



**Australian Government**

**Medical Services Advisory Committee**

## **Public Summary Document**

**Report to the Medical Services Advisory Committee on real world outcomes of Application 1087: Brain natriuretic peptide assays in the diagnosis and monitoring of heart failure**

**Medicare Benefits Schedule (MBS) item considered: 66830**

**Dates of MSAC consideration: 6-7 April 2017**

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

### **1. Purpose**

The purpose of the report presented to the Medical Services Advisory Committee (MSAC) was to inform MSAC of the real world impacts on the outcomes of Application 1087. The MSAC then uses this information to ensure that the new item/s resulting from this application/s is being used as intended.

The report is not intended to be a review of the clinical information covered during the application process.

### **2. MSAC's advice**

After considering the real world impacts of the outcomes of application 1087, MSAC noted that there was significant under-utilisation of item 66830 post-implementation and recommended no further action.

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

MSAC considered the real world impacts of the outcome of application 1087 for B-type natriuretic peptide (BNP) assays in the diagnosis of heart failure (MBS item 66830) by examining the available data for this item and separations for heart failure from the Australian Institute of Health and Welfare (AIHW) Australian Hospital Morbidity database.

MSAC noted that actual utilisation is between 10-20% of that predicted. MSAC considered that the lower than expected utilisation may be due to an assumption in the initial application that a high proportion of services would be provided in the private setting (36%), whereas the data suggest that the majority of patients presenting with heart failure actually present at public hospital emergency departments. MSAC also noted that utilisation has tended to be highest in the more populous states (NSW, VIC and QLD), with very low use in WA,

possibly due to the small number of private emergency departments in this state. MSAC noted that utilisation is concentrated in patients 75 years of age and above, in line with the primary target for the diagnosis and monitoring of heart failure.

MSAC noted that approximately 19% of patients have claimed item 66830 more than once, suggesting these patients have presented to ED and required a BNP test on multiple occasions.

In considering the data related to the fee charged for this MBS item, MSAC noted that the average fee charged has remained relatively stable since listing. MSAC also noted that the rate of bulk-billing appears to have increased from 16% to 43% between 2008-09 and 2015-16, although the rate varies between states.

It was assumed that 87% of pathology would be performed outside of hospital settings. However, since listing, MSAC noted that the majority of services (64-70%) have been provided in hospital. MSAC considered this may reflect use as monitoring which was not recommended.

MSAC noted that co-claiming patterns for MBS item 66830 are highly varied but are consistent with a patient presenting with heart failure. MSAC noted that the item is not as frequently co-claimed with a consult or patient initiation fee as assumed in the assessment report.

#### **4. Methodology**

An application is selected for consideration if the resulting new item(s) or item amendment(s) have been on the MBS for approximately 24 months or longer or if there were particular concerns about utilisation such that MSAC requested to consider it earlier. The specific applications for each MSAC meeting are selected by the MSAC Executive which is composed of the Chairs of MSAC and its sub-committees.

A report on the utilisation is developed by the Department of Health (the department) with information on a number of metrics including state variation, patient demographics, services per patient, practitioner's providing the service, data on fees and co-claiming of services. The number of metrics included in a report is dependent on the annual service volume for the MBS item(s) under consideration i.e. an item with very low utilisation will have less data to analyse. Where service volumes are too low, information is suppressed to protect patient privacy.

Where possible the report compares data on real world utilisation to the assumptions made during the MSAC assessment. Most of these assumptions are drawn from the assessment report.

Relevant stakeholders are provided an opportunity to comment on the findings in the report before it is presented to the MSAC. It is intended that stakeholders are given at least three weeks to consider the reports.

The stakeholder version of the report does not contain information on assumptions from the MSAC consideration if this information is not already publicly available. This is to protect the commercial in confidence of the original applicants. The same principle is applied to this document.

Once MSAC has considered the report its advice is made available online at the [MSAC Website](#).

## 5. Results

### Utilisation

To protect commercial in confidence, the final predicted utilisation numbers have been removed. The assumptions from the assessment report have been included and can be accessed in full on the MSAC website on the page for application 1087.

Utilisation estimates were based on the Australian Hospital Morbidity database for heart failure separations and ABS data for growth (3.25% pa).

The Australian National Hospital Morbidity database of the AIHW registered 41,052 separations for heart failure (HF) in 2002-03. The estimate is based on almost all Australian public and private hospitals. For reference the actual separations for the principal diagnosis of heart failure for 2008-09 to 2013-14 have been included in Table 1.

In Mueller et al (2004), of the 80 per cent of admitted patients in their sample with acute dyspnoea, 52.6 per cent were diagnosed with HF. It was assumed in the assessment report that this meant that 42 per cent ( $0.8 \times 0.525 = 0.42$ ) of patients with acute dyspnoea arriving at an ED were admitted to hospital with a primary diagnosis of HF. This calculation was then applied to the 2002-03 separation data ( $n=41,025$ ) to get an estimated rate of 97,742 ( $41,025/0.42$ ) ED presentations due to acute dyspnoea per annum in Australia.

The assessment report estimated that if the public to private proportions for HF admission are 78 and 22 per cent, then the corresponding public to private patient split is 64 and 36 per cent. As such the estimated services per annum were calculated as 36 per cent of the number of emergency department presentations due to acute dyspnoea, i.e.  $97,742 \times 0.36$  (Services estimated; Table 1).

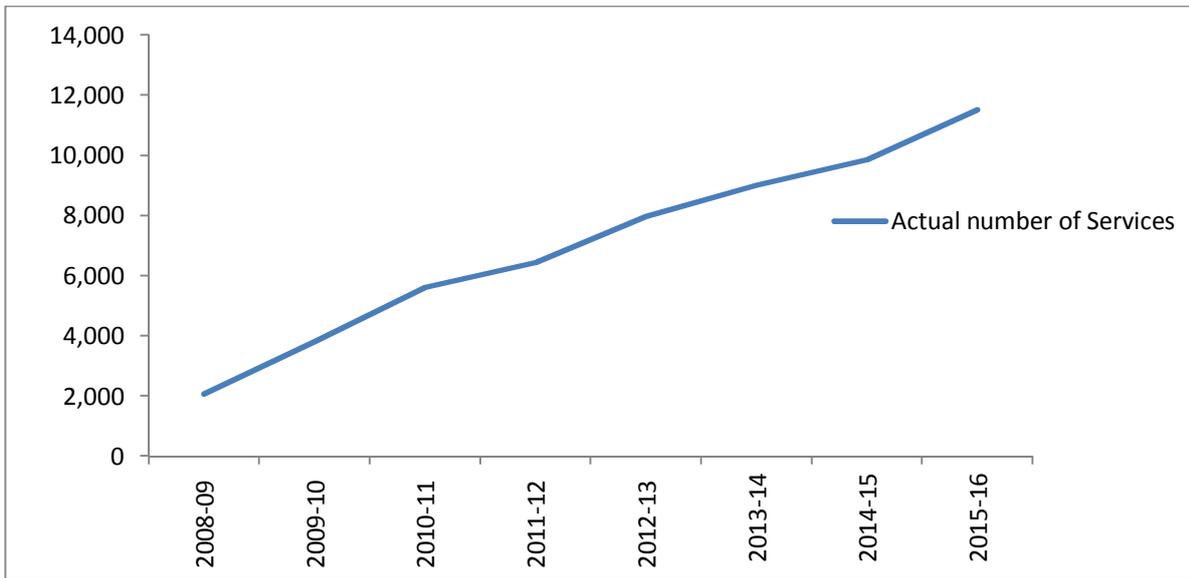
Actual utilisation is much lower than that predicted (Table 1).

One of the potential reasons actual utilisation is below that predicted may be because the majority of emergency patients still present at public hospitals. In Australia, in 2014-15, there were 25 private hospitals with an emergency department and 533,414 accident and emergency patients treated. In the same time period there were 290 public hospitals reporting emergency department presentations, totalling 7.4 million presentations.

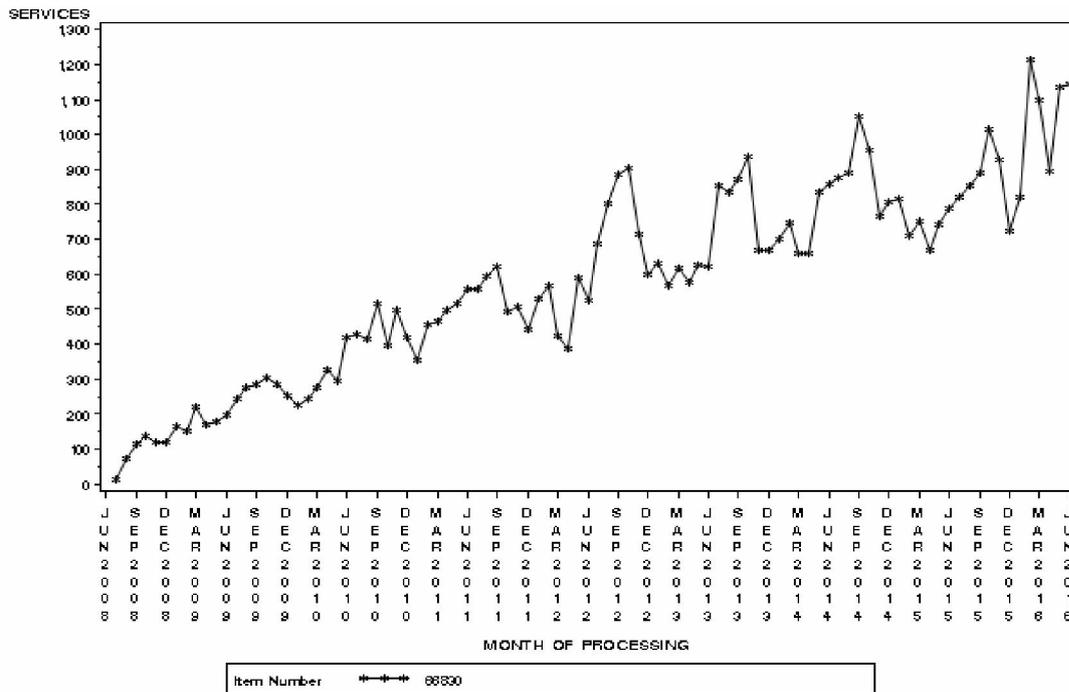
**Table 1: Predicted vs actual utilisation of MBS item 66830**

Financial Year/ Year since listing	2008-09 (Year 1)	2009-10 (Year 2)	2010-11 (Year 3)	2011-12 (Year 4)	2012-13 (Year 5)	2013-14	2014-15	2015-16
<b>Actual number of Services</b>	2,063	3,802	5,621	6,450	7,974	9,013	9,879	11,602
<b>Actual separations for the principal diagnosis of heart failure</b>	45,197	45,004	50,089	50,983	52,041	53,643		

Source: File: Q20659 Item 73332 66830 utilisation 16JAN17.xlsx, 1083 Assessment report and AIHW Australian Hospital Morbidity database



**Figure 1: Number of services for MBS item 66830 for 2008-09 to 2015-16.**



**Figure 2: Month by month service volume for MBS item 66830 from July 2008 to June 2016**

Source: Medicare Statistics online

Utilisation has tended to be highest in the more populous states (NSW, VIC and QLD) (Table 2). Notably, there appears to be very little use of this item number in WA, with volumes so low they required suppression and relatively high utilisation in TAS until 2015-16. SA had the highest utilisation in 2015-16 at 3,947 services, a significant jump from previous years of utilisation. In 2014-15, the item was claimed 1,517 times in SA.

**Table 2: Services and benefits paid per state for MBS item 66830 from 2008-09 to 2015-16**

		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Australia
2008-09	Services	869	241	795	54	NP	96	NP	NP	2,063
	Patients	712	229	750	52	NP	83	NP	NP	1,834
	Benefits	\$39,444	\$11,100	\$39,101	\$2,497	NP	\$4,568	NP	NP	\$97,068
2009-10	Services	1,529	555	1,191	335	NP	185	NP	NP	3,802
	Patients	1,250	479	1,123	314	NP	147	NP	NP	3,315
	Benefits	\$69,986	\$25,588	\$56,885	\$15,418	NP	\$8,620	NP	NP	\$176,853
2010-11	Services	2,359	762	1,651	584	NP	224	NP	NP	5,621
	Patients	1,903	684	1,545	537	NP	196	NP	NP	4,901
	Benefits	\$110,349	\$36,620	\$79,670	\$26,956	NP	\$10,505	NP	NP	\$266,007
2011-12	Services	2,543	1,286	1,650	742	NP	206	NP	NP	6,450
	Patients	2,069	1,122	1,553	693	NP	174	NP	NP	5,627
	Benefits	\$118,102	\$60,965	\$79,844	\$34,875	NP	\$9,856	NP	NP	\$304,694
2012-13	Services	2,792	1,856	2,012	920	NP	376	NP	NP	7,974
	Patients	2,252	1,573	1,873	830	NP	313	NP	NP	6,845
	Benefits	\$132,383	\$85,734	\$96,434	\$42,596	NP	\$18,108	NP	NP	\$376,089
2013-14	Services	2,750	2,443	2,238	1,072	NP	499	NP	NP	9,013
	Patients	2,245	2,101	2,056	965	NP	418	NP	NP	7,773
	Benefits	\$128,136	\$111,328	\$105,559	\$49,479	NP	\$25,039	NP	NP	\$420,035
2014-15	Services	2,841	2,693	2,451	1,517	NP	363	NP	NP	9,879
	Patients	2,306	2,303	2,239	1,368	NP	296	NP	NP	8,513
	Benefits	\$131,899	\$122,484	\$115,080	\$70,224	NP	\$17,730	NP	NP	\$458,012
2015-16	Services	2,038	2,642	2,824	3,947	NP	138	NP	NP	11,602
	Patients	1,720	2,280	2,543	3,396	NP	126	NP	NP	10,076
	Benefits	\$97,352	\$121,094	\$132,018	\$190,901	NP	\$6,641	NP	NP	\$548,610

NP = not published

Source: Department of Health, File: Q20659 Item 73332 66830 utilisation 16JAN17.xlsx

## In and out of hospital

It was assumed that 87% of pathology would be done outside hospital and would attract the 85% rebate with the remaining 13% attracting the 75% rebate.

In actuality, the majority of services have been provided in hospital since the item was listed (64-70% of services in 2008-09 to 2014-15) (Table 5). In 2015-16, it does appear as though the service is shifting to an even split of in and out of hospital provision, with 54% of services provided in hospital.

Since listing, services in SA have slowly shifted from predominantly being provided in-hospital (74% of services in 2008-09) to being provided predominantly out of hospital (34% of services in 2015-16).

**Table 3: Percentage of services provided in hospital for item 68830 in 2008-09 to 2015-16**

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Australia
<b>2008-09</b>	83%	85%	50%	74%	NP	57%	NP	NP	69%
<b>2009-10</b>	81%	82%	52%	73%	NP	66%	NP	NP	70%
<b>2010-11</b>	80%	70%	41%	70%	NP	59%	NP	NP	65%
<b>2011-12</b>	79%	66%	43%	58%	NP	54%	NP	NP	64%
<b>2012-13</b>	78%	72%	45%	65%	NP	48%	NP	NP	65%
<b>2013-14</b>	75%	78%	49%	69%	NP	35%	NP	NP	67%
<b>2014-15</b>	73%	77%	54%	61%	NP	39%	NP	NP	66%
<b>2015-16</b>	68%	72%	55%	34%	NP	47%	NP	NP	54%

NP = not published

## Patient breakdown

There did not appear to be any assumptions in the assessment report regarding the number of services a patient is likely to receive over a lifetime. About 19% of patients have claimed item 66830 more than once, with a small percentage claiming it more than 10 times since the item was listed (Table 3). It is possible that these patients have presented to ED on multiple occasions and required a BNP test on each presentation.

**Table 4: Number of services per patient since service listed in March 2014 to June 2016**

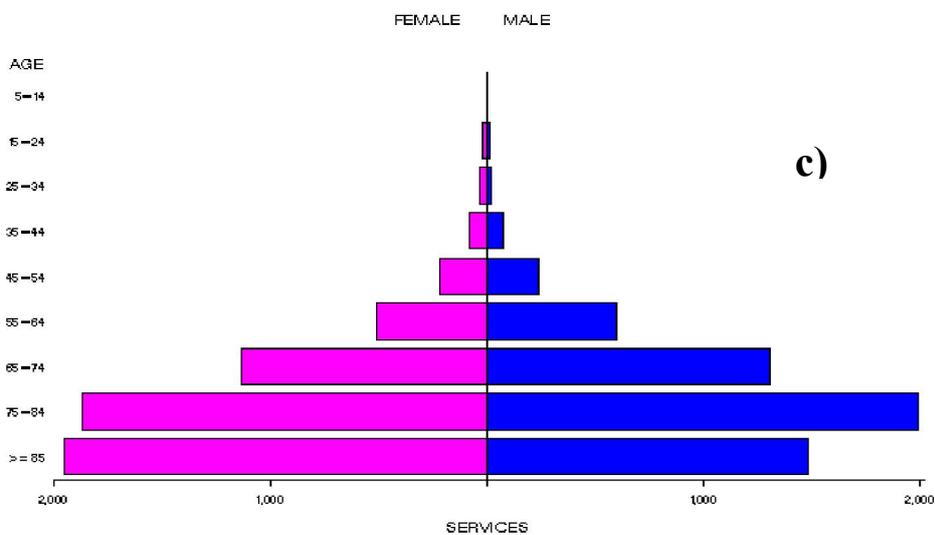
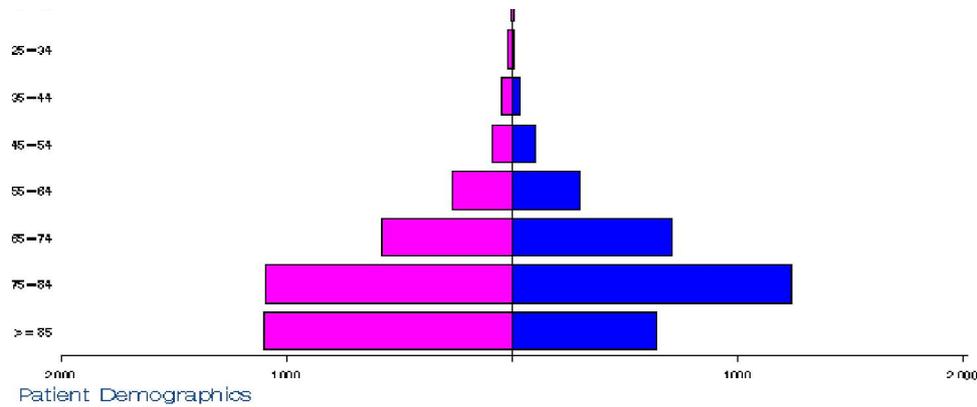
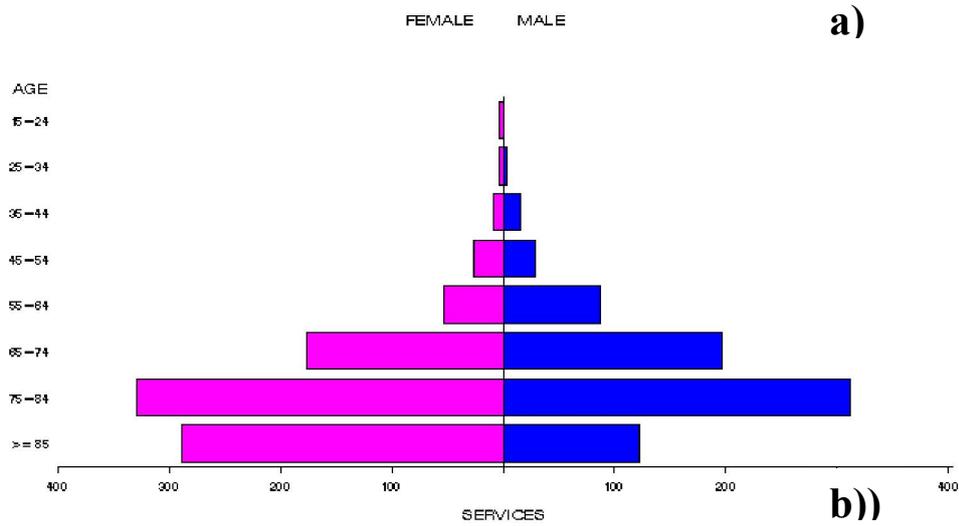
Number of Services	Number of Patients	Percentage of Patients
1	35,235	81%
2	5,314	12%
3	1,498	3%
4	602	1%
5	297	1%
6	154	0%
7	58	0%
8	34	0%
9	28	0%
10	8	0%
11	8	0%
12+	10	0%
<b>Total</b>	<b>43,246</b>	<b>100%</b>

Source for table 4: Department of Health, File: Q20659 Item 73332 66830 utilisation 16JAN17.xlsx

The population aged >75 years is the primary target for the diagnosis, monitoring and prognosis of HF. Utilisation seems to be concentrated in the 75 and above age groups, as

expected. The item appears to be claimed evenly by both men and women (5,808 women in 2015-16 compared to 5,727 men) (Figure 3).

Patient Demographics



**Figure 3: Demographic profile for MBS item 68830 for 2008-09 (a), 2011-12 (b) and 2015-16 (c)**  
 Source: Medicare Statistics Online

## Provider breakdown

All practitioners claiming this service are pathologists or haematologists. The number of practitioners claiming this service has fluctuated since listing, ranging from 43 to 56 (Table 5).

Similarly, the concentration of services among providers has varied each year, although the service provision has remained relatively concentrated with about 90% of services provided by just 30% of practitioners (Table 6).

**Table 5: Number of practitioners providing this service in 2008-09 to 2015-16**

Financial year	Australia
2008-09	45
2009-10	53
2010-11	56
2011-12	43
2012-13	49
2013-14	50
2014-15	47
2015-16	46

**Table 6: Cumulative percentage of medical practitioners providing item 66830 for 2008-09 to 2015-16**

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
10%	72%	66%	66%	59%	65%	62%	56%	65%
20%	85%	85%	81%	75%	82%	80%	72%	84%
30%	91%	91%	91%	87%	92%	89%	83%	93%
40%	95%	95%	95%	93%	96%	94%	90%	97%
50%	97%	98%	97%	96%	98%	97%	95%	99%
60%	99%	99%	99%	98%	99%	99%	98%	100%
70%	99%	99%	100%	99%	100%	100%	100%	100%
80%	100%	100%	100%	100%	100%	100%	100%	100%
90%	100%	100%	100%	100%	100%	100%	100%	100%
100%	100%	100%	100%	100%	100%	100%	100%	100%

Source for tables 5 & 6: Department of Health, File: Q20659 Item 73332 66830 utilisation 16JAN17.xlsx

## Co-claiming

The MBS items that were assumed to be associated with the diagnosis of heart failure in a private patient are 110 (professional attendance), 116 (subsequent professional attendance), 507 (Level 3 patient initiation fee), 65070 (full blood count), 66509 (electrolytes), 66515 (renal function), 66719 (thyroid function), 73910 (patient episode initiation), 11700 (ECG), 58500 (chest x-ray) and 55113 (echocardiography).

The co-claiming data shown in Tables 7 to 9 is the top 10 claiming combinations per financial year. The top 10 claiming patterns only appear to represent about 20% of all claims for item 66830. This suggests that the claiming patterns for item 66830 are highly varied.

Tables 10 to 12 show the top 5 items claimed with item 66830 in any combination. Item 66830 is typically co-claimed with the same five items each financial year (66512, 65070, 66518, 73930 and 73938) in addition to a range of other items.

Based on this data, item 66830 is not as frequently co-claimed with a consult or patient initiation fee as assumed in the assessment report. The assessment report did identify item 65070 as one that item 66830 would be frequently co-claimed with but failed to identify that it would be claimed with 66512, 66518, 73930 or 73938.

**Table 7: Top 10 instances of co-claiming with MBS item 66830 in 2008-09**

#	Items	Episodes	Number Services	Schedule Fee for Combination	% of total episodes	Cumulative %
1	66830, 66512,66518,73938	123	492	\$13,229	6%	6%
2	66830, 65070,66512,66518,73930	61	308	\$8,145	3%	9%
3	66830, 65070,66512,73930	49	196	\$5,500	2%	11%
4	66830, 65070,66512,66518,73938	43	216	\$5,374	2%	13%
5	66830, 65070, 65120, 66512, 66518, 73930.	33	198	\$4,841	2%	15%
6	66830, 65070, 65120, 66512, 66518, 73938	27	162	\$3,748	1%	16%
7	66830, 65070,66512,73938	27	108	\$2,817	1%	17%
8	66830, 65070,66512	27	81	\$2,553	1%	18%
9	66830, 65070,65120,66512,73930	25	125	\$3,158	1%	19%
10	66830, 66512,73930	23	69	\$2,186	1%	20%

**Table 8: Top 10 instances of co-claiming with MBS item 66830 in 2014-15**

#	Items	Episodes	Number Services	Schedule Fee for Combination	% of total episodes	Cumulative %
1	66830, 65070,66512,73930	302	1,222	\$30,103	3%	3%
2	66830, 66512,66518,73938	287	1,148	\$29,905	3%	6%
3	66830, 65070,66512,66518,73930	272	1,419	\$32,841	3%	9%
4	66830, 65070,66512,66518,73938	248	1,264	\$30,340	3%	12%
5	66830, 65070,66512,73938	212	851	\$21,476	2%	14%
6	66830, 65070,66512	180	540	\$16,757	2%	16%
7	66830, 65070,66512,73931	147	600	\$14,194	1%	17%
8	66830	139	139	\$8,132	1%	18%
9	66830, 65070, 65120, 66512, 66518, 73930	130	824	\$17,664	1%	19%
10	66830, 65070, 65120, 66512, 66518, 73938	119	719	\$16,087	1%	20%

**Table 9: Top 10 instances of co-claiming with MBS item 66830 in 2015-16**

#	Items	Episodes	Number Services	Schedule Fee for Combination	% of total episodes	Cumulative %
1	66830, 66512,66518,73938	361	1,445	\$37,624	3%	3%
2	66830, 65070,66512,66518,73938	319	1,619	\$38,961	3%	6%
3	66830, 65070,66512,73930	301	1,216	\$29,970	3%	9%
4	66830, 65070,66512,66518,73930	273	1,430	\$33,064	2%	11%
5	66830, 65070,66512	269	809	\$25,093	2%	13%
6	66830,	246	248	\$14,508	2%	15%
7	66830, 65070,66512,73939	233	936	\$22,319	2%	17%
8	66830, 65070,66512,73938	231	932	\$23,465	2%	19%
9	66830, 65070, 65120, 66512, 66518, 73938	140	843	\$18,909	1%	20%
10	66830, 65070, 65126, 66512, 66518, 73938	111	666	\$16,539	1%	21%

Source for Tables 7-9: Department of Health, File: Q20659\_TOP05: New Items Evaluation

**Table 10: Top 5 items that are co-claimed with 66830 in any combination in 2008-09**

Trigger Combination	CoClaimed Combination	Episodes	Services	Schedule fees	Episodes %
66830	66512	1,707	3,529	\$134,183	83%
66830	65070	1,342	2,750	\$104,245	65%
66830	66518	1,039	2,079	\$83,128	50%
66830	73930	845	1,767	\$66,639	41%
66830	73938	551	1,119	\$38,378	27%

**Table 11: Top 5 items that are co-claimed with 66830 in any combination in 2014-15**

Trigger Combination	CoClaimed Combination	Episodes	Services	Schedule fees	Episodes %
66830	66512	8,325	17,142	\$643,112	84%
66830	65070	6,945	14,160	\$528,713	70%
66830	66518	4,544	9,089	\$356,990	46%
66830	73938	3,314	6,875	\$222,179	34%
66830	73930	3,094	6,658	\$202,310	31%

**Table 12: Top 5 items that are co-claimed with 66830 in any combination in 2015-16**

Trigger Combination	CoClaimed Combination	Episodes	Services	Schedule fees	Episodes %
66830	66512	9,385	19,253	\$723,633	81%
66830	65070	7,632	15,534	\$580,445	66%
66830	66518	4,941	9,883	\$388,174	43%
66830	73938	3,876	8,037	\$259,826	33%
66830	73930	2,876	6,191	\$187,970	25%

Source for Tables 10-12: Department of Health, File: Q20659\_TOP05: New Items Evaluation

## Data on fee charged

The information provided on fees below is a snapshot of how the item is being claimed in practice. Data has not been printed for states and territories with relatively low service volumes.

The benefit for MBS item 66830 is \$43.90 (75%) or \$49.75 (85%).

The average fee charged for item 66830 has remained relatively stable since listing with a range of \$69 to \$74 (Table 13). In 2015-16, the state with the highest average fee charged was TAS at \$80. However, in the same year VIC had the highest fee charged at the 95<sup>th</sup> percentile at \$152.

From 2008-09 to 2015-16, the rate of bulk billing appears to have increased from 16% to 43%. There is marked variation between states with bulk billing in SA at 64% in 2015-16, compared to 24% in Victoria.

**Table 13: Fees charged for MBS item 66830 for 2008-09, 2014-15 and 2015-16 by date of service**

		Provider State/Territory								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Australia
2008-09	Average Fee Charged	\$61	\$68	\$81	\$64	NP	\$59	NP	NP	\$69
	Std Deviation	\$12	\$11	\$27	\$4	NP	\$8	NP	NP	\$21
	Median Fee Charged	\$60	\$64	\$73	\$65	NP	\$60	NP	NP	\$60
	75th Percentile	\$60	\$69	\$115	\$66	NP	\$60	NP	NP	\$74
	95th Percentile <sup>1</sup>	\$83	\$86	\$128	\$70	NP	\$64	NP	NP	\$128
	Bulk-billing Rate	11%	12%	22%	26%	NP	27%	NP	NP	16%
2014-15	Average Fee Charged	\$70	\$77	\$76	\$77	NP	\$59	NP	NP	\$74
	Std Deviation	\$17	\$23	\$16	\$16	NP	\$11	NP	NP	\$19
	Median Fee Charged	\$59	\$75	\$76	\$75	NP	\$59	NP	NP	\$75
	75th Percentile	\$76	\$77	\$80	\$76	NP	\$59	NP	NP	\$78
	95th Percentile	\$100	\$138	\$97	\$117	NP	\$79	NP	NP	\$104
	Bulk-billing Rate	26%	19%	38%	36%	NP	35%	NP	NP	29%
2015-16	Average Fee Charged	\$68	\$77	\$77	\$72	NP	\$80	NP	NP	\$74
	Std Deviation	\$13	\$26	\$14	\$16	NP	\$13	NP	NP	\$19
	Median Fee Charged	\$64	\$69	\$76	\$74	NP	\$76	NP	NP	\$76
	75th Percentile	\$76	\$77	\$80	\$76	NP	\$76	NP	NP	\$76
	95th Percentile	\$96	\$152	\$91	\$102	NP	\$123	NP	NP	\$116
	Bulk-billing Rate	31%	24%	42%	64%	NP	48%	NP	NP	43%

NP = not published

Source: Department of Health, File: Q20659 Item 73332 66830 utilisation 16JAN17.xlsx

<sup>1</sup> The 95<sup>th</sup> percentile fee charged represents that 95% of the time the fee is below this amount but in 5% of cases, the fee is higher than this.

## 6. Background

The item for BNP/NT-proBNP testing was added to the MBS in 2008 following an MSAC assessment in November 2006, which considered the safety, effectiveness and cost-effectiveness of the use of BNP assays in the diagnosis of heart failure in patients presenting with dyspnoea in the hospital emergency department setting, and the use of these assays in monitoring the progress of patients with heart failure. Based on the available evidence for the safety, effectiveness, and cost-effectiveness of the use of BNP assays in the diagnosis of heart failure, MSAC recommended public funding in the hospital emergency setting only. At the time, the evidence for BNP-or NT-proBNP-guided monitoring of patients with heart failure was considered insufficient.

MSAC noted that the yearly cost would be offset by a reduced number of private hospital admissions for heart failure and reduced MBS claims for private inpatient services.

## 7. Item descriptor

66830	Quantitation of BNP or NT-proBNP for the diagnosis of heart failure in patients presenting with dyspnoea to a hospital Emergency Department (Item is subject to rule 25) <b>Fee:</b> \$58.50 <b>Benefit:</b> 75% = \$42.90   85% = \$49.75
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## 8. Applicant's comments on MSAC's public summary document

The applicant had no comment

## 9. Further information on MSAC

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