Hepatitis B: utilisation analysis

# Drug utilisation sub-committee (DUSC)

## February 2015

### Abstract

#### Purpose

To examine the utilisation of medicines for the treatment of hepatitis B.

As the most recent new listing for hepatitis B occurred five years ago (December 2009) a predicted versus actual comparison is out of scope for this analysis.

This analysis focused on treatment of chronic hepatitis B. The vaccination program is out of scope for this analysis.

#### Background

The primary goal of treating hepatitis B patients is to improve patient survival by preventing or delaying the development of cirrhosis and liver cancer.[[1]](#footnote-1)

#### Data Source / methodology

Data for the number of prescriptions for medicines used to treat hepatitis B were extracted from the Highly Specialised Drugs (HSD) database for the period January 2003 to June 2014 inclusive, based on the date that the prescription was supplied. These data were used to count the overall number of packs dispensed for medicines used to treat hepatitis B, and the annual cost to Government.

The number of patients was calculated by matching prescriptions from the Department of Human Services (DHS) Authority Approvals database with data from the DHS Medicare Pharmacy Claims database for the period July 2013 to June 2014, inclusive.

#### Key Findings

During the period July 2013 to June 2014:

* 12,953 patients received treatment for hepatitis B through the PBS.
* 74,493 prescriptions were dispensed at a cost of $59,172,690.

Overall the market of hepatitis B medicines is growing. The DUSC noted this growth is largely attributable to entecavir and tenofovir use, which is consistent with the recommendation in clinical guidelines that most patients commence on these medicines.

### Purpose of analysis

To examine the utilisation of medicines for the treatment of hepatitis B.

As the most recent new listing for hepatitis B occurred five years ago (December 2009) a predicted versus actual comparison is out of scope for this analysis.

This analysis focused on treatment of chronic hepatitis B. The vaccination program is out of scope for this analysis.

### Background

Chronic Hepatitis B (CHB) Recommendations from the Gastroenterological Society of Australia (September 2009) was used as a main source of background information for this report. To view the guidelines visit the [Gastroenterological Society of Australia](http://www.gesa.org.au/professional.asp?cid=9&id=109).

#### Pharmacology

The primary goal of treating hepatitis B patients is to improve patient survival by preventing or delaying the development of cirrhosis and liver cancer.1

There are two groups of drugs used to treat hepatitis B; direct antiviral drugs (nucleoside/nucleotide analogues) and immunomodulatory drugs (interferons). Table 1 identifies the class of each PBS listed medicine. Nucleoside/nucleotide analogues reduce the amount of hepatitis B virus in the body by lowering the ability of the virus to multiply.[[2]](#footnote-2)

Interferons are proteins that modify the response of the body's immune system to help fight infections and severe diseases.[[3]](#footnote-3) In Australia, pegylated interferon has replaced standard interferon in chronic hepatitis B therapy.1

#### Therapeutic Goods Administration (TGA) approved indications

For details of the current TGA approved indications for medicines used in the treatment of hepatitis B refer to the Product Information (PI). The PIs for each product are available from the [TGA (Product Information)](http://tga.gov.au/hp/information-medicines-pi.htm) page.

#### Dosage and administration

The table below summarises the dosage and frequency of administration for medicines used to treat hepatitis B.

Table 1: Dosage and administration of medicines used to treat hepatitis B

|  |  |  |  |
| --- | --- | --- | --- |
| **Brand name and sponsor** | **Drug** | **Type of drug** | **Dose and frequency of administration** |
| Zeffix (Aspen Pharmacare Australia Pty Limited)Zetlam(Alphapharm Pty Ltd) | lamivudine | Nucleoside analogue | 100 mg once daily in adults and children >12 years3 mg/kg once daily to a maximum of 100 mg daily in children aged 2-11 years oldHigher doses are recommended in patients with HIV coinfection |
| Hepsera (Gilead Sciences Pty Limited) | adefovir dipivoxil | Nucleotide analogue | 10 mg once daily (adjusted in renally impaired patients) |
| Baraclude (Bristol-Myers Squibb Australia Pty Ltd) | entecavir | Nucleoside analogue | 0.5 mg once daily in nucleoside naïve patients (adjusted in renally impaired patients)1 mg once daily in patients with lamivudine resistance (adjusted in renally impaired patients) |
| Viread (Gilead Sciences Pty Limited) | tenofovir | Nucleotide analogue | 300 mg once daily (adjusted in renally impaired patients)Dose is given as tenofovir disoproxil fumarate (300 mg tablet equivalent to 136 mg tenofovir) |
| Sebivo (Novartis Pharmaceuticals Australia Pty Limited) | telbivudine | Nucleoside analogue | 600 mg once daily (adjusted in renally impaired patients) |
| Pegasys (Roche Products Pty Ltd) | peginterferon alfa-2a | Interferon | Subcutaneous injection 180 µg once a week for 48 weeks (adjusted in renally impaired patients) |
| Roferon-A (Roche Products Pty Ltd) | interferon alfa-2a | Interferon | Subcutaneous injection 4.5×106 units 3 times per week, increasing to a maximum of 18×106 units 3 times per week after one month if the lower dose is tolerated and there is no response |
| Intron A Redipen (Merck Sharp & Dohme (Australia) Pty Ltd) | interferon alfa-2b | Interferon | Subcutaneous injection 3×106 units 3 times per week, increasing to 5-10×106 units 3 times per week after one month if the lower dose is tolerated and there is no response |

Source: Australian Medicines Handbook, 2013

The current Product Information (PI) and Consumer Medicine Information (CMI) are available from [the TGA (Product Information)](file:///%5C%5Ccentral.health%5CDFSGroupData%5CSites%5CCO1%5CCO%5CPBD%5CPEB%5CEVAL%5CDUSC%5CDUSC%20policy%5CPvA%20transparency%20project%5CDUSC%20utilisation%20analysis%20reports%20public%20release%20documents%5CHepatitis%20B%202015%20Feb%5Cthe%20TGA%20%28Product%20Information%29) and the [TGA (Consumer Medicines Information).](http://www.tga.gov.au/consumers/information-medicines-cmi.htm)

#### Clinical situation

It is estimated that only 55 per cent of people living with chronic hepatitis B are diagnosed. The Second National Hepatitis B Strategy 2014-2017 notes expert opinion that increasing the proportion of those diagnosed to 80 per cent would significantly contribute to reducing hepatitis B associated morbidity and mortality, and reducing transmission.[[4]](#footnote-4)

While estimates for the proportion of people living with chronic hepatitis B who are on treatment are uncertain, they are very low, ranging from 2.5–5 per cent. Similarly, there is limited information on the proportion of people living with chronic hepatitis B who are eligible for treatment; however, Australian and international estimates range from 10–25 per cent.3

The decision to treat a patient is based on whether they are at risk for the development of cirrhosis and its consequences, liver failure and liver cancer. Clinical factors which are considered are the level of hepatitis B virus (HBV DNA) in the blood, alanine aminotransferase (ALT) levels and whether there is inflammation or fibrosis in the liver, as seen in the results of a liver biopsy.1 In general, a patient will require careful monitoring in the ‘Immune Tolerance’ and ‘Immune Control’ phases of the disease, and is likely to require treatment in the ‘Immune Clearance’ and ‘Immune Escape’ phases. To achieve continued clinical benefit, treatment may be required for years, decades or for the remainder of the patient’s life. The decision to initiate treatment must balance the long-term benefits with the long-term risks, and consider anticipated compliance and any contraindications.1

Drug resistance is common with older direct antiviral agents, but newer agents such as tenofovir and entecavir have favourable resistance profiles.[[5]](#footnote-5) According to clinical guidelines, tenofovir and entecavir are the preferred first-line therapies. Adefovir is also recommended as an appropriate first-line therapy, although the PBS listing for adefovir is restricted to second line use, after failure of antihepadnaviral therapy. In hepatitis B “e” antigen (HBeAg)-positive hepatitis B patients peginterferon is also an option for first line treatment. As lamivudine and telbivudine tend to have higher resistance rates they are generally not recommended in either HBeAg-positive or HBeAg-negative patients, although there are patient subgroups for whom lamivudine should be considered.1 There are options for combination treatment, such as lamivudine plus adefovir, if the patient develops resistance to lamivudine.

#### PBS listing details

Details of the PBS listing including listing date, indication, list price, maximum quantities and number of repeats, presentation, dose forms, brand name, manufacturer can be found in Appendix A.

##### Restriction

The PBS restrictions of medicines used to treat hepatitis B are summarised in the table below.

Table 2: PBS restrictions of medicines used to treat hepatitis B

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **LAM** | **ADV** | **ETV** | **TDF** | **LdT** | **IFN****alfa-2a** | **IFN****alfa-2b** | **pegIFN** |
| **Patients without cirrhosis:** |
| nucleoside analogue naïve with elevated HBV DNA levels and evidence of chronic liver injury |  |  |  |  |  |  |  |  |
| elevated HBV DNA levels and evidence of chronic liver injury |  |  |  |  |  |  |  |  |
| after antihepadnaviral therapy failure with or without combination treatment with lamivudine |  |  |  |  |  |  |  |  |
| after failure of lamivudine |  |  |  |  |  |  |  |  |
| **Patients with cirrhosis:** |
| nucleoside analogue naïve with detectable HBV DNA  |  |  |  |  |  |  |  |  |
| detectable HBV DNA  |  |  |  |  |  |  |  |  |
| after antihepadnaviral therapy failure with or without combination treatment with lamivudine |  |  |  |  |  |  |  |  |
| after failure of lamivudine |  |  |  |  |  |  |  |  |

Abbreviations: LAM: lamivudine; ADV: adefovir; ETV: entecavir; TDF:tenofovir; LdT:telbivudine; IFN alfa-2a: interferon alfa-2a; IFN alfa-2b: interferon alfa-2b; pegIFN: peginterferon alfa-2a

Full wording of the restrictions are available from the [PBS website](file:///%5C%5Ccentral.health%5CDFSGroupData%5CSites%5CCO1%5CCO%5CPBD%5CPEB%5CEVAL%5CDUSC%5CDUSC%20policy%5CPvA%20transparency%20project%5CManagement%20and%20templates%5CTemplate%20and%20SOP%5Cpbs.gov.au).

##### Date of listing on PBS

The date of first PBS listing of medicines used to treat hepatitis B are summarised in the table below.

Table 3: Date of first PBS listing of medicines used to treat hepatitis B

|  |  |
| --- | --- |
| **Drug** | **Date of first PBS listing for hepatitis B** |
| interferon alfa-2a | 1 November 2001 |
| interferon alfa-2b | 1 November 2001 |
| lamivudine | 1 November 2001 |
| adefovir  | 1 December 2004 |
| peginterferon alfa-2a | 1 October 2006 |
| entecavir | 1 December 2006 |
| telbivudine | 1 August 2008 |
| tenofovir | 1 December 2009 |

##### Changes to listing

Historical changes to the listings of medicines used to treat hepatitis B are tabulated in the appendices.

Current PBS listing details are available from the [PBS website](file:///%5C%5Ccentral.health%5CDFSGroupData%5CSites%5CCO1%5CCO%5CPBD%5CPEB%5CEVAL%5CDUSC%5CDUSC%20policy%5CPvA%20transparency%20project%5CManagement%20and%20templates%5CTemplate%20and%20SOP%5Cpbs.gov.au).

#### Relevant aspects of the PBAC considerations

**Entecavir July 2006 meeting**

Entecavir was recommended on a cost effectiveness basis compared to lamivudine for the treatment of hepatitis B patients in nucleos(t)ide naïve patients.

Entecavir was recommended on a cost minimisation basis compared to adefovir for the treatment of hepatitis B patients in lamivudine resistant patients.

The PBAC noted the overall market for chronic hepatitis B was not expected to grow or to grow more rapidly as a result of listing entecavir.

For further details refer to the [Public Summary Document](http://www.pbs.gov.au/info/industry/listing/elements/pbac-meetings/psd/2006-07/entecavir) from the July 2006 PBAC meeting.

**Tenofovir November 2008 meeting**

The PBAC recommended the listing of tenofovir on the S100 Highly Specialised Drugs Program of the PBS for the treatment patients with HBeAg-positive chronic hepatitis B who are nucleoside analogue naïve on a cost minimisation basis to entecavir 0.5 mg tablets.

The PBAC did not accept the claim that tenofovir is equally effective as entecavir in nucleoside naïve HBeAg negative patients because this conclusion relied on the assumption that tenofovir is equally effective in nucleoside naïve HBeAg negative and HBeAg positive patients.

The PBAC rejected the application for listing of tenofovir for the treatment of hepatitis in nucleoside experienced patients.

For further details refer to the [Public Summary Document](http://www.pbs.gov.au/info/industry/listing/elements/pbac-meetings/psd/2008-11/pbac-psd-tenofovir-nov08) from the November 2008 PBAC meeting.

**Tenofovir July 2009 meeting**

The PBAC recommended extending the listing of tenofovir on a cost-minimisation basis compared with entecavir 0.5 mg for treatment of chronic hepatitis B in nucleoside analogue naïve patients and on a cost-minimisation basis compared with adefovir 10 mg for patients who have failed previous antihepadnaviral therapy.

The submission estimated the likely number of patients/year to be less than 10,000 in Year 5 of listing.

For further details refer to the [Public Summary Document](http://www.pbs.gov.au/info/industry/listing/elements/pbac-meetings/psd/2009-07/pbac-psd-tenofovir-jul09) from the July 2009 PBAC meeting.

#### Previous reviews by the DUSC

A 12 month predicted versus actual review was completed for adefovir for the June 2006 DUSC meeting. The review found the actual utilisation of adefovir was slightly more than half of that predicted in the submission for the first year of listing.

The DUSC concluded that the lower than expected use may have been due to differences in interpretation of the requirement to have failed lamivudine therapy prior to being prescribed adefovir; as the treatment duration of lamivudine was not clinically well defined. Therefore the time between a patient being considered to have failed lamivudine and requiring transition to adefovir may be different in practice to that proposed in the submission.

### Methods

Data for the number of prescriptions for medicines used to treat hepatitis B were extracted from the Highly Specialised Drugs (HSD) database for the period January 2003 to June 2014 inclusive, based on the date that the prescription was supplied. These data were used to count the overall number of packs dispensed for medicines used to treat hepatitis B, and the annual cost to Government.

The number of patients was calculated by matching prescriptions from the Department of Human Services (DHS) Authority Approvals database with data from the DHS Medicare Pharmacy Claims database for the period July 2013 to June 2014, inclusive. The number of patients treated overall and for each drug was determined by counting the number of individual de-identified personal identification numbers in this period. Data manipulation was undertaken using SAS.

The DUSC noted that as there were only 12 months of complete patient level data available, it was not possible to complete a length of treatment analysis.

### Limitations of the data

Until July 2013 some HSD prescriptions were processed through the DHS Offline processing system, and these prescriptions do not have attached patient information. Therefore a patient level analysis has not been performed prior to July 2013 as the data are likely to be incomplete.

Some medicines used to treat hepatitis B are also listed for other indications, such as hepatitis C, HIV, myelogenous leukaemia in the chronic phase and malignant melanoma. Where a drug is listed for more than one indication under the same PBS item code it was not possible to separate these in the HSD data prior to July 2013.

The item codes for tenofovir include use for HIV. Figure 1 shows the use of tenofovir in the HSD database. All use of tenofovir prior to 1 December 2009 was for HIV treatment. The decrease in the use of tenofovir from the first quarter of 2006 is likely because a combination item of tenofovir with emtricitabine was listed for the treatment of HIV effective 1 February 2006.

Tenofovir was PBS listed for hepatitis B on 1 December 2009. In Figure 1, Hepatitis B (actual) represents the use of tenofovir for hepatitis B in the data set which matched the authority approvals and pharmacy claims data from July 2013 to June 2014. A trend function was used to estimate the amount of use of hepatitis B treatment before July 2013. This use was subtracted from the total use of tenofovir to estimate the use of tenofovir for HIV.

Figure 1: Estimated proportion of use of tenofovir over time

Lamivudine is also PBS listed for HIV but under separate PBS item codes which were excluded from this analysis. Use of interferon alfa-2a and interferon alfa-2b includes use for Philadelphia chromosome positive myelogenous leukaemia in the chronic phase. Use of peginterferon alfa-2a includes use for hepatitis C. As the use of interferons is quite low compared to direct antiviral drugs, the use of the interferons has not been adjusted.

For the period July 2013 to June 2014, prescriptions for HIV, hepatitis C and leukaemia were excluded from the data before counting the number of patients.

### Results

#### Analysis of drug utilisation

##### Overall utilisation

The figure below shows the use of medicines used to treat hepatitis B since 2003.

Figure 2: Use of medicines used to treat hepatitis B over time

Note that the use of tenofovir has been adjusted to exclude use for HIV, please see Figure 1 for more information.

The table below summarises the packs supplied by quarter and calendar year since 2003.

Table 4: Packs per quarter and year for all hepatitis B medicines

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Q1** | **Q2** | **Q3** | **Q4** | **Total by Calendar Year** |
| 2003 |  2,095  |  2,273  |  8,357  |  8,218  |  20,944  |
| 2004 |  7,464  |  8,054  |  8,212  |  8,904  |  32,634  |
| 2005 |  9,410  |  9,905  |  10,199  |  10,818  |  40,333  |
| 2006 |  10,097  |  13,057  |  11,249  |  12,068  |  46,471  |
| 2007 |  12,434  |  14,306  |  15,911  |  17,209  |  59,860  |
| 2008 |  16,743  |  18,777  |  19,471  |  21,443  |  76,435  |
| 2009 |  19,495  |  21,620  |  22,519  |  26,880  |  90,514  |
| 2010 |  26,215  |  26,814  |  29,587  |  30,594  |  113,210  |
| 2011 |  29,059  |  30,235  |  31,631  |  33,393  |  124,317  |
| 2012 |  33,183  |  33,856  |  35,910  |  38,038  |  140,987  |
| 2013 |  35,355  |  37,450  |  39,292  |  40,542  |  152,639  |
| 2014 |  38,015  |  39,529  |  |  |  77,544  |

\*Note: the figure reported for 2014 is for January to June 2014 (inclusive). These figures include some use for indications other than hepatitis B, however use of tenofovir prior to its hepatitis B listing on 1 December 2009 has been excluded (see ‘Limitations of the data’ p9-10 and Figure 1 for more information).

Use of hepatitis B medicines is increasing. The population rate of diagnosis of hepatitis B infection in Australia declined slightly from 33.8 per 100,000 population in 2009 to 30.9 in 2013[[6]](#footnote-6), which suggests the diagnosed prevalence may be fairly stable. The graph of overall utilisation by drug suggests the market is growing, largely due to the use of entecavir and tenofovir.

##### Utilisation by relevant sub-populations/regions or patient level analysis

In the 12 month period from July 2013 to June 2014, 12,953 patients accessed PBS listed medicine for hepatitis B.

The number of patients who accessed each drug is below. Note that a patient is counted once for each drug they received in this time period, and as patients may receive more than one medicine in the period, the sum of these patients is higher than the count of patients when they are not split by drug.

Table 5: Count of patients who received hepatitis B medicine during the period July 2013 to June 2014, by drug

|  |  |
| --- | --- |
| **Drug name** | **Number of patients** |
| ADEFOVIR DIPIVOXIL | 623 |
| ENTECAVIR | 7,175 |
| INTERFERON ALFA-2A | 1 |
| LAMIVUDINE | 1,696 |
| PEGINTERFERON ALFA-2A | 168 |
| TELBIVUDINE | 5 |
| TENOFOVIR | 4,641 |

Note that during this period interferon alfa-2b was PBS listed for hepatitis B but no prescriptions were recorded as being for hepatitis B.

The clinical guidelines recommend pegylated interferon be used rather than the older interferons. Only one patient used interferon alfa-2a for hepatitis B in the period July 2013 to June 2014, and there were no patients who used interferon alfa-2b for hepatitis B in this period.

#### Analysis of expenditure

Table 6: Cost to Government of medicines used to treat hepatitis B since 2003

|  |  |
| --- | --- |
| **Year** | **Cost to Government** |
| 2003 |  $3,291,262  |
| 2004 |  $4,914,580  |
| 2005 |  $9,818,377  |
| 2006 |  $12,215,030  |
| 2007 |  $21,980,871  |
| 2008 |  $28,889,980  |
| 2009 |  $36,395,481  |
| 2010 |  $46,507,626  |
| 2011 |  $51,100,477  |
| 2012 |  $58,120,201  |
| 2013 |  $62,710,354  |
| 2014\* |  $31,805,409  |

These figures are based on the date of supply.
\*Note: the figure reported for 2014 is for the first six months of the year. These figures include some use for indications other than hepatitis B, however use of tenofovir prior to its listing on 1 December 2009 has been excluded (see Figure 1Figure 1 for more information).

#### Analysis of actual versus predicted utilisation

As the most recent new listing for hepatitis B occurred five years ago (December 2009) a predicted versus actual comparison is out of scope for this analysis.

### Discussion

The use of hepatitis B medicines is increasing with time. The population rate of diagnosis of hepatitis B infection in Australia declined slightly from 33.8 per 100,000 population in 2009 to 30.9 in 20135, which suggests the diagnosed prevalence may be fairly stable. The DUSC agreed that the growth in the use of hepatitis B medicines is likely being driven by the introduction of newer drugs with lower rates of resistance, the use of combination treatment and patients being able to be treated with these drugs for a longer duration. The DUSC also considered that increased testing, in accordance with national guidelines, could increase detection, diagnosis and treatment in the future. DUSC noted that an estimated 45 per cent of prevalent patients are undiagnosed and that it is likely these patients have not shown any symptoms and may be diagnosed in the future.

To estimate future patterns of use, the DUSC considered it would be informative to know more about the history of the epidemiology of hepatitis B and whether the diagnosis rate has changed over time. However, future treated prevalence of hepatitis B in Australia will be influenced by a number of factors, including the patterns of immigration from endemic countries, levels of testing and access to accredited prescribers.

The DUSC considered the PBS restrictions provide flexibility for prescribers to choose the best treatment for their patient.

### DUSC actions

* The DUSC referred the report to the PBAC for information.

### Context for analysis

The DUSC is a Sub Committee of the Pharmaceutical Benefits Advisory Committee (PBAC). The DUSC assesses estimates on projected usage and financial cost of medicines.

The DUSC also analyses data on actual use of medicines, including the utilisation of PBS listed medicines, and provides advice to the PBAC on these matters. This may include outlining how the current utilisation of PBS medicines compares with the use as recommended by the PBAC.

The DUSC operates in accordance with the quality use of medicines objective of the National Medicines Policy and considers that the DUSC utilisation analyses will assist consumers and health professionals to better understand the costs, benefits and risks of medicines.

The utilisation analysis report was provided to the pharmaceutical sponsors of each drug and comments on the report were provided to DUSC prior to its consideration of the analysis.

### Sponsors’ comments

Alphapharm Pty Ltd

Aspen Pharma Pty Ltd

Apotex Pty Ltd

Bristol-Myers Squibb Australia Pty Ltd

Merck Sharp & Dohme (Australia) Pty Ltd

Novartis Pharmaceuticals Australia Pty Limited

Roche Products Pty Ltd

The sponsors have no comment.

### Appendix A

#### PBS listing details (as at 1 November 2014)

Table 7: PBS listing of medicines to treat hepatitis B

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Item** | **Name, form & strength, pack size** | **Max. quant.**  | **Rpts**  | **DPMQ** | **Brand name and manufacturer** |
| 5770Q | LAMIVUDINE100 mg tablet, 28 | 2 | 5 | $162.44 | Zeffix (Aspen Pharmacare Australia Pty Limited)Zetlam(Alphapharm Pty Ltd) |
| 6257H | LAMIVUDINE100 mg tablet, 28 | 2 | 5 | $175.70 |
| 5771R | LAMIVUDINE5 mg/mL oral liquid, 240 mL | 2 | 5 | $226.25 | Zeffix (Aspen Pharmacare Australia Pty Limited) |
| 6271C | LAMIVUDINE5 mg/mL oral liquid, 240 mL | 2 | 5 | $242.06 |
| 5606C | ADEFOVIR DIPIVOXIL10 mg tablet, 30  | 2 | 5 | $1,250.00 | Hepsera (Gilead Sciences Pty Limited) |
| 6450L | ADEFOVIR DIPIVOXIL10 mg tablet, 30  | 2 | 5 | $1,296.76 |
| 5711N | ENTECAVIR500 microgram tablet, 30 | 2 | 5 | $768.60 | Baraclude (Bristol-Myers Squibb Australia Pty Ltd) |
| 5712P | ENTECAVIR1 mg tablet, 30  | 2 | 5 | $1,250.00 |
| 9602J | ENTECAVIR500 microgram tablet, 30 | 2 | 5 | $806.10 |
| 9603K | ENTECAVIR1 mg tablet, 30  | 2 | 5 | $1,296.76 |
| 6358P | TENOFOVIR300 mg tablet, 30 | 2 | 5 | $1,011.60 | Viread (Gilead Sciences Pty Limited) |
| 9563H | TENOFOVIR300 mg tablet, 30 | 2 | 5 | $966.20 |
| 9562G | TELBIVUDINE600 mg tablet, 28 | 2 | 5 | $501.76 | Sebivo (Novartis Pharmaceuticals Australia Pty Limited) |
| 9630W | TELBIVUDINE600 mg tablet, 28 | 2 | 5 | $528.60 |
| 6439X | PEGINTERFERON ALFA-2A135 microgram/0.5 mL injection, 4 x 0.5 mL syringes | 2 | 5 | $2,378.56 | Pegasys (Roche Products Pty Ltd) |
| 6449K | PEGINTERFERON ALFA-2A180 microgram/0.5 mL injection, 4 x 0.5 mL syringes | 2 | 5 | $2,747.22 |
| 9515T | PEGINTERFERON ALFA-2A135 microgram/0.5 mL injection, 4 x 0.5 mL syringes | 2 | 5 | $2,331.80 |
| 9516W | PEGINTERFERON ALFA-2A180 microgram/0.5 mL injection, 4 x 0.5 mL syringes | 2 | 5 | $2,700.46 |
| 5759D | INTERFERON ALFA-2A3 million international units/0.5 mL injection, 1 x 0.5 mL syringe  | 30 | 5 | $894.00 | Roferon-A (Roche Products Pty Ltd) |
| 5760E | INTERFERON ALFA-2A4.5 million international units/0.5 mL injection, 1 x 0.5 mL syringe | 30 | 5 | $1,341.00 |
| 5761F | INTERFERON ALFA-2A6 million international units/0.5 mL injection, 1 x 0.5 mL syringe | 30 | 5 | $1,787.40 |
| 5762G | INTERFERON ALFA-2A9 million international units/0.5 mL injection, 1 x 0.5 mL syringe | 30 | 5 | $2,681.40 |
| 6210W | INTERFERON ALFA-2A3 million international units/0.5 mL injection, 1 x 0.5 mL syringe  | 30 | 5 | $936.46 |
| 6211X | INTERFERON ALFA-2A4.5 million international units/0.5 mL injection, 1 x 0.5 mL syringe | 30 | 5 | $1,387.66 |
| 6212Y | INTERFERON ALFA-2A6 million international units/0.5 mL injection, 1 x 0.5 mL syringe | 30 | 5 | $1,834.06 |
| 6213B | INTERFERON ALFA-2A9 million international units/0.5 mL injection, 1 x 0.5 mL syringe | 30 | 5 | $2,728.06 |
| 5763H | INTERFERON ALFA-2B18 million international units/1.2 mL injection, 1 x 1.2 mL cartridge | 2 | 5 | $357.48 | Intron A Redipen (Merck Sharp & Dohme (Australia) Pty Ltd) |
| 5764J | INTERFERON ALFA-2B30 million international units/1.2 mL injection, 1 x 1.2 mL cartridge | 2 | 5 | $595.80 |
| 5765K | INTERFERON ALFA-2B60 million international units/1.2 mL injection, 1 x 1.2 mL cartridge | 2 | 5 | $1,191.60 |
| 6253D | INTERFERON ALFA-2B18 million international units/1.2 mL injection, 1 x 1.2 mL cartridge | 2 | 5 | $378.54 |
| 6254E | INTERFERON ALFA-2B30 million international units/1.2 mL injection, 1 x 1.2 mL cartridge | 2 | 5 | $626.40 |
| 6255F | INTERFERON ALFA-2B60 million international units/1.2 mL injection, 1 x 1.2 mL cartridge | 2 | 5 | $1,238.36 |
| 5766L | INTERFERON ALFA-2B18 million international units/3 mL injection, 1 x 3 mL vial | 15 | 5 | $2,681.10 | Intron A (Merck Sharp & Dohme (Australia) Pty Ltd) |
| 5767M | INTERFERON ALFA-2B25 million international units/2.5 mL injection, 1 x 2.5 mL vial | 15 | 5 | $3,723.75 |
| 5768N | INTERFERON ALFA-2B10 million international units/mL injection, 5 x 1 mL vials | 3 | 5 | $1,489.50 |
| 6218G | INTERFERON ALFA-2B18 million international units/3 mL injection, 1 x 3 mL vial | 15 | 5 | $2,727.91 |
| 6219H | INTERFERON ALFA-2B25 million international units/2.5 mL injection, 1 x 2.5 mL vial | 15 | 5 | $3,770.56 |
| 6246R | INTERFERON ALFA-2B10 million international units/mL injection, 5 x 1 mL vials | 3 | 5 | $1,536.25 |

Source: pbs.gov.au

#### Changes to listing

Table 8: Changes to the PBS listing of medicines to treat hepatitis B

| **Drug** | **Comment** | **Date** |
| --- | --- | --- |
| interferon alfa-2a | First PBS listed | 1 November 2001 |
| interferon alfa-2b | First PBS listed | 1 November 2001 |
| lamivudine | First PBS listed | 1 November 2001 |
| adefovir  | First PBS listed | 1 December 2004 |
| peginterferon alfa-2a | First PBS listed | 1 October 2006 |
| entecavir | First PBS listed | 1 December 2006 |
| adefovir | The original restriction included a note which stated patients may receive treatment in combination with lamivudine for three months and immunocompromised patients may receive combination therapy for 12 months. The note was changed to “Patients may receive treatment in combination with lamivudine but not with other PBS-subsidised antihepadnaviral therapy.” | 1 March 2008 |
| entecavir | Requirement removed that patients must be 16 years or older | 1 July 2008 |
| telbivudine | First PBS listed | 1 August 2008 |
| tenofovir | First PBS listed | 1 December 2009 |
| interferon alfa-2a | Current specified levels of HBV elevation are included in the restriction | 1 November 2011 |
| interferon alfa-2b |
| lamivudine |
| entecavir |
| telbivudine |
| peginterferon alfa-2a |
| tenofovir | Current specified levels of HBV elevation are included in the restriction for patients who are nucleoside analogue naive | 1 November 2011 |
| adefovir  | Requirement removed that "women of child bearing age are not pregnant, not breast-feeding, and are using an effective form of contraception" | 1 November 2011 |
| peginterferon alfa-2a | Requirement removed for the patient to have chronic hepatitis B and compensated liver disease | 1 March 2012 |
| interferon alfa-2a | Restrictions split into patients with and without cirrhosis | 1 March 2012 |
| interferon alfa-2b |
| lamivudine |
| adefovir  |
| entecavir |
| telbivudine |
| peginterferon alfa-2a |
| tenofovir |

Current PBS listing details are available from pbs.gov.au

### Disclaimer

The information provided in this report does not constitute medical advice and is not intended to take the place of professional medical advice or care. It is not intended to define what constitutes reasonable, appropriate or best care for any individual for any given health issue. The information should not be used as a substitute for the judgement and skill of a medical practitioner.

The Department of Health (DoH) has made all reasonable efforts to ensure that information provided in this report is accurate. The information provided in this report was up-to-date when it was considered by the Drug Utilisation Sub-committee of the Pharmaceutical Benefits Advisory Committee. The context for that information may have changed since publication.

To the extent provided by law, DoH makes no warranties or representations as to accuracy or completeness of information contained in this report.

To the fullest extent permitted by law, neither the DoH nor any DoH employee is liable for any liability, loss, claim, damage, expense, injury or personal injury (including death), whether direct or indirect (including consequential loss and loss of profits) and however incurred (including in tort), caused or contributed to by any person’s use or misuse of the information available from this report or contained on any third party website referred to in this report.

1. Gastroenterological Society of Australia. Chronic Hepatitis B (CHB) Recommendations – Australia and New Zealand (2010): Gastroenterological Society of Australia; 2009. Available from <http://www.gesa.org.au/professional.asp?cid=9&id=109>. [↑](#footnote-ref-1)
2. Hepsera (adefovir). Consumer Medicine Information.. Melbourne: Gilead Sciences Pty Ltd. Prepared 5 September 2014. Available from <https://www.ebs.tga.gov.au/ebs/picmi/picmirepository.nsf/pdf?OpenAgent&id=CP-2010-CMI-03993-3>. [↑](#footnote-ref-2)
3. Pegasys (peginterferon). Consumer Medicine Information. Sydney: Roche Products Pty Ltd. Prepared 28 July 2014. Available from <
https://www.ebs.tga.gov.au/ebs/picmi/picmirepository.nsf/pdf?OpenAgent&id=CP-2010-CMI-01159-3>. [↑](#footnote-ref-3)
4. Australian Government Department of Health. Second National Hepatitis B Strategy 2014–2017. Canberra: Department of Health; 2014. Available from <http://www.health.gov.au/internet/main/publishing.nsf/Content/ohp-bbvs-hepb>. [↑](#footnote-ref-4)
5. Australian Medicines Handbook. Adelaide: Australian Medicines Handbook Pty Ltd; 2013. [↑](#footnote-ref-5)
6. The Kirby Institute. HIV, viral hepatitis and sexually transmissible infections in Australia Annual Surveillance

Report 2014. Sydney; The Kirby Institute; 2014. Available from < https://kirby.unsw.edu.au/surveillance/2014-annual-surveillance-report-hiv-viral-hepatitis-stis>. [↑](#footnote-ref-6)