

Policy Name: Oncology: Cytogenetic Testing MP9607

Effective Date: January 01, 2025

Important Information - Please Read Before Using This Policy

These services may or may not be covered by Dean Health Plan. Coverage is subject to requirements in applicable federal or state laws. Please refer to the member's plan document for other specific coverage information. If there is a difference between this general information and the member's plan document, the member's plan document will be used to determine coverage. With respect to Medicare, Medicaid, and other government programs, this policy will apply unless these programs require different coverage.

Members may contact Dean Health Plan Customer Service at the phone number listed on their member identification card to discuss their benefits more specifically. Providers with questions about this medical policy see Provider Communications for additional information. https://deancare.com/Providers/Provider-communications

Dean Health Plan medical policies are not medical advice. Members should consult with appropriate health care providers to obtain needed medical advice, care and treatment.

OVERVIEW

Cytogenetic analysis of solid tumors and hematologic malignancies aims to both classify the type of tumor or cancer present and identify somatic oncogenic mutations in cancer. These mutations, often called "driver" mutations, are becoming increasingly useful for targeted therapy selection, and may give insight into prognosis and treatment response in a subset of cancers. In addition, molecular analysis of solid tumors and hematologic malignancies, in particular, can also aid in making a diagnosis of a specific type of malignancy. For solid tumors, molecular analysis can be performed via direct testing of the tumor (which is addressed in this policy) or via circulating tumor DNA or circulating tumor cells (CTCs) (see Other Related Policies). For hematologic malignancies, molecular analysis can be performed on blood samples or bone marrow biopsy samples (skin or buccal cells/saliva is occasionally used in patients who have received a hematopoietic stem cell transplant).

POLICY REFERENCE TABLE

The tests and associated laboratories and CPT codes contained within this document serve only as examples to help users navigate claims and corresponding coverage criteria; as such, they are not comprehensive and are not a guarantee of coverage or non-coverage.

Use the current applicable CPT/HCPCS code(s). The following codes are included below for informational purposes only and are subject to change without notice. Inclusion or exclusion of a code does not constitute or imply member coverage or provider reimbursement.

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Coverage Criteria Sections	Example Tests (Labs)	Common CPT Codes	Common ICD Codes	Ref
Tumor Specific ALK Gene Rearrangement (Qualitative FISH and PCR) Tests	ALK FISH, Non-Small cell Lung Cancer (Labcorp)	88271, 88274	C34, C73	1, 4, 21, 22, 23, 26
Bladder Cancer Diagnostic and Recurrence FISH Tests	UroVysion Bladder Kit (Quest Diagnostics)	88120, 88121	C67, R31.9, Z85, Z85.5	30, 31
Chronic Lymphocytic Leukemia/Small Lymphocytic Lymphoma (CLL/SLL) FISH Panel Analysis	FISH for Chronic Lymphocytic Leukemia (Cleveland Clinic Laboratories)	88271, 88274, 88275, 88291	C91, C94, C95, Z85.6	10
	FISH, B-Cell Chronic Lymphocytic Leukemia Panel (Quest Diagnostics)			
Tumor Specific ERBB2 (HER2) Deletion/Duplication (FISH and CISH)	ERBB2 (HER2/neu) Gene Amplification by FISH with Reflex, Tissue (ARUP Laboratories)	88360, 88377	C08, C15, C16, C18, C19, C20, C50	2, 3, 5, 6, 11, 12, 14, 17, 20, 21, 25, 27
FISH Panel Analysis	Oncology FISH Analysis - Multiple Myeloma FISH Panel (Baylor Genetics, LLC)	88237, 88271, 88275, 88291	C90	13
	Multiple Myeloma (MM) Profile, FISH (Labcorp)			
NTRK Fusion Analysis Panel	NTRK NGS Fusion Panel (NeoGenomics Laboratories)	81191, 81192, 81193, 81194	C15, C16, C18, C34, C49.9, C50, C51, C53, C54, C73, C80.1, C91	1, 2, 3, 4, 5, 6, 8, 9, 11, 12, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 27, 32, 33
Tumor Specific PD- L1 Protein Analysis	PD-L1, IHC with Interpretation (Quest Diagnostics)	88341, 88342, 88360, 88361	C11, C15, C16, C34, C50, C51, C53, C67	1, 3, 5, 6, 11, 12, 14, 15, 27, 28,



Coverage Criteria Sections	Example Tests (Labs)	Common CPT Codes	Common ICD Codes	Ref
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Tumor Specific FOLR1 Protein Analysis	FOLR1 Immunohistochemistry Analysis (Labcorp)	88360	C56	20
Tumor Specific PML/RARA Gene Rearrangement (Qualitative FISH and PCR)	FISH, APL, <i>PML/RARA</i> , Translocation 15, 17 (Quest Diagnostics)	81315, 81316, 88271,	C91-C95	7
	PML/RARA t(15;17) (NeoGenomics Laboratories)	88274, 88275, 88291		
Tumor Specific RET Gene	RET FISH (NeoGenomics Laboratories)	88271, 88275, 88291, 88374, 88377	C34, C53, C73	1, 2, 3, 4, 5, 6, 11, 21, 27
Rearrangement Tests (FISH)	Oncology FISH Analysis - <i>RET</i> Rearrangement (Baylor Genetics)			
Tumor Specific ROS1 Gene Rearrangement	FISH ROS1 Rearrangement (Johns Hopkins Medical Institutions-Pathology Laboratory)	88271, 88274	C34	1, 21, 22, 23

OTHER RELATED POLICIES

This policy document provides coverage criteria for oncology-related cytogenetic testing. Please refer to:

- Oncology: Molecular Analysis of Solid Tumors and Hematologic Malignancies for criteria related to DNA testing of a solid tumor or a blood cancer.
- **Genetic Testing: Hereditary Cancer Susceptibility Syndromes** for coverage criteria related to genetic testing for hereditary cancer predisposition syndromes.
- **Oncology: Cancer Screening** for coverage criteria related to the use of non-invasive fecal, urine, or blood tests for screening for cancer.
- Oncology: Circulating Tumor DNA and Circulating Tumor Cells (Liquid Biopsy) for criteria related to circulating tumor DNA (ctDNA) or circulating tumor cell testing performed on peripheral blood for cancer diagnosis, management, and surveillance.
- Oncology: Algorithmic Testing for coverage criteria related to gene expression profiling and tumor biomarker tests with algorithmic analyses.
- Genetic Testing: Exome and Genome Sequencing for the Diagnosis of Genetic
 Disorders for coverage criteria related to whole genome and whole exome sequencing in rare
 genetic syndromes.
- Genetic Testing: General Approach to Genetic and Molecular Testing for coverage criteria
 related to cytogenetic testing in oncology that is not specifically discussed in this or another nongeneral policy.

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COVERAGE CRITERIA

Tumor Specific ALK Gene Rearrangement (Qualitative FISH and PCR) Tests

- I. Somatic *ALK* rearrangement analysis (88271, 88274) in solid tumors is considered **medically necessary** when:
 - A. The member has a diagnosis of or is in the initial work up stage for:
 - 1. Stage IB or higher lung adenocarcinoma, OR
 - 2. Stage IB or higher large cell lung carcinoma, OR
 - 3. Stage IB or higher squamous cell lung carcinoma, OR
 - 4. Stage IB or higher non-small cell lung cancer (NSCLC) not otherwise specified (NOS), **OR**
 - 5. Anaplastic thyroid carcinoma, OR
 - 6. Locally recurrent, advanced, and/or metastatic papillary thyroid carcinoma, **OR**
 - 7. Locally recurrent, advanced, and/or metastatic follicular thyroid cancer, **OR**
 - 8. Locally <u>advanced</u>/metastatic ampullary adenocarcinoma, **OR**
 - 9. Langerhans cell histiocytosis, OR
 - 10. Erdheim-Chester disease, OR
 - 11. Resectable, borderline resectable or locally <u>advanced</u> or metastatic pancreatic adenocarcinoma, **OR**
 - 12. Pediatric (diagnosed age 18 years or younger) diffuse high grade glioma.

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Bladder Cancer Diagnostic and Recurrence FISH Tests

- I. Bladder cancer diagnostic and recurrence FISH tests (88120, 88121) for diagnosing, and monitoring bladder cancer are considered **medically necessary** when:
 - A. The member has hematuria, AND
 - 1. Diagnostic studies have failed to identify the etiology of the hematuria, AND
 - 2. A bladder cancer diagnostic and recurrence FISH test has not been ordered more than 1 time in the past 12 months, **OR**
 - B. The member has been treated for bladder cancer, AND
 - 1. The bladder cancer diagnostic and recurrence FISH tests are ordered with the following frequency:
 - a) No more than 4 bladder tumor marker studies per year for years 1-2 after diagnosis
 - b) No more than 3 bladder tumor marker studies per year during year 3 after diagnosis
 - c) No more than 2 bladder tumor marker studies during year 4 after

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diagnosis

- d) No more than 1 bladder tumor marker studies annually for up to 15 years after diagnosis.
- II. Bladder cancer diagnostic and recurrence FISH tests (88120, 88121) for screening of members with hematuria are considered **investigational**.
- III. Bladder cancer diagnostic and recurrence FISH tests (88120, 88121) for diagnosing, and monitoring bladder cancer are considered **investigational** for all other indications.

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Chronic Lymphocytic Leukemia/Small Lymphocytic Lymphoma (CLL/SLL) FISH Panel Analysis

- I. Chronic lymphocytic leukemia/small lymphocytic lymphoma (CLL/SLL) FISH panel analysis (88271, 88274, 88275, 88291) in peripheral blood or bone marrow is considered **medically necessary** when:
 - A. The panel includes analysis for +12, del(11q), del(13q), and del(17p), AND
 - B. The member is undergoing initial diagnostic workup for chronic lymphocytic leukemia/small lymphocytic lymphoma (CLL/SLL).

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Tumor Specific ERBB2 (HER2) Deletion/Duplication (FISH and CISH)

- I. Somatic *ERBB2* (*HER2*) amplification analysis via in situ hybridization (ISH) (i.e., FISH or CISH) (88377) or immunohistochemistry (IHC) (88360) in solid tumors is considered **medically necessary** when:
 - A. The member has any of the following:
 - 1. Recurrent or newly diagnosed stage I-IV invasive breast cancer, OR
 - 2. Inoperable locally advanced, recurrent or metastatic gastric cancer, **OR**
 - 3. Suspected or proven metastatic colorectal cancer or appendiceal adenocarcinoma, **OR**
 - 4. Inoperable locally <u>advanced</u>, recurrent or metastatic esophageal and/or esophagogastric junction adenocarcinoma, **OR**
 - 5. Recurrent, unresectable, or metastatic salivary gland tumors, **OR**
 - 6. Recurrent, advanced or metastatic cervical carcinoma, **OR**
 - 7. Serous endometrial carcinoma, OR
 - 8. Endometrial carcinosarcoma, OR
 - 9. p53 abnormal endometrial carcinoma, **OR**
 - 10. Resectable, borderline resectable, or locally <u>advanced</u>/metastatic pancreatic adenocarcinoma, **OR**
 - 11. Recurrent ovarian/fallopian tube/primary peritoneal cancer, **OR**

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- 12. Recurrent or metastatic vaginal cancer, **OR**
- 13. Stage IIIB or higher muscle invasive bladder cancer, OR
- 14. Metastatic small bowel adenocarcinoma.

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Multiple Myeloma FISH Panel Analysis

- I. Multiple myeloma FISH panel analysis (88237, 88271, 88275, 88291) of bone marrow is considered **medically necessary** when:
 - A. The panel includes analysis for del(13), del(17p13), t(4;14), t(11;14), t(14;16), t(14;20), 1q21 gain/amplification, del(1p), **AND**
 - B. The member is undergoing initial diagnostic workup for multiple myeloma.

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NTRK Fusion Analysis Panel

- I. NTRK 1/2/3 fusion analysis panel (81191, 81192, 81193, 81194) via fluorescent in situ hybridization (FISH) or immunohistochemistry (IHC) in solid tumors is considered **medically necessary** when:
 - A. The member is undergoing initial diagnostic workup for or has a diagnosis of:
 - 1. Advanced, progressive, or metastatic solid tumor, **OR**
 - 2. Cancer for which surgical resection is not possible, OR
 - 3. Unknown primary cancers, **OR**
 - B. The member has a diagnosis of any of the following cancers at any stage:
 - 1. Cervical sarcoma, OR
 - 2. Anaplastic thyroid carcinoma, OR
 - 3. Acute lymphoblastic leukemia (ALL), **OR**
 - 4. Pediatric (diagnosed age 18 years or younger) diffuse high grade glioma.

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Tumor Specific PD-L1 Protein Analysis

- I. PD-L1 protein expression analysis via immunohistochemistry (IHC) (88341, 88342, 88360, 88361) in solid tumors is considered **medically necessary** when:
 - A. The member has a diagnosis of or is in the initial work up stage for:
 - 1. Stage IB or higher lung adenocarcinoma, **OR**
 - 2. Stage IB or higher large cell lung carcinoma, **OR**
 - 3. Stage IB or higher squamous cell lung carcinoma, **OR**
 - 4. Stage IB or higher non-small cell lung cancer (NSCLC) not otherwise specified

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(NOS), OR

- 5. Locally <u>advanced</u> or metastatic bladder cancer, **OR**
- 6. Recurrent, progressive, or metastatic cervical cancer (squamous cell carcinoma, adenocarcinoma, or adenosquamous carcinoma), **OR**
- 7. Recurrent unresectable or stage IV triple negative breast cancer, **OR**
- 8. Locally <u>advanced</u>, recurrent or metastatic esophageal and/or esophagogastric junction adenocarcinoma, **OR**
- 9. Locally <u>advanced</u>, recurrent or metastatic gastric adenocarcinoma, **OR**
- 10. Recurrent, unresectable, oligometastatic, or metastatic nasopharyngeal cancer, **OR**
- 11. Recurrent, progressive or metastatic squamous cell vulvar cancer, **OR**
- 12. Recurrent or metastatic vaginal cancer.

NOTE: PD-L1 protein expression analysis via IHC is often performed as an adjunct component of comprehensive molecular profiling panels for solid tumors

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Tumor Specific FOLR1 Protein Analysis

- I. Tumor specific FOLR1 protein expression analysis via immunohistochemistry (IHC) analysis (88360) is considered **medically necessary** when:
 - A. The member has recurrent, platinum resistant epithelial ovarian, fallopian tube or primary peritoneal cancer, **AND**
 - B. Elahere (mirvetuximab soravtansine) is being considered for treatment.

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Tumor Specific PML/RARA Gene Rearrangement (Qualitative FISH and PCR)

- PML/RARA rearrangement analysis via fluorescent in situ hybridization (FISH) (81315, 81316, 88271, 88274, 88275, 88291) in peripheral blood or bone marrow is considered medically necessary when:
 - A. The member is undergoing initial diagnostic work up for acute myeloid leukemia (AML).

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Tumor Specific *RET* Gene Rearrangement Tests (FISH)

- I. Tumor specific *RET* gene rearrangement testing via fluorescent in situ hybridization (FISH) (88374, 88377, 88271, 88275, 88291) in solid tumors is considered **medically necessary** when:
 - A. The member has a diagnosis of:
 - Recurrent or persistent locoregional or metastatic medullary thyroid cancer, AND
 - a) Germline testing for *RET* mutations is negative or has not been done,

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OR

- 2. Anaplastic thyroid carcinoma, OR
- 3. Locally recurrent, advanced and/or metastatic papillary thyroid carcinoma, OR
- 4. Locally recurrent, advanced and/or metastatic follicular thyroid carcinoma, **OR**
- 5. Locally recurrent, <u>advanced</u> and/or metastatic oncocytic carcinoma (formerly called Hurthle cell carcinoma), **OR**
- 6. Advanced or metastatic adenocarcinoma of the lung, OR
- 7. Advanced or metastatic large cell cancer of the lung, OR
- 8. <u>Advanced</u> or metastatic non-small cell cancer of the lung, not otherwise specified, **OR**
- 9. Locally advanced or metastatic squamous cell carcinoma of the cervix, OR
- 10. Locally <u>advanced</u> or metastatic adenocarcinoma of the cervix, **OR**
- 11. Locally advanced or metastatic adenosquamous carcinoma of the cervix, **OR**
- 12. Recurrent unresectable or stage IV breast cancer, **OR**
- 13. Suspected or confirmed metastatic colon cancer, OR
- 14. Resectable, borderline resectable, locally <u>advanced</u> or metastatic pancreatic adenocarcinoma, **OR**
- 15. Locally <u>advanced</u>, recurrent or metastatic esophageal or esophagogastric junction cancer, **OR**
- 16. Locally advanced, recurrent or metastatic gastric cancer, **OR**
- 17. Recurrent or metastatic vaginal cancer.

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Tumor Specific ROS1 Gene Rearrangement

- I. Tumor specific *ROS1* gene rearrangement analysis via fluorescent in situ hybridization (FISH) (88271, 88274) in solid tumors is considered **medically necessary** when:
 - A. The member has a diagnosis of:
 - Advanced or metastatic lung adenocarcinoma, OR
 - 2. Advanced or metastatic large cell lung carcinoma, OR
 - 3. Advanced or metastatic squamous cell lung carcinoma, OR
 - Advanced or metastatic non-small cell lung cancer (NSCLC) not otherwise specified (NOS), OR
 - 5. Locally advanced or metastatic ampullary adenocarcinoma, **OR**
 - 6. Resectable or borderline resectable, or locally <u>advanced</u> or metastatic pancreatic adenocarcinoma, **OR**
 - 7. Pediatric (diagnosed age 18 years or younger) diffuse high-grade glioma.

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PRIOR AUTHORIZATION

Prior authorization is not required. However, services with specific coverage criteria may be reviewed retrospectively to determine if criteria are being met. Retrospective denial may result if criteria are not met.

DEFINITIONS

Advanced cancer: Cancer that is unlikely to be cured or controlled with treatment. The cancer
may have spread from where it first started to nearby tissue, lymph nodes, or distant parts of
the body. Treatment may be given to help shrink the tumor, slow the growth of cancer cells, or
relieve symptoms.

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BACKGROUND AND RATIONALE

Tumor Specific ALK Gene Rearrangement (Qualitative FISH and PCR) Tests

National Comprehensive Cancer Network (NCCN)

The NCCN Thyroid Carcinoma guidelines (3.2024) recommend that individuals with anaplastic thyroid cancer should undergo molecular testing including *BRAF*, *NTRK*, *ALK*, *RET*, MSI, dMMR, and tumor mutational burden if not previously done (p. ANAP-1). *ALK* testing is also recommended for locally recurrent, advanced, and/or metastatic papillary thyroid carcinoma (p. PAP-10) and locally recurrent, advanced, and/or metastatic follicular thyroid carcinoma. (p. FOLL-9)

NCCN Non-Small Cell Lung Cancer guidelines (7.2024) recommend *ALK* rearrangement testing in patients with Stage IB-IIIA, IIIB [T3,N2] disease perioperatively for consideration of systemic therapy (p. NSCL-E, 1 of 5) as well as for patients with advanced or metastatic adenocarcinoma, large cell, squamous cell, or NSCLC not otherwise specified (NOS). (p. NSCL-19)

NCCN guidelines for Ampullary Adenocarcinoma (2.2024) recommend somatic molecular profiling for patients with locally advanced/metastatic disease if systemic therapy is being considered. Potentially actionable somatic findings include fusions involving the ALK gene. (p. AMP-3)

NCCN guidelines for Histiocytic Neoplasms (2.2024) recommends molecular testing of a tissue biopsy during the diagnostic workup for Langerhans cell histiocytosis and Erdheim-Chester disease, and suggests RNA based molecular panel including fusion testing for *ALK*; however if *ALK* rearrangement is suspected clinically, or if fusion panel testing is not available, ALK immunohistochemistry and FISH studies may be performed. (p. LCH-2, ECD-2)

NCCN guidelines for Pancreatic Adenocarcinoma (3.2024) recommend somatic molecular profiling for patients with locally advanced/metastatic disease as well as those with resectable or borderline resectable disease if systemic therapy is being considered. Potentially actionable somatic findings include fusions involving the ALK gene. (p. PANC-1A)

NCCN guidelines for Pediatric Central Nervous System Cancers (1.2024) recommend broad molecular testing to classify pediatric diffuse high-grade gliomas. This includes detection of fusions involving the ALK gene. (p. PGLIO-B, 2 of 4)

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Bladder Cancer Diagnostic and Recurrence FISH Tests

Centers for Medicare and Medicaid Services

The CMS local coverage determination (LCD) entitled "Lab: Bladder/Urothelial Tumor Markers" includes the following utilization guidelines for bladder marker testing.

Regarding the UroVysion Bladder Cancer Kit: "It is used to detect chromosomal abnormalities in voided urine to assist not only in bladder cancer surveillance but also in the initial identification of bladder cancer."

"Follow-up after initial diagnosis/most recent occurrence and treatment

- Maximum of 4 bladder tumor marker studies per year for years 1-2
- Maximum of 3 bladder tumor marker studies per year for year 3
- Maximum of 2 bladder tumor marker studies for year 4 and
- Maximum of 1 bladder tumor marker studies follow-up annually for up to 15 years."

"For high risk patients with persistent hematuria and a negative FISH assay following a comprehensive diagnostic (no tumor identified) workup, ONE repeat FISH testing in conjunction with cystoscopy is considered reasonable and necessary within 1 year of the original attempted diagnosis."

The CMS LCD Reference Article "Billing and Coding: Lab: Bladder/Urothelial Tumor Markers" states the following: "This A/B MAC will only cover bladder tumor marker fluorescence in situ hybridization (FISH) testing services when performed using validated assays. To date, UroVysion Bladder Cancer Kit is the only Federal Drug Administration (FDA) approved assay that is designed to detect aneuploidy for chromosomes 3, 7, 17 and loss of the 9p21 locus via FISH.

Bladder cancer tumor markers performed by any technology, immunoassay, molecular or FISH testing, are not covered for screening of all patients with hematuria."

Chronic Lymphocytic Leukemia/Small Lymphocytic Lymphoma (CLL/SLL) FISH Panel Analysis

National Comprehensive Cancer Network (NCCN)

NCCN Chronic Lymphocytic Leukemia/Small Lymphocytic Lymphoma guidelines (3.2024) recommend FISH testing for +12; del(11q); del(13q); del(17p) during the diagnostic workup for CLL/SLL as this information is useful for prognosis and treatment planning. (p. CSLL-1)

Tumor Specific ERBB2 (HER2) Deletion/Duplication (FISH and CISH)

National Comprehensive Cancer Network (NCCN)

NCCN Esophageal and Esophagogastric Junction Cancers guidelines (4.2024) recommend HER2/ERBB2 testing using FISH or IHC for patients with inoperable locally advanced, recurrent or metastatic adenocarcinoma if trastuzumab is being considered for treatment. (p. ESOPH-B, 3 of 6)

NCCN Head and Neck Cancers guidelines (4.2024) recommend HER2/ERBB2 testing prior to treatment for individuals diagnosed with recurrent, unresectable, or metastatic salivary gland tumors.

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(p. SALI-4)

NCCN Colon Cancer guidelines (4.2024) recommend HER2/ERBB2 testing during the workup for suspected or proven metastatic colorectal cancer. (p. COL-2) These guidelines also recommend HER2 analysis for metastatic appendiceal adenocarcinoma. (p. COL-I 2 of 3)

NCCN Gastric Cancer guidelines (2.2024) recommend HER2/ERBB2 testing for patients with inoperable locally advanced, recurrent or metastatic adenocarcinoma of the stomach if trastuzumab is being considered. (p. GAST-B, 3 of 6)

NCCN Breast Cancer guidelines (4.2024) recommend HER2/ERBB2 testing be performed on all patients with newly diagnosed primary or metastatic breast cancer. (p. BINV-A 1 of 2)

NCCN Cervical Cancer guidelines (3.2024) recommend HER2 testing for recurrent, advanced or metastatic cervical carcinoma. (p. CERV-A 1 of 7)

NCCN Uterine Neoplasms guidelines (2.2024) recommend HER2 IHC with reflex to FISH for all serous and carcinosarcoma endometrial tumors and recommends consideration of HER2 testing for all tumors that have abnormal p53 by IHC. (p. ENDO-A, 1 of 4)

NCCN guidelines for Pancreatic Adenocarcinoma (3.2024) indicate that testing for potentially actionable somatic findings including HER2 amplifications is recommended for patients with locally advanced or metastatic disease (p. PANC-5), recurrence after resection (p. PANC-9), and with resectable or borderline resectable disease being considered for neoadjuvant systemic therapy. (p. PANC-F, 1 of 12)

NCCN guidelines for Ovarian Cancer/Fallopian Tube Cancer/Primary Peritoneal Cancer (3.2024) recommend HER2 testing by IHC for recurrent disease after primary treatment. (p. OV-6)

NCCN guidelines for Vaginal Cancer (1.2025) recommend consideration of HER2 testing by IHC or FISH for recurrent or metastatic vaginal cancer. (p. VAG-5, VAG-6, VAG-A 2 of 2)

NCCN guidelines for Bladder Cancer (4.2024) recommend consideration of IHC for HER2 overexpression for stage IIIB or higher muscle invasive bladder cancer. (p. BL-8-10)

NCCN guidelines for Small Bowel Adenocarcinoma (4.2024) recommend testing for HER2 amplifications for patients with metastatic disease. (p. SBA-5)

Multiple Myeloma FISH Panel Analysis

National Comprehensive Cancer Network (NCCN)

NCCN Multiple Myeloma guidelines (4.2024) recommend FISH testing during the initial workup of multiple myeloma for prognostic purposes. The recommended FISH testing includes: del(13), del (17p13), t(4;14), t(11;14), t(14;16), t(14:20), 1q21 gain/1q21 amplification, 1p deletion. (p. MYEL-1)

NTRK Fusion Analysis Panel

National Comprehensive Cancer Network (NCCN)

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The NCCN Thyroid Carcinoma guidelines (3.2024) recommend that individuals with anaplastic thyroid cancer or locally recurrent, advanced, and/or metastatic papillary, follicular, and oncocytic carcinoma (formerly called Hurthle cell carcinoma) undergo molecular testing including NTRK as part of disease workup. (p. ANAP-1, p. PAP-10, p. FOLL-9, p. ONC-9)

The NCCN Colon Cancer Guidelines (4.2024) recommend broad molecular profiling to identify rare and actionable mutations and fusions, including NTRK, for patients with suspected or proven metastatic adenocarcinoma. (p. COL-2) For individuals who are *NTRK* gene fusion-positive, NCCN lists the following biomarker-directed therapies: entrectinib, larotrectinib, and repotrectinib. (p. COL-D 2 of 11)

The NCCN Non-Small Cell Lung Cancer guidelines (7.2024) recommends *NTRK* molecular analysis for patients with advanced or metastatic adenocarcinoma, large cell carcinoma, and NSCLC not otherwise specified (NOS) and recommends consideration of *NTRK* testing for advanced or metastatic squamous cell carcinoma of the lung. (p. NSCL-19) For individuals who are *NTRK* gene fusion-positive, NCCN lists the following biomarker-directed therapies: entrectinib, larotrectinib, and repotrectinib. (p. NSCL-33)

The NCCN Occult Primary guidelines (1.2025) states that patients with metastatic or unresectable *NTRK* gene fusion positive adenocarcinomas without a known acquired resistance mutation, who have no satisfactory treatment options or who have progressed on treatment can be treated with entrectinib and/or larotrectinib or repotrectinib. (p. OCC-B, 2 of 11)

The NCCN Cervical Cancer guidelines (3.2024) recommends *NTRK* fusion analysis for patients with cervical sarcoma. (p. CERV-A 1 of 7)

The NCCN Vulvar Cancer guidelines (4.2024) recommends consideration of *NTRK* fusion analysis for recurrent, progressive, or metastatic squamous cell carcinoma of the vulva. (p. VULVA-A 2 of 4)

The NCCN Uterine Neoplasms guidelines (2.2024) recommends consideration of *NTRK* fusion analysis for recurrent or metastatic endometrial carcinoma (p. ENDO-A 2 of 4) or metastatic uterine sarcoma. (p. UTSARC-A 1 of 8)

The NCCN Breast Cancer guidelines (4.2024) recommend NTRK fusion testing for recurrent unresectable or stage IV disease if eligible for larotrectinib, entrectinib or repotrectinib treatment (no known resistance mutation and no satisfactory alternatives or have progressed on treatment). (p. BINV-Q 6 of 14)

The NCCN Gastric Cancer guidelines (2.2024) recommends consideration of comprehensive genomic profiling including *NTRK* fusion analysis for unresectable locally advanced, recurrent, or metastatic gastric cancer. (p. GAST-B 5 of 6)

The NCCN Esophageal and Esophagogastric Junction Cancer guidelines (4.2024) recommends consideration of comprehensive genomic profiling including *NTRK* fusion analysis for unresectable, locally advanced, recurrent, or metastatic esophageal cancer. (p. ESOPH-B 5 of 6) For individuals who are *NTRK* gene fusion-positive, NCCN lists the following biomarker-directed therapies: entrectinib, larotrectinib, and repotrectinib. (p. ESOPH-F 6 of 22)

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The NCCN Acute Lymphoblastic Leukemia guidelines (2.2024) and Pediatric Acute Lymphoblastic Leukemia guidelines (6.2024) recommend *NTRK* fusion analysis for acute lymphoblastic leukemia (ALL) for the purposes of risk stratification. (p. ALL-3; p. PEDALL-A 1 of 2)

The NCCN Soft Tissue Sarcoma guidelines (2.2024) recommend larotrectinib, entrectinib or repotrectinib for patients with advanced or metastatic disease and *NTRK* gene fusion-positive tumors. (p. SARC-G 1 of 13)

The NCCN Neuroendocrine and Adrenal Tumors guidelines (2.2024) recommends consideration of *NTRK* fusion testing for patients with unresectable or metastatic extrapulmonary poorly differentiated neuroendocrine carcinoma/large or small cell carcinoma/mixed neuroendocrine-non-neuroendocrine neoplasm. (p. PDNEC-1) For individuals who are *NTRK* gene fusion-positive, NCCN lists the following biomarker-directed therapies: entrectinib, larotrectinib, and repotrectinib. (p. NE-H 5 of 9

The NCCN Head and Neck Cancers guidelines (4.2024) recommend use of NGS profiling and other appropriate biomarker testing to evaluate *NTRK* prior to treatment for metastatic salivary gland tumors. (p. SALI-4)

The NCCN Hepatocellular Carcinoma guidelines (2.2024) indicate that larotrectinib, entrectinib, and repotrectinib are options for treatment in patients with NTRK gene fusion positive tumors. (p. HCC-I, 1 of 2)

The NCCN Ovarian Cancer/Fallopian Tube Cancer/ Primary Peritoneal Cancer guidelines (3.2024) recommend tumor molecular testing including *NTRK* testing for recurrent disease if prior testing for these markers was not done. (p. OV-6) For individuals who are *NTRK* gene fusion-positive, NCCN lists the following biomarker-directed therapies: entrectinib, larotrectinib, and repotrectinib. (p. OV-C 8 of 12)

The NCCN Small Bowel Adenocarcinoma guidelines (4.2024) recommends larotrectinib and entrectinib as options for subsequent-line treatment of metastatic small bowel adenocarcinoma that is *NTRK* gene fusion positive. (p. SBA-D 1 of 7)

The NCCN Pediatric Central Nervous System Cancers guidelines (1.2024) state that broad molecular testing is required for comprehensive classification of pediatric diffuse high-grade gliomas, including NGS with fusion detection for *ROS1*, *MET*, *NTRK1/2/3*, *ALK*, *FGFR1/2/3*. (p. PGLIO-B, 2 of 4)

The NCCN guidelines for Pancreatic Adenocarcinoma (3.2024) recommend testing for potentially actionable somatic findings including *NTRK* fusions for patients with locally advanced/metastatic disease. (p. PANC-1A) In addition, patients with resectable or borderline resectable disease who are considering systemic therapy are recommended to consider testing for somatic findings including NTRK fusions. (p. PANC-F, 1 of 12) For individuals who are *NTRK* gene fusion-positive, NCCN lists the following biomarker-directed therapies: entrectinib, larotrectinib, and repotrectinib. (p. PANC-F 3 of 12)

The NCCN guidelines for Vaginal Cancer (1.2025) recommend consideration of NTRK fusion testing for recurrent or metastatic vaginal cancer. (p. VAG-5, VAG-6, VAG-A 2 of 2)

The NCCN guidelines for Gastrointestinal Stromal Tumors (2.2024) lists the following biomarker-directed therapies for individuals with unresectable, progressive or metastatic disease: entrectinib,

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larotrectinib, and repotrectinib. (p. GIST-E 1 of 4)

Food and Drug Administration

The FDA label for Augtyro (repotrectinib) includes indications and usage information for the treatment of the following:

- "adult patients with locally advanced or metastatic ROS1-positive nonsmall cell lung cancer (NSCLC). (1.1)
- adult and pediatric patients 12 years of age and older with solid tumors that:
 - o have a neurotrophic tyrosine receptor kinase (NTRK) gene fusion and
 - are locally advanced or metastatic or where surgical resection is likely to result in severe morbidity.

have progressed following treatment or have no satisfactory alternative therapy.

Tumor Specific PD-L1 Protein Analysis

National Comprehensive Cancer Network (NCCN)

The NCCN Gastric Cancer guidelines (2.2024) recommends PD-L1 testing during the workup for documented or suspected metastatic adenocarcinoma. (p. GAST-1)

The NCCN Head and Neck Cancers guidelines (4.2024) state recommendations for first line therapy which could include PD-L1 inhibitors for recurrent, unresectable, oligometastatic, or metastatic cancer of the nasopharynx. (p. NASO-B 1 of 3)

The NCCN Bladder Cancer guidelines (4.2024) states recommendations for specific therapies for individuals with locally advanced or metastatic (stage IV) bladder cancer, which can include PD-L1 inhibitors. (p. BL-G 2 of 7)

The NCCN Vulvar Cancer guidelines (4.2024) recommends consideration of PD-L1 testing for individuals with recurrent, progressive, or metastatic squamous cell carcinoma of the vulva. (p. VULVA-A 2 of 4)

The NCCN Esophageal and Esophagogastric Junction Cancers guidelines (4.2024) recommends PD-L1 testing for individuals during the workup phase for documented or suspected metastatic esophageal and esophagogastric junction cancers. (p. ESOPH-1)

The NCCN Cervical Cancer guidelines (3.2024) recommends PD-L1 testing for individuals with recurrent, progressive, or metastatic cervical cancer of the following pathologies: squamous cell carcinoma, adenocarcinoma, or adenosquamous carcinoma. (p. CERV-A 1 of 7)

NCCN Non-Small Cell Lung Cancer guidelines (7.2024) recommend PD-L1 testing in patients with stage IB-IIIA, IIIB [T3, N2] non-small cell lung cancer perioperatively (p. NSCL-E, 1 of 5) or for advanced or metastatic adenocarcinoma, large cell, squamous cell, and NSCLC not otherwise specified (NOS). (p. NSCL-19)

The NCCN Breast Cancer guidelines (4.2024) states recommendations for treatments for recurrent unresectable or stage IV triple negative breast cancer based on PD-L1 tumor status. (p. BINV-Q 2 of

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14)

NCCN guidelines for Vaginal Cancer (1.2025) recommend consideration of PD-L1 testing for recurrent or metastatic vaginal cancer. (p. VAG-5, VAG-6, VAG-A 2 of 2).

Food and Drug Administration (FDA)

The FDA's list of cleared or approved companion diagnostic devices lists several cancer types approved for testing via the immunohistochemistry assay for PD-L1 for the purposes of treatment decision-making. These cancer types include, in part: head and neck squamous cell carcinoma, urothelial carcinoma (PMA number 150013, supplement number S014), and triple negative breast cancer (PMA number 150013, supplement S020).

Tumor Specific FOLR1 Protein Analysis

National Comprehensive Cancer Network (NCCN)

NCCN guidelines for Ovarian Cancer/Fallopian Tube Cancer/Primary Peritoneal Cancer (3.2024) indicate that the preferred treatment regimen for platinum resistant recurrent disease includes mirvetuximab soravtansine if the tumor expresses folate receptor alpha (i.e., FOLR1). Therefore, tumor molecular analysis for this cancer type is recommended to include, at a minimum, tests to identify potential benefit from targeted therapeutics that have tumor-specific or tumor-agnostic benefit, including folate receptor alpha (FOLR1). (p. OV-C, 9 and 10 of 12)

In the setting of recurrent disease, tumor molecular analysis is also recommended to include folate receptor alpha (FOLR1) if prior testing did not include this marker. (p. OV-6)

Tumor Specific PML/RARA Gene Rearrangement (Qualitative FISH and PCR)

National Comprehensive Cancer Network (NCCN)

NCCN Acute Myeloid Leukemia guidelines (3.2024) state that many different types of gene mutations are associated with specific prognoses, helping to guide medical management decisions, and/or may indicate that specific therapeutic agents are useful. Therefore, all patients with AML should be tested for these mutations. (p. EVAL-1). The discussion section of this guideline states that *PML-RAR* alpha is included in this group of genetic markers that should be tested in all patients. (p. MS-4)

Tumor Specific *RET* Gene Rearrangement Tests (FISH)

National Comprehensive Cancer Network (NCCN)

The NCCN guidelines on Thyroid Carcinoma (3.2024) recommend that patients with recurrent or persistent medullary thyroid carcinoma have somatic *RET* testing if germline wild type or germline unknown (p. MEDU-6). The guideline also recommends that individuals with anaplastic thyroid cancer and/or locally recurrent, advanced and/or metastatic papillary, follicular, or oncocytic carcinoma that cannot be treated with radioactive iodine should undergo molecular testing including *BRAF*, *NTRK*, *ALK*, *RET* and tumor mutational burden if not previously done. (p. ANAP-3, PAP-10, FOLL-9, ONC-9)

The NCCN guideline on Non-Small Cell Lung Cancer (7.2024) recommends analysis for *RET* gene rearrangements in patients with advanced or metastatic adenocarcinoma of the lung, large cell carcinoma of the lung, or NSCLC not otherwise specified and recommends consideration of RET gene testing for patients with advanced or metastatic squamous cell carcinoma of the lung (p. NSCL-19),

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noting that NGS-based methodology has a high specificity and that RNA-based NGS is preferable to DNA-based NGS for fusion detection. (p. NSCL-H, 5 of 8)

The NCCN guideline for Cervical Cancer (3.2024) recommends consideration of *RET* gene fusion testing for patients with locally advanced or metastatic cervical cancer of the following pathologies: squamous cell carcinoma, adenocarcinoma, or adenosquamous carcinoma. (p. CERV-A, 1 of 7)

NCCN guidelines for Breast Cancer (4.2024) list *RET* fusion as a biomarker with an FDA approved therapy for any subtype of recurrent unresectable or stage IV disease. Either tumor tissue or blood can be used for detection. (p. BINV-Q, 6 of 14)

NCCN guidelines for Colon Cancer (4.2024) recommend broad molecular profiling including *RET* fusion detection as part of the workup for suspected or proven metastatic adenocarcinoma. (p. COL-2)

NCCN guidelines for Pancreatic Adenocarcinoma (3.2024) recommends consideration of testing for potentially actionable somatic mutations including *RET* fusions for resectable or borderline resectable disease when systemic therapy is being considered (p. PANC-F, 1 of 12) and recommends this testing for locally advanced/metastatic disease. (p. PANC-1A)

NCCN guidelines for Esophageal and Esophagogastric Junction Cancers (4.2024) recommend biomarker testing for patients with locally advanced, recurrent or metastatic esophageal or esophagogastric junction cancer and lists RET gene fusion as a targeted biomarker. (p. ESOPH-B, 5 of 6)

NCCN guidelines for Gastric Cancer (2.2024) recommend biomarker testing for patients with locally advanced, recurrent or metastatic gastric cancer and lists RET gene fusion as a targeted biomarker. (p. GAST-B, of 6)

NCCN guidelines for Vaginal Cancer (1.2025) recommend consideration of RET fusion testing for recurrent or metastatic vaginal cancer. (p. VAG-A 2 of 2)

Tumor Specific ROS1 Gene Rearrangement

National Comprehensive Cancer Network (NCCN)

NCCN Non-Small Cell Lung Cancer guidelines (7.2024) recommend *ROS1* rearrangement testing in patients with advanced or metastatic disease of the following lung cancer pathologies: Adenocarcinoma, Large Cell, and NSCLC not otherwise specified (NOS) and recommends consideration of this testing for patients with squamous cell carcinoma of the lung. (p. NSCL-19)

NCCN guidelines for Ampullary Adenocarcinoma (2.2024) recommend consideration of tumor molecular profiling, including for ROS1 fusions, for patients with locally advanced or metastatic disease who are considering systemic therapy. (p. AMP-3)

NCCN guidelines for Pancreatic Adenocarcinoma (3.2024) recommends consideration of tumor molecular profiling including ROS1 fusions for patients with resectable or borderline resectable disease in advance of systemic therapy (p. PANC-F, 1 of 12) and recommends this testing for locally advanced or metastatic disease. (p. PANC-1A)

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NCCN guidelines for Pediatric Central Nervous System Cancers (1.2024) state that broad molecular testing is required for comprehensive classification of pediatric diffuse high-grade gliomas, including detection of fusions involving *ROS1*. (p. PGLIO-B, 2 of 4)

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Note: The Health Plan uses the genetic testing clinical criteria developed by Concert Genetics, an industry-leader in genetic testing technology assessment and policy development.

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