AUDITOR GENERAL’S REPORT
Performance Examination

First Do No Harm:
Reducing Adverse Events in Public Hospitals

Report 10 - October 2007
PERFORMANCE EXAMINATION – FIRST DO NO HARM: REDUCING ADVERSE EVENTS IN PUBLIC HOSPITALS

This report has been prepared for submission to Parliament under the provisions of section 25 of the Auditor General Act 2006.

Performance Examinations are an integral part of the overall Performance Auditing program and seek to provide Parliament with assessments of the effectiveness and efficiency of public sector programs and activities thereby identifying opportunities for improved performance.

The information provided through this approach will, I am sure, assist Parliament in better evaluating agency performance and enhance Parliamentary decision-making to the benefit of all Western Australians.

COLIN MURPHY
AUDITOR GENERAL
17 October 2007
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The vast majority of patients that enter our public hospitals every year are treated safely and without incident. In some cases incidents occur, some of which unintentionally harm patients.

No healthcare system is risk or error free, and adverse events will occur. Nonetheless, many of them are preventable and reducing the number of adverse events would reduce the human cost to patients and their families, and would release substantial resources to treat additional patients.

WA Health has started to respond, and has put in place the foundations of a coordinated approach to reducing adverse events. But this is occurring in a system that faces many pressures and is regularly balancing competing demands and priorities. More remains to be done to reduce adverse events and it is important that this be given a high priority across the system. Reporting of clinical incidents needs to be improved and better use should be made of all available information. System-wide learning also needs to be more effective, and there should be more structured monitoring and evaluation of progress.

Improving reporting is not just about counting adverse events, it is about generating information for action – understanding the causes and patterns of events to target actions to prevent them in the future. Improvement will depend on continued development of a reporting culture. That means building staff engagement through both trust in the system, and the understanding of the value of reporting. Voluntary, confidential reporting without fear of reprisal can be effective in securing staff engagement and generating the information that enables effective learning. Individual accountability for actions that warrant it has to be maintained, but blaming individuals where system failures are the cause of an event can be counter-productive to improving safety.

Achieving reductions in adverse events will be a challenge given the complexity of modern healthcare, and the increasing demands on the health system. WA Health needs to balance the drive to deliver services in the face of increasing demand with a strong focus on minimising harm.
Executive Summary

The vast majority of patients in our public hospitals are treated safely and without incident. Adverse events are, however, a significant issue both in Western Australia (WA), other states and similar healthcare systems overseas. Adverse events cause physical and emotional harm to patients, and impact on patients’ families.

There are no indications to suggest that the incidence of adverse events in WA is unusually high. On the basis of reported incidents, adverse events with severe or catastrophic outcomes for patients are rare, and the most frequent are minor incidents, causing either minor or no harm. Harm can include extended hospital stay, emotional distress, suffering, disease, injury, disability and/or death.

Two-thirds of incidents reported in 2006 and for which reports were finalised by 30 June 2007, resulted in some degree of harm to patients, and around one in 20 of those events were rated as critical, causing serious harm or death.

As well as causing harm to patients, adverse events consume healthcare resources – patients stay longer in hospital and require additional and different treatment as a consequence of an adverse event. WA Health estimates that adverse events in WA may have cost around $380 million in 2005-06. Reducing adverse events offers the opportunity to release significant resources to treat additional patients and invest in safety improvements, with research showing that up to 50 per cent of adverse events are preventable.

WA Health (the Department of Health, Metropolitan Area and WA Country Health Services, and Peel Health Service) has responded to the issue of patient safety in line with approaches elsewhere and in 2001 established the Office of Safety and Quality in Healthcare (OSQH) to lead quality and safety improvement across the health system. OSQH has introduced state-wide incident reporting and has developed a clinical governance framework to underpin and support changes to practices across the health system.

Hospitals investigate and respond to incidents and adverse events, and also conduct a range of clinical improvement activities based around their own circumstances and priorities. Effectively leveraging this local activity into system-wide learning is important in reducing adverse events.

The examination focused on two key questions:

- Are there good systems in place to report and analyse adverse events in WA public hospitals?
- Does WA Health learn from adverse events by implementing solutions to reduce them and measure its effectiveness in doing so?
Key findings

We found that while there had been significant progress implementing incident reporting, the quality of information captured is not yet adequate to give a reliable view of adverse events or trends. Improving reporting and analysis of incidents, and developing a good understanding of the situation in WA hospitals, enables effective prioritisation of activities to reduce adverse events.

We also found that WA Health has the foundations of a coordinated approach, but key elements of a learning system are not yet in place, holding back system-wide improvements. Specifically, more remains to be done to ensure that changes are being consistently implemented across the health system, and that they are evaluated to demonstrate that the changes are delivering intended benefits.

- The incidence of adverse events appears to be similar to that elsewhere.
- WA Health has established state-wide incident reporting, but there are deficiencies that limit its understanding of adverse events:
  - there is under-reporting of events, we estimate that almost one-third of adverse events were reported in 2006
  - reporting is not improving overall, although some hospitals have significantly improved their reporting
  - information is not timely, more than half of unclassified cases are more than six months old
  - a coordinated approach to improving reporting is lacking.
- WA Health is not systematically using all available information sources to build a more complete understanding of adverse events.
- WA Health has the foundations of a coordinated approach to adverse events, but key elements needed to achieve system-wide improvements are not yet in place:
  - implementation of the clinical governance structures that support and reinforce reductions in adverse events is patchy
  - system-wide priorities based on the situation in WA have not been developed
  - while there are examples of local improvements, information is not systematically shared between hospitals and across the system
  - WA Health does not have a structured program of monitoring and evaluation.
Key recommendations

WA Health should improve its understanding of adverse events by:

- increasing reporting and improving the timeliness of data
- making systematic use of all available data sources.

WA Health should improve learning from adverse events by:

- setting system-wide priorities based on a better understanding of the situation in WA
- increasing the sharing of information between hospitals and across the system
- implementing a coordinated program of monitoring of initiatives and evaluation of progress.

Health services and hospitals should have effective structures and systems to drive reductions in adverse events.

Response by WA Health

WA Health welcomes this timely and useful report. WA Health is committed to improving patient care and reducing clinical incidents in all its hospitals and health services. This audit presented a positive opportunity to have further improvements identified and will assist with the ongoing health reform process.

The report identifies some areas that WA Health agrees will benefit and enhance the already good work that is underway in relation to how clinical incident reporting can improve patient safety. These areas of agreement include:

- increased sharing of information between Health Services to support improved learning from clinical incidents (which can only increase the sector’s ability to learn from adverse events)
- the need to continue to provide education on the importance of clinical incident reporting
- the importance of providing more feedback to staff relating to clinical incident investigation
- the need to further strengthen the push for a coordinated approach to improving reporting
- the need to consider the allocation of resources used to classify clinical incidents.
The suggested improvements complement the established Clinical Governance Framework that was first developed in 2002 and widely deployed throughout the WA Health system by 2005. This framework is designed to ensure that a consistent, systematic and integrated approach to patient safety occurs, by embedding a comprehensive clinical risk management process that incorporates reporting, investigating and managing clinical incidents. More information relating to this framework is available on the WA Health website (www.health.wa.gov.au).

WA Health notes the methodology used to derive conclusions regarding the number of clinical incidents reported in our health system. WA Health also notes that this is a complex and new field in healthcare and that work is just starting to develop and agree terminology and methods to define the scope, nature and impact of things that go wrong in healthcare.

WA Health will continue to use all available clinical and administrative datasets and evidence, to target future priority patient safety initiatives. In this way, WA Health will effectively respond to emerging patient safety issues and improve learning and sharing information about reducing the impact of clinical incidents.

WA Health would like to recognise the work that has already been undertaken throughout hospitals and health services to improve patient safety and the quality of healthcare. This important area of healthcare is one that is taken extremely seriously by all the health services that make up WA Health. The community can be assured of the ongoing commitment and resolve of WA Health and its people to further improve patient safety in our hospitals.
The incidence of adverse events in WA public hospitals appears similar to that elsewhere

Adverse events occur in hospitals elsewhere and many of them are preventable

Clinical incidents range from near misses and very minor incidents which do not impact on the patient’s health or treatment, to those which cause harm and death to the patient. Those incidents which cause harm are generally referred to as adverse events (Figure 1). Harm can include extended hospital stay, emotional distress, suffering, disease, injury, disability and/or death.

Research in Australia, the UK, New Zealand and Denmark has produced similar findings that around 10 per cent of patients experience an adverse event of some type while in the hospital system.

Adverse events should be distinguished from poor clinical outcomes. Patients do not always get better, and despite high quality healthcare, complications can arise that lead to a poor clinical outcome. In contrast, an adverse event is an event caused by the healthcare provided that results in unintentional harm.

The outcome of an adverse event for a patient can vary from minor to severe. A fall can result in a slight bruise or a broken hip. A medication error can lead to minor discomfort because pain medication was late, or to quadriplegia or death because a chemotherapy drug was unintentionally injected into the spinal fluid rather than a vein.

Although the perception of clinical incidents is often that they are caused by the errors of individuals, research shows that these incidents are more often the result of system problems where multiple factors contribute to an incident. The Quality in Australian Health Care Study (1995) found that around 50 per cent of adverse events may be preventable.
The incidence of adverse events in WA public hospitals appears similar to that elsewhere ... continued

Figure 1: The Relationship between Clinical Incidents, Adverse Events and Sentinel Events

Adverse events and sentinel events are subsets of all clinical incidents. The difference between them is, broadly, the increasing severity of outcome for the patient. Note that this diagram is not drawn to scale and does not reflect accurately the proportions of the three categories.

Source: OAG

The reported incidence of adverse events in WA appears to be similar to elsewhere

Adverse events are a significant issue in healthcare in WA and elsewhere. They cause physical and emotional harm to patients, impact on patients’ families and carry a significant resource cost. We have found no indications to suggest that the incidence of adverse events in WA is unusually high. The Australian Institute of Health and Welfare has reported that 5.0 per cent of separations (discharge from hospital) in Australian public hospitals in 2005-06 had one or more adverse events. This compares with a figure for WA public hospitals of 5.6 per cent; the range for Australian States and Territories is 3.1 to 7.2 per cent.
On the basis of reported clinical incidents, adverse events with severe or catastrophic outcomes for patients are rare. WA Health’s clinical incident reports show that, in 2006, there were 25,769 incidents. Of the 23,196 incidents for which reports were finalised by 30 June 2007, two-thirds (15,614) resulted in harm to patients, and are classed as adverse events. Of those adverse events, around one in 20 events (820) were rated as critical, causing serious harm or death. Less serious patient outcomes include incidents which harm patients but for which no or only minor treatment or additional tests are required.

Clinical incidents that do not cause patient harm (7,582) are reported because they provide a good source of information on where the risks of future adverse events lie and how they can be avoided. They include potential incidents due to a hazard, near misses, and incidents which did happen but did not cause any measurable patient harm.

Falls and medication incidents are the two most commonly reported types of incidents in the UK, Australia and WA. Medication incidents can range from a delay in receiving medication to death from being given the wrong medication. A patient who falls may suffer only minor harm such as bruising or an injury that requires a long stay in hospital such as a broken hip.

The health system also reports sentinel events which are a specific set of preventable events that lead to catastrophic patient outcomes. There were 42 sentinel events reported in 2006. The WA rate of nationally reported sentinel events compares closely with that experienced in NSW and Victoria.

As well as causing harm to patients, adverse events consume healthcare resources – patients stay longer in hospital and require additional and different treatment as a consequence of suffering an adverse event. WA Health estimate that adverse events in WA may have cost around $380 million in 2005-06. Reducing adverse events offers the opportunity to release significant resources to treat additional patients and invest in safety improvements, with research showing that up to 50 per cent of adverse events are preventable.

**WA Health is responding to adverse events**

The Office of Safety and Quality in Healthcare (OSQH), is responsible to the Director General of Health, for the development of policies, programs and standards for the provision of safe, high quality health care (Figure 2). OSQH is also responsible for ensuring individual and organisational accountability for safety and quality and for monitoring patient safety outcomes at a system level.
The incidence of adverse events in WA public hospitals appears similar to that elsewhere ... continued

Figure 2: Responsibilities and Accountabilities for Safety and Quality within WA Health

Area health services have responsibility for the delivery of safe, quality healthcare with the Office of Safety and Quality responsible for advocacy and state-wide policy development, implementation and monitoring. The WA Council for Safety and Quality is a non-statutory body providing advice to the Director General and Minister.

Source: OAG based on DoH documentation

The OSQH can recommend to the Director General the introduction of state-wide changes to clinical and organisational practice and policy through mandatory operational directives. OSQH is responsible for leadership and strategic planning and advocates for safety and quality improvement. It also designs and rolls out to area health services and hospitals new policies and initiatives on adverse events.

The four Area Health Services (North and South Metropolitan, WA Country and Peel) and the hospitals within each Service are required to deliver services which are effective and safe. They are to comply with operational directives but can also act independently to address safety and quality issues. Clinical departments within hospitals conduct activities focused on safety and quality and in response to particular adverse events. Hospital staff are responsible for reporting and investigating individual events, within guidelines set by the OSQH.
WA Health has responded to the issue of patient safety in line with approaches elsewhere. Since being established in 2001, the Office of Safety and Quality in Healthcare (OSQH) has introduced state-wide incident reporting and has developed a clinical governance framework to underpin and support changes to practices across the health system.

WA Health has also highlighted its recently launched Safety and Quality Investment for Reform (SQuIRe) initiative, which allocates funding for change in targeted clinical areas and clinical governance. WA Health also formed in January 2007 the Clinical Governance Network intended to facilitate the exchange of information and learning from adverse events across the health system.

WA was among the first health systems in Australia to adopt systems for reporting and reviewing deaths and severe adverse events with a view to learning and preventing future events. These include the review of surgical deaths (WA Audit of Surgical Mortality), which has recently been extended into all clinical areas (WA Review of Mortality), and implemented mandatory Sentinel Event reporting.

**Examination focus and approach**

This performance examination focused on how well adverse events are reported and understood, and how effectively the health service learns from adverse events. We also considered the broader area of clinical incidents to the extent that they inform the approach to reducing adverse events. The examination focused on in-patient care in public hospitals.

The various models that have been used nationally and internationally to try to improve patient safety share a number of key elements (Figure 3) which should be in place at both hospital and overall health system levels. The implementation of these models is generally conducted within a broader supporting framework, usually known as a clinical governance framework, and involves a commitment to ongoing learning.
The incidence of adverse events in WA public hospitals appears similar to that elsewhere ... continued

Figure 3: The key elements of a model for improving patient safety and reducing adverse events

An example of the common key elements in models for improving patient safety, as characterised by the UK National Patient Safety Agency.

Source: National Patient Safety Agency, UK

Taking the elements of these models into account, the examination focused on two key questions:

- Are there good systems in place to report and analyse adverse events in WA public hospitals?
- Does WA Health learn from adverse events by implementing solutions to reduce them and measuring effectiveness in doing so?

In seeking to answer these questions we reviewed progress with the two key foundations for change, introducing the reporting and analysis of events and the establishment of a learning system, the latter being addressed through initiatives and the evaluation of their impact.

We did not analyse the contribution of broad system factors which may impact on adverse events such as workload, skills, facilities and equipment, and patient throughput.
The examination assessed WA Health performance centrally through the OSQH, and locally through operational practice within a sample of six hospitals. The sample included two teaching hospitals, two metropolitan non-teaching hospitals, and two rural hospitals. Together these hospitals accounted for 45 per cent of separations in 2006. We also gathered specific information on developments in clinical governance at one other metropolitan hospital.

We reviewed practice nationally and internationally in improving patient safety and addressing adverse events. We interviewed key staff, conducted file reviews, and held focus groups with hospital staff. We collected and analysed data from a range of systems within WA Health. We also met with a range of stakeholders and engaged expert clinical advice.
The level and pattern of adverse events is not well understood

Key Findings

- **WA Health has established state-wide incident reporting, but there are deficiencies that limit its understanding of adverse events:**
  - there is under-reporting of events, we estimate that almost one-third of adverse events were reported in 2006
  - reporting is not improving overall, although some hospitals have significantly improved their reporting
  - information is not timely, more than half of unclassified cases are more than six months old
  - a coordinated approach to improving reporting is lacking.

- **WA Health is not systematically using all available information sources to build a more complete understanding of adverse events.**

Recommendations

WA Health should improve its understanding of adverse events by:

- increasing reporting and improving the timeliness of data
- making systematic use of all available data sources.

We found that while there had been significant progress implementing incident reporting, the quality of information captured by WA Health is not yet adequate to give a reliable view of adverse events or trends.

**WA Health has implemented state-wide incident reporting**

A clinical incident reporting and management system (CIMS) known formally by WA Health as AIMS WA, has been introduced into all public hospitals in WA. We found that it had been consistently implemented at the six hospitals we visited. CIMS is a voluntary system intended to capture all types of clinical incidents and as close to 100 per cent of incidents as possible within a voluntary system, and has been and is being used by other states as well as WA.

CIMS’s primary purpose is to improve healthcare delivery by providing information on clinical incidents. It covers reporting, investigation, analysis and monitoring of clinical
incidents. WA Health can access a range of standard reports from the system, or have reports generated. Data obtained from CIMS can also be used to identify areas of concern for a hospital, by tracking the number of incidents in a given timeframe, clinical area, or ward or by specific incident.

The OSQH has also introduced a mandatory reporting system for sentinel events – rare preventable events that cause catastrophic patient outcomes. Sentinel events have to be notified to the Chief Medical Officer within seven days and investigated and outcomes reported within 45 days.

This mix of voluntary and mandatory reporting is similar to other health systems and safety critical sectors. The effectiveness of reporting systems in part relies on having a reporting culture, gaining staff engagement through trust in the system and the understanding of why reporting is important. Experience in other sectors where safety is critical indicates that voluntary, confidential reporting without fear of reprisal can be effective in securing staff engagement.

Incident reporting is generating an incomplete picture of adverse events

There is under-reporting of adverse events into the clinical incident management system

WA Health recognises that information collected on clinical incidents is incomplete. WA Health also recognises that they do not know the actual incidence of adverse events in public hospitals and do not have reliable estimates of the level of reporting into CIMS. Our analysis indicates that almost one-third of adverse events were reported in CIMS in 2006. WA Health has not conducted retrospective medical record reviews, which can be costly and time consuming, to identify the level of reporting and the rate of events in WA, and have relied on research work undertaken in other states.

Retrospective medical record reviews are the most reliable way of estimating reporting levels but these have been not conducted for this purpose by WA Health. In the absence of existing estimates, we used the available information on the level of incidents reported in CIMS and the expected level of adverse events indicated by the research to derive an indicative estimate of the level of reporting achieved in WA.
The level and pattern of adverse events is not well understood ... continued

That research found that approximately 10 per cent of separations involved adverse events. Analysis of WA Health data showed, for those separations involving one or more adverse events, an average of 1.67 events per separation. Given that there were approximately 380,000 separations from public hospitals in 2006, we have estimated an expected level of adverse events of 63,000. Based on this expected number of events, we estimate that almost 30 per cent of adverse events were reported into CIMS in 2006.

**Reporting into CIMS is not improving overall**

Although the number of reported events increased substantially for two years during the roll-out of CIMS, since 2003 this trend has not continued even though there is extensive under-reporting. This indicates there has not been significant improvement in the take-up of reporting by health service staff beyond initial system implementation (Figure 4).

![Figure 4: Number of incidents reported to CIMS](image)

*The substantial increase in reported incidents during the rollout of the clinical incident management system in 2001 and 2002 has not continued.*

Source: OAG analysis of CIMS data
Some hospitals have significantly improved their reporting

The uptake in reporting to CIMS is not uniform across the health system. Some hospitals have significantly increased their reporting levels while others have plateaued or decreased (Figure 5). This indicates that there is scope to increase overall levels of reporting, bringing levels of reporting up to the highest achieved in our sample hospitals would add approximately one-third to the number of clinical incidents reported. Understanding the variations between hospitals would also inform overall, and targeted, efforts to improve reporting.

Figure 5: Number of clinical incidents reported to CIMS for six hospitals 2002-06

There is significant variation in the trends in reporting between hospitals and not all hospitals have followed the overall trend from 2003 to 2006.

Source: OAG analysis of CIMS data
Overall system data are unlikely to be representative of the actual incidence and pattern of adverse events

WA Health has little assurance on the extent to which the reported incidence and pattern of events is representative of actual patterns of events. This is indicated by the significant variations in reported rates of events between hospitals, and other factors which could skew the information such as the types and severity of adverse events which are not being captured, and variations in reporting rates between groups of healthcare staff.

Analysis of CIMS data for 2006 shows a substantial variation in reported rates of adverse events between hospitals. In order to adjust for differences in the volume and acuity of patients treated in each hospital we have calculated the number of events reported in CIMS by the hospitals as a rate per 1 000 weighted separations. For the 14 hospitals with more than 5 000 separations per year the rate varies between 8.3 events per 1 000 weighted separations to 90.5 (Figure 6).

Figure 6: Number of reported adverse events per 1 000 weighted separations in 2006 for hospitals with more than 5 000 separations compared to the overall system rate

There is significant variation in the reported rate of adverse events between hospitals.

Source: OAG analysis of CIMS data
These variations could be driven by a number of factors. For instance, some hospitals may be reporting a higher proportion of their adverse events than others, or they may represent actual differences in the incidence of events. The variation around the overall system rate indicates that overall data may not reflect actual incidence, and understanding the drivers in the variations would help to formulate successful strategies to both address under-reporting and to improve patient safety.

The reported pattern of severity of incidents may not reflect the actual pattern of severity of adverse events, near misses and minor incidents. CIMS data for 2006 shows that two-thirds of reported clinical incidents have a severity of outcome of Level 4 or above. Near misses and minor incidents (Levels 1 to 3) are only one-third of events. This is the opposite pattern to that reported, for instance, in the UK and NSW.

There is also no consistent pattern to the severity of clinical incidents reported by hospitals, with some showing more than 50 per cent of reported incidents as near misses or minor incidents and others reporting less than 20 per cent at Levels 1 to 3. This is a further indication that the overall data in CIMS is unlikely to be representative of actual incidents.

Nurses are responsible for 88 per cent of reporting into CIMS yet make up just 56 per cent of the total health workforce. WA Health has not assessed if the level of reporting by different professional groups is appropriate or if targeted strategies will improve reporting.

A coordinated approach to improving reporting is lacking

WA Health has not pursued coordinated and system-wide initiatives to address the causes of under-reporting of adverse events in the health system and as a result, reporting levels have remained largely static since 2003. Although WA Health have sought to address some of the causes of under-reporting in some areas of the system, there is not yet evidence that these initiatives have had a significant impact.

Based on international literature and our observations, a coordinated approach could involve centrally driven initiatives including training that emphasises the importance of reporting, learning from sites that have improved reporting rates, addressing barriers to reporting, and encouraging a reporting culture across the system.

International literature identifies key elements in a successful reporting system, such as confidentiality, ensuring no a fear of reprisals, useful and accessible feedback, ease of making reports and training and education. It also points out that all of these are interlinked in developing a reporting culture.
In a 2005 survey of, and focus groups with, CIMS users OSQH identified that high workloads compared with the time taken to report an incident and fear of reprisal or blame were common reasons given for under-reporting. Considering an incident not worth reporting was cited most frequently as a reason for not reporting an incident. Our focus groups and hospital visits supported this view of the primary factors contributing to under-reporting.

WA Health has sought to address some of these areas. For instance, OSQH have given training to health services on the importance of giving feedback to staff following an incident investigation. However, in the hospitals we visited and during our focus groups staff consistently commented that they did not feel feedback had improved.

OSQH, after user consultation, also modified the CIMS form in 2006 in part to make it easier and quicker to complete, although the success and impact of this has not been followed up. WA Health also has plans to upgrade the current CIMS system to incorporate features to make reporting easier, such as electronic reporting. These changes will take some time to impact on levels of reporting.

Some hospitals have improved reporting through local initiatives. For instance, one hospital has substantially increased its reporting into CIMS primarily by:

- producing a shorter form for medication errors that requires less than a minute to complete. Reports are then investigated by a pharmacist. Staff also receive small incentives for reporting
- reviewing other databases for reports that also should be included in CIMS, such as security incidents. This saves staff completing more than one form for the same event
- reviewing medical emergency team responses to a deteriorating patient. The response and the patient care leading up to the call-out are assessed.

This hospital was the most successful amongst the six we assessed in achieving improvements in reporting (Figure 5). Understanding what strategies work is important to improving reporting across the health system, although not all of the initiatives will be appropriate system-wide.
Information from adverse event reports is not timely, reducing its usefulness

The reporting system data is not up to date and this reduces its usefulness. There is a build-up of reports yet to be entered and classified so that information on type and cause of incidents, other than total number, is not available. On this basis, WA Health recognises that the scope to use CIMS for timely identification of emerging trends is limited.

Following an incident report being raised, the incident is investigated by the hospital and the incident report finalised. At this point the full report is entered into the system. It is subsequently classified by trained staff who ensure consistency in how information is recorded in the system. At 30 June 2007 there were 7 000 reports unclassified, over 60 per cent of which were for incidents that occurred more than six months before (Figure 7). The backlog is worse in some areas, with one hospital we visited having a backlog of over 2 200 incidents remaining unclassified for over six months.

![Figure 7: Proportion of total number of unclassified cases by year at 30 June 2007](image)

Over 60 per cent of unclassified reports relate to incidents that occurred more than 6 months earlier. The number of CIMS reports that are unclassified has risen each year since 2001 to a total of over 7 000 at 30 June 2007. Data from unclassified incidents such as patient outcome and cause cannot be used to detect trends.

Source: OSQH analysis of CIMS data
The backlog of unclassified reports reduces the usefulness of the data for system-wide analysis of trends and emerging patterns in events, and means that hospital managers do not get timely information. At one hospital which did not have a backlog in entry into the system, key information was used by managers and the peak clinical governance committee as part of its monthly reporting. This shows the speed with which feedback can be provided to those reporting incidents which is a key element of encouraging staff to report incidents.

The time taken from an event occurring to a report being finalised can also impact the timeliness of information. Currently, it takes on average 80 days from an event occurring to the incident report being signed off and ready for classification. This period allows for the incident to be investigated to understand its causes, which is important information in preventing future events and enabling hospitals to react to that incident.

Although WA Health have not set target timeframes for the reporting of incidents, one hospital we visited achieved an average of 30 days. This indicates that there is likely to be scope to speed up this process in other hospitals, and to set a target for the time taken to report an incident. The setting of targets would assist hospitals to track their performance.

Two hospitals log incidents onto CIMS soon after they have occurred and can track the progress and completion of incident investigations. This reduces the risk of reports getting lost in the system.

**WA Health is not systematically using all available information sources to build a more complete understanding of adverse events**

There are systems other than CIMS which gather information on adverse events, but this complementary information is not systematically used. Although hospital staff investigate individual adverse events and respond to them, hospitals often do not have a good overall understanding of the pattern of events, none of the six hospitals in the sample systematically compared data from all the information sources within their hospital to obtain a better picture of adverse events.

Although CIMS is the only WA Health system designed to capture key information to manage and prevent adverse events, a number of other systems also collect relevant data (Figure 8). Some, such as the Healthcare Infection Surveillance WA (HISWA) database, cover single event types but do not capture the range of data reported into CIMS. Others,
such as the Hospital Morbidity Data System (HMDS), are not event reporting systems but hold information on adverse events as a by-product of their main purpose. All of the systems provide information that can complement that in CIMS.

### Dedicated clinical incident reporting systems

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<th>CIMS</th>
<th>Sentinel Event Reporting</th>
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<tbody>
<tr>
<td>• Voluntary</td>
<td>• Mandatory reporting and investigation</td>
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<tr>
<td>• Used by all public hospitals</td>
<td>for defined sentinel events (national)</td>
</tr>
<tr>
<td>• Reporting, investigating, analysing and managing incidents</td>
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### Systems that contain information on some types of adverse events

<table>
<thead>
<tr>
<th>HISWA</th>
<th>WA Audit of Surgical Mortality</th>
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<tr>
<td>• Reporting of specific hospital acquired infections</td>
<td>• Audit of patients who die during or post surgery</td>
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<th>Statutory mortality committees</th>
<th>WA Review of Mortality</th>
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<tbody>
<tr>
<td>• Mandatory reporting of anaesthetic, perinatal/infant and maternal deaths</td>
<td>• Review of all deaths in public hospitals</td>
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<th>HMDS</th>
<th>Patient Complaint Systems</th>
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<td>• Patient data</td>
<td>• Complaints from patients/carers/family</td>
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<th>Coronial Liaison</th>
<th>Medical Indemnity National Collection</th>
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<td>• Findings from deaths reported under the Coroners Act 1996</td>
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**Figure 8: Information systems within WA Health that contain incident data**

The systems in WA Health that collect information on adverse events can be used collectively to provide a better understanding of events.

Source: OAG

In some instances having multiple reporting systems for a type of adverse event can lead to difficulties in achieving a system-wide view of the event and capturing information on causes.

Hospital Acquired Infections (HAIs) are an example. We found that HAIs are not routinely reported into CIMS although some infections are captured in HISWA and infection control teams in hospitals gather broader data at the hospital level. To achieve a consolidated view
The level and pattern of adverse events is not well understood ... continued

of HAIs, WA Health would need to combine HISWA with the multiple local hospital data sources. For adverse events such as HAIs (common, high impact), WA Health should ensure reporting into CIMS although this may require reporting the same event in multiple systems.

Overall, however, cross checking of multiple information systems can potentially provide a better understanding of adverse events. For instance, we found some apparently contrary trends in recorded adverse events. While the total number of adverse events recorded in CIMS has risen 12 per cent since 2003, the increase recorded in HMDS is almost 20 per cent (Figure 9). Significantly different trends between the two systems were also found at individual hospitals (Figure 10). There is overlap between the two systems, although there are some differences in definitions and data capture methods that limit direct statistical comparisons. Nonetheless, these trends warrant further analysis by WA Health.

![Graph showing adverse events captured in CIMS and HMDS since 2003 by year](image)

**Figure 9: The numbers of adverse events captured in CIMS and HMDS since 2003 by year**

The trend in adverse events shown in CIMS is significantly different to that shown by HMDS. The number of events captured in CIMS has increased by 12 per cent since 2003, but in HMDS the number of events has increased by 20 per cent.

Source: OAG analysis of HMDS and CIMS data
The 20 per cent increase in HMDS adverse events might appear to indicate a substantial worsening in patient safety, but whether this is the case is unclear. Other drivers in the health system such as changes in patient throughput and acuity, which are not reflections of clinical practice or the performance of safety and quality systems, appear to partly account for the increase in HMDS. The number of weighted separations, which reflects changes in patient throughput and acuity, increased by seven per cent over the same period. Changed reporting and coding practices may be another factor explaining this trend.

![Graph showing adverse events reported in CIMS and HMDS since 2002 for one of the sample hospitals.](image)

**Figure 10: Adverse events reported in CIMS and HMDS since 2002 for one of the sample hospitals**

*Adverse events data in HMDS and CIMS shows apparently contrary trends.*

Source: OAG analysis of HMDS and CIMS data

None of our six sampled hospitals are making good use of the multiple sources of information about adverse events. However, we were made aware of two hospitals that had made use of multiple sources of information to improve their understanding of all, or certain types, of adverse events.

- One hospital reviewed their patient files in addition to their CIMS data, prior to implementing their patient safety program, providing them with an understanding of what was happening in their hospital and a baseline to measure progress.
Another hospital has cross-matched infections reported on their pathology database with HMDS data. They found around 90 per cent agreement between the two systems. Ten per cent of adverse events were recorded in one system but not the other. This provided some assurance that they were capturing the actual level of infections in their systems, although not in CIMS.

Changes in the liaison between OSQH and the Coroner’s Office further demonstrate how WA Health can make better use of multiple sources of safety recommendations. The OSQH liaises with the Coroner’s Office so that findings from coronial investigations can be translated into recommendations for health care providers and rapidly circulated. The two Offices have developed a form for reporting deaths that incorporates requirements under the Coroners Act 1996. They have also produced a joint publication *From death we learn* which gives examples of deaths reported to the Coroner and his findings.
Systematic learning from adverse events is at an early stage

Key findings

- WA Health has the foundations of a coordinated approach to reducing adverse events, but key elements needed to achieve system-wide improvements are not yet in place:
  - implementation of the clinical governance structures that support and reinforce reductions in adverse events is patchy
  - system-wide priorities based on the situation in WA have not been developed
  - while there are examples of local improvements, information is not systematically shared between hospitals and across the system
  - WA Health does not have a structured program of monitoring and evaluation.

Recommendations

WA Health should improve learning from adverse events by:

- setting system-wide priorities based on a better understanding of the situation in WA
- increasing the sharing of information between hospitals and across the system
- implementing a coordinated program of monitoring of initiatives and evaluation of progress.

Health services and hospitals should have effective structures and systems to drive reductions in adverse events.
An effective learning system would build on the reporting and analysis of clinical incidents (Figure 3) and use it to:

- prioritise and target efforts to reduce adverse events
- implement measures that are practical and effective
- monitor implementation of programs and review their effectiveness.

These activities need to be supported by a clinical governance framework to provide clear responsibilities, accountabilities and guidance. A number of these key activities in WA Health need to be enhanced and, although OSQH has rolled out a mandatory clinical governance framework, only a few hospitals are well advanced in implementing it.

**Implementation of clinical governance structures across the system is patchy**

The OSQH have developed and provided to Area Health Services a mandatory Clinical Governance Framework, including Clinical Governance Guidelines and Clinical Governance Standards for Western Australian Health Services. However, we identified that only one of the seven hospitals we collected information from was well advanced in its implementation of clinical governance structures.

Clinical governance committees and frameworks are important in reducing adverse events by providing a structure that enables priorities to be identified, measures to be targeted and implementation and impact to be tracked. They should also ensure regular reporting of performance and trends and review of improvement activities.

One hospital has improved its safety and quality reporting and governance structures so that management regularly review data and information on individual clinical areas within the hospital (Figure 11). It has established a system where its peak clinical governance committees receive a range of information which provides evidence of safety and quality of care. Their approach collates information from various sources into a standardised and systematic reporting format.

They find this has made it easier to monitor and evaluate clinical performance and identify clinical risks; provide objective data to help prioritise issues for investigation and action, prompt discussion about trends and issues in clinical areas, and report efficiently and identify any data problems. The approach also makes use of a range of tools hospitals can use to detect adverse events in addition to reporting such as clinical audits, mortality/morbidity reviews, and monitoring triggers and markers and clinical indicators.
Figure 11: The clinical governance model used by one hospital

These clinical governance process and structures enable regular and structured monitoring, review and reporting of adverse events and initiatives to reduce them. This process repeats until the risk of the adverse event has been reduced or the clinical indicator met.

Source OAG based on WA Health information

At three of the seven hospitals the clinical governance committee set up to receive and assess information, and prioritise and review action, had not met regularly as scheduled or, in one case, not at all.
System-wide priorities based on the situation in WA have not been developed

WA Health has not yet developed system-wide priorities based on analysis of the WA context. Measures and targets for reducing adverse events have also not been developed, either through a strategic plan or other mechanism. It is also difficult for hospitals to build system-wide OSQH objectives into their own planning, or monitor their progress.

To date, centrally driven change has largely focused on rolling out the clinical governance framework, and on initiatives intended to address specific types of adverse events and clinical practice. In prioritising action OSQH has focused on falls, medication incidents and hospital acquired infections based largely on international experience and frequency of events, rather than a combined analysis of frequency, impact and resource consumption based on the WA context.

Hospitals, while responding to events with serious patient outcomes, have tended to target activity based on locally set priorities. Assessment of an event’s impact using a broader range of criteria may result in the health system selecting a different set of priority events.

The absence of prioritisation based on the situation in WA, and dedicated strategic planning for adverse events, means there is limited assurance that WA Health’s efforts are appropriately prioritised. A more strategic approach based on state conditions would enable the health system to target efforts to where the greatest benefits can be realised. Effectively targeting efforts should free up resources to allow more patients to be treated.

While there are examples of localised improvements, information is not systematically shared

Despite examples of successful change at local level this has not yet resulted in consistent transfer of learning outside individual hospitals, which has led to duplication and inefficiency. Learning at the hospital and health service level has been hampered by a lack of effective communication and coordination, particularly between hospitals and health services.

For instance we found three hospitals were independently working on adverse events caused by giving the wrong dose of a painkiller due to similar packaging. While each of the three hospitals was putting measures in place, no steps were taken to communicate this to the rest of the health system.
Although we found examples where hospitals responded to a local need for improvement and the changes were taken up across the system, this was ad-hoc and there is no formal structure or process to ensure this happens consistently. In seeking to address this, a Clinical Governance Network (CGN) was formed in January 2007, involving representatives from across WA Health, and intended to facilitate sharing of information and approaches system-wide. Given its recent formation, it is too early to assess the impact the CGN has had.

There are examples of approaches to structured sharing which potentially could be applied across the system. For instance, one hospital coordinates safety and quality programs for an area health service and uses a range of activities to transfer learning between sites. The area health service has made a deliberate start to improving communication and knowledge of adverse events throughout all hospitals under its management. The area’s safety and quality staff work in a single unit to encourage a consistent and more effective approach to patient safety across the region through activities such as:

- annual safety road-shows to all sites on patient incidents, learning, new programs/policies and frequent safety communications to staff
- regular safety presentations to local clinicians and regional general managers
- regular site visits to ‘hot spots’
- training modules on patient safety policies and procedures
- annual regional CIMS report including comparison to state-wide data and reports on safety issues using CIMS information.

Generating the right type of information for sharing across the system is essential to effective learning, and practice overseas indicates that disseminating a broader range of information and analysis than currently generated by OSQH can be a key component in improvement. OSQH produces an annual report on CIMS and on sentinel events, and distributes two newsletters on sentinel events and patient safety. As an example of other approaches, the UK National Patient Safety Agency produces and distributes a range of adverse event information which is tailored to users and designed to prompt and support learning at all levels across the system including:

- regular monitoring reports tied into agency and hospital reporting cycles
- feedback reports to hospitals providing comparative information on incident rates and types tailored to clusters of hospitals
Systematic learning from adverse events is at an early stage ... continued

- thematic analyses of types of incidents and their causes and systematic incident reviews
- reports on specific significant events and ad-hoc requests from hospitals and other parties.

Despite deficiencies in the current data, OSQH should review and broaden the types and frequency of information and analysis it produces to support system learning, and should take into account the views of those at all levels in the health system who are involved in, and have responsibility for, improving patient safety.

**WA Health does not have a structured program of monitoring and evaluation**

There has been little structured monitoring and evaluation across the system of the implementation or effectiveness of central initiatives to reduce adverse events.

Monitoring the implementation of, and compliance with, initiatives to reduce adverse events is critical in making sure that the changes required by a new policy or procedures are becoming embedded in operational practice. It also allows lessons to be learned about the best ways to roll-out new initiatives. Unless the new policies and procedures are followed, there is the risk that adverse events will continue to occur even where the tools to prevent them exist.

OSQH do not have a structured approach to monitoring implementation and compliance. OSQH monitoring to date has involved:

- a post implementation audit of the National In-Patient Medication chart, and informal follow-up with hospitals
- enquiries of individual hospitals as to progress in implementing recommendations from sentinel event investigations
- requests to WA Health’s Internal Audit group to include areas for review, as recently with the Clinical Governance Framework.
A range of hospital staff have reported to us that some of the policies and procedures have proved problematic to implement at operational levels. They considered this was due to lack of piloting programs prior to roll-out, no implementation plans and tools, lack of prior advice on policy releases and timeframes, and inadequate support and training for implementation. This type of feedback should be captured through OSQH monitoring of implementation and compliance.

OSQH has also conducted little assessment of the effectiveness of initiatives to reduce adverse events. The analysis that has been done has not shown clear evidence yet that initiatives are reducing adverse events.

A recent initiative allocates $8 million per year for reform in targeted clinical areas and clinical governance. The initiative, titled Safety and Quality Investment for Reform (SQuIRe), is a step towards incorporating monitoring and evaluation into specific programs. Funding under SQuIRe is conditional on reporting against performance indicators and process and outcome measures for specific adverse events.
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