc
- reduced risk of adverse events due to drug combinations/prescribing errors
- reduced duplication of diagnostic tests
- faster access to test results
- instructions for test preparation, medication use etc can easily be made available
- streamlined admission, registration at health care facilities
- details transferred to GP subject to consumer's consent
- improved clinical processes due to more complete information about condition and risk factors etc
- improved access to health promotion information and services
- improved continuity of care across services

## Benefits to providers

Key benefits to providers will include:

- better access to information for treatment and care planning
- timely access to health records
- fewer errors and duplication of treatment as episodes of care can be tracked across all health services
- improved continuity of care – health service events can be tracked to enable better planning of care and allow more cost effective service delivery
- medical alert information could reduce the risk of adverse events
- decision support allows clinicians to make the best treatment decision for the patient
- protocols can be automatically generated by placing an order for a specific test
- results available in one location for comparative analysis
- discharge planning facilitated
- improved ability to measure outcomes
- improved quality of care through alerts, standard protocols, care plans and decision support tools
- reduced prescribing errors
- automatic notification of follow up dates
- reduction in duplication of data entry in multiple systems

## Benefits to the organisation

Key benefits to the health system will include:

- improved accountability in health care with a consistent approach to monitoring and reporting
- a best practice, evidence based health system
- reduction in errors
- accessibility to information for audit and research purposes
- improved information for population health purposes
- reduced costs of health care through less unnecessary duplication of treatment
- improved understanding of utilisation patterns and therefore better service planning
- improved resource management through increased use of clinical pathways
- improved ability to benchmark performance through increased knowledge of outcomes
- improved security of patient information.

# Worked?

## How will we know it has worked?

- 6 The EHR Strategy is a long term strategy and the direct consumer and population health benefits will not be realised in the short term. However there will be some benefits evident in the short term. These will be measured by:
- number of people who “opt in” to NSW EHR\*Net
  - levels of clinician satisfaction/perception that there is more information available on which to base treatment decisions
  - increased availability of care plans, protocols, decision support etc
  - reduced incidence of, and cost associated with, adverse events
  - closer partnerships with General Practice, and improved availability of discharge reports available in a timely manner to GPs.

This strategy establishes the direction for the NSW health system to implement the Electronic Health Record by 2010 and achieve the recommendations of the NSW Health Council. The aim is to establish a framework for a phased approach to implementing EHR\*Net in NSW Health that is consistent with national directions agreed by Health Ministers as part of the national HealthConnect initiative.

The work ahead includes defining the core components of EHR\*Net in terms of overall information architecture, content and technical infrastructure. It also includes implementing strategies to address the issues of change management, work practices, overcoming barriers to implementing an EHR and marketing and communications.

As content will be derived from a number of key information systems it is imperative that the source systems are progressed expeditiously. These information systems include:

- the Unique Patient Identifier
- patient administration systems
- point-of care clinical systems
- ambulatory information systems
- community based health information systems.

Alliances of Area Health Services are being established to select the core Patient Administration and Point-of-Care Clinical Systems, which provide much of the content for the EHR. Alliance formation is driven by a set of principles including the need to reduce the timeframe to implement PAS/PoCCS, cost savings by sharing

implementation resources and skills, consistency in approach to implementation and the need to source EHR\*Net with clinically relevant information.

The strategy will therefore be closely aligned with the implementation of the source systems. A key factor in selecting lead sites for implementation of the full vision of EHR\*Net or to pilot components of the EHR will be their ability to source the content.

The strategy proposes an incremental approach to ensure that there is a learning process to provide for the maximum return on the high level of investment that will be necessary to achieve its aims. It will also build on existing initiatives that fit within the scope of the planned outcomes.

Two such initiatives are the introduction of event summaries within the Statewide program of Chronic and Complex Care Projects, and the Child Health Information Network (CHIN) project, which is developing cross border information governance structures to promote a more holistic approach to the provision of services within the greater west of Sydney. NSW Health has sought federal funding to test and evaluate these EHR building blocks.

Governance of the EHR Strategy needs to be established within the overall IM&T strategy framework as it is more appropriate for governance to be considered at this strategic level.

To advance this EHR strategy, the next step is to address the detailed recommendations and to establish a governance and program management structure that will focus on achieving the deliverables and the milestones.

# Endnotes

- 1 National Electronic Health Records Taskforce, *A Health Information Network for Australia* Department of Health and Aged Care, Canberra, June 2000, p.21.
- 2 NSW Government, *Report of the NSW Health Council: A Better Health System for NSW*, March 2000, p.21.
- 3 NSW Government, *Report of the NSW Health Council: A Better Health System for NSW*, March 2000, p.21.
- 4 National Electronic Health Records Taskforce, *A Health Information Network for Australia*, Department of Health and Aged Care, Canberra, June 2000, p.49
- 5 National Electronic Health Records Taskforce, *A Health Information Network for Australia* Department of Health and Aged Care, Canberra, June 2000, p.21.
- 6 National Electronic Health Records Taskforce, *A Health Information Network for Australia* Department of Health and Aged Care, Canberra, June 2000, p.7.