

# Multiplex Pathogen Identification Panels for Infectious Disease



## Medical Coverage Policy

Effective Date: 12/14/2023  
Revision Date: 12/14/2023  
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Policy Number: HUM-0578-018

**Change Summary:** Updated Title, Coverage Determination, Coverage Limitations, Provider Claims Codes, References

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<p><b>Disclaimer</b> <b>Description</b> <b>Coverage Determination</b> <b>Background</b></p>	<p><b>Medical Alternatives</b> <b>Provider Claims Codes</b> <b>References</b></p>
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**Description**

Microbes (eg, bacteria, fungi, parasites, viruses) cause infections in humans. Testing methods for detecting microbes traditionally include detection by cultures or antibody testing. However, since microbes contain genetic material (DNA and RNA), genetic testing methods can be applied to detect pathogens. The genetic material in microbes differs from the genetic material in human cells. Samples used for genetic testing for infectious disease include aspirated fluid around joints, blood, cerebrospinal fluid, sputum, stool and urine. Genetic testing can be used to diagnose infections, identify and type the microbes causing an infection as well as determine if a microbe will respond to a specific treatment.

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Nucleic acid amplification test (NAAT or NAT) is one type of genetic test used for infectious disease. This technique makes numerous copies (amplification) of any genetic material from the microbes present in a sample so that it can be more easily detected. One type of NAAT is polymerase chain reaction (PCR). These tests provide faster results than traditional methods and are more sensitive and specific.

Some newer genetic tests for infectious disease can analyze for several different microbes simultaneously from a single sample. This is called panel testing, also known as molecular panels or multiplex testing. Panel tests may be used to identify infections that have similar signs and symptoms but can be caused by a variety of microbes. Currently, the most common panel tests are respiratory or gastrointestinal infection multiplex NAAT panels. For example, an individual may present with symptoms such as abdominal pain and diarrhea which can be caused by a virus, bacteria or parasite. Genetic testing panels may lead to a quicker diagnosis which can influence treatment decisions but may also include those with unclear medical management. Another indication for multiplex pathogen identification testing are central nervous system (CNS) infections. **BioFire FilmArray Meningitis/Encephalitis (ME) Panel** is an example of multiplex pathogen test for CNS infections.

Multiplex pathogen identification panels have been suggested for the evaluation of many types of infections including, but may not be limited to, bloodstream, bone and joint, encephalitis, meningitis, surgical wounds and urinary tract infections. Examples of multiplex pathogen identification panels for these infections include, but may not be limited to: **(Refer to Coverage Limitations section)**

- Accelerate PhenoTest BC Kit
- BioFire Bone and Joint Infection (BJI) Panel
- BioFire FilmArray Blood Culture Identification (BCID2) Panel
- Lesion Infection (Wound)
- Qlear UTI
- Qlear UTI-Reflex ABR
- Urogenital Pathogen with Rx Panel (UPX)

Next-generation sequencing (NGS), also known as high-throughput sequencing or deep sequencing, has been proposed to identify microbial infections for several indications. There are two approaches to NGS: whole genome sequencing or

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targeted sequencing which includes PCR in the process. An example of NGS for infectious disease includes **MicroGenDx qPCR and NGS for Infection. (Refer to Coverage Limitations section).**

Antibiotic resistance testing, also known as antimicrobial susceptibility testing, provides information that can be used to guide treatment decisions such as the selection of appropriate antibiotic regimens. There are different methods for testing, including conventional methods (phenotypic testing) and newer molecular (genotypic) techniques such as PCR, NAAT and NGS. Examples of molecular antibiotic resistance tests include, but may not be limited to, **ABRx Antibiotic Resistance Panel, RevoGene Carba C and XPERT CARBA-R. (Refer to Coverage Limitations Section).**

Some laboratories offer panels that include both pathogen identification and antibiotic resistance or sensitivity. Panels are used for many indications including, but may not be limited to, recurrent urinary tract infections (UTIs). Examples of this type of testing include, but may not be limited to, **GENETWORx UTI with ABR, Guidance UTI and Qlear UTI-Reflex ABR. (Refer to Coverage Limitations section).**

Differentiation between bacterial from viral infections is an emerging indication for multiplex pathogen testing. An example of this type of test is **MeMed BV. (Refer to Coverage Limitations section).**

**Metagenomic NGS** is an evolving, novel molecular technology proposed to detect pathogens for infectious disease and can potentially provide direct, unbiased analysis of microbial composition of specimens without reliance on traditional culture or targeted molecular tests. An example is **Johns Hopkins Metagenomic Next-Generation Sequencing Assay for Infectious Disease. (Refer to Coverage Limitations section).**

**Genetic testing for infectious disease differs from genetic tests for inherited conditions.** Microbes associated with infectious disease contain genetic material but the genetic material contained within microbes differs from genetic material within human cells. Genetic testing for inherited conditions, also known as germline mutation testing, analyzes an individual's DNA and can identify genetic mutations to determine inherited risk of disease. An individual's germline DNA is constant and identical in all body tissue types. The DNA and RNA of microbes are present only in

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the tissue sampled, are not representative of an individual's germline DNA and are not inheritable.

### Related Medical Coverage Policies

Test/Indication	Medical Coverage Policy
Molecular testing for bacterial vaginosis, vaginal candidiasis or vaginitis	<a href="#">Molecular Diagnostic Testing for Reproductive Health</a>
Serologic (antibody) testing for SARS-CoV-2	<a href="#">Severe Acute Respiratory Syndrome Coronavirus 2</a> <a href="#">Serologic (Antibody) Testing</a>
Viral testing for SARS-CoV-2	<a href="#">Severe Acute Respiratory Syndrome Coronavirus 2</a> <a href="#">Viral Testing</a>

### Coverage Determination

#### **Central Nervous System Infection Multiplex Pathogen Identification Panel**

Humana members may be eligible under the Plan for **central nervous system (CNS) infection multiplex pathogen identification panel (87483)** when an individual presents with signs and symptoms of CNS infection (eg, encephalitis, meningitis).

#### **Gastrointestinal Multiplex Pathogen Identification Panel – Targeted (Up to 5 Targets)**

Humana members may be eligible under the Plan for **gastrointestinal multiplex pathogen identification panel up to 5 targets (87505)** when the following criteria are met:

- Individual presents with signs and symptoms of gastrointestinal infection including travel-related diarrhea (eg, abdominal pain, bloody stool, dehydration, diarrhea, loss of appetite, nausea, vomiting) for greater than 7 days duration; **AND**
- Traditional stool test (eg, culture, microscopic analysis, antigen analysis) results are negative; **AND**

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- Results of the test will determine therapeutic management (eg, antibiotic treatment)

### **Gastrointestinal Infection Multiplex Pathogen Identification Panel – Expanded (6 to 25 Targets)**

Humana members may be eligible under the Plan for **gastrointestinal infection multiplex pathogen identification panel containing 6 to 25 targets** (87506, 87507) when the following criteria are met:

- Individual meets the above [criteria for targeted panel](#); **AND**
- Individual is immunocompromised and/or considered high-risk for serious complications and includes any of the following:
  - Currently receiving cancer treatment; **OR**
  - Currently receiving chronic glucocorticoid therapy; **OR**
  - Diagnosed with human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS); **OR**
  - Diagnosed with inherited disease that affects the immune system (eg, agammaglobulinemia, selective IgA deficiency); **OR**
  - Organ transplant recipient

### **Respiratory Infection Multiplex Pathogen Identification Panel – Targeted (Up to 5 Targets)**

Humana members may be eligible under the Plan for **respiratory infection multiplex pathogen identification panel up to 5 targets** (87631) when the following criteria are met:

- Individual presents with signs and symptoms of respiratory infection (eg, cough, dyspnea [short of breath], fever, sore throat, tight chest, wheezing); **AND**

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- Individual is immunocompromised and/or considered high-risk for serious complications and includes any of the following:
  - Currently receiving cancer treatment; **OR**
  - Currently receiving chronic glucocorticoid therapy; **OR**
  - Diagnosed with human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS); **OR**
  - Diagnosed with inherited disease that affects the immune system (eg, agammaglobulinemia, selective IgA deficiency); **OR**
  - Organ transplant recipient; **AND**
- Results of the test will determine therapeutic management (eg, antibiotic treatment)

### *Coverage Limitations*

Humana members may **NOT** be eligible under the Plan for **multiplex pathogen identification panels for infectious disease** for any indications other than those listed above including, but may not be limited to:

- Antibiotic resistance including, but may not be limited to:
  - ABRx Antibiotic Resistance Panel
  - Acuitas AMR Gene Panel
  - RevoGene Carba C
  - XPERT Carba-R
- Aspergillus species (eg, MycoDART Dual Amplification Real-Time PCR Panel for 4 Aspergillus Species [Aspergillus Diagnostic Panel] [0109U])
- Bacteremia
- Blood culture identification (87154) including, but may not be limited to:
  - BioFire FilmArray Blood Culture Identification 2 (BCID2) Panel

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- ePlex BCID Gram-Positive Panel (0141U)
- ePlex BCID Gram-Negative Panel (0142U)
- Candidiasis, including nails (eg, Candida Comprehensive Panel, T2Candida Panel) (87481)
- Combination pathogen identification and antibiotic resistance or sensitivity
- Differentiation of bacterial from viral infection (eg, MeMed BV [0351U])
- Ear, nose and throat (ENT) (eg, Bacterial ENT Test Panel, Fungal ENT Test Panel, GENETWORx ENT Pathogen Panel, Viral ENT Test Panel)
- Eye infection (eg, Bacterial Eye Infection Test Panel, Fungal Eye Infection Test, Panel Viral Eye Infection Test Panel)
- Fever of unknown origin/acute febrile illness (eg, BioFire Global Fever Panel, BioFire Global Fever Special Pathogens Panel)
- Fungal pathogen identification (eg, ePlex BCID Fungal Pathogens [FP] Panel [0140U])
- Hematuria
- Interstitial cystitis (bladder pain syndrome)
- Myalgia
- Onychomycosis, including dystrophic nails (eg, Nail Fungal Infection Test, Nail PCR Diagnostics)
- Osteomyelitis (including bone and joint infections) (eg, BioFire Joint Infection [JI] Panel)
- Pancreatitis
- Pneumonia (eg, BioFire FilmArray Pneumonia Plus Panel)

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- Prostatitis (eg, Guidance Prostatitis)
- Prosthetic joint infection
- Pyelonephritis
- Sepsis (eg, T2Bacteria Panel)
- Tinea pedis
- Urinary tract infection (UTI) including, but may not be limited to:
  - Bridge Urinary Tract Infection Detection and Resistance Test (0321U)
  - GENETWORx Molecular PCR UTI Test (0416U)
  - Guidance UTI
  - Qlear UTI (0371U)
  - Qlear UTI-Reflex ABR (0372U)
  - Urogenital Pathogen with Rx Panel (UPX) (0374U)
- Venous leg ulcer
- Wound infection (eg, GENETWORx Wound Infection Diagnostics, Lesion Infection [Wound] [0370U], Wound Pathogen Panel)

These are considered experimental/investigational as they are not identified as widely used and generally accepted for any other proposed uses as reported in nationally recognized peer-reviewed medical literature published in the English language.

Humana members may **NOT** be eligible under the Plan for the following tests:

- Metagenomic sequencing including, but may not be limited to:
  - Johns Hopkins Metagenomic Next-Generation Sequencing Assay for Infectious Disease (0323U)
  - Karius Test (0152U)

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- MicroGenDx qPCR & NGS for Infection (0112U)
- RNA fluorescence in situ hybridization (FISH) with phenotypic minimum inhibitory concentration (MIC)-based antimicrobial susceptibility including, but may not be limited to:
  - Accelerate PhenoTest BC Kit (0086U)
  - Accelerate PhenoTest BC Kit AST Configuration (0311U)

These are considered experimental/investigational as they are not identified as widely used and generally accepted for the proposed uses as reported in nationally recognized peer-reviewed medical literature published in the English language.

Humana members may **NOT** be eligible under the plan for **multiplex pathogen identification panels for infectious disease** for any of the following:

- Duplicative testing following treatment for clearance of pathogen
- Duplicative testing within an episode for the same diagnosis
- Gastrointestinal panels of 26 or more targets (eg, GI Assay [Gastrointestinal Pathogen with ABR] [0369U])
- Multiplex pathogen identification panel for respiratory infections performed simultaneously with multiplex pathogen identification panel for pneumonia
- Respiratory panels 6 or more targets (87632, 87633) including, but may not be limited to:
  - BioFire FilmArray Respiratory Panel [RP]
  - BioFire Respiratory Panel 2.1 [0202U]
  - BioFire SpotFire Respiratory (R) Panel
  - ePlex Respiratory Pathogen (RP) Panel [0115U]
  - ePlex Respiratory Pathogen Panel 2 [RP2] [0225U]
  - NxTAG Respiratory Pathogen Panel
  - NxTAG Respiratory Pathogen Panel + SARS-CoV-2
  - QIAstat-Dx Respiratory SARS-CoV-2 Panel [0223U]

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- Respiratory Pathogen with ABR (RPX) (0373U)
- T.E.N. Upper Respiratory Infection Panel

These are considered not medically necessary as defined in the member's individual certificate. Please refer to the member's individual certificate for the specific definition.

### Background

Additional information about **infectious disease** may be found from the following websites:

- [Centers for Disease Control and Prevention](#)
- [Infectious Diseases Society of America](#)
- [National Library of Medicine](#)

### Medical Alternatives

Alternatives to **multiplex pathogen identification panel for bacteremia** include, but may not be limited to:

- Blood culture

Alternatives to **multiplex pathogen identification panel for chronic wounds** include, but may not be limited to:

- Cultures/pathology of wound, urine and blood

Alternatives to **multiplex pathogen identification panel for onychomycosis** include, but may not be limited to:

- Fungal culture
- Histopathologic examination of nail clippings

Alternatives to **multiplex pathogen identification panel for prostatitis** include, but may not be limited to:

- Urinalysis and culture

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Alternatives to **multiplex pathogen identification panel for sinusitis and rhinosinusitis** include, but may not be limited to:

- Clinical examination
- Nasal/sinus cultures

Alternatives to **multiplex pathogen identification panel for tinea pedis** include, but may not be limited to:

- Clinical examination
- Microscopy and culture of skin scrapings

Alternatives to **multiplex pathogen identification panel for urinary tract infection** include, but may not be limited to:

- Urinalysis and culture

Physician consultation is advised to make an informed decision based on an individual's health needs.

### Provider Claims Codes

Any CPT, HCPCS or ICD codes listed on this medical coverage policy are for informational purposes only. Do not rely on the accuracy and inclusion of specific codes. Inclusion of a code does not guarantee coverage and or reimbursement for a service or procedure.

CPT® Code(s)	Description	Comments
81479	Unlisted molecular pathology procedure	<b>Not Covered if used to report any test outlined in Coverage Limitations section</b>

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87154	Culture, typing; identification of blood pathogen and resistance typing, when performed, by nucleic acid (DNA or RNA) probe, multiplexed amplified probe technique including multiplex reverse transcription, when performed, per culture or isolate, 6 or more targets	<b>Not Covered</b>
87481	Infectious agent detection by nucleic acid (DNA or RNA); Candida species, amplified probe technique	<b>Not Covered</b>
87483	central nervous system pathogen (eg, Neisseria meningitidis, Streptococcus pneumoniae, Listeria, Haemophilus influenzae, E. coli, Streptococcus agalactiae, enterovirus, human parechovirus, herpes simplex virus type 1 and 2, human herpesvirus 6, cytomegalovirus, varicella zoster virus, Cryptococcus), includes multiplex reverse transcription, when performed, and multiplex amplified probe technique, multiple types or subtypes, 12-25 targets	
87505	Infectious agent detection by nucleic acid (DNA or RNA); gastrointestinal pathogen (eg, Clostridium difficile, E. coli, Salmonella, Shigella, norovirus, Giardia), includes multiplex reverse transcription, when performed, and multiplex amplified probe technique, multiple types or subtypes, 3-5 targets	
87506	Infectious agent detection by nucleic acid (DNA or RNA); gastrointestinal pathogen (eg, Clostridium difficile, E. coli, Salmonella, Shigella, norovirus, Giardia), includes multiplex reverse transcription, when performed, and multiplex amplified probe technique, multiple types or subtypes, 6-11 targets	
87507	Infectious agent detection by nucleic acid (DNA or RNA); gastrointestinal pathogen (eg, Clostridium difficile, E. coli, Salmonella, Shigella, norovirus, Giardia), includes multiplex reverse transcription, when performed, and multiplex amplified probe technique, multiple types or subtypes, 12-25 targets	

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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	<b>Not Covered</b>
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	<b>Not Covered</b>
87798	Infectious agent detection by nucleic acid (DNA or RNA), not otherwise specified; amplified probe technique, each organism	<b>Not Covered if used to report any test outlined in Coverage Limitations section</b>
0086U	Infectious disease (bacterial and fungal), organism identification, blood culture, using rRNA FISH, 6 or more organism targets, reported as positive or negative with phenotypic minimum inhibitory concentration (MIC)-based antimicrobial susceptibility	<b>Not Covered</b>
0109U	Infectious disease (Aspergillus species), real-time PCR for detection of DNA from 4 species (A. fumigatus, A. terreus, A. niger, and A. flavus), blood, lavage fluid, or tissue, qualitative reporting of presence or absence of each species	<b>Not Covered</b>
0112U	Infectious agent detection and identification, targeted sequence analysis (16S and 18S rRNA genes) with drug-resistance gene	<b>Not Covered</b>

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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	
0140U	Infectious disease (fungi), fungal pathogen identification, DNA (15 fungal targets), blood culture, amplified probe technique, each target reported as detected or not detected	<b>Not Covered</b>
0141U	Infectious disease (bacteria and fungi), gram-positive organism identification and drug resistance element detection, DNA (20 gram-positive bacterial targets, 4 resistance genes, 1 pan gram-negative bacterial target, 1 pan Candida target), blood culture, amplified probe technique, each target reported as detected or not detected	<b>Not Covered</b>
0142U	Infectious disease (bacteria and fungi), gram-negative bacterial identification and drug resistance element detection, DNA (21 gram-negative bacterial targets, 6 resistance genes, 1 pan gram-positive bacterial target, 1 pan Candida target), amplified probe technique, each target reported as detected or not detected	<b>Not Covered</b>
0152U	Infectious disease (bacteria, fungi, parasites, and DNA viruses), microbial cell-free DNA, plasma, untargeted next-generation sequencing, report for significant positive pathogens	<b>Not Covered</b>
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	<b>Not Covered</b>
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	<b>Not Covered</b>

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0225U	Infectious disease (bacterial or viral respiratory tract infection) pathogen-specific DNA and RNA, 21 targets, including severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), amplified probe technique, including multiplex reverse transcription for RNA targets, each analyte reported as detected or not detected	<b>Not Covered</b>
0311U	Infectious disease (bacterial), quantitative antimicrobial susceptibility reported as phenotypic minimum inhibitory concentration (MIC)–based antimicrobial susceptibility for each organisms identified	<b>Not Covered</b>
0321U	Infectious agent detection by nucleic acid (DNA or RNA), genitourinary pathogens, identification of 20 bacterial and fungal organisms and identification of 16 associated antibiotic-resistance genes, multiplex amplified probe technique	<b>Not Covered</b>
0323U	Infectious agent detection by nucleic acid (DNA and RNA), central nervous system pathogen, metagenomic next-generation sequencing, cerebrospinal fluid (CSF), identification of pathogenic bacteria, viruses, parasites, or fungi	<b>Not Covered</b>
0351U	Infectious disease (bacterial or viral), biochemical assays, tumor necrosis factor-related apoptosis-inducing ligand (TRAIL), interferon gamma-induced protein-10 (IP-10), and C-reactive protein, serum, algorithm reported as likelihood of bacterial infection	<b>Not Covered</b>
0369U	Infectious agent detection by nucleic acid (DNA and RNA), gastrointestinal pathogens, 31 bacterial, viral, and parasitic organisms and identification of 21 associated antibiotic-resistance genes, multiplex amplified probe technique	<b>Not Covered</b> <b>New Code Effective</b> <b>04/01/2023</b>
0370U	Infectious agent detection by nucleic acid (DNA and RNA), surgical wound pathogens, 34 microorganisms and identification of 21 associated antibiotic-resistance genes, multiplex amplified probe technique, wound swab	<b>Not Covered</b> <b>New Code Effective</b> <b>04/01/2023</b>

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0371U	Infectious agent detection by nucleic acid (DNA or RNA), genitourinary pathogen, semiquantitative identification, DNA from 16 bacterial organisms and 1 fungal organism, multiplex amplified probe technique via quantitative polymerase chain reaction (qPCR), urine	<b>Not Covered</b>  <b>New Code Effective 04/01/2023</b>
0372U	Infectious disease (genitourinary pathogens), antibiotic-resistance gene detection, multiplex amplified probe technique, urine, reported as an antimicrobial stewardship risk score	<b>Not Covered</b>  <b>New Code Effective 04/01/2023</b>
0373U	Infectious agent detection by nucleic acid (DNA and RNA), respiratory tract infection, 17 bacteria, 8 fungus, 13 virus, and 16 antibiotic-resistance genes, multiplex amplified probe technique, upper or lower respiratory specimen	<b>Not Covered</b>  <b>New Code Effective 04/01/2023</b>
0374U	Infectious agent detection by nucleic acid (DNA or RNA), genitourinary pathogens, identification of 21 bacterial and fungal organisms and identification of 21 associated antibiotic-resistance genes, multiplex amplified probe technique, urine	<b>Not Covered</b>  <b>New Code Effective 04/01/2023</b>
0416U	Infectious agent detection by nucleic acid (DNA), genitourinary pathogens, identification of 20 bacterial and fungal organisms, including identification of 20 associated antibiotic-resistance genes, if performed, multiplex amplified probe technique, urine	<b>Not Covered</b>  <b>New Code Effective 10/01/2023</b>
<b>CPT® Category III Code(s)</b>	<b>Description</b>	<b>Comments</b>
No code(s) identified		
<b>HCPCS Code(s)</b>	<b>Description</b>	<b>Comments</b>
No code(s) identified		

### References

- American Academy of Orthopaedic Surgeons (AAOS). Diagnosis and prevention of perioperative joint infections: clinical practice guidelines. <https://www.aaos.org>. Published March 11, 2019. Accessed December 7, 2023.

See the [DISCLAIMER](#). All Humana member health plan contracts are **NOT** the same. All legislation/regulations on this subject may not be included. This document is for informational purposes only.



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Humana's documents are updated regularly online. When printed, the version of this document becomes uncontrolled. Do not rely on printed copies for the most up-to-date version. Refer to [Medical and Pharmacy Coverage Policies](#) to verify that this is the current version before utilizing.

2. American College of Gastroenterology (ACG). Practice Guidelines. ACG clinical guideline: diagnosis, treatment, and prevention of acute diarrheal infections in adults. <https://gi.org>. Published April 2016. Accessed December 7, 2023.
3. American Thoracic Society (ATS). American Thoracic Society Documents. Diagnosis and treatment of adults with community-acquired pneumonia: an official clinical practice guideline of the American Thoracic Society and Infectious Diseases Society of America. <https://www.thoracic.org>. Published October 1, 2019. Accessed December 7, 2023.
4. American Thoracic Society (ATS). American Thoracic Society Documents. Microbiological laboratory testing in the diagnosis of fungal infections in pulmonary and critical care practice: an official American Thoracic Society clinical practice guideline. <https://www.thoracic.org>. Published September 1, 2019. Accessed December 7, 2023.
5. American Thoracic Society (ATS). American Thoracic Society Documents. Nucleic acid–based testing for noninfluenza viral pathogens in adults with suspected community-acquired pneumonia. <https://www.thoracic.org>. Published May 1, 2021. Accessed December 7, 2023.
6. American Urological Association (AUA). Recurrent uncomplicated urinary tract infections in women: AUA/CUA/SUFU guideline. <https://www.auanet.org>. Published April 2019. Accessed December 7, 2023.
7. American Venous Forum (AVF). Management of venous leg ulcers: clinical practice guidelines of the Society for Vascular Surgery and the American Venous Forum. <https://www.veinforum.org>. Published August 2014. Accessed December 7, 2023.
8. Centers for Disease Control and Prevention (CDC). People at higher risk for flu complications. <https://www.cdc.gov>. Updated August 25, 2023. Accessed December 7, 2023.
9. ClinicalKey. Clinical Overview. Acute diarrhea in adults. <https://www.clinicalkey.com>. Updated August 29, 2023. Accessed December 5, 2023.

See the [DISCLAIMER](#). All Humana member health plan contracts are **NOT** the same. All legislation/regulations on this subject may not be included. This document is for informational purposes only.

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Humana's documents are updated regularly online. When printed, the version of this document becomes uncontrolled. Do not rely on printed copies for the most up-to-date version. Refer to [Medical and Pharmacy Coverage Policies](#) to verify that this is the current version before utilizing.

10. ClinicalKey. Clinical Overview. Aspergillosis, clinical spectrum.  
<https://www.clinicalkey.com>. Updated October 5, 2023. Accessed December 5, 2023.
11. ClinicalKey. Clinical Overview. Bacterial gastroenteritis.  
<https://www.clinicalkey.com>. Updated January 18, 2023. Accessed December 4, 2023.
12. ClinicalKey. Clinical Overview. Campylobacter infections.  
<https://www.clinicalkey.com>. Updated August 26, 2023. Accessed December 4, 2023.
13. ClinicalKey. Clinical Overview. Chlamydia pneumoniae Infection.  
<https://www.clinicalkey.com>. Updated December 17, 2022. Accessed December 5, 2023.
14. ClinicalKey. Clinical Overview. Encephalitis in adults.  
<https://www.clinicalkey.com>. Updated March 14, 2023. Accessed December 4, 2023.
15. ClinicalKey. Clinical Overview. Encephalitis in children.  
<https://www.clinicalkey.com>. Updated August 2, 2022. Accessed December 4, 2023.
16. ClinicalKey. Clinical Overview. Fever of undetermined origin.  
<https://www.clinicalkey.com>. Updated January 1, 2024. Accessed December 5, 2023.
17. ClinicalKey. Clinical Overview. Fever of unknown origin in children.  
<https://www.clinicalkey.com>. Updated October 27, 2023. Accessed December 5, 2023.
18. ClinicalKey. Clinical Overview. Gastroenteritis in children.  
<https://www.clinicalkey.com>. Updated August 26, 2023. Accessed December 4, 2023.

See the [DISCLAIMER](#). All Humana member health plan contracts are **NOT** the same. All legislation/regulations on this subject may not be included. This document is for informational purposes only.

## Multiplex Pathogen Identification Panels for Infectious Disease

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Humana's documents are updated regularly online. When printed, the version of this document becomes uncontrolled. Do not rely on printed copies for the most up-to-date version. Refer to [Medical and Pharmacy Coverage Policies](#) to verify that this is the current version before utilizing.

19. ClinicalKey. Clinical Overview. Hematuria. <https://www.clinicalkey.com>. Updated May 27, 2022. Accessed December 5, 2023.
20. ClinicalKey. Clinical Overview. Influenza. <https://www.clinicalkey.com>. Updated September 25, 2023. Accessed December 5, 2023.
21. ClinicalKey. Clinical Overview. Invasive aspergillosis associated with immunocompromise. <https://www.clinicalkey.com>. Updated October 5, 2023. Accessed December 5, 2023.
22. ClinicalKey. Clinical Overview. Listeriosis. <https://www.clinicalkey.com>. Updated October 23, 2023. Accessed December 5, 2023.
23. ClinicalKey. Clinical Overview. Mycoplasma pneumoniae Infections. <https://www.clinicalkey.com>. Updated March 15, 2023. Accessed December 5, 2023.
24. ClinicalKey. Clinical Overview. Nontyphoidal salmonella infection. <https://www.clinicalkey.com>. Updated September 19, 2023. Accessed December 5, 2023.
25. ClinicalKey. Clinical Overview. Respiratory syncytial virus infection. <https://www.clinicalkey.com>. Updated December 4, 2023. Accessed December 5, 2023.
26. ClinicalKey. Clinical Overview. Sepsis in neonates. <https://www.clinicalkey.com>. Updated November 22, 2023. Accessed December 5, 2023.
27. ClinicalKey. Clinical Overview. Staphylococcus aureus bacteremia. <https://www.clinicalkey.com>. Updated September 19, 2023. Accessed December 5, 2023.
28. ClinicalKey. Clinical Overview. Traveler's diarrhea. <https://www.clinicalkey.com>. Updated September 14, 2023. Accessed December 5, 2023.

See the [DISCLAIMER](#). All Humana member health plan contracts are **NOT** the same. All legislation/regulations on this subject may not be included. This document is for informational purposes only.

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Humana's documents are updated regularly online. When printed, the version of this document becomes uncontrolled. Do not rely on printed copies for the most up-to-date version. Refer to [Medical and Pharmacy Coverage Policies](#) to verify that this is the current version before utilizing.

29. ClinicalKey. Clinical Overview. Viral gastroenteritis. <https://www.clinicalkey.com>. Updated September 20, 2023. Accessed December 5, 2023.
30. Hainrichson M, Avni N, Eden E, et al. A point-of-need platform for rapid measurement of a host-protein score that differentiates bacterial from viral infection: analytical evaluation. *Clin Biochem*. 2022;S0009-9120(22)00115-1. <https://www.sciencedirect.com>. Accessed October 26, 2022.
31. Hayes, Inc. Clinical Utility Evaluation. Next-generation sequencing (NGS) for antimicrobial resistance profiling of pathogens in infections. <https://evidence.hayesinc.com>. Published February 16, 2017. Updated April 6, 2021. Accessed December 2, 2023.
32. Hayes, Inc. Clinical Utility Evaluation. Next-generation sequencing (NGS) for identification of microbial pathogens in infections. <https://evidence.hayesinc.com>. Published February 23, 2017. Updated April 6, 2021. Accessed December 2, 2023.
33. Hayes, Inc. Clinical Utility Evaluation. Next-generation sequencing (NGS) for microbial pathogens in infection outbreak surveillance or response. <https://evidence.hayesinc.com>. Published February 16, 2017. Updated April 6, 2021. Accessed December 2, 2023.
34. Hayes, Inc. Genetic Test Evaluation (GTE) Synopsis. ABRx antibiotic resistance panel (Diatherix Laboratories). <https://evidence.hayesinc.com>. Published June 15, 2017. Accessed December 2, 2023.
35. Hayes, Inc. Genetic Test Evaluation (GTE) Synopsis. DecodEX microbial genetic identification (PathoGenius Laboratory). <https://evidence.hayesinc.com>. Published September 1, 2016. Accessed December 2, 2023.
36. Hayes, Inc. Molecular Test Assessment. FilmArray Respiratory Panel (BioFire Diagnostics LLC). <https://evidence.hayesinc.com>. Published May 21, 2020. Updated May 8, 2023. Accessed December 2, 2023.

## Multiplex Pathogen Identification Panels for Infectious Disease

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Humana's documents are updated regularly online. When printed, the version of this document becomes uncontrolled. Do not rely on printed copies for the most up-to-date version. Refer to [Medical and Pharmacy Coverage Policies](#) to verify that this is the current version before utilizing.

37. Hayes, Inc. Molecular Test Assessment. FilmArray Respiratory Panel 2 (BioFire Diagnostics LLC). <https://evidence.hayesinc.com>. Published March 10, 2020. Updated March 31, 2023. Accessed December 2, 2023.
38. Hayes, Inc. Molecular Test Assessment. Karius Test (Karius Inc.) to diagnose infections in immunocompromised or vulnerable hospitalized patients. <https://evidence.hayesinc.com>. Published August 10, 2022. Updated September 26, 2023. Accessed December 2, 2023.
39. Hayes, Inc. Molecular Test Assessment. Multiplex molecular panels for diagnosis of gastrointestinal infection. <https://evidence.hayesinc.com>. Published December 18, 2018. Updated October 31, 2022. Accessed December 2, 2023.
40. Hayes, Inc. Precision Medicine Research Brief. BD Affirm VPIII microbial identification system (Becton, Dickinson and Company). <https://evidence.hayesinc.com>. Published January 6, 2022. Accessed December 2, 2023.
41. Hayes, Inc. Precision Medicine Research Brief. FilmArray BCID2 (BioFire Diagnostics/Biomerieux). <https://evidence.hayesinc.com>. Published May 17, 2023. Accessed December 2, 2023.
42. Hayes, Inc. Precision Medicine Research Brief. FilmArray Meningitis/Encephalitis Panel (BioFire Diagnostics LLC). <https://evidence.hayesinc.com>. Published October 11, 2022. Accessed December 2, 2023.
43. Hayes, Inc. Precision Medicine Research Brief. Multi-target panels for identification of respiratory pathogens. <https://evidence.hayesinc.com>. Published October 18, 2022. Accessed December 2, 2023.
44. Hayes, Inc. Precision Medicine Research Brief. Multi-target panels for identification of urinary pathogens. <https://evidence.hayesinc.com>. Published November 3, 2022. Accessed December 2, 2023.

## Multiplex Pathogen Identification Panels for Infectious Disease

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Humana's documents are updated regularly online. When printed, the version of this document becomes uncontrolled. Do not rely on printed copies for the most up-to-date version. Refer to [Medical and Pharmacy Coverage Policies](#) to verify that this is the current version before utilizing.

45. Huang TD, Melnik E, Bogaerts P, Evrard S, Glupczynski Y. Evaluation of the ePlex blood culture identification panels for detection of pathogens in bloodstream infections. *J Clin Microbiol.* 2019;57(2).
46. Infectious Diseases Society of America (IDSA). IDSA Features. Clinical practice guideline for the management of asymptomatic bacteriuria: 2019 update by the Infectious Diseases Society of America. <https://www.idsociety.org>. Published March 21, 2019. Accessed December 7, 2023.
47. Infectious Diseases Society of America (IDSA). IDSA Guideline. 2015 Infectious Diseases Society of America (IDSA) clinical practice guidelines for the diagnosis and treatment of native vertebral osteomyelitis in adults. <https://www.idsociety.org>. Published September 15, 2015. Accessed December 7, 2023.
48. Infectious Diseases Society of America (IDSA). IDSA Guideline. 2017 Infectious Diseases Society of America clinical practice guidelines for the diagnosis and management of infectious diarrhea. <https://www.idsociety.org>. Published October 19, 2017. Accessed December 7, 2023.
49. Infectious Diseases Society of America (IDSA). IDSA Guideline. A guide to utilization of the microbiology laboratory for diagnosis of infectious diseases: 2018 update by the Infectious Diseases Society of America and the American Society for Microbiology. <https://www.idsociety.org>. Published June 28, 2018. Accessed December 7, 2023.
50. Infectious Diseases Society of America (IDSA). IDSA Guideline. Clinical practice guideline by the Pediatric Infectious Diseases Society and the Infectious Diseases Society of America: 2021 guideline on diagnosis and management of acute hematogenous osteomyelitis in pediatrics. <https://www.idsociety.org>. Published August 2021. Accessed December 7, 2023.
51. Infectious Diseases Society of America (IDSA). IDSA Guideline. Clinical practice guidelines by the Infectious Diseases Society of America: 2018 update on diagnosis, treatment, chemoprophylaxis, and institutional outbreak management of seasonal influenza. <https://www.idsociety.org>. Published December 19, 2018. Accessed December 7, 2023.

See the [DISCLAIMER](#). All Humana member health plan contracts are **NOT** the same. All legislation/regulations on this subject may not be included. This document is for informational purposes only.

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Humana's documents are updated regularly online. When printed, the version of this document becomes uncontrolled. Do not rely on printed copies for the most up-to-date version. Refer to [Medical and Pharmacy Coverage Policies](#) to verify that this is the current version before utilizing.

52. Infectious Diseases Society of America (IDSA). IDSA Guideline. Clinical practice guidelines for Clostridium difficile infection in adults and children: 2017 update by the Infectious Diseases Society of American (IDSA) and Society for Healthcare Epidemiology of America (SHEA). <https://www.idsociety.org>. Published April 1, 2018. Accessed December 7, 2023.
53. Infectious Diseases Society of America (IDSA). IDSA Guideline. Clinical practice guideline for the management of candidiasis: 2016 update by the Infectious Diseases Society of America. <https://www.idsociety.org>. Published December 16, 2015. Accessed December 7, 2023.
54. Infectious Diseases Society of America (IDSA). IDSA Guideline. Infectious Diseases Society of America 2023 guidance on the treatment of antimicrobial resistant gram-negative infections. <https://www.idsociety.org>. Published July 18, 2023. Accessed December 7, 2023.
55. Infectious Diseases Society of America (IDSA). IDSA Guideline. Practice guidelines for the diagnosis and management of aspergillosis: 2016 update by the Infectious Diseases Society of America. <https://www.idsociety.org>. Published June 29, 2016. Accessed December 7, 2023.
56. Infectious Diseases Society of America (IDSA). IDSA Guideline (ARCHIVED). Practice guidelines for the management of bacterial meningitis. <https://www.idsociety.org>. Published November 1, 2004. Accessed December 7, 2023.
57. Infectious Diseases Society of America (IDSA). IDSA Guideline (ARCHIVED). The management of encephalitis: clinical practice guidelines by the Infectious Diseases Society of America. <https://www.idsociety.org>. Published August 2008. Accessed December 7, 2023.
58. Kim YJ, Park KH, Park DA, et al. Guideline for the antibiotic use in acute gastroenteritis. *Infect Chemother*. 2019;51(2):217-243. <https://www.ncbi.nlm.nih.gov/pmc>. Accessed September 20, 2021.



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Humana's documents are updated regularly online. When printed, the version of this document becomes uncontrolled. Do not rely on printed copies for the most up-to-date version. Refer to [Medical and Pharmacy Coverage Policies](#) to verify that this is the current version before utilizing.

59. Little P, Read RC, Becque T, et al. Antibiotics for lower respiratory tract infection in children presenting in primary care (ARTIC-PC): the predictive value of molecular testing. *Clin Microbiol Infect.* 2022;28(9):1238-1244.
60. National Institute of Diabetes and Digestive and Kidney Diseases. Guiding principles for the care of people with or at risk for diabetes. <https://www.niddk.nih.gov>. Updated August 2018. Accessed December 7, 2023.
61. Schneider JE, Cooper JT. Cost impact analysis of novel host-response diagnostic for patients with community-acquired pneumonia in the emergency department. *J Med Econ.* 2022;25(1):138-151. <https://www.tandfonline.com>. Accessed October 26, 2022.
62. Steiner F, Schmutz S, Gosert R, et al. Usefulness of the GenMark ePlex RPP assay for the detection of respiratory viruses compared to the FTD21 multiplex RT-PCR. *Diagn Microbiol Infect Dis.* 2021;101(1):115424. <https://www.sciencedirect.com>. Accessed September 15, 2021.
63. UpToDate, Inc. Acute respiratory failure during pregnancy and the peripartum period. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
64. UpToDate, Inc. Acute viral encephalitis in children: clinical manifestations and diagnosis. <https://www.uptodate.com>. Updated November 2023. Accessed December 3, 2023.
65. UpToDate, Inc. Acute viral gastroenteritis in children in resource-rich countries: clinical features and diagnosis. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
66. UpToDate, Inc. Approach to the adult with acute diarrhea in resource-rich settings. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.



## Multiplex Pathogen Identification Panels for Infectious Disease

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Humana's documents are updated regularly online. When printed, the version of this document becomes uncontrolled. Do not rely on printed copies for the most up-to-date version. Refer to [Medical and Pharmacy Coverage Policies](#) to verify that this is the current version before utilizing.

67. UpToDate, Inc. Approach to the immunocompromised patient with fever and pulmonary infiltrates. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
68. UpToDate, Inc. Approach to the patient with chronic meningitis. <https://www.uptodate.com>. Updated November 2023. Accessed December 3, 2023.
69. UpToDate, Inc. Aseptic meningitis in adults. <https://www.uptodate.com>. Updated November 2023. Accessed December 3, 2023.
70. UpToDate, Inc. Bacterial endophthalmitis. <https://www.uptodate.com>. Updated November 2023. Accessed December 6, 2023.
71. UpToDate, Inc. Bacterial meningitis in children older than one month: clinical features and diagnosis. <https://www.uptodate.com>. Updated November 2023. Accessed December 3, 2023.
72. UpToDate, Inc. Bacterial meningitis in the neonate: clinical features and diagnosis. <https://www.uptodate.com>. Updated November 2023. Accessed December 3, 2023.
73. UpToDate, Inc. Basic principles and technique of bronchoalveolar lavage. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
74. UpToDate, Inc. Bronchiolitis in infants and children: clinical features and diagnosis. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
75. UpToDate, Inc. Candidemia and invasive candidiasis in children: clinical manifestations and diagnosis. <https://www.uptodate.com>. Updated November 2023. Accessed December 3, 2023.
76. UpToDate, Inc. Carbapenem-resistant E. coli, K. pneumoniae, and other Enterobacterales (CRE). <https://www.uptodate.com>. Updated November 2023. Accessed December 4, 2023.

See the [DISCLAIMER](#). All Humana member health plan contracts are **NOT** the same. All legislation/regulations on this subject may not be included. This document is for informational purposes only.

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Humana's documents are updated regularly online. When printed, the version of this document becomes uncontrolled. Do not rely on printed copies for the most up-to-date version. Refer to [Medical and Pharmacy Coverage Policies](#) to verify that this is the current version before utilizing.

77. UpToDate, Inc. Chronic pulmonary aspergillosis: epidemiology, clinical manifestations and diagnosis. <https://www.uptodate.com>. Updated November 2023. Accessed December 3, 2023.
78. UpToDate, Inc. Clinical evaluation and diagnostic testing for community-acquired pneumonia in adults. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
79. UpToDate, Inc. Clinical manifestations and diagnosis of candida infection in neonates. <https://www.uptodate.com>. Updated November 2023. Accessed December 3, 2023.
80. UpToDate, Inc. Clinical manifestations and diagnosis of candidemia and invasive candidiasis in adults. <https://www.uptodate.com>. Updated November 2023. Accessed December 3, 2023.
81. UpToDate, Inc. Clinical manifestations and diagnosis of Legionella infection. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
82. UpToDate, Inc. Clinical manifestations and diagnosis of rotavirus infection. <https://www.uptodate.com>. Updated November 3, 2023. Accessed December 2, 2023.
83. UpToDate, Inc. Clostridioides difficile infection in adults: clinical manifestations and diagnosis. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
84. UpToDate, Inc. Clostridioides difficile infection in children: clinical manifestations and diagnosis. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
85. UpToDate, Inc. Community-acquired pneumonia in children: clinical features and diagnosis. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.

## Multiplex Pathogen Identification Panels for Infectious Disease

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Humana's documents are updated regularly online. When printed, the version of this document becomes uncontrolled. Do not rely on printed copies for the most up-to-date version. Refer to [Medical and Pharmacy Coverage Policies](#) to verify that this is the current version before utilizing.

86. UpToDate, Inc. Community-acquired pneumonia in children: outpatient treatment. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
87. UpToDate, Inc. Conjunctivitis. <https://www.uptodate.com>. Updated November 2023. Accessed December 6, 2023.
88. UpToDate, Inc. Cryptococcus gattii infection: clinical features and diagnosis. <https://www.uptodate.com>. Updated November 2023. Accessed December 3, 2023.
89. UpToDate, Inc. Cryptosporidiosis: epidemiology, clinical manifestations, and diagnosis. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
90. UpToDate, Inc. Cyclospora infection. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
91. UpToDate, Inc. Cysticercosis: clinical manifestations and diagnosis. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
92. UpToDate, Inc. Dermatophyte (tinea) infections. <https://www.uptodate.com>. Updated November 27, 2023. Accessed December 3, 2023.
93. UpToDate, Inc. Detection of bacteremia: blood cultures and other diagnostic tools. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
94. UpToDate, Inc. Diagnosis of invasive aspergillosis. <https://www.uptodate.com>. Updated November 2023. Accessed December 3, 2023.
95. UpToDate, Inc. Diagnosis of pulmonary tuberculosis in adults. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.

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Humana's documents are updated regularly online. When printed, the version of this document becomes uncontrolled. Do not rely on printed copies for the most up-to-date version. Refer to [Medical and Pharmacy Coverage Policies](#) to verify that this is the current version before utilizing.

96. UpToDate, Inc. Diagnosis, treatment, and prevention of adenovirus infection. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
97. UpToDate, Inc. Epidemiology, clinical manifestations, and diagnosis of Cryptococcus neoformans meningoencephalitis in patients with HIV. <https://www.uptodate.com>. Updated November 2023. Accessed December 3, 2023.
98. UpToDate, Inc. Epidemiology, clinical manifestations, diagnosis, and treatment of Haemophilus influenzae. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
99. UpToDate, Inc. Fever of unknown origin in adults: evaluation and management. <https://www.uptodate.com>. Updated November 28, 2023. Accessed December 2, 2023.
100. UpToDate, Inc. Fever without a source in children 3 to 36 months of age: evaluation and management. <https://www.uptodate.com>. Updated November 14, 2023. Accessed December 2, 2023.
101. UpToDate, Inc. Free-living amoebas and Prototheca. <https://www.uptodate.com>. Updated November 2023. Accessed December 3, 2023.
102. UpToDate, Inc. Gram-negative bacillary bacteremia in adults. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
103. UpToDate, Inc. Health care-associated meningitis and ventriculitis in adults: clinical features and diagnosis. <https://www.uptodate.com>. Updated November 2023. Accessed December 3, 2023.
104. UpToDate, Inc. Human herpesvirus 6 infection in children: clinical manifestations, diagnosis, and treatment. <https://www.uptodate.com>. Updated November 2023. Accessed December 3, 2023.

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105. UpToDate, Inc. Human metapneumovirus infections.  
<https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
106. UpToDate, Inc. Infection in the solid organ transplant recipient.  
<https://www.uptodate.com>. Updated November 2023. Accessed December 3, 2023.
107. UpToDate, Inc. Intestinal entamoeba histolytica amebiasis.  
<https://www.uptodate.com>. Updated November 22, 2023. Accessed December 2, 2023.
108. UpToDate, Inc. Molecular diagnosis of central nervous system infections.  
<https://www.uptodate.com>. Updated November 2023. Accessed December 3, 2023.
109. UpToDate, Inc. Mycoplasma pneumoniae infection in adults.  
<https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
110. UpToDate, Inc. Mycoplasma pneumoniae infection in children.  
<https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
111. UpToDate, Inc. Next-generation DNA sequencing (NGS): principles and clinical applications. <https://www.uptodate.com>. Updated November 2023. Accessed December 3, 2023.
112. UpToDate, Inc. Nocardia infections: clinical microbiology and pathogenesis.  
<https://www.uptodate.com>. Updated November 2023. Accessed December 3, 2023.
113. UpToDate, Inc. Nontyphoidal Salmonella: gastrointestinal infection and asymptomatic carriage. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.

## Multiplex Pathogen Identification Panels for Infectious Disease

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114. UpToDate, Inc. Norovirus. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
115. UpToDate, Inc. Onychomycosis: epidemiology, clinical features, and diagnosis. <https://www.uptodate.com>. Updated November 2023. Accessed December 3, 2023.
116. UpToDate, Inc. Overview of antibacterial susceptibility testing. <https://www.uptodate.com>. Updated November 2023. Accessed December 3, 2023.
117. UpToDate, Inc. Parainfluenza viruses in adults. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
118. UpToDate, Inc. Parainfluenza viruses in children. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
119. UpToDate, Inc. Pathogenic Escherichia coli associated with diarrhea. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
120. UpToDate, Inc. PCR testing for the diagnosis of herpes simplex virus in patients with encephalitis or meningitis. <https://www.uptodate.com>. Updated November 2023. Accessed December 3, 2023.
121. UpToDate, Inc. Pertussis infection in infants and children: clinical features and diagnosis. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
122. UpToDate, Inc. Plesiomonas shigelloides infections. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
123. UpToDate, Inc. Pneumonia caused by Chlamydia pneumoniae in adults. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.

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124. UpToDate, Inc. Pneumonia caused by Chlamydia pneumonia in children. <https://www.uptodate.com>. Updated November 7, 2023. Accessed December 2, 2023.
125. UpToDate, Inc. Polymerase chain reaction (PCR). <https://www.uptodate.com>. Updated November 2023. Accessed December 3, 2023.
126. UpToDate, Inc. Prosthetic joint infection: epidemiology, clinical manifestations, and diagnosis. <https://www.uptodate.com>. Updated November 2023. Accessed December 3, 2023.
127. UpToDate, Inc. Psittacosis. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
128. UpToDate, Inc. Respiratory syncytial virus infection: clinical features and diagnosis. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
129. UpToDate, Inc. Seasonal influenza in adults: clinical manifestations and diagnosis. <https://www.uptodate.com>. Updated November 6, 2023. Accessed December 2, 2023.
130. UpToDate, Inc. Seasonal influenza in children: clinical features and diagnosis. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
131. UpToDate, Inc. Septic arthritis in adults. <https://www.uptodate.com>. Updated November 2023. Accessed December 4, 2023.
132. UpToDate, Inc. Shiga toxin-producing Escherichia coli: clinical manifestations, diagnosis, and treatment. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
133. UpToDate, Inc. Shigella infection: epidemiology, clinical manifestations and diagnosis. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.

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134. UpToDate, Inc. Systemic inflammatory response syndrome (SIRS) and sepsis in children: definitions, epidemiology, clinical manifestations, and diagnosis. <https://www.uptodate.com>. Updated November 2023. Accessed December 3, 2023.
135. UpToDate, Inc. The common cold in adults: diagnosis and clinical features. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
136. UpToDate, Inc. Travelers' diarrhea: epidemiology, microbiology, clinical manifestations, and diagnosis. <https://www.uptodate.com>. Updated November 2023. Accessed December 2, 2023.
137. UpToDate, Inc. Tuberculous meningitis: clinical manifestations and diagnosis. <https://www.uptodate.com>. Updated November 2023. Accessed December 3, 2023.
138. UpToDate, Inc. Vertebral osteomyelitis and discitis in adults. <https://www.uptodate.com>. Updated November 2023. Accessed December 3, 2023.
139. UpToDate, Inc. Viral infections following lung transplantation. <https://www.uptodate.com>. Updated November 2023. Accessed December 3, 2023.
140. UpToDate, Inc. Viral meningitis in children: clinical features and diagnosis. <https://www.uptodate.com>. Updated November 2023. Accessed December 3, 2023.
141. US Food & Drug Administration (FDA). 510(k) substantial equivalence determination decision summary: Accelerate Pheno System, Accelerate PhenoTest BC Kit. <https://www.fda.gov>. Published September 15, 2020. Accessed December 6, 2023.
142. US Food & Drug Administration (FDA). 510(k) substantial equivalence determination decision summary: Acuitas AMR Gene Panel.



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<https://www.fda.gov>. Published September 30, 2021. Accessed December 6, 2023.

143. US Food & Drug Administration (FDA). 510(k) substantial equivalence determination decision summary: BD Respiratory Viral Panel (BD RVP) for BD MAX System; BD Respiratory Viral Panel-SCV2 (BD RVP-SCV2) for BD MAX System. <https://www.fda.gov>. Published July 31, 2023. Accessed December 6, 2023.
144. US Food & Drug Administration (FDA). 510(k) substantial equivalence determination decision summary: BIOFIRE FILMARRAY Gastrointestinal (GI) Panel. <https://www.fda.gov>. Published March 16, 2023. Accessed December 6, 2023.
145. US Food & Drug Administration (FDA). 510(k) substantial equivalence determination decision summary: BioFire Global Fever Panel, BIOFIRE SHIELD Control Kit for the BioFire Global Fever Panel. <https://www.fda.gov>. Published October 20, 2022. Accessed November 14, 2022.
146. US Food & Drug Administration (FDA). 510(k) substantial equivalence determination decision summary: BioFire Global Fever Special Pathogens Panel; BIOFIRE SHIELD Control Kit for the BioFire Global Fever Special Pathogens Panel. <https://www.fda.gov>. Published March 22, 2023. Accessed December 6, 2023.
147. US Food & Drug Administration (FDA). 510(k) substantial equivalence determination decision summary: BIOFIRE SPOTFIRE Respiratory Panel. <https://www.fda.gov>. Published February 3, 2023. Accessed December 6, 2023.
148. US Food & Drug Administration (FDA). 510(k) substantial equivalence determination decision summary: BIOFIRE SPOTFIRE Respiratory Panel (R) Mini. <https://www.fda.gov>. Published April 13, 2023. Accessed December 6, 2023.
149. US Food & Drug Administration (FDA). 510(k) substantial equivalence determination decision summary: cobas SARS-CoV-2 & Influenza A/B for use

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on the cobas Liat System. <https://www.fda.gov>. Published July 27, 2023. Accessed December 6, 2023.

150. US Food & Drug Administration (FDA). 510(k) substantial equivalence determination decision summary: ePlex Blood Culture Identification Fungal Pathogen (BCID-FP) Panel. <https://www.fda.gov>. Published December 21, 2018. Accessed November 14, 2022.
151. US Food & Drug Administration (FDA). 510(k) substantial equivalence determination decision summary: FilmArray Pneumonia Panel plus. <https://www.fda.gov>. Published October 27, 2022. Accessed November 14, 2022.
152. US Food & Drug Administration (FDA). 510(k) substantial equivalence determination decision summary: MeMed BV. <https://www.fda.gov>. Published June 30, 2023. Accessed December 6, 2023.
153. US Food & Drug Administration (FDA). 510(k) substantial equivalence determination decision summary: Panther Fusion AdV/hMPV/RV Assay. <https://www.fda.gov>. Published May 5, 2023. Accessed December 6, 2023.
154. US Food & Drug Administration (FDA). 510(k) substantial equivalence determination decision summary: T2Candida 1.1 Panel. <https://www.fda.gov>. Published December 12, 2017. Accessed December 6, 2023.
155. US Food & Drug Administration (FDA). De novo summary: BioFire Joint Infection (JI) Panel. <https://www.fda.gov>. Published April 29, 2022. Accessed November 14, 2022.
156. US Food & Drug Administration (FDA). Evaluation of automatic class III designation for Accelerate PhenoTest BC Kit: decision summary. <https://www.fda.gov>. Published February 23, 2017. Accessed December 6, 2023.
157. US Food & Drug Administration (FDA). Evaluation of automatic class III designation for BioFire Respiratory Panel 2.1: decision summary.

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<https://www.fda.gov>. Published March 17, 2021. Accessed November 14, 2022.

158. US Food & Drug Administration (FDA). Nucleic acid based tests.  
<https://www.fda.gov>. Published May 26, 2023. Accessed December 6, 2023.
159. Wojno KJ, Baunoch D, Luke N, et al. Multiplex PCR based urinary tract infection (UTI) analysis compared to traditional urine culture in identifying significant pathogens in symptomatic patients. *Urology*. 2020;136:119-126.
160. Yan L, Sun W, Lu Z, Fan L. Metagenomic next-generation sequencing (mNGS) in cerebrospinal fluid for rapid diagnosis of tuberculosis meningitis in HIV-negative population. *Int J Infect Dis*. 2020;96:270-275.  
<https://linkinghub.elsevier.com>. Accessed October 26, 2022.