# Respiratory Viral Panels

**MEDICAL POLICY NUMBER:** 256

**Effective Date:** 8/1/2023

**Last Review Date:** 7/2023

**Next Annual Review:** 7/2024



**INSTRUCTIONS FOR USE:** Company Medical Policies serve as guidance for the administration of plan benefits. Medical policies do not constitute medical advice nor a guarantee of coverage. Company Medical Policies are reviewed annually and are based upon published, peer-reviewed scientific evidence and evidence-based clinical practice guidelines that are available as of the last policy update. The Company reserves the right to determine the application of medical policies and make revisions to medical policies at any time. The scope and availability of all plan benefits are determined in accordance with the applicable coverage agreement. Any conflict or variance between the terms of the coverage agreement and Company Medical Policy will be resolved in favor of the coverage agreement. Coverage decisions are made on the basis of individualized determinations of medical necessity and the experimental or investigational character of the treatment in the individual case. In cases where medical necessity is not established by policy for specific treatment modalities, evidence not previously considered regarding the efficacy of the modality that is presented shall be given consideration to determine if the policy represents current standards of care.

**SCOPE:** Providence Health Plan, Providence Health Assurance, and Providence Plan Partners as applicable (referred to individually as “Company” and collectively as “Companies”).

## *PLAN PRODUCT AND BENEFIT APPLICATION*

☒ **Commercial** ☒ **Medicaid/OHP*** ☐ **Medicare****

*Medicaid/OHP Members

*Oregon*: Services requested for Oregon Health Plan (OHP) members follow the OHP Prioritized List and Oregon Administrative Rules (OARs) as the primary resource for coverage determinations. Medical policy criteria below may be applied when there are no criteria available in the OARs and the OHP Prioritized List.

**Medicare Members

This *Company* policy may be applied to Medicare Plan members only when directed by a separate *Medicare* policy. Note that investigational services are considered **"not medically necessary"** for Medicare members.

## COVERAGE CRITERIA

I. Respiratory viral panels of 3-5 pathogens (CPTs: 87631, 87636, 87637, 0240U, and 0241U) may be considered **medically necessary** when all of the following criteria (A.-C.):

   A. Testing is for any of the diagnoses listed below. (See Billing Guidelines for a complete list of diagnosis codes); **and**
   B. Testing is for individuals who are at high risk for complications of respiratory viral infection; **and**
   C. Testing will be used to guide or alter management.

II. Respiratory viral panels of 3-5 pathogens (CPTs: 87631, 87636, 87637, 0240U, and 0241U) are considered **not medically necessary** when criterion I. above is not met.

III. Multiplex PCR respiratory viral panels of 6 or more pathogens (CPT codes: 87632, 87633, 0115U, 0202U, and 0223U) are **not medically necessary**.

Link to Evidence Summary

## *POLICY CROSS REFERENCES*

None

**The full Company portfolio of current Medical Policies is available online and can be accessed here.**

## POLICY GUIDELINES

### BACKGROUND

Viral pathogens are the most common cause of upper respiratory tract infections (URIs). Respiratory viral panels (RVPs) detect and identify specific viral nucleic acids from individuals exhibiting symptoms of respiratory viruses (e.g. adenovirus, coronavirus, human bocavirus, influenza A, influenza B).

## REGULATORY STATUS

### U.S. FOOD AND DRUG ADMINISTRATION (FDA)

Approval or clearance by the Food and Drug Administration (FDA) does not in itself establish medical necessity or serve as a basis for coverage. Therefore, this section is provided for informational purposes only.

## CLINICAL EVIDENCE AND LITERATURE REVIEW

### EVIDENCE REVIEW

A review of the ECRI, Hayes, Cochrane, and PubMed databases was conducted regarding the use of respiratory viral panels as a treatment for various conditions. Below is a summary of the available evidence identified through June 2023.

#### High Risk Individuals

Studies evaluating the use of respiratory testing in the outpatient setting are largely limited to high-risk populations. Respiratory viral infections cause significant morbidity and mortality in these populations, and the clinical utility of RVP testing has been established in numerous studies.[1-4]

#### Average Risk Individuals

- In 2018, Echavarria and colleagues conducted a prospective, randomized, non-blinded study that assessed the impact of RVP testing on antibiotic and antiviral prescription, and use of complementary studies (chest x-ray, computerized tomography scan, complete blood count, urinary antigen for Streptococcus pneumoniae or Legionella pneumoniae, and bacterial cultures of blood, urine or sputum).[5] In total, 432 individuals (156 children and 276 adults) presented to a single center emergency department with signs and symptoms of an acute lower respiratory infection had testing performed via the FilmArray assay (n=289) or immunofluorescence assay (IFA) (n=143). High risk individuals, such as those with cancer, HIV, immunosuppression, or organ transplants, were excluded. Results showed a change in medical management was significantly more likely in the FilmArray assay group than the IFA group in both children and adults. For antibiotics, a significant change in treatment plan was observed in both children and adults in the FilmArray assay group versus the IFA group. While there were significant changes

noted in antiviral prescription for both FluA/B positive adults and FluA/B negative adults, there was no significant change in antiviral prescription noted in children between the two study groups. As for complementary studies, there was a significant decrease of usage noted in children between the two groups; however, a significant change was not noted in adults. Additional studies are needed to validate these results in the average risk population.

- In 2016, Green and colleagues also evaluated the impact of RVP testing on antibiotic prescription rates in adult individuals (n=295) through a retrospective chart review.[6] Charts were evaluated based on three test groups: tested positive for influenza virus (n=105), tested positive for a non-influenza virus pathogen (n=109), and no respiratory pathogen detected (n=81). The authors found a significant difference in rates of oseltamivir and antibiotic prescriptions among the three groups; however, there was no significant difference in antibiotic prescription rates between the non-influenza virus pathogen group and the no respiratory pathogen detected group. The authors concluded that "testing positive for influenza virus was associated with receiving fewer antibiotic prescriptions, but no such effect was seen for those who tested positive for a non-influenza virus. Authors concluded that data suggest testing for influenza viruses alone may be sufficient.

**Large Respiratory Viral Panels**

- In 2020 (updated 2023), Hayes published a evidence review assessing the analytical validity, clinical validity, and clinical utility of the BioFire FilmArray Respiratory Panel.[7]

  In total, 16 studies were included for review. Nine studies provided data for the performance of the FilmArray RP. Eight studies reported on run time and turnaround time and 1 study reported on the limit of detection of the FilmArray RP. Four studies provided data for the FilmArray RP on patient nasopharyngeal swabs (NPS) samples. These studies evaluated FilmArray RP assay performance against other nucleic acid amplification tests (NAATs) and suggest that the FilmArray RP has good agreement with other NAATs. While the FilmArray RP also has good sensitivity and specificity for detection of certain pathogens (e.g., influenza A/B and respiratory syncytial virus) there was demonstrated cross-reactivity with others (e.g., B. pertussis). Eight studies provided data for the FilmArray RP test and came primarily from studies of inpatient care. Although the reported data suggests the FilmArray RP may improve some aspects of therapeutic management, the data was conflicting in demonstrating improved clinical outcomes such as reduced hospital length of stay and improved antibiotic prescription rates.

  Authors concluded that low-quality evidence supports the use of the FilmArray RP intended for the simultaneous qualitative detection and identification of multiple respiratory viral and bacterial nucleic acids in nasopharyngeal swabs obtained from individuals suspected of respiratory tract infections, to aid in the diagnosis of respiratory infection if used in conjunction with other clinical and epidemiological information. Limitations included lack of data to support the accuracy of the test and to the lack of clinical validity studies that used additional pertinent methods to validate the FilmArray RP test. Hayes assigned a "C" rating and called for additional studies to validate the accurate detection of all pathogens and that the test improves patient outcomes.

- In 2020 (updated 2023), published and evidence review assessing the analytical validity, clinical validity, and clinical utility of the FilmArray Respiratory Panel 2 (RP2).[8] In total, 1 analytical validity study and 1 clinical validity study was identified. One study reported a 99.3% success rate for the FilmArray RP2. The clinical validity study compared the FilmArray RP2 test with the FilmArray RP. No studies addressed the clinical utility of the FilmArray RP2 test. Authors assigned a "D2" rating, concluding that evidence was insufficient to support the use of the FilmArray RP2 intended for the simultaneous qualitative detection and identification of multiple respiratory viral and bacterial nucleic acids in nasopharyngeal swabs obtained from individuals suspected of respiratory tract infections, to aid in the diagnosis of respiratory infection if used in conjunction with other clinical and epidemiological information.

- In 2018 (updated 2020), ECRI conducted a evidence review assessing the ePlex respiratory pathogen (RP) panel for detecting influenza.[9] In total, 4 diagnostic cohort studies were included for review. Three studies compared the ePlex RP panel to a real-time PCR test or another commercial respiratory panel and reported median time to results and positive percent agreement. One retrospective multicenter diagnostic cohort study (n = 344) compared the ePlex RP panel to RVP and reported turnaround times, number of positive tests, percentage of patients admitted, and percentage of patients receiving antibiotics. Authors reported agreement with the reference standard instead of diagnostic accuracy (i.e., sensitivity, specificity). Also, laboratory-developed real-time PCR-based assays are developed and performed in a single lab, so test methods can vary among laboratories. Therefore, ECRI stated that study results may not generalize to other laboratory-developed PCR-based assays for influenza. Two of the diagnostic cohort studies included specimen samples not indicated for testing with the ePlex RP (i.e., sputum, bronchoalveolar lavage fluid, throat swab, nasopharyngeal aspirate), which could affect test results. The clinical utility study had high risk of bias due to retrospective design.

  Authors concluded that evidence was too low in quality and quantity to determine whether the ePlex RP panel works as well as the gold standard laboratory-developed, real-time PCR testing for diagnosing influenza. These studies provide some evidence that the ePlex RP panel provides results within a few hours compared with standard methods. Additional large diagnostic cohort studies that compare patient NPSs tested with ePlex RP to viral culture or real-time PCR tests were considered necessary to address the evidence gaps, but none are ongoing.

**CLINICAL PRACTICE GUIDELINES**

**Infectious Diseases Society of America**

In 2018, the Infectious Diseases Society of America published guidelines addressing the diagnosis, treatment, chemoprophylaxis, and institutional outbreak management of seasonal influenza.[10] Authors issued the following recommendations:

- Clinicians should test for influenza in high-risk patients, including immunocompromised persons who present with influenza-like illness, pneumonia, or nonspecific respiratory illness (eg, cough without fever) if the testing result will influence clinical management.
- Clinicians should test for influenza in patients who present with acute onset of respiratory symptoms with or without fever, and either exacerbation of chronic medical conditions (eg,

asthma, chronic obstructive pulmonary disease [COPD], heart failure) or known complications of influenza (eg, pneumonia) if the testing result will influence clinical management.

- Clinicians can consider influenza testing for patients not at high risk for influenza complications who present with influenza-like illness, pneumonia, or nonspecific respiratory illness (eg, cough without fever) and who are likely to be discharged home if the results might influence antiviral treatment decisions or reduce use of unnecessary antibiotics, further diagnostic testing, and time in the emergency department, or if the results might influence antiviral treatment or chemoprophylaxis decisions for high-risk household contacts.
- Clinicians should use rapid molecular assays (ie, nucleic acid amplification tests) over rapid influenza diagnostic tests (RIDTs) in outpatients to improve detection of influenza virus infection (A-II) [targeted panel tests].

**EVIDENCE SUMMARY**

Evidence is sufficient to support the use of respiratory viral panels that test 5 or fewer targets in individuals who are at high risk for complications of respiratory viral infection, including immunocompromised individuals. Evidence does not support, however, RVP testing in average risk individuals, as studies to date have yet to demonstrate improved clinical outcomes in this population. Evidence is also insufficient to support the use of large viral panels containing 6 or more pathogen targets. Additional large diagnostic cohort studies are needed to establish the clinical utility of these panels.

## *BILLING GUIDELINES AND CODING*

CPTs 87631, 87636, 87637, 0240U, and 0241U are only covered when supported by medical necessity by billing with one of the of the following ICD-10 codes:

| | | | | |
|---|---|---|---|---|
| B9729 | D8132 | D828 | J180 | Z03818 |
| D800 | D8139 | D829 | J181 | Z20822 |
| D801 | D814 | D830 | J182 | Z20828 |
| D802 | D815 | D831 | J188 | Z8616 |
| D803 | D816 | D832 | J189 | Z940 |
| D804 | D817 | D838 | J208 | Z941 |
| D805 | D81810 | D839 | J22 | Z942 |
| D806 | D81818 | D840 | R051 | Z943 |
| D807 | D81819 | D841 | R052 | Z944 |
| D808 | D8189 | J069 | R053 | Z945 |
| D809 | D819 | J1281 | R054 | Z946 |
| D810 | D820 | J1282 | R058 | Z9481 |
| D811 | D821 | J1289 | R059 | Z9482 |
| D812 | D822 | J129 | R062 | Z9483 |
| D8130 | D823 | J158 | R509 | Z9484 |
| D8131 | D824 | J168 | U071 | |

| CODES* | | |
|---|---|---|
| **CPT** | 0115U | Respiratory infectious agent detection by nucleic acid (DNA and RNA), 18 viral types and subtypes and 2 bacterial targets, amplified probe technique, including multiplex reverse transcription for RNA targets, each analyte reported as detected or not detected |
| | 0202U | Infectious disease (bacterial or viral respiratory tract infection), pathogen specific nucleic acid (DNA or RNA), 22 targets including severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), qualitative RT-PCR, nasopharyngeal swab, each pathogen reported as detected or not detected |
| | 0223U | Infectious disease (bacterial or viral respiratory tract infection), pathogen-specific nucleic acid (DNA or RNA), 22 targets including severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), qualitative RT-PCR, nasopharyngeal swab, each pathogen reported as detected or not detected |
| | 0225U | Infectious disease (bacterial or viral respiratory tract infection) pathogen-specific DNA and RNA, 21 targets, including severe acute respiratory syndrome coronavirus 2 (SARSCoV-2), amplified probe technique, including multiplex reverse transcription for RNA targets, each analyte reported as detected or not detected |
| | 0240U | Infectious disease (viral respiratory tract infection), pathogen-specific RNA, 3 targets (severe acute respiratory syndrome coronavirus 2 [SARS-CoV-2], influenza A, influenza B), upper respiratory specimen, each pathogen reported as detected or not detected |
| | 0241U | Infectious disease (viral respiratory tract infection), pathogen-specific RNA, 4 targets (severe acute respiratory syndrome coronavirus 2 [SARS-CoV-2], influenza A, influenza B, respiratory syncytial virus [RSV]), upper respiratory specimen, each pathogen reported as detected or not detected |
| | 87631 | Infectious agent detection by nucleic acid (DNA or RNA); respiratory virus (eg, adenovirus, influenza virus, coronavirus, metapneumovirus, parainfluenza virus, respiratory syncytial virus, rhinovirus), includes multiplex reverse transcription, when performed, and multiplex amplified probe technique, multiple types or subtypes, 3-5 targets |
| | 87632 | Infectious agent detection by nucleic acid (DNA or RNA); respiratory virus (eg, adenovirus, influenza virus, coronavirus, metapneumovirus, parainfluenza virus, respiratory syncytial virus, rhinovirus), includes multiplex reverse transcription, when performed, and multiplex amplified probe technique, multiple types or subtypes, 6-11 targets |
| | 87633 | Infectious agent detection by nucleic acid (DNA or RNA); respiratory virus (eg, adenovirus, influenza virus, coronavirus, metapneumovirus, parainfluenza virus, respiratory syncytial virus, rhinovirus), includes multiplex reverse transcription, when performed, and multiplex amplified probe technique, multiple types or subtypes, 12-25 targets |
| | 87636 | Infectious agent detection by nucleic acid (DNA or RNA); severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (Coronavirus disease [COVID-19]) and influenza virus types A and B, multiplex amplified probe technique |

| | | |
|---|---|---|
| | 87367 | Infectious agent detection by nucleic acid (DNA or RNA); severe acute respiratory syndrome coronavirus 2 (SARSCoV-2) (coronavirus disease [covid-19]), influenza virus types a and b, and respiratory syncytial virus, multiplex amplified probe technique |
| **HCPCS** | None | |

***Coding Notes:**

- The above code list is provided as a courtesy and may not be all-inclusive. Inclusion or omission of a code from this policy neither implies nor guarantees reimbursement or coverage. Some codes may not require routine review for medical necessity, but they are subject to provider contracts, as well as member benefits, eligibility and potential utilization audit.
- All unlisted codes are reviewed for medical necessity, correct coding, and pricing at the claim level. If an unlisted code is submitted for non-covered services addressed in this policy then it will be **denied as not covered**. If an unlisted code is submitted for potentially covered services addressed in this policy, to avoid post-service denial, **prior authorization is recommended**.
- **See the non-covered and prior authorization lists on the Company Medical Policy, Reimbursement Policy, Pharmacy Policy and Provider Information website for additional information.**
- HCPCS/CPT code(s) may be subject to National Correct Coding Initiative (NCCI) procedure-to-procedure (PTP) bundling edits and daily maximum edits known as "medically unlikely edits" (MUEs) published by the Centers for Medicare and Medicaid Services (CMS). This policy does not take precedence over NCCI edits or MUEs. Please refer to the CMS website for coding guidelines and applicable code combinations.

## *REFERENCES*


1. Bridevaux P-O, Aubert J, Soccal P, et al. Incidence and outcomes of respiratory viral infections in lung transplant recipients: a prospective study. *Thorax.* 2014;69(1):32-38.
2. Fisher CE, Preiksaitis CM, Lease ED, et al. Symptomatic respiratory virus infection and chronic lung allograft dysfunction. *Clinical Infectious Diseases.* 2016;62(3):313-319.
3. Magnusson J, Westin J, Andersson L-M, Brittain-Long R, Riise GC. The impact of viral respiratory tract infections on long-term morbidity and mortality following lung transplantation: a retrospective cohort study using a multiplex PCR panel. *Transplantation.* 2013;95(2):383-388.
4. Hammond SP, Gagne LS, Stock SR, et al. Respiratory virus detection in immunocompromised patients with FilmArray respiratory panel compared to conventional methods. *Journal of clinical microbiology.* 2012;50(10):3216-3221.
5. Echavarría M, Marcone DN, Querci M, et al. Clinical impact of rapid molecular detection of respiratory pathogens in patients with acute respiratory infection. *Journal of Clinical Virology.* 2018;108:90-95.
6. Green DA, Hitoaliaj L, Kotansky B, Campbell SM, Peaper DR. Clinical utility of on-demand multiplex respiratory pathogen testing among adult outpatients. *Journal of clinical microbiology.* 2016;54(12):2950-2955.
7. Hayes Inc. FilmArray Respiratory Panel (BioFire Diagnostics LLC). https://evidence.hayesinc.com/report/gte.filmarray4787. Published 2023. Accessed 6/8/2023.
8. Hayes Inc. FilmArray Respiratory Panel 2 (BioFire Diagnostics LLC). https://evidence.hayesinc.com/report/gte.filmarray4894. Published 2023. Accessed 6/8/2023.
9. ECRI Institute. ePlex Respiratory Pathogen (RP) Panel (GenMark Diagnostics, Inc.) for Detecting Influenza. https://www.ecri.org/components/ProductBriefs/Pages/25839.aspx. Published 2020. Accessed 6/8/2023.

10. Uyeki TM, Bernstein HH, Bradley JS, et al. Clinical Practice Guidelines by the Infectious Diseases Society of America: 2018 Update on Diagnosis, Treatment, Chemoprophylaxis, and Institutional Outbreak Management of Seasonal Influenzaa. *Clinical Infectious Diseases.* 2018;68(6):e1-e47.

## *POLICY REVISION HISTORY*

| DATE | REVISION SUMMARY |
|---|---|
| 2/2023 | Converted to new policy template. |
| 8/2023 | Annual Review. Codes added, no changes to configuration. Diagnosis codes added back to Billing Guideline. |