



THE UNIVERSITY OF
NEW SOUTH WALES



CENTRE FOR CLINICAL GOVERNANCE RESEARCH

EVALUATION OF THE INCIDENT INFORMATION MANAGEMENT SYSTEM IN NEW SOUTH WALES: STUDY NUMBER 9



ASSESSMENT OF THE VALUE AND USE OF
IIMS TO THE CEC

The Centre for Clinical Governance Research in Health undertakes strategic research, evaluations and research-based projects of national and international standing with a core interest to investigate health sector issues of policy, culture, systems, governance and leadership.

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1 ABBREVIATIONS AND DEFINITIONS

1.1 Abbreviations

AHS	Area Health Service
CCGR	Centre for Clinical Governance Research at University of NSW
CEC	Clinical Excellence Commission
CGU	Clinical Governance Unit
IIMS	Incident Information Management System
NSW Health	NSW Department of Health
PSCQP	Patient Safety and Clinical Quality Program
PHO	Public Health Organisation
PSI	Patient Safety International
QSB	Quality and Safety Branch, NSW Health
RCA	Root Cause Analysis
RIB	Reportable Incident Brief
ROI	Return on Investment
SAC	Severity Assessment Code
SIP	Safety Improvement Program
SIM	Strategic Information Management Branch, NSW Health

1.2 Definitions

Clinical Practice Improvement	A combination of tools, techniques, skills and attributes designed to enhance care inputs, structures, cultures, processes, outputs or outcomes.
Culture	The configuration of attitudes, values, beliefs, meanings, behaviours and practices which together can be seen to be definitive of 'what people are' or 'where people come from'. Culture can be seen as a 'state' or something people possess, while it appears more fruitful to regard it as performance and also a process.
Ethnography	A research technique used for describing what human beings do in selected settings, usually comprising 'participant observation', field notes, narrative accounts, interviews, and other qualitative research methods.
Evaluation	The systematic examination of a policy, program or project aimed at assessing its merit, value, worth, relevance or contribution.
Formative Evaluation	Evaluation conducted during a course of a policy's, program's or project's life.
Innovation	The rate, propensity, capacity and effectiveness in adopting new ideas, practices or behaviours.
Leximancer	A software package which identifies the key ideas, concepts and themes in text-based documents, allowing researchers to examine the concepts, and the relationships between them, in detail.
Organisational Culture	The collective set of relationships in organisations that differentiate one group from another in terms of dress, attitudes, values, behaviours, beliefs, language and shared meaning.
Summative Evaluation	Evaluation conducted at the end of a policy's, program's or project's life.
Triangulation	A multi-method research or evaluation design which adduces converging or diverging evidence drawn from pluralist sources to illuminate an object of inquiry.

2 EXECUTIVE SUMMARY

This report outlines the results of study 9 in the evaluation of NSW Health's Incident Information Management System (IIMS). This study examines the use and value of IIMS to the Clinical Excellence Commission (CEC). In-depth interviews were conducted with eight of CEC's senior staff members. The interviews sought informants' opinions about the value and use of IIMS and about the functionality and utility of IIMS data within the context of the CEC's role and responsibilities in particular. Three areas of primary responsibility were identified. These are: the state-wide analysis of anonymised, aggregated data through IIMS; the use of IIMS as a data source upon which CEC can base its safety improvement strategies and effect positive systems change; and the use of IIMS as a point of dialogue between the members of the CEC, NSW Health, clinicians and the general public.

It is clear from the interviews that IIMS is considered of great value and essential to the work and responsibilities of CEC and it has further potential to support CEC's work. Nonetheless, three areas do require further consideration. Firstly, improvements in the functionality of IIMS should lead to quicker response times and more accurate reporting. Secondly, questions will, and should remain, about the validity of the IIMS data, the method(s) of analysis and best methods for translation of the data into sustained quality and safety improvements. Thirdly, issues over levels of access to data, resources and lack of clarity over the role of NSW Health and CEC need to be addressed.

3 INTRODUCTION

3.1 Overview

The NSW Department of Health (NSW Health) commissioned the Centre for Clinical Governance Research (CCGR) at University of New South Wales to conduct a formal evaluation of its Incident Information Management System (IIMS) as part of a contract to identify and evaluate a Knowledge Management program for Quality and Safety Branch. NSW Health needed the evaluation to assess the success of the implementation and effects of the program against the project objectives and key expected benefits.

The objective of IIMS at the time the evaluation was commissioned was to provide an electronic system that:

- Recorded all healthcare incidents
- Assisted managers through a workflow module to manage the incidents that occurred in their area
- Recorded the results of reviews or investigations of incidents
- Provided reports on all incidents that had been recorded in the system.

The evaluation aims to utilise the multi-method, triangulated approach employed in the *Evaluation of the Safety Improvement Program*, conducted by CCGR for the Clinical Excellence Commission (CEC) and NSW Health in 2004-2005. The IIMS evaluation was agreed to be a synthesis of 10 inter-related studies (Table 1). This evaluation was conducted by A/Professor Jeffrey Braithwaite, Ms Jo Travaglia, Conjoint A/Professor Mary T. Westbrook, Dr Christine Jorm, Dr Cynthia Hunter, Ms Katherine Carroll, A/Professor Rick Iedema and Ms Mahalakshmi Ekambareshwar.

Table 1: Evaluation studies

STUDY	TITLE	COMMENTS, ACTIONS AND TIMEFRAMES	LED BY/TEAM
Study #1	Literature review	<ul style="list-style-type: none"> ▪ National and international peer reviewed and professional journals ▪ Databases ▪ Websites ▪ Relevant industry and research bodies 	Christine Jorm, Jeffrey Braithwaite, Jo Travaglia
Study #2	Review of the education and training program	<ul style="list-style-type: none"> ▪ Prospective analysis of IIMS' face to face and online training ▪ Retrospective analysis of IIMS' pilot training program evaluation forms 	Mahalakshmi Ekambareshwar, Jo Travaglia, Jeffrey Braithwaite, Mary Westbrook
Study #3	Review of the project implementation process for IIMS	<ul style="list-style-type: none"> ▪ Interviews with key stakeholders ▪ Review of project implementation plan ▪ Questionnaire 	Jeffrey Braithwaite, Jo Travaglia

Study #4	Analysis of the success of the "reach" of IIMS within the health system	<ul style="list-style-type: none"> ▪ Questionnaire ▪ Interviews ▪ Focus groups ▪ Walk around survey 	Mary Westbrook, Jo Travaglia, Cynthia Hunter, Katherine Carroll, Jeffrey Braithwaite
Study #5	Assessment of the satisfaction of IIMS users with the system	<ul style="list-style-type: none"> ▪ Questionnaire ▪ Comparison with international and industry programs 	Mary Westbrook, Jo Travaglia, Jeffrey Braithwaite
Study #6	Map of the facility processes involved in implementing IIMS and handling incidents	<ul style="list-style-type: none"> ▪ Interviews with key stakeholders ▪ Focus group of key stakeholders 	Jo Travaglia, Jeffrey Braithwaite, Mary Westbrook
Study #7	Examination of incident reports and management responses	<ul style="list-style-type: none"> ▪ Comparison of IIMS with other reporting mechanisms pre- and post- IIMS ▪ Comparison with international approaches 	Jo Travaglia, Jeffrey Braithwaite, Mary Westbrook
Study #8	Review of the dissemination of lessons learned	<ul style="list-style-type: none"> ▪ Questionnaire ▪ Interviews with key stakeholders 	Jo Travaglia, Jeffrey Braithwaite, Mary Westbrook
Study #9	Assessment of the value and use of IIMS to the CEC	<ul style="list-style-type: none"> ▪ Interviews with CEC staff 	Jeffrey Braithwaite, Jo Travaglia
Study #10	Examination of the reporting processes, including change in management of RIBS post IIMS	<ul style="list-style-type: none"> ▪ NSW Health data ▪ Interviews with Quality and Safety Branch staff 	Jo Travaglia, Jeffrey Braithwaite

Having presented the results of study 8, the *Review of dissemination of lessons learned*, we turn to the results of study 9. This study was the *Assessment of the value and use of IIMS to the CEC*. This part of the report documents the outcomes of this study. This component of the evaluation was conducted by A/Professor Jeffrey Braithwaite and Ms Jo Travaglia.

3.2 About this report

The next section, section 4, *Methods*, documents the way we went about conducting the interviews and assessing the value of IIMS to CEC. Section 5 presents our findings, and section 6 discusses the findings in relation to the key research questions. The conclusion, section 7, briefly outlines the implications of these findings for the evaluation of IIMS as a whole.

4 METHODS

In this study we sought to assess the value and use of IIMS to the CEC. The assessment was based on interviews conducted with eight senior staff of the CEC, all of whom utilise data from the IIMS system. We conducted the semi-structured interviews over a two day period. Each lasted from 45 to 80 minutes.

A content analysis of the data was conducted by one of the researchers, using NVivo version 7, a qualitative data analysis package, and concepts were thematically coded. The coding and themes were then reviewed by the second researcher to confirm the validity of the findings.

5 FINDINGS

5.1 CEC's responsibility in relation to IIMS

The CEC's mission is "to build confidence in health care in NSW, by making it demonstrably better and safer for patients and a more rewarding workplace."¹ IIMS is considered an integral part of this mission in three ways. Firstly, CEC is responsible for the state-wide analysis of anonymised, aggregated data which is obtained through IIMS. Secondly, IIMS provides a data source upon which CEC can base its safety improvement strategies and effect positive systems change. Finally, IIMS provides a point of dialogue between the members of the CEC, NSW Health, clinicians and the general public. The CEC also pays for the IIMS/AIMS licence in NSW.

State-wide analysis of data

The CEC informants saw themselves as having a core responsibility for the regular, detailed examination of state-wide and AHS data for incident trends, changes in reporting rates, and for the identification of both success stories and cautionary tales, a responsibility they share with NSW Health. IIMS was the underlying mechanism for this process.

In undertaking responsibility for this level of analysis, the CEC has felt the impact of the most recent restructuring processes of NSW Health. The creation of the CEC and the AHS Clinical Governance Units in the past two years is contemporaneous with the implementation of the IIMS project. As a result, CEC, like the AHSs and the IIMS project itself, has been working in an uncertain environment, and grappling with a process of transition. At the same time it is establishing its own role, creating its place in the structure and culture of health services in NSW and managing a range of quality improvement projects and programs, it is leading with imperfect systems and significant personnel changes across NSW Health.

The tension seems most evident in the continual demand CEC receives for help with quality and safety issues, and for both data and assistance with data analysis. While this is being provided where possible, the continuation of detailed assistance on an ad hoc basis, for individual groups within AHSs, was felt to be outside of the scope of responsibility of the CEC. It was noted however, that this issue should be resolved once the AHS Clinical Governance Units became fully operational.

Safety and quality improvement

Informants believed that the CEC was, with NSW Health, responsible for translating IIMS data into safety improvement programs at a state-wide level. This process involved a collaborative cross-portfolio approach by most of the CEC's senior managers, who were seeking to identify patterns and issues from IIMS which could be converted into clinical leadership, clinical practice improvement, and safety programs.

Several examples of clinical practice improvement and training programs, which had emerged from an analysis of IIMS data, were provided. These included a project reviewing paediatric guidelines and another on communication in handovers, which also examined RCA data. The effective use of IIMS to determine CEC priorities was welcomed, although with a note of caution. A number of informants noted that while IIMS data was central to this process, it was not the only source of incident information for the CEC, nor should it be. Amongst other sources given as an example, the CEC is currently analysing six months (or approximately 200 cases) of RCA data. This review, conducted by a medical practitioner and a patient safety expert, will identify, categorise and analyse causal factors, which in turn will contribute to the design of safety and quality improvement programs. IIMS is seen therefore as an essential, but not sole, factor underpinning CEC's priorities and strategies.

Feedback

The CEC's responsibility to provide information to its Council members, clinicians and the general public was mentioned repeatedly. Central to this commitment was the feeling that without dialogue, that is, without a constant flow of information, data and perceptions to and from the CEC, CEC's stakeholders (including the general public and clinicians in particular) would see little benefit in the resources allocated to IIMS. Informants were concerned that the feedback loop be continuous throughout the health system, that is that at all levels – NSW Health, CEC, AHS, facility, ward and individual clinician, there be engagement with and learning from IIMS data. The view of informants was that just as with the responsibility for trend analysis, responsibility for feedback from IIMS was still in the process of development, and that the form and function of such feedback was yet to be finally negotiated by the parties involved.

The need for feedback to the general public was considered essential. Careful and detailed consideration was currently being given by senior staff of the CEC and NSW Health as to the type, amount and format that incident information would take so as to best meet the needs and expectations of the general public.

5.2 IIMS' function and functionality

Given the CEC's role in the analysis, translation and communication of IIMS data, the function and functionality of the database is of fundamental concern. The function of IIMS, that is the role it plays in providing data for quality and safety improvement, was seen as having enormous potential. However, this potential was felt to be jeopardised by some operating problems with the system – that is, with the functionality of the system.

Many of the issues identified by informants related to concerns expressed to them by staff of AHSs. The main issues included the poor connectivity of the system, the time taken to use the system, and in particular difficulties in extracting and analysing data. Whilst these were felt to be commonly held problems, they were thought to be remediable. The move to version 3.5 of the IIMS software, and then to version 4, which is to be a rewritten form of the software, and web-based, is expected to result in significant improvements over the current version.

One issue which was raised by several informants was the quality and integrity of the data, and in particular what it indicated. There was a strong feeling that it should be clearly noted that IIMS provides information on incidents that are *reported*. As such, the trends and patterns perceptible in IIMS are a function of the discipline background of the major reporters (estimated at up to 90% nursing) and the types of concerns that the reporters are most likely to witness or be involved in (e.g. falls and medications). These data were obviously useful or important, but the caveat was that other incidents were not being reported. It was hoped by commentators, however, that within a couple of years the IIMS database, and its reporters, will have matured so that better and higher quality data will be available. Of particular interest to most informants was the development and implementation of strategies to increase reporting rates of doctors. One possible strategy is the use of a call centre with specially trained staff to enhance medical reporting, a strategy which is already being employed by three AHSs.

A structural issue which was raised was the need for the IIMS User Group to meet on a more regular basis. The User Group has responsibility for mediating changes between NSW Health, CEC, AHSs and the IIMS vendor. Due to lack of resources and staffing changes, recent meetings had been cancelled, leaving the process of enhancements and modifications temporarily in limbo.

5.3 The processing and use of IIMS data

Most of the senior staff of CEC regularly examine, or are in the process of assessing, the IIMS data for issues relevant to their portfolios. It was noted that the CEC was under-resourced in terms of its ability to analyse and feedback data to those who created or contributed to it. The demands placed on the CEC for data and data analysis was not seen as abating any time soon. The ability of the CEC to provide such analysis, even to its key stakeholders, was also felt to be limited by the CEC's current skill mix. In order to gain most benefit from the IIMS data, more detailed, ongoing, and statistically sophisticated analyses, were felt to be required.

Despite these resource limitations, the CEC provides reports based on IIMS to the CEC Board, Committees and Council. The CEC has also produced a report for Directors of Clinical Governance in AHSs, and a number of ad hoc reports on key issues for specific projects and state-wide groups both in-house and for external groups. Data are examined monthly year to date, year to date, and for trends. Most of the analysis is conducted by two dedicated staff members in the CEC.

One way the CEC has sought to improve its ability to deal with the demand for data analysis is by providing access to all its data external to the IIMS system, thereby circumventing the waiting times and connectivity issues faced by general users. This process was set up for the CEC by the vendor, PSI, and appears to be working effectively. The CEC has also developed a suite of reports to assist in the analysis of IIMS data, and has published these on the NSW Health website to help AHS managers.

5.4 Strategic management of IIMS by NSW Health and CEC

IIMS has split responsibility across NSW Health and CEC. This has caused some confusion within, and outside of, these bodies. The historical and organisational reasons for the split – with NSW Health responsible for management and analysis of SAC 1s, safety alerts, the management of the IIMS system and its modifications, and policy directives and guidelines, and CEC responsible for analysis of SAC 2 – 4s, trend and issue analysis, clinical practice improvement and training, remain unclear. The CEC has access to data at AHS level, although two members of staff have access at every level (that is, including for individual incidents). Both parties have a reporting function to the Minister and to the public, but this too is seen as potentially confusing. An example given was the CEO of CEC being asked to speak to the media about the release of NSW Health's Patient Safety and Clinical Quality Annual Reports.

There was divided opinion as to whether completely locating IIMS in either NSW Health or the CEC would improve its functionality. The perceived advantages of locating IIMS in NSW Health centred on responsibilities for dealing with the technical and software issues associated with IIMS, and the ability of NSW Health to provide sophisticated statistical analysis of the data. The disadvantages were the removal of CEC's ability to identify and respond to issues with immediacy, and its capacity to assist AHSs.

6 DISCUSSION

IIMS incident data analysis lies at the core of the CEC's responsibilities. It is seen as integral to the CEC's ability to meet its objectives and achieve its mission. While the staff of the CEC were clearly able to identify the limitations of IIMS, all informants stressed their support of the program and its value to their work. The functionality issues were seen as annoying, but surmountable. Work is underway to access the IIMS software version 4.0, which it is understood has a considerable range of advanced features.

The staff of the CEC, like their counterparts in AHSs and NSW Health, are grappling with new organisations, new systems, and new teams, all in the face of increasing demands for quick and effective improvements to the safety and quality of health services across NSW.

CEC staff are on a steep learning curve. The dialogue within CEC is robust and engaging. As an organisation CEC, while building on the foundations of the Institute of Clinical Excellence (ICE) is a different body, with a unique set of challenges and objectives. IIMS is considered as contributing significantly, and positively, to the work of the CEC. While acknowledging the technical, organisational and cultural issues which currently hamper the realisation of its full potential, IIMS provides AHSs with their first state-wide, standardised, incident monitoring data. As such its benefits outweigh the difficulties, and, longer term, the improvements in IIMS should underpin improvements in efforts to tackle safety and quality.

7 CONCLUSION

IIMS has proven to be of both value and use to the CEC. Three areas need to be considered. Firstly, improvements in the functionality of IIMS will lead to quicker response times and more accurate reporting. Secondly, questions will, and should remain, about the validity of the IIMS data, the method(s) of analysis and best methods for translation of the data into sustained quality and safety improvements. Thirdly, issues over levels of access to data and resources and confusion over the role of NSW Health and CEC need to be addressed sooner rather than later.

8 REFERENCES

1. Clinical Excellence Commission. *About the Clinical Excellence Commission*. Sydney: Clinical Excellence Commission, 2006. Accessed at: <http://www.cec.health.nsw.gov.au/about.html>, Accessed on 10 June 2006.