



THE UNIVERSITY OF
NEW SOUTH WALES



CENTRE FOR CLINICAL GOVERNANCE RESEARCH

EVALUATION OF THE INCIDENT INFORMATION MANAGEMENT SYSTEM IN NEW SOUTH WALES: STUDY NO 2



REVIEW OF THE EDUCATION AND
TRAINING PROGRAM

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.

© Mahalakshmi Ekambareshwar, Jo Travaglia, Jeffrey Braithwaite and Mary T. Westbrook 2006

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National Library of Australia

Cataloguing-in-Publication data:

Series Title: Evaluation of the Incident Information Management System in New South Wales

Report Title: Evaluation of the Incident Information Management System in New South Wales: Study No. 2 – Review of the education and training program

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

ISBN: 0 7334 2391 4

1. Incident Information Management System (NSW) - Evaluation.

2. I. Ekambareshwar, M. II. Travaglia, J. III. Braithwaite, J. IV. Westbrook, M.T. V. 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 INTRODUCTION	4
3.1 Overview	4
3.2 About this report	5
4 METHODS	6
4.1 Aim	6
4.2 Method	6
5 FINDINGS	7
5.1 Training methods	7
5.2 Web-based training	7
5.3 Video and CD-ROM training	13
5.4 Face-to-face training	14
5.5 Log file analysis of IIMS training database	16
5.6 Evaluation of the IIMS Pilot Training	17
6 DISCUSSION	20
7 CONCLUSION	22
8 REFERENCES	23
9 APPENDIX	24
9.1 Appendix 1: Log file analysis of IIMS training by modules	24

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 results of study 2 in the evaluation of the Incident Information Management System (IIMS) program in New South Wales. The study provides a triangulated observational analysis of IIMS education and training programs. It also reviews the results of an evaluation of the training conducted as part of the piloting of IIMS in NSW. This component of the evaluation was conducted between February and May 2006.

The report found that users' overall experience of undertaking web-based training is satisfactory. IIMS web-based training satisfied the criteria used for evaluating web-based training including content, instructional design, interactivity, navigation, motivational components, use of media, evaluation of learning, aesthetics, record keeping and tone. IIMS web-based training effectively addresses the key issues involved in the reporting and managing of incidents using IIMS.

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, M 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 	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 1, the *Literature Review*, we turn to the results of study 2. This study was the *Review of the education and training program*. This report documents the outcomes of this study. This component of the evaluation was conducted by Ms Mahalakshmi Ekambareshwar, Ms Jo Travaglia, A/Professor Jeffrey Braithwaite and Conjoint A/Professor Mary Westbrook.

3.2 About this report

The next section, section 4, *Methods*, documents the evaluation process utilised by the researchers. Section 5 presents the findings of this process, while section 6 discusses the findings in relation to the key research questions. The conclusion, section 7, briefly outlines the implications of this study for the evaluation of IIMS as a whole.

4 METHODS

4.1 Aim

The aim of the study was to conduct a triangulated observational analysis of IIMS' training programs. We evaluated the training according to these criteria: content, instructional design, interactivity, navigation, motivational components, use of media, evaluation of learning, aesthetics, record keeping and tone.

4.2 Method

A formative evaluation was carried out using a multi-faceted evaluation following the utilization-focused evaluation process outlined by Patton.¹ Our evaluation methodology includes the analysis of online course and Compact Disc-Read Only Memory (CD-ROM) material,² log file analysis of the use of IIMS training^{3 4} and analysis of IIMS face-to-face training.

One of the researchers attended the IIMS on-line training and participated in two face-to-face training sessions, undertook an analysis of CD-ROM and video training material, conducted informal interviews with stakeholders involved in IIMS training and undertook a log file analysis of training data from one Area Health Service (AHS). The analysis of on-line training, CD-ROM, video, log file and informal stakeholder discussions was undertaken during the period February 2006 to May 2006. The researcher attended the first face-to-face training session for *Notifiers of Incidents* on 14 March 2006 and the second face-to-face training session for *Managers of Incidents* on 28 March 2006.

The researcher conducted a formative evaluation of the two face-to-face training sessions, participating in all activities and discussions during the course of training. The contents of IIMS on-line training and the two face-to-face training sessions were independently assessed. The CD-ROM and video training material were reviewed together and the log in pattern to IIMS on-line training was reviewed based on data from one AHS. Field notes of these data-gathering activities were taken along with field notes of informal discussions with IIMS stakeholders. The findings that follow emerge from consolidation of the field notes into a final set of results, discussion and conclusion.

A second researcher then examined the evaluations of IIMS training conducted by a private company, Edmore, during the pilot phase of the IIMS implementation. In addition, the evaluators included questionnaire items on training, and responses to these are presented in study 5 of this series.

5 FINDINGS

5.1 Training methods

Aims and Objectives

NSW Health seeks compliance with IIMS policy directives throughout the NSW health system. AHSs are required to ensure that users receive appropriate levels of training and access to the IIMS system. NSW Health's key steps in the process are notification, management and classification of incidents.

The objective of IIMS training is to ensure that almost 100,000 potential notifiers in the NSW Health workforce receive adequate training in the use of IIMS according to their role in incident management. NSW Health policy asserts that: *the aim of IIMS training is to support health care professionals in identifying, tracking and managing clinical, workforce and corporate incident information across the NSW health system.*⁵

Training programs in the use of IIMS were developed by NSW Health using the following training media: e-learning modules through Intranet (web-based), Video, CD-ROM and Digital Versatile Disc DVD. As part of the initial deployment of IIMS, three different types of user training strategies were delivered by NSW Health to be implemented by all public health organisations:

- Awareness training – to raise awareness of IIMS to all staff and to train all staff on how to notify an incident. Awareness training includes notifier awareness and manager awareness
- Online training – IIMS web-based training is the official training package delivered by NSW Health available via the Intranet to all employees
- Administrator training – training given to system administration staff who need to know how to create logins and maintain security permissions for local users.

5.2 Web-based training

5.2.1 Description of training

NSW Health introduced IIMS web-based training with the intention that it will be the main mode of training for IIMS. The intended objectives of IIMS web-based training are to nurture a reporting culture and to increase compatibility with reporting of all incidents and near misses. IIMS web-based training is available to all NSW Health employees through the Intranet of the Area Health Service (AHS) and there was simultaneous State-wide roll out of IIMS training.

NSW Health had a short time-frame (November 2004 to May 2005) to implement IIMS across the State. Thus, a consistent and standardised training method was sought. IIMS web-based training was therefore implemented. IIMS web-based training is accessed via an icon "Online Training" in some AHSs and in others the training package may be accessed via Information

Management and Technology Division staff. The training program was designed by subject matter experts at New South Wales Health and designed by Edmore Pty Ltd. for New South Wales Health.

Access to training requires a username and password. The initial login screen asks the notifier to type in their first name and surname, and their work location. Subsequent logins ask for their first name and surname and confirms their work location. Although the training program requires a username to log in, the usernames are selected by the trainee and are not connected to network usernames. While not common, it appears possible for trainees to log onto the IIMS web-based training using fictitious names. This is certainly a drawback if looking at log file analysis to track staff who have participated in training.

Managers who are required to manage incidents on IIMS need to apply to the IIMS Manager of the AHS for username and password. In some AHSs, it is a requirement that the on-line training needs to be completed prior to the issue of a username and password. This is monitored using the tracking feature in IIMS training. In certain AHSs, training rooms equipped with computers are utilised for guided web-based training. Face-to-face training is not the preferred option in one AHS due to lack of human and material resources.

The web-based training program describes what IIMS is and explains the role of the user in using IIMS as part of improving safety in one's area of work. Quality dimensions are explained in brief, the Safety Improvement Program is explained as having two components, one of which is a 'reporting culture' and the other is 'An information system to achieve the first component' through reporting.

Definitions of 'incident' and 'near miss' are given and the rationale behind why incidents should be reported are explained. In the version reviewed, the Incident Management was explained as a five-step processⁱ :

- Identify
- Notify
- Investigate
- Classify
- Analyse.

Each of the five steps was explained in detail. The step of 'Identifying' incidents has a series of scenario questions, on which participants are tested on whether to 'notify' or 'ignore' incidents occurring.

ⁱ The latest NSW Health Incident Management Policy (PD2006_030) now identifies seven steps in the incident management process: identification; notification; prioritisation; investigation; classification; analysis and action; and feedback following investigation.

5.2.2 Evaluation of web-based training

We subjected IIMS training to the ten criteria used for evaluating web-based training employed in the semi-annual Multimedia and Internet Training Awards program.⁶ These are: content, instructional design, interactivity, navigation, motivational components, use of media, evaluation of learning, aesthetics, record keeping and tone.

Criteria 1 - Content

IIMS web-based training has five modules, practice exercises and assessment followed by 'Exit'. These are listed on the main menu in the following order:

- How to use this Training
- Introduction to IIMS
- Incident Management
- Incident Data Analysis
- Workflow
- Practice Exercises and Assessment
- Exit.

The first three modules are the most important as they prepare trainees to navigate through IIMS training, notify incidents on IIMS and manage notified incidents on IIMS. The fourth module, 'Incident Data Analysis', is for selected managers who analyse incident reports and the fifth module, 'Workflow', enables the notification process to be extended to inform other departments that have an overlapping responsibility in the management of incidents. 'Practice Exercises and Assessment' is the final module that is optional in some AHSs and mandatory in other AHSs in order to obtain username and password to access Data Manager. In evaluating IIMS' training contents we look at whether the training program includes the appropriate amount and quality of information.

Module 1 – How to Use this Training The web-based training familiarises trainees to the training program through an introductory module on 'How to Use this Training'. This introduces trainees to the various buttons, icons and windows on screen – 'Forward button' in the bottom right corner to move to the next step, 'Help window' if more information about an instruction is required, 'Let's move on' window that performs the correct action for the trainee if trainee is unable to perform an action after reading the 'Help window'. This module also introduces trainees to 'what to do' during Application Simulation Lessons.

Module 2 – Introduction to IIMS The 'Introduction to IIMS' module provides an overview of IIMS and has 74 pages of training material. This module gives trainees background information on why IIMS was introduced in NSW Health and explains the role of the trainee in using IIMS as part of improving safety. The module emphasises that 'safety' is one of six dimensions of Quality which is essential to providing quality health care to customers (which is NSW Health's objective). IIMS is the information system introduced to assist health care workers achieve a safety culture.

Explanations of what constitutes an 'Incident' and 'Near Miss' are given. As mentioned earlier, IIMS is a five step process – Identify, Notify, Investigate, Classify and Analyse. The first two steps Identify and Notify are performed by all Staff and the next three steps Investigate, Classify and Analyse are performed by managers. This module explains the Identification and Notification process in detail. Trainees are tested on some scenarios where incidents have occurred and are asked to choose between 'Notify' using IIMS or 'Ignore'. Trainees are taken through Simulation Lessons on how to notify an incident on IIMS Notification form. Trainees are guided step-by-step through the notification form until completion of form and generation of incident ID. The module concludes with a summary of Key Points.

Module 3 – Incident Management The 'Incident Management' module educates trainees on how to manage incidents through performance of the next two steps of the IIMS five-step process – Investigate and Classify. 'Incident Management' has eight lessons with a total of 266 pages that includes:

- Incident Management Overview – 23 pages
- Investigating an Incident – 57 pages
- Classifying an Incident – 36 pages
- Linking Incidents – 23 pages
- Managing Your Incident List – 43 pages
- Running Incident Reports – 19 pages
- Designing Incident Reports – 38 pages
- Updating Workflow Task Details – 27 pages.

Trainees are instructed to complete the first three modules in order. The first initiation step is the automatic generation of an email to the person responsible for managing the incident. As part of incident investigation, managers need to review the incident, collect relevant information and record management details.

All lessons begin with an introduction followed by the objectives of the lesson; simulation of Data Manager are included in all lessons and conclude with a review that sums up what has been learnt in the lesson. Through simulation, managers are taught how to navigate and enter incident information in the Management Console of IIMS, review notification details, how to create and manage links, how to manage incident list, how to run incident reports, how to design a report and how to review and update tasks in Data Manager Workflow.

Module 4 - Incident Data Analysis The fourth module in IIMS web-based training is 'Incident Data Analysis' and has three lessons. Access to Data Analyser requires username and password given to a select group of staff who are required to perform various types of analysis and reporting. The following lessons are included in this module:

- Running predefined reports
- Comparing data and drilling down

- Creating queries and reports.

This module is intended for Managers required to perform analysis of incident reports who are taught how to access Data Analyser Console, select and run pre-defined reports, define characteristics of the report, generate report and modify data presentation through simulation of the IIMS Analyser Console. The simulation process gives trainees hands-on experience on how to generate various reports, for example, 'Incidents by Incident Type per Month' and 'Incidents by date'. A simulation of Analyser trains managers on how to generate a chart that contains data from more than one organisation and how to drill down to Data Manager from the chart.

Module 5 - Workflow Workflow is the fifth module in IIMS web-based training and is used by very few trainees as seen in log file analysis. Workflow has four lessons.

- Introduction to Workflow
- Designing Workflows
- Applying a Workflow to a Project
- Designing Manual Workflows.

Some incidents notified on IIMS require the attention of more than one department. Workflow enables the notification process to be extended to inform other departments with overlapping responsibilities for managing incidents. Once again, as in all other modules, simulation of workflow is used to teach trainees how to design tasks within a workflow.

We found the contents well structured and appropriate. Trainees seem able to secure sufficient information through these modules to participate in IIMS at the right level. That said, as we shall see, there are opportunities for improvement over time.

Criteria 2 - Instructional Design

Each of the modules in IIMS web-based training has an introduction, an outline of the objectives, lesson review and simulations wherever necessary. The instructions are easy to follow. Overall, the design is suited for the kind of instruction delivered.

Criteria 3 - Interactivity

The modules are designed in such a way that there is some user interface in order to navigate through the screens. Where simulation is used, increased user interface is necessary in order to perform the various functions and commands within the simulation.

Criteria 4 - Navigation

Some amount of computer literacy is required to navigate through the screens and within the screen. Users are guided through the navigation process but are unable to follow their own navigation pathway. The Main Menu is given at the start of the training program and the menu for each of the modules is given at the start of the module.

One drawback identified while navigating is that the topics for each of the lessons are given at the end of each lesson which would have been beneficial to trainees if provided at the start of the lesson. Trainees have the option of clicking the 'topics' icon in the bottom toolbar at any time during the lesson to get a list of topics. Trainees do not have the option to exit at anytime during the lesson. However, they can exit by through the 'menu' button which contains the 'exit' button in the bottom toolbar.

Criteria 5 - Motivational Components

There is no humour, games and adventure or surprise elements present. This could be due to the nature of the contents delivered and use of motivational factors is considered not appropriate. However, where necessary, testing is included to reinforce the concepts introduced to trainees. There are also optional 'Practice Exercises and Assessment' at the end of the training program.

Criteria 6 - Use of Media

The training program does not employ animation, music or sound. The program employs effective use of consistent colours. The addition of audio feature as an option would have been useful both from an accessibility point of view and from the point of view of trainees for easier execution of the various functions.

Criteria 7 – Evaluation of learning

As mentioned earlier, there is simulation in almost all lessons where trainees are evaluated. There is also a final 'Practice Exercises and Assessment' at the end of the training program that is mandatory in some Area Health Services in order to obtain a username and password for access to 'Incident Management' modules. Mastery of current lessons is required in order to proceed to the next lesson.

Criteria 8 - Aesthetics

The colours used for web-based training are consistent throughout the course. The course material in all modules is set on white background with shades of blue, grey and a trace of pink. Log in leads to the 'Main Menu' that contains all the modules with NSW Health logo that appears in the top right hand corner. Overall, the visual appearance is quite pleasing to the eye.

In all modules and simulations, functions/commands that need to be performed by the trainee appear in red text and use of blue text indicates that the trainee needs to take note of it and nothing needs to be done. Text typed by the trainee appears in red.

Criteria 9 - Record Keeping

All log-ins to IIMS training program are recorded on the web log-in and can be monitored by the IIMS Manager. Scores from all tests and exercises are also forwarded to the IIMS Manager of the respective AHS. The record keeping feature is effective and beneficial to evaluate learners' behaviour.

Learners' behaviour may be evaluated using the Web log data from a sample of Web-Based Training environment. By analysing the web log, information about who is using the material, from where and when can be determined.⁷

Criteria 10 - Tone

The training program is intended to deliver training in the use of IIMS and it does just that. The language and tone used are well-designed for the health audience and the instructions given are mostly simple to follow.

5.3 Video and CD-ROM training

The video starts with a short introduction by the NSW Director General of Health who explains IIMS aims and purpose. The focus of the video is on quality of patient care where safety is fundamental; and safety of patients, visitors and staff. Identifying, notifying and acting on incidents are projected as the key ingredients to the development of a safety culture within all healthcare areas. The IIMS is a tool developed to achieve safety in healthcare organisations.

Participants are educated in:

- What constitutes an incident
- Identifying incidents and notify incidents through the use of IIMS. When an incident should be notified
- What a 'near miss' is, and
- How to identify and notify 'near miss' incidents.

The five-step process for analysing web-based training is followed. Staff are trained in the first two steps of 'identifying' and 'notifying' incidents while managers are trained in the additional three steps of 'investigating', 'classifying' and 'analysing'.

An example of how to identify a clinical incident is demonstrated. The focus of the video is on reporting of clinical incidents. A demonstration of 'how to notify an incident' is shown. Participants are taken directly to the IIMS notification form on the Intranet page. The video does not show participants where to look for the IIMS notification icon on the intranet page.

The above analysis was that of CD-ROM for notifiers. The researchers were informed that all other modules of the training package are available on Compact Discs (CD) and DVD, licensed by the training package developers to make copies as required. Interview with an IIMS stakeholder involved in the development of the training package, revealed that the use of CD-ROM for training of all modules does not allow for tracking of modules completed by trainees. Due to lack of user tracking facility, AHSs did not prefer this mode of training. The researchers were not able to obtain a copy of CD-ROM and DVD that contained all training modules. However, we believe the contents of the CD-ROM and DVD to be the same as for web-based training.

5.4 Face-to-face training

To supplement the web-based training, some AHSs have introduced other forms of training such as face-to-face training for staff and managers; and facilitator-led web-based training. Face-to-face training sessions are conducted on a needs basis, in response to demand.

5.4.1 Evaluation of face-to-face training for Notifiers of incidents on IIMS

The demand-driven training session attended by the observer as a participant was targeted towards a specific group of the health workforce from the same workplace who had difficulty entering incidents on IIMS. There was a total of thirteen participants in a good-sized room. The room was well equipped with audio-visual facilities.

The course was facilitated by the IIMS Manager of the Area Health Service. The facilitator used a combination of technology - video, computer and data projector. The facilitator gave a short introduction of IIMS followed by the video on IIMS developed by New South Wales Health. The facilitator clearly explained to trainees that the duration of the video would be for 19 minutes. The lighting was appropriate for viewing the video presentation and the volume was adjusted to suit participants' requirements. The participants were attentive for the whole of the presentation.

Due to the fast-paced 19-minute video presentation, the observer felt that participants did not get a clear picture of the notification process and 'how to notify' electronically. The video presentation in the observer's judgement was not adequate for participants to find IIMS notification form and enter incidents electronically.

The advantage in face-to-face training as opposed to only video/CD-ROM training is that the facilitator supplemented the video presentation with a live demonstration of how to enter incidents on IIMS. Through the use of a computer and data projector, the facilitator showed participants of where to find the IIMS notification icon on the Intranet. The facilitator then showed participants where to find the e-notification form and entered an incident on the form by answering questions and engaging participants. There was some confusion as to how to log on to the clinical area where the incident occurred. The facilitator demonstrated this clearly (there seemed to be a technical problem where the system did not reveal to the notifier that they are actually logged on to their area of work). Upon completion of the form, notifiers are given an Incident Number.

Some of the questions raised by participants at the end of the session were:

- How long does it take to complete the e-IIMS notification form?
- Can the form be printed and placed on the patients' record?
- Why staff incidents are not recorded electronically?
- Will the reported incidents be reviewed?

The facilitator pointed out that the time taken to complete the form depended on the level of familiarity. It could take anywhere from about 15 minutes initially to about 2 minutes after

practice. Completed forms cannot be printed by the Notifier but Managers can print incident reports at the time of review. Only incident numbers should be placed on the patients' record. Staff incidents are currently not recorded in some AHSs due to technical difficulties and compatibility with Occupational Health and Safety forms. Review of incidents is best done by the manager at the department or ward level. At the end of face-to-face training session, participants seemed satisfied and confident to be able to notify incidents electronically on IIMS.

5.4.2 Evaluation of face-to-face training for Managers of incidents on IIMS

A total of 4 participants, including the observer as a participant, attended training for managers. The target audience for this training session was managers of wards and departments who are required to manage incidents. Participants had differing knowledge levels of the IIMS database ranging from use of IIMS on a daily basis to having never used IIMS. The course was held in a computer training room that was adequately equipped; there were a total of 8 computers in the training room (including one for the facilitator) and a data projector. The computers were set up on tables; the tables were laid against the wall around the room. The lighting was adequate and there was a pedestal fan. The duration of the course was two hours. This course was intended to equip managers with skills on how to access 'Incident Management', to manage IIMS database and to run reports from the database.

Objectives of the course

The objectives that were identified were:

- Log in to IIMS Data Manager, Navigate around Data Manager screen
- Open and read an incident notification, complete management fields including recommendations
- Make and read notes, print reports from templates in Data Manager
- Create report templates in Data Manager, Email reports
- Export report information, use advanced view in Data Manager
- Access and print reports from templates in Data Analyser.

The facilitator introduced IIMS web-based training to the participants, showed participants where IIMS web-based training was located on the AHS Intranet website and advised participants to use the training as a reference point. Participants were advised to contact the Information Management and Technology unit's helpdesk if they experienced problems connecting to the IIMS database.

The training started with hands-on experience on how to locate the Incident Notification Form on the Intranet website. Staff can access the Incident Notification Form on the Intranet site without the need for a username and password. Participants were shown how to find the work location on the Incident Tree Identification. Location of incident is where "the incident will be managed" and not the actual location of incident. Participants generally had trouble finding

their location and identifying whether they have successfully chosen the location. There is no clear indication to IIMS users that they have chosen the location except for the blue highlighting of the location. The facilitator gave an explanation of the tree and who can access information entered on IIMS. All mandatory fields on the form were explained and the importance of entering as much information on the form was stressed.

Participants were then guided through to IIMS Data Manager on IIMS Management. Participants need to log in to AIMS Data Manager that requires a username and password. The facilitator emphasised that management of incidents is the core business of the Area Health Service and it is important for Managers to manage all incidents efficiently. The facilitator explained the Severity Assessment Codes (SAC) 1 to 4 briefly. The initial SAC number assigned is usually an initial reaction to the incident by the notifier. The SAC rating is usually moderated by the manager of the ward or department and therefore it is important for managers to manage incidents on IIMS at least once a day. Incidents with a SAC 1 or 2 rating should be managed immediately. A Reportable Incident Brief (RIB) has to be submitted to the NSW Health for all incidents with a SAC 1 rating, and recent modifications to IIMS now allows this to be done through the program.

The facilitator emphasised that the IIMS database does not serve as a communication tool nor is it a place to complain about other staff. IIMS is a 'quality improvement tool' with a focus on 'patient care'. There is a "Notes" icon wherein notes can be kept for reminders. Once incidents are entered on IIMS, they are managed by the ward or department manager and then by the hospital patient representatives who completes the incident management process. The Data Management Console was explained in detail by the facilitator. The functions of each icon on the toolbar were explained in detail. Participants were educated on how to review incidents entered on IIMS and how to place managers' comments.

So far, the course content focussed on "Getting Data In". The next step is to "Get Data Out" using the Analyser application in IIMS. Analyser requires a username and password to log in. Analyser's function is to run quantitative reports of incidents. The facilitator guided the participants through the analysis process and gave participants hands-on experience on 'how to analyse incidents by date, by organisation, by incident type' and how to preview and generate reports. The Analyser has the capability to export documents and reports and to email reports. Participants had hands-on experience of exporting reports aided by the facilitator. The Analyser also has the capacity to generate graphs and to export graphs. The functions of all icons on the Analyser were explained. The facilitator reinforced that it is easy to generate reports using Analyser and explained the usefulness of reports. Parameters need to be defined prior to generating reports.

The hands-on course was supplemented with hand-outs of 'IIMS Getting Data In' and 'IIMS Getting Data Out' that were developed in-house by the IIMS Manager of the Area Health Service. The facilitator satisfied the identified objectives of the course and participants seemed well equipped to manage incidents on IIMS.

5.5 Log file analysis of IIMS training database

Log file analysis of IIMS training data was conducted for the period November 2004 to December 2005. Prior to the merger of two Area Health Services (AHS) in December 2005, IIMS training database was maintained independently at the two AHS. The trend still continues and therefore the researcher analysed the data maintained at the two locations within the one larger AHS. Data were available only for major locations and were not available at smaller sites within the AHS.

For the period November 2004 to December 2005, training data at one location (location A) indicated that 485 staff logged on to IIMS web-based training. A total of 1,784 logins to the IIMS on-line training by the 485 users and the total training time undertaken by users was 35,933 minutes. This averaged to 20.14 minutes per login. Data indicated that the longest time spent on one module was 1,654 minutes on 'How to use this training'.

For the same period, training data at the second location (location B) indicated that 140 staff logged on to IIMS on-line training. There was a total of 1,044 logins to the IIMS on-line training by the 140 users and the total training time undertaken by users was 15,744 minutes. This averaged to 15.14 minutes per login. Data indicated that the longest time spent on one module was 1,542 minutes on 'Classifying an incident'.

Log file analysis reveals that a total of 625 staff attempted web-based training out of an estimated staff number of some 10,000. The most frequently visited module was 'How to use this training' with 687 logins, followed by 'Introduction to IIMS' with 575 logins and 'Incident management overview' with 391 logins (see Appendix 1 - these are combined figures for both locations A and B).

5.6 Evaluation of the IIMS Pilot Training

As part of the IIMS pilot, the training program sponsored by NSW Health and designed by Edmore Pty Ltd. for NSW Health, was piloted in November 2004, over 2 days. The training covered Administrator, Training Co-ordinator and Online Training.

The training was evaluated by the company and the results of the evaluation are held in the IIMS project documentation. Unfortunately, while copies of the original evaluations are held by NSW Health, the documentation itself does not allow for secondary analysis as there is no record of the demographic profile of participants on the forms, nor are there clear details in the documentation of the contents of the course. Moreover, the five point scale used in the evaluation (1 = unsatisfactory, 5 = excellent) provided no differentiation between these extremes. Given that the training has now been delegated to AHSs, and modifications have been made to the face to face, CD/DVD and online programs, the material which follows is presented more as a historical record, than as a significant contribution to this evaluation.

The results provided in the documentation are presented in Tables 2, 3 and 4. Tables 2 and 3 present the numbers and percentages for individual course components, while Table 4 provides a selection of free-text insights into responses to the program.

Table 2: Numbers and percentages of participants' evaluations of Session 1 of IIMS course (n=78)

QUESTION	1 UNSATIS- FACTORY	2	3	4	5 EXCELLENT
Session 1					
Training content addresses the stated objectives	1 (1%)	0	7 (9%)	44 (59%)	23 (31%)
Taught me useful skills	1 (1%)	0	17 (22%)	43 (56%)	16(21%)
Training program taught me how to use the application	1 (1%)	0	14 (18%)	37 (52%)	20 (28%)
Applicability of the training content to your job role	1(1%)	0	14 (19%)	35 (48%)	23 (32%)
Overall usability of training (ease of navigation)	1 (1%)	2 (3%)	10 (13%)	34 (43%)	31 (40%)
Content is clearly presented and easy to understand	1 (1%)	5 (7%)	8 (10%)	35 (45%)	29 (37%)
Presented in an interesting and effective manner	1 (1%)	2 (3%)	14 (18%)	32 (42%)	27 (36%)
The level of interaction throughout the training	0	2 (3%)	8 (10%)	43 (55%)	25 (32%)
Rate your overall experience with this training format	1 (1%)	0	12 (16%)	44 (57%)	20 (26%)

Table 2 shows the numbers and percentages of the very positive (checked the last two optional answer on the scale) and the negative answers (checked either of the first two optional answers to the item) that the 78 participants gave on their evaluation questionnaires to aspects of Session 1. Regarding participants' evaluation of the course, training course content addresses the stated objectives received the highest percentage of very positive ratings (90%). The level of interaction throughout the training was also seen as being very good (87%, rank 2) and as the overall usability of training (ease of navigation) and the overall experience with the training format (both 83%, rank 3). The most negative rating was for 'Content is clearly presented and easy to understand' (8%).

Table 3: Numbers and percentages of participants' evaluations of Session 2 of IIMS course (n=38)

QUESTION	1 UNSATIS- FACTORY	2	3	4	5 EXCELLENT
Session 2					
Training content addresses the stated objectives	0	0	10 (26%)	18 (46%)	11 (28%)
Taught me useful skills	0	1 (3%)	8 (21%)	21 (55%)	8 (21%)
Training program taught me how to use the application	0	2 (5%)	7 (19%)	19 (50%)	10 (26%)
Applicability of the training content to your job role	0	1 (3%)	11 (29%)	15 (39%)	11 (29%)
Overall usability of training (ease of	0	1 (3%)	10 (26%)	21 (55%)	6 (16%)

navigation)					
Content is clearly presented and easy to understand	0	1 (3%)	9 (24%)	19 (51%)	8 (22%)
Presented in an interesting and effective manner	0	0	8 (22%)	16 (43%)	13 (35%)
The level of interaction throughout the training	0	1 (3%)	8 (22%)	16 (43%)	12 (32%)
Rate your overall experience with this training format	0	2 (5%)	8 (21%)	19 (50%)	9 (24%)

Table 3 shows the numbers and percentages of the very positive (checked the last two optional answer on the scale) and the negative answers (checked either of the first two optional answers to the item) that the 38 participants gave on their evaluation questionnaires to session 2. The highest percentage of very positive ratings (78%) was presented in an interesting and effective manner. ‘Taught me useful skills’ and ‘Training program taught me how to use the application’ were both ranked 2 at 76%. The rankings for this session were lower than for session 1. The most negative rating was for ‘Applicability of the training content to your job role’ (32%).

Table 4: Examples of respondents’ general comments on IIMS pilot training

RESPONDENTS’ RESPONSES
Interactive stuff was very good
Simple and clear
Excellent step by step easy to use and navigate
Excellent design and presentation
Information is not suitable across all disciplines
Less complex language particularly for non-clinicians
Too much focus on clinicians, need other areas, community etc
I believe 30% of staff could not cope with this package
Simple to use, very good training package, includes ease of use, availability and time required
Very good for managers and above
Good to see background information
Online training for the majority is not practical we need videos
Good work by yourself and at your own pace
For people with limited computer skills this program is easy and clear to use

The general comments provide an insight into the experiences and expectations of participants. Many participants also provided very specific feedback about the training manual and materials. Given, however, that the training materials are in the process of being updated to reflect version 3.5 of the IIMS software, many of the issues identified by participants have been superseded.

6 DISCUSSION

Overall, the training programs through various media are well structured and effective. The pilot training program for IIMS seems to have been highly regarded by most participants. A number of issues, such as the applicability of the training and ease of comprehension remain an issue for some participants undertaking the current training programs.

The current web-based training program does not indicate to the trainee the module or modules they have completed. A marker placed next to the completed module at least at each particular login would be useful to trainees to keep track of which modules they have completed.

Upon completion of a web-based training module, progress to the next module is not automatic and trainees have to go back to the menu and choose the next module in order to proceed to the next module. IIMS web-based training does not allow trainees to explore the system; this may be a disadvantage for some learners who prefer less structured learning processes. If trainees click on the wrong section of the screen, the Help pop-up screen appears.

The video and CD-ROM training resources, intended for notifiers of incidents on IIMS, if used alone, do not seem wholly adequate for participants to find IIMS notification forms and enter incidents electronically. Due to the fast-paced 19-minute video presentation, the observer felt that participants did not get a clear picture of the notification process and 'how to notify' electronically. The advantage in the face-to-face training as opposed to video/CD-ROM alone mode of training is that the facilitator supplemented the video presentation with a live demonstration of how to enter incidents on IIMS.

The web-based training program allows for log file analysis of training. Web-based training does not have a timed log off and therefore if the user had left the program on and walked away from the computer, the training log indicates that the user is still undertaking training. This makes the data on time spent on modules unreliable. This could be overcome by setting automatic logout from training program after an idle time of say 10 minutes.

Although the training program requires username and password to log in, the usernames are not connected to network usernames and there is evidence to suggest that login to IIMS web-based training have occurred using fictitious names. This is certainly a drawback when looking at log file analysis to track staff who have completed or attempted training.

Although web-based training is the preferred form of IIMS training by NSW Health, training procedures are not consistent across AHSs. While some AHSs supplement web-based training with needs-based face-to-face training sessions, other AHSs use web-based training only. Log file analysis reveals that a total of 625 staff attempted web-based training out of an estimated staff number of over 10,000 in one AHS. It is not clear if this is sufficient for present and future needs.

Reporting and managing of incidents presents a challenge to the health care industry similar to the food service industry,⁸ especially in dealing with staff incidents reported by ancillary and domestic services staff. Use of technology may be a barrier to the use of web-based training

and hence web-based training could effectively teach information to employees who were purportedly already trained.^{8 9}

We found the experience of undertaking web-based training to be useful. Attention could be paid to researching the amount and type of information retained, and how much of the training is applied in work situations. A marker placed next to a completed module at least at each particular login would be useful to trainees to keep track of what modules they have completed. The 'audio' feature that allows trainees to listen to the training modules will be beneficial to trainees with reading problems and with disabilities. An estimate of the time required to complete each module would be useful. Setting automatic logout from the training program after an idle time of say 10 minutes would produce reliable log file analysis data. If not already performed, it would be beneficial to carry out an assessment of whether web-based training is compatible with the learning styles of the health workforce. Web-based training would be effective to teach health care staff who are purportedly already trained. Consistent training procedures across all AHS could result in consistent reporting of incidents on IIMS.

7 CONCLUSION

Our assessment of the training in its various modes is largely favourable. There are grounds for increasing levels of penetration of training, as we have discussed, and several suggestions are able to be made for improvement ranging from minor details (eg, a marker next to each completed module to indicate its completion) to more extensive action (eg, how learners learn and how they could apply their knowledge about IIMS more effectively).

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9 APPENDIX

9.1 Appendix 1: Log file analysis of IIMS training by modules

IIMS training by modules. Training was undertaken in two locations within one AHS.

MODULE	NUMBER OF STAFF WHO ATTEMPTED TRAINING AT LOCATION A	NUMBER OF STAFF WHO ATTEMPTED TRAINING AT LOCATION B
Applying a Workflow to a project	6	11
Classifying an incident	63	35
Comparing data and drilling down	19	22
Creating queries and reports	21	10
Creating query and report assessment	4	2
Designing incident reports	24	36
Designing manual Workflows	13	10
Designing Workflows	11	9
How to use this training	499	188
Incident classification	27	5
Incident location project	5	2
Incident management overview	240	151
Incident type project	5	8
Introduction to IIMS	430	145
Introduction to Workflow	39	23
Investigating the incident	124	81
Linking incidents	41	46
Managing your incident list	49	74
Patient incident management	50	66
Running incident reports	35	59
Running predefined reports	44	37
Running predefined reports assessment	16	6
Updating Workflow task details	19	18