New South Wales Auditor-General’s Report
Performance Audit
Managing length of stay and unplanned readmissions in NSW public hospitals

NSW Health
The role of the Auditor-General

The roles and responsibilities of the Auditor-General, and hence the Audit Office, are set out in the Public Finance and Audit Act 1983.

Our major responsibility is to conduct financial or ‘attest’ audits of State public sector agencies’ financial statements. We also audit the Total State Sector Accounts, a consolidation of all agencies’ accounts. Financial audits are designed to add credibility to financial statements, enhancing their value to end-users. Also, the existence of such audits provides a constant stimulus to agencies to ensure sound financial management.

Following a financial audit the Audit Office issues a variety of reports to agencies and reports periodically to parliament. In combination these reports give opinions on the truth and fairness of financial statements, and comment on agency compliance with certain laws, regulations and government directives. They may comment on financial prudence, probity and waste, and recommend operational improvements.

We also conduct performance audits. These examine whether an agency is carrying out its activities effectively and doing so economically and efficiently and in compliance with relevant laws. Audits may cover all or parts of an agency’s operations, or consider particular issues across a number of agencies.

Performance audits are reported separately, with all other audits included in one of the regular volumes of the Auditor-General’s Reports to Parliament – Financial Audits.

In accordance with section 38E of the Public Finance and Audit Act 1983, I present a report titled Managing length of stay and unplanned readmissions in NSW public hospitals: NSW Health.

Grant Hehir
Auditor-General
23 April 2015

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Executive summary

Conclusion

Information is readily available about length of stay for patients treated in hospitals. Reducing hospital length of stay is an efficiency metric for NSW Health. However, information on unplanned readmissions is of less value due to the current limitations in its data collection and the complex nature of this indicator.

Information is used to actively manage patient flow, which is an underlying driver of length of stay. Managers at Local Health Districts appeared not to use unplanned readmissions information as much as length of stay information.

There are many local and statewide initiatives that aim to reduce length of stay and unplanned readmissions. However, the impact of some local and statewide initiatives on length of stay and unplanned readmissions are not well understood and quantified due to the lack of evaluations conducted.

Supporting findings

NSW Health has achieved considerable success over recent years in reducing average length of stay despite increasing pressure on hospital admissions by older and chronically ill patients. This success has been driven by changes in the ways health services are delivered over the past five to six years, such as the increasing use of same day care for treatments that previously require overnight hospital stays. During the same period, there has also been a notable reduction in average length of stay for admissions involving overnight stays. There is a good level of length of stay information available and this information is actively used to manage patient journeys in hospital.

Available data suggest that the rate of unplanned readmissions has not reduced in NSW despite various statewide and local strategies. NSW Health is undertaking research to better understand unplanned readmissions, their causes and the best ways to address them.

The overall rate of unplanned readmissions remained unchanged, but fell in several Local Health Districts where unplanned readmission performance was more closely linked to funding by the Ministry of Health. The linkage of funding to performance appeared to increase organisational focus on the issue.

Compared to length of stay, the use of unplanned readmission information within hospitals for management purposes is less robust and less useful due to the inherent limitations of the current unplanned readmissions data and the complex nature of this indicator.

A key goal for managing length of stay and unplanned readmissions is to treat the right patient at the right place at the right time. This includes keeping people healthy and supporting discharged patients in the community to minimise the need for future admissions. In NSW Health, there is an increased uptake of statewide and local initiatives to improve management of patients outside hospitals in their local communities. However, the results of individual innovations are sometimes not well understood and measured.

NSW Health recognises the importance of integrating in-hospital services with primary and community care to provide seamless, effective and efficient care. Ensuring continuity and integration in care enables earlier discharges from hospital and reduces the need for unplanned readmissions. While providing affordable primary care is the Commonwealth Government’s responsibility, NSW Health interacts with primary and community healthcare providers to ensure patients receive appropriate support after they are discharged from hospital.
A key to enabling integrated and continuous care is appropriate sharing of clinical information between hospitals and primary healthcare providers, particularly with General Practitioners (GPs). NSW Health has sought to improve information sharing by introducing HealtheNet. This system enables sharing of hospital information, such as patient discharge summaries, either directly to a patient’s GP or via the national Personally Controlled Electronic Health Record (PCEHR) system. HealtheNet has not currently been rolled out to all Local Health Districts.

Background

The New South Wales health system faces daily challenges of treating many patients in its 225 public hospitals and interacting with primary and community care services outside hospitals. The health system is complex as it involves public and private providers in and outside hospitals, and Commonwealth and State funding.

Length of stay refers to the period of time a patient stays in hospital after being admitted for a care or service event. Length of stay is an indicator of efficiency that influences hospital’s capacity to treat patients.

An unplanned readmission refers to a patient coming back to hospital for an unplanned care or service within 28 days of an earlier discharge from the same hospital. The rate of unplanned readmission is an indicator of effectiveness as it helps to measure the quality and continuity of care within and outside hospitals.

NSW Health monitors length of stay and unplanned readmissions as important indicators of operational performance in hospitals. The average length of stay in hospitals and unplanned readmissions to hospitals should be as low as they can be consistent with models of care. Service Agreements between the Ministry of Health and Local Health Districts include these indicators as service measures, which are regularly reviewed as part of NSW Health’s Performance Framework.

The audit examined how effectively length of stay and unplanned readmissions are managed in NSW public hospitals.

The audit’s scope included:

- emergency and planned admissions and medical, surgical, renal and oncology procedures; and the impact of increasing same day and outpatient services
- all inpatients regardless of whether their care was acute, subacute or non-acute.

The audit excluded patients admitted for mental health conditions.

The audit assessed whether:

- information on length of stay and unplanned readmissions is available to those who need it for monitoring performance
- information is used to manage length of stay and unplanned admissions effectively
- there are initiatives in place to reduce length of stay and unplanned readmissions.

In conducting the audit, we consulted the Ministry of Health, Clinical Excellence Commission, Agency for Clinical Innovation and four of the 15 Local Health Districts, that is:

- Northern Sydney Local Health District
- Western Sydney Local Health District
- Mid North Coast Local Health District
- Hunter New England Local Health District.

See Appendix 2 for further details about the audit approach.
Recommendations

NSW Health should:

1. As soon as possible, address the limitations in the existing specifications for measuring unplanned readmissions within 28 days of discharge. (page 15)

2. By December 2015, ensure the use of Relative Stay Index reports and Activity Based Management portal at the Local Health District level. (page 19)

3. By December 2015, take appropriate actions to support local analysis and reporting of length of stay and unplanned readmissions, subject to cost-benefit considerations of providing more business intelligence tools to Local Health District and hospital staff. (page 19)

4. By December 2015, identify and coordinate statewide and local strategies to reduce unplanned readmissions. These strategies should be targeted at specific conditions and patient groups who would most benefit from reductions in unplanned readmissions. (page 20)

5. By December 2015, ensure that out-of-hospital programs being rolled out have suitable evaluation programs attached. (page 23)

6. By June 2016, commence formal reviews and evaluations on the effectiveness of HealtheNet in supporting continuity of patient services from hospital care to primary and community care. The reviews should include IT challenges encountered during implementation, effectiveness of training and education programs, take up/utilisation rates and evidence of success. (page 23)
Introduction

Challenges faced by NSW Health

There are more than 225 public hospitals in New South Wales. Every day in New South Wales:

• around 17,000 people will spend the night in a public hospital
• 6,500 people will be seen by an emergency department
• 5,600 people are admitted to a public hospital
• 1,000 patients have their surgery (emergency or planned) performed in our public hospitals

In addition, NSW Health has a role of interacting with primary and community care services outside hospitals. The health system is complex as it involves public and private providers in and outside hospitals, and Commonwealth and State funding.

Measuring and reporting length of stay in hospitals

Length of stay refers to the period of time a patient stays in hospital after being admitted for a care or service event. Length of stay is measured in bed days. A patient who is admitted and discharged from hospital on the same day is allocated one bed day. Mathematically, the length of stay of an overnight hospital stay is the difference between the date the patient is admitted and the date of discharge, subject to other small adjustments.

As an operational measure used in hospital management, length of stay is reported as average length of stay for a selected group of patients, a facility or the whole health system. Average length of stay can be presented as a figure on its own or used to construct a relative stay index (RSI) by removing the impact of uncontrollable patient characteristics.

Measuring and reporting unplanned readmissions to hospitals

An unplanned readmission occurs where a patient is admitted for an unplanned care or service within 28 days of an earlier discharge. Unplanned readmissions are typically presented as rates (that is, the number of readmissions divided by total number of admissions for the same period). They can be reported as all-cause readmissions or condition-specific readmissions.

Service agreements between the Ministry of Health and Local Health Districts include the rate of unplanned readmission as a safety and quality service measure: 'Unplanned hospital readmissions: all admissions within 28 days of separation (%)'.

Lowering lengths of stay and unplanned readmissions aids efficiency

Keeping patients in hospitals is costly. On average, each day of overnight stay for acute patients costs the health system approximately $1,400. A detailed description of this estimate, including exclusion rules, is in Appendix 3.

Reducing length of stay would create considerable savings to the health system, as each bed day freed up means additional capacity to provide care to other patients. This additional capacity allows NSW Health to meet greater demand for health services. Similarly, reducing unplanned readmissions will create efficiency gains as unnecessary admissions are avoided and bed days are freed up, creating capacity for the next patient on the waiting list.

For example, Northern Sydney Local Health District's Operational Efficiency and Service Integration (OESI) unit draws on hospital performance data. OESI findings are used to inform reporting to NSW Treasury and the Ministry of Health on operational efficiencies and related savings. OESI analysis using 2013–14 data indicates that the reduction in length of stay in Northern Sydney Local Health District hospitals has resulted in a combined $92 million saving, which is used to treat more patients or reinvested elsewhere in health services.
The operational environment

The Ministry of Health provides strategic direction by including length of stay and unplanned readmission targets in service agreements with Local Health Districts. These targets are cascaded down to hospital executive performance agreements. In addition, there are clinical governance groups within Local Health Districts that support cultures of continuous improvement, including quality and safety assurance. The Clinical Excellence Commission and Agency for Clinical Innovation facilitate statewide improvement programs.

A critical day to day operational focus in hospitals is patient flow and achieving the best patient care co-ordination, including discharge practices. This is achieved via meetings involving multiple disciplines and units within hospitals, informed by reports produced from key IT systems.

Clinical and management systems are vital for assessing variations and assisting decision-making so that resources can be applied to best effect. For example, length of stay information can help identify ‘blockages’ in hospital processes that stop patients from going home early, and support clinical guidelines to help clinicians make appropriate decisions. The improved capability of health information systems and regular use of performance data are key to delivering better care for patients and value for money.

Factors affecting hospital length of stay and readmission rates

Australian and international research has shown that there are a range of factors that may influence a patient’s length of stay in hospital:

- Some determinants of a patient’s length of stay are difficult for a hospital to control, such as the patient’s age, sex and primary diagnosis.
- Other factors relate more directly to the quality of care provided, such as hospital infection rates and adverse events from treatments.
- Advances in diagnostic technologies and better treatments, particularly less invasive surgical procedures, have also contributed to reducing average length of stay, as have changes in the models and types of care.
- Social and family factors may affect length of stay, particularly for women.
- The day of the week on which a procedure is performed and discharge management procedures, such as who has authority to approve a discharge, have also been shown to affect length of stay.

For unplanned readmissions, some occasions may be an unavoidable result of the diagnosis. Others may be a result of poor initial care in the hospital, or inadequate follow-up care outside the hospital. As discussed on page 22, determining the reason for an unplanned readmission can be difficult.

An initial review of international evidence indicated that approximately 25 per cent of unplanned readmissions were related to deficiency of hospital care.

All these factors point to a complex mix of possible determinants for a patient’s length of stay and the risk of experiencing an unplanned readmission.

However, in conducting this audit, we focused on a smaller range of matters that are particularly relevant to contemporary public hospital care in New South Wales. The key issues that drive – or have the potential to drive – reductions in average length of stay and unplanned readmission rates are:

service standards imposed by NSW Health on Local Health Districts – these can provide focus and clarity to service administrators

high quality and timely information – such information supports effective and transparent performance reporting, as well as enabling high quality decision-making for patient flow management through the hospital

innovative initiatives among Local Health Districts and hospitals that provide new, effective ways of delivering treatments which enable early patient discharge, such as same day services

good transitions to out-of-hospital care, including through good information sharing, which ensures better continuity of care for the patient.

The extent to which individual Local Health Districts or hospitals have addressed these matters varies across New South Wales.

Managing patient flows can affect length of stay and unplanned readmissions

In healthcare, patient flow is the process by which patients are served through the multiple stages of care. For example, a patient may initially present at an Emergency Department, before being admitted to a medical assessment unit, then transferred to an operating theatre, recovering ward, general ward, then discharged.

Patient flow has both a clinical element dealing with the progression of a patient’s health status, as well as an administrative and operational element as the patient is moved through the hospital.

Exhibit 1 shows, in simplified form, the relationship between in-hospital and post-hospital patient flows for patients with acute conditions. This depicts the importance of out-of-hospital services in supporting early discharges from hospitals.

In-hospital patient flow includes patients with acute conditions who need to be admitted to hospital. They need to be kept in hospital, possibly being transferred though the hospital to receive different types of care until their condition improves sufficiently for a safe discharge.

Post-hospital patient flow includes patients who have undergone acute treatment in hospitals and have been discharged. It also includes patients who are receiving palliative and geriatric care out-of-hospital. They have continual access to specialist care at outpatient clinics with the support of GPs and community care programs.

The arrows in Exhibit 1 illustrate the possibility of patients who were discharged having to return to hospitals for various reasons. Some patients return for planned treatments, while others may return due to complications from previous hospital stay or an unrelated health condition. If a patient is readmitted to the same hospital from which they were discharged within 28 days for an unplanned treatment, it is counted as an unplanned readmission.

Hospital supported services provided in the home and community are necessary to promote sustainable health services and maintain length of stay and unplanned readmissions at manageable levels.

Ensuring that appropriate out-of-hospital care is available to a discharged hospital patient helps to:

• support earlier initial discharge from hospitals as decisions can be made with confidence that the patient will receive appropriate care
• reduce the chance of the patient experiencing an unplanned readmission due to inadequate ongoing care.

Out-of-hospital care may take a variety of forms, including GPs and other private providers, community healthcare, or planned outpatient hospital services.

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5 http://www.sss8.cl/media/upload/paginas/seccion/8183_.pdf
Exhibit 1: Concept map of patient flows in hospital and post discharge

Source: Audit Office research.
Key findings

Is information on length of stay and unplanned readmissions available to those who need them for monitoring performance?

This section contains our assessment on availability of length of stay and unplanned readmissions information, using inpatient datasets and reports provided by the Ministry of Health and information and feedback provided by the four Local Hospital Districts that we visited.

**Finding:** Information is readily available about length of stay for patients treated in hospitals. Reducing hospital length of stay results in increased efficiency in New South Wales public hospitals. However, information on unplanned readmissions is of less value due to the current limitations in its data collection and the complex nature of this indicator.

The data shows a sustained decline in average length of stay over recent years whilst the number of hospital admissions increasing. This is a considerable success for NSW Health.

A key change over the past 5-6 years is the increasing use of same day care, which has contributed to substantial savings on hospital bed days. During the same period, there has also been a notable reduction in average length of stay for admissions involving overnight stays.

The rate of total unplanned readmissions has not reduced for NSW Health as a whole. In 2013-14, the state average was 6.8 per cent which is above the **NSW 2021** target of 5.5 per cent.

**Availability and use of length of stay information**

We were provided a 10-year inpatient dataset by NSW Health that contains length of stay information. Our analysis of the dataset is detailed in the following subsections.

**In NSW, length of stay is falling, while total admissions are rising**

Exhibit 2 shows that in New South Wales from 2008–09 to 2013–14

- overall average length of stay (including same-day admissions) fell from 3.68 days to 3.35 days
- overnight average length of stay also fell from 5.72 days to 5.27 days
- hospital inpatient episodes increased from 1.49 million to 1.74 million.
Exhibit 2: Average length of stay (ALOS) and number of admissions in NSW

Source: 10-year inpatient data, Hospital System Information & Performance Reporting Branch (HSIPR), NSW Ministry of Health.

Note: Total episodes are the number of patient admissions to hospitals during a year. ALOS includes same day admissions and overnight stay admissions. Overnight ALOS is the average number of days that patients stay in hospitals, for admissions involving overnight stays.

No relationship between average length of stay and number of admissions

This audit examined whether there was any relationship between the number of admissions in a Local Hospital District and the average length of stay. Economies of scale can often allow larger organisations to achieve efficiencies that are unavailable to smaller organisations, and we looked at whether this could be reflected in shorter average length of stay among larger Local Hospital Districts.

Exhibit 3 shows average length of stay by Local Hospital Districts for 2012–13. There is no apparent relationship between the number of hospital admissions and the average length of stay.

For example, in 2012–13, the average length of stay was similar in Hunter New England (5.1 days), Western New South Wales (5.1 days), and Murrumbidgee (5.0 days) Local Health Districts. These similarities in average length of stay were despite large differences in admissions (from over 200,000 in Hunter New England Local Health District down to less than 65,000 in Murrumbidgee Local Health District).

Differences in average length of stay are more likely to be affected by factors such as different patient population, differences in services provided, and differences in planning and management.
Exhibit 3: Average length of stay and number of admissions

Key for Local Health Districts:
SYD=Sydney; SWS=South Western Sydney; SES=South Eastern Sydney; IS=Illawarra Shoalhaven; WS=Western Sydney; NBM=Nepean Blue Mountains; NS=North Sydney; CC=Central Coast; HNE=Hunter New England; NNSW=Northern NSW; MNC=Mid North Coast; SNSW=Southern NSW; M=Murrumbidgee; WNSW=Western NSW; FW=Far West; SCHN=Sydney Children Hospitals Network; SVHN=St Vincent’s Health Network (SCHN and SVHN comprise the Specialty Health Network).

Source: 10-year public hospital inpatient data, Hospital System Information & Performance Reporting Branch (HSIPR), NSW Ministry of Health.

Note: Justice and Forensic Mental Health Network is excluded from this analysis due to a very different patient cohort.
Average length of stay falling across types of hospitals and for different types of care

Information on average length of stay is available to different degrees of granularity and can be disaggregated in different ways, such as by type of hospital and type of care provided.

For example, Exhibit 4 shows the average length of stay from 2004–05 to 2013–14 by hospital peer groups for the four largest clinical specialties: obstetrics, orthopaedics, cardiology and respiratory medicine. The decrease in average length of stay is observed across all hospital peer groups for all four specialties.

Exhibit 4: Average length of stay trends by hospital peer group for selected specialties (in days)

Key for the three hospital peer groups:
'A' = very large referral and specialist hospitals; 'B' = large metropolitan and rural hospitals; and 'C' = medium and smaller sized hospitals; 'D' = small, regional and remote hospitals.
Source: 10–year public hospital inpatient data, Hospital System Information & Performance Reporting Branch (HSIPR), NSW Ministry of Health.
Average length of stay has fallen while same-day care has become more common

An increase in the provision of same-day care is likely a key driver in the reduction of average length of stay in New South Wales hospitals. As same day episodes of care are assigned a length of stay of one day (by default), the increasing proportion of same day admissions reduces average length of stay, everything else being equal.

Exhibit 5 shows that from 2007–08 to 2013–14:

- the number of same day admission increased from 549,715 to 784,992
- the percentage of all admissions that were same day admissions increased from 43% to 45%.

Exhibit 5: 10-year trend of same day admissions: number and as a percentage of total admissions

Source: 10-year public hospital inpatient data, Hospital System Information and Performance Reporting Branch (HSIPR), NSW Ministry of Health.

The increase in same day admissions has resulted in substantial savings in hospital bed days, since patients who previously stayed overnight can access same day facilities where they are admitted and discharged on the same day. This results in hospital overnight beds being freed up.

NSW Health was also successful in reducing average length of stay for admissions involving overnight stays. The decreasing trend of overnight length of stay is likely to be influenced by:

- advances in medical technology and the introduction of new models of care
- improved practices for managing patient flow within hospitals
- earlier discharge of patients supported by services delivered outside hospitals in the community.

Initiatives that have been introduced to better manage patient flow include:

- the use of emergency department short stay units (EDSSUs) and medical assessment units (MAUs) to provide shorter stay patient care at as an alternative to admitting patients to hospital
- the roll out of the Patient Flow Portal (discussed later) for up-to-the-minute tracking and discharge planning for each patient
- implementing the High Volume Short Stay model for elective surgery
- Community Packages of Care to support patients following their discharge from hospital.
Using length of stay information for planning and forecasting

Reliable and robust information on length of stay can also be used to forecast demand in hospitals, allowing resources to be planned more efficiently and effectively.

Exhibit 6 shows that there are substantial differences in average length of stay for planned and unplanned admissions. Hospitals can use this information, together with data from other sources, such as emergency departments, to forecast when periods of peak demand may occur.

For example, if seasonal patterns suggest that unplanned admissions from emergency departments tend to peak on Mondays and Tuesdays, hospitals can seek to arrange for planned admissions to occur on other days in order to manage demand for hospital beds.

Exhibit 6: Average length of stay and episodes for planned and unplanned admissions for 2013–14 in NSW

<table>
<thead>
<tr>
<th></th>
<th>ALOS  (days)</th>
<th>Overnight ALOS (days)</th>
<th>No. of same day</th>
<th>No. of overnight</th>
<th>% same day</th>
<th>% overnight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planned</td>
<td>1.72</td>
<td>4.70</td>
<td>734,252</td>
<td>142,557</td>
<td>84%</td>
<td>16%</td>
</tr>
<tr>
<td>Unplanned</td>
<td>4.53</td>
<td>5.37</td>
<td>1,008,678</td>
<td>815,381</td>
<td>55%</td>
<td>45%</td>
</tr>
</tbody>
</table>

Source: 10-year public hospital inpatient data, Hospital System Information and Performance Reporting Branch (HSIPR), NSW Ministry of Health.

Availability and use of information about unplanned readmissions

The rate of unplanned readmissions is used by NSW Health as a measure of quality. The rate of unplanned readmissions is not a key performance indicator (KPI) assigned to Local Health Districts, although it is included as a service measure.

The NSW Government’s NSW 2021 plan includes a target to reduce rates of unplanned and unexpected hospital readmissions. The target is to reduce the percentage of total hospital admissions that are unplanned or unexpected by 5 per cent per annum (that is, to 5.2 per cent) over four years from 2010–11.

Exhibit 7 shows the rate of unplanned readmission in 2013–14:

- was 6.8 per cent – this is higher than the NSW 2021 target of 5.5 per cent
- remained relatively unchanged from 2010–11.

Exhibit 8 shows rates of unplanned readmission across Local Health Districts in 2013–14.
Exhibit 8: Rates of unplanned readmissions for 2013-14 by Local Health District

![Graph showing rates of unplanned readmissions for 2013-14 by Local Health District. The graph indicates that State average is 6.8%.]

Key for Local Health Districts:
SYD=Sydney; SWS=South Western Sydney; SES=South Eastern Sydney; IS=Illawarra Shoalhaven; WS=Western Sydney; NBM=Nepean Blue Mountains; NS=North Sydney; CC=Central Coast; HNE=Hunter New England; NNSW=Northern NSW; MNC=Mid North Coast; SNSW=Southern NSW; M=Murrumbidgee; WNSW=Western NSW; FW=Far West; SCHN=Sydney Children Hospitals Network; SVHN St Vincent’s Health Network (SCHN and SVHN comprise the Specialty Health Network).

Source: Health System Performance Report July 2014, Hospital System Information & Performance Reporting Branch (HSIPR), NSW Ministry of Health.

NSW Health is currently undertaking considerable activity at the Local Health District and statewide levels to enhance understanding of unplanned readmissions.

However, there remain limitations with the information on unplanned readmissions rates:

- The data are limited to readmission to the same hospital from which the individual was initially discharged. This can result in underreporting of readmissions.
- Unplanned readmissions include readmissions for any reason to the same hospital within 28 days, including those that may not be related to the original service.
- Unplanned readmissions are limited to those that occur within 28 days. For some types of care, a longer or shorter period may be more appropriate. For example, an unplanned readmission for a hip replacement may reflect poorly on the quality of the initial service even if it occurs many months after discharge.

Interviewees from the Ministry of Health and managers in hospitals indicated that the current unplanned readmissions measure is problematic as it includes unavoidable and avoidable readmissions and excludes readmissions to other hospitals.

As discussed on page 21, determining the reason for unplanned readmissions can be difficult. An initial review of international evidence indicated that only about 25 per cent of unplanned readmissions were related to deficiency of hospital care.

**Recommendation**

**NSW Health should:**

As soon as possible, address the limitations in the existing specifications for measuring unplanned readmissions within 28 days of discharge.
Information systems for length of stay and rates of unplanned readmissions

Exhibit 9 shows the information technology systems supporting statewide and Local Health District performance reports, including the analysis of length of stay and unplanned readmissions.

**Exhibit 9: NSW Health’s Information Management Architecture**

The quality and relevance of performance information in NSW Health, including length of stay and unplanned readmissions, has improved over the last five years. Improved capability of health information systems and regular use of performance data are important to better patient care and value for money.

All Local Health Districts report length of stay and unplanned readmissions using activity data from NSW Health’s data warehouse, the Health Information Exchange (HIE). The quality of HIE activity data has improved over recent years, partly driven by the introduction of Activity Based Funding (ABF), which requires accurate activity and cost data.

NSW Health has developed a statewide business intelligence tool called the Activity Based Management (ABM) portal to enable wider use of ABF data (where activity is linked to cost) for management purposes. The ABM portal allows for customised performance reporting to be done at any time and to accommodate the needs and interests of each Local Health District.

When fully rolled out, all Local Health Districts will be able to use the ABM portal to benchmark themselves against other state services on length of stay, unplanned readmissions and other indicators. In addition, the Ministry of Health has recently introduced a set of quarterly benchmarking reports for both length of stay and unplanned readmissions.

We observed a culture of continuous improvement using regular reporting of length of stay information in the four Local Health Districts we visited. We also observed the use of statewide tools such as the Patient Flow Portal (see page 19), as well as local performance monitoring tools created using Microsoft Excel.
Is this information used to manage length of stay and unplanned admissions effectively?

In this section, we report whether information about length of stay and unplanned readmissions was used by management in the hospitals we visited.

**Finding: Information is used to actively manage patient flow which is an underlying driver of length of stay. Managers at Local Health Districts do not use unplanned readmissions information as much as length of stay information.**

While Local Health Districts use the Patient Flow Portal to manage patients’ journeys in hospital and patient discharges, we observed limited awareness of the Relative Stay Index reports and Activity Based Management portal provided by the Ministry of Health.

Some Local Health District and hospital staff wanted greater access to business intelligence licenses to increase automation of analysis and reporting.

Despite the lack of quality data, management focus is likely to make a positive difference on unplanned readmissions. The management of unplanned readmissions appears to be more successful when there is a greater the focus on specific diagnostic related groups and types of patients.

Local Health Districts receive less funding if they exceed the State average for unplanned readmissions. However, this average is higher than the NSW 2021 target. Therefore, a Local Health District could exceed the NSW 2021 target without financial consequences, provided that it stayed below the State average. This appears to create an inconsistency between the performance required under NSW 2021 and by NSW Health. NSW Health is currently reviewing its approach to unplanned readmissions.

**Using information to better manage length of stay**

**Patient flow portal as a tool for managing length of stay**

An overarching driver of length of stay is patient flow management within hospitals. Patient flow aims to coordinate patient journey through the various stages in a health service (see Exhibit 10). Patient flow management is critical to controlling length of stay.

Sound patient flow management involves using timely data to inform clinical and discharge decisions. This has flow-on impacts for minimising length of stay (efficiency) and ensuring appropriate patient outcomes relative to quality and safety.

NSW Health has developed the Patient Flow Portal, a real time tracking tool of patients during their hospital journey. The Portal has been rolled out to all Local Health Districts and is a key tool for how nurses and doctors manage patient stay in wards.

An important element of the Portal is the ‘expected discharge dates’ information for admitted patients in hospital. The ‘expected discharge dates’ are initially calculated using predictive tools embedded in the Portal, and are subsequently reviewed, and if necessary, modified, by multidisciplinary teams in hospital.

Should a patient stay in hospital beyond his or her ‘expected discharge date’ (in other words, he or she was not discharged as planned), the reason for the delay will be recorded in the Portal as ‘waiting for what’. The ‘waiting for what’ information enables bed managers and discharge planners to act to resolve the issue that prevents patients from being discharged on time.

Exhibit 10 shows the typical problems and disconnections that may increase a patient’s length of stay in hospitals.
An upcoming improvement to the Portal is the introduction of ‘electronic journey boards’. This will display key information from the Portal in wards, for example, to highlight the demand for beds arising from emergency department admissions and expected discharge dates from wards to free up beds.

Opportunities for greater use of length of stay information

Local Health Districts and hospitals analyse and report on average length of stay extensively. The four Local Heath Districts we visited use benchmarking, including independent reporting from the Hospital Roundtable, a non-profit membership organisation of health services across Australia and New Zealand. 

Analysis of average length of stay allows a broader look at issues throughout a patient’s hospital journey, from the emergency department to expected discharge dates.

As discussed in Section 1, there is detailed information available in hospitals to assess patient flow issues, manage related operational issues and optimise length of stay. We observed a high level of consistency across the hospitals we visited on the frequency of operational meetings and the information used. Generally, there are:

- daily patient flow/bed meetings involving bed managers, ward nurses and discharge planners. These meetings discuss information from the Patient Flow Portal, such as reasons causing delays in patient discharge (‘waiting for what’), expected discharges and expected in-coming patients
- weekly and/or monthly performance meetings attended by the executive team. These meetings discuss performance indicators, including length of stay, using performance data from the HIE.

Source: NSW Ministry of Health.

6 https://www.healthroundtable.org/
We observed instances of the use of data and information to support evidence based changes to clinical pathways and models of care. We also observed initiatives aimed at improving operational efficiency and resource allocation. These can have an impact on admissions and length of stay, for example, increasing use of outpatient clinics for patients redirected from emergency departments, and the closure of beds to support hospital in the home services.

We noted that the Ministry of Health has commenced providing regular quarterly reports on Relative Stay Index (RSI) or casemix adjusted average length of stay to Local Health Districts. In addition, length of stay and average length of stay information is available on the statewide ABM portal (discussed in Section 1). However, our interviews with Local Health District representatives indicated that:

- the RSI reports produced by the Ministry of Health are not widely distributed and many in the Local Health Districts are not aware of them
- there are limited licenses for the ABM portal being provided by the Ministry of Health and that limited its usefulness.

Further feedback from Local Health Districts and hospitals we visited included:

- That Local Health Districts welcome the upcoming installation of electronic patient journey boards to improve the use of data from the Patient Flow Portal for patient discharge.
- Many length of stay reports are manually produced at Local Health Districts by extracting data from HIE using Business Objects software, and populating the data into templates created in Microsoft Excel. Some Local Health District and hospital interviewees called for greater availability of business intelligence tools to be made available, for example, Microsoft SQL Server, Qlikview, to improve automation and reduce errors in this process.
- Clinicians often found length of stay reporting by diagnostic related groupings to be too aggregated for meaningful clinical interpretation and decision-making. Clinicians require detailed analysis of case complications to better explain length of stay variations, in addition to aggregate trends data.

**Recommendation**

NSW Health should:

By December 2015, ensure the use of Relative Stay Index reports and Activity Based Management portal at the Local Health District level.

By December 2015, take appropriate actions to support local analysis and reporting of length of stay and unplanned readmissions, subject to cost-benefit considerations of providing more business intelligence tools to Local Health District and hospital staff.

**Using information to better manage unplanned readmissions**

Reporting and analysis of unplanned readmissions data is not as well established as for length of stay. As reported earlier, NSW Health did not meet the NSW 2021 target to reduce the rate of unplanned readmissions to 5.5 per cent for 2013–14.

Local Health Districts have financial incentives to manage unplanned readmissions relative to the state average, which is higher than the NSW 2021 target. One Local Health District with an unplanned readmission rate exceeding the State average was subject to a ‘purchasing adjustor’ that effectively reduced its funding. In this Local Health District, there was a concerted effort to manage and reduce unplanned readmissions. As a result, the rate of unplanned readmissions reduced.
Not all unplanned readmissions are a reflection on quality of care. An initial review of international evidence commissioned by the Ministry of Health indicated that approximately 75 per cent of unplanned readmissions were chronically ill, elderly patients requiring interventions in the community. The remaining 25 per cent of unplanned readmissions were potentially avoidable, such as inappropriate timing of discharge, inadequate information, complications or incorrect/inappropriate action.

The idea that not all unplanned readmissions are avoidable is consistent with the NSW 2021 measures report for 2013, which noted that only a small proportion of reviewed cases related to safety and quality issues, with most relating to:

…post-discharge follow-up arrangements, lack of primary care and integrated care options, and increased prevalence of chronic disease with episodes of acute exacerbation.7

The Ministry of Health and the CEC are currently reviewing the indicator. Part of the review involves developing a number of interactive unplanned readmission reports at the levels of Local Health District, hospital and service related group. The tool adjusts for ‘uncontrollable patient characteristics’ to facilitate a like-with-like comparison of unplanned readmission across Local Health Districts and hospitals. At the time of writing, this interactive tool is still in its draft form.

A recent discussion paper by the Ministry of Health indicated that interventions targeted at conditions associated with a greater likelihood of unplanned readmission have the potential to lower readmissions, and that poor discharge practices can contribute to the problem. The management of unplanned readmissions appears to be more successful the greater the focus on specific diagnostic related groups and types of patients.

Two Local Health Districts that we visited had carried out internal audits on patient files to understand the extent to which unplanned readmissions were related to some of the following key drivers: avoidable admissions, original admission, insufficient discharge planning, insufficient contact with community health facilities or outpatient clinics, and chronic diseases. These audits tend to be time and resource consuming and are often based on small sample sizes.

Our discussion with the CEC indicated that a more effective way of assessing unplanned readmissions is via collecting patients’ feedback when they present at the emergency departments or are being readmitted to hospitals. This has the potential of collecting more accurate information that better reflects the factors causing the patient to readmit. In turn, this would allow Local Health Districts or hospitals to tailor their approach to deal with unplanned readmissions in their local circumstances. This approach is currently being trialled at Northern NSW Local Health District, and may be trialled in Northern Sydney Local Health District in the near future.

**Recommendation**

**NSW Health should:**

By December 2015, identify and coordinate statewide and local strategies to reduce unplanned readmissions. These strategies should be targeted at specific conditions and patient groups who would most benefit from reductions in unplanned readmissions.

---

Are there initiatives in place to reduce length of stay and unplanned readmissions?

While we observed many statewide and local initiatives designed to reduce length of stay and unplanned readmissions during our visits to Local Health Districts, it is impossible to list everything in this section. This section contains our general observations in response to the audit criteria. We have included ten case studies of initiatives we observed in our commentary and in Appendix 4.

Finding: There are many local and statewide initiatives that aim to reduce length of stay and unplanned readmissions. However, the impact of some local and statewide initiatives on length of stay and unplanned readmissions are not well understood and quantified due to the lack of evaluations conducted.

Health services and programs provided out of hospital may support the reduction of length of stay and unplanned readmissions, by enabling earlier discharge and keeping patients in good health to reduce the need for future hospitalisation.

A key enabler to the success of initiatives is good information sharing and exchange between in-hospital services and out-of-hospital services. NSW Health has introduced HealtheNet to enable the sharing of patient records between public hospitals and primary and community care providers. HealtheNet has not currently been rolled out to all Local Health Districts.

How out-of-hospital health services can affect length of stay and unplanned readmissions

Ideally, a holistic approach is needed to facilitate patient flow management within the whole health system; that is, the focus needs to not only concentrate on what happens inside hospitals but also what happens after a patient is discharged. Exhibit 1 (reproduced from the Introduction) depicts the interaction between patient flow inside hospitals and post hospital discharge.

Exhibit 1: Concept map of patient flows in hospital and post discharge

Source: Audit Office research.

While some health services outside hospitals may be funded by NSW Health (for example, hospital in the home, some palliative and geriatric care and outpatient clinics), services such as GP consultations and community programs are largely the responsibility of the Commonwealth. Part of NSW Health’s responsibility is to work with primary and community care providers to facilitate a continuum of care from hospitals to the community.
Individual circumstances and the different case complications of each patient are likely to result in different interactions between his or her in-hospital and post-hospital experiences. However feedback from Local Health District and hospital interviews implied a number of benefits of out of hospital services, which are expressed here generally:

- Strong primary and community care supports earlier discharge of patients from hospitals. Earlier discharge will reduce length of stay and make hospital beds available to the next patient. Patients who receive good community care are likely to be in better health and should they ever return to hospitals they may require shorter length of stay than those who do not receive good community care.
- Health services outside acute settings funded by hospitals may reduce unplanned readmissions as they ensure appropriate follow-up care and support after a patient's discharge, hence reducing the risk of the patient having to return to hospitals due to health deterioration i.e. reduce unplanned readmissions.

Initiatives are being pursued to reduce length of stay and unplanned readmissions

In all four Local Health Districts we visited, we observed an increase in the uptake of statewide initiatives (such as hospital in the home and integrated care), as well as local clinical initiatives to improve service delivery to the local community (such as the use of telemedicine in rural Local Health Districts to reduce barriers to healthcare access due to distance). Examples of these initiatives are included in the ten case studies listed later in this section and detailed in Appendix 4.

Funding arrangements and multiple service providers pose challenges to reducing length of stay and unplanned readmission. Many initiatives outside hospitals are largely funded by the Commonwealth and delivered by the State and private providers. This adds complexity in coordinating patient services, especially at discharge from hospital. Discharge officers need to be aware of all services available and how best to connect patients with them.

Examples of the services available include hospital in the home, community nursing, specialist outpatient clinics, palliative and geriatric care programs, chronic disease programs, and telemedicine services. The different providers and services also make it difficult for the patients to navigate their way through the different programs and services.

Hospital in the home and chronic disease programs helping to reduce length of stay

As discussed in Section 1, the ongoing improvement of managing length of stay within hospitals is driven by increasing information availability. In addition to efficiency resulting from better use of information, a number of statewide and local initiatives are effectively creating capacity outside hospital settings so that patients can be discharged early. Two examples are:

- hospital in the home, which provides care in patient’s home thus reducing length of stay in hospitals
- chronic disease management programs, which provides care coordination and self-management support to help chronically ill patients to manage their conditions and reduce need for hospitalisation.

As indicated by the case studies in Appendix 4, we received limited information about the impact on length of stay of initiatives during our visits. Evaluations were conducted only in a few instances. However, many initiatives are part of national and statewide programs and are subject to longer term reviews.
Post discharge follow-up and integrated care helping to reduce unplanned readmission

Some initiatives have a primary aim to reduce unplanned readmissions. Some examples are:

- follow up phone calls with discharged patients to ensure their medications are up-to-date, and their referrals and ongoing care management are in place
- the integrated care program, which aims to bring together primary care services and hospital services to better support patients in the community.

As noted in Section 2, NSW Health is reviewing the unplanned readmissions measure and is developing strategies to help reduce unplanned readmissions. These strategies are likely to include proactive initiatives such as profiling patients (on admission) who are more likely to return to hospital, and a greater focus on coordinating services for patients on discharge.

Initiatives supporting patient record sharing

A key enabler to the success of the initiatives discussed is good information sharing and exchange between in-hospital services and out-of-hospital services. Information exchange and connectivity ensure patients’ medical records and histories can be accessed in and out of hospitals so that the best patient care is provided.

NSW Health recognises the importance of integrating in-hospital services with primary and community care to provide seamless, effective and efficient care, to reduce needs for hospital admissions and enable earlier discharges from hospitals. NSW Health interacts with primary and community care funded by Commonwealth in ensuring that patients receive appropriate support after they are discharged from hospitals.

An important initiative is the introduction of HealtheNet, which NSW Health began piloting during 2005-06. To date, HealtheNet has been implemented in the Western Sydney, Nepean Blue Mountains, Hunter New England, South Eastern Sydney and Illawarra Shoalhaven Local Health Districts and The Children’s Hospitals Network (Westmead and Randwick). This system enables the sharing of patient records between public hospital and GPs, by transferring the records directly to GPs or to the Personally Controlled Electronic Health Record (PCEHR) (a national shared electronic health record system).

A related program that supports access to clinical information by Community Health systems is the Community Health and Outpatient Care (CHOC) program. Northern Sydney Local Health District and Central Coast Local Health District are pilot sites for CHOC.

NSW Health is currently committed to implementing HealtheNet to all remaining Local Health Districts by the middle of 2015.

Recommendation

NSW Health should:

By December 2015, ensure that out-of-hospital programs being rolled out have suitable evaluation programs attached.

Recommendation

NSW Health should:

By June 2016, commence formal reviews and evaluations on the effectiveness of HealtheNet in supporting continuity of patient services from hospital care to primary and community care. The reviews should include IT challenges encountered during implementation, effectiveness of training and education programs, take up/utilisation rates and evidence of success.
Case studies of initiatives to reduce length of stay and unplanned readmissions

Appendix 4 outlines ten case studies of statewide and local initiatives we observed during our hospital visits. We examined the case studies to understand how the initiatives influence length of stay and unplanned readmissions. Broadly, the initiatives are targeted at:

- facilitating earlier patient discharges from acute beds in hospitals (consistent with post-hospital patient flow in Exhibit 1)
- reducing or preventing unnecessary and/or unplanned readmissions, by ensuring a continuum of care following patient discharges (consistent with sound discharge practice as part of in-hospital patient flow in Exhibit 1).

The ten case studies are:

1. Care in home supported by community health
2. Use of outpatient clinics
3. Integrated care
4. Palliative care – enhanced capacity and new models of care
5. NSW Chronic Disease Management Program (also known as Connecting Care)
6. Heart to Heart Partnership
7. Acute Geriatric Evaluation and Management Unit
8. Telemedicine
9. Follow up phone calls post discharge
10. In Safe Hands program.
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<th>Glossary of terms</th>
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<tr>
<td><strong>Activity Based Funding (ABF)</strong></td>
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<td><strong>Activity Based Management (ABM)</strong></td>
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<td><strong>Business intelligence tools</strong></td>
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<td><strong>Clinical pathways</strong></td>
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<td><strong>Clinical specialties</strong></td>
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<td><strong>Community Health and Outpatient Care (CHOC)</strong></td>
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<td><strong>eHealth</strong></td>
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<td><strong>Electronic Medical Record (EMR)</strong></td>
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<td><strong>Emergency Department Short Stay Unit (EDSSU)</strong></td>
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<td><strong>Health Information Exchange (HIE)</strong></td>
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<td><strong>HealthineNet</strong></td>
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<td><strong>High Volume Short Stay model</strong></td>
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<td><strong>Hospital episodes</strong></td>
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<td><strong>Hospital peer groups</strong></td>
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<td><strong>Inpatient/acute care</strong></td>
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<td><strong>Integrated Care Program</strong></td>
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<td><strong>Length of stay</strong></td>
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<td>Medical Assessment Unit (MAU)</td>
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<td>Models of care</td>
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<td>Outpatient/ambulatory care</td>
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<td>Overnight admissions</td>
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<td>Patient Controlled Electronic Health Records (PCEHR)</td>
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<td>Relative Stay Index (RSI)</td>
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<td>Same day care/admissions</td>
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<td>Telemedicine</td>
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<td>Unplanned readmission</td>
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Appendices

Appendix 1: Response from NSW Health

NSW Health

21 April 2015
Ref: H15/30885-4

Mr Grant Hehir
Auditor-General
The Audit Office of New South Wales
GPO Box 12, Sydney NSW

Dear Mr Hehir

Re: Performance Audit - Managing the length of stay and unplanned readmissions in NSW public hospitals

Thank you for providing me a copy of the final report from the above performance audit.

Please find attached a formal response from NSW Health to be incorporated into the published report.

I note your intent to table the report on 23 April 2015.

I would like to thank you and your team for working with the Ministry of Health and Local Districts / Specialty Health Networks to make this audit process a worthwhile and constructive exercise.

Yours sincerely

Dr Mary Foley
Secretary, NSW Health

20.4.15

NSW Auditor-General's Report to Parliament | Managing length of stay and unplanned readmissions in NSW public hospitals | Appendices
Response from NSW Health

NSW Health welcomes the findings of the Auditor-General’s report, which shows a sustained decline in patient average length of stay over recent years whilst the number of hospital admissions continued to increase.

As the report correctly points out, these extraordinary improvements in the efficiency of the NSW public hospital system are a result of a range of different factors. This includes advances in medical technology and models of care (including out-of-hospital care), as well as a sustained and focussed effort by clinicians and hospital managers to improve the management of patient flow through the hospital system, ensuring that the time patients spend in hospitals is appropriate and that any unnecessary delays are eliminated.

The Ministry of Health, as the system manager, has contributed to this success by setting up an appropriate funding and performance management policy environment, which is conducive to the delivery of safe, efficient and effective care. This policy environment includes the introduction of Activity Based Funding as well as a Performance Framework designed around the timely use of relevant data and information to continuously monitor, analyse and act on key operational metrics such as length of stay. More notable improvements in average length of stay seen in the last three to four years coincide with the introduction of the Activity Based Funding model. The Ministry has also supported local improvement efforts by investing in the development of industry-leading information management and analysis tools, such as the Patient Flow Portal, which enables real-time tracking of patients’ stay across all of the State’s largest hospitals.

The report identifies a number of challenges for NSW Health in dealing with the complex issue of unplanned readmissions. While it has been used in the Australian health system for many years, the rate of unplanned readmissions lacks a consistent and standardised national definition. It is also an indicator that tends to be poorly understood, with the most common assumption being that it is indicative of the quality of care that patients receive in hospitals. However, as pointed out in the report, based on an independent review of international evidence commissioned by the Ministry in 2013, only a quarter of unplanned readmissions are related to possible deficiencies in care received during the initial hospital stay. The vast majority of readmissions seem to be related to post-discharge care in the community and a range of patient-related factors, including the natural progression of disease, for example, in chronically ill patients and the frail elderly.

Given the complexities surrounding the issue of unplanned readmissions, the Ministry, in partnership with the Clinical Excellence Commission, is undertaking an in-depth review and analysis of unplanned readmissions in NSW public hospitals, with a view to developing a revised indicator definition and a set of information tools and management strategies aimed at more precise identification of areas for improvement and action.

This work is well advanced and the implementation of a range of strategies has already commenced, such as the use of patient survey tools while readmitted patients are still in hospital to better understand and target specific causes of their readmissions. The use of unplanned readmission rates as a ‘purchasing adjustor’ in the Ministry’s funding model for Local Health Districts and Specialty Health Networks continues to be refined to ensure that the funding signals continue to stimulate meaningful performance improvement efforts.

The report identifies and describes important linkages between hospitals, community health, primary care, general practice and private sector providers in ensuring continuity of care for patients before, during and after their stay in hospital. These linkages are crucial in enabling hospitals to plan early, safe discharge of patients from hospitals and in preventing unnecessary readmissions and repeat admissions.

Building on its previous efforts and investments in this area, NSW Health is currently in the process of implementing the new Integrated Care Program, designed to establish innovative models of care delivery, which support person-centred, seamless, efficient and effective care, particularly for people with complex, long term conditions who require care to be integrated across different providers in hospital and community-based settings.
In March 2014, the NSW Government announced the NSW Integrated Care Strategy, alongside an investment of $120 million over four years from 2014 to 2017. The aim is to develop a health system that people can navigate easily, which offers a better experience and outcomes for people through connected health services and continuity of care, and one which offers better value, avoiding duplication of services and tests, and unnecessary hospitalisations. One of the expected outcomes of this program is a reduction in potentially avoidable hospital readmissions.

An important enabler of care continuity and integration is timely sharing of clinical information between hospitals and community providers, especially general practitioners. To this end, NSW Health is in the process of rolling out HealtheNet, a web-based information system designed to provide a single view of a patient record to all clinicians involved in the patient’s care. This includes the ability to send ‘Electronic Discharge Summaries’ directly to GPs’ computer systems and sharing of information with the Personally Controlled Electronic Health Record (PCEHR) to be viewed by other authorised healthcare providers for example private specialists and healthcare professionals in aged care facilities.

This work is progressing in collaboration with Local Health Districts (LHDs), Medicare Locals (to be replaced by Primary Health Networks), the Commonwealth Department of Health, National eHealth Transition Authority (NEHTA), consumers and a range of industry partners to ensure that the best possible service is provided. The current plan is for HealtheNet to be implemented in phases to all LHDs by the middle of 2015.

NSW Health accepts or partially accepts all recommendations made in the Auditor-General’s report. The following table outlines specific responses to each of the recommendations.

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<th>Recommendation</th>
<th>NSW Health Response</th>
<th>Comment</th>
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<td>1. As soon as possible, address the limitations in the existing specifications for measuring unplanned readmissions within 28 days of discharge.</td>
<td>Partially accepted.</td>
<td>While the review of the current unplanned readmission indicator is well under way, there are no quick and simple solutions to be found in this space. Current measures are limited by the scope of data items in the current administrative data collections and some of these limitations will not be possible to address in the short term. A more productive and cost-effective approach to this issue is the one already being pursued by NSW Health – to provide improved reporting tools to hospitals and LHDs for local review and investigation, coupled with a set of targeted and evidence-based strategies to reduce those unplanned readmissions that are potentially preventable.</td>
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<td>2. By December 2015, ensure the use of its Relative Stay Index reports and Activity Based Management portal at the Local Health District level.</td>
<td>Accepted.</td>
<td>The roll-out of the Relative Stay Index reports and the Activity Based Management portal is under way in accordance with NSW Health’s existing plans and is progressing well.</td>
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<td>3. By December 2015, take appropriate actions to support local analysis and reporting of length of stay and unplanned readmissions, subject to cost-benefit considerations of providing more business intelligence tools to Local Health District and hospital staff.</td>
<td>Accepted.</td>
<td>NSW Health is currently developing its new Analytics Strategy, which will address a number of current and planned initiatives for dissemination and use of appropriate business intelligence tools across the system. This builds on an array of analytical tools and reporting systems already available to Local Health Districts and hospital staff.</td>
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<td>Recommendation</td>
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<td>4. By December 2015, identify and coordinate statewide and local strategies to reduce unplanned readmissions. These strategies should be targeted at specific conditions and patient groups who would most benefit from reductions in unplanned readmissions.</td>
<td>Accepted.</td>
<td>An in-depth review of unplanned readmissions was undertaken by the Ministry and the Clinical Excellence Commission, including a review of international evidence. This has resulted in identification of a range of evidence-based strategies that are currently being considered for implementation in NSW Health. These strategies will work in alignment with a broader set of integrated care strategies currently being implemented as part of NSW Health’s Integrated Care Program.</td>
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<td>5. By December 2015, ensure that out-of-hospital programs being rolled out have suitable evaluation programs attached.</td>
<td>Accepted.</td>
<td>Most statewide programs already have evaluations routinely included as part of the program. The new Integrated Care Program has a significant monitoring and evaluation component running in parallel with the actual implementation. Local Health Districts are encouraged to run smaller, targeted local evaluations for their innovation programs – these have to be commensurate to the size of local initiatives.</td>
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<td>6. By June 2016, commence formal reviews and evaluations on the effectiveness of HealtheNet in supporting continuity of patient services from hospital care to primary and community care. The reviews should include IT challenges encountered during implementation, effectiveness of training and education programs, take up/utilisation rates and evidence of success.</td>
<td>Accepted in principle.</td>
<td>The current plan is for HealtheNet to be implemented in all LHDs by middle of 2015. It is important for the new system to be in operation for a reasonable period of time before any meaningful evaluative effort can take place. The evaluation will have to take into account a range of related eHealth-type initiatives, such as the Personally Controlled Electronic Health Record (Commonwealth-funded national project), as well as local initiatives aimed at supporting GP-to-hospital interactions such as shared care plans, electronic referrals and the like. This is a fast changing field with multiple inter-related projects, relying on a wide range of stakeholders, which may impact on the timing of any formal review or evaluation.</td>
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Dr Mary Foley  
Secretary, NSW Health  
April 2015
Appendix 2: About the audit

Audit objective
The audit’s objective was to examine how effectively length of stay and unplanned readmissions are managed in NSW public hospitals.

The average length of stay in hospitals should be as low as it can be consistent with better practice models of care. Length of stay influences capacity and can support greater output from the health system for a similar cost. The level of unplanned readmissions following hospitalisation should be as low as it can be consistent with better practice models of care. Unplanned readmission is an indicator of effectiveness as it helps measure patient safety and of the quality of service within and outside hospitals.

Audit scope and focus
The audit’s scope included:
- emergency and planned admissions and medical, surgical, renal and oncology procedures; and the impact of increasing same day and outpatient services
- all inpatients regardless of whether their care was acute, subacute or non-acute.

The audit excluded patients admitted for mental health conditions.

The primary focus of the audit was the management of length of stay and unplanned admissions at a hospital level; and the information, analysis and initiatives available to assist management.

Audit criteria
The audit criteria provide the expected standards of performance (‘what should be’). They are applied to the actual performance (‘what is’). This comparison produces performance information and allows the construction of audit findings (particularly around gaps in the performance) and the formation of an overall conclusion against the audit’s objective. The criteria are based on research and discussions with NSW Health.

Criterion 1: Information on length of stay and unplanned readmissions is available to those who need it for monitoring performance.
- Other key indicators include: RSI and quality indicators.
- Those who need the information are the appropriate levels of management?
- Management information includes: up-to-date comparative information by DRG and specialty, including the RSI; management levels receiving tailored reporting include individual clinicians, NUMs, bed managers and executives in hospitals, Local Health Districts and the Ministry.

Criterion 2: Information is used to manage length of stay and unplanned admissions effectively
- Constraints are both inside and outside a hospital's control – these include older patients, those with pre-existing complicated conditions, patients in remote locations and limited support from home who will likely need a longer stay in a hospital bed.
- Managers within hospital are able to coordinate medical practitioners, the timing of diagnostic tests, and manage beds and discharges.

Criterion 3: There are initiatives in place to reduce length of stay and unplanned readmissions
- Initiatives include the patient flow portal, pathways of care outside the hospital; use of same day admissions, performance agreements and targets.
A selection of Local Health Districts and hospitals was made by the Audit Office. They were:

- Western Sydney Local Health District (Westmead & Blacktown)
- Hunter NE Local Health District (John Hunter & Tamworth)
- Northern Sydney Local Health District (RNS & Hornsby)
- Mid North Coast Local Health District (Coffs Harbour & Port Macquarie).

The selection of was based on their analysis of the inpatient data base and the ABM portal. The audit team have also had discussions within the Ministry on current initiatives and their possible impact on patient length of stay.

**Audit approach**

The audit collected performance information and evidence and produced its report by:

- conducting interviews
- collecting and analysing performance information, reports and documents
- corroborating and assessing performance against criteria
- documenting findings
- conducting exit interviews to consult on the audit’s findings, conclusion and recommendations for improvement.

The approach was complemented by quality assurance processes within the Audit Office to ensure compliance with professional standards.

The audit approach had four major components:

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<th>Audit approach</th>
<th>Analysis</th>
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| 1. Analysis of state-wide data on length of stay and related measures | Data quality checks on the pivot tables and RSI analysis. Time series analysis on length of stay and related measures by the following variables:  
- Local Health Districts  
- hospital and hospital groups  
- patient demographics  
- time and date of discharge  
- public versus private patient  
- SRGs. |
| 10 years of time series data provided by the Health System Information and Reporting Branch  
Relative stay index (RSI) analysis produced by Health System Information and Reporting Branch  
Local Health District/hospital level analysis  
discussions with Ministry staff; BHI, AlHW & NHPA analysis. |
| 2. Analysis of information through NSW Health’s Activity Based Management (ABM) portal | Consistency of findings between ABM portal and the pivot tables and RSI analysis. Use of the ABM portal to understand the complex interactions between key drivers of length of stay or related measures, and casemix variations between hospitals. |
| 3. Review of NSW Health initiatives  
Initiatives include: Whole of Hospital Program; implementation of the patient flow portal for bed management; hospital in the home; non-clinical community packages of care for discharged patients; and, integrated care strategies being trialled. | Review of past and current initiatives to support better management of length of stay; especially their take-up and success within Local Health Districts and hospitals. Identifying the better practice sites for management of length of stay, unplanned readmissions and related measures. Assessing reasons behind better practices and adaptability to other sites. |
| 4. Visits to selected Local Health Districts and hospitals in metropolitan and rural locations to assess the impact on management and clinical practices on length of stay and unplanned readmissions. | The selection of Local Health Districts and hospitals is informed by:  
- Average length of stay and RSI performance  
- volumes of patients by hospital  
- performance of high volume, common procedures in terms of average length of stay; especially within SRGs for orthopaedics, obstetrics, cardiology and respiratory medicine. |
Audit methodology
Our performance audit methodology is designed to satisfy Australian Audit Standards ASAE 3500 on performance auditing, and to reflect current thinking on performance auditing practices. Our processes have also been designed to comply with the auditing requirements specified in the Public Finance and Audit Act 1983.

Acknowledgements
We gratefully acknowledge the co-operation and assistance provided by NSW Health officials. In particular we would like to thank our liaison officers, and the staff who participated in interviews and provided material relevant to the audit.

Audit team
Chris Bowdler and Xin Yin Ooi conducted the performance audit. Rob Mathie, Andrew Hayne and Kathrina Lo provided direction and quality assurance.

Audit cost
Including staff costs, printing costs and overheads, the estimated cost of the audit is $314,096.
Appendix 3: Cost per bed day for overnight admissions of ABF hospitals in 2012–13 for acute patients, excluding mental health, renal dialysis and hospital in the home episodes

<table>
<thead>
<tr>
<th>Local Health District</th>
<th>$ per bed day</th>
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<th>$ per bed day</th>
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<tr>
<td>Central Coast</td>
<td>$1,100 to $1,350</td>
<td>South Eastern Sydney</td>
<td>$1,350 to $1,600</td>
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<td>South Western Sydney</td>
<td>$1,100 to $1,350</td>
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<td>$1,600 to $1,850</td>
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<td>Illawarra Shoalhaven</td>
<td>$1,100 to $1,350</td>
<td>St Vincent’s Health</td>
<td>$1,350 to $1,600</td>
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<td>Sydney Children’s Hospital</td>
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<td>Nepean Blue Mountains</td>
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<tr>
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<tr>
<td>Northern Sydney</td>
<td>$1,100 to $1,350</td>
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</tbody>
</table>

NSW average – 1,400

Source: ABM portal, NSW Ministry of Health.

We were advised the above cost per bed day numbers by ABF Taskforce, NSW Health. Mental health episodes, renal dialysis and hospital in the home episodes are excluded due to their vastly different representation in the portfolio of Local Health Districts.

The cost per bed day numbers are for overnight acute admissions only and do not include prosthesis and operating room costs, as these costs are irrespective of length of stay/bed days.

The above calculation uses ABF data from ABF hospitals only, which represents 91% of total acute hospital overnight admissions in New South Wales public hospitals. The same exclusion rules around dialysis, mental health and hospital in the home were applied to the calculation of total acute overnight hospital admissions.
Appendix 4: Case studies of initiatives supporting care outside hospital

Case study 1: Care in home supported by community health

Hospital in the home (HITH) provides care in the patient’s home thus reducing the length of stay in hospital or, in some instances, avoiding a readmission altogether.

Particular conditions are well managed through this type of care, such as cellulitis, pneumonia, deep vein thrombosis, chronic obstructive pulmonary disease (COPD), and urinary tract infections.

Care received through a HITH service is comparable with care received in a hospital. HITH is often complemented by Community Packages (ComPacks), GP clinics, and allied health to provide holistic care to patients. Benefits for patients include:

- the ability to remain in the comfort of their own home
- not having to adjust to the hospital’s routine – they can eat their own food, watch TV when they want and sleep in their own bed
- reduced risk of adverse events from hospital admission
- family and friends can visit when it suits the patient rather than the hospital routine.

A review of HITH by Deloitte Access Economics suggests that HITH may provide lower cost care compared to hospital care while achieving equivalent clinical outcomes. A cost comparison study across the six diagnostic related groups commonly treated using HITH indicates that HITH care would cost 22 per cent less than hospital care per separation.

Northern Sydney Local Health District has an Acute-Post Acute Care (APAC) Service which is a HITH service that delivers hospital substitution care without requiring the patient to stay in a hospital bed. The service is preferred by many patients as they are able to receive individualised care, recover in the comfort of their home, and are less exposed to adverse events associated with hospital admission, such as falls and infections.

Case study 2: Use of outpatient clinics

Westmead Hospital in the Western Sydney Local Health District extensively uses outpatient clinics to reduce the needs for hospital admissions. For example, it operates Rapid Access Clinics (RAP) for patients with cardiovascular and respiratory conditions and diabetes to avoid them going to the emergency department. Also, GPs write referrals for their patients to the RAP. Another example is the Comprehensive Care Centre (CCC), which provides a range of renal services for patients who would have otherwise been admitted.

Case study 3: Integrated care

The integrated care program aims to bring together a range of fragmented care across hospitals and primary care services to improve patient health outcomes and reduce cost. The current integrated care strategy for NSW provides $120 million over four years. It contributes to the NSW 2021 and State Health Plan goals of keeping people healthy and out of hospital by delivering integrated care. It is similar to efforts in comparable health systems internationally to provide a more sustainable solution in the long run, particularly for people with complex health and social needs.

Locally led integrated care is at the heart of the strategy, with funding provided to Local Health Districts to develop and progress integrated care in their regions, in partnership with primary care organisations, such as Medicare Locals and other local providers.

Western Sydney Local Health District is presently a ‘demonstrator Local Health District’ for integrated care. The following services and initiatives are included as part of the Western Sydney Integrated Care Program (WSICP) framework:

- Connecting Care
- HealthOne
- The Partnership Council with Western Sydney Medicare Local (WSML)
- HealthPathways
• Diabetes Prevention and Management Strategy
• Heart to Heart Program
• NSW Integrated Care Demonstrator.

The WSICP also partners with a range of WSML initiatives including:

• After Hours GP Services
• Access to Allied Psychologists Services (ATAPS)
• Partners in Recover (PIR)
• Close The Gap (CTG)
• Care Coordination & Supplementary Services (CCSS).

Case study 4: Palliative care – enhanced capacity and new models of care

Palliative care helps people with life-threatening conditions to maximise their quality of life or ensure comfort at the end of their life.

NSW Health is implementing a plan to increase access to palliative care over 2012–2016. It aims to give palliative care patients the opportunity to choose their services and decide where and how they will be cared for at the end of their lives. The plan aims to achieve this by developing new models of care, fostering partnerships and establishing linkages across services and sectors to develop an integrated network of primary care, specialist palliative care, aged care and community services.

One initiative under the plan is NSW Health’s partnership with Silver Chain Group, a provider of end-of-life service, to provide personal care and evening nursing visits for people being supported through their end-of-life stage at home. Following a successful trial in South Western Sydney Local Health District, Silver Chain Group has commenced services in Western Sydney Local Health District, South Western Sydney Local Health District and Mid North Coast Local Health District.

Case study 5: NSW Chronic Disease Management Program (also known as Connecting Care)

Chronic diseases are medical conditions that tend to be long lasting and persistent in their symptoms or development, requiring ongoing management. They include cancers, heart disease, diabetes and chronic respiratory diseases. In many cases, health outcomes and quality of life can be improved if conditions are managed well.

The NSW Chronic Disease Management Program was implemented across all Local Health Districts in 2010. The Program provides care coordination and self-management support to help people with chronic disease to better manage their condition and access appropriate services in order to improve health outcomes, prevent complications and reduce the need for hospitalisation.

An evaluation of the Program in the Hunter New England Local Health District estimated a 37 per cent reduction in the number of admissions among program participants and a savings of 3,178 bed days, translating to an approximate saving or reinvestment of $4.6 million. The evaluation also estimated a reduction in emergency department presentation by 38 per cent, translating to an approximate cost saving or reinvestment of $1.2 million.

Case study 6: Heart to Heart Partnership, Western Sydney Local Health District

Chronic Heart Failure (CHF) affects 10 per cent of people over the age of 65 and has an estimated cost of $1 billion per year nationwide. CHF hospitalisations are potentially preventable if patients receive timely, evidence-based, and coordinated care.
The Heart to Heart Partnership program at Western Sydney Local Health District has been redesigned to improve transition from acute hospital settings to primary and community care. Some key program features include:

- Developing self-management action plans
- Jointly managing high risk patients between acute, community health services and GPs
- Registering patients on admission to facilitate discharge planning and care coordination.

An early evaluation of the program found that clinician and patient involvement in redesigning the process has facilitated local networking amongst primary care providers, and changes to clinical roles to enable transition of patients from hospital to primary care, including increased home visits from two to nine a week. The evaluation also found that the inherent challenges with a multi-sector partnership needed to be addressed.

**Case study 7: Acute Geriatric Evaluation and Management Unit (AGEM), Mid North Coast Local Health District**

The AGEM Unit is a purpose-built unit in the Mid North Coast Local Health District for managing older patients who are at risk of having a physical or mental decline in an acute hospital setting. It is based on a multi-disciplinary approach, and develops plans for patients to achieve optimal outcomes.

An evaluation of AGEM found that in the first six months, it resulted in:

- Reduced length of stay for both Geriatric Evaluation and Management (GEM) patients and psychogeriatric type patients.
- Reduced number of days for patients requiring special care, such as those who are aggressive and have a high risk of falls. These patients are transferred from less specialised wards to AGEM or directly admitted to AGEM.
- Increased number of discharges of patients back to their home environment, avoiding placement in a residential aged care facility.

**Case study 8: Telemedicine**

Telemedicine refers to clinical consultations between two or more sites using secured transmission by videoconference over the internet. It is used to reduce travel time for patients and carers from rural areas by enabling patient to have their consultation at their local health facility rather than travel to a major tertiary referral hospital. These services also help to bridge the gap for populations who would not have attended a consultation that required hours of travel and who may have ignored their condition until it becomes an emergency.

Telemedicine has been operating in Hunter New England Local Health District since 2012 and is growing at a rapid rate. In Hunter New England Local Health District, rural and regional patients were travelling more than 1.5 million kilometres in total every month to attend outpatient appointments.

It is forecast that in Hunter England Local Health District the total savings to patients and carers as at 30 June 2015 from telemedicine are:

- Savings of some 570,000 kilometres of travelling and some 28,500 hours of travelling time, equivalent to about $675,000 in travel cost
- Savings of some 700 nights of accommodation and meals, equivalent to about $366,000 in cost
- Opportunity cost of about $158,000 in lost income from people not running their businesses or farms when they travel to seek healthcare in hospitals.
**Case study 9: Follow up phone calls post discharge**

Follow up phone calls after discharge help mitigate the risk of readmission.

We observed in Mid North Coast Local Health District and Hunter New England Local Health District that patients receive a follow up phone call from a junior hospital doctor within 25–48 hours post discharge. This is to ensure that patients are coping well post discharge, understand their medications, are aware of the prescriptions they need from their GPs and that their appointments with GPs/outpatient clinics/allied health are scheduled. Our discussion with CEC confirms these advantages and that follow up phone calls assist in reducing avoidable unplanned readmissions.

**Case study 10: In Safe Hands program**

The In Safe Hands program aims to empower healthcare teams to better address daily challenges of the broad spectrum of a patient’s care. Teams that have implemented In Safe Hands have identified benefits such as reduced length of stay, adverse events and unplanned readmissions, and improved patient experience.

Structured Interdisciplinary Bedside Rounds (SIBR) is one component of the program. We observed an example of this at Coffs Harbour Hospital in Mid North Coast Local Health District where executive professionals from medical, nursing, and community services backgrounds undertake weekly ‘complex patient rounds’ to review patients who have stayed in hospitals for more than eight days.

As part of the In Safe Hands initiative, Hornsby Hospital in Northern Sydney Local Health District has developed an ‘In Safe Hand’ dashboard that shows key metrics for emergency departments, wards, and intensive care units. The tools help teams to work collaboratively across disciplines and keep each other accountable for the smooth flow of patient care.
Performance auditing

What are performance audits?
Performance audits determine whether an agency is carrying out its activities effectively, and doing so economically and efficiently and in compliance with all relevant laws.

The activities examined by a performance audit may include a government program, all or part of a government agency or consider particular issues which affect the whole public sector. They cannot question the merits of government policy objectives.

The Auditor-General’s mandate to undertake performance audits is set out in the Public Finance and Audit Act 1983.

Why do we conduct performance audits?
Performance audits provide independent assurance to parliament and the public.

Through their recommendations, performance audits seek to improve the efficiency and effectiveness of government agencies so that the community receives value for money from government services.

Performance audits also focus on assisting accountability processes by holding managers to account for agency performance.

Performance audits are selected at the discretion of the Auditor-General who seeks input from parliamentarians, the public, agencies and Audit Office research.

What happens during the phases of a performance audit?
Performance audits have three key phases: planning, fieldwork and report writing. They can take up to nine months to complete, depending on the audit’s scope.

During the planning phase the audit team develops an understanding of agency activities and defines the objective and scope of the audit.

The planning phase also identifies the audit criteria. These are standards of performance against which the agency or program activities are assessed. Criteria may be based on best practice, government targets, benchmarks or published guidelines.

At the completion of fieldwork the audit team meets with agency management to discuss all significant matters arising out of the audit. Following this, a draft performance audit report is prepared.

The audit team then meets with agency management to check that facts presented in the draft report are accurate and that recommendations are practical and appropriate.

A final report is then provided to the CEO for comment. The relevant minister and the Treasurer are also provided with a copy of the final report. The report tabled in parliament includes a response from the CEO on the report’s conclusion and recommendations. In multiple agency performance audits there may be responses from more than one agency or from a nominated coordinating agency.

Do we check to see if recommendations have been implemented?
Following the tabling of the report in parliament, agencies are requested to advise the Audit Office on action taken, or proposed, against each of the report’s recommendations. It is usual for agency audit committees to monitor progress with the implementation of recommendations.

In addition, it is the practice of Parliament’s Public Accounts Committee (PAC) to conduct reviews or hold inquiries into matters raised in performance audit reports. The reviews and inquiries are usually held 12 months after the report is tabled. These reports are available on the parliamentary website.

Who audits the auditors?
Our performance audits are subject to internal and external quality reviews against relevant Australian and international standards.

Internal quality control review of each audit ensures compliance with Australian assurance standards. Periodic review by other Audit Offices tests our activities against best practice.

The PAC is also responsible for overseeing the performance of the Audit Office and conducts a review of our operations every four years. The review’s report is tabled in parliament and available on its website.

Who pays for performance audits?
No fee is charged for performance audits. Our performance audit services are funded by the NSW Parliament.

Further information and copies of reports
For further information, including copies of performance audit reports and a list of audits currently in-progress, please see our website www.audit.nsw.gov.au or contact us on 9275 7100.
## Performance audit reports

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**Performance audits on our website**

A list of performance audits tabled or published since March 1997, as well as those currently in progress, can be found on our website [www.audit.nsw.gov.au](http://www.audit.nsw.gov.au).
Professional people with purpose

The role of the Auditor-General

The roles and responsibilities of the Auditor-General, and hence the Audit Office, are set out in the Public Finance and Audit Act 1983.

Our major responsibility is to conduct financial or ‘attest’ audits of State public sector agencies’ financial statements. We also audit the Total State Sector Accounts, a consolidation of all agencies’ accounts.

Financial audits are designed to add credibility to financial statements, enhancing their value to end-users. Also, the existence of such audits provides a constant stimulus to agencies to ensure sound financial management.

Following a financial audit the Audit Office issues a variety of reports to agencies and reports periodically to parliament. In combination these reports give opinions on the truth and fairness of financial statements, and comment on agency compliance with certain laws, regulations and government directives. They may comment on financial prudence, probity and waste, and recommend operational improvements.

We also conduct performance audits. These examine whether an agency is carrying out its activities effectively and doing so economically and efficiently and in compliance with relevant laws. Audits may cover all or parts of an agency’s operations, or consider particular issues across a number of agencies.

Performance audits are reported separately, with all other audits included in one of the regular volumes of the Auditor-General’s Reports to Parliament – Financial Audits.

In accordance with section 38E of the Public Finance and Audit Act 1983, I present a report titled Managing the length of stay and unplanned readmissions in NSW public hospitals: NSW Health.

Grant Hehir
Auditor-General
23 April 2015

Our vision
Making a difference through audit excellence.

Our mission
To help parliament hold government accountable for its use of public resources.

Our values
Purpose – we have an impact, are accountable, and work as a team.
People – we trust and respect others and have a balanced approach to work.
Professionalism – we are recognized for our independence and integrity and the value we deliver.
New South Wales Auditor-General’s Report
Performance Audit
Managing the length of stay and unplanned readmissions in NSW public hospitals
NSW Health