Australian Government

Department of Health

Submission

to the Senate Community Affairs References Committee

Inquiry into the availability and accessibility of diagnostic imaging equipment around Australia

October 2017

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1 Executive Summary

Diagnostic imaging is a core component of the health care system, allowing appropriate initial diagnosis and ongoing assessment of many medical conditions. Diagnostic imaging involves a wide range of services, delivered using different diagnostic imaging equipment and techniques (often referred to as modalities) and by different clinical professionals.

There are a number of different modalities used in Australia, including:

- ultrasound;
- computed tomography (CT);
- diagnostic radiology (e.g. x-ray, mammography);
- magnetic resonance imaging (MRI); and
- nuclear medicine imaging, including positron emission tomography (PET).

The Department of Health administers Commonwealth funding for medical services, including diagnostic imaging services, through the Medicare Benefits Schedule (MBS) and the National Health Reform Agreements.

In 2016-17 there were over 25 million MBS diagnostic imaging services provided to patients in Australia. The Government, through the Department of Human Services (DHS) Medicare payments system, paid over $3.4 billion in patient rebates. These services were provided in a range of practice settings and by a number of different provider groups.

Of the diagnostic imaging services claimed under the MBS in 2016-17, diagnostic radiology comprised 42 per cent of the services, followed by ultrasound (39 per cent), CT (12 per cent) and then MRI (four per cent) and nuclear medicine imaging (three per cent). Ultrasound and CT accounted for the highest benefits paid at 33 per cent and 29 per cent respectively, followed by diagnostic radiology (17 per cent), MRI (13 per cent) and nuclear medicine imaging (eight per cent).

For the purpose of the payment of Medicare benefits, the Department, via DHS, collects information about diagnostic imaging practices in Australia, including the equipment located at these practices.

A summary of this Submission as it relates to the Terms of Reference for the *Senate Community Affairs References Committee Inquiry into the availability and accessibility of diagnostic imaging equipment around Australia*, follows.

Term of Reference (a) Geographic and other disparities in access to diagnostic imaging equipment

The Australian Government generally does not determine where diagnostic imaging equipment is located. For private diagnostic imaging facilities, these decisions are commercial and taken without influence from the Australian Government. For public diagnostic imaging facilities, these decisions are taken by state and territory governments.

However, for MRI and to a lesser degree PET there are MBS eligibility requirements on where providers can locate the equipment.

Analysis of MBS related data collected for 2015-16 included lag times between the date of request and service. The lag time could be regarded as a proxy of the time a patient waited to have their scan, subject to a number of caveats around patient control over when they make the appointment and other factors.

Key findings of the analysis included:

- For most equipment types, the numbers of diagnostic imaging machines per 100,000 population were much the same across all states and territories.
- Mammography and angiography had the longest national average request/date of service lag times at 52 days and 56 days respectively in 2015-16. For mammography, the lag times for GP and specialist requesting for mammography were 30 days and 95 days respectively. GP-requested services are more likely for women diagnosed with breast cancer for the first time, whereas specialist-requested services are more likely when the patient is or has been under treatment and requires annual follow up scans.
- Patients in Victoria, Western Australia and Queensland had the longest lag times for angiography at 62, 70 and 89 days respectively compared to a national average of 56 days.
- At the Primary Health Networks level for MRI, the average maximum lags were 15 days for GP-requested services (Western Queensland) and 46 days for specialist-requested services (Gold Coast) in 2015-16 compared to national averages of nine and 30 days respectively.

There are no international benchmarks for the optimum number of different types of equipment per capita or lag times between the date the service was requested and when it was rendered. It is therefore not able to be ascertained where Australia is positioned from an international perspective on access issues.

The Organisation for Economic Co-operation and Development (OECD) collects equipment data from its members for CT and MRI. In 2015, Australia ranked 10th in the numbers of CT machines and 20th in the number of MRI machines per million population.

Term of Reference (b) Arrangements for Commonwealth subsidy of diagnostic imaging equipment and services

Patient rebates for diagnostic imaging services are delivered through the MBS.

Each service listed in the MBS is allocated a schedule fee, on which the Medicare benefit is based. The schedule fee generally takes into account all expenses incurred in the delivery of the service, including the capital costs of equipment used to provide the service.

Most schedule fees for diagnostic imaging services were last increased in 2004. The last schedule fee increases were for cardiac ultrasound in 2007.

In 2016-17, some 394.3 million services were funded under the MBS at a cost of $22 billion. Diagnostic imaging services represented 25.7 million services (7 per cent - Figure 1, page 17) and $3.4 billion in benefits (16 per cent - Figure 2, page 18).

Specialist radiologists provided the vast majority of services at 88 per cent in 2016-17 (Table 13, page 20).

Private specialist radiology practices delivered some 78 per cent of the services claimed under the MBS, followed by public facilities at 13 per cent and other practices at 10 per cent (for example, cardiology practices, GP clinics, vascular laboratories and obstetrics and gynaecological practices) (Table 14, page 21).

Eighty four per cent of services provided out of hospital were bulk billed in 2016-17, and thus provided at no out-of-pocket cost for patients. The average out-of-pocket costs for out-of-hospital non bulk billed diagnostic imaging services in 2016-17 was just over $97 (Figure 8, page 23). Out-of-pocket costs have grown at an average annualised rate of four per cent since 2004. This exceeded the average CPI increase of three per cent per annum.

New items are included on the MBS on advice of the Medical Services Advisory Committee (MSAC), which assesses new technologies for comparative safety, effective and cost effectiveness. The MBS Review Taskforce is currently reviewing all items on the MBS, including diagnostic imaging services, to align them with contemporary clinical evidence and practice in order to improve health outcomes for consumers. The Taskforce has established a number of diagnostic imaging specific or related clinical committees and working groups.

In relation to MBS rules for equipment, lower Medicare benefits apply to most equipment types over certain ages (from 10 to 15 years depending on the type). This uses Medicare benefits to incentivise the use of up to date equipment. For MRI, there are MBS rules that confer eligibility on specific equipment. Eligibility for MRI equipment can be transferred on request subject to the applicant satisfying criteria around patient access. MRI MBS eligibility is granted on a full or partial basis, with full machines able to render the full range of MRI services listed in the MBS for rebate purposes. Partially eligible machines are able to render a subset of items, mainly those requested able to be requested by GPs. Partially eligible machine are generally only located in major cities.

As at October 2017, there were 174 fully eligible machines and 174 partially eligible MRI machines operating in Australia. The last general MRI eligibility expansion round was in 2012.

Expansion of MRI eligibility is expensive. For example, upgrading existing partial machines alone would cost around $150 million in extra Medicare benefits per year.

The only other equipment type with Medicare eligibility restrictions is PET, which needs to be located in a comprehensive practice along with cancer care facilities.

All diagnostic imaging practices intending to render any diagnostic services for the purpose of Medicare benefits must be accredited under the Diagnostic Imaging Accreditation Scheme (DIAS). DIAS ensures that diagnostic imaging services funded under the MBS are safe, effective and responsive to the needs of health care consumers and provided by practices which meet specified quality standards. As at 31 March 2017, there were 3,982 practices accredited under DIAS.

The Department engages with the diagnostic imaging profession, industry groups, consumers and other stakeholders to develop policy advice in relation to diagnostic imaging services through both formal

and informal consultative and advisory groups. The formal groups established by the Department are the Diagnostic Imaging Advisory Committee and the Diagnostic Imaging Accreditation Scheme Advisory Committee, who generally meet twice per year.

Term of Reference (c) - Out-of-pocket costs for services that are not subsidised by the Commonwealth and the impact of these on patients

The Department does not keep data for services that do not attract Commonwealth funding and is unable to comment further on the impact of the costs for these services.

However, the MSAC process ensures that Australians have access to medical services that have been shown to be safe and clinically effective, as well as representing value-for-money for both patients and taxpayers. The MSAC process considers stakeholder and independent (evidence based) inputs.

Term of reference (d) - The respective roles of the Commonwealth, states and other funders in ensuring access to diagnostic imaging services

The Department facilitates access to diagnostic imaging services through funding arrangements, however, it has no role in the direct delivery of those services. This is a matter for private providers and state and territory governments.

In addition to funding under the MBS, the National Health Reform Agreement (NHRA) between the Commonwealth and state and territory governments outlines the financing and governance arrangements for Australian public hospital services, including diagnostic imaging services.

The states and territories have committed through the NHRA to provide eligible patients with diagnostic imaging services through the public hospital system free of charge, on the basis of clinical need and within a clinically appropriate period.

The NHRA allows for diagnostic imaging services to be provided by health practitioners in public hospitals and clinics through the MBS under ‘rights of private practice’ arrangements.

MBS data show that public facilities have increased their market share of claiming MBS-funded services by two percentage points over the last 10 years to 2016-17.

2 Background

Diagnostic imaging is a core component of the health care system, allowing appropriate initial diagnosis and ongoing assessment of many medical conditions.

There are a number of different modalities used in Australia, including:

- ultrasound;
- computed tomography (CT);
- diagnostic radiology (e.g. x-ray, mammography);
- magnetic resonance imaging (MRI); and
- nuclear medicine imaging, including positron emission tomography (PET).

Funding for the services is provided and regulated through a combination of Commonwealth and state and territory laws.

Medicare-eligible diagnostic imaging services are regulated through three main pieces of Commonwealth legislation. These are:

- the *Health Insurance Act 1973* (HI Act);
- the *Health Insurance Regulations 1975* (HI Regs); and
- the *Health Insurance (Diagnostic Imaging Services Table) Regulations* (DIST).

In addition, quality service provision is assured through the Diagnostic Imaging Accreditation Scheme (DIAS) under which diagnostic imaging practices must be accredited in order to attract Medicare benefits.

The Australian Government provides patient rebates for a range of diagnostic imaging services, for all the modalities mentioned above, through the Medicare Benefits Schedule (MBS).

In 2016-17 there were over 25 million Medicare-eligible diagnostic imaging services provided to patients in Australia. The Government, through the Department of Human Services (DHS) Medicare payments system, paid over $3.4 billion in patient rebates. These services were provided in a range of practice settings and by a number of different provider groups.

Of the diagnostic imaging services claimed under the MBS in 2016-17, diagnostic radiology comprised 42 per cent of the services, followed by ultrasound (39 per cent), CT (12 per cent) and then MRI (four per cent) and nuclear medicine imaging (three per cent) (see Figure 3). Ultrasound and CT accounted for the highest benefits paid at 33 per cent and 29 per cent respectively, followed by diagnostic radiology (17 per cent), MRI (13 per cent) and nuclear medicine imaging (eight per cent) (see Figure 4).

On 17 August 2017, the Senate referred the following matter to the Senate Community Affairs References Committee for inquiry and report: The availability and accessibility of diagnostic imaging equipment around Australia.

The terms of reference[1] are:

a. geographic and other disparities in access to diagnostic imaging equipment;

b. arrangements for Commonwealth subsidy of diagnostic imaging equipment and services;

c. out-of-pocket costs for services that are not subsidised by the Commonwealth and the impact of these on patients; and

d. the respective roles of the Commonwealth, states and other funders in ensuring access to diagnostic imaging services.

Sections 3 to 6 of this Submission address each of the terms of reference.

3 Geographic and other disparities in access to diagnostic imaging equipment

3.1 Introduction

The Department of Health obtains information about diagnostic imaging practices in Australia under the Location Specific Practice Number (LSPN) provisions of the *Health Insurance Act 1973* for the purposes of administering the Medicare Benefits Schedule (MBS).

The LSPN provisions require diagnostic imaging practices to register with the Department of Human Services, and provide details about their practice type, location, who owns the practices and the types of equipment located at the practice.

For the purpose of the payment of Medicare benefits, diagnostic imaging equipment is classified into five overall groups. These are:

- ultrasound;
- CT;
- diagnostic radiology;
- nuclear medicine (including PET); and
- MRI.

Within some groups, subsets of equipment are recognised.

In 2016-17, diagnostic radiology equipment had the highest utilisation of MBS services at 42 per cent, while the most benefits were paid for ultrasound equipment at 33 per cent (Table 1).

Further information about the MBS and the benefits payable for diagnostic imaging services under it are contained in Section 4 of this Submission.

[1] http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Community_Affairs/Diagnosticimaging

Table 1. Diagnostic imaging equipment types with MBS utilisation 2016-17

Equipment type	Description	Percentage of MBS services claimed	Percentage of MBS benefits paid
Ultrasound	Produces detailed images of the body, using high frequency sound waves produced by a small hand held device known as an ultrasound probe (transducer). The reflected sound waves are detected by the probe and used to create an image which is displayed on the television screen of the ultrasound machine.	39	33
Computed Tomography (CT)	Uses special x-ray equipment to obtain 3D image of the body and then uses computer processing of that information to show a cross-section of the body, including bones and organs.	12	29
Diagnostic Radiology		42	17
General x-ray	Type of picture produced by passing a very small amount of radiation through the body to expose a sensitive detector or film that is positioned on the other side. The image shows the internal structures including the bones and some of the soft tissues. Also known as a radiograph.		
Mammography	Low dose x-ray that provides detailed images of the internal structure of the breast.		
Fluoroscopy	Produces x-rays in real time on a television monitor. In most cases this involves the administration of a contrast agent to outline the region of interest.		
Angiography	Uses the same principle as fluoroscopy but with lower x-ray doses for potentially longer vascular imaging.		
Orthopantomography	Uses x-ray images to produce panoramic images for dental purposes.		
Nuclear Medicine (including Positron Emission Tomography - PET)	Uses small amounts of radioactive material administered to the patient and then captured by detectors.	3	8
Magnetic Resonance Imaging (MRI)	Uses a very powerful magnet and radio-frequency pulses to collect signals that are then processed by a computer to form an image of the body part.	4	13

Source: Department of Health

The Australian Government generally does not determine where diagnostic imaging equipment is located. For private diagnostic imaging facilities, these decisions are commercial and taken without influence from the Australian Government. For public diagnostic imaging facilities, these decisions are taken by state and territory governments.

However, for MRI and to a lesser degree PET (both discussed further in Section 4) there are MBS eligibility requirements on where providers can locate the equipment.

Set out in Sections 3.2.1 to 3.2.5 are tables showing the number of each of the above types of equipment by state and territory, the number of units per 100,000 population and the average time between the date of request for the service by the patient's treating practitioner and the date the service was rendered.

Important notes to the tables

- The equipment information was collected from the LSPN register as at 30 June 2016. As noted earlier the information on the register is provided by practices and the currency of it is their responsibility.

- Australian Bureau of Statistics population figures[2] were used to determine the number of units per 100,000.
- In relation to the average time between the date of request and date of service, it should be noted:
  - that patients generally have control over when they make appointments for their imaging services following a request from the treating practitioner;
  - there are also times when the treating practitioner issues a request with the expectation that the patient will not immediately have the service (for example 12 monthly mammography follow-ups for women diagnosed with breast cancer); and
  - the lag is calculated using actual days, not working days.
- With the above caveats, the lag between the date of request and the date of service could be regarded as a proxy measure of waiting times for services.
- Date of request/service lag times are based on the state/territory of residence of the patient, not where the service was rendered. That is, a patient may have had a service on equipment in one jurisdiction but the service will be recorded in the MBS data against the patient's state/territory of residence.
- Unless otherwise identified, the data for the tables was sourced from MBS data.

3.2 Key comparative geographic analysis

- For most equipment types, the numbers of diagnostic imaging machines per 100,000 population were much the same across all states and territories. As a notable exception, the Northern Territory had 22 general x-ray machines per 100,000 population compared to the national average of 16 (Table 4).
- Apart from x-ray in the Northern Territory, the number of machines does not appear to influence the request/date of service lag times.
- Mammography and angiography had the longest national average request/date of service lag times at 52 days and 56 days respectively in 2015-16. Mammography patients in Victoria and South Australia had the longest lags at 68 and 70 days (Table 5).
- After drilling further down into the lag times between general practitioners (GP) and specialist requesting for mammography, the lag times were 30 days and 95 days respectively. GP requested services are more likely for women diagnosed with breast cancer for the first time. On the other hand, the specialist requested services are more likely when the patient is or has been under treatment and requires annual follow up scans.
- The disparity between states is also less pronounced for GP-requested mammography services, ranging from 23 days for Northern Territory patients to 41 days for South Australian patients.
- Patients in Victoria, Western Australia and Queensland had the longest lag times for angiography at 62, 70 and 89 days respectively compared to a national average of 56 days (Table 7).
- The Department has also undertaken analysis for Primary Health Networks for MRI. The average maximum lags were 15 days for GP-requested services (Western Queensland) and 46 days for specialist-requested services (Gold Coast) in 2015-16 (Table 25 at Appendix 2).
- There are no international benchmarks for the optimum number of different types of equipment per capita or lag times between the date the service was requested and when it was rendered. It is therefore not able to be ascertained where Australia is positioned from an international perspective on access issues.

[2] ABS 3235.0 – Populations by Age and Sex, Regions of Australia 2016, released 27 August 2017 – aggregated to SA3

- The Organisation for Economic Co-operation and Development (OECD) collects equipment data from its members for CT and MRI. In 2015, Australia ranked 10th in the numbers of CT machines and 20th in the number of MRI machines per million population (Appendix 1).

3.2.1 Ultrasound

Table 2. Ultrasound equipment and average time between request and date of service by state and territory 2015-16

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Australia
Number of units	2,963	1,958	1,764	635	875	186	86	162	8,629
Units per 100,000 population	38.3	31.7	36.4	37.1	34.2	35.9	35.0	40.2	35.6
Average time between date of request and date of service (days)	23	22	21	25	21	25	28	26	22

3.2.2 Computed Tomography

Table 3. Computed tomography equipment and average time between request and date of service by state and territory 2015-16

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Australia
Number of units	562	355	302	103	123	21	13	28	1,507
Units per 100,000 population	7.3	5.7	6.2	6.0	4.8	4.1	5.3	6.9	6.2
Average time between date of request and date of service (days)	11	14	13	17	13	13	12	13	13

3.2.3 Diagnostic Radiology

Table 4. General X-ray equipment and average time between request and date of service by state and territory 2015-16

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Australia
Number of units	1,350	890	828	307	356	78	54	58	3,921
Units per 100,000 population	17.4	14.4	17.1	17.9	13.9	15.1	22.0	14.4	16.2
Average time between date of request and date of service (days)	10	12	10	15	11	11	6	11	11

Table 5. Mammography equipment and average time between request and date of service by state and territory 2015-16

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Australia
Number of units	236	145	109	42	37	5	4	13	591
Units per 100,000 population	3.0	2.3	2.2	2.5	1.4	1.0	1.6	3.2	2.4
Average time between date of request and date of service (days) - GP requested	34	28	24	41	30	23	23	27	30
Average time between date of request and date of service (days) - specialist requested	63	114	118	99	97	117	72	77	95
Average time between date of request and date of service (days) - all requesting practioners	42	68	47	70	42	56	39	41	52

Note: The number of mammography machines shown in Table 5 are those providing MBS-eligible mammograms. They do not include mammography machines used under the BreastScreen Australia program, which are not recorded under the LSPN provisions.

Table 6. Fluoroscopy equipment and average time between request and date of service by state and territory 2015-16

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Australia
Number of units	404	315	253	89	155	26	5	22	1,269
Units per 100,000 population	5.2	5.1	5.2	5.2	6.1	5.0	2.0	5.5	5.2
Average time between date of request and date of service (days)	21	17	13	16	24	5	13	19	18

Table 7. Angiography equipment and average time between request and date of service by state and territory 2015-16

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Australia
Number of units	170	102	93	29	45	8	2	11	460
Units per 100,000 population	2.2	1.7	1.9	1.7	1.8	1.5	0.8	2.7	1.9
Average time between date of request and date of service (days)	43	62	89	34	70	36	35	18	56

Table 8. Orthopantomography equipment and average time between request and date of service by state and territory 2015-16

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Australia
Number of units	393	314	249	62	94	22	12	19	1,165
Units per 100,000 population	5.1	5.1	5.1	3.6	3.7	4.3	4.9	4.7	4.8
Average time between date of request and date of service (days)	12	14	14	15	17	16	9	16	14

3.2.4 Nuclear medicine imaging equipment

Table 9. Nuclear medicine imaging equipment (other than PET) and average time between request and date of service by state and territory 2015-16

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Australia
Number of units	202	93	85	30	32	9	1	9	461
Units per 100,000 population	2.6	1.5	1.8	1.8	1.3	1.7	0.4	2.2	1.9
Average waiting time	12	16	15	21	18	13	21	9	14

Table 10. PET equipment and average time between request and date of service by state and territory 2015-16

	NSW	VIC	QLD	SA	WA	TAS	NT*	ACT	Australia
Number of units	18	20	18	2	7	2	0	2	69
Units per 100,000 population	0.2	0.3	0.4	0.1	0.3	0.4	0.0	0.5	0.3
Average waiting time	12	20	19	18	32	34	22	5	19

* Note: A PET machine was committed for Darwin in the 2016 election but has not yet been installed.

3.2.5 Magnetic resonance imaging equipment

Unlike other diagnostic imaging equipment, Medicare eligibility for MRI equipment is not automatically granted. The current arrangements for MRI equipment eligibility are discussed in detail under Section 4.3.2.

MRI eligibility is granted on a full or partial basis. Fully eligible machines are able to attract Medicare rebates for all the MRI services listed in the MBS. Partially eligible MRI units are able to attract Medicare rebates for a subset of MRI items listed on the MBS. These items include: specified GP-requested items, a range of cancer staging services, Poly Implant Prosthese (PIP) breast items, Crohn's disease items and new items added to the MBS on the recommendations of the Medical Services Advisory Committee (MSAC).

Table 11. Medicare eligible MRI equipment by state and territory as at 30 September 2017

		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	TOTAL
Full	**Number**	59	41	37	11	16	6	2	2	174
	Per 100,000 pop	0.8	0.7	0.7	0.6	0.6	1.1	0.8	0.5	0.7
Partial	**Number**	63	41	35	12	16			7	174
	Per 100,000 pop	0.8	0.7	0.7	0.7	0.6	0	0	1.7	0.7
Total	**Number**	122	82	72	23	32	6	2	9	348
	Per 100,000 pop	1.6	1.3	1.4	1.3	1.1	1.1	0.8	2.2	1.4

Table 12. MRI - average time between request and date of service by state and territory 2015-16

Requesting provider	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	TOTAL
GP	9	8	8	10	9	10	10	9	9
Specialist	21	38	29	36	37	27	20	17	30
All providers	17	29	21	28	30	23	18	14	23

4 Arrangements for Commonwealth subsidy of diagnostic imaging equipment and services

4.1 Introduction

The Department of Health administers Commonwealth funding for medical services, including diagnostic imaging services, through the Medicare Benefits Schedule (MBS) and the National Health Reform Agreements.

This section discusses funding under the MBS. Funding arrangements under the National Health Reform Agreements are covered in Section 5.

4.2 Medicare Benefits

4.2.1 Medicare Benefits Schedule

The *Health Insurance Act 1973* (the HI Act) and its associated subordinate legislation and other instruments provide for, and govern, the payment of Medicare benefits for medical services.

Medicare benefits contribute to the cost of the medical expenses incurred for professional services that are listed in one of three tables of the HI Act: the General Medical Services Table, the Pathology Services Table and, relevant to this submission, the Diagnostic Imaging Services Table. Together,

these tables and the provisions of the HI Act and its other subordinate legislation comprise the MBS, including the conditions under which Medicare benefits are payable.

Each service listed in the MBS is allocated a schedule fee, on which the Medicare benefit is based. The schedule fee generally takes into account all expenses incurred in the delivery of the service, including the capital costs of equipment used to provide the service[3].

In 2016-17, some 394.3 million services were funded under the MBS at a cost of $22 billion. Diagnostic imaging services represented 25.7 million services (7 per cent - Figure 1) and $3.4 billion in benefits (16 per cent - Figure 2).

Figure 1. Number of MBS services by category (millions) 2016-17

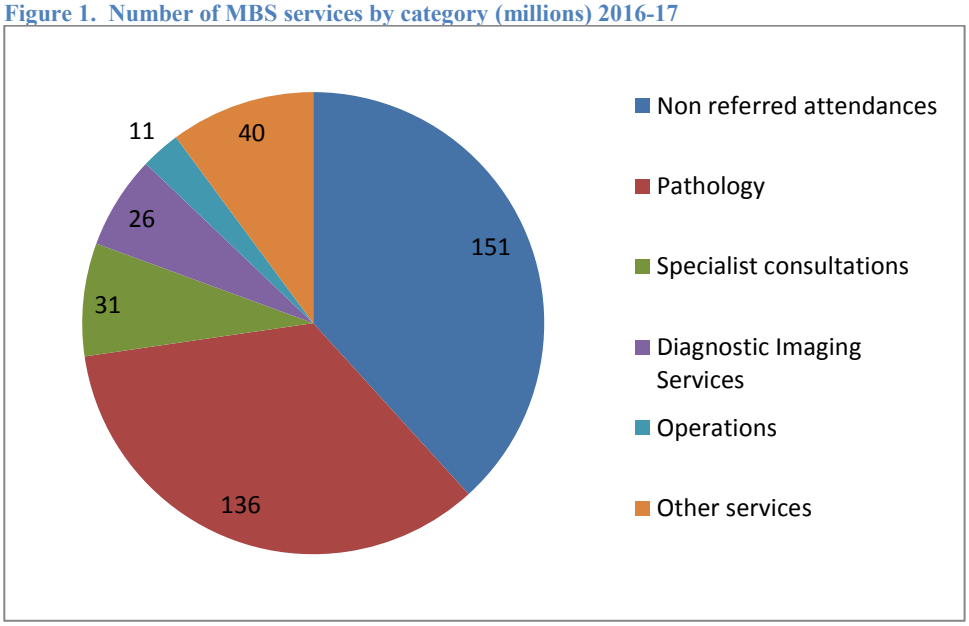
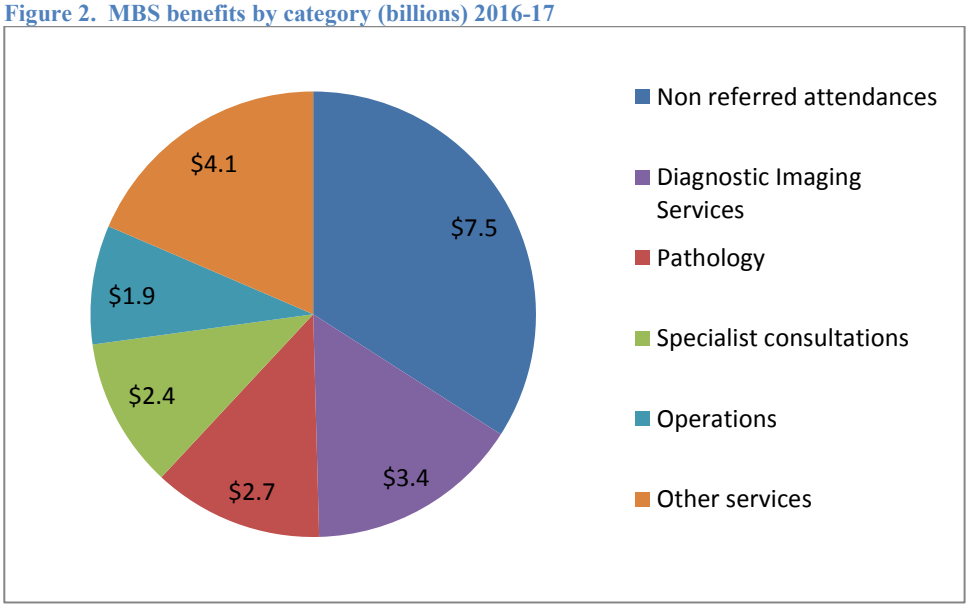


Figure 2. MBS benefits by category (billions) 2016-17



Sources for Figures 1 and 2: Department of Health MBS data

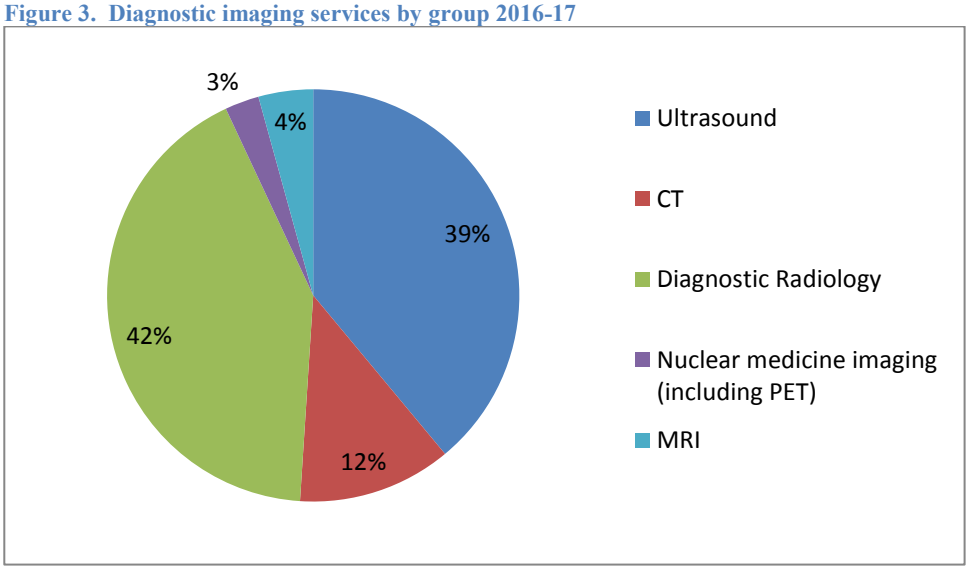
The diagnostic imaging services covered by the MBS and the rules of interpretation for those services are listed in the *Health Insurance (Diagnostic Imaging Services Table) Regulation* (DIST). The DIST

[3] An exception to this is high cost radiation oncology equipment, for which funding is provided under the Radiation Oncology Health Program Grants Scheme.

(as with the general medical and pathology services tables) are fully remade each year in accordance with subsection 4AA(2) of the Act.

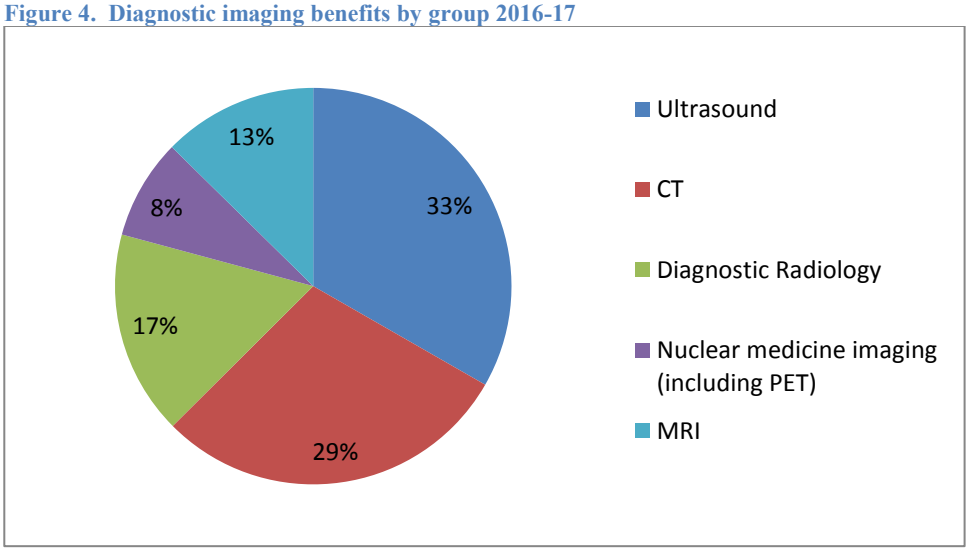
As noted in Section 3, of the diagnostic imaging services claimed under the MBS in 2016-17, diagnostic radiology comprised 42 per cent of the services, followed by ultrasound (39 per cent), computed tomography (12 per cent) and then magnetic resonance imaging and nuclear medicine imaging at 4 percent and 3 per cent respectively (Figure 3). By contrast, ultrasound and CT accounted for the highest benefits paid (Figure 4).

Figure 3. Diagnostic imaging services by group 2016-17



Source: Department of Health MBS data

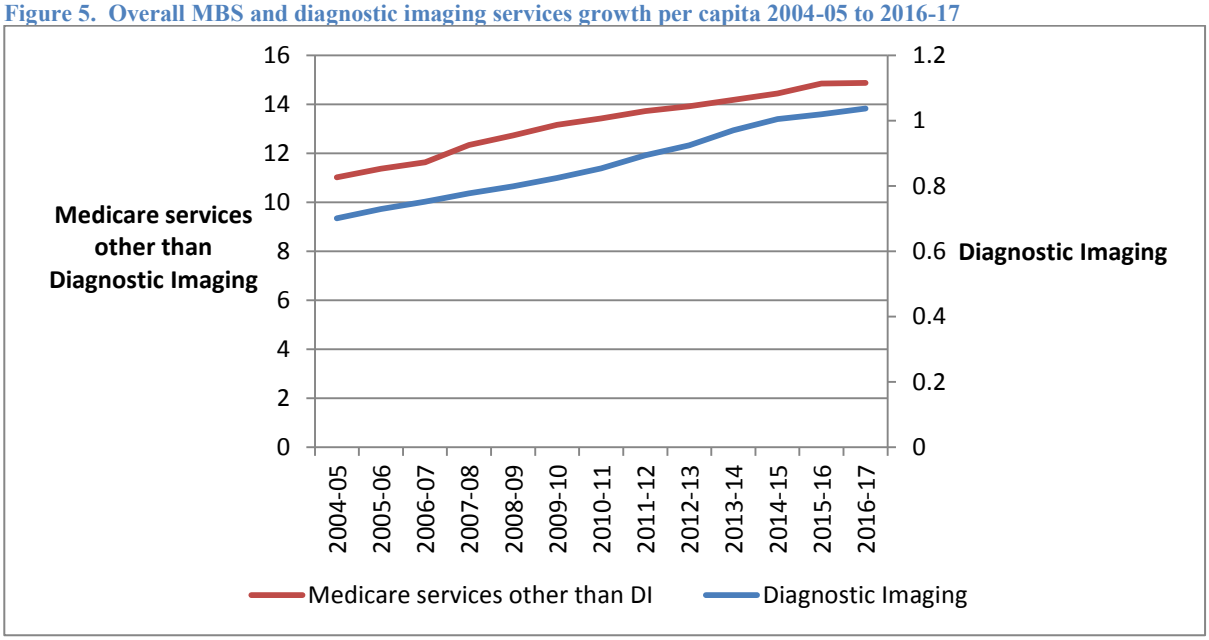
Figure 4. Diagnostic imaging benefits by group 2016-17



Source: Department of Health MBS data

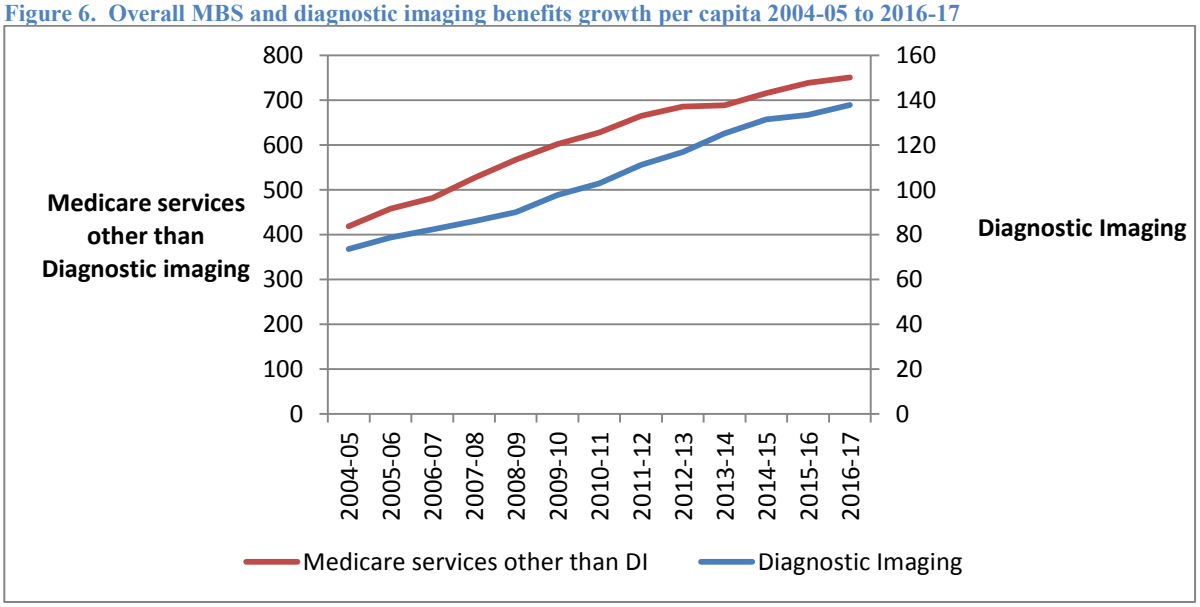
Diagnostic imaging services and benefits growth per capita has mirrored the growth in MBS funded services over the past 13 years with compound annual growth of 3 per cent for services (Figure 5) and 5 per cent for benefits (Figure 6).

Figure 5. Overall MBS and diagnostic imaging services growth per capita 2004-05 to 2016-17



Source: Department of Health MBS data

Figure 6. Overall MBS and diagnostic imaging benefits growth per capita 2004-05 to 2016-17



Source: Department of Health MBS data

4.2.2 Who provides diagnostic imaging services

Diagnostic imaging services are provided by a diverse range of providers and in a variety of practice settings. Specialist radiologists provided the vast majority of services (88 per cent) in 2016-17 (Table 13).

Table 13. Percentage diagnostic imaging services claimed by provider type and group 2016-17

Provider type	Ultrasound	CT	Diagnostic Radiology	Nuclear medicine imaging (including PET)	MRI	Total
Specialist radiologist	75.6%	99.7%	98.1%	37.3%	100.0%	88.0%
Cardiologist	10.8%	0.2%	1.0%	0.5%	0.0%	4.7%
Obstetrics and Gynaecology	5.9%	0.0%	0.0%	0.0%	0.0%	2.3%
Specialist surgeons	4.0%	0.0%	0.4%	0.0%	0.0%	1.7%
Nuclear Medicine Specialist	0.4%	0.1%	0.0%	55.5%	0.0%	1.7%
Internal Medicine Specialist	1.7%	0.0%	0.1%	3.4%	0.0%	0.8%
GP	0.7%	0.0%	0.2%	0.0%	0.0%	0.3%
Paediatrician	0.2%	0.0%	0.0%	0.0%	0.0%	0.1%
Oral and Maxillofacial Surgeon	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
Sport and Exercise Medicine Physician	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Others	0.7%	0.0%	0.1%	3.2%	0.0%	0.4%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Department of Health MBS data

As noted in Section 3 of this submission, the Department collects information about practice types through LSPN registration requirements. There are three broad categories of practice: private specialist radiology practices; public facilities; and other practices, such as GP practices and cardiology practices. Private specialist radiology practices as identified through the LSPN register provided the majority of services (78 per cent) in 2016-17 (Table 14).

Table 14. Percentage diagnostic imaging services claimed by practice type and group 2016-17

Practice type	Ultrasound	CT	Diagnostic Radiology	Nuclear medicine imaging (including PET)	MRI	Total
Private specialist radiology practices	71%	84%	82%	76%	81%	78%
Public facilities	9%	14%	14%	24%	18%	13%
Other practices	20%	2%	4%	0%	0%	10%
Total	100%	100%	100%	100%	100%	100%

Source: Department of Health MBS data

4.2.3 Affordability of diagnostic imaging services

4.2.3.1 Diagnostic imaging MBS fee adjustments

Up until 1 July 1998, decisions about schedule fee increases were generally made annually along with other services in the MBS (except pathology).

From 1 July 1998 to 30 June 2008, diagnostic imaging expenditure was managed under collaborative arrangements (Memoranda of Understanding) with the diagnostic imaging sector. Under these arrangements, funding was capped under annual growth targets, and fees for diagnostic imaging services were increased or decreased to meet the targets. In April 2008, the Government announced that the MoUs would cease and the MBS fees applicable at that time would apply. Diagnostic imaging fees were last adjusted in 2007 (Table 15).

Table 15. Dates of last schedule fee increases for diagnostic imaging services

Group	Date of last schedule fee increase
Ultrasound (except cardiac ultrasound)	1 November 2004
Ultrasound - Cardiac	1 November 2007
CT	1 November 2004
Diagnostic radiology	1 November 2004
Nuclear Medicine Imaging	1 November 2006
MRI	1 July 2006

Source: Department of Health

In the 2017-18 Budget, the Government announced that it would introduce indexation for a range of diagnostic imaging services from 1 July 2020 at an estimated cost of $20.6 million for that year. These services relate to CT, mammography, fluoroscopy and interventional radiology. In 2017-18, these services represented 18 per cent of the total number of diagnostic imaging service claimed and 33 per cent of the Medicare benefits paid. The items to be indexed are shown in Table 16 below.

Table 16. Diagnostic imaging items to be indexed from 1 July 2020

55054, 55848, 55850, 56001, 56007, 56010, 56013, 56016, 56022, 56028, 56030, 56036, 56101, 56107, 56219, 56220, 56221, 56223, 56224, 56225, 56226, 56233, 56234, 56237, 56238, 56301, 56307, 56401, 56407, 56409, 56412, 56501, 56507, 56553, 56619, 56625, 56801, 56807, 57001, 57007, 57201, 57341, 57350, 57351, 57360, 57362, 59300, 59303, 59306, 59309, 59312, 59314, 59318, 60500, 60503, 60506, 60509, 61109

Source: Department of Health

Indexation has a compounding effect on benefit payments and indexation of these targeted items is estimated to increase total diagnostic imaging expenditure by around $700 million over 10 years.

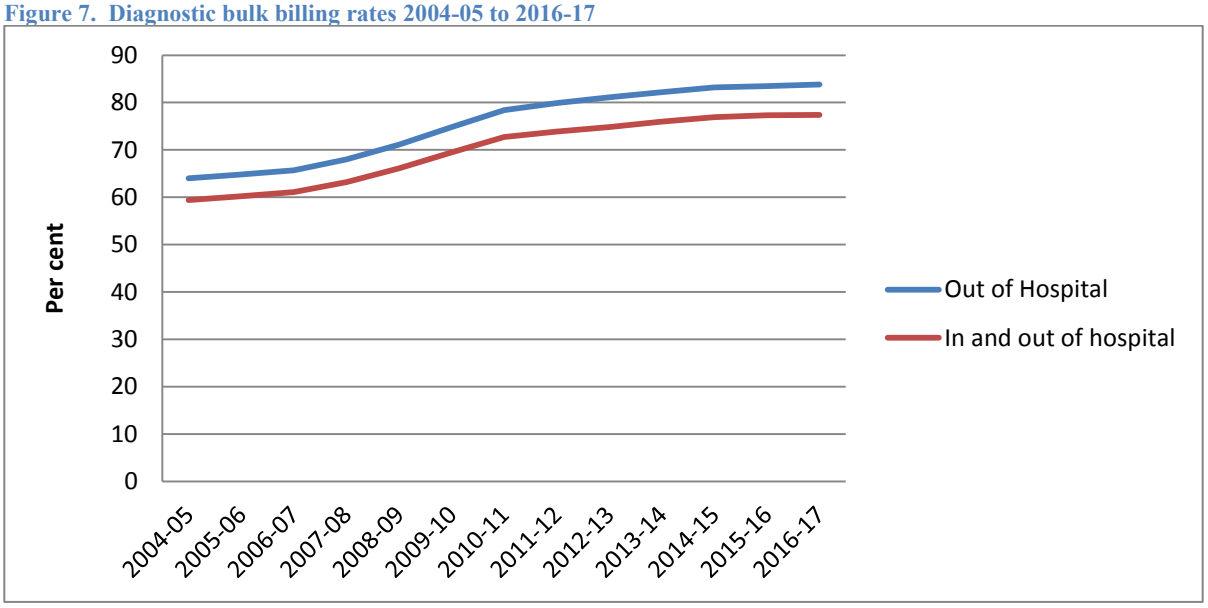
4.2.3.2 Bulk billing

When a provider bulk bills a patient, they do so on the basis that they accept the Medicare benefit as full payment for the service. Bulk billed services are provided to patients with no additional out-of-pocket cost.

For out-of-hospital diagnostic imaging services the general Medicare rebate is 85 per cent of the MBS fee, except for those provided by or on behalf of GPs, where the Medicare benefit is 100 per cent of the MBS fee.

On 1 November 2009, the Government introduced a bulk billing incentive for diagnostic imaging services under which the bulk bill benefit for diagnostic imaging services would increase from 85 per cent to 95 per cent of the schedule fee. This was extended on 1 May 2012 so that bulk billed MRI services would attract 100 per cent of the schedule fee. The bulk billing rate for 2016-17 for out-of-hospital services was over 83.8 per cent (Figure 7).

Figure 7. Diagnostic bulk billing rates 2004-05 to 2016-17



Source: Department of Health MBS data

Table 17. Diagnostic imaging bulk billing rates by group for out-of-hospital services 2016-17

Billing type	Ultrasound	CT	Diagnostic Radiology	Nuclear medicine imaging (including PET)	MRI	Total
Bulk billed	76%	90%	89%	92%	86%	84%
Not bulk billed	24%	10%	11%	8%	14%	16%
Total	100%	100%	100%	100%	100%	100%

Source: Department of Health MBS data

4.2.3.3 Patient out of pocket costs for non-bulk billed services

MBS claiming data allow the identification of the difference between the fee charged by the provider for each item and the amount of benefit paid for that item.

The Department publishes this data for various categories of services in the MBS. For services provided to private admitted patients of a public or private hospital, or private patients who receive services as hospital substitute services, the Medicare benefit payable is 75 per cent of the MBS fee. For patients with an appropriate private hospital cover, the health fund is required to pay, at a minimum, the difference between the Medicare benefit and the MBS fee.

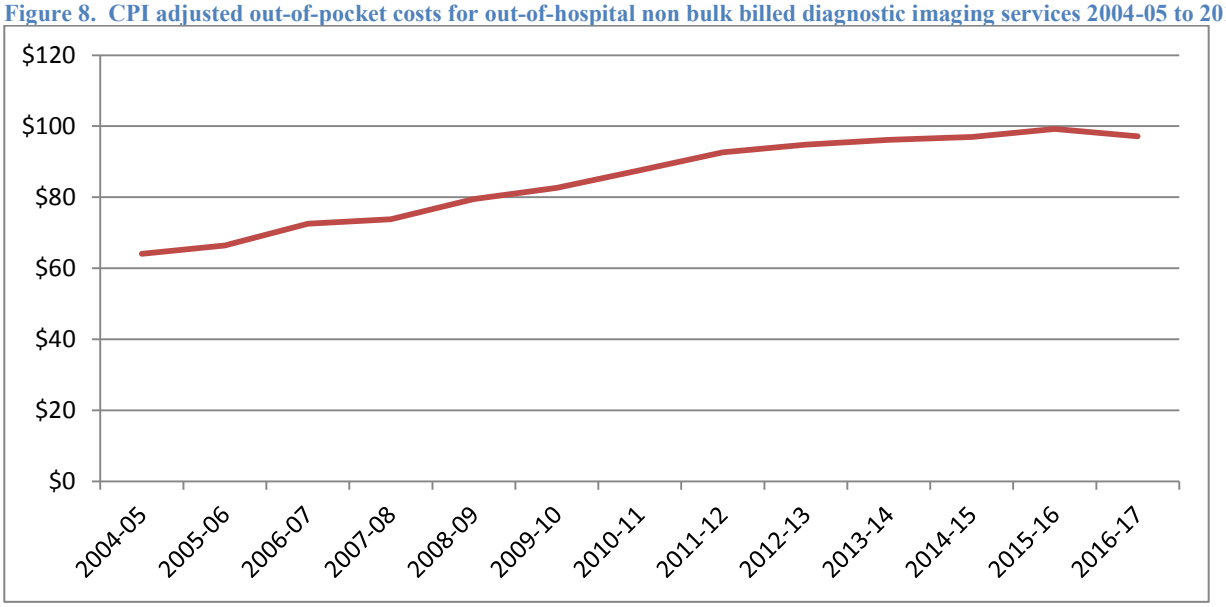
Private health funds can also pay above the schedule fee under any gap cover arrangements they may have with the provider of the service. These data are not collected under the MBS. However, the Australian Prudential Regulation Authority (APRA) collects data on in-hospital services with no gap and under known gap agreements[4]. Private health insurers are not generally permitted to cover the gap for out-of-hospital services for which a Medicare benefit is payable[5], but can choose to for services not covered by the MBS.

[4] Reported quarterly by APRA in their publication *Private Health Insurance – Medical Services*.
[5] Private health insurers are permitted to cover out-of-hospital services for which a Medicare benefit is payable where they meet the requirements of Rule 10 of the *Private Health Insurance (Health Insurance Business) Rules 2016*.

In addition, for diagnostic imaging services, in-hospital services represent a very small portion of the total number of service rendered (three per cent in 2016-17). For these reasons, the Department primarily considers out-of-hospital services when analysing out-of-pocket costs to patients[6].

Figure 8 below shows the average patient contribution (out-of-pocket costs) for services rendered out-of-hospital for the period 2004-05 to 2016-17, adjusted to reflect the effect of the consumer price index (CPI) over that time. The actual average out-of-pocket cost for 2016-17 was $97.11 as shown in the figure. The actual average out-of-pocket cost in 2004-05 was $47.79 which equates to $64.05 in today's value. Excluding the effect of CPI, out-of-pocket costs have grown in real terms by an average of one per cent per annum over this period.

Figure 8. CPI adjusted out-of-pocket costs for out-of-hospital non bulk billed diagnostic imaging services 2004-05 to 2016-17



Source: Department of Health MBS data and ABS CPI indexes http://www.abs.gov.au/ausstats/abs@.nsf/exnote/6401.0

4.2.4 MBS Reviews

In 2015 the Government established the MBS Review Taskforce (the Taskforce) to undertake a program of work that considers how the more than 5,700 items on the MBS can be aligned with contemporary clinical evidence and practice in order to improve health outcomes for consumers.

The Taskforce is committed to providing recommendations to the Minister for Health that will allow the MBS to deliver on the following key goals:

- affordable and universal access;
- best-practice health services;
- value for the individual consumer; and
- value for the health system.

The MBS Review is led by clinicians.

4.2.4.1 Diagnostic imaging committees and working groups

In relation to diagnostic imaging, the Taskforce established a number of sub-committees and working groups. These are listed below.

[6] APRA does not collect data on out-of-hospital services with no gap or under known gap agreements.

- Diagnostic Imaging Clinical Committee
- Breast Imaging Working Group
- Imaging of the Knee Working Group
- Imaging for Pulmonary Embolism and Deep Vein Thrombosis Working Group
- Nuclear Medicine Working Group
- Upper and Lower Limb Working Group
- Vascular Surgery and Interventional Radiology Working Group

As diagnostic imaging services are delivered by a broad range of providers, profession-specific working groups have also been established to review all MBS listed items, including the non-diagnostic imaging items, that fall within the scope of practice of those provider groups. Two such groups are the Obstetrics Clinical Committee and the Cardiac Services Clinical Committee.

Details of these committees and working groups can be found at http://www.health.gov.au/internet/main/publishing.nsf/Content/MBSR-committees#wor .

All diagnostic imaging items will be reviewed.

Recommendations made by the respective committees are released via the Taskforce for public consultation. Feedback from the consultations is considered by the Taskforce which subsequently makes recommendations to the Government.

4.2.4.2 Diagnostic imaging consultation reports

The most recent Taskforce reports involving diagnostic imaging that have been published for consultation are:

Still open for consultation

- Cardiac services - http://www.mbsreview.com.au/reports/cardiac-report.html

Consultations now closed

- Knee imaging - http://mbsreview.com.au/reports/ki-report_1.html
- Pulmonary Embolism and Deep Vein Thrombosis - http://mbsreview.com.au/reports/pedvt-report_1.html

Reports previously accepted by the Minister

- Removing obsolete items - http://www.health.gov.au/internet/budget/publishing.nsf/Content/budget2016-factsheet10.htm
- Reducing unnecessary spinal x-rays - http://www.health.gov.au/internet/main/publishing.nsf/content/MBSR-reducing-unnecessary-spinal-x-rays

4.2.4.3 Taskforce recommendations actioned

- Obsolete items – implemented 1 July 2016
- Reducing unnecessary spinal x-rays – to be implemented 1 November 2017

4.2.5 Medical Services Advisory Committee

Applications for public funding of medical services, including diagnostic imaging services, can be made to the Department for consideration by the Medical Services Advisory Committee (MSAC). The

MSAC is an independent non-statutory committee established by the Australian Government Minister for Health in 1998 and comprises individuals with expertise in clinical medicine, health economics and consumer matters.

MSAC appraises new medical services, and provides advice to Government on whether a new medical service should be publicly funded (and if so, its circumstances) on an assessment of its comparative safety, clinical effectiveness, cost-effectiveness, and total cost, using the best available evidence. Amendments and reviews of existing services funded on the MBS or other programmes (for example, blood products or screening programmes) are also considered by MSAC. This process ensures that Australians have access to medical services that have been shown to be safe and clinically effective, as well as representing value-for-money for both patients and taxpayers.

Current MSAC applications for diagnostic imaging services and their stage in the assessment process are shown are in Table 18.

Table 18. Current diagnostic imaging MSAC applications

Application Number	Application title	Status
1490	Breast Magnetic Resonance Imaging for Breast Implant Associated Anaplastic Large Cell Lymphoma	Scheduled to be considered at the 29/9/2017 MSAC Executive Meeting - seeking guidance on the most appropriate MSAC pathway
1467	Obstetric MRI	Expected to be considered at the 28/3/2018 MSAC meeting
1372.1	MRI for patients with colorectal carcinoma (CRC) with suspected hepatic metastases or patients with suspected hepatocellular carcinoma (HCC) for the purposes of staging	Expected to be considered at the 28/3/2018 MSAC meeting
1464	Breast Magnetic Resonance Imaging for improved definition of the breast cancer	Expected to be considered at the 26/7/2018 MSAC meeting
1397	mpMRI prostate diagnostic scans	Expected to be reconsidered at the 28/3/2018 MSAC meeting

Source: Department of Health

Diagnostic imaging MSAC applications that the Department is currently working towards implementing are shown in Table 19.

Table 19. MSAC applications in the process of implementation

Application Number	Application title
1479R	Substitution of Ga-68-DOTA peptide PET/CT scanning (in lieu of Octreotide) for patients with neuroendocrine gastroenteropancreatic tumours (GEP-NETs)
1432	Cardiac MRI – Cardiomyopathy – Part B

Source: Department of Health

4.3 Special MBS provisions for diagnostic imaging equipment

4.3.1 Capital Sensitivity

As noted earlier, the MBS fee for diagnostic imaging services takes into account the capital costs of equipment used in the delivery of a service. There is no additional or separate funding for the equipment.

However, almost all diagnostic imaging services listed, excluding PET services, have two different schedule fees, i.e. 'mirror' items. This is known as the capital sensitivity measure. The measure is intended to improve the quality of imaging and improve patient access to newer, better quality equipment, and reduce exposure to unnecessary radiation, by encouraging providers to upgrade or replace old equipment.

These mirror items are known as schedule K items and schedule NK items. A schedule K item relates to diagnostic imaging services performed on newer or upgraded equipment. A schedule NK item relates to diagnostic imaging services performed on older or aged equipment, with approximately 50 per cent of the schedule K item fee applying. Schedule NK items are typically identified by the addition of the letters '(NK)' at the end of the item descriptor for individual items. An example of a K and NK item for the same service is provided below.

Table 20: K and NK schedule items for a chest x-ray

Item Type	MBS Item Number	MBS Item Descriptor	MBS Fee
K schedule item	58506	CHEST (lung fields) by direct radiography (R)	$60.75
NK schedule item	58508	CHEST (lung fields) by direct radiography (R)(NK)	$30.40

Source: Department of Health

The number of NK items claimed is very small in comparison to K items (less than one per cent), which indicates the measure has been effective in ensuring that in metropolitan areas, older equipment has been replaced by new or upgraded equipment. The exemptions for non-metropolitan areas has ensured continued access to imaging services in these areas, albeit in some circumstances on older equipment.

4.3.1.1 Age of equipment

'Life age' is the technical term used to describe how old an item of equipment is under the capital sensitivity measure. When equipment has reached its life age, the NK item applies unless there is an exemption.

The age of equipment is determined by 'the date that the equipment was first installed in Australia' or 'if the equipment was imported as used equipment – the date of manufacture of the oldest component of the equipment'. The requirements are set out in more detail in Appendix 3.

The two key aspects of life age of equipment are:

- new effective life age; and
- maximum extended life age.

Equipment that has not been upgraded is classified by the 'new effective life age' of the equipment. Equipment that has been upgraded is classified by the 'maximum extended life age' of the equipment. To avoid double counting, the time period specified for the 'maximum extended life age' includes the

relevant number of years under the 'new effective life age'. The time periods for the 'new effective life age' and 'maximum extended life age' varies according to type of equipment. A table summarising these ages is provided at Appendix 3.

An update is 'an additional reasonable investment has been made within the new effective life age for the diagnostic imaging equipment that improves the overall performance of the imaging system so that it is equivalent to new diagnostic imaging equipment supplied in Australia at the time of the improvement'.

4.3.1.2 Exemptions

There are a number of exemptions to the capital sensitivity measure:

- automatic exemptions based solely on the location of the practice; and
- exemptions granted upon application to the Secretary of the Department of Health based on a number of factors.

Automatic exemptions apply to equipment in practices in outer regional, remote, and very remote Australia.

The exemptions provided upon application to the Secretary (delegated to the relevant Assistant Secretary) are where the equipment:

- is located in an inner regional area;
- does not exceed the maximum extended life age by three years or more;
- is operated on a rare and sporadic basis; and
- provides crucial patient access to diagnostic imaging services.

4.3.1.3 Reforms

Over time, there have been reforms to the capital sensitivity measure, focused on expanding the number of modalities subject to the measure, and increasing the time periods for the maximum extended life age.

The capital sensitivity measure has been raised with the Taskforce for consideration.

4.3.2 MRI

4.3.2.1 MBS eligibility of machines

Unlike other diagnostic imaging services (except PET equipment discussed under Section 4.3.3) where there are no controls on MBS eligibility for particular pieces of equipment and where they are located, access to MRI equipment has been managed by successive Governments since it was first listed on the MBS in 1 September 1998. Prior to this, MRI was funded by the Commonwealth via a targeted and cost shared grants program with state and territory governments. Under the program, 18 publicly owned units were funded to provide MRI services free of charge to patients.

When MRI was first listed on the MBS, all machines operating in Australia or planned to be operational as at 7.30pm on 12 May 1998 were allocated MBS eligibility, taking the number of eligible machines to 38. Since then, access to MBS eligibility for MRI units has been provided using a mix of methods, including open tender, Invitation To Apply (ITA) and direct listings. These expansion processes were actioned for a range of reasons including election commitments, the recommendations of formal reviews and under collaborative arrangements with the sector. A key factor underlying these expansion processes has been increasing demand for services, and unmet need, particularly as MRI

became mainstream. As noted in Section 3.2.5, the total number of operating MBS eligible machines (full and partial) is now 348. A schematic showing the expansion rounds for MBS eligible units is shown at Appendix 4.

MBS eligibility for MRI is currently conferred via the DIST through a Deed of Undertaking between the MRI provider and the Commonwealth. Eligibility is granted to a specific provider, in a specified location, for a specific piece of equipment.

In addition, the equipment needs to be located at a comprehensive practice, that is, a practice that also offers at least x−ray, ultrasound and CT services.

4.3.2.2 Transfer of MRI MBS eligibility

MRI Deed holders can apply to the Department to transfer their eligibility to another site. This can either be on a temporary or permanent basis. Temporary transfers are usually short term and requested for reasons such as equipment or building maintenance. Permanent transfers are requested in situations such as the sale or relocation of a business. When assessing requests from MRI providers to transfer MRI MBS eligibility, the Department takes into account, among other things:

- patient outcomes – whether the transfer will improve patient access and contribute to better health outcomes for the identified patient population;
- access to Medicare-eligible MRI services, including factors such as current waiting times for access to existing Medicare-eligible MRI services in the area; and
- service population, for example, if the relocated equipment will service substantially the same patient population.

A new Deed in respect of the transferred equipment needs to be entered into by the provider. The Department of Human Services is notified of the transfer so that it can update payment systems to allow for claims to be paid.

In 2016-17, the Department actioned 44 transfer requests and approved 43 (Table 21).

Table 21. Medicare-eligible MRI transfers 2016-17

Type of transfer	Approval status	
	Requested	Not approved
Permanent	30	1
Temporary	14	0
Total	44	1

Source: Department of Health

4.3.2.3 Expansion of access to MRI

In 2016-17 it has been estimated that, on average, each fully eligible machine attracted Medicare benefits of approximately $1.6 million and the average benefit for each partial machine was around $750,000.

Upgrading all partial machines to full eligibility is estimated to cost approximately $150 million per year, if all machines were operating at full capacity.

Full deregulation, that is upgrading all partial machines and conferring eligibility on existing ineligible machines (the Department understands that there are around 160 ineligible machines operating in Australia), is estimated to cost over $400 million per year, if all machines were operating at full capacity.

4.3.3 PET

PET equipment can be located anywhere as long as it is within a facility that has comprehensive cancer services for Medicare benefits purposes. The DIST defines a comprehensive facility as a

> 'building or part of a building, or more than one building, where all of the following services are performed (whether or not other services are also performed):
>
> (a) PET;
> (b) computed tomography;
> (c) diagnostic ultrasound;
> (d) medical oncology;
> (e) radiation oncology;
> (f) surgical oncology;
> (g) x-ray.'

Providers of PET services are required by the DIST to make a statutory declaration to the Department of Human Services stating that they, among other things, provide services in a comprehensive facility.

The requirement for PET services to be provided in a comprehensive facility was introduced when Medicare benefits became available for PET services in 2005. At that time there were only three indications funded: epilepsy; solitary pulmonary nodules; and non-small cell lung cancer. Medicare benefits became available for PET for those three diseases through facilities that provided an appropriate quality of service as part of comprehensive oncological and neurological care. Comprehensive facility arrangements were included as part of the framework to ensure quality for an evolving diagnostic imaging tool.

While MBS indications for PET expanded, the comprehensive practice criterion was not reviewed until 2010. At that time, stakeholder views were divided as follows:

- Those that considered that the delivery of high quality PET services was dependent upon availability of appropriate staff/equipment/facilities and appropriate links to oncology services (medical, surgical and radiation), but not dependent upon the co-location of the PET facility on the same physical site; and
- Those of the view that co-location of PET services with a comprehensive cancer centre, in a major teaching hospital important for cancer management, and research and training at these facilities encourages the recruitment and retention of staff. The management of oncology patients is a multidisciplinary process and best patient outcomes are achieved when all clinical information is available through integrated Radiology Information Systems with Patient Archiving Communication Systems (RIS/PACS).

On balance, the outcomes of that review were to amend the then definition of a comprehensive facility by removing the then requirements for a covered pedestrian walkway between multiple buildings, and for neurology services to be performed at the facility, noting that the majority of PET services were oncological.

The requirement for PET services to be co-located with a comprehensive cancer centre has not been reviewed since 2010.

While not regulated under the MBS, providers need to consider a number of issues such as specialised staff, equipment, infrastructure and access to radioisotopes before establishing a PET service. The radioisotopes used in PET scans are manufactured in medical cyclotrons. Radioisotopes begin to decay as soon as they are manufactured and this process is measured in a time period called a half-life. The half-life of the radiopharmaceutical ^{18}F-fluoro deoxy glucose (FDG) used in PET scans is 110 minutes, which makes it is difficult to transport the isotopes around Australia

There are a number of commercially operated cyclotrons in Sydney and Melbourne, which manufacturer and transport radioisotopes used for PET scans. However, some large hospitals have incorporated cyclotrons into their facilities and manufacture the radioisotopes onsite as they are needed.

4.4 Quality and safe delivery of diagnostic imaging services

4.4.1.1 The Diagnostic Imaging Accreditation Scheme

All diagnostic imaging practices intending to render any diagnostic services for the purpose of Medicare benefits must be accredited under the Diagnostic Imaging Accreditation Scheme (DIAS). The DIAS was developed to ensure safety and quality standards for diagnostic imaging practices. It was established in June 2007 through the *Health Insurance Act 1973* (the HI Act), which links mandatory accreditation to the payment of Medicare benefits for diagnostic imaging services listed in the DIST.

The role of the DIAS is to ensure that diagnostic imaging services funded under the MBS are safe, effective and responsive to the needs of health care consumers and provided by practices which meet specified quality standards. As at 31 March 2017, there were 3,982 practices accredited under DIAS.

Accredited practices under the DIAS must demonstrate their ability to meet a range of Practice Accreditation Standards (the standards). The most current DIAS standards came into effect on 1 January 2016, and relate to:

- Organisational standards which ensure that accredited practices have policies and procedures in place to meet the requirements of the DIAS, as well as processes to manage staff registration and licensing, radiation safety requirements, equipment management and maintenance, and infection control.
- Pre-procedure standards which ensure that diagnostic imaging procedures are only undertaken where there is an identified clinical need where the patient has met any relevant MBS requirements, and where the patient has provided informed consent to the procedure. These standards also ensure patients are correctly identified prior to the procedure, and any medication risks are managed.
- Procedure standards which ensure that the practice has documented protocols regarding the diagnostic imaging procedures they provide, and policies which support the management of radiation exposure.
- Post-procedure standards which ensure that accredited practices effectively communicate the results of diagnostic imaging procedures to the requesting practitioner, document the results of procedures, and manage consumer and stakeholder feedback (including complaints management).

There are currently three organisations appointed by the Minister for Health as the organisations with the authority to accredit practices under s.23DZZIAA of the Act. These organisations accept applications for accreditation from providers of diagnostic imaging services, perform desk top audits to

assess compliance with DIAS standards, and grant accreditation. The Department of Health has a Deed of Agreement with each of the accreditors which sets out the terms and conditions of their approval and the rules for conducting accreditation activities. Accreditors also advise the Department of Human Services of practices' accreditation status and liaise with the Department of Health as required.

More information about the DIAS, the standards and associated information resources, and the accreditors is available on the Department of Health website http://www.health.gov.au/internet/main/publishing.nsf/Content/di-quality.

4.4.1.2 Quality Framework

The Royal Australian and New Zealand College of Radiologists (RANZCR) and the Australian Diagnostic Imaging Association (ADIA) have jointly developed a *Quality Framework* to underpin sustainable, quality medical imaging.

The Quality Framework has four key priority areas:

1. supervision of CT;
2. supervision of mammography and ultrasound of the musculoskeletal system;
3. the development of quality protocols for images captured at a different location than where they are reported on by the reporting practitioner; and
4. minimum qualification requirements for those undertaking diagnostic ultrasound.

The immediate priority for RANZCR and ADIA is supervision of CT and they have proposed that for metropolitan areas only ((RA1 - major cities[7]) there should be: strict on-site rules for CT and CT Coronary Angiography (CTCA) with the administration of contrast; and general on-site rules for CT and CTCA without contrast administration; and a general on-site rule or off-site rule for cone-beam CT as shown in Table 22 below.

Table 22. RANZCR and ADIA proposed CT supervision changes for metropolitan areas

Strict on-site rule The specialist: (i) be on-site while the diagnostic imaging procedure is being performed; and (ii) be available to supervise and guide the conduct and diagnostic quality and safety of the diagnostic imaging procedure; and (iii) where necessary, and in accordance with accepted medical practice, attend on the patient personally during the conduct of the diagnostic imaging procedure. Except if the service is performed in an emergency or outside ordinary working hours at a hospital.
General on-site rule The specialist must be on-site during ordinary working hours, except for reasonable breaks and clinical meetings (up to a maximum of three hours per day), and must: (i) be available to supervise and guide the conduct and diagnostic quality and safety of the diagnostic imaging procedure; and (ii) where necessary, and in accordance with accepted medical practice, attend on the patient personally during the conduct of the diagnostic imaging procedure. Except if the service is performed in an emergency.

[7] Using the Australian Standard Geographical Classification (ASGS) Remoteness Areas http://www.doctorconnect.gov.au/

Off-site supervision rule

An off-site specialist must:

(i) be available off-site at a workstation within a picture archiving and communication system (PACS) network while the imaging is being performed;

(ii) have access to the digital images via a secure high-speed network; and

(iii) be available to supervise and guide the conduct and diagnostic quality and safety of the examination, and where necessary, and in accordance with established medical practice, verbally communicate with the imaging technician during the conduct of the procedure.

Source: Department of Health

The Quality Framework is complex with significant implications for the sector. The Government is currently considering implementation of the Quality Framework.

4.5 Stakeholder engagement

In addition to stakeholder engagement processes for MSAC and the MBS Reviews Taskforce, the Department has established formal diagnostic imaging consultative and advisory committees.

4.5.1 Diagnostic Imaging Advisory Committee

The Diagnostic Imaging Advisory Committee (DIAC) includes stakeholders representing the professional and industry groups involved in the delivery of diagnostic imaging services. Its role is to provide a forum for the diagnostic imaging industry, clinicians, government and consumer representatives to advise the Department of Health on diagnostic imaging matters relating to the MBS.

The DIAC usually meets twice a year. The current membership of the DIAC is shown at Appendix 5.

4.5.2 Diagnostic Imaging Accreditation Scheme Advisory Committee

The Diagnostic Imaging Accreditation Scheme Advisory Committee (DIASAC) was established to ensure that appropriate quality and safety standards of practice are applied to MBS funded diagnostic imaging. Its role is to provide the Department of Health with assistance and advice on the development of policy under the DIAS (discussed in Section 4.4.1.1).

Members of the DIASAC are diagnostic imaging sector experts chosen from nominees of the diagnostic imaging related professional colleges and organisations. The current membership of the DIASAC is shown in Appendix 6.

5 Out-of-pocket costs for services that are not subsidised by the Commonwealth and the impact of these on patients

The Department does not keep data for services that do not attract Commonwealth funding and is unable to comment further on the impact of the costs for these services.

As noted under Section 4.2.5, before medical services are publicly funded and listed on the MBS, they need to be assessed by MSAC for comparative safety, clinical effectiveness, cost-effectiveness, and total cost, using the best available evidence. This process ensures that Australians have access to medical services that have been shown to be safe and clinically effective, as well as representing value-for-money for both patients and taxpayers.

The MSAC process is robust and considers stakeholder and independent (evidence based) inputs.

6 The respective roles of the Commonwealth, states and other funders in ensuring access to diagnostic imaging services

6.1 Introduction

As noted under Section 4, the Department of Health administers Commonwealth funding for medical services, including diagnostic imaging services, through the MBS and the National Health Reform Agreement (NHRA).

The Department facilitates access to diagnostic imaging services through funding arrangements, however, it has no role in the direct delivery of those services. This is a matter for private providers and state and territory governments.

Funding under the MBS has been explored in Section 4. The rest of this Section discusses the NHRA.

6.2 National Health Reform Agreement

The NHRA is an agreement between the Commonwealth and state and territory governments that outlines the financing and governance arrangements for Australian public hospital services, including diagnostic imaging services.

Under the NHRA, Commonwealth provides a contribution to the cost of delivering public hospital services (including diagnostic imaging) under a system of activity based funding. Activity based funding ensures funding is provided to hospitals based on the volume and type of services delivered to patients.

The states and territories are the system managers of their respective hospital systems, responsible for the day-to-day administration of public hospital services in their jurisdictions. This includes, for example, the purchase and maintenance of diagnostic imaging equipment and employment of relevant imaging personnel.

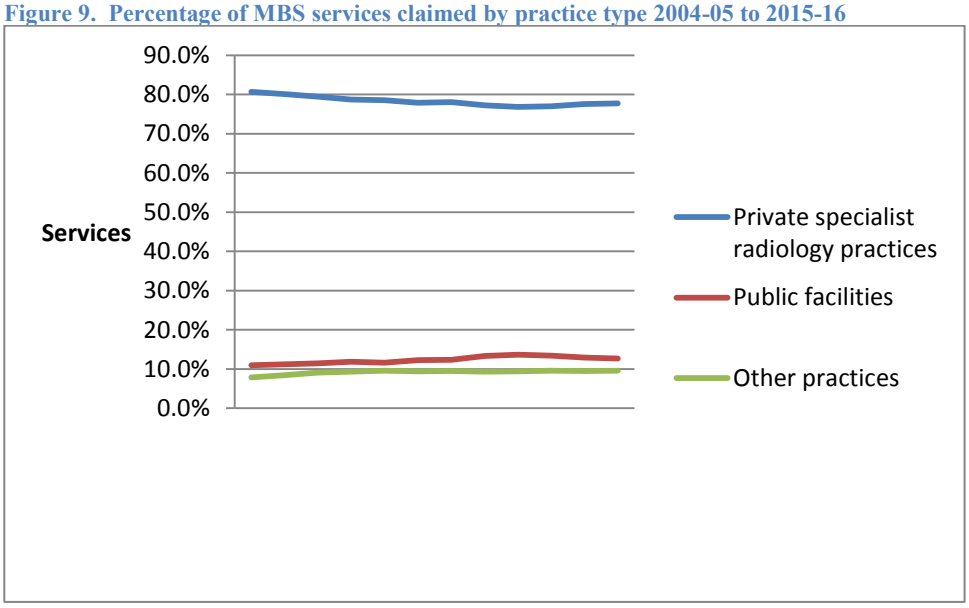
The states and territories have committed through the NHRA to provide eligible patients with diagnostic imaging services through the public hospital system free of charge, on the basis of clinical need and within a clinically appropriate period.

The NHRA allows patients of public hospitals to elect to be treated as private patients (in the case of admitted patients and patients undergoing hospital substitute treatment) and charges to be raised where medical practitioners at the hospital have provided the service under rights of private practice arrangements. These services are funded through a combination of MBS benefits, private health insurance (admitted and hospital substitute patients), and individual patient contributions.

There have been concerns from the private sector that public hospitals have an increased capacity to deliver bulk-billed services and to generate significant profit margins from a range of strategies, including managing referral streams to shift the costs to the MBS for non-admitted patient services, being double funded under the NHRA and having a subsidised cost base.

Data show that public facilities have increased their share of claiming MBS funded services by two percentage points over the last 10 years to 2015-16 whereas the private specialist radiology practice share has reduced by three percentage points (Figure 9).

Figure 9. Percentage of MBS services claimed by practice type 2004-05 to 2015-16



Source: MBS data extraction April 2017 (Q20747). Note: The practice types are as identified on the Location Specific Practice Number register. Practices self-identify their type for the purposes of the register. Other practices include GP practices, cardiology practices, obstetrics and gynaecological practices, vascular laboratories etc.

Appendix 1: OECD CT and MRI machine numbers

Table 23. CT machines per million population OECD countries to 2015

Country	1998	2003	2008	2013	2015
United States		58.5		86.9	81.9
Iceland	18.3	41.5	63.0	80.3	79.0
Denmark		28.9	43.0	75.5	75.6
South Korea	23.1	31.9	73.1	75.3	74.6
Switzerland	19.0	18.0	32.0	73.2	
Greece			31.1	70.2	
Latvia		27.1	47.8	69.6	
Germany	10.6	55.1	62.3	67.4	
Italy	36.0	47.8	61.9	66.2	
Austria	52.2	54.4	59.4	59.2	
Australia	24.2	40.6		53.7	59.6
Lithuania		18.2	27.5	47.3	
Luxembourg	25.9	26.6	53.2	44.2	35.5
Finland	24.4	28.0	0.0	43.4	42.8
Estonia			29.9	37.9	
Spain	10.1	12.9	14.7	35.2	
Poland	3.5	6.3	10.9	34.2	
Slovakia		18.2	27.5	30.7	
Czech Republic	8.1	12.7	26.8	30.1	
France	13.3	16.1	21.7	29.0	33.2
Chile				24.5	
Slovenia			24.7	24.3	26.2
Netherland			20.4	23.1	
Belguim		10.3	13.4	22.2	
Portugal		9.0	55.1	20.3	
Israel	11.1	11.7	16.7	18.1	19.7
Ireland			14.3	17.8	17.9
New Zealand	8.9	11.4	12.4	16.7	17.8
Canada		20.5		14.7	15.0
Turkey		5.6	10.7	13.9	
Russia	2.3		5.0	11.3	
Mexico		3.0	4.0	10.7	
United Kingdom		6.9	7.3	7.9	
Hungary	5.0	6.5	7.1	7.9	
Japan			97.0		
Sweden					20.4
Brazil			11.4		

Table 24. MRI machines per million population in OECD countries to 2015

Country	1998	2003	2008	2013	2015
United States		38.6		70.9	77.9
Germany	3.7	37.0	47.2	57.8	
Italy	11.6	23.8	40.1	50.4	
South Korea		9.0	34.9	48.9	53.0
Greece			19.9	48.5	
Finland	16.7	26.1	31.2	44.1	51.9
Iceland	7.3	34.5	37.8	43.2	42.5
Austria	17.0	27.1	36.1	38.4	
Spain	3.8	7.3	9.5	30.7	
Ireland			8.9	26.5	28.5
Luxembourg	2.4	11.1	24.6	25.8	24.9
Netherland			20.8	23.0	
Estonia			16.5	22.8	
Lithuania		1.8	8.8	21.0	
Latvia		2.6	13.8	20.9	
Switzerland	13.2	14.2		19.9	
France	2.4	6.4	12.1	18.8	25.2
Slovenia			13.9	17.5	
Czech Republic	1.4	2.5	10.0	14.8	
Australia	4.5	3.7	5.7	13.5	15.0
Slovakia		4.1	12.3	13.3	
Chile				13.2	
Poland		1.0	2.9	12.9	
New Zealand	2.6	3.7	9.6	11.3	13.3
Belgium		6.8	10.4	10.8	
Turkey		1.5	7.9	9.9	
Canada	0.1	9.4		8.9	9.5
Israel	3.0	3.3	4.7	7.0	8.4
Portugal		2.6	18.6	6.5	
United Kingdom		4.5	5.5	6.1	
Mexico		1.3	1.6	4.1	
Russia	0.7	1.4	2.3	4.0	
Hungary	1.5	2.6	2.8	3.0	
Sweden					14.7
Brazil			3.8		
Denmark		18.2			
Japan			43.0		

Tables 23 and 24 Source: OECD
Note: the Australian figures are for Medicare-eligible MRI machines only.

Appendix 2: MRI request/date of service lag times by Primary Health Care Network

Table 25. MRI request/date of service lag times under the MBS by Primary Health Network

State/PHN	GP	Specialist	Australia
NSW			
Central and Eastern Sydney	8	21	16
Hunter New England and Central Coast	10	23	19
Murrumbidgee	8	20	17
Nepean Blue Mountains	11	16	14
North Coast	9	23	19
Northern Sydney	9	24	19
South Eastern NSW	9	21	17
South Western Sydney	7	17	14
Western NSW	10	27	23
Western Sydney	9	16	13
VIC			
Eastern Melbourne	8	43	31
Gippsland	10	30	25
Murray	11	34	27
North Western Melbourne	7	50	37
South Eastern Melbourne	8	31	24
Western Victoria	7	22	18
QLD			
Brisbane North	7	18	15
Brisbane South	9	35	26
Central Queensland, Wide Bay, Sunshine Coast	7	23	17
Darling Downs and West Moreton	8	27	21
Gold Coast	7	46	28
Northern Queensland	8	34	25
Western Queensland	15	30	27
SA			
Adelaide	10	36	28
Country SA	11	36	29
TAS			
Tasmania	10	27	23
WA			
Country WA	11	35	28
Perth North	9	37	30
Perth South	9	37	30
NT			
Northern Territory	10	20	18
ACT			
Australian Capital Territory	9	17	14
Australia	9	30	23

Source: Department of Health MBS data

Appendix 3: Capital sensitivity – equipment life ages and exemptions

Table 26. Summary of key aspects of life ages and exemptions for specific DI modalities (as at June 2015)

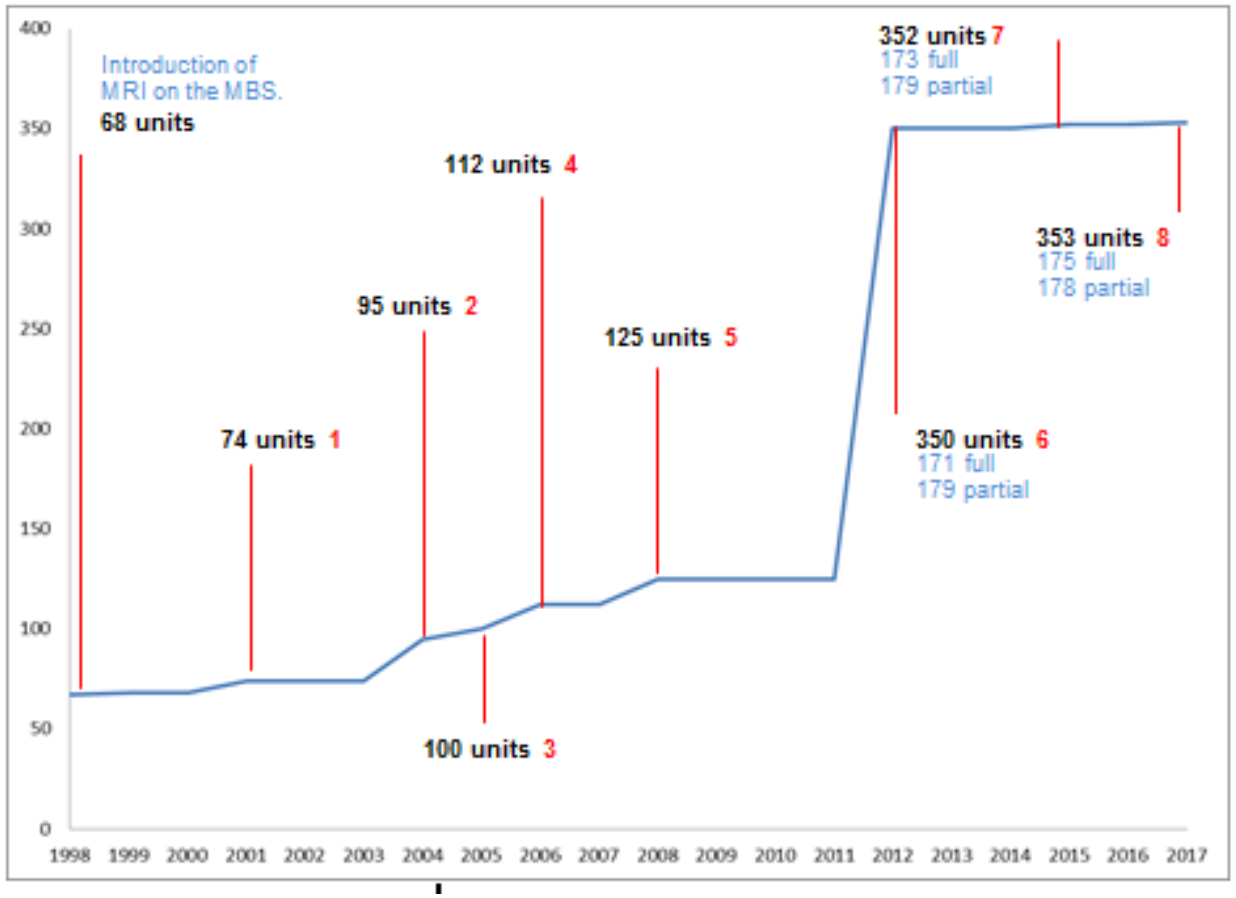
EQUIPMENT TYPE	MBS ITEM NUMBERS	EFFECTIVE LIFE AGE	MAXIMUM EXTENDED LIFE AGE	EXEMPTIONS	APPLIED SINCE
Ultrasound	55005-55855	10 years	15 years	*Automatic:* RA2 (outer regional), RA3 (remote), RA4 (very remote) *Department:* RA1 (inner regional) and RRMA4 (small rural) or RRMA5 (other rural)	1 July 2011
Computed Tomography (CT)	56001-57361	10 years	15 years	*Automatic:* RA2 (outer regional), RA3 (remote), RA4 (very remote) *Department:* RA1 (inner regional) and RRMA4 (small rural) or RRMA5 (other rural)	1 March 1999 27 November 2013 (amended to align exemptions)
X-ray	57529-57723 58102-59104 59504-60101	15 years	20 years	*Automatic:* RA2 (outer regional), RA3 (remote), RA4 (very remote) *Department:* RA1 (inner regional) and RRMA4 (small rural) or RRMA5 (other rural)	1 July 2011
Orthopantomography (OPG)	57911-57968	15 years	20 years	*Automatic:* RA2 (outer regional), RA3 (remote), RA4 (very remote) *Department:* RA1 (inner regional) and RRMA4 (small rural) or RRMA5 (other rural)	1 July 2011
Mammography	59301-59319	10 years	15 years	*Automatic:* RA2 (outer regional), RA3 (remote), RA4 (very remote) *Department:* RA1 (inner regional) and RRMA4 (small rural) or RRMA5 (other rural)	1 July 2011
Angiography	59903-60078	10 years	15 years	*Automatic:* RA2 (outer regional), RA3 (remote), RA4 (very remote) *Department:* RA1 (inner regional) and RRMA4 (small rural) or RRMA5 (other rural)	1 July 2001 27 November 2013 (amended to include exemptions)
Fluoroscopy	60501-61110	15 years	20 years	*Automatic:* RA2 (outer regional), RA3 (remote), RA4 (very remote) *Department:* RA1 (inner regional) and RRMA4 (small rural) or RRMA5 (other rural)	1 July 2011
Nuclear Medicine (excluding PET)	61302-61505 61650-61729	10 years	15 years	*Automatic:* RA2 (outer regional), RA3 (remote), RA4 (very remote) *Department:* RA1 (inner regional) and RRMA4 (small rural) or RRMA5 (other rural)	1 July 2011
Magnetic Resonance Imaging (MRI)	63013-63523	10 years	20 years	*Automatic:* RA2 (outer regional), RA3 (remote), RA4 (very remote) *Department:* RA1 (inner regional) and RRMA4 (small rural) or RRMA5 (other rural)	1 July 2011
Positron Emission Tomography (PET)	61523-61646	N/A	N/A	N/A	N/A

Source: Department of Health

Notes: The RA category numbers are based on those defined in the Diagnostic Imaging Services Table (DIST). RA1 is defined by the Australian Standard Geographical Classification as Major cities, RA2 as Inner Regional etc. The difference in the DIST definition is an idiosyncrasy of drafting regulations.

Appendix 4: Expansion of MRI Medicare eligibility over time

Table 27. Expansion of MRI Medicare eligibility over time



1 – 2001	▪ Area of need expansion - 6 units
2 – 2004	▪ ITA based on mandatory criteria – 21 units
3 – 2005	▪ Children's hospital expansion – 5 units
4 – 2006	▪ Area of need expansion – 10 units ▪ Election commitment - Dubbo – 1 unit ▪ Gippsland mobile unit – 1 unit
5 – 2008	▪ Public hospital expansion – 13 units
6 – 2012	▪ Metropolitan and regional expansion – 34 full, 179 partial eligibility ▪ Area of need – 12 units (full)
7 – 2015	▪ Government discretion – Mount Gambier – 1 unit (full) ▪ Government discretion – Epworth Richmond Hospital – 1 unit (full)
8 – 2017	▪ Election commitment – Frankston and Maroondah public hospitals – 1 unit (full) and 1 unit (partial to full)

Source: Department of Health
Note: There are five units that have not commenced operation from the 2012 expansion round. As noted in the body of this Submission, there are 348 Medicare eligible units operating.

Appendix 5: Diagnostic Imaging Advisory Committee Representative Organisations

Royal Australian and New Zealand College of Radiologists
Australian Diagnostic Imaging Association
Cardiac Society of Australia and New Zealand
Australasian Association of Nuclear Medicine Specialists
Australasian Sonographers Association
Australasian Society for Ultrasound in Medicine
Australian Orthopaedic Association
Royal Australian and New Zealand College of Obstetricians and Gynaecologists
Consumer Health Forum
Australasian College of Physical Scientists and Engineers in Medicine
Australian Society of Medical Imaging and Radiation Therapy
Royal Australian College of General Practitioners
Diagnostic Imaging and Monitoring Association
Australian Medical Association
Chiropractors' Association of Australia
Australian Radiation Protection and Nuclear Safety Agency
Australian and New Zealand Society for Vascular Surgery
Medical Imaging Nurses' Association of Australia

Appendix 6: Diagnostic Imaging Accreditation Advisory Committee Membership

Member	Nominating organisation
A/Prof Bruce Chater	Australasian College of Rural and Remote Medicine
A/Prof Philip Dubois	Australian Diagnostic Imaging Association
Ms Lynne Ingram	Australian Society of Medical Imaging and Radiation Therapy
Mr Adam Jones	NSW Health and Australasian College of Physical Scientists and Engineers in Medicine
Ms Fiona Law	Medical Imaging Nurses Association
Dr William Macdonald	Australian Association of Nuclear Medicine Specialists
Mr Patrick Meehan	Australian Diagnostic Imaging Association and Sonic Health
Dr Deborah Nisbet	Royal Australian and New Zealand College of Obstetricians and Gynaecologists
Mr Tony Parmiter	Australian Sonographers Association
A/Prof David Prior	Cardiac Society of Australia and New Zealand
Mrs Geraldine Robertson	Consumers Health Forum
Prof John Slavotinek	Royal Australian and New Zealand College of Radiologists
Dr David Thiele	Qld Health and Australasian College of Physical Scientists and Engineers in Medicine
Mr James Wood	I-MED Victoria