



THE UNIVERSITY OF
NEW SOUTH WALES



CENTRE FOR CLINICAL GOVERNANCE RESEARCH

EVALUATION OF THE INCIDENT INFORMATION MANAGEMENT SYSTEM IN NEW SOUTH WALES: OVERVIEW OF STUDIES



OVERVIEW REPORT ON THE EVALUATION
OF THE INCIDENT INFORMATION
MANAGEMENT SYSTEM

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.

First published in 2006 by the Centre for Clinical Governance Research in Health, Faculty of Medicine, University of New South Wales, Sydney, NSW 2052.

Printed and bound by University of New South Wales.

© Jeffrey Braithwaite, Jo Travaglia, Mary T. Westbrook, Christine Jorm, Cynthia Hunter, Katherine Carroll, Rick Iedema and Mahalakshmi Ekambareshwar 2006

This report is copyright. Apart from fair dealing for the purpose of private study, research, criticism or review, as permitted under the Copyright Act, 1968, no part of this publication may be reproduced by any process without the written permission of the copyright owners and the publisher.

National Library of Australia

Cataloguing-in-Publication data:

Series Title: Evaluation of the Incident Information Management System in NSW Health

Report Title: Incident Information Management System in NSW: Overview of studies.

A report submitted to NSW Health evaluating the Incident Information Management System (IIMS)

ISBN: 0 7334 2389 2

1. Incident Information Management System (N.S.W.) - Evaluation.

2. I. Braithwaite, J. II. Travaglia, J.F. III. Westbrook, M.T. IV. Jorm, C. V. Hunter, C. VI. Carrol, K. VII. Iedema, R. VIII. Ekambareshwar, M. IX. University of New South Wales. Centre for Clinical Governance Research in Health.

TABLE OF CONTENTS

1 ABBREVIATIONS AND DEFINITIONS	2
1.1 Abbreviations	2
1.2 Definitions	2
2 EXECUTIVE SUMMARY	3
3 RECOMMENDATIONS	4
4 INTRODUCTION	7
4.1 The task	7
4.2 The evaluation	8
4.3 The problem stated	9
5 METHODS	11
6 FINDINGS	13
6.1 Study one: conduct a literature review	13
6.2 Study two: review a sample of pilot and current IIMS education and training programs	13
6.3 Study three: review the project implementation process for IIMS	13
6.4 Study four: analyse the success of the “reach” of IIMs within the NSW health system	13
6.5 Study five: assess the satisfaction of IIMS users with the system	14
6.6 Study six: map the facility processes involved in implementing IIMS and handling incidents	14
6.7 Study seven: examine incident reports and management processes	14
6.8 Study eight: review the dissemination of lessons learned	14
6.9 Study nine: assess the value and use of IIMS to the CEC	14
6.10 Study ten: examine reporting processes, including change in management of RIBS post IIMS	15
7 DISCUSSION	16
8 CONCLUSION	17
9 REFERENCES	18
10 APPENDICES	20
10.1 Appendix 1: Centre personnel allocated to the evaluation process	20
10.2 Appendix 2: NSW Health’s evaluation brief to CCGR	25

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 presents the findings of multiple studies conducted to evaluate the Incident Information Management System (IIMS) for NSW Health. IIMS was introduced by NSW Health to act as a core mechanism for safety and quality improvement in Area Health Services (AHSs).

We assembled a team of evaluators to undertake the research, conducted over 10 inter-related studies. We found that by instituting IIMS, NSW Health had laid a positive platform for the improvement of safety and quality of care. The implementation plan to introduce IIMS to the NSW Health system was well planned and executed. IIMS is beginning to be used in useful ways. AHSs are starting to look at incident trends and patterns. Facilities and wards are monitoring issues identifiable from incident data. The Clinical Excellence Commission (CEC) is utilising IIMS data to design and implement State-wide clinical practice improvement programs. NSW Health is employing IIMS data in analysing high-level safety initiatives (e.g. Safety Alerts) and using IIMS information to formulate new health policy responses.

There are challenges. These include: improving reporting levels, especially medical reporting; providing feedback to notifiers at various levels in the health system; improving software capabilities by acquiring version 4.0 of IIMS; refining and improving data and its management over time; and linking data to specific improvement programs of NSW Health and the CEC in a more robust way. The end result of IIMS should be a reduction in adverse events, errors, iatrogenic harm and the prevention of recurrences of common errors and near misses. At this point these outcomes have been articulated, but not demonstrated.

Intelligent use of IIMS data, providing feedback to participants to engage them in systems improvement and patient safety enhancements at local levels are highly desirable objectives. Failure to achieve them risks losing momentum and the goodwill generated by this project to date.

3 RECOMMENDATIONS

From the work that follows we have developed ten recommendations. These are intended to address major barriers and encourage more effective realisation of IIMS' potential. In each case we show the study or studies from which the recommendation is drawn.

1. The international literature indicates that the effectiveness of incident reporting is dependent on a set of specific conditions. These include a number of factors associated with: design, reporting, protection, staffing and resources, external surveillance, follow up and evaluation. Paramount amongst these factors are timely and accurate responses to reporting and non-punitive and improvement-oriented feedback mechanisms. IIMS has begun the process of achieving these goals.

Recommendation 1 – drawn from Studies 1 and 2: We recommend that a plan be formulated to feed back aggregated IIMS data and training to relevant parties throughout the NSW health system for AHS action and appropriate formulation into safety improvement programs.

2. IIMS training is operating across AHSs. A variety of forms of training are being employed to ensure the effective use of IIMS by staff. The training would be enhanced by the production of an IIMS manual and the release of updated online, video and DVD training materials at the same time as each new version of IIMS is released.

Recommendation 2 – drawn from Studies 2 and 6: We recommend that NSW Health work with the CEC and Patient Safety International (PSI), the software vendor, to develop the training and education materials, including manuals, online, video and DVD packages, and to ensure that these are released at the same time as new versions of IIMS.

3. IIMS was successfully implemented across the State within the forecast timeframe and budget allocated. Despite the complexity of the project, and information technology projects rarely meeting predicted deadlines, IIMS' project objectives and targets were met.

Recommendation 3 – drawn from Study 3: We recommend that the lessons learned from the IIMS implementation, summarised in Study 3, be documented and utilised for the benefit of future projects of this kind.

4. The transition from the project to the program has been impeded by changes in staff at NSW Health and AHSs. This has resulted in loss of project and organisational memory, and may have contributed to confusion over the roles of NSW Health and the CEC for IIMS.

Recommendation 4 – drawn from Studies 3, 9 and 10: We recommend that the respective roles and access to IIMS of NSW Health and the CEC be reviewed.

5. Levels of awareness of IIMS are generally high. There are groups of staff who need additional education and support in order to encourage their use of IIMS. These include hospitality and medical staff, and patients and carers if they are to be encouraged to be reporters.

Recommendation 5 – drawn from Studies 4 and 5: We recommend that targeted education, information and support strategies be developed for under-reporting groups.

6. Important factors in willingness to report include involvement of notifiers and potential notifiers, acknowledgement of professional concerns, effective and timely feedback and evidence of value.

Recommendation 6 – drawn from Studies 4 and 5: We recommend that NSW Health in conjunction with CEC formulate a strategy to acknowledge and encourage the involvement of different professional groups in all aspects of IIMS, including modifications to the program.

7. Multiple databases in support of incident reporting or to capture patient information are currently operating around the State. While this is in part a matter of history, need or circumstance, most often it is a result of perceived difficulties with current versions of IIMS. These issues need to be resolved.

Recommendation 7 – drawn from Studies 5 and 7: We recommend that the various databases in operation be reviewed, that reasons for the non-use of IIMS be addressed, and that the linking of relevant State-wide systems be encouraged.

8. The software limitations of IIMS remain a concern, as does the process of requesting and dealing with enhancements and modifications and the ability to extract reports. There remain issues with the effectiveness of particular modules and with the comprehensiveness, relevance and functionality of the classifications used.

Recommendation 8 – drawn from Studies 6 and 7: We recommend that concerns about software limitations be addressed with PSI and in consultation with AHSs and professional groups, and steps be taken to address these issues prior to the release of version 4.

9. Lessons learned from IIMS are being captured and disseminated within AHSs and facilities in piecemeal ways. Consideration needs to be given to the most effective methods of harnessing and distributing this learning, and how on-going double loop learning can be achieved.

Recommendation 9 – drawn from Study 8: We recommend that a coordinated strategy for dissemination of lessons learned be developed and executed. It is desirable that lessons learned be tied closely to, and benefit from, the NSW Health Knowledge Management Strategy.

10. The real test of incident reporting is whether it measurably improves patient safety and reduces levels of harm to patients. There needs to be further development of the analysis of IIMS data and the translation of data into sustained improvement strategies.

Recommendation 10 – drawn from Studies 5, 6, 7 and 8: We recommend that NSW Health and CEC develop and execute a comprehensive plan to translate incident information and trends into measurable improvement strategies.

4 INTRODUCTION

4.1 The task

The NSW Department of Health (NSW Health) commissioned the Centre for Clinical Governance Research (CCGR) at the University of New South Wales (UNSW) to conduct a formal evaluation of the 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 requested the evaluation to assess the success of the IIMS implementation project and effect of the IIMS program against the project objectives and key expected benefits (see Appendix 2 for the full brief).

In 2006, IIMS became a core component of the Patient Safety and Clinical Quality Program (PSCQP), which was launched by the Minister in 2004. The SIP program, the predecessor of PSCQP, was established in order to develop "... a culture within which health care incidents are identified, reported, investigated, analysed and acted upon." NSW Health selected the Australian Incident Monitoring System (AIMS) developed by Patient Safety International (PSI) for this process¹ and re-labelled it IIMS. The specific objectives of IIMS are to provide an electronic system that: records all healthcare incidents; assists managers through a workflow module to manage the incidents that occur in their area; records the results of reviews or investigations of incidents; and provides reports on all incidents that have been recorded in the system. The timetable for implementation of the IIMS project was: implementation throughout 2004, deployment of the system in May 2005 and sign off of the system in November 2005.

It is important to note that the IIMS *project* refers to those activities which led to the deployment of the technology, and the systems and training required to implement the IIMS system across NSW health services from 2004 to May 2005. The IIMS project was managed by Quality and Safety Branch (QSB) of NSW Health in conjunction with Communio, a project management company. The IIMS *program* refers to the actual operation of IIMS in NSW, along with related policies and procedures, with various roles assigned to NSW Health, AHSs and CEC, since the sign-off of the project in November 2005.

From 2004 to November 2005, the objectives of the **IIMS project** were as follows:

- Provide centralised and robust project management support
- Support AHSs to deliver the IIMS solution to meet local service delivery model
- Ensure state-wide deployment of the IIMS from a central data centre
- Ensure state-wide deployment of the IIMS is supported by NSW Department of Health policy
- Ensure the IIMS is supported by a training program
- Ensure the NSW staff are trained to utilise the IIMS application

- IIMS meets the NSW Health incident management reporting requirements.^{2: pg 3}

From November 2005, the original objectives of the **IIMS program** were 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 have been recorded in the system.

4.2 The evaluation

At the centre of the evaluation were four key questions. These were: did the IIMS project meet its objectives; how successful was the transition from IIMS project to program; how effective is IIMS; and what can be done to improve the effectiveness of IIMS?

In order to answer these questions the evaluation team utilised the multi-method triangulated approach employed in the *Evaluation of the Safety Improvement Program*, conducted by the CCGR for CEC and NSW Health in 2004-2005. The evaluation was agreed to be a synthesis of 10 inter-related studies (Table 1).

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, Mary Westbrook, 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 surveys 	Jo Travaglia, Cynthia Hunter, Katherine Carroll, Jeffrey Braithwaite
Study #5	Assessment of the satisfaction	<ul style="list-style-type: none"> ▪ Questionnaire 	Mary Westbrook, Jo Travaglia,

	of IIMS users with the system	<ul style="list-style-type: none"> ▪ Comparison with international and industry programs 	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

The IIMS evaluation was conducted by researchers at, or associated with, CCGR. Those involved included: 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.

4.3 The problem stated

Over the last decade health services around the world have sought to find ways to support a reporting culture amongst their staff.³⁻⁵ The aim is to encourage a systems approach to the reporting of medical errors, adverse events and near misses, that is, an approach where the focus is on the identification of the causes of error, rather than the blaming of individuals. Central to the creation of such a culture is the development and use of reporting systems which allow for the accurate capturing and analysis of, and learning from, incidents, incident patterns and trends.⁶⁻¹²

In the sections that follow we outline the methods used to evaluate NSW Health's effort to instigate a reporting system (section 5), followed by our findings from each of the 10 studies conducted as part of this evaluation (section 6). A summary of a more detailed report on each of the studies is available on request. In section 7 we provide a very brief discussion of these findings, followed by our conclusions (section 8) and recommendations (section 9). The appendices provide information on the evaluation team and the brief given to CCGR by NSW Health.

5 METHODS

Table 2 below lists the key tasks, evaluation methods and core questions posed, drawn from the *Evaluation Protocol*. This shows the evaluation methods we used for studies 1-10 and the core questions we sought to answer.

Table 2: Key study tasks, evaluation methods and core questions

KEY TASKS	EVALUATION METHODS	CORE QUESTIONS
Study 1: Conduct a literature review	We investigated the literature and analysed it using Leximancer, a concept analysis tool	What is known about incident reporting processes and mechanisms internationally?
Study 2: Review a sample of pilot and current IIMS education and training programs	We reviewed various education methods by which IIMS training is realised	What do participants in the IIMS training program learn, what and how are they taught, and what is the educational value received?
Study 3: Conduct a review of the project implementation process for IIMS	We interviewed key stakeholders and examined project documentation to assess the implementation process of IIMS	From the perspective of key stakeholders, did the IIMS implementation project meet its stated scope and objectives, budget, contractual and project performance, IT management, milestones and timeframe?
Study 4: Analyse the success of the "reach" of IIMS within the health system	We conducted interviews and focus groups to determine the extent to which IIMS has been accepted and is used	What is the depth of understanding of the IIMS system and the breadth of this understanding across all professions and employees of the Area Health Service
Study 5: Assess the satisfaction of IIMS users with the system	We surveyed 2185 staff in NSW to ascertain respondents' experiences with IIMS, attitudes towards incident reporting, understanding of IIMS processes, views on the security of IIMS, perceptions of IIMS and overall assessment of IIMS	How satisfied are IIMS users with IIMS: the ease of use of the program; ease of notification; time taken; results of reporting; outcomes and feedback?
Study 6: Map the facility processes involved in implementing IIMS and handling incidents	We conducted interviews and focus groups with NSW Health participants to look at IIMS utilisation	What is the level of use of IIMS at a facility and AHS level? What are the differences in IIMS arising from customization and culture?
Study 7: Examination of incident reports and management responses	We interviewed key staff, conducted focus groups and reviewed extant data to see how IIMS and data are handled	What is the nature, quality, reliability and comprehensiveness of IIMS data? What are the current patterns of reporting, management responses and evidence of implementation of actions at the local, area and state levels? Have appropriate metrics and performance criteria in managing incidents been established?

KEY TASKS	EVALUATION METHODS	CORE QUESTIONS
Study 8: Review the dissemination of lessons learned	We conducted interviews with patient safety managers, QSB staff and CEC staff to consider how lessons learned from IIMS are disseminated	How is the information drawn from IIMS disseminated and used in websites, safety alerts, and facility and area developed reports? What are the feedback mechanisms at facility, AHS and NSW Health level?
Study 9: Assessment of the value and use of the IIMS system to the CEC	We interviewed eight key staff from CEC to assess IIMS' value and contributions to CEC's programs and activities	How is IIMS processes and data being utilised by the CEC?
Study 10: Examination of the reporting processes, including change in management of RIBS post IIMS	We observed QSB staff to consider how QSB's reporting and management processes work in practice	How is IIMS processes and data being utilised by NSW Health? How has the use of RIBS changed after the implementation of IIMS?

In summary, in conducting ten triangulated studies of the processes associated with the IIMS project and programs, as well as stakeholder attitudes, we aimed to create a map of IIMS, its strengths, weaknesses, opportunities and limitations. In the next section we present the results of our findings under each of these studies.

6 FINDINGS

In this section the overall findings are presented. Each study will be dealt with in turn. Further information about each study is available from the separate evaluation project reports made available to NSW Health and the CEC.

6.1 Study one: conduct a literature review

Most developed health systems are strengthening their capacity and systems in order to improve the rate and quality of incident reporting. IIMS has now been in place in NSW since June 2005. The project was formally signed-off in November 2005. The promise of incident management is high, but has not yet been realised internationally. There are legal, cultural, regulatory and financial barriers and incentives to reporting incidents.^{6 13 14} The challenge for NSW Health is to reduce the barriers to utilisation, accelerate the incentives and secure a strong return on investment (ROI) with IIMS.

6.2 Study two: review a sample of pilot and current IIMS education and training programs

IIMS training is generally effective, and has been well received. Various methods are available by which to obtain education and training about IIMS: web-based, video, CD-ROM training, face to face presentations and tutorials and learning from an experienced colleague. As IIMS unfolds and is increasingly used, and as new staff join NSW Health, ongoing training programs will be needed.

6.3 Study three: review the project implementation process for IIMS

The implementation strategy to institute the IIMS software amounted to an ambitious project which was achieved on-time and on-budget. The project was delivered to NSW Health with all contractual obligations satisfied. Positive features of the implementation include that it was well planned and executed, professionally project-managed and the implementation processes enjoyed senior executive sanction and support. Resources were allocated appropriately in order to ensure an effective outcome. NSW Health can learn from such an implementation thereby ensuring that future implementation projects secure the right mix of these ingredients to help optimise success.

6.4 Study four: analyse the success of the “reach” of IIMS within the NSW health system

Awareness of IIMS is generally high amongst clinical and managerial groups, with the exceptions of hospitality and medical staff.¹⁵⁻¹⁷ To improve utilisation of IIMS requires further training amongst these groups and the design of effective feedback loops for those contributing to IIMS data. Ways to demonstrate the value of IIMS, and provide evidence to medical and hospitality staff of its usefulness, will need to be found.

6.5 Study five: assess the satisfaction of IIMS users with the system

There is considerable support for IIMS and a good level of understanding of IIMS processes. However, IIMS seeks comprehensive information, and is harder to use than paper-based systems. Managers are more favourably disposed towards IIMS than non-managers. Key problems include software limitations, slowness of the system, time taken to enter data, hardware availability and the need for feedback and training.

6.6 Study six: map the facility processes involved in implementing IIMS and handling incidents

IIMS is becoming embedded in the NSW health system. It is broadly well-accepted and in use across AHSs. IIMS helps clarify when root cause analysis (RCA)^{18 19} processes need to be invoked. Further work is needed to improve reporting rates,²⁰ provide feedback to notifiers^{21 22} and use the system to its potential.

6.7 Study seven: examine incident reports and management processes

IIMS is a marked advancement on other reporting systems.²³ It benchmarks favourably against other internationally available systems of this type. It enables incidents to be reported, and initiates management processes to tackle specific incidents and trends. Further work is needed to improve reporting rates, capitalise on the system, and link IIMS-stimulated initiatives to measurable gains in patient safety.²⁴

6.8 Study eight: review the dissemination of lessons learned

There are active processes underway in NSW to utilise fully the IIMS data. Further initiatives are needed to realise greater returns on investment from IIMS and to disseminate lessons in reliable and user-relevant ways.

6.9 Study nine: assess the value and use of IIMS to the CEC

There are considerable benefits from IIMS for the CEC. To improve on the benefits to CEC will require: the next version of IIMS (version 4.0),²⁵ a clearer translation of IIMS data into CEC's quality and safety improvement programs and a clarification of IIMS roles and responsibilities between NSW Health and CEC.

6.10 Study ten: examine reporting processes, including change in management of RIBS post IIMS

IIMS holds further potential for the management of RIBs and RCAs over time. NSW Health has made progress in this area, but further work is required to improve the RIB and RCA analysis and reporting processes.

7 DISCUSSION

The IIMS project was implemented professionally, on-time and on-budget using a strong project management methodology. The transition from project implementation to ongoing information management program in November 2005 continues with considerable progress in 2006.

Further progress is possible. In this overview report we have discussed some of the main ways to capitalise on the investment in IIMS and improve the reporting process and its utilisation. Recommendations are made which might be given consideration by a joint task force of NSW Health, CEC and AHS representatives.

8 CONCLUSION

This report is a summary of ten extensively researched IIMS studies. Further information is provided in the evaluation reports which are available from NSW Health and CEC.

9 REFERENCES

1. NSW Health. *Departmental brief for Safety Improvement Program (SIP) evaluation*. North Sydney: NSW Department of Health, 2004.
2. Incident Information Management System (IIMS) Project Team. *Project scope*. North Sydney: NSW Department of Health, 2004.
3. Fraser SG, Rubin G. Interventions to increase clinical incident reporting in health care (protocol). San Francisco: The Cochrane Collaboration, 2006.
4. Institute of Medicine. *To err is human: building a safer health care system*. Washington, DC: National Academy Press, 2000.
5. National Health Service. *An organisation with a memory: a report of an expert group on learning from adverse events in the NHS*. London: Department of Health, 2000.
6. Barach P, Small SD. Reporting and preventing medical mishaps: lessons from non-medical near miss reporting systems. *British Medical Journal* 2000;320:753-763.
7. Beckmann U, West LF, Groombridge GJ. The Australian Incident Monitoring Study in Intensive Care: AIMS-ICU. The development and evaluation of an incident reporting system in intensive care. *Anaesthesia & Intensive Care* 1996;24(3):311 - 313.
8. Runciman WB, Sellen A, Webb RK. The Australian Incident Monitoring Study. Errors, incidents and accidents in anaesthetic practice. *Anaesthesia & Intensive Care* 1993;21(5):506-519.
9. Stanhope N, Crowley-Murphy M, Vincent C, A.M. OC, Taylor-Adams SE. An evaluation of adverse incident reporting. *Journal of Evaluation in Clinical Practice* 1999;5(1):5-12.
10. Vincent C, Stanhope N, Crowley-Murphy M. Reasons for not reporting adverse incidents: an empirical study. *Journal of Evaluation in Clinical Practice* 1999;5(1):13-21.
11. Leape L. Reporting of adverse events. *New England Journal of Medicine* 2002;347:1633-8.
12. Tuttle D, Holloway R, Baird T, Sheehan B, Skelton WK. Electronic reporting to improve patient safety. *Quality and Safety in Health Care* 2004;13:281-6.
13. Evans SM, Berry JG, Smith BJ, Esterman A, Selim P, O'Shaughnessy J, et al. Attitudes and barriers to incident reporting: a collaborative hospital study. *Quality & Safety in Health Care* 2006;15(1):39-43.
14. Lawton R, Parker D. Barriers to incident reporting in a healthcare system. *Quality and Safety in Health Care* 2002;11(1):15-8.
15. Kingston MJ, Evans SM, Smith BJ, Berry JG. Attitudes of doctors and nurses towards incident reporting: a qualitative analysis. *Medical Journal of Australia* 2004;181(1):36-39.

16. Westbrook M, Braithwaite J, Travaglia J, Long D, Jorm C, Iedema R. Promoting safety: varied reactions of doctors, nurses and allied health professionals to a safety improvement program. *International Journal for Health Care Quality Assurance* In press.
17. Thompson DA, Lubomski L, Holzmueller C, Wu A, Morlock L, Fahey M, et al. Integrating the intensive care unit safety reporting system with existing incident reporting systems. *Joint Commission Journal on Quality & Patient Safety* 2005;31(10):585-93.
18. Bagian JP, Gosbee J, Lee CZ, Williams L, McKnight SD, Mannos DM. The Veterans Affairs root cause analysis in action. *Joint Commission Journal on Quality Improvement* 2002;28(10):531-45.
19. Wald H, Shojania KG. Root cause analysis. In: Shojania KG, Duncan BW, McDonald KM, Wachter RW, Markowitz AJ, editors. *Making health care safer: a critical analysis of patient safety practices*. Evidence Report/Technology Assessment No. 43 ed. Rockville, MD. : Agency for Healthcare Research and Quality, 2001.
20. Stanhope N, Crowley-Murphy M, Vincent C, O'Connor AM, Taylor-Adams SE. An evaluation of adverse incident reporting. *Journal of Evaluation in Clinical Practice* 1999;5(1):5-12.
21. Taylor JA, Brownstein D, Christakis DA, Blackburn S, Strandjord TP, Klein EJ, et al. Use of incident reports by physicians and nurses to document medical errors in pediatric patients. *Pediatrics* 2004;114(3):729-35.
22. Nakajima K, Kurata Y, Takeda H. A web-based incident reporting system and multidisciplinary collaborative projects for patient safety in a Japanese hospital. *Quality and Safety in Health Care* 2005;14(2):123-9.
23. Ahluwalia J, Marriott L. Critical incident reporting systems. *Seminars In Fetal and Neonatal Medicine* 2005;10(1):31-7.
24. Woodward S. Achieving a safer health service: part 3. *Professional Nurse* 2004;19(7):390-4. (18 ref).
25. Bae S, Khouangsathiene S, Morey C, O'Connor C, Rose E, Shakil A. Implementation of a web-based incident-reporting system at Legendary Health System. In: Lorenzi N, Ash J, Einbinder J, McPhee W, Einbinder L, editors. *Transforming health care through information*. 2nd ed. New York: Springer, 2005.

10 APPENDICES

10.1 Appendix 1: Centre personnel allocated to the evaluation process

Staff members of CCGR have undertaken numerous studies into the organisational structures and processes of hospitals and the features of the underlying cultures and sub-cultures pertinent to clinical practice improvement. They are also experienced adult educators. Staff members have in addition undertaken a range of research and evaluation studies into health systems reforms, clinicians as managers and the leadership behaviour of clinicians. The Centre is a leading facility nationally and internationally in clinical and social science research and evaluation of health service reform initiatives.

The team deployed to conduct the evaluation includes clinicians, organisational behaviour specialists, psychologists, sociologists, anthropologists and other social scientists as well as statistical and methodological experts. Thus we drew on the disciplines needed to do a thorough evaluation. The team is headed by A/Professor Jeffrey Braithwaite and includes 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.

Associate Professor Jeffrey Braithwaite

BA, DipLabReIs and the Law, MIR (Hons I), MBA, PhD, FAIM, FCHSE

Director, Centre for Clinical Governance Research

Professor Jeffrey Braithwaite is Director of the University of New South Wales' Centre for Clinical Governance Research and an Associate Professor in the School of Public Health and Community Medicine. He joined the Centre as a Commonwealth Casemix Research Fellow in 1994. Prior to this time Professor Braithwaite held a number of executive positions in the health sector over a twenty five-year period. He has managed, consulted, taught and researched in Australia and a number of countries including the People's Republic of China, Papua New Guinea, Japan, Singapore, Hong Kong, the United States of America and the United Kingdom. His research interests include clinicians as managers, organisational theory, the future of the hospital, organisational design of hospitals, change management in health care and health policy development and implementation. Professor Braithwaite has an international reputation in health services management, and has published extensively in national and international journals in these fields including the *BMJ*, *The Lancet*, *Social Science & Medicine*, *Journal of Managerial Psychology*, *Organizational Studies* and *Health Services Management Research*. Professor Braithwaite is the CCGR evaluation project sponsor, led studies 3, 8, 9 and participated in all other studies.

Ms Katherine Carroll

BPhty LaTrobe, BA Hons LaTrobe

PhD Candidate, Centre for Clinical Governance Research

Katherine has a Bachelor of Physiotherapy and a B.A Hons (Sociology). Katherine's PhD research is part of a wider ARC Discovery Grant: 'Are clinicians' identity and practice aligned with the direction of health care reform and the new roles implied in its achievement?' The Chief Investigator for this ARC Discovery is A/Professor Rick Iedema. Katherine is exploring intensive care settings.

Using qualitative research methods and complexity theory, this research investigates the stability and uncertainty that coexist within the roles that medical, nursing and allied health clinicians perform in intensive care. Katherine interweaves the constructed 'stable points' in intensive care (professional roles, routine ward rounds and the predetermined rostering of staff) *with* coexisting emergent 'unpredictables' that characterise organising a unit that cares for critically ill patients. Thus, Katherine is researching the interplay between stability and uncertainty as it is enacted and experienced by clinicians at the ward level of the health system. The research is based on data collected through multiple methods: video-ethnography, participant-observation, reflexive clinician focus groups and interviews. Ms Carroll participated in study 4.

Ms Mahalakshmi Ekambareshwar

BSc India, Grad Dip HSM UTS, ACHSE

Masters (Honours) Candidate, University of Technology Sydney

Mahalakshmi has a Bachelor of Science (Physics) and a Graduate Diploma in Health Services Management. Mahalakshmi's Masters (Honours) research is to review the education and training provided to health workforce in the use of Incident Information Management System (IIMS). In doing so, Mahalakshmi looks at education and training provided to the health workforce in a broad sense - accessibility to IIMS training programs and language and literacy issues. A triangulated observational analysis of the IIMS training programs was conducted as part of this research. Her research is based on utilization-focused evaluation where data is collected through multiple methods: stakeholder interviews, analysis of the web-based IIMS training material, analysis of face-to-face training, analysis of CD-ROM / video training material, log file analysis, development of questionnaire administered to users of IIMS Training. Optimal modes of education for the health workforce are likely to improve compliance with incident reporting and hence improve the quality and safety of healthcare. The Chief Investigator for this research project is Professor Mary Chiarella of University of Technology, Sydney.

Mahalakshmi has held a number of positions in the health sector for over thirteen years. She is the Project Officer at Cancer Services, Northern Sydney Central Coast Health. Her research interests are in the areas of quality and safety in health care and health policy development and implementation. Ms Ekambareshwar led study 2.

Dr Cynthia Hunter

BA, MA UWA PhD Newcastle

Research Fellow

Dr Cynthia Hunter has Bachelor and Masters qualifications from the University of Western Australia and a PhD from the University of Newcastle, Australia. Her career spans academic teaching in Australia and overseas, applied anthropology in the Pacific Rim and research in Australia and Indonesia. Her broad research interests focus on all aspects of illness and healing ethnography. Particular interests include delivery and quality of health care. Cynthia is currently employed in the Centre as the senior researcher working collaboratively on an ARC Discovery Grant: Anchoring preventive health care to positive learning: An exploration of local methods of organizing and improving medical practices. This project incorporates ethnographic research in the two major children's hospitals in Sydney observing and critically examining the daily work practices culture of clinicians' communications and interactions with each other. Dr Hunter participated in study 4.

A/Professor Rick Iedema

BA, MA, PhD (Syd)

Deputy Director, Centre for Clinical Governance Research and A/Professor, School of Public Health and Community Medicine, UNSW

A/Professor Iedema's research into hospital communication and interaction is of international renown. His publications have appeared in the *BMJ*, *Social Science & Medicine*, *Organization Studies* and *Health Services Management Research*, among many others. Dr Iedema's book (2003) provides an in-depth description of how the organisation of health care work is changing. Dr Iedema is also in the process of organising and editing a volume of papers in this area produced by a team of prominent local and international researchers. His contribution to the study of clinical practice and its organisation is also demonstrated in his role as Co-Chief Investigator on three ARC-SPIRT/Linkage funded projects and as Principal Chief Investigator on two ARC Discovery grants. These projects have enabled Dr Iedema to describe the over-arching facets of clinicians' work that produce good clinical as well as organisational outcomes. Dr Iedema participated in the overview report.

Dr Christine Jorm

MBBS, MD, FANZCA

Conjoint Senior Lecturer, Centre for Clinical Governance Research, St George Clinical School and School of Public Health and Community Medicine

Dr Christine Jorm is an Anaesthetist with wide expertise in the organisational and clinical dimensions of safety and quality. She has experience in convening RCA teams and being an RCA team member and leader.

Dr Jorm brings extensive clinical experience to adverse event analysis and the negotiation and dissemination of analytical findings. Her research involves studying the interaction of medical specialty culture with patient safety and quality issues. Qualitative inquiry and research design form the major part of this study. Themes that illuminate behaviour include: personal motivations for work, the understanding of professionalism, the strength of alliances with other doctors, and the influence of current public and political perceptions of healthcare in NSW. A number of psychological constructs are also of relevance. These include organizational citizenship behaviour, risk taking behaviour and bystander apathy. Dr Jorm was the original project manager for this evaluation, and led study 1.

Ms Jo Travaglia

BSocStuds (Hons), Grad Dip AdEd, Cert TEASOL, MEd

Research Fellow, Centre for Clinical Governance Research

Ms Jo Travaglia has been involved in health services education and research for over 20 years, actively inquiring into, promoting and developing the concept of diversity and cultural competence in health. She has led research and evaluation projects on a range of topics relating to diversity, ethnicity, cultural competence, and disability and health services.

Ms Travaglia has taught in the Bachelor of Education, Postgraduate Diploma in Education and Masters of Education Programs at the University of Sydney and the Australian Catholic University. At the University of NSW she has taught undergraduate and postgraduate medical and Masters of Public Health students. She is currently working in the Centre for Clinical Governance Research on an evaluation project of the impact of the Clinical Excellence Commission programs in NSW. Ms Travaglia was project manager for this evaluation project, led studies 4, 6, 7, 8, 10 and participated in all other studies.

Conjoint Associate Professor Mary Westbrook

BA (Hons) (Syd), MA (Hons), PhD (Macq), FAPS, AM

Conjoint Associate Professor, Centre for Clinical Governance Research

Before joining the CCGR Associate Professor Westbrook was Associate Professor in the Department of Behavioural Sciences, Faculty of Health Sciences, The University of Sydney. During her teaching career she was primarily involved in the education of students in ten health professions. Associate Professor Westbrook has published over 100 research articles in peer reviewed journals. Her main areas of research are illness, disability, ageing, health care, health consumers, ethnicity, gender, organisational behaviour and vocational development of health professionals.

Associate Professor Westbrook is a Fellow of the Australian Psychological Society. In 1998 she was awarded an AM for 'services to people with disabilities and to education in the field of health sciences research'. She is a director of the Northcott Society, one of the largest Australian NGOs providing services for people with disabilities and is a member of the Medical Advisory Board of Post-Polio International, USA. She was a founding member of Post-Polio Network (NSW) and through its website provides a global email information enquiry service for polio survivors and health care providers. Associate Professor Westbrook led study 5 and participated in studies 2, 6, 7 and 8.

10.2 Appendix 2: NSW Health's evaluation brief to CCGR

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 the Incident Information Management System (IIMS). NSW Health needs the evaluation to assess the success of the implementation and effect of the program, against the project objectives and key expected benefits. The CEC is interested in the extent to which the IIMS will make health care in NSW safer and better under CCGR's contract to conduct a *Research and Evaluation Program into Safety and Quality*. This evaluation continues the multi-method triangulated approach utilised in the *Evaluation of the Safety Improvement Program*, conducted by the CCGR for the CEC and NSW Health in 2004-2005.

10.2.1 Overview of the Incident Information Management System (IIMS)

The Department of Health has introduced a number of initiatives to address patient safety and quality including the comprehensive Safety Improvement Program (SIP) and Reportable Incident Brief (RIB) process (NSW Health Circular 2003/88). The IIMS has been developed as a key quality assurance tool for public health organisations (PHOs).

The SIP has two key components:

- The first has been the development of the culture within which health care incidents are identified, reported, investigated, analysed and acted upon
- The second is the use of an information system that assists health care workers to achieve the first component. IIMS is this system.

The objective of the IIMS is to provide an electronic system that:

- Records all healthcare incidents
- Assists managers through a workflow module to manage the incidents that occur in their area
- Records the results of reviews or investigation of incidents
- Provides reports on all incidents that have been recorded in the system.

The IIMS is based on the Advanced Incident Monitoring System (AIMS) developed by the Australian Patient Safety Foundation (<http://www.apsf.net.au/>). The classification system used in IIMS is endorsed by all Australian Health Ministers and will allow for the collection and analysis of nationally consistent data.

There are 100,000 potential users of the IIMS in the NSW Health system i.e. all NSW Health system employees and contractors. The majority of these will be notifiers to the IIMS only, with the remainder having management responsibilities. NSW Health, CEC, PHOs, managers and staff all have specific roles and responsibilities relating to the implementation of IIMS.

10.2.2 Incident categories of IIMS

There are four categories of incidents occurring in the health care setting. The electronic system has a separate “form” for each of these incident types. (Table 2):

TABLE 2: Incident categories of IIMS

INCIDENT CATEGORY	DESCRIPTION
Clinical Incidents	Any incident, adverse event or near miss involving patient care: for example some deaths, falls, pressure ulcers and including those that may be caused by medical equipment (such as infusion pumps) or those due to system issues such as access block
Staff, visitor, contractor incidents	Any incident or near miss pertaining to the health of any staff (permanent or casual), visitor, volunteer or contractor. This category includes occupational health and safety type issues and body substance exposure incidents
Property, security, hazard incidents	Any incident or near miss that involves these elements, for example theft or damage to property or issues identified after routine OH&S inspection
Complaints	An expression of dissatisfaction by a complainant, which may have one or more issues associated

10.2.3 The incident management process

Incident management in IIMS involves three main processes (Table 3). A flow diagram of the incident management process in IIMS is presented in section 10.2.6.

TABLE 3: IIMS Processes

PROCESS	
1.	Notification
2.	Management of incidents in the electronic environment
3.	Classification

1. Notification

Notification is the process of entering data about an incident or near miss for any of the incident categories into the IIMS. The minimum dataset (MDS) required for each incident includes the following mandatory fields:

- The location of the incident
- The date the incident occurred
- The time the incident occurred (either exact or approximate time)
- The incident type
- A brief description of the incident and the following additional items:
 - Which specific service was involved eg cardiology, physiotherapy etc
 - Answers to a few brief questions related to the incident type or types nominated.

Notifiers are also asked to make an initial assessment of the severity of an incident by using the Severity Assessment Code (SAC) matrix and to give their opinion on how the incident may have been prevented. Notification of incidents or near misses is made in three ways:

Direct data entry

- This is the preferred method of notification as it is the most timely and efficient method of incident notification
- All mandatory fields in the electronic form must be completed before the incident can be submitted.

Paper based notification form

- This method has the same data elements as the electronic “form”
- As the incident form is designed to collect both opinion and fact it is not to be retained once data are entered into the electronic environment.

Telephone

A telephone contact centre will be established as part of the implementation of the IIMS to enable notification of incidents via telephone.

2. Management of incidents in the electronic environment

Management of incidents in IIMS describes the processes undertaken in the electronic environment regarding review of incidents and actions taken in response to that review. This is only a component of the overall incident management process. Responsibility for management of incidents will be delineated at PHO level as part of the service delivery model (SDM) unique to each PHO. In general the person responsible for the ward or service area will have first line responsibility for managing incidents or near misses that occur in their area.

The following sequence pertains to the management of incidents:

- a) All notified incidents are reviewed to assess the level of investigation required

- b) Management is undertaken by registered users to the system who have the appropriate authority and training to do so
- c) All data elements in both notification and management screens are completed as far as possible
- d) Actions taken and recommendations for further action to prevent recurrence of the incident are documented in IIMS and reviewed by a more senior manager who also records acceptance of recommendations and/or comments in IIMS
- e) Tracking actions taken and recommendations made via the data manager module in IIMS to ensure appropriate and timely review of the outcome of implementation. This is an important part of the incident management process facilitated by IIMS.
- f) Senior management (as defined at each PHO) is responsible for deciding whether recommendations are accepted and approved, especially when there are resource implications from those recommendations
- g) If the incident pertains to a performance issue or inappropriate behaviour by staff, an investigation should be undertaken by appropriately senior personnel to attempt to verify the substance of the report as outlined in the "Guideline on the Management of a Complaint or Concern about a Clinician 2001 (PD2005_586)".
- h) Management of incidents via the IIMS does not replace the responsibility of staff to notify appropriate authorities, such as when the incident involves a criminal act, an unsafe act, alcohol or drug use by a staff member, patient abuse etc. (refer to current policies).

3. Classification

Classification is undertaken by nominated personnel according to the SDM of each PHO and may include local managers, patient safety managers and staff of Clinical Governance Units (CGU).

There are three levels of classification: minimum data set; basic classification; advanced classification. The explanations of these are as follows:

Minimum dataset (MDS) includes responses to the drop down questions that appear on the notification screen for each incident type nominated. SAC 3 and SAC 4 incidents will be classified as per the minimum data set that appears in the notification screen of the IIMS.

Basic classification refers to a number of questions seeking further information about what happened, what type of staff was involved, and the contributory and causative factors for each incident type. These questions appear on the right hand side of the management screen. All SAC 2 actual incidents will be classified to the basic level following incident analysis unless they are subject to an RCA.

Advanced classification refers to a more detailed set of questions that appear on the right hand side of the management screen. This classification is to be made for all incidents that rate an actual SAC 1 or have an RCA completed. The advanced classification will form a part of the final report from an RCA and is therefore available to the NSW Health as a public document and not subject to legal privilege as is other information from an RCA.

The information provided through classification is included in reports available to managers. This will assist them in developing strategies based on trend data to understand cumulative risk and to minimise the recurrence of such incidents in their area of responsibility. The standard classification system used in IIMS allows comparison of data across incident type.

10.2.4 Changes to IIMS

Area Health Services (AHS) are able to request changes to IIMS during the initial 12-month period of operation (May 2005 – May 2006). These requests will be considered by the IIMS User Group established by NSW Health. Changes can be made to the following software modules: Data manager; Analyser; User Administrator; Workflow; Database and D/Base Administrator.

10.2.5 Terms of reference for the IIMS evaluation

1. Purpose

The task of the evaluation is to assess the success of the implementation and effect of the IIMS program against the program objectives and key expected benefits.

2. Key Tasks

The key tasks of the evaluation are specified in Table 4.

TABLE 4: Key tasks of the evaluation

TASK	DESCRIPTION
1.	Undertake a literature review
2.	Conduct a prospective and retrospective review of IIMS education and training
3.	Conduct a review of the project implementation process for IIMS
4.	Assess the success of the “reach” of IIMS within the health system
5.	Evaluate levels of satisfaction of IIMS users with the system
6.	Map implementation of IIMS and handling of incidents at a facility level
7.	Analyse incident reports and management responses
8.	Evaluate dissemination of lessons learned
9.	Establish the value and use of the IIMS system to the CEC
10.	Describe IIMS management and reporting process

3. Process

It is expected that the process undertaken to complete the evaluation will include:

- Review of relevant literature, both national and international
- Consultation with key stakeholders involved in the IIMS:
 - i) IIMS Management Committee
 - ii) Branch Directors and other NSW Health staff
 - iii) Clinical Excellence Commission representatives
 - iv) NSW Health managers and staff
 - v) AHS managers and staff
- Report of progress to the IIMS Management Steering Committee
- Preparation of interim draft release report
- Preparation of final report.

4. Project supervision, management and collaboration

The IIMS Management Committee will oversee the contract.

10.2.6 Flow diagram of incident management process in IIMS

