6.04 INACTIVATED QUADRIVALENT INFLUENZA VACCINE  
(split virion),  
Pre-filled syringe, 0.5mL,  
Afluria® Quad, Seqirus (Australia) Pty Ltd

1. Purpose of Application
   1. Extend the current listing of inactivated quadrivalent influenza vaccine (QIV) (split virion), Afluria® Quad, on the NIP for the prevention of influenza to include persons aged 5-17 years old who are currently eligible for other brands of QIV through the NIP; specifically:

* Children aged 5 to 17 years with increased risk of complications from influenza;
* Aboriginal and/or Torres Strait Islanders aged 15 to 17 years; and
* Pregnant women aged 17 years and under.
  1. Afluria Quad has not been previously considered by the PBAC in these age groups, however it is listed on the NIP for use in eligible people aged 18 years and over.
  2. The submission based the request for listing on a cost-minimisation basis compared to QIV (inactivated, split virion) (Fluarix Tetra®) and inactivated QIV (split virion) (FluQuadri®). Both comparators are currently listed on the NIP for these age and sub-groups.

Table 1: Key components of the clinical issue addressed by the submission

| **Component** | **Description** |
| --- | --- |
| Population | Persons aged 5-17 years old who are eligible for influenza vaccine through the NIP. Currently defined as those have certain medical conditions which increase the risk of influenza disease complications such as those with severe asthma, lung or heart disease, low immunity or diabetes.  Pregnant women ≤ 17 years, currently eligible for free influenza vaccine through the NIP.  Aboriginal and/or Torres Strait Islander persons aged 15-17 years, currently eligible for free influenza vaccine through the NIP. |
| Intervention | Afluria Quad is a prophylactic vaccine developed for immunisation against influenza disease caused by influenza virus subtypes A and subtypes B. It contains 15 mcg haemagglutinin per dose each for strains A/H1N1, A/H3N2, B/Yamagata lineage, and B/Victoria lineage. The strains chosen for vaccine manufacture each year are endorsed by the Australian Influenza Vaccine Committee as being antigenically equivalent to the reference virus. |
| Comparator | NIP listed quadrivalent influenza virus vaccine; there are two formulations currently available for this age group: FluQuadri and Fluarix Tetra. |
| Outcomes | The primary outcomes in the submission were the GMT ratio and SCR. |
| Clinical claim | In persons aged 5-17 years who are at risk of complications from influenza, Afluria Quad is as effective as other NIP listed QIV vaccines at reducing infection with influenza viruses and has an equivalent safety profile to the comparator. |

NIP: National immunisation program; GMT: geometric mean titre; SCR: seroconversion rate

Source: Table1.1, p16 of the submission, adjusted during the evaluation.

1. Requested listing
   1. The submission requested a change to the circumstances in which Afluria Quad is available as a designated vaccine for the NIP to expand the population in which the vaccine may be available:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Name, Restriction,**  **Manner of administration and form** | | **Max.**  **Qty** | **№.of**  **Rpts** | **Approved ex-manufacturing price** | **Proprietary Name and Manufacturer** | | |
| Inactivated Quadrivalent Influenza Vaccine (split virion), 0.5mL, prefilled syringe | | 1 | 0\* | $''''''''''' | Afluria Quad® | Seqirus (Australia)Pty Ltd | |
| Category/Program: | NIP | | | | | |
| Groups eligible for funded influenza vaccine | 5 years and over with increased risk of complications from influenza  Aboriginal and/or Torres Strait Islander peoples 15 years and over  65 years and over  Pregnant women | | | | | |
| Number and timing of doses: | For children 5 years and older but less than 9 years, 2 doses at least 1 month apart for the first vaccination and 1 dose per calendar year after that.  For persons 9 years and above, 1 dose per calendar year. | | | | | |

* 1. Children aged 5 to <9 years who are influenza vaccine naïve require an additional dose in the first year of immunisation, four weeks after the initial vaccine. This was not included in the proposed listing. The ATAGI post-submission advice (P1) clarified that even for children who were initially vaccinated with two doses, if they missed one or more subsequent years, they would still only require a single dose of vaccine.
  2. The proposed NIP indication in the submission is the same as the current NIP listing for Fluarix Tetra and FluQuadri, with the exception of the youngest age of administration allowable (3 years and over for Fluarix Tetra and FluQuadri).
  3. The submission proposed an ex-manufacturer price of $'''''''', equal to the nationally negotiated price for Afluria Quad in persons aged 18 and over.
  4. A minor submission to the PBAC from the Chief Medical Officer (CMO) of the Department of Health requested that eligibility for National Immunisation Program (NIP) funded QIV for Aboriginal and/or Torres Strait Islander people be expanded to include children and adolescents aged 5 to <15 years (*agenda item 6.17 refers)*. The CMO requested that the PBAC also consider expanding eligibility for Afluria Quad to include Aboriginal and/or Torres Strait Islander people aged 5 to <15 years (resulting in listing for ages 5 years and older).

*For more detail on PBAC’s view, see section 7 PBAC outcome.*

1. Background

## Registration status

* 1. Afluria Quad was approved for TGA registration on 2February 2018 for the prevention of influenza caused by Influenza Virus Types A and B contained in the vaccine. The vaccine is indicated for use only in persons aged 5 years and over.

## Previous PBAC considerations

* 1. Out of session, subsequent to the August 2016 PBAC meeting, the PBAC recommended the listing of Afluria Quad on the Determination for the prevention of seasonal influenza for adults aged 18 years and older who are eligible to receive NIP‑funded influenza vaccine. The recommendation was made on a cost‑minimisation basis with Fluarix Tetra, with the equi‑effective doses being one dose of 0.5 mL Afluria Quad and one dose of 0.5 mL Fluarix Tetra.

*For more detail on PBAC’s view, see section 7 PBAC outcome.*

1. Population and disease
   1. Influenza is a self-limited infection for most children, with a resolution of symptoms after approximately one week of illness. However, many children experience complications ranging from mild conditions not requiring hospitalisation, to life threatening conditions. The most common severe complication in children infected with influenza is pneumonia, which can lead to respiratory failure and death. Other rare complications include acute myositis, neurological conditions, transverse myelitis, encephalopathy, Guillain-Barre syndrome (GBS) and myopericarditis.
   2. Influenza characteristically begins with the abrupt onset of fever, diffuse myalgia, malaise and headache, which is then rapidly followed by the development of non-productive cough, nasal congestion, rhinitis and sore throat.
   3. Currently two brands of QIV, Fluarix Tetra and FluQuadri, are listed on the NIP for the nominated population.
   4. The submission requested that Afluria Quad be listed as an additional brand of QIV vaccine on the NIP for the nominated population.
2. Comparator
   1. The submission nominated Fluarix Tetra and FluQuadri as the main comparators. These QIV vaccines are currently listed on the NIP for the nominated population in the submission. ATAGI pre-submission advice considered that the appropriate primary comparator for any applications for the use of a QIV vaccine in the NIP should be a QIV vaccine that is currently registered and listed on the Determination (p2-3 of the ATAGI pre-submission advice). The choice of comparators was appropriate.

*For more detail on PBAC’s view, see section 7 PBAC outcome.*

1. Consideration of the evidence

## Sponsor hearing

* 1. There was no hearing for this item.

## Consumer comments

* 1. The PBAC noted that no consumer comments were received for this item.

## Clinical trials

* 1. The submission was based on one head-to-head randomised trial comparing Afluria Quad to Fluarix Tetra: CSLCT-QIV-13-02 (hereon referred to as trial QIV‑13‑02). A claim of non-inferiority was made on the outcomes of immunogenicity and safety. The PBAC has previously accepted surrogate outcomes (e.g. haemagglutination antibody geometric mean titre and seroconversion rate) for the assessment of influenza vaccines.
  2. Details of the trials presented in the submission are provided in Table 2.

Table 2: Trials and associated reports presented in the submission

| **Trial ID** | **Protocol title/ Publication title** | **Publication citation** |
| --- | --- | --- |
| CSLCT-QIV-13-02  Referred to as QIV-13-02 | A Phase 3, randomised, multicenter, observer-blinded, non-inferiority study to evaluate the immunogenicity and safety of bioCSL quadrivalent inactivated influenza virus vaccine (bioCSL QIV) with a US-licensed 2015-2016 quadrivalent inactivated comparator influenza vaccine (comparator QIV) in a pediatric population 5 through 17 years of age. | October 2016 |
|  | Airey J, Albano FR, Sawlwin DC, Jones AG, Formica N, Matassa V, Leong J. Immunogenicity and safety of a quadrivalent inactivated influenza virus vaccine compared with a comparator quadrivalent inactivated influenza vaccine in a paediatric population: A Phase 3, randomised non-inferiority study. | Vaccine 2017 35(20):2745-2752 |

Source: Table 2.4, p38 of the submission.

* 1. The key features of the direct randomised trial are summarised in Table 3.

Table 3: Key features of the included evidence for Afluria Quad vs. Fluarix Tetra

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Trial** | **N** | **Design/ duration** | **Risk of bias** | **Patient population** | **Outcome(s)** |
| QIV-13-02 | 1709 (FAS) | R, DB, MC  6 mths | Low | Healthy children 5-17 years | GMT, SCR, Safety |

FAS: full analysis set; DB: double blind; R: randomised; MC: multi centre; GMT: geometric mean titre; SCR: seroconversion rate

Source: Compiled during the evaluation.

* 1. Trial QIV-13-02 either did not conduct subgroup analyses on children considered at increased risk of complications, or excluded them depending on the condition. Trial QIV-13-02 also did not include Aboriginal and/or Torres Strait Islander children, and excluded pregnant women from the trial. The ATAGI pre-submission advice stated that based on the non-inferior immunogenicity in healthy children, the protection provided in children with underlying comorbidities would be expected to be similar to that achieved with other NIP funded QIVs in this population (Pre-submission advice, P4).
  2. QIV-13-02 was only conducted over a 6-month period during the 2014/15 northern hemisphere influenza season. The strains included in QIVs differ year to year, as do the prevalent strains in the community. The immunogenicity results during one season may not reflect the immunogenicity of the QIVs in another season.
  3. The submission did not compare Afluria Quad with FluQuadri directly or indirectly.

## Comparative effectiveness

* 1. The results for the primary outcomes of the geometric mean titre (GMT) ratios and seroconversion rates (SCR) are presented in Table 4 and Table 5.

Table 4: Post-vaccination HI antibody GMTs of Afluria Quad relative to Fluarix Tetra for each strain 28 days after last vaccination (per-protocol population)

|  | **Post-vaccination GMT** | | **GMT Ratio** | **NI Criterion** |
| --- | --- | --- | --- | --- |
| **Strain** | **Afluria Quad** | **Fluarix Tetra** | **Fluarix Tetra/Afluria Quad**  **(95% CI)** | **UCL < 1.5?** |
| A/H1N1 | 952.6  (n=1,6043) | 958.8 | 1.01  (0.93, **1.09**) | Yes |
| A/H3N2 | 886.4  (n=1,6043) | 930.6 | 1.05  (0.96, **1.15**) | Yes |
| B/YAM | 60.9  (n=1,6043) | 54.3 | 0.89  (0.81, **0.98**) | Yes |
| B/VIC | 145.0  (n=1,6043) | 133.4 | 0.92  (0.83, **1.02**) | Yes |

GMT: geometric mean titre; NI: non-inferiority; QIV: quadrivalent influenza vaccine; CI: confidence interval; UCL: upper confidence limit

Source: Table 2.13, p51 of the submission.

* 1. The upper confidence limit of the 95% confidence interval of the GMT ratio was less than the non-inferiority criterion nominated in the submission of 1.5 for each of the four strains tested.

Table 5: Post-vaccination SCRs of Afluria Quad relative to Fluarix Tetra for each strain 28 days after last vaccination (per-protocol population)

|  | **Seroconversion rate (SCR) %** | | **SCR Difference** | **NI Criterion** |
| --- | --- | --- | --- | --- |
| **Strain** | **Afluria Quad (N=1,605) (95% CI)** | **Fluarix Tetra (N=528) (95% CI)** | **Fluarix Tetra − Afluria Quad (95% CI)** | **UCL ≤ 10%** |
| A/H1N1 | 66.4  (64.0, 68.7) | 63.3  (59.0, 67.4) | -3.1  (-8.0, **1.8**) | Yes |
| A/H3N2 | 82.9  (81.0, 84.7) | 83.3  (79.9, 86.4) | 0.4  (-4.5, **5.3**) | Yes |
| B/YAM | 58.5  (56.0, 60.9) | 55.1  (50.8, 59.4) | -3.4  (-8.3, **1.5**) | Yes |
| B/VIC | 72.1  (69.8, 74.3) | 70.1  (66.0, 74.0) | -2.0  (-6.9, **2.9**) | Yes |

SCR: seroconversion rate; NI: non-inferiority; QIV: quadrivalent influenza vaccine; CI: confidence interval; UCL: upper confidence limit

Source: Table 2.13, p51 of the submission

* 1. The upper confidence interval for the SCR difference was less than the non-inferiority criterion nominated in the submission of 10% for each of the four influenza strains.
  2. The submission claimed that both of the non-inferiority criteria were consistent with FDA guidance (p49 of the submission). ATAGI considered that the non-inferiority criterion were appropriate (p3 of the ATAGI pre-submission advice).

## Comparative harms

* 1. A summary of the solicited and unsolicited adverse events is presented in Table 6[[1]](#footnote-1).

Table 6: Summary of all solicited and unsolicited adverse events in QIV-13-02 (OSS population)

| **Category of adverse event (AE)** | **Afluria Quad**  **(N=1,692)** | | | **Fluarix Tetra**  **(N=560)** | | | **Overall**  **(N=2,252)** | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **n** | **(%)** | **Events** | **n** | **(%)** | **Events** | **n** | **(%)** | **Events** |
| No Adverse Events | 598 | (35.3) | - | 223 | (39.8) | - | 821 | (36.5) | - |
| ≥ 1 AE | 1,094 | (64.7) | 2,902 | 337 | (60.2) | 844 | 1,431 | (63.5) | 3,746 |
| ≥ 1 Related AE | 1,003 | (59.3) | 2,285 | 310 | (55.4) | 666 | 1,313 | (58.3) | 2,951 |
| Overall AE Intensity |  |  |  |  |  |  |  |  |  |
| Grade 1 | 637 | (37.6) | 1,933 | 194 | (34.6) | 577 | 831 | (36.9) | 2,510 |
| Grade 2 | 355 | (21.0) | 811 | 113 | (20.2) | 227 | 468 | (20.8) | 1,038 |
| Grade 3 | 101 | (6.0) | 153 | 30 | (5.4) | 39 | 131 | (5.8) | 192 |
| Missing | 1 | (<0.1) | 5 | 0 | - | 1 | 1 | (<0.1) | 6 |
| Solicited AE Intensity |  |  |  |  |  |  |  |  |  |
| Grade 1 | 627 | (38.7) | 1,675 | 200 | (37.4) | 515 | 827 | (38.4) | 2,190 |
| Grade 2 | 299 | (18.4) | 647 | 94 | (17.6) | 182 | 393 | (18.2) | 829 |
| Grade 3 | 92 | (5.7) | 135 | 25 | (4.7) | 31 | 117 | (5.4) | 166 |
| Missing | 1 | (<0.1) | 4 | 0 |  | 1 | 1 | (<0.1) | 5 |
| Grade >=1 | 1,019 | (62.9) | 2,461 | 319 | (59.6) | 729 | 1,338 | (62.1) | 3,190 |
| Unsolicited AE Intensity | |  |  |  |  |  |  |  |  |
| Grade 1 | 149 | (8.8) | 258 | 31 | (5.5) | 62 | 180 | (8.0) | 320 |
| Grade 2 | 108 | (6.4) | 164 | 33 | (5.9) | 45 | 141 | (6.3) | 209 |
| Grade 3 | 11 | (0.7) | 18 | 6 | (1.1) | 8 | 17 | (0.8) | 26 |
| Missing | 1 | (<0.1) | 1 | 0 |  |  | 1 | (<0.1) | 1 |
| Serious Adverse Events | 8 | (0.5) | 11 | 2 | (0.4) | 2 | 10 | (0.4) | 13 |
| Deaths | 0 | - | - | 0 | - | - | 0 | - | - |
| Related Serious AEs | 0 | - | - | 0 | - | - | 0 | - | - |
| Adverse Events of Special Interest | 0 | - | - | 0 | - | - | 0 | - | - |
| Discontinuation due to an AE | 0 | - | - | 0 | - | - | 0 | - | - |

OSS: overall safety population; AE: adverse event

Source: Table 2.17, p56 of the submission

* 1. The submission presented an exploratory safety analysis to investigate the occurrence of fever after administration of Afluria Quad or Fluarix Tetra. The submission concluded that both Afluria Quad and Fluarix Tetra were well tolerated overall, and that there were no significant associations of fever for either vaccine (p57-58 of the submission). While not statistically significant, ATAGI noted that in both Cohort A (5 to 9 years of age) and Cohort B (17 years of age) the percentage of patients experiencing fever was higher in the Afluria Quad group (p4 of the ATAGI pre-submission advice). The study was not powered to detect a difference in the incidence of fever, which increases the uncertainty in these results.
  2. ATAGI noted that in 2010 a bioCSL (now Seqirus) trivalent influenza vaccine (TIV) (Fluvax®) was associated with an increased incidence of febrile seizures in children aged five years or less. Investigation into the cause of this safety concern identified a combination of new influenza strains and the standard method of manufacturing used by the sponsor. Afluria Quad has been produced under modified manufacturing conditions.

## Clinical claim

* 1. The submission described Afluria Quad as non-inferior in terms of effectiveness compared with Fluarix Tetra and non-inferior in terms of safety compared with Fluarix Tetra (p66 of the submission).
  2. The evaluation considered that the therapeutic conclusion regarding efficacy is likely to be reasonable given the evidence presented in the submission and the fact that the nominated comparator vaccines which contain the same strains each season as Afluria Quad are currently being used in the population nominated by the submission. However, clinical evidence in terms of efficacy was provided from only one influenza season in the northern hemisphere. Furthermore, trial QIV-13-02 excluded most of the population for whom NIP listing was sought.
  3. The therapeutic conclusion regarding safety appears reasonable; however some uncertainty remains around the incidence of fever in younger children.
  4. The PBAC considered that the claim of non-inferior comparative effectiveness was reasonable.
  5. The PBAC considered that the claim of non-inferior comparative safety was reasonable.

## Economic analysis

* 1. The proposed equi-effective doses were Afluria Quad 0.5mL and Fluarix Tetra 0.5mL in line with the doses used in Trial QIV-13-02, the TGA PIs and the current NIP listing. The proposed equi-effective doses *are* reasonable.
  2. The submission did not propose the equi-effective doses for Afluria Quad and FluQuadri. The equi-effective doses from the July 2015 FluQuadri submission were FluQuadri 0.5mL and Fluarix Tetra 0.5mL. It is reasonable to expect that the equi-effective doses remain as Afluria Quad 0.5mL and FluQuadri 0.5mL.
  3. No additional costs and/or cost offsets were reported in the submission.

## Drug cost/patient/year

* 1. $''''''''' based on a single dose per child per year.
  2. For influenza vaccine naïve children aged 5 to 8 years, the cost would be $''''''''''' in the first year based on the child receiving two vaccinations four weeks apart in the first year, followed by $''''''''' per child per year thereafter.

## Estimated NIP usage & financial implications

* 1. This submission was not considered by DUSC. The submission utilised a mixed epidemiological and market share approach and assumed a market share of 30% of the population eligible for QIV.

Table 7: Estimated use and financial implications

|  | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| --- | --- | --- | --- | --- | --- | --- |
| **Estimated extent of use** | | | | | | |
| Number of patients treated (assuming 30% market share of the eligible population) | '''''''''''' | '''''''''''' | ''''''''''' | ''''''''''''' | '''''''''''' | ''''''''''' |
| Number of 5-8 year olds requiring a second vaccine in the first year of immunisation | '''''''''' | '''''''''' | ''''''''' | '''''''''' | '''''''''' | ''''''''' |
| Number of vaccines administereda | ''''''''''''' | '''''''''''' | '''''''''''''' | '''''''''''''' | ''''''''''''' | ''''''''''''' |
| **Estimated financial implications of Afluria Quad** | | | | | | |
| Cost to NIP | $'''''''''''''''' | $'''''''''''''''''' | $''''''''''''''' | $''''''''''''''''' | $'''''''''''''''' | $'''''''''''''''''' |
| **Estimated financial implications for Fluarix Tetra and FluQuadri** | | | | | | |
| Savings to NIP | $'''''''''''''''' | $''''''''''''''' | $'''''''''''''''''' | $''''''''''''''' | $'''''''''''''''''' | $'''''''''''''''' |
| **Net financial implications** | | | | | | |
| Net cost to NIP | '''''' | '''''' | ''''''' | '''''' | '''''' | ''''' |

a Assuming immunisation with one vaccine per year in children 9 years and older and children 5-8 years previously immunised for influenza, and immunisation with two vaccines in the first year for immunisation naïve children 5-8 years.

Source: Table 4.3, p71 of the submission; Table 4.4, p72 of the submission; Table 4.5, p72 of the submission Table 4.8, p73 of the submission

* 1. At year 6, the estimated number of vaccines administered was less than 10,000 and there would be no net cost to the NIP.

## Quality Use of Medicines

* 1. No Quality Use of Medicines information was presented with the submission.
  2. ATAGI noted that the introduction of an additional influenza vaccine brand product for use in a paediatric population, with a different lower age limit to those currently funded on the NIP, may introduce confusion among providers and parents (p7 of the ATAGI pre-submission advice). Accordingly, there is a risk that Afluria Quad would be used to vaccinate children 3 to 5 years of age, for which it is not TGA registered. The PSCR (P1) acknowledged ATAGI’s concerns and noted the plan to distribute Dear Healthcare Professional letters, vaccine refrigerator stickers and an ATAGI age recommendation card for the 2019 influenza season. The PSCR added that this approach would be evaluated through bimonthly market research activities, and through fortnightly reports of off-label use from the Office of Health Protection.
  3. ATAGI recommended that an active surveillance and monitoring program be conducted to monitor the ongoing safety of the different vaccine compositions and to monitor adverse events following immunisation (including in vaccine naïve children who require two immunisations) given that Afluria Quad has not previously been used in children 5-17 years in a national program, and considering the limited evidence of safety in the paediatric population, particularly among those with underlying medical conditions (p8 of the ATAGI pre-submission advice).

*For more detail on PBAC’s view, see section 7 PBAC outcome.*

1. PBAC Outcome
   1. The PBAC recommended a change to the circumstances in which inactivated QIV, Afluria® Quad, is a designated vaccine for the purposes of the Act. The PBAC recommended the expansion of the population in which Afluria Quad may be available on the NIP for the prevention of influenza to include persons aged 5 to 17 years (inclusive) who are currently eligible for other brands of QIV through the NIP; specifically:

* People aged 5 to 17 years with increased risk of complications from influenza, as defined in subsection 7(8)A(c) of the Determination (including pregnant women);
* Women who are pregnant; and
* Aboriginal and/or Torres Strait Islander people aged 15 to 17 years.
  1. At the same meeting, the PBAC recommended a change to the circumstances in which QIVs currently listed on the NIP and able to be administered in people aged 5 to 14 years (specifically, FluQuadri and Fluarix Tetra) may be provided to include NIP funded use in Aboriginal and/or Torres Strait Islander people aged 5 to 14 years. Accordingly, in addition to the above recommendation, the PBAC recommended that Afluria Quad also be available for NIP listing for Aboriginal and/or Torres Strait Islanders aged 5 to 14 years (inclusive).
  2. The PBAC recalled it recommended the NIP listing of Afluria Quad for use in NIP eligible adults aged 18 years and over on a cost-minimisation basis to Fluarix Tetra subsequent to its August 2016 meeting.
  3. The PBAC noted that the proposed comparator QIVs, Fluarix Tetra and FluQuadri, are currently designated vaccines in the requested population. The PBAC considered the clinical place for Afluria Quad and the comparators were appropriate.
  4. The PBAC’s recommendation to expand the age eligibility for Afluria Quad was made on a cost-minimisation basis to Fluarix Tetra (or FluQuadri) with the equi-effective doses being one dose of Fluarix Tetra 0.5mL (or FluQuadri 0.5mL) and one dose of Afluria Quad 0.5mL.
  5. The PBAC noted that the submission presented a single head-to-head randomised trial comparing Afluria Quad to Fluarix Tetra and based the claim of non-inferior comparative effectiveness and safety on immunogenicity and safety outcomes. The PBAC noted that Trial QIV-13-02 either did not conduct subgroup analyses on children considered at increased risk of complications or excluded them, depending on the condition. Trial QIV-13-02 also did not include Aboriginal and/or Torres Strait Islander children, and excluded pregnant women from the trial. The PBAC noted the ATAGI advice that based on the non-inferior immunogenicity in healthy children, the protection provided in children with underlying comorbidities would be expected to be similar to that achieved with other NIP funded QIVs in this population (ATAGI pre‑submission advice, p4).
  6. The PBAC noted that the submission did not present a comparison of effectiveness and safety for Afluria Quad and FluQuadri. The PBAC recalled that it recommended FluQuadri for listing on the determination on a cost minimisation basis to Fluarix Tetra in July 2015. Accordingly, the PBAC considered that demonstration of non-inferiority to Fluarix Tetra was sufficient in this instance.
  7. The PBAC noted that QIV-13-02 was only conducted over a 6 month period in the 2014/15 northern hemisphere. The PBAC considered that variability in influenza strain prevalence occurs year to year and that this impacts all influenza vaccines, including certainty of vaccine effectiveness in a given season.
  8. The PBAC considered that the clinical claim of non-inferior comparative effectiveness to Fluarix Tetra based on immunogenicity results was reasonable, noting that the pre-specified criteria for non-inferiority were met for each of the four shared influenza strains in Afluria Quad and Fluarix Tetra.
  9. The PBAC recalled that in 2010 a bioCSL (now Seqirus) trivalent influenza vaccine (Fluvax) was associated with increased rates of febrile seizures in children aged five years and younger. The PBAC noted that investigation linked this safety concern to a combination of new influenza strains and the method of manufacturing used by the sponsor. The PBAC noted that Afluria Quad is produced under modified manufacturing conditions and that the evidence presented in the submission was supportive of a claim of non-inferior comparative safety to Fluarix Tetra.
  10. The PBAC noted that there would be no net cost to the NIP as a result of this extension to listing.
  11. The PBAC noted that ATAGI had recommended that an active safety surveillance and monitoring program be conducted and that the sponsor had advised that it was exploring ongoing surveillance.
  12. The PBAC noted that this submission is not eligible for an Independent Review as Independent Review is only relevant to submissions seeking PBS listing.

**Outcome:**

Recommended

1. Recommended listing
   1. Amend the circumstances under which Afluria Quad is available as a designated vaccine to include persons aged 5 to 17 years (inclusive) who are currently eligible for other brands of QIV through the NIP; specifically:

* People aged 5 to 17 years who have increased risk of complications from influenza (as defined in subsection 7(8)A(c) of the Determination);
* women who are pregnant; and
* Aboriginal and/or Torres Strait Islander people aged 5 to 17 years.

1. Context for Decision

The PBAC helps decide whether and, if so, how medicines should be subsidised in Australia. It considers submissions in this context. A PBAC decision not to recommend listing or not to recommend changing a listing does not represent a final PBAC view about the merits of the medicine. A company can resubmit to the PBAC or seek independent review of the PBAC decision.

1. Sponsor’s Comment

The sponsor had no comment.

1. Solicited adverse events were a series of pre-specified local and systemic symptoms occurring between day 1 and day 7. Unsolicited adverse events were any other adverse event that occurred between day 1 and the study exit (p4 of the QIV-13-02 clinical study report). [↑](#footnote-ref-1)