Management of Medical Equipment

Executive Summary

Report 8: May 2017

Introduction

This audit assessed whether the management of medical equipment in public hospitals is efficient and effective. We focused on the management of medical equipment at the Department of Health, Health Support Services, the North, South, and East Metropolitan Health Services, and the WA Country Health Service (WACHS). The audit covered the period July 2013 to December 2016.

We visited 8 hospitals which in 2015-16 accounted for:

- 43% of the total value of all medical equipment that cost $5,000 and above
- 36% of all patients treated in public hospitals.

Metropolitan hospitals	Country hospitals
Sir Charles Gairdner Hospital	Kalgoorlie Regional Hospital
Royal Perth Hospital	Esperance Hospital
Armadale Kelmscott Memorial Hospital	Geraldton Regional Hospital
Rockingham General Hospital	Carnarvon Hospital

Table 1: Sample hospitals

The audit scope did not include the Child and Adolescent Health Service or hospitals managed under public private partnerships, for example St John of God Midland Public Hospital, and outsourced facilities management arrangements such as Fiona Stanley Hospital.

Background

Introduced in July 2016, the *Health Services Act 2016* changed the governance of WA Health, moving decision-making closer to service delivery and patient care. As system manager the Department of Health is responsible for overall management, performance and the strategic direction of WA Health.

The Health Services Act provided for the establishment of 6 health service providers, of which, 5 are board-governed statutory authorities, legally accountable for the delivery of health services. The sixth is Health Support Services (HSS), governed by a Chief Executive reporting through the Director General Department of Health. HSS is WA Health's Shared Service Centre, providing a suite of technology, supply, workforce and financial services to Western Australia's public health services.

Each health service should provide safe, high quality, efficient and economical health services. They are also responsible for the management of medical equipment within their hospitals. It should be noted that the new boards were not responsible for the management of medical equipment before July 2016.

Having the appropriate medical equipment in the right place at the right time, fit for purpose and well maintained, is essential for the delivery of good quality healthcare.

Medical equipment is vital for the diagnosis, treatment, and rehabilitation of patients. Equipment ranges from small, inexpensive items such as thermometers that cost less than $100, to expensive complex items like computer tomography (CT) scanners, magnetic resonance image (MRI) equipment, and radiosurgery equipment costing several million dollars.

Health Support Services maintain accounting records of medical equipment when the original purchase cost is $5,000 and above. About 19,000 items valued at $625 million are in this category in all WA public hospitals. Hospitals also hold thousands of medical equipment items that cost less than $5,000.

Medical equipment can be technically complex and require specialist expertise to use, maintain and repair. It generally has an expected life of between 5 and 10 years depending on the type of equipment. The actual life will also depend on a wide range of factors including how often it is used, how reliable it is and how well it is maintained.

The unavailability or failure of equipment can present significant risks to patients, staff and service delivery – risks that the health system needs to manage.

Individual health service providers and hospitals are responsible for managing their own equipment, including planning, acquisition, maintenance, repair and disposal.

Medical equipment is funded through capital projects, special programs, the Medical Equipment Replacement Program (MERP), hospital operational funds, special purpose accounts (for example hospital trust funds), gifts and donations. The Department of Health is currently responsible for administering MERP which was introduced in 2004 as a system wide approach to fund the replacement of medical equipment.

The Western Australian Policy Advisory Committee on Technology (WAPACT), part of the Department of Health, evaluates new high cost health technologies, including medical equipment, expected to exceed $250,000 in annual or single accquisition cost.

In September 2015, the Department of Health identified the need to undertake reform in the management of the MERP, including the development of a governance framework that articulated roles, responsibilities and accountabilities of the program.

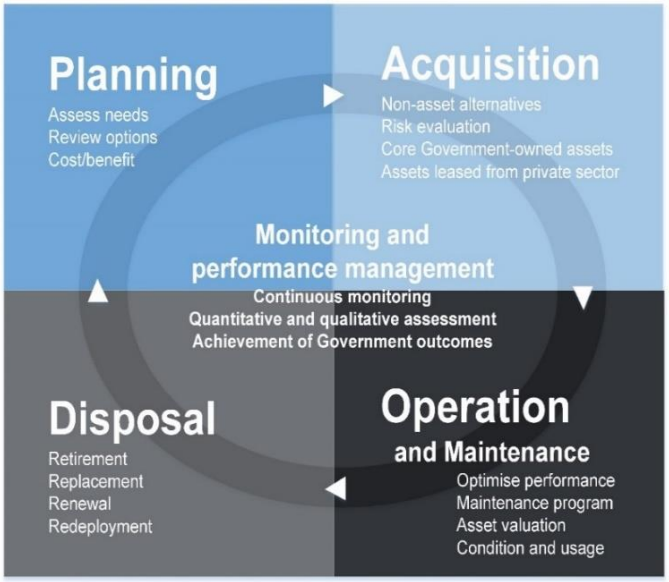
Although the WA Health's Strategic Asset Plan – Phase 1 approved in November 2015, identified key areas to reform, this was deferred pending the outcome of our audit.

What does good management involve?

Effective asset management of medical equipment not only supports service delivery, it also enables the health system to achieve value for money from the equipment. Good asset management is a continuous process that includes:

- sound planning and an understanding of business need to determine what equipment is required
- acquisition processes that represent value for money and comply with State Supply Commission requirements
- good maintenance and monitoring programs that ensure equipment remains in good condition, is used to full capacity and its expected life is maximised
- performance management and monitoring including comprehensive and accurate asset information to aid decision-making
- disposal of equipment that is no longer required.

The stages of the asset management cycle are highlighted in Figure 1.



Source: Victoria, Department of Health 2012 (modified by OAG)

Figure 1: Asset management cycle

Audit conclusion

Equipment failure or unavailability due to repair or maintenance rarely has a serious impact on patient care. However, it does cause incidents and inefficiencies. The risk of adverse events was also increased because preventative maintenance for 16% of equipment we sighted was not done on time, and yet the un-serviced equipment remained available for use. Keeping to maintenance schedules is even more important as 36% of equipment we sighted across our 8 sample hospitals had exceeded its expected life.

Although we found little evidence of equipment shortages, we cannot provide assurance that hospitals are achieving value for money from their management of medical equipment. Health service providers, and hospitals, cannot answer key asset management questions, such as how much equipment is needed, the cost efficiency of maintaining or replacing existing equipment, or whether high value equipment is used to its full capacity. This is because hospitals and health service providers are not capturing or effectively using information on equipment and do not have a strategic asset management approach for medical equipment.

This lack of a strategic asset management approach is impacting efficiency:

- leasing equipment is not routinely considered as an acquisition option
- procurement is generally not aggregated to obtain lowest cost from a supplier
- available funding determines equipment replacement priorities and decisions are not always based on robust information.

For the majority of hospitals and health service providers, no one has clear responsibility for managing medical equipment and its costs. Responsibility is dispersed across health service staff, biomedical engineers, hospital operations managers, heads of clinical service areas and central health department staff. This reduces accountability and efficiency.

Key findings

- **Equipment failure** – Our 8 sample hospitals reported that 107 (0.4%) of 26,325 clinical incidents between February 2014 and August 2016 were caused by medical equipment failure or malfunction. Two of these were incidents where serious harm or death could have been caused. Over a similar period, they reported that 94 theatre cases and 586 imagery appointments were cancelled due to equipment failure or unavailability (less than 1% of the total number of cases and appointments). We were unable to assess if these rates are high

as hospitals do not use targets as a tool for monitoring and reducing the frequency of failure. **(**page 13)

- **Servicing equipment** – 41 items of equipment (16% of our sample), including critical items such as an intensive care unit ventilator, were un-serviced within required timeframes. Servicing of some items was overdue by 1 year or more. Servicing helps ensure that the equipment is reliable and safe to use. (page 14)

- **Age of equipment** – 36% of equipment (10,000+ items) in the 8 hospitals is older than its expected life, increasing the risk to service delivery and patient care. Old equipment can be fit for purpose but keeping it operating may not represent value for money. No assessment is done as to whether retention rather than replacement is the most cost effective option. We estimated the replacement cost to be around $140 million. Because health service providers do not have replacement values for all equipment, we have used a number of assumptions to derive our estimate and it is an indicative estimate of total replacement cost. (page 16)

- **A strategic approach** – Health service providers do not have a strategic asset management approach to medical equipment and are not capturing or effectively using key information. Hospitals have not determined what equipment they need, what they have, what their maintenance costs are or what it would cost to purchase what they need. Replacement and purchasing decisions and actions are not sufficiently informed, prioritised or coordinated. (page 17)

- **Responsibility** – There is a lack of clear responsibility for managing medical equipment and its costs amongst the majority of health service providers and hospitals. Responsibility is spread across health service staff, biomedical engineers, hospital operations managers, heads of clinical service areas and central health department staff. This reduces accountability and efficiency. (page 17)

- **Replacement strategies** – Health service providers and hospitals do not have asset management strategies or plans for medical equipment needs beyond 12 months. None had strategies for addressing gaps between replacement needs and available funding. (page 18)

- **Replacement processes** – Processes mainly involve adding or removing equipment from lists provided by individual clinical service areas and hospitals, or equipment identified by biomedical engineers. The basis for how equipment gets on the lists is neither clear nor consistent but is not based on key value for money drivers or a longer-term view of clinical services and demand. (page 18)

- **Medical equipment information** – Comprehensive and timely equipment information is not consistently captured, and when it is, it is often not used to inform decision-making. (page 18)

- **Use of MERP** – MERP was introduced to address the backlog in equipment replacement but a lack of clear business rules to define how the funds can be used has seen funds spent on purchasing new additional equipment. (page 20)

- **Purchasing options** – Health service providers and hospitals do not routinely consider all acquisition options such as contracting the service, leasing the equipment, or reallocating surplus medical equipment from other sites. As a result, it is not evident that they obtain best value for money. (page 21)

- **Reallocating surplus equipment** – The processes for reallocating surplus equipment is not effective. We found 1,200 items of unused medical equipment that cost $7.2 million sitting for at least 2 years in Fremantle Hospital stores. (page 21)

- **Effective purchasing** – Opportunities are missed to aggregate equipment purchases across hospitals and thereby obtain better prices from suppliers. Each health service provider is responsible for purchasing its own equipment. (page 22)
- **Acquisition timelines** – The time taken to acquire high value equipment through open tender process is often slow – our sample showing the average time was 17 months with some cases (defibrillators and patient monitors) taking more than 2.5 years. (page 23)
- **Underspending** – A combination of a lack of strategic planning and long procurement times has contributed to a significant underspend in the MERP. Between 2013-14 and 2015-16, a total of $76.6 million was spent out of $121.7 million in available funds. Underspending has resulted in government withdrawing nearly $15 million from MERP. (page 23)

Recommendations

1. The Department of Health should by June 2018:

a. develop an overarching policy for the management of medical equipment

b. take a proactive role in guiding health service providers in developing long-term medical equipment asset management strategies and plans

c. determine whether the MERP should be the appropriate vehicle to fund the replacement of medical equipment

d. subject to MERP continuing to fund the replacement of medical equipment, develop clear guidelines for the management of the program

e. consider establishing a single medical equipment register that includes all items of equipment held by health service providers.

2. The Department of Health, Health Support Services and health service providers should by June 2018:

a. ensure that the medical equipment procurement process includes the consideration of alternative options (contracting out, lease, using surplus assets) to purchasing

b. use medical equipment plans to identify opportunities to aggregate procurement and standardise equipment to maximise value for money.

3. Health service providers and hospitals should by June 2018:

a. allocate clear responsibility for the management of medical equipment

b. establish hospital medical equipment baselines (number and type of assets) that are subject to periodic review to ensure they meet agreed service requirements and demand, and to avoid maintaining surplus equipment

c. develop asset management strategies and plans for medical equipment which include a minimum of 5 year forecasts of funding and equipment replacement needs

d. establish a single register of all medical equipment that includes all relevant information and ensure that it is accessible to key users within hospitals

e. develop consistent guidelines and periodically assess the life expectancy of medical equipment

f. regularly monitor and report on the performance and condition of medical equipment at executive management and board level

g. **investigate all items of equipment listed as missing, confirm its location, and where necessary take disposal action for equipment that is no longer held or required.**

Agency responses

Department of Health

The Department of Health notes the Office of the Auditor General's findings in respect of the management of medical equipment, and accepts and supports its recommendations and timeframes.

Since late 2015 the Department has been aware that strong reform is needed in the management of medical equipment to ensure that hospitals, patients and the community receive the best return on their investment. A subsequent internal review identified many of the issues that appear in this report, and much work has already been done to reform this area of health.

The Department will continue to roll out these significant system-wide reforms, including embedding strategic asset planning and management into the WA health system, to ensure that we can continue to deliver high quality care to all Western Australians.

Note: This is a summary extract, the full response is shown in Appendix 2.

East Metropolitan Health Service

East Metropolitan Health Service (EMHS) is pleased that EMHS Health Technology Management Unit is acknowledged within the report in a positive light. EMHS also noted the challenges on health service providers that are raised within this report in maintaining an efficient and effective health technology program that manages equipment repair and servicing with strategic planning and equipment replacement. This report and its recommendations will be used to continue to improve the strategic management and day-to-day governance of medical equipment through EMHS.

EMHS accepts all recommendations within the report, relevant to EMHS as a health service provider.

Health Support Service

Health Support Service (HSS) thanks the OAG for the report and notes the findings and recommendations. HSS will work with both the Department of Health and the patient facing health service providers to support ongoing improvements in procurement efficiency in the planning, acquisition and management of medical equipment across the WA health system.

North Metropolitan Health Service

North Metropolitan Health Service (NMHS) accepts and agrees with the recommendations from the audit. The audit has highlighted the need for better delineation of responsibilities between health service providers, Health Support Services and Department of Health on the role of asset management and governance.

South Metropolitan Health Service

South Metropolitan Health Service (SMHS) recognises and welcomes the opportunity for further improvement. SMHS will seek to address the audit concerns, improve strategic management and oversight of medical equipment, and address the historical deficiencies.

Note: This is a summary extract. The SMHS response is shown in full in Appendix 2.

WA Country Health Service

WA Country Health Service WA Country Health Service (WACHS) welcomes the findings and recommendations of the Office of the Auditor General's audit and is committed to addressing those recommendations accepted by the organisation.

Note: This is a summary extract. The WACHS response is shown in full in Appendix 2.