



Australian Government

Medical Services Advisory Committee

Public Summary Document

Application No. 1584 – Radionuclide imaging for the diagnosis of transthyretin amyloid cardiomyopathy

Applicant: Pfizer Australia Pty Ltd

Date of MSAC consideration: MSAC 76th Meeting, 1-2 August 2019

Context for decision: MSAC makes its advice in accordance with its Terms of Reference, [visit the MSAC website](#)

1. Purpose of application

An application requesting Medicare Benefit Schedule (MBS) listing of bone scintigraphy using 99mTc-labelled phosphate derivatives for the diagnosis of transthyretin amyloid cardiomyopathy (ATTR-CM) was received from Pfizer Australia by the Department of Health.

This application was submitted as codependent with an application to the Pharmaceutical Benefits Advisory Committee (PBAC) for listing of tafamidis on the Pharmaceutical Benefits Scheme (PBS) to treat ATTR-CM.

2. MSAC's advice to the Minister

MSAC advised that the current MBS item descriptors for MBS items 61446 and 61449 should be reviewed to encourage regional bone studies rather than whole body studies when used to diagnose transthyretin amyloid cardiomyopathy.

MSAC advised PBAC that the diagnostic performance of cardiac scintigraphy via bone studies should be considered acceptably similar to cardiac biopsy for the purposes of determining eligibility for tafamidis. MSAC advised that, with any subsidy of tafamidis for this population, the utilisation of these MBS items should be expected to increase, but to a lesser extent than predicted in the application form.

3. Summary of consideration and rationale for MSAC's advice

This codependent application involving cardiac scintigraphy via bone studies for the diagnosis of ATTR-CM and tafamidis for its subsequent treatment was initially considered to be suitable to undergo the MSAC process. However, during the pre-PASC process, it was noted that the proposed new services can be performed under existing MBS bone study items (61446 and 61449 for localised bone study), and that no new MBS items would be needed.

MSAC noted that the current algorithm for the diagnosis of ATTR-CM is cardiac MRI followed by endomyocardial biopsy. Cardiac biopsy is considered to be the gold standard for this diagnosis, but is still subject to some false negatives. MSAC accepted that technetium-labelled radiotracers in cardiac scintigraphy have recently been shown to provide very high diagnostic accuracy for ATTR-CM (for example, Treglia et al, Eur J Nuclear Medicine and Molecular Imaging (2018) 45:1945-55), and that it is diagnostically equivalent to endomyocardial biopsy.

Endomyocardial biopsy is an invasive procedure with potentially serious risks to the patient. It is also a costly procedure, as it requires imaging to place the catheters, followed by biopsy and pathology costs. A bone study using scanning technology is significantly cheaper to perform. However, MSAC considered that it will not be a direct cost offset, because more patients will likely choose to undergo a bone study, even if they have previously refused a cardiac biopsy. In addition, tafamidis would represent a treatment for ATTR-CM where currently there is no treatment option. MSAC therefore noted the likely increased utilisation in bone study services, as patients would require confirmed ATTR-CM to access tafamidis and will likely prefer a bone study over cardiac biopsy.

MSAC noted that a bone study could replace the need for a cardiac biopsy in nearly all cases. However, a bone study will not replace the need for a cardiac MRI, especially for patients with stage 0 or 1 infiltrative cardiomyopathy who do not wish to undergo a biopsy. MSAC also noted that cardiac MRI is not reimbursed via the MBS, which could affect the diagnostic clinical pathway as clinicians may lean towards using funded procedures, if possible. MSAC noted that ATTR-CM does present a burden to health care, is increasing in prevalence due to Australia's ageing population, but is currently underdiagnosed.

The application reasonably suggests a high uptake in the year 1 (up to 11,559) as the prevalent population is tested. Although MSAC considered this number to be an overestimate, MSAC accepted that it may be accurate if clinicians use bone studies to diagnose ATTR-CM in patients with heart failure who do not have the known clinical indicators for this diagnosis such as preserved ejection fraction. The application estimated decreasing utilisation in years 2, 3 and 4 (7,383, 4,020 and 3,859, respectively), but MSAC considered these numbers to be an overestimate as well, as they were based on trends in prevalence rather than being based on estimates of annual incidence. MSAC also noted that it may take more than a year to test the prevalent population, creating a 'lag', which would increase estimates of patient numbers in the following few years beyond those based on annual incidence alone.

MSAC considered that a regional bone study was suitable to diagnose ATTR-CM. MSAC noted that some clinicians may choose to perform a whole-body study, but it is not necessary. MSAC recommended that the item descriptors be reframed to reflect this.

4. Background

The MSAC Executive considered this application at its 21 June 2019 meeting and advised that while the proposed service can already be performed under existing MBS items and an HTA assessment on the safety and effectiveness of the service is not necessary, it would be useful for MSAC to consider an estimate of the increased utilisation and potential cost to the MBS if tafamidis is listed on the Pharmaceutical Benefits Scheme (PBS).

5. Proposal for public funding

The proposed new services are able to be performed under existing MBS items 61446 and 61449 (Table 1) for localised bone study.

Table 1 Current MBS items for localised bone scans

Number	Descriptor	Fee
61446	Localised bone or joint study, including when undertaken, blood flow, blood pool and repeat imaging on a separate occasion (R) (K)	\$333.55
61449	Localised bone or joint study and single photon emission tomography, including when undertaken, blood flow, blood pool and imaging on a separate occasion (R) (K)	\$456.20

6. Proposed intervention's place in clinical management

Transthyretin amyloid cardiomyopathy (ATTR-CM) is a life-threatening disease characterised by accumulation of amyloid fibrils composed of misfolded transthyretin protein in the heart. Misfolded monomers or oligomers of transthyretin are deposited in the myocardium, leading to cardiomyopathy and symptoms of heart failure.

Cardiac scintigraphy with ^{99m}Tc-labeled pyrophosphate (PYP), ^{99m}Tc-labeled oxidronate (HDP) or ^{99m}Tc-labeled 3,3-diphosphono-1,2-propanodicarboxylic acid (DPD) is sensitive and specific for imaging cardiac ATTR amyloid and enables a diagnosis of ATTR-CM.

7. Financial/budgetary impacts

The MBS item descriptors for nuclear medicine bone scans are quite broad, so the proportion of these scans already being used for cardiac scintigraphy to diagnose ATTR-CM is unknown.

The current utilisation of each of the bone scan items is shown in Table 2. The utilisation of bone scan items has been decreasing over recent years.

Table 2 Current MBS utilisation

Number of Services	2014	2015	2016	2017	2018
MBS item 61446	8,993	6,849	5,155	3,840	2,898
MBS item 61449	40,354	39,658	38,538	39,225	38,561
Total	49,347	46,507	43,513	43,065	41,459

If listed on the PBS, tafamidis will be the first specific treatment available for ATTR-CM. As patients will need to have an accurate diagnosis of ATTR-CM to be eligible for treatment with tafamidis, it is likely that the utilisation of bone scintigraphy for diagnosis will increase.

According to the applicant, there are currently 250 diagnosed patients in Australia, with the expected number of patients suitable for tafamidis treatment in Australia between 2,000 and 11,000. The estimation of utilisation for bone scan services is shown in Table 3.

Table 3 Applicant estimated utilisation for MBS bone scan services.

Year	Year 1	Year 2	Year 3	Year 4
Number of services	11,559	7,383	4,020	3,859

The actual total number of patients with the disease is unknown. There is likely current under-diagnosis due to poor recognition of the condition and lack of treatment options.

MSAC noted that there is likely to be a significant increase in bone scans. The numbers for Year 1 are likely to be overestimated if the ‘red flags’ are followed. It is also possible that inappropriate testing may result in larger numbers than indicated. The predicted number of patients with prevalent ATTR-CM is similar to the applicant’s estimate for total Year 1 scans, and it is likely that a large proportion of patients will remain undiagnosed or refuse further investigations. MSAC considered that the numbers for subsequent years are likely overestimated, as the number of incident cases will be much lower than stated and prevalence rates were used in the calculations beyond Year 1.

If tafamidis is listed on the PBS, it is expected that the increase in expenditure for MBS bone scan items would be approximately \$11.3 million over the first four years as shown in Table 4.

Table 4 Estimated cost to the MBS for bone scan services

Year	Year 1	Year 2	Year 3	Year 4	TOTAL
Cost to MBS	\$5.010 m	\$3.018 m	\$1.633 m	\$1.612 m	\$11.273 m

The costs in Table 4 are likely to be overestimated and reflect a ‘worst case scenario’ for expenditure regarding overuse. Utilisation is likely to be lower if best practice is followed and should decline after the first year.

Prior to scintigraphy being used, endomyocardial biopsy was used to diagnose ATTR-CM. Scintigraphy is significantly cheaper than cardiac biopsy, which requires imaging for placement of catheters, biopsy, and tissue pathology. However, cardiac biopsy services are not currently used at high volumes because of the lack of treatment options and the high risk of the procedure. If cardiac biopsy were considered as an offset for 92.2% of bone scan for ATTR-CM services (the sensitivity of bone scan for ATTR-CM) the maximum save would be approximately \$10.5 million over four years.

8. Applicant’s comments on MSAC’s Public Summary Document

Pfizer welcomes MSAC’s consideration and decision to allow use of the existing MBS items for nuclear scintigraphy to identify patients with ATTR-CM.

9. Further information on MSAC

MSAC Terms of Reference and other information are available on the MSAC Website: [visit the MSAC website](#)