Comprehensive Genomic Profiling and Genetic Testing for Solid Tumors

Effective Date: 08/29/2024
Revision Date: 08/29/2024
Review Date: 07/25/2024
Policy Number: HUM-0595-010
Line of Business: Commercial

Medical Coverage Policy

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Description

Comprehensive genomic profiling (CGP) (also referred to as comprehensive molecular profiling) is a type of somatic (tumor) test that involves a combination of laboratory methodologies to detect genetic alterations and the simultaneous evaluation of large numbers (hundreds to thousands) of biomarkers in tumor tissue to aid in the management of advanced solid tumors, including guiding treatment decisions as well as determination of clinical trial eligibility. Techniques can vary from test to test and may include next-generation sequencing (NGS), fluorescence in situ hybridization (FISH) and immunohistochemistry (IHC) and often provides information on tumor mutational burden (TMB), microsatellite instability (MSI) and homologous recombination deficiency (HRD). Examples include **Altera Tumor Genomic Profiling, Guardant360, NeoGenomics Solid Tumor NGS Fusion Panel** and **TissueNext**.

Some CGP tests analyze both deoxyribonucleic acid (DNA) and ribonucleic acid (RNA). **NeoTYPE DNA & RNA – Lung** is an NGS profiling test that detects single nucleotide variants, insertions/deletions, copy number variants, and/or RNA fusions in a total of 50 genes (44 genes analyzed by DNA and 19 by RNA), plus MSI and TMB. **Tempus xT** is another example of a CGP somatic test performed for the management of advanced cancer. Previously Tempus xT conducted sequencing for both ribonucleic acid (RNA) and deoxyribonucleic acid (DNA) within a single panel. However, a new test, **Tempus xR**, is now available as an independent assay dedicated solely to RNA sequencing. This means that Tempus xT focuses on DNA analysis while Tempus xR specializes in RNA analysis, and they are no longer combined into one test.

Single gene testing can be utilized to diagnose and monitor cancer including, but may not be limited to, cholangiocarcinoma, gallbladder cancer, gastrointestinal stromal tumor, glioblastoma, melanoma and thyroid cancer. This type of testing is indicated for an individual who exhibits disease symptoms and may be necessary to diagnose or rule out suspected cancer.

DNA Specimen Provenance Assignment (DSPA) Testing (eg, know error System) is a molecular diagnostic test intended for the protection and control of tissue samples to purportedly decrease the incidence of diagnostic mistakes due to the misidentification, specimen transposition or cell contamination of samples, also known as specimen provenance complications (SPCs). Breast and prostate tissues are most often tested but other tissue types, such as bone marrow, may also be examined.

LungOI is an artificial-intelligence (AI)-based molecular profiling that uses a digitized biopsy image and is proposed for the diagnosis of lung cancer. **(Refer to Coverage Limitations section)**

Genomic profiling in conjunction with in vitro chemoresistance and chemosensitivity assays has been proposed to guide treatment decisions. **(Refer to Coverage Limitations section)**

Coverage Determination

Any state mandates for comprehensive genomic profiling and genetic testing for solid tumors take precedence over this medical coverage policy.

Genetic testing may be excluded by certificate. Please consult the member's individual certificate regarding Plan coverage.

<u>Comprehensive Genomic Profiling for Solid Tumors</u>
Humana members may be eligible under the Plan for **comprehensive genomic profiling for solid tumors** (81445, 81455, 81456, 81449) (eg, LungHDPCR [0478U], OncoReveal Dx Lung & Colon Cancer Assay [0448U], OptiSeq Colorectal Cancer NGS Panel [0498U], OptiSeq Dual Cancer Panel Kit [0499U]) when the following criteria are met:

- Diagnosed with recurrent, relapsed, refractory, metastatic or advanced stage III or IV cancer; **AND**
- Has not previously received comprehensive molecular profiling for the same tumor type; **AND**
- Treatment with anticancer therapy is being considered

***IDH1, IDH2* and *TERT* Mutation Analysis Panel**

Humana members may be eligible under the Plan for ***IDH1, IDH2* and *TERT* Mutation Analysis Panel** (0481U) for glioma.

Single Gene Testing

***IDH1/IDH2* Gene Analysis**

Humana members may be eligible under the Plan for ***IDH1* (81120) and/or *IDH2* (81121) gene analysis** for any of the following indications:

- Cholangiocarcinoma, locally advanced, metastatic or unresectable **(*IDH1* only)**; **OR**
- Gallbladder cancer, metastatic or unresectable **(*IDH1* only)**; **OR**
- Glioma

***KIT (c-KIT)* Gene Analysis**

Humana members may be eligible under the Plan for ***KIT* (*c-KIT*) gene analysis** (81272) for any of the following indications:

- Gastrointestinal stromal tumor (GIST); **OR**
- Melanoma, metastatic or unresectable

***KRAS* Gene Analysis**

Humana members may be eligible under the Plan for ***KRAS* gene analysis** (81275, 81276) for any of the following indications:

- Colorectal cancer, metastatic; **OR**
- Non-small cell lung cancer, metastatic

***MGMT* Promoter Methylation Testing**

Humana members may be eligible under the Plan for ***MGMT* promoter methylation testing** (81287) for glioma.

***NRAS* Gene Analysis**

Humana members may be eligible under the Plan for ***NRAS* gene analysis** (81311) for any of the following indications:

- Colorectal cancer, metastatic; **OR**
- Melanoma, metastatic

***PDGFRA* Gene Analysis**
Humana members may be eligible under the Plan for ***PDGFRA* gene analysis** (81314) an individual presents with a mass known or clinically suspected to be GIST.

***TERT* Gene Analysis**
Humana members may be eligible under the Plan for ***TERT* gene analysis** (81345) for any of the following indications:

- Glioma; **OR**
- Melanoma; **OR**
- Uterine sarcoma

***TP53* Gene Analysis**
Humana members may be eligible under the Plan for ***TP53* gene analysis** (81351, 81352) for any of the following indications:

- Endometrial carcinoma; **OR**
- Medulloblastoma; **OR**
- Neuroendocrine tumors; **OR**
- Occult primary; **OR**
- Pancreatic adenocarcinoma; **OR**
- Uterine sarcoma

Repeat CGP
Humana members may be eligible under the Plan for **repeat CGP** when the following criteria are met:

- Individual diagnosed with advanced or metastatic solid tumor; **AND**
- Individual diagnosed with recurrence, relapse or is nonresponsive to treatment; **AND**
- Examination of a new sample of the primary tumor

Coverage Limitations

Humana members may **NOT** be eligible under the Plan for **comprehensive genomic profiling or genetic testing for solid tumors** for any indications or tests other than those listed above including, but may not be limited to:

- Adjunct to in vitro chemoresistance and chemosensitivity assays
- CureMatch (0794T)
- LungOI (0414U)

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.

Coding Information

Any codes listed on this 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
81120	IDH1 (isocitrate dehydrogenase 1 [NADP+], soluble) (eg, glioma), common variants (eg, R132H, R132C)	
81121	IDH2 (isocitrate dehydrogenase 2 [NADP+], mitochondrial) (eg, glioma), common variants (eg, R140W, R172M)	
81272	KIT (v-kit Hardy-Zuckerman 4 feline sarcoma viral oncogene homolog) (eg, gastrointestinal stromal tumor [GIST], acute myeloid leukemia, melanoma), gene analysis, targeted sequence analysis (eg, exons 8, 11, 13, 17, 18)	
81275	KRAS (Kirsten rat sarcoma viral oncogene homolog) (eg, carcinoma) gene analysis; variants in exon 2 (eg, codons 12 and 13)	
81276	KRAS (Kirsten rat sarcoma viral oncogene homolog) (eg, carcinoma) gene analysis; additional variant(s) (eg, codon 61, codon 146)	
81287	MGMT (O-6-methylguanine-DNA methyltransferase) (eg, glioblastoma multiforme) promoter methylation analysis	

81311	NRAS (neuroblastoma RAS viral [v-ras] oncogene homolog) (eg, colorectal carcinoma), gene analysis, variants in exon 2 (eg, codons 12 and 13) and exon 3 (eg, codon 61)	
81314	PDGFRA (platelet-derived growth factor receptor, alpha polypeptide) (eg, gastrointestinal stromal tumor [GIST]), gene analysis, targeted sequence analysis (eg, exons 12, 18)	
81345	TERT (telomerase reverse transcriptase) (eg, thyroid carcinoma, glioblastoma multiforme) gene analysis, targeted sequence analysis (eg, promoter region)	
81351	TP53 (tumor protein 53) (eg, Li-Fraumeni syndrome) gene analysis; full gene sequence	
81352	TP53 (tumor protein 53) (eg, Li-Fraumeni syndrome) gene analysis; targeted sequence analysis (eg, 4 oncology)	
81449	Targeted genomic sequence analysis panel, solid organ neoplasm, 5-50 genes (eg, ALK, BRAF, CDKN2A, EGFR, ERBB2, KIT, KRAS, MET, NRAS, PDGFRA, PDGFRB, PGR, PIK3CA, PTEN, RET), interrogation for sequence variants and copy number variants or rearrangements, if performed; RNA analysis	
81451	Targeted genomic sequence analysis panel, hematolymphoid neoplasm or disorder, 5-50 genes (eg, BRAF, CEBPA, DNMT3A, EZH2, FLT3, IDH1, IDH2, JAK2, KIT, KRAS, MLL, NOTCH1, NPM1, NRAS), interrogation for sequence variants, and copy number variants or rearrangements, or isoform expression or mRNA expression levels, if performed; RNA analysis	
81455	Targeted genomic sequence analysis panel, solid organ or hematolymphoid neoplasm, DNA analysis, and RNA analysis when performed, 51 or greater genes (eg, ALK, BRAF, CDKN2A, CEBPA, DNMT3A, EGFR, ERBB2, EZH2, FLT3, IDH1, IDH2, JAK2, KIT, KRAS, MLL, NPM1, NRAS, MET, NOTCH1, PDGFRA, PDGFRB, PGR, PIK3CA, PTEN, RET), interrogation for sequence variants and copy number variants or rearrangements, if performed	

81456	Targeted genomic sequence analysis panel, solid organ or hematolymphoid neoplasm or disorder, 51 or greater genes (eg, ALK, BRAF, CDKN2A, CEBPA, DNMT3A, EGFR, ERBB2, EZH2, FLT3, IDH1, IDH2, JAK2, KIT, KRAS, MET, MLL, NOTCH1, NPM1, NRAS, PDGFRA, PDGFRB, PGR, PIK3CA, PTEN, RET), interrogation for sequence variants and copy number variants or rearrangements, or isoform expression or mRNA expression levels, if performed; RNA analysis	
81457	Solid organ neoplasm, genomic sequence analysis panel, interrogation for sequence variants; DNA analysis, microsatellite instability	**New Code Effective 01/01/2024**
81458	Solid organ neoplasm, genomic sequence analysis panel, interrogation for sequence variants; DNA analysis, copy number variants and microsatellite instability	**New Code Effective 01/01/2024**
81459	Solid organ neoplasm, genomic sequence analysis panel, interrogation for sequence variants; DNA analysis or combined DNA and RNA analysis, copy number variants, microsatellite instability, tumor mutation burden, and rearrangements	**New Code Effective 01/01/2024**
81479	Unlisted molecular pathology procedure	**Not Covered if used to report any test outlined in Coverage Limitations section**
0022U	Targeted genomic sequence analysis panel, non-small cell lung neoplasia, DNA and RNA analysis, 23 genes, interrogation for sequence variants and rearrangements, reported as presence/absence of variants and associated therapy(ies) to consider	
0048U	Oncology (solid organ neoplasia), DNA, targeted sequencing of protein-coding exons of 468 cancer-associated genes, including interrogation for somatic mutations and microsatellite instability, matched with normal specimens, utilizing formalin-fixed paraffin-embedded tumor tissue, report of clinically significant mutation(s)	
0211U	Oncology (pan-tumor), DNA and RNA by next-generation sequencing, utilizing formalin-fixed paraffin-embedded tissue, interpretative report for single nucleotide variants, copy number alterations, tumor mutational burden, and microsatellite instability, with therapy association	**Not Covered** **Test Obsolete/No Longer Available**

0244U	Oncology (solid organ), DNA, comprehensive genomic profiling, 257 genes, interrogation for single-nucleotide variants, insertions/deletions, copy number alterations, gene rearrangements, tumor-mutational burden and microsatellite instability, utilizing formalin-fixed paraffin-embedded tumor tissue	
0250U	Oncology (solid organ neoplasm), targeted genomic sequence DNA analysis of 505 genes, interrogation for somatic alterations (SNVs [single nucleotide variant], small insertions and deletions, one amplification, and four translocations), microsatellite instability and tumor-mutation burden	
0329U	Oncology (neoplasia), exome and transcriptome sequence analysis for sequence variants, gene copy number amplifications and deletions, gene rearrangements, microsatellite instability and tumor mutational burden utilizing DNA and RNA from tumor with DNA from normal blood or saliva for subtraction, report of clinically significant mutation(s) with therapy associations	
0334U	Oncology (solid organ), targeted genomic sequence analysis, formalin-fixed paraffin-embedded (FFPE) tumor tissue, DNA analysis, 84 or more genes, interrogation for sequence variants, gene copy number amplifications, gene rearrangements, microsatellite instability and tumor mutational burden	
0379U	Targeted genomic sequence analysis panel, solid organ neoplasm, DNA (523 genes) and RNA (55 genes) by next-generation sequencing, interrogation for sequence variants, gene copy number amplifications, gene rearrangements, microsatellite instability, and tumor mutational burden	
0391U	Oncology (solid tumor), DNA and RNA by next-generation sequencing, utilizing formalin-fixed paraffin-embedded (FFPE) tissue, 437 genes, interpretive report for single nucleotide variants, splice- site variants, insertions/deletions, copy number alterations, gene fusions, tumor mutational burden, and microsatellite instability, with algorithm quantifying immunotherapy response score	
0414U	Oncology (lung), augmentative algorithmic analysis of digitized whole slide imaging for 8 genes (ALK, BRAF, EGFR, ERBB2, MET, NTRK1-3, RET, ROS1), and KRAS G12C and PD-L1, if performed, formalin-fixed paraffin-embedded (FFPE) tissue, reported as positive or negative for each biomarker	**Not Covered** **New Code Effective 10/01/2023**

0444U	Oncology (solid organ neoplasia), targeted genomic sequence analysis panel of 361 genes, interrogation for gene fusions, translocations, or other rearrangements, using DNA from formalin-fixed paraffin-embedded(FFPE) tumor tissue, report of clinically significant variant(s)	
0448U	Oncology (lung and colon cancer), DNA, qualitative, next-generation sequencing detection of single-nucleotide variants and deletions in EGFR and KRAS genes, formalin-fixed paraffin-embedded (FFPE) solid tumor samples, reported as presence or absence of targeted mutation(s),with recommended therapeutic options	**New Code Effective 04/01/2024**
0478U	Oncology (non-small cell lung cancer), DNA and RNA, digital PCR analysis of 9 genes (EGFR, KRAS, BRAF, ALK, ROS1, RET, NTRK 1/2/3, ERBB2, and MET) in formalin-fixed paraffin-embedded (FFPE) tissue, interrogation for single-nucleotide variants, insertions/deletions, gene rearrangements, and reported as actionable detected variants for therapy selection	**New code Effective Date 10/01/2024**
0481U	IDH1 (isocitrate dehydrogenase 1 [NADP+]), IDH2 (isocitrate dehydrogenase 2 [NADP+]), and TERT (telomerase reverse transcriptase) promoter (eg, central nervous system [CNS] tumors), next-generation sequencing (single-nucleotide variants [SNV], deletions, and insertions)	**New code Effective Date 10/01/2024**
0498U	Oncology (colorectal), next-generation sequencing for mutation detection in 43 genes and methylation pattern in 45 genes, blood, and formalin-fixed paraffin-embedded (FFPE) tissue, report of variants and methylation pattern with interpretation	**New code Effective Date 10/01/2024**
0499U	Oncology (colorectal and lung), DNA from formalin-fixed paraffin-embedded (FFPE) tissue, next-generation sequencing of 8 genes (NRAS, EGFR, CTNNB1, PIK3CA, APC, BRAF, KRAS, and TP53), mutation detection	**New code Effective Date 10/01/2024**
CPT® Category III Code(s)	**Description**	**Comments**

0794T	Patient-specific, assistive, rules-based algorithm for ranking pharmaco-oncologic treatment options based on the patient's tumor-specific cancer marker information obtained from prior molecular pathology, immunohistochemical, or other pathology results which have been previously interpreted and reported separately	**Not Covered** **New Code Effective 07/01/2023**
HCPCS Code(s)	**Description**	**Comments**
No code(s) identified		

References

1. American Academy of Dermatology (AAD). Guidelines of care for the management of primary cutaneous melanoma. https://www.aad.org. Published January 2019.

2. American Society of Clinical Oncology (ASCO). Metastatic pancreatic cancer: ASCO guideline update. https://www.asco.org. Published 2020.

3. American Society of Clinical Oncology (ASCO). Somatic genomic testing in patients with metastatic or advanced cancer: ASCO provisional clinical opinion. https://www.asco.org. Published February 17, 2022.

4. American Thyroid Association (ATA). 2021 American Thyroid Association guidelines for management of patients with anaplastic thyroid cancer: American Thyroid Association Anaplastic Thyroid Cancer Guidelines Task Force. https://www.thyroid.org. Published 2021.

5. Association for Molecular Pathology (AMP). Guidelines for validation of next-generation sequencing-based oncology panels: a joint consensus recommendation of the Association for Molecular Pathology and College of American Pathologists. https://www.amp.org. Published May 2017.

6. Association for Molecular Pathology (AMP). Updated molecular testing guideline for the selection of lung cancer patients for treatment with targeted tyrosine kinase inhibitors: guideline from the College of American Pathologists, the International Association for the Study of Lung Cancer, and the Association for Molecular Pathology. https://www.amp.org. Published March 2018.

7. ClinicalKey. Clinical Overview. Brain neoplasm, glioblastoma. https://www.clinicalkey.com. Updated January 1, 2024.

8. ClinicalKey. Clinical Overview. Cholangiocarcinoma. https://www.clinicalkey.com. Updated April 30, 2024.
9. ClinicalKey. Clinical Overview. Colorectal cancer. https://www.clinicalkey.com. Updated January 31, 2024.

10. ClinicalKey. Clinical Overview. Gastrointestinal stromal tumor. https://www.clinicalkey.com. Updated July 10, 2023.

11. ClinicalKey. Clinical Overview. Lung cancer (non–small cell). https://www.clinicalkey.com. Updated January 2, 2024.

12. ClinicalKey. Clinical Overview. Melanoma. https://www.clinicalkey.com. Updated May 13, 2024.

13. College of American Pathologists (CAP). Molecular biomarker testing for the diagnosis of diffuse gliomas: guideline from the College of American Pathologists in collaboration with the American Association of Neuropathologists, Association for Molecular Pathology, and Society for Neuro-Oncology. https://www.cap.org. Published May 2022.

14. ECRI Institute. ECRI Genetic Test Assessment. Altera Tumor Profiling Test (Natera, Inc.) for guiding targeted therapy selection for solid tumor cancers. https://www.ecri.com. Published July 2022.

15. ECRI Institute. ECRI Genetic Test Assessment. GEM ExTra Cancer Panel (Ashion Analytics) for guiding targeted therapy for solid tumors and hematological malignancies. https://www.ecri.com. Published August 2021.

16. ECRI Institute. ECRI Genetic Test Assessment. OmniSeq Insight (OmniSeq, LLC) for guiding therapy selection for solid tumor cancers. https://www.ecri.com. Published July 2022.

17. ECRI Institute. ECRI Genetic Test Assessment. Paradigm Cancer Diagnostic PCDx Test (Paradigm Diagnostics, Inc.) for guiding targeted therapy for solid tumors. https://www.ecri.com. Published March 2021.

18. ECRI Institute. ECRI Genetic Test Assessment. PGDx elio tissue complete (Personal Genome Diagnostics, Inc.) for guiding targeted therapy for solid tumor cancers. https://www.ecri.com. Published August 2021.

19. ECRI Institute. ECRI Genetic Test Assessment. Prima Comprehensive Tumor Panel (MedGenome Labs Pvt Ltd) for guiding targeted cancer therapy. https://www.ecri.org. Published August 2020.

20. ECRI Institute. ECRI Genetic Test Assessment. Prima Somatic Cancer Mutation Panel (MedGenome Labs Pvt Ltd) for guiding targeted cancer therapy. https://www.ecri.com. Published July 2020.

21. ECRI Institute. ECRI Genetic Test Assessment. StrataNGS (Strata Oncology, Inc.) for guiding targeted therapy for solid tumor cancers. Published August 2021.

22. ECRI Institute. ECRI Genetic Test Assessment. Tempus xT (Tempus) to guide targeted therapy for solid tumor cancers. https://www.ecri.com. Published November 2022.
23. ECRI Institute. ECRIgene. Caris Molecular Intelligence Profiling Test (Caris Life Sciences) for informing management of solid tumors. https://www.ecri.com. Published April 2018.

24. ECRI Institute. ECRIgene. MSK-IMPACT (MSKCC) genomic profiling test for guiding targeted therapy for solid tumors. https://www.ecri.com. Published February 2019.

25. ECRI Institute. ECRIgene. Oncomine Dx Target Test (Thermo Fisher Scientific, Inc.) companion diagnostic for guiding targeted therapy for NSCLC. https://www.ecri.com. Published June 2018.

26. Gandini S, Zanna I, De Angelis S, et al. TERT promoter mutations and melanoma survival: a comprehensive literature review and meta-analysis. *Crit Rev Oncol Hematol*. 2021:160:103288.

27. Hayes, Inc. Genetic Testing Evaluation (GTE) Report. KIT and PDGFRA testing for diagnosis of gastrointestinal stromal tumors (GISTs). https://evidence.hayesinc.com. Published August 11, 2011. Updated August 18, 2014.

28. Hayes, Inc. Genetic Testing Evaluation (GTE) Report. KIT and PDGFRA testing for prognosis of gastrointestinal stromal tumors (GISTs). https://evidence.hayesinc.com. Published September 12, 2011. Updated August 19, 2014.

29. Hayes, Inc. Genetic Testing Evaluation (GTE) Report. KIT and PDGFRA testing for the primary treatment of gastrointestinal stromal tumors (GISTs) with tyrosine kinase inhibitors. https://evidence.hayesinc.com. Published October 10, 2011. Updated November 24, 2014.

30. Hayes, Inc. Genetic Testing Evaluation (GTE) Report. KIT and PDGFRA testing for the secondary treatment of gastrointestinal stromal tumors (GISTs) with tyrosine kinase inhibitors. https://evidence.hayesinc.com. Published November 4, 2011. Updated November 25, 2014.

31. Hayes, Inc. Genetic Testing Evaluation (GTE) Report. Methylguanine-DNA methyltransferase (MGMT) gene methylation for glioblastoma multiforme (GBM). https://evidence.hayesinc.com. Published January 29, 2015.

32. Hayes, Inc. Genetic Test Evaluation (GTE) Synopsis. KIT gene testing in malignant melanoma. https://evidence.hayesinc.com. Published October 27, 2011.

33. Hayes, Inc. Genetic Test Evaluation (GTE) Synopsis. OmniSeq Comprehensive (OmniSeq). https://evidence.hayesinc.com. February 2, 2017.

34. Hayes, Inc. Genetic Test Evaluation (GTE) Synopsis. OmniSeq Target. https://evidence.hayesinc.com. Published October 29, 2015.

35. Hayes, Inc. Genetic Test Evaluation (GTE) Synopsis. Paradigm Cancer Diagnostic (PCDx) Test. https://evidence.hayesinc.com. Published August 27, 2015.

36. Hayes, Inc. Molecular Test Assessment. FoundationOne CDx (Foundation Medicine Inc.) for the intended use as a broad molecular profiling tool. https://evidence.hayesinc.com. Published April 26, 2022. Updated May 17, 2023.

37. Hayes, Inc. Molecular Test Assessment. GeneStrat (Biodesix Inc.). https://evidence.hayesinc.com. Published April 25, 2023. Updated June 3, 2024.

38. Hayes, Inc. Molecular Test Assessment. MI Profile (Caris Life Sciences) for the intended use as a broad molecular profiling tool. https://evidence.hayesinc.com. Published May 3, 2022. Update May 31, 2024.

39. Hayes, Inc. Molecular Test Assessment. MI TumorSeek (Caris Life Sciences). https://evidence.hayesinc.com. Published September 17, 2019.

40. Hayes, Inc. Precision Medicine Insights. Comprehensive molecular profiling test(s) for solid tumors intended to be used as broad molecular profiling tool to assigned matched therapy. https://evidence.hayesinc.com. Published January 11, 2022.

41. Hayes, Inc. Precision Medicine Research Brief. GeneStrat NGS Genomic Test (Biodesix Inc.). https://evidence.hayesinc.com. Published April 21, 2023.

42. Hayes, Inc. Precision Medicine Research Brief. Guardant360 TissueNext (Guardant Health Inc.). https://evidence.hayesinc.com. Published May 3, 2023.

43. Hayes, Inc. Precision Medicine Research Brief. MI Tumor Seek Hybrid (Caris Life Sciences). https://evidence.hayesinc.com. Published May 15, 2023.

44. Hayes, Inc. Precision Medicine Research Brief. OncoExTra (Exact Sciences Corp). https://evidence.hayesinc.com. Published September 7, 2023.

45. Hayes, Inc. Precision Medicine Research Brief. PGDx Elio Tissue Complete (Personal Genome Diagnostics Inc.). https://evidence.hayesinc.com. Published November 23, 2022.

46. Hayes, Inc. Precision Medicine Research Brief. Tempus xR (Tempus Labs Inc.). https://evidence.hayesinc.com. Published May 20, 2024.

47. Hayes, Inc. Precision Medicine Research Brief. Tempus xT (Tempus Labs Inc.). https://evidence.hayesinc.com. Published October 13, 2023.

48. National Comprehensive Cancer Network (NCCN). NCCN Biomarkers Compendium: IDH1, IDH2, KIT, MGMT, PDGFRA, TERT, TP53. https://www.nccn.org. Updated 2024.

49. National Comprehensive Cancer Network (NCCN). NCCN Clinical Practice Guidelines in Oncology. Biliary tract cancers. https://www.nccn.org. Updated April 19, 2024.

50. National Comprehensive Cancer Network (NCCN). NCCN Clinical Practice Guidelines in Oncology. Bone cancer. https://www.nccn.org. Updated March 12, 2024.

51. National Comprehensive Cancer Network (NCCN). NCCN Clinical Practice Guidelines in Oncology. Breast cancer. https://www.nccn.org. Updated March 11, 2024.

52. National Comprehensive Cancer Network (NCCN). NCCN Clinical Practice Guidelines in Oncology. Central nervous system cancers. https://www.nccn.org. Updated May 31, 2024.

53. National Comprehensive Cancer Network (NCCN). NCCN Clinical Practice Guidelines in Oncology. Cervical cancer. https://www.nccn.org. Updated May 6, 2024.

54. National Comprehensive Cancer Network (NCCN). NCCN Clinical Practice Guidelines in Oncology. Colon cancer. https://www.nccn.org. Updated May 24, 2024.

55. National Comprehensive Cancer Network (NCCN). NCCN Clinical Practice Guidelines in Oncology. Esophageal and esophagogastric junction cancers. https://www.nccn.org. Updated April 26, 2024.

56. National Comprehensive Cancer Network (NCCN). NCCN Clinical Practice Guidelines in Oncology. Gastric cancer. https://www.nccn.org. Updated May 29, 2024.

57. National Comprehensive Cancer Network (NCCN). NCCN Clinical Practice Guidelines in Oncology. Gastrointestinal stromal tumors. https://www.nccn.org. Updated March 8, 2024.

58. National Comprehensive Cancer Network (NCCN). NCCN Clinical Practice Guidelines in Oncology. Head and neck cancers. https://www.nccn.org. Updated May 1, 2024.

59. National Comprehensive Cancer Network (NCCN). NCCN Clinical Practice Guidelines in Oncology. Hepatocellular carcinoma. https://www.nccn.org. Updated April 9, 2024.

60. National Comprehensive Cancer Network (NCCN). NCCN Clinical Practice Guidelines in Oncology. Melanoma: cutaneous. https://www.nccn.org. Updated April 3, 2024.

61. National Comprehensive Cancer Network (NCCN). NCCN Clinical Practice Guidelines in Oncology. Neuroblastoma. https://www.nccn.org. Updated February 7, 2024.

62. National Comprehensive Cancer Network (NCCN). NCCN Clinical Practice Guidelines in Oncology. Neuroendocrine and adrenal tumors. https://www.nccn.org. Updated August 2, 2023.

63. National Comprehensive Cancer Network (NCCN). NCCN Clinical Practice Guidelines in Oncology. Non-small cell lung cancer. https://www.nccn.org. Updated April 23, 2024.

64. National Comprehensive Cancer Network (NCCN). NCCN Clinical Practice Guidelines in Oncology. Occult primary (cancer of unknown primary [CUP]). https://www.nccn.org. Updated April 29, 2024.

65. National Comprehensive Cancer Network (NCCN). NCCN Clinical Practice Guidelines in Oncology. Ovarian cancer including fallopian tube cancer and primary peritoneal cancer. https://www.nccn.org. Updated May 13, 2024.

66. National Comprehensive Cancer Network (NCCN). NCCN Clinical Practice Guidelines in Oncology. Pancreatic adenocarcinoma. https://www.nccn.org. Updated April 30, 2024.

67. National Comprehensive Cancer Network (NCCN). NCCN Clinical Practice Guidelines in Oncology. Rectal cancer. https://www.nccn.org. Updated April 30, 2024.

68. National Comprehensive Cancer Network (NCCN). NCCN Clinical Practice Guidelines in Oncology. Small cell lung cancer. https://www.nccn.org. Updated November 21, 2023.

69. National Comprehensive Cancer Network (NCCN). NCCN Clinical Practice Guidelines in Oncology. Uterine neoplasms. https://www.nccn.org. Updated March 6, 2024.

70. Society for Immunotherapy of Cancer (SITC). Position Article and Guidelines. The Society for Immunotherapy of Cancer consensus statement on immunotherapy for the treatment of lung cancer and mesothelioma. https://www.sitcancer.org. Published May 31, 2022.

71. Stockley TL, Oza AM, Berman HK, et al. Molecular profiling of advanced solid tumors and patient outcomes with genotype-matched clinical trials: the Princess Margaret IMPACT/COMPACT trial. *Genome Med*. 2016;8(1):109.

72. Tomlins SA, Hovelson DH, Harms P, et al. Development and validation of StrataNGS, a multiplex PCR, semiconductor sequencing-based comprehensive genomic profiling test. *J Mol Diagn*. 2021;23(11):1515-1533.

73. Tomlins SA, Hovelson DH, Suga JM, et al. Real-world performance of a comprehensive genomic profiling test optimized for small tumor samples. *JCO Precis Oncol*. 2021;5:PO.20.00472.

74. UpToDate, Inc. Adenocarcinoma of unknown primary site. https://www.uptodate.com. Updated May 2024.

75. UpToDate, Inc. Adjuvant and neoadjuvant therapy for gastrointestinal stromal tumors. https://www.uptodate.com. Updated May 2024.

76. UpToDate, Inc. Classification and pathologic diagnosis of gliomas, glioneuronal tumors, and neuronal tumors. https://www.uptodate.com. Updated May 2024.

77. UpToDate, Inc. Clinical features, diagnosis, and pathology of IDH-mutant, 1p/19q-codeleted oligodendrogliomas. https://www.uptodate.com. Updated May 2024.

78. UpToDate, Inc. Clinical presentation, diagnosis, and prognosis of gastrointestinal stromal tumors. https://www.uptodate.com. Updated May 2024.

79. UpToDate, Inc. Epidemiology, risk factors, anatomy, and pathology of cholangiocarcinoma. https://www.uptodate.com. Updated May 2024.

80. UpToDate, Inc. Initial systemic therapy for metastatic colorectal cancer. https://www.uptodate.com. Updated May 2024.

81. UpToDate, Inc. Initial systemic therapy for metastatic exocrine pancreatic cancer. https://www.uptodate.com. Updated May 20, 2024.

82. UpToDate, Inc. Initial treatment and prognosis of IDH-wildtype glioblastoma in adults. https://www.uptodate.com. Updated May 2024.

83. UpToDate, Inc. Management of glioblastoma in older adults. https://www.uptodate.com. Updated May 2024.

84. UpToDate, Inc. Medical treatment for relapsed epithelial ovarian, fallopian tubal, or peritoneal cancer: platinum-resistant disease. https://www.uptodate.com. Updated May 2024.

85. UpToDate, Inc. Medical treatment for relapsed epithelial ovarian, fallopian tubal, or peritoneal cancer: platinum-sensitive disease. https://www.uptodate.com. Updated May 2024.

86. UpToDate, Inc. Molecular genetics of colorectal cancer. https://www.uptodate.com. Updated May 2024.

87. UpToDate, Inc. Molecular pathogenesis of diffuse gliomas. https://www.uptodate.com. Updated May 2024.

88. UpToDate, Inc. Molecular pathogenesis of exocrine pancreatic cancer. https://www.uptodate.com. Updated May 2024.

89. UpToDate, Inc. Oncogenes and tumor suppressor genes in thyroid nodules and nonmedullary thyroid cancer. https://www.uptodate.com. Updated May 2024.

90. UpToDate, Inc. Overview of the classification and management of cancers of unknown primary site. https://www.uptodate.com. Updated May 2024.

91. UpToDate, Inc. Overview of the management of advanced cutaneous melanoma. https://www.uptodate.com. Updated May 2024.

92. UpToDate, Inc. Pathobiology and staging of small cell carcinoma of the lung. https://www.uptodate.com. Updated May 2024.

93. UpToDate, Inc. Pathology and prognostic determinants of colorectal cancer. https://www.uptodate.com. Updated May 2024.

94. UpToDate, Inc. Personalized, genotype-directed therapy for advanced non-small cell lung cancer. https://www.uptodate.com. Updated May 2024.

95. UpToDate, Inc. Poorly differentiated cancer from an unknown primary site. https://www.uptodate.com. Updated May 2024.

96. UpToDate, Inc. Second-line systemic therapy for advanced exocrine pancreatic cancer. https://www.uptodate.com. Updated May 2024.

97. UpToDate, Inc. Squamous cell carcinoma of unknown primary site. https://www.uptodate.com. Updated May 2024.

98. UpToDate, Inc. Systemic therapy for advanced cholangiocarcinoma. https://www.uptodate.com. Updated May 30, 2024.

99. UpToDate, Inc. Systemic therapy of metastatic well-differentiated pancreatic neuroendocrine tumors. https://www.uptodate.com. Updated May 22, 2024.

100. UpToDate, Inc. Systemic treatment of metastatic melanoma with BRAF and other molecular alterations. https://www.uptodate.com. Updated May 14, 2024.

101. UpToDate, Inc. Therapy for metastatic colorectal cancer in older adult patients and those with a poor performance status. https://www.uptodate.com. Updated May 2024.

102. UpToDate, Inc. Tissue-agnostic cancer therapy: DNA mismatch repair deficiency and response to immune checkpoint blockade in solid tumors. https://www.uptodate.com. Updated May 2024.

103. UpToDate, Inc. Treatment of advanced, unresectable gallbladder cancer. https://www.uptodate.com. Updated May 2024.

104. UpToDate, Inc. Tyrosine kinase inhibitor therapy for advanced gastrointestinal stromal tumors. https://www.uptodate.com. Updated May 4, 2024.

105. US Food & Drug Administration (FDA). 510(k) Substantial Equivalence Determination Decision Summary. ACTOnco IVD. https://www.fda.gov. Published December 23, 2022.

106. US Food & Drug Administration (FDA). 510(k) Substantial Equivalence Determination Decision Summary. PGDx elio tissue complete. https://www.fda.gov. Published April 24, 2020.

107. US Food & Drug Administration (FDA). Evaluation of automatic class III designation for MSK-IMPACT (Integrated Mutation Profiling of Actionable Cancer Targets): decision summary. https://www.fda.gov. Published November 15, 2017.

108. US Food & Drug Administration (FDA). List of cleared or approved companion diagnostic devices (in vitro and imaging tools). https://www.fda.gov. Updated May 23, 2023.

109. US Food & Drug Administration (FDA). Summary of Safety and Effectiveness Data (SSED): Oncomine Dx Target Test. https://www.fda.gov. Published June 22, 2017. Updated September 21, 2022.

110. US Food & Drug Administration (FDA). Summary of Safety and Effectiveness Data (SSED): xT CDx. https://www.fda.gov. Published April 28, 2023.

Change Summary

07/25/2024 Annual Review, Coverage Change. Provider Claims Codes Update.
08/29/2024 Update, Coverage Change. Provider Claims Codes Update.