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# New South Wales Auditor-General's Report

## Performance Audit

### Activity Based Funding Data Quality

NSW Health

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In accordance with section 38E of the *Public Finance and Audit Act 1983*, I present a report titled **Activity Based Funding Data Quality: NSW Health**.

A handwritten signature in black ink, reading 'A. T. Whitfield'.

**A T Whitfield PSM**  
Acting Auditor-General  
4 November 2015

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# Executive summary

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This audit examines whether the implementation of Activity Based Funding by NSW Health is supported by sound data quality governance. The audit focuses on data quality governance and the adequacy of support structures.

Activity Based Funding of health services means that providers are funded based on the actual number of services provided to patients and the State Price paid for delivering those services. The State Price is currently informed by the average cost of delivering services. Activity Based Funding depends on having good quality data about the type of care provided, how much is provided, and the cost to provide it.

Key activities that contribute to Activity Based Funding are:

- accurately determining the cost of providing care; and,
- ensuring written clinical information about a patient is translated into a code that allows standardised classification of types of care.

In turn, data quality depends on having policies and practices that support a comprehensive data quality framework. A data quality framework aims to ensure that data are suitable for its intended uses and includes consideration of factors such as the accuracy, timeliness, relevance and accessibility of data, and the institutional environment in which data are collected.

## Conclusion

**Data quality governance for Activity Based Funding is adequate, although there are some areas for improvement.**

All Local Health Districts use a standardised process to cost the services they provide. In addition, a new mandatory internal audit program focusing on the costing process has been rolled out to all Local Health Districts, which will provide additional quality assurance for Activity Based Funding.

NSW Health has developed, but is yet to implement, a comprehensive data quality framework which governs how Local Health Districts collect, manage and use data for Activity Based Funding. While this is a positive development, we found significant variations in the use of unaudited feeder systems which act as sources of data for the costing process – such as rostering and other support systems – between, and occasionally within, Local Health Districts.

The engagement of leadership with Activity Based Funding is an important institutional component for good data quality governance. We found that senior leaders in NSW Health are committed to Activity Based Funding and encourage its use to improve management practice. This keeps the organisation focused on data quality.

There are workforce related issues that may impact on data quality for Activity Based Funding in NSW. Local Health Districts have reported issues with maintaining the capacity of their clinical coding workforce. While Local Health Districts reported that the quality of clinical coding has improved over time, not all of them have enough coders to carry out regular coding audits.

## There is a standardised system used to calculate cost of patient's admission

The costing systems used by all Local Health Districts we visited are highly consistent and standardised. All Local Health Districts comply with the same set of rules (called Cost Accounting Guidelines), use a standardised data submission server, and carry out standard data validation checks prescribed by the Ministry of Health.

## Ministry guidance on Activity Based Funding internal audit requirements has been developed

There were no compulsory internal audit requirements for costing processes at Local Health Districts, resulting in a wide range of approaches (audit topics, methodology and frequency) taken by internal auditors. The Ministry of Health has developed a mandatory statewide audit program, which will include support for Local Health District internal audit teams that may not have enough resources to do this additional work.

## A statewide data quality framework will be rolled out in 2015–16

NSW Health does not yet apply a comprehensive data quality framework governing how Local Health Districts compile their patient activity data for costing. Although there is a conceptual data quality management framework developed in 2010, which predates Activity Based Funding implementation in NSW, the Ministry of Health has now developed a specific statewide data quality framework for Activity Based Funding. This framework is expected to be applied statewide in the 2015–16 financial year.

## The use of multiple, unaudited feeder systems present risk to data quality

As part of preparing patient activity data, Local Health Districts often use ‘feeder systems’, which include such systems as appointment booking, pathology, operating theatre booking, clinical rostering and pharmacy systems. These feeder systems are unaudited, and their impact on data accuracy is unknown. We found variations in feeder systems used between, and occasionally within, districts.

## Leadership commitment supports, but is not a substitute for a sound data quality framework

We observed commitment to Activity Based Funding among senior leaders at the Ministry of Health and Local Health Districts. For example, all Districts we visited have Board committees or senior executives overseeing Activity Based Funding. Activity Based Funding data are used in benchmarking, budgeting and performance monitoring. This level of commitment supports better data quality, however, it is not a substitute for a comprehensive data quality framework.

## There is a shortage of clinical coders which might impact on data quality

Local Health Districts have reported issues with maintaining their clinical coding workforce causing some Local Health Districts difficulty reaching performance targets for clinical coding. Additionally, not all Local Health Districts have enough coders to carry out regular coding audits. Coding audits are important to ensure the quality of clinical coding, which plays a key role in Activity Based Funding.

## Local Health Districts strive to improve mutual understanding between clinicians and coders

Medical Officers sometimes do not realise the reliance of coders on their medical documentation. Most Local Health Districts have mechanisms to assist coder-clinician interactions and programs to enhance Medical Officers’ understanding of Activity Based Funding.

## Recommendations

NSW Health should by October 2016:

1. Commence an initiative to encourage and support Local Health Districts in developing local costing practice and procedure manuals to mitigate the risk of critical information loss should costing staff leave their jobs.
2. Continue to progress the implementation of the NSW Health ABF Internal Audit program for costing functions in Local Health Districts and assist Local Health Districts to address any resource issues which may affect their ability to comply with this program.
3. Conduct a review and risk assessment of feeder systems used for the collection and reporting of patient activity data.
4. Assist Local Health Districts in addressing resource or capacity issues that may affect the clinical coding staff’s ability to carry out regular coding audits.



# Introduction

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## 1.1 Activity Based Funding as a driver of efficiency and effectiveness

Activity Based Funding of health services means that providers are funded based on the actual number and type of services provided to patients and the State Price paid for delivering those services. The State Price is currently informed by the average cost of delivering services. This contrasts with 'block funding', where funding is provided as a fixed amount based on population and previous funding. Block funding is often more appropriate for smaller health services, or for activities that are difficult to price, such as teaching and research.

Activity Based Funding provides incentives to health care providers to minimise waste and be efficient. This is achieved by linking funding to 'what they have done', rather than 'who they are' or 'how much money they received in the past'. In simple terms, the funding that a hospital receives under Activity Based Funding will be determined by the volumes and types of services it provides multiplied by what it should cost to provide those services efficiently.

Activity Based Funding offers other potential benefits, such as allowing clinicians the ability to compare their data against that of other health facilities. This can help identify areas of potential clinical improvement, which in turn, helps ensure that resources are used in ways that maximise health benefits to the community.

Because Activity Based Funding requires detailed information about patient activity in health services, it creates a rich source of data that can be used to improve health service management, track performance across health services, and contribute to better outcomes for patients.

## 1.2 Implementation of Activity Based Funding in New South Wales

Various agreements between the Australian, State and Territory governments have anticipated the consistent nationwide implementation of Activity Based Funding since around 2008.

In 2012, NSW Health adopted its own model of Activity Based Funding under the initiative *The Next Step: Funding reform*. This was described as a "... new approach to the funding, purchasing and performance of health services in NSW where Local Health Districts are allocated funding using a combination of block funding grants and funding based on patient activity".

NSW Health anticipates its new funding model will:

- improve patient care and outcomes
- ensure equivalent health resources are made available to people with equivalent health need
- make the best use of resources and ensuring value for money and financial sustainability within quality and safety standards
- encourage a focus on outputs, outcomes and quality
- encourage clinicians and managers to identify and address variations in costs and practices to improve efficiency and effectiveness.

In 2013-14, 84 health facilities in New South Wales received funds on an Activity Based Funding basis. This represented 75 per cent of the funds provided to Local Health Districts and Speciality Health Networks.

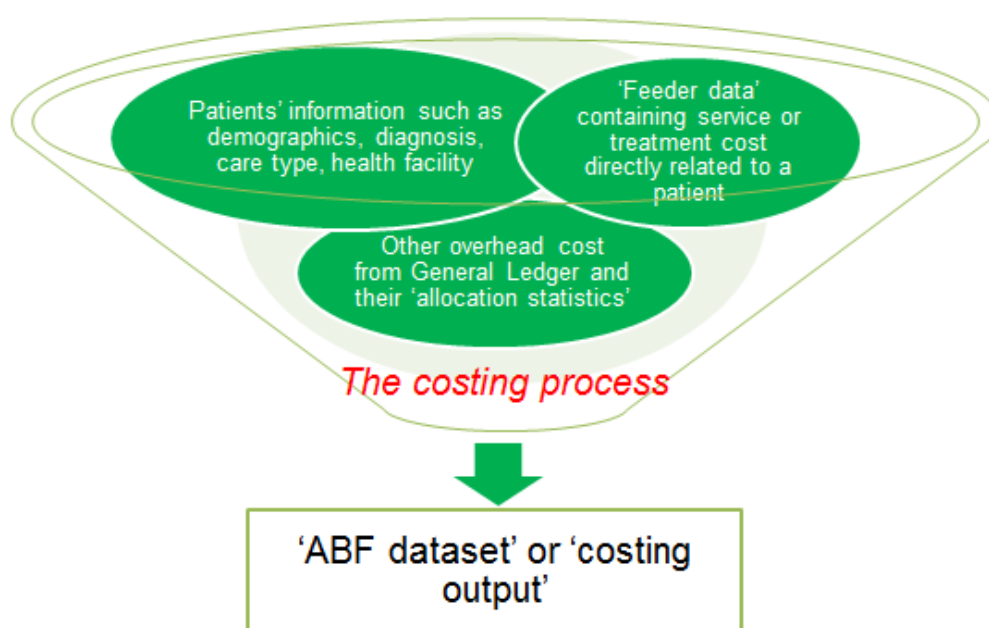
### 1.3 Good quality data are a major enabler of Activity Based Funding

Good quality data are essential for Activity Based Funding. In turn, this requires good quality data collection to ensure that:

- the number and types of services provided to patients are accurately captured
- the efficient cost of providing health care is reliably determined
- the right service targets are being set.

Exhibit 1 provides an overview of the main data sources used for Activity Based Funding.

#### Exhibit 1: Data input used to generate Activity Based Funding dataset



Source: Audit Office research.

#### Notes:

1. Overhead cost is expenditure that cannot be directly attributed to individual patient admissions (such as corporate expenses). The allocation of overhead cost to patient admissions will necessarily be approximate, using 'allocation statistics' to reflect likely usage (such as total revenue).
2. 'Feeder data' are data coming from 'feeder systems', which are used to track service information and costs that are directly related to a patient. Some examples are appointment booking, pathology, operating theatre booking, rostering of clinical staff and pharmacy systems.

This report contains references to 'patient activity data' and 'financial data':

- Patient activity data means non-monetary data related to patient and service information, including patients' information and non-financial data from 'feeder systems'
- Financial data are those that are expressed in monetary terms, such as cost and revenue from providing services to inpatients, including financial data from 'feeder systems'.

Patient activity data and financial data are processed to produce an Activity Based Funding dataset via the 'costing process' (see Section 2.1 for detailed discussion). For this reason, we use the term 'Activity Based Funding dataset' and 'costing output' interchangeably in this report.

While perfect data quality is desirable it is not always achievable, nor always necessary. NSW Health needs the source data to be good enough to ensure fair and effective implementation of Activity Based Funding. This ensures that its Activity Based Funding model can achieve the goal of delivering good patient care.

In its 2013-14 Funding Guidelines, NSW Health emphasised the need to:

- improve the quality of activity data (where patient services are recorded) and the costing of services
- better understand the relationship between the State's 'efficient price' and actual cost to provide services.

### 1.4 What makes a comprehensive data quality framework

The *NSW Government Standard for Data Quality* defines data quality as 'whether or not the data is suitable for its intended use'. Good quality data are often said to be "fit-for-purpose", if it is of sufficient quality to fulfil its intended use in operations, decision making or planning.

For Activity Based Funding, good quality data means that:

- patients' information, feeder system data and overhead cost data (shown in Exhibit 1) are of sufficient quality that they reflect actual patient services provided by hospitals and actual cost associated with providing those services
- 'costing process' (shown in Exhibit 1), whereby a dollar cost is allocated to each patient's admission, results in patient-level output that reflects the relative resource usage by each patient's admission to hospital.

The *NSW Government Standard for Data Quality* adopts the *Australian Bureau of Statistics' Data Quality Framework*. This framework sets out the seven dimensions that collectively contribute to making good quality data.

#### Exhibit 2: The seven dimensions of data quality



Source: National Statistical Service website: [www.nss.gov.au](http://www.nss.gov.au)

Using the Data Quality Framework above, we focussed on the following dimensions in this audit:

- **Accuracy and timeliness:** Whether patients' information, feeder data, overhead cost and their allocation statistics submitted by Local Health Districts accurately reflect the patient services provided by hospitals and actual cost of providing those services, and whether data were submitted within the Ministry of Health's time frame.



Section 2 and 3 of this report contains our assessment of whether NSW Health's framework, processes and systems support the creation of Activity Based Funding data that is accurate and timely.

- **Relevance and accessibility:** Whether the Activity Based Funding costing output are used in managing, planning and budgeting for health services, and whether they are available to Local Health Districts in a user-friendly format.

Section 4 of this report discusses our assessment of these elements in detail.

- **Institutional environment:** Whether Local Health Districts are capable and have the necessary resources to collect data relating to Activity Based Funding.

For this audit, we focussed on staffing and IT resources. We discuss this in Sections 2 and 3 where they are relevant. Section 5 discusses the role of coders and clinicians in ensuring accurate coding of patient activity, which is a crucial element of data quality.

## 1.5 Our audit approach to Activity Based Funding

This report is the first of a series of two audits on Activity Based Funding that we are conducting. A follow up audit is scheduled for 2016-17 and will focus more on Activity Based Management and how the health system manages demand and variation in the cost of providing health services between hospitals.

This audit focuses on data quality governance and the adequacy of support structures, in terms of staffing and IT. As discussed in Section 1.3, good quality data are fundamental to ensure that NSW Health's Activity Based Funding model achieves the goal of efficient and better patient care.

During our audit, we consulted and spoke to representatives from:

- Groups within the NSW Ministry of Health: Activity Based Funding Taskforce, Health System Information and Performance Reporting, Workforce Planning & Development
- Four Local Health Districts: Hunter New England, Central Coast, South Eastern Sydney and Western New South Wales
- NSW Health's Pillar: Health Education and Training Institute.

More details about this audit are in Appendix 2.

# Key findings

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## 2. Governance of the Activity Based Funding costing process

In this section, we assess whether NSW Health has in place a sufficient data framework, systems and processes to govern the Activity Based Funding costing process. We also discuss the adequacy of staffing and IT in supporting the costing process where they are relevant.

**All Local Health Districts use a standardised framework and process to cost the services they provide. In addition, a new mandatory internal audit program focusing on the costing process has been rolled out to all Local Health Districts, which will provide additional quality assurance for Activity Based Funding.**

The Ministry of Health sets the same set of rules for all Local Health Districts for costing. These are called the Cost Accounting Guidelines. These rules prescribe the use of a standardised data submission server and identical data validation checks. The Cost Accounting Guidelines also require management internal processes (such as the requirement of the Chief Executive of a Local Health District to 'sign-off' on the costing output) which act as part of a management assurance framework. All Local Health Districts must comply with these rules, and we found that this was the case in the four districts we visited.

The costing staff at Local Health Districts receive good support from their peer network and the Ministry of Health. However, we found limited interaction between the staff who do costing and the staff who do coding. This may affect the quality of costing output, and appeared to be a result of heavy workloads among both groups.

We observed that internal audit programs across Local Health Districts varied considerably in their choices of topics, methods, and frequencies. The Ministry of Health has now developed a statewide audit program (called the DNR Audit Program). Some interviewees expressed concerns that Local Health Districts with a small audit team may not have enough capacity to carry out work mandated under the statewide audit program. In response to these concerns, the new DNR Audit Program will establish an expert audit team to conduct the audit across a number of Local Health Districts on a rolling three year program.

### Recommendations

NSW Health should by October 2016:

- Commence an initiative to encourage and support Local Health Districts in developing local costing practice and procedure manuals to mitigate the risk of critical information loss should costing staff leave their jobs.
- Continue to progress the implementation of the NSW Health ABF Internal Audit program for costing functions in Local Health Districts and assist Local Health Districts to address any resource issues which may affect their ability to comply with this program.

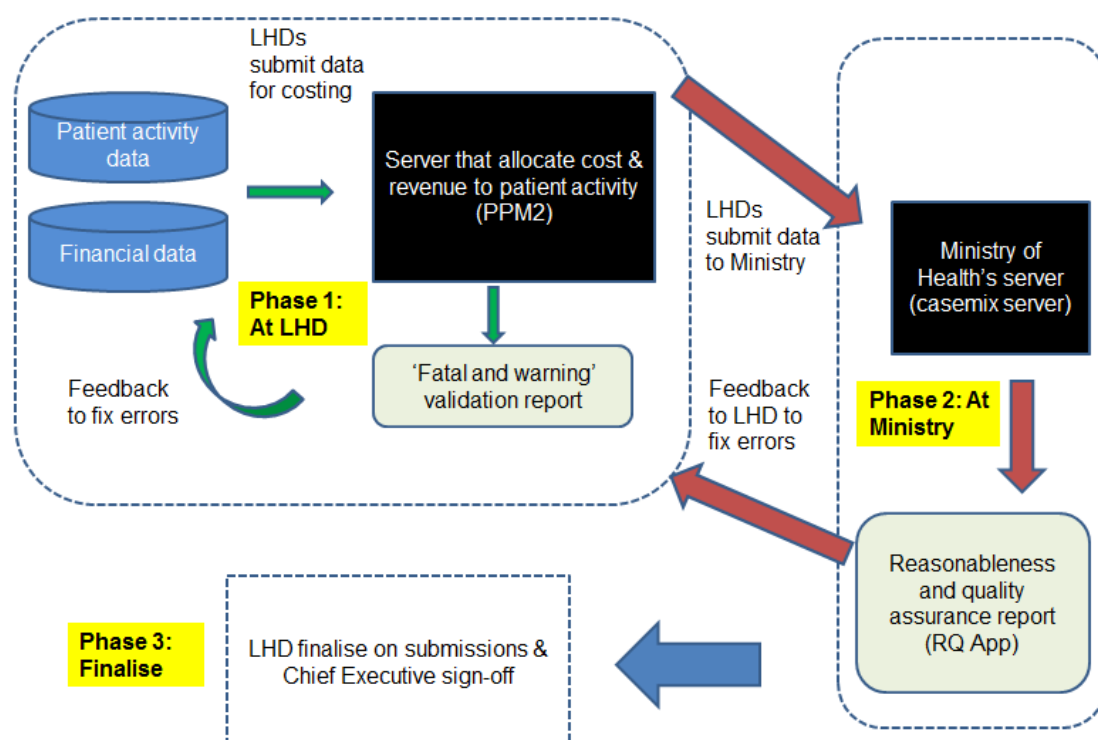
## 2.1 NSW Health has a standardised system to cost patient activity

### The costing process and IT systems are highly standardised

It is fundamental to Activity Based Funding that information is available on how much an individual patient's admission has cost the hospital. This information comes from patient activity data and financial data, as outlined in Section 1.3. The method to 'match' patient activity data to the relevant financial data is known as the 'costing process'.

We found that all Local Health Districts use a standardised costing process. Exhibit 3 depicts the costing process of NSW Health, with three broad phases.

#### Exhibit 3: The costing process of NSW Health



The costing process begins with Local Health Districts collecting the relevant patient activity data and financial data. This is collected using standard templates provided by the Ministry of Health. The data are then loaded into a prescribed data server called PPM2. This server automatically generates warning reports if the submitted data contain obvious pre-defined errors. Local Health Districts will then correct their data and re-submit until the server accepts them. This is **Phase 1** in Exhibit 3.

After a successful attempt at submitting data into the PPM2 server, a Local Health District's data will automatically go into another server hosted at the Ministry of Health. This is called the casemix server. The casemix server also contains data submissions from other Local Health Districts. This server refreshes every day after 3pm, and provides two forms of feedback to Local Health Districts:

- automated error reports through email
- an updated a web-based report (RQ App) that shows the quality of every Local Health District's data, visible to all Local Health Districts – see Exhibit 4 for a snapshot of the RQ App.

This is **Phase 2** in Exhibit 3. Phase 2 will loop back to Phase 1 as Local Health Districts carry out further attempts to correct data errors found by the automated error reports and RQ App.

In practice, a Local Health District may repeat Phase 1 and Phase 2 multiple times to gradually get their data submissions to an acceptable level of quality.

The final step of costing involves the Chief Executive of each Local Health District endorsing (or 'signing-off') its data submission. This is **Phase 3** in Exhibit 3.

The costing process occurs twice during a financial year: once for mid-year and once for year-end.

### Cost Accounting Guidelines provide consistent costing guidelines

There is a set of statewide guidelines, called 'Cost Accounting Guidelines', that govern the costing process at Local Health Districts. There are three volumes of Cost Accounting Guidelines and these are issued by the Activity Based Funding Taskforce of the Ministry of Health.

The Cost Accounting Guidelines are not static documents. Instead the Ministry of Health updates them regularly following consultations with Local Health Districts during or after each round of data submission.

We observed a high level of consistency in the governance of costing processes at the Local Health Districts we visited.

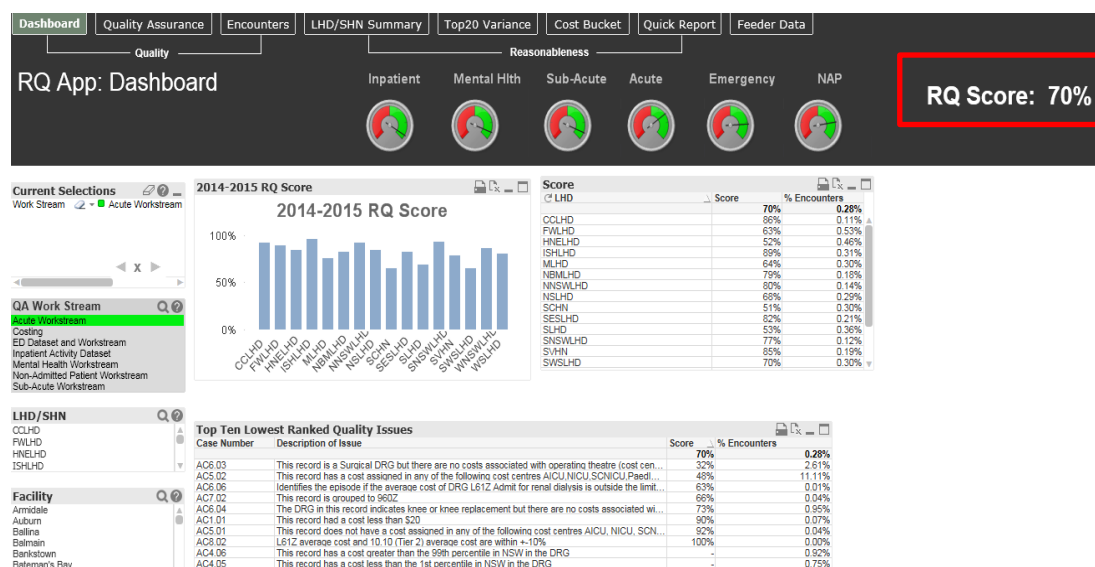
### Embedded validation tools within costing process impose discipline

As shown in Exhibit 3, there are embedded data validation checks within the costing process: the 'fatal and warning' validation report and the RQ App. These validation tools encourage Local Health Districts to continually improve the quality of their data submissions. This is achieved by:

- an unsatisfactory 'fatal and warning' validation report preventing a Local Health District from submitting its data to PPM2
- creating a performance culture through the RQ App being visible to all Local Health Districts for comparison and benchmarking of their data.

Exhibit 4 is a screenshot of the RQ App. The 'RQ Score' at the top right hand corner is a data quality indicator prescribed in the Cost Accounting Guidelines. Conceptually, the higher the RQ Score, the better is the quality of data submission.

### Exhibit 4: Snapshot of the dashboard (summary) page of the RQ App



Source: Activity Based Funding Taskforce, NSW Ministry of Health.

### **Some management internal processes have been included in the standardised process**

As part of the Cost Accounting Guidelines, Local Health District Chief Executives are required to 'sign-off' on final costing outputs as part of the submission process. This is described as Phase 3 in Exhibit 3. This type of activity, which requires senior management review, is an internal assurance process and forms part of a management assurance framework. We discuss some of the data quality implications of this process in Section 4 of this report.

## **2.2 Governance of costing is quite good despite workforce challenges**

### **Knowledge sharing and secure file transfer are valuable to Local Health Districts**

The Ministry of Health has established a statewide costing peer group called the 'Costing Standards User Group'. This has been in place since the implementation of Activity Based Funding in New South Wales. The peer group's main roles is to:

- develop, implement and monitor clinical costing methodologies to ensure best practice and consistent costing outputs across all Local Health Districts
- provide a forum to network, support and develop clinical costing staff in Local Health Districts.

In addition, we observed the use of a secure web portal (the 'Collaborative Space') by costing teams in Local Health Districts and by the Ministry of Health. This web portal is used by:

- local Health Districts to send files securely to each other or to the Ministry of Health
- the Ministry of Health to upload the latest Cost Accounting Guidelines, files and templates for data submissions, and programming scripts related to suggested data quality checks.

The Local Health Districts we visited were generally happy with the support they received through the Costing Standards User Group workshops that were convened before each costing round and the Collaborative Space.

### **Local policies and costing manual may assist transition should key costing staff leave**

Most Local Health Districts rely heavily on the knowledge and experience of their costing staff. This creates a risk that knowledge and experience rests with a small number of staff.

Local Health Districts can lower the risk this issue presents by maintaining updated procedural documentation of their costing process. Case study 1 explores an example of such procedural documentation at Hunter New England Local Health District.

### **Costing staff are well supported but there might be workforce issues**

There were two key issues raised about the costing workforce.

- Firstly, the Ministry of Health submitted that it is difficult to recruit appropriately experienced and skilled costing staff. We observed that this is also the case for coding positions, and is an especially acute problem outside of Sydney.
- Secondly, Local Health Districts consistently highlighted that costing teams operate with very little spare capacity and often struggle under excessive workloads.



### Case Study 1: Local costing policy and manual at Hunter New England LHD

Hunter New England Local Health District has developed two local documents to assist in retaining knowledge and experience related to costing. They are:

- a data quality framework for costing data
- a costing manual, detailing steps involved in preparing patient activity and financial data for submission into the costing server (PPM2).

The data quality framework provides higher-level guidance on source data and their origin, important quality dimensions and what they mean, and the personnel or team who are accountable for managing data-related risks. The communication strategies are still being developed.

The costing manual is a detailed step-by-step guide on the entire costing process, including screenshots of the IT systems that the costing team uses.

Notwithstanding these issues, we looked at what steps costing teams perform to promote data quality. One of the key data checks that costing teams routinely use is a patient's length of stay for certain diagnoses. In all Local Health Districts we visited, costing teams will seek to go back to coders when they suspect coding errors – for example, if lengths of stay for certain diagnoses appear unreasonably long or short.

We observed that:

- this checking tended to be more formal in Local Health Districts that were more mature in their implementation of Activity Based Funding
- Local Health Districts that are more resource-constrained in their costing teams may struggle to meet data submission deadlines and hence may have less time for verification of coding errors.

Section 5.1 describes the role of coders in Activity Based Funding.

## 2.3 There are new compulsory internal audit requirements for costing

In our visits to Local Health Districts, we found a wide range of approaches to internal audits. This includes a variety of audit topics, methods, and frequencies. Three of the four Local Health Districts reviewed carry out some form of internal audit on Activity Based Funding functions. One Local Health District has not conducted any internal audits on Activity Based Funding due to insufficient audit staff.

The Ministry of Health has just launched a new mandatory audit program which examines the costing process during the yearly District and Network Return (DNR). This new program, called the DNR audit program, has been developed to satisfy several external requirements related data submitted during the DNR process. These requirements include the 2013 NSW Auditor-General's recommendation for the development of a mandatory internal audit of the costing and patient data included in the annual DNR.

The Ministry of Health engaged a consultant to develop the DNR audit program, using information systems in Western Sydney Local Health District. The program has been tested in the Southern New South Wales and South Western Sydney Local Health Districts, and is currently being rolled out to the whole state.

Some interviewees expressed concerns that Local Health Districts with small audit teams may not have capacity to carry out work mandated under a statewide audit program. However, the Ministry of Health's Activity Based Funding Taskforce strategy for the statewide rollout of the Activity Based Funding internal audit program has factored in a number of initiatives to support local audit activities. These initiatives include the planned formation of a specialist peer audit team to assist local audit teams in the conduct of the audit in Local Health Districts as required. This model also supports a peer review audit every three years.

In addition to the audit program described above, the Ministry suggests to Local Health Districts that they conduct audits described in the Cost Accounting Guidelines, though this is not mandatory. We note that these audits are limited in scope and may be better characterised as data quality activities.

### 3. Governance of patient activity data used for Activity Based Funding

In this section, we assess whether there is a sufficient data framework, systems and processes to govern the accuracy of patient activity data used for costing. We also include findings about IT systems related to patient activity data.

We focus on patient activity data because these are less frequently audited, compared to financial data. Financial data undergo greater checking, such as through annual financial audits.

**NSW Health has developed, but is yet to implement, a comprehensive data quality framework which governs how Local Health Districts collect, manage and use data for Activity Based Funding. While this a positive development, we found significant variations in the use of unaudited feeder systems that act as sources of data for the costing process—such as rostering and other support systems—between, and occasionally within, Local Health Districts.**

While there are data specifications that describe how data are captured and defined for Activity Based funding, there is no statewide data quality framework that supports Local Health Districts in preparing patient activity data for costing. NSW Health developed a conceptual data quality management framework in 2010. This conceptual framework has underpinned the development and implementation of several data quality assurance activities. Further, the Ministry of Health has responded to a 2013 NSW Auditor-General's recommendation regarding data quality assurance by establishing a Data Quality Framework specific for Activity Based Funding. This framework has been developed and is expected to be implemented in 2015-16.

As part of preparing patient activity data, Local Health Districts may use 'feeder systems', such as systems for appointment booking, pathology, operating theatre booking, rostering of clinical staff and pharmacy systems. We found significant variations in the use of feeder systems between, and occasionally within, Local Health Districts. These feeder systems are unaudited, hence their impacts on data accuracy are not known.

The current Patient Admission Systems at Local Health Districts are not designed to collect data for Activity Based Funding. The onus is entirely on Local Health Districts to ensure that their patient activity data put together from these systems are accurate.

#### Recommendations

NSW Health should by October 2016:

- Conduct a review and risk assessment of feeder systems used for the collection and reporting of patient activity data.

#### 3.1 A statewide comprehensive data quality framework for activity data has been developed and is yet to being implemented

##### There are a range of data specifications being used to support data quality

Clear definition regarding what data are captured and how it is collected is an important component of data quality governance. With regards to data quality governance in NSW, there are a range of data quality specifications which govern how data are collected. Some of the specifications which govern the collection and use of data related to Activity Based Funding include the Independent Hospital Pricing Authority Data Request Specifications (such as the Admitted Patient Care National Minimum Data Set) and those described in the Cost Accounting Guidelines.

While these specifications are a necessary component of a data quality governance framework, they do not assist in meeting other dimensions of a data quality framework as described by the Australian Bureau of Statistics (such as the accuracy and timeliness of data).

### The conceptual framework developed in 2010 is still being rolled out

In 2010, NSW Health commissioned a report titled *A Conceptual Data Quality Management Framework in NSW Health and a Data Quality Assessment Methodology*. The purpose of this report was to propose a governance framework and methodology to assess data quality in order to:

- generate confidence about data quality
- highlight areas where data quality can be improved and track progress in some of these areas over time.

By 2013, this work had not been developed into a statewide data quality framework to govern how Local Health Districts put together their patient activity data. In the NSW Auditor-General's Report to Parliament in 2013, the Auditor-General made a recommendation that the Ministry of Health should develop a formal data quality assurance framework to improve the accuracy and reliability of data used to make activity based funding decisions.

As a result, the Ministry of Health engaged consultants to develop the "NSW Health Data Quality Assurance Framework for Activity Based Management (January 2015)". This framework was developed to be generally applicable to NSW Health data collections and is currently in the process of being implemented. It is planned that this framework will be applied statewide by all Local Health Districts in the 2015-16 financial year.

During our audit, we found that Hunter New England Local Health District has developed a local data quality framework. This framework, which is detailed in Case Study 2, may provide another useful reference for data quality frameworks currently being applied to data related to activity based funding.

#### Case Study 2: Data quality framework for activity data at Hunter New England Local Health District

Hunter New England Local Health District's data quality framework has the following elements:

- Background materials on health activity data, such as their uses in NSW Health, data sources and accountability structure (who is responsible for data within the Local Health District)
- Potential data quality risks, their impact and "controls" that can be used to mitigate those risks
- The source systems that generate various types of activity data
- Hunter New England Local Health District's current assessment of the quality dimensions of their activity data, using the Australian Bureau of Statistics' data quality framework
- Outline of data quality related policy documents, tasks and reports that different units and personnel in Hunter New England Local Health District are responsible for.

### Local Health Districts do not find all private consultant reports useful

The Ministry of Health commissioned consultants to undertake work related to Activity Based Funding. In particular:

- in 2012 and 2014, consultants were engaged to assess readiness for Activity Based Funding in Local Health Districts. These assessments comprised a series of questionnaires completed by Local Health Districts. The self-assessments cover areas such as timeliness, accuracy, frequency of reporting against targets, and transparency of budget setting processes.
- Between 2012-2014, NSW Health commenced implementation of the 2010 'Conceptual Data Framework' by engaging a consulting firm to conduct audits of 73 hospitals across all Local Health Districts / Specialty Health Networks. The program focused on data collection and covers:
  - a review of compliance with applicable Ministry policies
  - a review of the hospital's current data collection and recording practices
  - recommendations for improvements to the Ministry and the hospital's procedures designed to increase the accuracy and integrity of data collection.

We received mixed feedback from Local Health Districts about these consultant reports.

- One Local Health District commented that the Activity Based Funding readiness assessment report focused on broad elements and lacked specifics, while the data quality audit and assurance program report was used to inform its internal audit program.
- One Local Health District stated that the reports were used to assess their capacity in implementing Activity Based Funding.
- One Local Health District conducted its own readiness assessment without needing a consultant. That district was not aware of the audit and assurance program report.
- One Local Health District commented that it lacked the capacity and staffing to give much attention to either piece of work.

### Data checks developed by individual Local Health Districts can be shared to gain efficiency

One Local Health District commented on the inefficiency of relying solely on data quality checks mandated by the costing process, due to the large sizes of costing output. Instead it developed its own data quality checks using local databases. These checks detect errors in patient activity data before it is submitted into the PPM2 costing server.

There are potential efficiency gains if similar local initiatives can be shared with other Local Health Districts, either informally or formally through the coordination by the Ministry of Health.

## 3.2 Potential risk from relying on multiple and unaudited feeder systems

'Feeder systems' are used to track services and costs that relate directly to a patient. Examples include appointment booking, pathology, operating theatre booking, rostering of clinical staff and pharmacy systems.

We found significant variation in the use of feeder systems between, and occasionally within, Local Health Districts. Local Health Districts with specific feeder systems reported the following issues:

- Some feeder systems were not originally designed for use as data collection tools for Activity Based Funding. This is particularly where feeder systems have evolved from single use applications (such as appointment booking systems) into feeder sources used for costing.



- Some feeder systems are not directly controllable by the individual Local Health District. This includes where a system is purchased from another Local Health District. This adds another degree of complexity to using this data for Activity Based Funding.
- There are difficulties in asking third-party service providers to provide data extracts that are fit for use in the Activity Based Funding costing process.

In contrast to financial data from the general ledgers of Local Health Districts, information captured in these feeder systems is unaudited. No Local Health Districts were able to provide audited documentation for feeder systems, relying instead on data quality activities created to support specific tasks or requirements. Most of these data quality activities involve correction of easily identified errors, such as missing or obviously incorrect data.

Currently, Local Health Districts have few options other than developing individual solutions to improve data quality in feeder systems. The exception is where a problem is widespread enough to attract direct support and engagement from the Ministry of Health. We found one instance where two Local Health Districts had collaborated to fix similar problems with the same feeder systems. This resulted in shared resources achieving a solution for both Local Health Districts.

A standardised suite of feeder systems across New South Wales is likely to reduce the complexity and challenges of implementing Activity Based Funding. Standardisation of feeder systems would allow:

- greater consistency in the costing process
- development of more efficient, statewide solutions to resolve feeder system issues, reducing the number of issues experienced by Local Health Districts.

We acknowledge that it would be necessary to take into account the costs and benefits of standardising feeder systems, especially in the short term when implementation and integration costs would be highest.

### 3.3 Patient admission systems are not designed to collect activity data

We received feedback from two Local Health Districts that the IT systems used to collect patient admission information (Electronic Patient Record System) are 'clunky' and not user-friendly. As a result, the data entry personnel at Local Health Districts need to pull data fields from multiple data sources before putting them together into a dataset.

This hybrid record may be subject to human errors, in addition to being time-consuming to produce. Staff we interviewed from one Local Health District have concerns that Local Health Districts are left to their own means to deal with this problem, in spite of the clear benefit of a statewide solution.

## 4. Implication from leadership commitment and use of the Activity Based Funding dataset

This section summarises the different uses of the Activity Based Funding dataset we observed during the audit. The Ministry of Health takes the view that the use of the Activity Based Funding dataset contributes significantly to data quality improvements, since it encourages Local Health Districts to fix data errors found when using the dataset.

**The engagement of leadership to Activity Based Funding is an important institutional component for good data quality governance. We found that senior leaders in NSW Health are committed to Activity Based Funding and encourage its use to improve management practice. This keeps the organisation focused on data quality.**

We observed leadership commitment to Activity Based Funding during this audit. This message is cascaded down to the Local Health Districts' executives.

At Local Health Districts, there is clear commitment to data quality, partly because their Chief Executives are required to endorse the final costing output. We observed the use of the Activity Based Funding dataset in benchmarking, budgeting and performance monitoring. This incentivises improved data quality and therefore encourages data quality improvement.

### 4.1 The use of the Activity Based Funding dataset improves its quality over time

One important element of NSW Health's current data quality governance is to encourage the use of the Activity Based Funding dataset beyond its funding purpose. In addition to being committed to Activity Based Funding, senior leaders in NSW Health also encourage its use to improve management practice. This is also known as 'Activity Based Management'.

The Ministry of Health makes the Activity Based Funding dataset visible to all Local Health Districts through the Activity Based Management portal (see discussion in Section 4.3). This encourages Local Health Districts to use the Activity Based Funding dataset to compare their performance to other Local Health Districts and their hospital peer groups.

By encouraging Local Health Districts to use the Activity Based Funding dataset, data errors are likely to be found and fixed over time. This contributes to data quality improvement.

### 4.2 Sponsorship from the top and ownership of data encourages improvement

#### Senior leadership promotes an environment to improve data quality

While all State and Territory governments have had to comply with the Activity Based Funding requirements imposed by the National Health Reform Agreement, there is some variation in how these requirements have been enacted by different jurisdictions. NSW Health, and senior leadership within the Ministry of Health, have repeatedly demonstrated a commitment to the use of Activity Based Funding in NSW.

This commitment is demonstrated by:

- the various presentations about Activity Based Funding on NSW Health's website, including a presentation by the Secretary of NSW Health
- the 2013-14 Funding Guidelines, which sets out NSW Health's commitment to improving timeliness and accuracy of patient coding, patient classifications and costing of patient services.

## Chief Executives sign-off a requirement to finalise costing

As discussed in Section 2.1, the Chief Executive at every Local Health District is required to endorse the data submissions and costing output before they are finalised. This ensures that Local Health Districts accept ultimate accountability and ownership of their data.

At the Local Health Districts visited, we observed strong commitments to continually improve the quality of data submissions. These commitments appear to be motivated by:

- the transparency of data quality through the RQ App (discussed in Section 2.1)
- the accountability and data ownership accepted by Chief Executives.

## Local Health District Board's commitment to Activity Based Funding is evident

In all Local Health Districts we visited, we observed that Activity Based Funding receives significant attention at the Board level. This is evident from the Local Health Districts' governance structure.

Exhibit 5 summarises where Activity Based Funding sits within the governance structure of the Local Health Districts we visited. The differences are likely due to a combination of:

- variations in organisational practice and historical reasons
- stages and/or maturity of Activity Based Funding implementation.

### Exhibit 5: Local Health District Board committees and senior executives with significant Activity Based Funding responsibilities

Local Health Districts	Board committees/senior executives with key roles in Activity Based Funding implementation
Hunter New England	<b>Finance and Performance Committee</b> <ul style="list-style-type: none"> <li>• reports to the Board on patient activities funded by Activity Based Funding</li> </ul> <b>Data Management Committee</b> <ul style="list-style-type: none"> <li>• provides governance of all data management</li> <li>• include representation by the Manager of the Activity Based Funding Unit</li> </ul>
Central Coast	<b>Activity Based Management Steering Committee</b> <ul style="list-style-type: none"> <li>• oversees patient activities funded by Activity Based Funding</li> <li>• provides governance of the collection and submission of data</li> <li>• coordinate discussions related to using costing output to identify possible areas of improvement or inefficiencies</li> </ul>
South Eastern Sydney	<b>Activity Based Funding Steering Committee</b> <ul style="list-style-type: none"> <li>• provides higher level governance and oversight on Activity Based Funding</li> <li>• provides recommendations to the Chief Executive to assist strategic decisions on funding and activity and to work towards consistent practice across the Local Health District</li> </ul> <b>Activity Based Management Implementation Committee</b> (operates a level beneath the Steering Committee) <ul style="list-style-type: none"> <li>• provides lower level operational governance on data collection</li> </ul>
Western New South Wales	<b>Finance and Performance Sub-Committee</b> <ul style="list-style-type: none"> <li>• provide highest level of oversight on Activity Based Funding</li> </ul> <b>Shared responsibilities between the Chief Executive, Director of Finance, Manager of Budget Analysis and Manager of Organisational Performance</b> <ul style="list-style-type: none"> <li>• Activity Based Funding implementation</li> </ul>

### 4.3 Activity Based Funding dataset is used for benchmarking, budgeting and monitoring

#### ‘Activity Based Management Portal’ enables benchmarking and comparison

The Ministry of Health has developed a web based application, the ‘Activity Based Management Portal’ (ABM Portal), to help Local Health Districts improve its local practice. The ABM Portal contains the finalised costing output, and allows Local Health Districts or hospitals to:

- compare their local performance (for example, patient activity volume and associated cost, average patient length of stay in hospital) to other Local Health Districts or hospitals
- understand the different cost (for example, allied health, ward medicals, ward nurses) related to a particular type of patient service
- understand the differences in clinical practice and their impact on cost within a hospital or Local Health District.

We observed the use of the ABM Portal in three out of the four Local Health Districts we visited. Comments we received from inside the Ministry as well as at Local Health Districts suggest that NSW Health is striving to encourage more use of the Activity Based Funding dataset (such as through the ABM Portal). The transparency of the Activity Based Funding dataset creates an incentive for Local Health Districts to get their data submissions right.

#### There are opportunities to use Activity Based Funding dataset for local purposes

Given the rich detail in the Activity Based Funding dataset, there are opportunities for Local Health Districts to make use of them to inform delivery of health services.

We observed two examples of such applications at South Eastern Sydney Local Health District. These are discussed in Case Study 3.

#### **Case Study 3: High Cost Services model and Hospital Acquired Diagnosis quality project at South Eastern Sydney Local Health District**

South Eastern Sydney Local Health District has taken further steps to use the Activity Based Funding dataset, by engaging the University of Wollongong to develop the following tools:

- The High Cost Services model
- The “Classification of Hospital Acquired Diagnosis (CHaDx)” tool.

The High Cost Services model provides evidence to support the Local Health District’s claim that certain health services require greater funding than the ‘default’ under Activity Based Funding. Using this model, the casemix team is able to separate higher costs due to the nature of service from higher costs due to inefficiency.

The CHaDx tool allows the Local Health District to investigate the impact of hospital acquired diagnosis on additional length of patient’s stay, which will not attract additional funding under Activity Based Funding. These results can be presented at a specialty or diagnosis level.

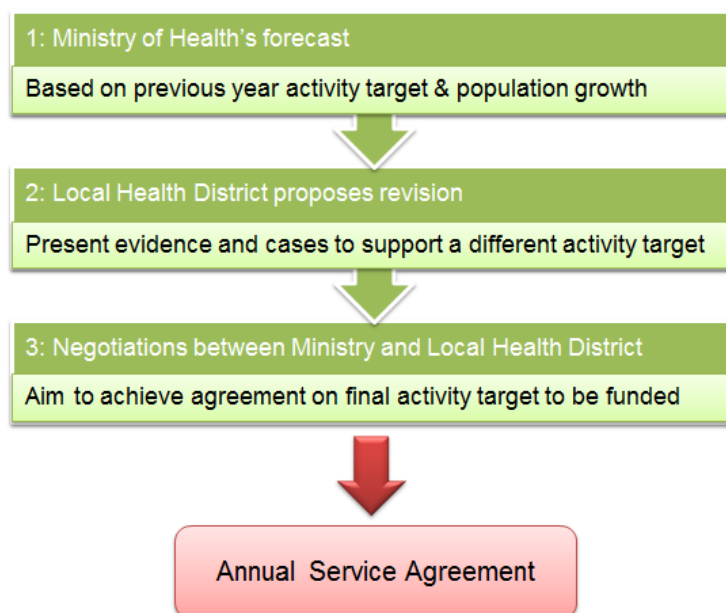
#### Service Agreement process link Activity Based Funding to target and budget

Under NSW Health’s new funding structure, an annual agreement (Service Agreement) signed between the Chief Executive and Board Chair of a Local Health District and the Ministry of Health determines the funding to the Local Health District. The Service Agreement contains:

- patient service targets for which the Ministry of Health is willing to provide funding
- the budget that the Local Health District gets for providing those patient services.

Exhibit 6 depicts the typical negotiation process leading to the annual Service Agreement being signed. The Activity Based Funding dataset is used to forecast future patient activity (Step 1 and 2), as well as provide the basis for negotiations (Step 3). In practice, the three steps may be repeated multiple times before an agreement between the Local Health District and the Ministry is achieved.

#### Exhibit 6: NSW Health's service agreement process



Source: Audit Office research.

#### Most Local Health Districts regularly monitor their activity and cost variation

Most Local Health Districts we visited regularly monitor their patient activity and cost variation of health services. Patient activity can be more readily monitored using automated reports generated by the Local Health Districts' data warehouse (Health Information Exchange). The monitoring of cost variation happens less frequently as it requires the full costing output from the ABM Portal, which only gets updated at each costing round (every six months).

One Local Health District regularly provides their costing output to 'The Health Roundtable', a non-profit membership organisation of health services across Australia and New Zealand. The Health Roundtable collects, analyses and publishes information to allow health organisation to improve their operations.

The regular use of patient activity and costing data allows Local Health Districts to detect data errors and continuously improve their data quality.

#### 4.4 Use of the Activity Based Funding dataset not a substitute for sound data quality framework

The mechanism of data quality improvement outlined in Section 4.1 has its merits. The use of the Activity Based Funding dataset has contributed to better data quality, most notably when data errors were found when Local Health Districts compare themselves to each other through a benchmarking exercise.

While the use of data contributes to data quality improvement, it is not a perfect substitute for a complete and comprehensive data quality framework. Some limitations to this approach to data quality are shown below.



- From a Local Health District's perspective, there might be a bias towards fixing data errors which lead to unfavourable results.
- Benchmarking tables, such as those in the ABM Portal, may reveal data errors specific to a particular Local Health District that make it an 'outlier'. The tables will not reveal data errors that are common across all Local Health Districts.
- Relying on user-initiated (in this case, Local Health Districts) data quality improvement could mean a wide range of approaches in tackling the same problem. As a result, the dataset of different Local Health Districts could be inconsistent.
- There may be small, incremental errors in the data that are only detected once their aggregate effect in establishing an outlier has become apparent.

The use of the Activity Based Funding dataset to improve clinical practice (discussed in Section 4.3) is still in its infancy. A common challenge faced by Local Health Districts is that when the Activity Based Funding dataset shows unexpected results – such as unreasonably long length of patient's stay – they can be dismissed as data errors in the absence of strong confidence in data quality.

Our view is that leadership commitment, use of the dataset and a sound data quality framework need to co-exist to facilitate data quality improvement.

## 5. Coders' and clinicians' role supporting Activity Based Funding

Accurate coding helps to ensure that Activity Based Funding datasets reflect the actual patient services provided by hospitals. During our audit, we discussed the importance of coding audits, the issue of a coding workforce shortage, and the role of clinicians and clinical documentations with the Ministry of Health and Local Health Districts. This section documents our findings.

**Local Health Districts have reported issues with maintaining the capacity of their clinical coding workforce. While Local Health Districts reported that the quality of clinical coding has improved over time, not all of them have enough coders to carry out regular coding audits.**

Clinical coding plays a key role in Activity Based Funding. Local Health Districts have reported issues with recruiting trained clinical coders. These issues mean that some Local Health Districts have difficulty reaching performance targets for clinical coding. Additionally, not all Local Health Districts have enough coders to carry out regular coding audits. Coding audits are important to ensure the quality of clinical coding, which plays a key role in Activity Based Funding.

Medical Officers sometimes do not realise the heavy reliance placed by coders on their medical documentation. Most Local Health Districts have mechanisms to assist coder-clinician interactions and programs to enhance Medical Officers' understanding of Activity Based Funding.

### **Recommendation**

NSW Health should by October 2016:

- Assist Local Health Districts in addressing resource or capacity issues that may affect the clinical coding staff's ability to carry out regular coding audits

## 5.1 Not all Local Health Districts have enough coders to carry out regular coding audits

### Accurate clinical coding of patient admissions is essential for Activity Based Funding

For acute inpatients (patients who get admitted to hospital for treatment or relief of their symptoms), 'coding' refers to a clinical coder assigning the admission to the correct code under the Australian refined diagnosis-related groups (AR-DRG).

The AR-DRG is an Australian admitted patient classification system which provides a clinically meaningful way of relating the number and type of patients treated in a hospital (that is, its casemix) to the resources required by the hospital.<sup>1</sup>

Clinical coders assign AR-DRG to each patient's admission, by reviewing all clinical documentations from the point where a patient is admitted to when he or she is discharged. Clinical coders assign AR-DRG based on strict rules, typically using proprietary software.

The AR-DRG code for each patient's admission will be recorded in the patient activity data. The costing process (discussed in Chapter 2) will then link a series of costs associated, such as medical supplies, operating theatre, nursing, radiology, pathology, with a patient's admission (hence the assigned AR-DRG code).

A key contributor to the quality of costing output is the accuracy of the AR-DRG codes in patient activity data.

### Coding audits are important to ensure accuracy, but require additional coders

Coding audits play an important role in ensuring the accuracy of clinical coding. In a coding audit, a different clinical coder will review the code assigned to a patient's admission and identify if there has been an error due to miscoding.

In the event of a miscoding, the coding auditor will determine the severity of the error and a primary cause for the mistake. Under Activity Based Funding, the severity can range from immaterial errors (such as not reflecting the smoking status of a patient) to financially significant, where the codes assigned were incorrect and resulted in funding that does not cover the costs associated with providing service to a patient. Common causes of miscoding include coder error and issues with clinical documentation, such as diagnoses not being written in the medical record.

We found that not all Local Health Districts we visited have enough staff to carry out clinical coding audits. As coding auditors are themselves clinical coders, this relates to a broader issue of coding workforce shortage, which is discussed next.

## 5.2 All Local Health Districts face similar coding workforce challenges

We received consistent feedback from all Local Health Districts visited about the coding workforce shortage across New South Wales. These problems applied to rural and metropolitan Local Health Districts.

The Ministry of Health and staff at Local Health Districts told us that one of the issues faced when recruiting and retaining clinical coders is that the salary offered in NSW is not competitive with those offered in other jurisdictions or by private coding consultancies.

Local Health Districts advised us that it takes about two years of coaching and on-the-job training for a junior coder, who has completed a formal coding qualification, to become competent at coding accurately. This means that a Local Health District cannot quickly respond to unexpected vacancies if they occur.

Our consultation with the Workforce Planning & Development group of NSW Health confirms the above comment.

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<sup>1</sup> Australian Institute of Health and Welfare – full reference

Additionally, we were able to find evidence that some Local Health Districts struggled to meet performance targets for clinical coding.

The Ministry of Health has not recently quantified the extent of workforce shortage across the State or carried out forecasts on how the situation may change in the future. According to a slightly dated workforce data collection in 2011, there were 33 unfilled full time positions for clinical coders across New South Wales at that time. Across three of the Local Health Districts we visited, there were a total of 9.6 full time equivalent positions vacant (with approximately 50 per cent of the positions being vacant for more than a year).

A number of initiatives have been developed in recent years to support Local Health Districts to recruit and train new clinical coders. These initiatives include the Clinical Coding Workforce Enhancement Project (which developed skills via the Certificate IV in Health Administration (Clinical Coding)). This project has not been formally assessed by NSW Health.

Additionally, HETI is developing the Clinical Coding Training Space which will act as a virtual training environment for clinical coders across the state. This space is due for launch in late 2015 and will include a standardised training pathway for new, and reskilling, clinical coders.

### Remote coding is a potential solution to coding workforce shortage

A number of Local Health Districts suggested that a possible solution to the coding workforce shortage is providing suitable conditions for coders to work remotely. This may enable Local Health Districts to recruit coders who do not live close to the health facilities they work in.

A key enabler for coders to code remotely is electronic access to patients' medical records and clinical documentations.

During our audit, we found that some Local Health Districts face challenges when it comes to converting patients' medical records and clinical documentation into electronic form. These challenges are typically related to medical documentation staff being busy with other work and not having time to scan documents.

## 5.3 Medical Officers play a key role in clinical documentation for Activity Based Funding

### Medical Officers play an important role in Activity Based Funding

Medical documentation and patient records play an important role in the Activity Based Funding data process. Clinical coders use medical record data to code patient admissions to specific disease related groups. The accuracy of coding therefore relies on the completeness of medical documentation, including written diagnoses.

Junior Medical Officers are frequently responsible for clinical documentation. Several Local Health Districts we visited commented that sometimes medical documentation is incomplete. For example, a diagnosis may not be recorded in a patient's medical documentation, which creates additional challenge for a clinical coder to accurately ascribe a code to a patient event.

From our discussions with Local Health Districts, this appears to be due to the lack of understanding among Medical Officers about the different purposes for which medical records may be used. Traditionally, the perception is that the main purpose of medical records is to support management of patient needs. The role of medical records has expanded in an Activity Based Funding environment to include documenting a patient's "journey" and final diagnosis so that it can be coded for financial purposes.

Further, NSW Health has a policy directive (PD2012\_069), *Health Care Records – Documentation and Management*, which is mandatory for all staff and defines the requirements for documenting and managing health care records across public health organisations in the NSW public health system. The directive states that "the main purpose of a health care record is to provide a means of communication to facilitate the safe care and

treatment of a patient/client.” It goes on to state that “the health care record may also be used for communication with external health care providers, and statutory and regulatory bodies, in addition to facilitating patient safety improvements; investigation of complaints; planning; audit activities; research (subject to ethics committee approval, as required); education; financial reimbursement and public health. The record may become an important piece of evidence in protecting the legal interests of the patient / client, health care personnel, other personnel or PHO.”

Despite this directive, we were unable to find other statewide policies which supported medical officers to more effectively document their activity in patient health records so that it could be more easily coded.

### **Health Education and Training Institute plays a role in supporting Junior Medical Officers to improve their clinical documentation skills**

Medical education in Australia is overseen by the Australian Medical Council, which accredits Australian universities that provide training to future doctors. There is limited scope for the Ministry of Health to influence the training provided by universities to junior doctors on clinical documentation and Activity Based Funding. However, the Health Education and Training Institute (HETI) plays a critical role in assigning and supporting interns in New South Wales hospitals and there may be scope for HETI to improve the medical documentation skills of Junior Medical Officers.

Currently, HETI provides a half hour online learning module “Documentation and Activity Based Funding For Clinicians”. This module is currently not a mandatory training requirement for clinical staff in NSW health. There were mixed reports of its effectiveness, with some Local Health Districts remarking that it was challenging to engage junior doctors in training modules.

## **5.4 Mutual understanding between coders and clinicians is improving**

We found the use of a consistent mechanism at Local Health Districts for clinical coders to raise their queries with clinicians when there is uncertainty about clinical documentation. This mechanism is known as the ‘Clinical Documentation Coding Query’ tool, or simply ‘coding query forms’.

Every Local Health District uses the tool differently. Clinical coders at some Local Health Districts use the query form to directly contact Medical Officers who were involved in providing care for specific patients. One Local Health District relied on a senior clinician to voluntarily respond to queries by reviewing patient records (for which the clinician did not directly provide care) and answering questions.

In addition to coding query forms, some Local Health Districts hold clinical education sessions aimed at improving clinicians’ understanding of how coding works and how clinical coders use clinical documentation in coding. Clinical coders who attended these sessions were able to enhance their understanding of how clinicians documented their activity, which could lead to more efficient coding practice as the coders become more informed about where to look for specific information.

Case Study 4 shows an example of such education session.

The Ministry of Health and Local Health Districts see these sessions as excellent tools to improve mutual understanding between clinicians and clinical coders.

However, most of the Local Health Districts we visited reported that it was occasionally difficult to engage clinicians, particularly when there were high workloads and competing priorities. For this reason, it is important to engage clinical leaders (more senior medical staff in hospitals, such as Heads of Department and Medical Directors). We found evidence of senior medical staff demonstrating leadership in promoting clinicians’ engagement with Activity Based Funding in all Local Health Districts we visited.



#### **Case Study 4: Junior Medical Officer Coding Exercise at Central Coast Local Health District**

Central Coast Local Health District has a training program to enhance Junior Medical Officers' (JMOs) understanding of the importance of clinical documentation and coding in the Activity Based Funding environment.

Below is our summary of this training program:

1. Examination of discharge summary followed by identification of the patient's diagnoses by the JMOs.
2. Coding was done on the spot using those diagnoses; the codes were entered into coding software to generate the AR-DRG and dollar funding is calculated using Activity Based Funding formulae.
3. The JMOs were given copies of de-identified patient record and asked to write down any diagnosis, under the time pressure experienced by coders (typically 15-20 minutes).
4. Once step 3 is complete, JMOs were to determine patient's diagnoses and the additional diagnoses that come from the discharge summary (if any) are added.
5. Repeat step 2 to demonstrate the impact of any change in AR-DRG resulting from additional diagnoses information documented in discharge summary, including the impact on dollar funding under Activity Based Funding.

## 6. Special mention: Activity Based Funding in a rural Local Health District

Western New South Wales Local Health District, which is located in rural and regional NSW, faces different challenges when it comes to implementing Activity Based Funding.

Case study 5 describes the challenges that Western New South Wales Local Health District faces. Most of these challenges are due to lower population density and workforce shortage in rural areas.

### **Case Study 5: Activity Based Funding at Western New South Wales Local Health District**

Being a rural Local Health District, Western New South Wales Local Health District grapples with staffing issues and is slower at implementing Activity Based Funding compared to Local Health Districts in metropolitan areas.

The Full Time Equivalent (FTE) of costing staff has reduced due to natural attrition and difficulties in recruitment. Much of the activity data improvement projects are done collaboratively with Southern New South Wales Local Health District, which share similar challenges and some IT systems.

The Local Health District mainly relies on in-house coding staff, though some facilities have occasionally used external service providers. The position of District Clinical Coding Manager has been advertised three times with no successful recruitment. There is a coding vacancy in Dubbo Health Service, after the previous coder was promoted to being a medical records manager.

The Local Health District is under-resourced in internal audit. It has just employed an Audit Manager. There are concerns that the internal audit team will not have the capacity to carry out the statewide internal audit program once that is made compulsory. So far the Local Health District has not done any audits in-house.

At Dubbo Health Service, when coders have questions about clinical documentation, they use clinical coding query forms and those queries would be addressed by the Director of Medical Services, instead of the treating doctors. This is because many doctors are “fly-in-fly-out” and may not be at the facility at that time. The Health Service relies on the Director of Medical Services to influence improvement in clinicians’ practice, such as through the Clinical Council.

Due to staff shortage in coding, the Local Health District does not conduct clinical coding audits hence cannot report on this performance indicator.

While Western New South Wales Local Health District is the only rural Local Health District we visited, it is likely that other rural Local Health Districts experience similar challenges.

# Appendices

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## Appendix 1: Response from NSW Health



Ref: S15/574-7

Mr A. T. Whitfield PSM  
Acting Auditor-General  
Audit Office of NSW  
GPO Box 12  
SYDNEY NSW 2001

Dear Mr Whitfield

### **Performance Audit: Data quality governance to support the implementation of Activity Based Funding**

Thank you for your letter of 30 September 2015 inviting NSW Health to provide a formal response on the final performance audit report on *Data quality governance to support the implementation of Activity Based Funding*.

NSW Health welcomes the Auditor-General's findings that data quality governance for Activity Based Funding is adequate whilst acknowledging the commitment of NSW Health and its senior management in implementing the Activity Based Funding (ABF) program.

NSW Health has achieved an ambitious work program since 2011 to implement and develop the Activity Based Funding (ABF) program as required by the Commonwealth National Health Reform Agreement.

The Auditor-General's report demonstrates the investment made by NSW Health in ABF which has been significant and positively impacts across the health system. It continues to be an evolving and maturing program.

NSW Health supports the report's four (4) recommendations noting that the recommendations are being progressed by NSW Health and this is building on the current ABF work program. Specific responses as summarised below:

#### **Recommendation 1**

Commence an initiative to encourage and support LHDs in developing local costing practice and procedure manuals to mitigate the risk of critical information loss should costing staff leave their jobs.

**Response:** Supported, NSW Health will address this work as part of a broader costing workforce initiative.

#### **Recommendation 2**

Continue to progress the implementation of the NSW ABF Internal Audit program for costing functions in LHDs and assist LHDs to address any resource issues which may affect their ability to comply with this program

**Response:** Supported, NSW Health has an implementation program for the NSW ABF Internal Audit in progress which supports LHDs to meet this requirement.

NSW Ministry of Health  
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73 Miller St North Sydney NSW 2060  
Locked Mail Bag 961 North Sydney NSW 2059  
Tel (02) 9391 9000 Fax (02) 9391 9101

**Recommendation 3**

Conduct a review and risk assessment of feeder systems used for the collection and reporting of patient activity data.

**Response:** Supported, NSW Health will address this work as part of the implementation of the Data Quality Framework.

**Recommendation 4**

Assist LHDs in addressing resource or capacity issues that may affect the clinical coding staff's ability to carry out regular coding audits.

**Response:** Supported, NSW Health will build on the Clinical Coding Workforce Enhancement Project, which included scholarship funding for the Certificate IV in Health Administration (Clinical Coding), through the launch of the NSW Health Education and Training Institute's (HETI's) Clinical Coding Training Space in 2015-16. This tool will provide a sustainable learning pathway for clinical coding education in NSW Health.

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

Yours sincerely



Dr Mary Foley  
Secretary, NSW Health

21. 10. 15

## Appendix 2: About the audit

From 1 July 2012, NSW Health adopted a new approach to the funding, purchasing and performance measurement of health services in New South Wales. Under the new funding structure, Local Health Districts (LHDs) and Specialty Health Networks (SHNs) will progressively move from 'block funding' to activity based funding (ABF). At present, approximately 80% of NSW Health's funding is allocated by ABF.

The two main 'building blocks' of ABF are patient activity and costing data. Patient activity data contains information on the mix of health services provided to patients. Costing data contains information on cost incurred by the health system in treating patients.

The 2013-14 NSW Health Funding Guidelines specify that:

"In 2013/14, focus will be placed on ABF processes, utilising available data on the cost and performance of a facility to improve management and decision-making processes. In essence it is a move to Activity Based Management (ABM)."

The Guidelines also outline the key emphasis surrounding ABM:

"ABM requires using available information generated from the funding process to understand the costs and costs drivers in service delivery and to make management decisions to change and improve these factors.

Emphasis is placed on:

- Counting and reporting the services provided (timely and accurate coding and classification)
- Improving the accuracy and timeliness of costing services
- Understanding the relationship between price and cost, in order to make more informed decisions on services within the available funding parameters"

### Scope

The audit objective is to examine whether NSW Health has robust data governance frameworks, systems and processes in place to ensure that Activity Based Funding data are fit for purpose.

Our objective is to provide assurance to NSW Parliament and the public that NSW Health has robust systems and processes that promote quality data for the implementation of ABF. In addition we also seek to examine whether NSW Health has sufficient resources (such as staffing and IT) to support those systems and processes.

By 'Activity Based Funding data', we refer to both patient activity and costing data relevant to the implementation of ABF.

By 'data governance', we refer to both:

- 'data quality controls': checks to assess and maintain the quality of data being collected and managed to a level that is fit for purpose; and
- 'data quality assurance': planned system of review procedures carried out by personnel not directly involved in the data collection process. This includes independent reviews or audits, such as internal audits and peer reviews on methodology and procedures, external evaluations of ABF data quality, etc.

We acknowledge that it is difficult and costly to ensure absolute accuracy of health data. NSW Health aims to ensure that health data are fit for purpose, rather than perfect. This audit interprets 'fit for purpose' to mean that health service planning and delivery decision making activities are informed by activity and costing data.

## Audit criteria and exclusions

Our two audit criteria are:

- Are there appropriate data quality governance frameworks, systems and processes in place to ensure that data used for ABF are fit for purpose?
- Is the current level and mix of resources adequate to support the governance of ABF data?

To ensure that the audit objectives are auditable within the given timeframe and resource allocations, we excluded:

- A detailed audit of the quality of patient activity and costing data (i.e. substantive testing of samples of ABF dataset)
- A detailed review of the logic and algorithms used to allocate cost to patient activity
- A focus on the systems and processes that measure activity of patient streams other than acute care provided in inpatient settings.

## Audit approach

The audit team utilised the following audit procedures.

Audit criteria	Audit procedures
<p><b>Are there appropriate data quality governance frameworks, systems and processes in place to ensure that data used for ABF are fit for purpose?</b></p>	<p>Consultation with Ministry of Health and Local Health Districts.</p> <p>Gain access and review the following documents:</p> <ul style="list-style-type: none"> <li>• NSW Health's overall data quality framework, policies and/or guidelines to ensure the quality of ABF data</li> <li>• evidence of compliance with data quality framework and guidelines by Local Health Districts</li> <li>• relevant evaluations reports, internal audit plans and reports examining quality of health data collection</li> <li>• relevant documents related to service planning and budgeting which incorporate the ABF data</li> <li>• other relevant documents identified during the course of the audit.</li> </ul> <p>Gain access and review related consultant reports.</p> <p>Interviews with:</p> <ul style="list-style-type: none"> <li>• Selected managers, teams and individuals of Health System Information and Performance Reporting (HISPR) and ABF Taskforce of the Ministry of Health and individuals who use ABF data as part of service planning and annual budgeting.</li> <li>• Selected managers, teams and individuals at Local Health Districts with responsibility for data collection, data coding, data quality assurance of patient activity and costing data.</li> <li>• Other relevant contacts identified during the course of the audit.</li> </ul>
<p><b>Is the current level and mix of resources adequate to support the governance of ABF data?</b></p>	<p>Consultation with Ministry of Health on roles and responsibilities assigned to different individuals and teams in relation to the collection of health data for ABF and the costing process.</p> <p>Consultation with the Health Education Training Institute on the progress of the Clinical Coding Workforce Enhancement Project and its role in supporting Local Health Districts to implement ABF policy.</p> <p>Broad-based assessment of staffing and IT resources, rather than focusing on particular benchmarks such as staff ratios.</p>



### **Audit methodology**

Our performance audit methodology is designed to satisfy Australian Audit Standards ASAE 3500 on performance auditing. The Standard requires the audit team to comply with relevant ethical requirements and plan and perform the audit to obtain reasonable assurance and draw a conclusion on the audit objective. 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 the NSW Ministry of Health and the selected Local Health Districts. In particular we wish to thank our liaison officers and staff who participated in interviews and provided material relevant to the audit

### **Audit team**

Xin Yin Ooi and Jason Appleby conducted the performance audit. Andrew Hayne and Kathrina Lo provided direction and quality assurance.

### **Audit cost**

Including staff costs and overheads, the estimated cost of the audit is \$230,000.

# Performance auditing

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## **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](http://www.audit.nsw.gov.au) or contact us on 9275 7100.

## 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 recognised for our independence and integrity and the value we deliver.

**Professional people with purpose**

Making a difference through audit excellence.

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