

If a conflict arises between a Clinical Payment and Coding Policy and any plan document under which a member is entitled to Covered Services, the plan document will govern. If a conflict arises between a CPCP and any provider contract pursuant to which a provider participates in and/or provides Covered Services to eligible member(s) and/or plans, the provider contract will govern. "Plan documents" include, but are not limited to, Certificates of Health Care Benefits, benefit booklets, Summary Plan Descriptions, and other coverage documents. Blue Cross and Blue Shield of Illinois may use reasonable discretion interpreting and applying this policy to services being delivered in a particular case. BCBSIL has full and final discretionary authority for their interpretation and application to the extent provided under any applicable plan documents.

Providers are responsible for submission of accurate documentation of services performed. Providers are expected to submit claims for services rendered using valid code combinations from Health Insurance Portability and Accountability Act approved code sets. Claims should be coded appropriately according to industry standard coding guidelines including, but not limited to: Uniform Billing Editor, American Medical Association, Current Procedural Terminology, CPT® Assistant, Healthcare Common Procedure Coding System, ICD-10 CM and PCS, National Drug Codes, Diagnosis Related Group guidelines, Centers for Medicare and Medicaid Services National Correct Coding Initiative Policy Manual, CCI table edits and other CMS guidelines.

Claims are subject to the code edit protocols for services/procedures billed. Claim submissions are subject to claim review including but not limited to, any terms of benefit coverage, provider contract language, medical policies, clinical payment and coding policies as well as coding software logic. Upon request, the provider is urged to submit any additional documentation.

Serum Tumor Markers for Malignancies

Policy Number: CPCPLAB037

Version 1.0

Approval Date: September 5, 2025

Plan Effective Date: January 1, 2026

Description

The Plan has implemented certain lab management reimbursement criteria. Not all requirements apply to each product. Providers are urged to review Plan documents for eligible coverage for services rendered.

Reimbursement Information

NOTE: Except for where otherwise specified in the table below, quarterly measurement of designated serum biomarkers is permitted for follow-up, monitoring, and/or surveillance.

- 1) Measurement of the following serum biomarkers **may be reimbursable** for the following indications:

Serum Biomarker	Indication
Alkaline phosphatase (ALP)	<u>Bone neoplasms:</u> • Workup
	<u>Melanoma (uveal):</u> • Workup
	<u>Systemic light chain amyloidosis:</u> • Initial diagnostic workup
Alpha fetoprotein (AFP)	<u>Hepatocellular carcinoma:</u> • Screening; • Workup for confirmed HCC; • Surveillance (every 3-6 months for 2 years, then every 6 months)
	<u>Intrahepatic cholangiocarcinoma:</u> • Workup for isolated intrahepatic mass
	<u>Occult primary:</u> • Additional workup for localized adenocarcinoma or carcinoma not otherwise specified; liver, mediastinum, or retroperitoneal mass
	<u>Ovarian cancer/fallopian tube cancer/primary peritoneal cancer:</u> • Initial workup; • During primary chemotherapy; • Monitoring/follow-up for complete response (as clinically indicated)
	<u>Ovarian cancers (less common):</u> • <u>Carcinosarcoma (malignant mixed mullerian tumors):</u> ○ Monitoring; ○ Follow-up • <u>Clear cell carcinoma of the ovary:</u> ○ Monitoring; ○ Follow-up

Serum Biomarker	Indication
	• <u>Mucinous neoplasms of the ovary:</u> ○ Monitoring ○ Follow-up • <u>Low-grade serous carcinoma:</u> ○ Monitoring ○ Follow-up <u>Ovarian cancers:</u> • <u>Borderline epithelial tumors:</u> ○ Monitoring/follow-up (every visit if initially elevated) • <u>Malignant germ cell tumors:</u> ○ Surveillance (no more than every 2 months for the first 2 years, every 4 months in years 3-5, and then annually after year 5) • <u>Malignant sex cord stromal tumors:</u> ○ Surveillance if clinically indicated. If done, frequency based on stage (i.e., 6-12 months if early-stage, low-risk disease; 4-6 months if high-risk disease) <u>Testicular cancer – non-seminoma:</u> • Workup; • Risk classification; • Surveillance (no more than every 2 months) <u>Testicular cancer - pure seminoma:</u> • Initial diagnostic workup; • Post-diagnostic workup; • Risk classification; • Post-treatment surveillance (no more than every 2 months) <u>Thymomas and thymic carcinomas:</u> • Initial evaluation, if appropriate
Beta-2 microglobulin (B2M)	<u>B-cell lymphomas (diffuse large B-cell; follicular [grade 1-2]; HIV-related; lymphoblastic; mantle cell):</u> • Workup
	<u>Castleman Disease:</u> • Workup
	<u>Chronic lymphocytic leukemia/small lymphocytic lymphoma:</u> • Workup • For prognostic and/or therapy determination
	<u>Multiple myeloma:</u> • Initial diagnostic workup; • Follow-up/surveillance (as needed) for solitary plasmacytoma or solitary plasmacytoma with minimal marrow involvement
	<u>Systemic light chain amyloidosis:</u>

Serum Biomarker	Indication
	Initial diagnostic workup
	<u>Waldenström macroglobulinemia / lymphoplasmacytic lymphoma:</u> Workup
BNP or NT-proBNP	<u>Multiple myeloma:</u> Initial diagnostic workup
Calcitonin (CALCA)	<u>Adenocarcinoma, and anaplastic/undifferentiated epithelial tumors:</u> Workup
	<u>Medullary carcinoma:</u> - Additional workup; - Post-surgical evaluation; - Monitoring; - Surveillance (2-3 months postoperative, then every 6-12 months)
	<u>Multiple endocrine neoplasia, type 2:</u> At diagnosis (clinical evaluation) for medullary thyroid cancer
	<u>Occult primary (unknown primary cancer):</u> Workup
Cancer antigen 15-3 and 27.29 (CA 15-3 and 27.29)	<u>Breast cancer (invasive):</u> Monitoring metastatic disease
	<u>Occult primary- suspected metastatic malignancy:</u> - Initial workup; - Assessing disease prognosis; - Monitoring/follow-up for response
Cancer antigen 19-9 (CA 19-9)	<u>Ampullary adenocarcinoma:</u> - Workup; - Surveillance (every 3-6 months for 2 years, then every 6-12 months for up to 5 years as clinically indicated) for resected ampullary cancer, stage I-III
	<u>Appendiceal adenocarcinoma:</u> Workup to establish baseline. Abnormal measurements should be trended.
	<u>Extrahepatic cholangiocarcinoma:</u> - Workup to establish baseline; - Monitoring
	<u>Gallbladder cancer:</u> - Workup to establish baseline; - Monitoring; - Surveillance (as clinically indicated), post-resection
	<u>Intrahepatic cholangiocarcinoma:</u> - Workup to establish baseline; - Monitoring

Serum Biomarker	Indication
	<u>Occult primary:</u> • Workup to establish baseline
	<u>Ovarian cancer/fallopian tube cancer/primary peritoneal cancer:</u> • Initial workup; • During primary chemotherapy; • Monitoring/follow-up for complete response (as clinically indicated)
	<u>Ovarian cancers (less common):</u> • <u>Carcinosarcoma (malignant mixed mullerian tumors):</u> ○ Workup ○ Monitoring/follow-up • <u>Clear cell carcinoma of the ovary:</u> ○ Workup ○ Monitoring/follow-up • <u>Grade 1 endometrioid carcinoma:</u> ○ Workup ○ Monitoring/follow-up • <u>Low-grade serous carcinoma:</u> ○ Workup ○ Monitoring/follow-up • <u>Mucinous neoplasms of the ovary:</u> ○ Workup ○ Monitoring/follow-up <u>Ovarian cancers:</u> • <u>Borderline epithelial tumors:</u> ○ Monitoring/follow-up (every visit if initially elevated) • <u>Malignant germ cell tumors:</u> ○ Surveillance (no more than every 2 months for the first 2 years, every 4 months in years 3-5, and then annually after year 5) • <u>Malignant sex cord stromal tumors:</u> ○ Surveillance if clinically indicated. If done, frequency based on stage (i.e., 6-12 months if early-stage, low-risk disease; 4-6 months if high-risk disease) • <u>Mucinous carcinoma of the ovary:</u> ○ Additional workup (if not previously done)
	<u>Pancreatic adenocarcinoma:</u> • Workup to establish baseline; • Monitoring; • Post-operative, post-adjuvant treatment surveillance (every 3-6 months for 2 years, then every 6-12 months as clinically indicated)

Serum Biomarker	Indication
	<u>Small bowel adenocarcinoma:</u> • Workup to establish baseline; • Post-treatment surveillance (every 3-6 months for 2 years, then every 6 months for a total of 5 years) • At metastasis or recurrence
Cancer antigen 125 (CA-125)	<u>Appendiceal adenocarcinoma:</u> • Workup to establish baseline
	<u>Endometrial carcinoma:</u> • Additional workup; • Surveillance (if initially elevated)
	<u>Lynch syndrome:</u> • Surveillance
	<u>Occult primary:</u> • Initial evaluation/workup; • Additional workup for adenocarcinoma or carcinoma not otherwise specified, in those with a uterus and/or ovaries present
	<u>Ovarian cancer/fallopian tube cancer/primary peritoneal cancer:</u> • Initial workup; • During primary chemotherapy; • Monitoring/follow-up for complete response (as clinically indicated)
	<u>Ovarian cancers (less common):</u> • <u>Carcinosarcoma (malignant mixed mullerian tumors):</u> ○ Monitoring/follow-up • <u>Clear cell carcinoma of the ovary:</u> ○ Monitoring/follow-up • <u>Mucinous neoplasm of the ovary:</u> ○ Monitoring/follow-up • <u>Grade 1 endometrioid carcinoma:</u> ○ Monitoring/follow-up • <u>Low-grade serous carcinoma:</u> ○ Monitoring/follow-up <u>Ovarian cancers:</u> • <u>Borderline epithelial tumors:</u> ○ monitoring/follow-up (every visit if initially elevated) • <u>Malignant germ cell tumors:</u> ○ surveillance (no more than every 2 months for the first 2 years, every 6 months in years 3-5, and then annually after year 5) • <u>Malignant sex cord stromal tumors:</u> ○ Surveillance if clinically indicated. If done, frequency based on stage (i.e., 6-12 months if

Serum Biomarker	Indication
	early-stage, low-risk disease; 4-6 months if high-risk disease)
	<u>Peritoneal mesothelioma:</u> Initial evaluation
	<u>Uterine neoplasms</u> - Initial workup; - Additional workup; - Surveillance
Carcinoembryonic antigen (CEA)	<u>Appendiceal adenocarcinoma:</u> - Workup to establish baseline; - Monitoring; - Post-treatment surveillance
	<u>Breast cancer (invasive):</u> Monitoring metastatic disease
	<u>Colon cancer:</u> - Workup to establish baseline; - Monitoring; - Surveillance (every 3-6 months for 2 years, then every 6 months for a total of 5 years)
	<u>Extrahepatic cholangiocarcinoma:</u> - Workup to establish baseline; - Monitoring
	<u>Gallbladder cancer:</u> - Workup to establish baseline; - Monitoring; - Surveillance; - Monitoring of adjuvant treatment (as clinically indicated), post-resection
	<u>Intrahepatic cholangiocarcinoma:</u> - Workup to establish baseline; - Monitoring
	<u>Medullary carcinoma:</u> - Diagnosis and additional workup; - Monitoring; - Post-surgical surveillance (2-3 months postoperative, then every 6-12 months)
	<u>Multiple endocrine neoplasia, type 2:</u> At diagnosis (clinical evaluation) for medullary thyroid cancer
	<u>Occult primary (unknown primary cancer):</u> Workup for adenocarcinoma or carcinoma not otherwise specified
	<u>Ovarian cancer/fallopian tube cancer/primary peritoneal cancer:</u> - Initial workup; - During primary chemotherapy;

Serum Biomarker	Indication
	Monitoring/follow-up for complete response (as clinically indicated)
	<u>Ovarian cancers (less common):</u> <u>Carcinosarcoma (malignant mixed mullerian tumors):</u> - Monitoring/follow-up <u>Clear cell carcinoma of the ovary:</u> - Monitoring/follow-up <u>Grade 1 endometrioid carcinoma:</u> - Monitoring/follow-up <u>Low-grade serous carcinoma:</u> - Monitoring/follow-up <u>Mucinous neoplasms of the ovary:</u> - Monitoring/follow-up <u>Ovarian cancers:</u> <u>Borderline epithelial tumors:</u> - Monitoring/follow-up (every visit if initially elevated) - Post-adjuvant treatment <u>Malignant germ cell tumors:</u> - Surveillance (no more than every 2 months for the first 2 years, every 4 months in years 3-5, and then annually after year 5) <u>Malignant sex cord stromal tumors:</u> - Surveillance if clinically indicated. If done, frequency based on stage (i.e., 6-12 months if early-stage, low-risk disease; 4-6 months if high-risk disease) <u>Mucinous carcinoma of the ovary:</u> - Additional workup (if not previously done)
	<u>Rectal cancer:</u> - Workup to establish baseline; - Monitoring; - Surveillance (every 3-6 months for 2 years, then every 6 months for a total of 5 years)
	<u>Small bowel adenocarcinoma:</u> - Workup to establish baseline; - Post-treatment surveillance (every 3-6 months for 2 years, then every 6 months for a total of 5 years)
Chorionic gonadotropin beta polypeptide (CGB3)	<u>Gestational trophoblastic neoplasia:</u> - Initial workup; - During and post treatment (no more than weekly); - Follow-up/surveillance (no more than monthly for 12 months)
	<u>Occult primary:</u> Additional workup for localized adenocarcinoma or

Serum Biomarker	Indication
	carcinoma not otherwise specified; individuals < 65 years of age with mediastinum or retroperitoneal mass
	<u>Ovarian cancer/fallopian tube cancer/primary peritoneal cancer:</u> - Initial workup; - During primary chemotherapy; - Monitoring/follow-up for complete response (as clinically indicated)
	<u>Ovarian cancers:</u> <u>Borderline epithelial tumors:</u> - Monitoring/follow-up (every visit if initially elevated) <u>Malignant germ cell tumors:</u> - Surveillance (no more than every 2 months for the first 2 years, every 4 months in years 3-5, and then annually after year 5) <u>Malignant sex cord stromal tumors:</u> - Surveillance if clinically indicated. If done, frequency based on stage (i.e., 6-12 months if early-stage, low-risk disease; 4-6 months if high-risk disease)
	<u>Testicular cancer – non-seminoma:</u> - Workup; - Risk classification; - Surveillance (no more than every 2 months)
	<u>Testicular cancer – pure seminoma:</u> - Workup; - Post-diagnostic workup; - Risk classification; - Post-treatment surveillance (no more than every 2 months)
	<u>Thymomas and thymic carcinomas:</u> Initial evaluation, if appropriate
Human epididymis protein 4 (HE4)	<u>Ovarian cancer/fallopian tube cancer/primary peritoneal cancer:</u> - Initial workup; - During primary chemotherapy; - Monitoring/follow-up for complete response (as clinically indicated)
	<u>Ovarian cancers (less common):</u> <u>Carcinosarcoma (malignant mixed mullerian tumors):</u> - Monitoring/follow-up <u>Clear cell carcinoma of the ovary:</u> - Monitoring/follow-up

Serum Biomarker	Indication
	• <u>Grade 1 endometrioid carcinoma:</u> ◦ Monitoring/follow-up • <u>Low-grade serous carcinoma:</u> ◦ Monitoring/follow-up • <u>Mucinous neoplasms of the ovary:</u> ◦ Monitoring/follow-up <u>Ovarian cancers:</u> • <u>Borderline epithelial tumors:</u> ◦ Monitoring/follow-up (every visit if initially elevated) ◦ Post-adjuvant treatment • <u>Malignant germ cell tumors:</u> ◦ Surveillance (no more than every 2 months for the first 2 years, every 4 months in years 3-5, and then annually after year 5) • <u>Malignant sex cord stromal tumors:</u> ◦ Surveillance if clinically indicated. If done, frequency based on stage (i.e., 6-12 months if early-stage, low-risk disease; 4-6 months if high-risk disease)
Inhibin (INHA)	<u>Occult primary (unknown primary cancer):</u> • Additional workup for adenocarcinoma or carcinoma not otherwise specified
	<u>Ovarian cancer/fallopian tube cancer/primary peritoneal cancer:</u> • Initial workup; • During primary chemotherapy; • Monitoring/follow-up for complete response (as clinically indicated)
	<u>Ovarian cancers (less common):</u> • <u>Carcinosarcoma (malignant mixed mullerian tumors):</u> ◦ Monitoring/follow-up • <u>Clear cell carcinoma of the ovary:</u> ◦ Monitoring/follow-up • <u>Grade 1 endometrioid carcinoma:</u> ◦ Monitoring/follow-up • <u>Low-grade serous carcinoma:</u> ◦ Monitoring/follow-up • <u>Mucinous neoplasms of the ovary:</u> ◦ Monitoring/follow-up <u>Ovarian cancers:</u> • <u>Borderline epithelial tumors:</u> ◦ Monitoring/follow-up (every visit if initially elevated) • <u>Malignant germ cell tumors:</u>

Serum Biomarker	Indication
	○ Surveillance (no more than every 2 months for the first 2 years, every 4 months in years 3-5, and then annually after year 5) • <u>Malignant sex cord stromal tumors:</u> ○ Surveillance if clinically indicated. If done, frequency based on stage (i.e., 6-12 months if early-stage, low-risk disease; 4-6 months if high-risk disease)
Serum free light chains	<u>Castleman disease:</u> • Workup
	<u>Multiple myeloma:</u> • Initial diagnostic workup; • Follow-up • Surveillance (up to once per month)
	<u>Systemic light chain amyloidosis:</u> • Initial diagnostic workup
Troponin T	<u>Systemic light chain amyloidosis:</u> • Initial diagnostic workup
Tryptase	<u>Systemic mastocytosis:</u> • Initial diagnosis

- 2) For all other cancer indications not discussed above, use of the above biomarkers (alone or in a panel of serum tumor markers) **are not reimbursable.**
- 3) All other serum tumor markers not addressed above (alone or in a panel of serum tumor markers) **are not reimbursable.**
- 4) For the screening and detection of cancer, analysis of proteomic patterns in serum **are not reimbursable.**

Procedure Codes

The following is not an all-encompassing code list. The inclusion of a code does not guarantee it is a covered service or eligible for reimbursement.

Codes
81500, 81503, 81538, 81599, 82105, 82107, 82232, 82308, 82378, 83520, 83521, 83789, 83880, 83950, 83951, 84075, 84078, 84080, 84484, 84702, 84703, 84704, 84999, 86300, 86301, 86304, 86305, 86316, 86336, 0003U, 0092U, 0163U, 0404U, 0558U, 0559U, 0599U, G0327

References

1. Hottinger A, Hormigo A. Serum Biomarkers. *Encyclopedia of Cancer*. Springer Berlin Heidelberg; 2011.
http://link.springer.com/referenceworkentry/10.1007/978-3-642-16483-5_5269
2. NCI. Tumor Markers. <https://www.cancer.gov/about-cancer/diagnosis-staging/diagnosis/tumor-markers-fact-sheet>
3. NCCN. Biomarkers Compendium. <https://www.nccn.org/compendia-templates/compendia/biomarkers-compendium>
4. Febbo PG, Ladanyi M, Aldape KD, et al. NCCN Task Force report: Evaluating the clinical utility of tumor markers in oncology. *Journal of the National Comprehensive Cancer Network : JNCCN*. Nov 2011;9 Suppl 5:S1-32; quiz S33. doi:10.6004/jnccn.2011.0137
5. Sturgeon CM, Hoffman BR, Chan DW, et al. National Academy of Clinical Biochemistry Laboratory Medicine Practice Guidelines for Use of Tumor Markers in Clinical Practice: Quality Requirements. *Clinical Chemistry*. 2008;54(8):e1. doi:10.1373/clinchem.2007.094144
6. BeScreened. BeScreened. <https://bescreened.com/>
7. Aspira Health. Ova1Plus®. <https://aspirawh.com/ova1plus/>
8. ASPIRA. OvaWatch. <https://aspirawh.com/ovawatch/>
9. Pinzani P, D'Argenio V, Del Re M, et al. Updates on liquid biopsy: current trends and future perspectives for clinical application in solid tumors. *Clin Chem Lab Med*. Jun 25 2021;59(7):1181-1200. doi:10.1515/cclm-2020-1685
10. Sharma U, Pal D, Prasad R. Alkaline phosphatase: an overview. *Indian J Clin Biochem*. Jul 2014;29(3):269-78. doi:10.1007/s12291-013-0408-y
11. Szulc P, Bauer DC, Dempster DW, Luckey M, Cauley JA. Osteoporosis. 2013;1doi:10.1016/B978-0-12-415853-5.00067-4
12. NCCN. NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) Systemic Light Chain Amyloidosis Version Version 2.2025.
https://www.nccn.org/professionals/physician_gls/pdf/amyloidosis.pdf
13. Thio Q, Karhade AV, Notman E, et al. Serum alkaline phosphatase is a prognostic marker in bone metastatic disease of the extremity. *J Orthop*. Nov-Dec 2020;22:346-351. doi:10.1016/j.jor.2020.08.008
14. Schefer H, Mattmann S, Joss RA. Hereditary persistence of α -fetoprotein Case report and review of the literature. *Annals of Oncology*. 1998;9(6):667-672. doi:10.1023/A:1008243311122
15. Gilligan TD, Seidenfeld J, Basch EM, et al. American Society of Clinical Oncology Clinical Practice Guideline on uses of serum tumor markers in adult males with germ cell tumors. *Journal of clinical oncology : official journal of the American Society of Clinical Oncology*. Jul 10 2010;28(20):3388-404. doi:10.1200/jco.2009.26.4481
16. Wu M, Liu H, Liu Z, Liu C, Zhang A, Li N. Analysis of serum alpha-fetoprotein (AFP) and AFP-L3 levels by protein microarray. *The Journal of international medical research*. Oct 2018;46(10):4297-4305. doi:10.1177/0300060518789304
17. Singal AG, Llovet JM, Yarchoan M, et al. AASLD Practice Guidance on prevention, diagnosis, and treatment of hepatocellular carcinoma. *Hepatology*. May 22 2023;doi:10.1097/HEP.0000000000000466

18. Santos Schraiber Ld, de Mattos AA, Zanotelli ML, et al. Alpha-fetoprotein Level Predicts Recurrence After Transplantation in Hepatocellular Carcinoma. *Medicine*. Jan 2016;95(3):e2478. doi:10.1097/md.0000000000002478
19. Cheng J, Wang W, Zhang Y, et al. Prognostic role of pre-treatment serum AFP-L3% in hepatocellular carcinoma: systematic review and meta-analysis. *PloS one*. 2014;9(1):e87011. doi:10.1371/journal.pone.0087011
20. Park SJ, Jang JY, Jeong SW, et al. Usefulness of AFP, AFP-L3, and PIVKA-II, and their combinations in diagnosing hepatocellular carcinoma. *Medicine*. Mar 2017;96(11):e5811. doi:10.1097/md.0000000000005811
21. Ryu T, Takami Y, Wada Y, et al. Double- and Triple-Positive Tumor Markers Predict Early Recurrence and Poor Survival in Patients with Hepatocellular Carcinoma within the Milan Criteria and Child-Pugh Class A. *Journal of gastrointestinal surgery : official journal of the Society for Surgery of the Alimentary Tract*. Jun 2017;21(6):957-966. doi:10.1007/s11605-017-3394-1
22. Caviglia GP, Abate ML, Petrini E, Gaia S, Rizzetto M, Smedile A. Highly sensitive alpha-fetoprotein, Lens culinaris agglutinin-reactive fraction of alpha-fetoprotein and des-gamma-carboxyprothrombin for hepatocellular carcinoma detection. *Hepatology research : the official journal of the Japan Society of Hepatology*. Mar 2016;46(3):E130-5. doi:10.1111/hepr.12544
23. Berrebi A, Shvidel L, Arditti FD, Bassous L, Haran M, Shtalrid M. The Significance of Elevated Beta 2-Microglobulin (b2-m) in B-CLL: Evidence of in Vitro b2-m Secretion Following Activation of B-CLL Cells. *Blood*. 2009;114(22):4380.
24. Katou H, Kanno T, Hoshino M, et al. The role of disulfide bond in the amyloidogenic state of beta(2)-microglobulin studied by heteronuclear NMR. *Protein science : a publication of the Protein Society*. Sep 2002;11(9):2218-29. doi:10.1110/ps.0213202
25. Marcinko TM, Dong J, LeBlanc R, Daborowski KV, Vachet RW. Small molecule-mediated inhibition of β -2-microglobulin-based amyloid fibril formation. *The Journal of biological chemistry*. Jun 23 2017;292(25):10630-10638. doi:10.1074/jbc.M116.774083
26. Seo S, Hong JY, Yoon S, et al. Prognostic significance of serum beta-2 microglobulin in patients with diffuse large B-cell lymphoma in the rituximab era. *Oncotarget*. Nov 22 2016;7(47):76934-76943. doi:10.18632/oncotarget.12734
27. Weber M, Hamm C. Role of B-type natriuretic peptide (BNP) and NT-proBNP in clinical routine. *Heart*. Jun 2006;92(6):843-9. doi:10.1136/hrt.2005.071233
28. Di Castelnuovo A, Veronesi G, Costanzo S, et al. NT-proBNP (N-Terminal Pro-B-Type Natriuretic Peptide) and the Risk of Stroke. *Stroke*. Mar 2019;50(3):610-617. doi:10.1161/STROKEAHA.118.023218
29. Venner CP. AL amyloidosis cardiac staging updated using BNP. *Blood*. Jan 17 2019;133(3):184-185. doi:10.1182/blood-2018-10-882159
30. NCCN. NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) Multiple Myeloma Version 1.2025. https://www.nccn.org/professionals/physician_gls/pdf/myeloma.pdf
31. Tuttle RM. Medullary thyroid cancer: Clinical manifestations, diagnosis, and staging. Updated July 29, 2024. <https://www.uptodate.com/contents/medullary-thyroid-cancer-clinical-manifestations-diagnosis-and-staging>
32. Wells SA, Jr., Asa SL, Dralle H, et al. Revised American Thyroid Association guidelines for the management of medullary thyroid carcinoma. *Thyroid : official*

- journal of the American Thyroid Association*. Jun 2015;25(6):567-610.
doi:10.1089/thy.2014.0335
33. Haugen BR, Alexander EK, Bible KC, et al. 2015 American Thyroid Association Management Guidelines for Adult Patients with Thyroid Nodules and Differentiated Thyroid Cancer: The American Thyroid Association Guidelines Task Force on Thyroid Nodules and Differentiated Thyroid Cancer. *Thyroid : official journal of the American Thyroid Association*. Jan 2016;26(1):1-133.
doi:10.1089/thy.2015.0020
 34. Tormey WP, Byrne B, Hill AD, Sherlock M, Thompson CJ. Should serum calcitonin be routinely measured in patients presenting with thyroid nodule? *Minerva endocrinologica*. Dec 2017;42(4):306-310. doi:10.23736/s0391-1977.17.02566-4
 35. Magnani JL. The discovery, biology, and drug development of sialyl Lea and sialyl Lex. *Archives of Biochemistry and Biophysics*. 2004/06/15/ 2004;426(2):122-131.
doi:10.1016/j.abb.2004.04.008
 36. Isaksson S, Jönsson P, Monsef N, et al. CA 19-9 and CA 125 as potential predictors of disease recurrence in resectable lung adenocarcinoma. *PloS one*. 2017;12(10):e0186284. doi:10.1371/journal.pone.0186284
 37. Dorigo O, Berek JS. Personalizing CA125 levels for ovarian cancer screening. *Cancer prevention research (Philadelphia, Pa)*. Sep 2011;4(9):1356-9.
doi:10.1158/1940-6207.Capr-11-0378
 38. Kim NH, Lee MY, Park JH, et al. Serum CEA and CA 19-9 Levels are Associated with the Presence and Severity of Colorectal Neoplasia. *Yonsei medical journal*. Sep 1 2017;58(5):918-924. doi:10.3349/ymj.2017.58.5.918
 39. Feng F, Tian Y, Xu G, et al. Diagnostic and prognostic value of CEA, CA19-9, AFP and CA125 for early gastric cancer. *BMC cancer*. Nov 9 2017;17(1):737.
doi:10.1186/s12885-017-3738-y
 40. Lucarelli G, Ditonno P, Bettocchi C, et al. Diagnostic and prognostic role of preoperative circulating CA 15-3, CA 125, and beta-2 microglobulin in renal cell carcinoma. *Disease markers*. 2014;2014:689795. doi:10.1155/2014/689795
 41. Chen F, Shen J, Wang J, Cai P, Huang Y. Clinical analysis of four serum tumor markers in 458 patients with ovarian tumors: diagnostic value of the combined use of HE4, CA125, CA19-9, and CEA in ovarian tumors. *Cancer Manag Res*. 2018;10:1313-1318. doi:10.2147/cmar.S155693
 42. Bind MK, Mishra RR, Kumar V, Misra V, Singh PA. Serum CA 19-9 and CA 125 as a diagnostic marker in carcinoma of gallbladder. *Indian J Pathol Microbiol*. Jan-Mar 2021;64(1):65-68.
 43. Li AJ. Serum biomarkers for evaluation of an adnexal mass for epithelial carcinoma of the ovary, fallopian tube, or peritoneum. Updated October 31, 2024. <https://www.uptodate.com/contents/serum-biomarkers-for-evaluation-of-an-adnexal-mass-for-epithelial-carcinoma-of-the-ovary-fallopian-tube-or-peritoneum>
 44. Duffy MJ. Carcinoembryonic Antigen as a Marker for Colorectal Cancer: Is It Clinically Useful? *Clinical Chemistry*. 2001;47(4):624.
doi:10.1093/clinchem/47.4.624
 45. Harvey RA. Human chorionic gonadotropin: Biochemistry and measurement in pregnancy and disease. Updated June 23, 2023.
<https://www.uptodate.com/contents/human-chorionic-gonadotropin-biochemistry-and-measurement-in-pregnancy-and-disease>

46. Marcillac I, Troalen F, Bidart J-M, et al. Free Human Chorionic Gonadotropin β Subunit in Gonadal and Nongonadal Neoplasms. *Cancer Research*. 1992;52(14):3901.
47. Hotakainen K, Ljungberg B, Paju A, Rasmuson T, Alfthan H, Stenman UH. The free beta-subunit of human chorionic gonadotropin as a prognostic factor in renal cell carcinoma. *British journal of cancer*. Jan 21 2002;86(2):185-9. doi:10.1038/sj.bjc.6600050
48. Li J, Yin M, Song W, et al. B Subunit of Human Chorionic Gonadotropin Promotes Tumor Invasion and Predicts Poor Prognosis of Early-Stage Colorectal Cancer. *Cellular physiology and biochemistry : international journal of experimental cellular physiology, biochemistry, and pharmacology*. 2018;45(1):237-249. doi:10.1159/000486770
49. Strosberg J. Diagnosis of carcinoid syndrome and tumor localization. Updated March 19, 2025. <https://www.uptodate.com/contents/diagnosis-of-the-carcinoid-syndrome-and-tumor-localization>
50. Yang X, Yang Y, Li Z, et al. Diagnostic value of circulating chromogranin a for neuroendocrine tumors: a systematic review and meta-analysis. *PloS one*. 2015;10(4):e0124884. doi:10.1371/journal.pone.0124884
51. Tian T, Gao J, Li N, et al. Circulating Chromogranin A as A Marker for Monitoring Clinical Response in Advanced Gastroenteropancreatic Neuroendocrine Tumors. *PloS one*. 2016;11(5):e0154679. doi:10.1371/journal.pone.0154679
52. Walentowicz P, Krintus M, Sadlecki P, et al. Serum inhibin A and inhibin B levels in epithelial ovarian cancer patients. *PloS one*. 2014;9(3):e90575. doi:10.1371/journal.pone.0090575
53. Gershenson D. Sex cord-stromal tumors of the ovary: Epidemiology, clinical features, and diagnosis in adults. Updated July 8, 2024. <https://www.uptodate.com/contents/sex-cord-stromal-tumors-of-the-ovary-epidemiology-clinical-features-and-diagnosis-in-adults>
54. Farkkila A, Koskela S, Bryk S, et al. The clinical utility of serum anti-Mullerian hormone in the follow-up of ovarian adult-type granulosa cell tumors--A comparative study with inhibin B. *International journal of cancer*. Oct 1 2015;137(7):1661-71. doi:10.1002/ijc.29532
55. Kyrtsolis MC KE, Bartzis V, Pessah I, Nikolaou E, Karalis V, Maltezas D, Panayiotidis P, Harding S. Monoclonal Immunoglobulin. *Multiple Myeloma - A Quick Reflection on the Fast Progress*. 2012.
56. ACS. What Is Multiple Myeloma? <https://www.cancer.org/cancer/multiple-myeloma/about/what-is-multiple-myeloma.html>
57. Tosi P, Tomassetti S, Merli A, Polli V. Serum free light-chain assay for the detection and monitoring of multiple myeloma and related conditions. *Ther Adv Hematol*. Feb 2013;4(1):37-41. doi:10.1177/2040620712466863
58. Katzmann JA, Clark RJ, Abraham RS, et al. Serum reference intervals and diagnostic ranges for free kappa and free lambda immunoglobulin light chains: relative sensitivity for detection of monoclonal light chains. *Clin Chem*. Sep 2002;48(9):1437-44.
59. ACS. What Is Waldenstrom Macroglobulinemia? <https://www.cancer.org/cancer/waldenstrom-macroglobulinemia/about/what-is-wm.html>

60. Cautha S, Gupta S, Hanif A, Moirangthem V, Jain K. Lymphoplasmacytic Lymphoma with Only Lambda Light Chain Monoclonal Paraprotein Expression. *Eur J Case Rep Intern Med*. 2022;9(2):003106. doi:10.12890/2022_003106
61. Moreau AS LX, Manning R, Coiteux V, Darre S, Hatjiharisi E, Hunter Z, Jia X, Ngo H, O'Sullivan G, Santos D, Treon S, Facon T, Anderson K, Ghobrial I. Serum Free Light Chain in Waldenstrom Macroglobulinemia. 2006;doi:10.1182/blood.V108.11.2420.2420
62. Wu D, Lim MS, Jaffe ES. Pathology of Castleman Disease. *Hematol Oncol Clin North Am*. Feb 2018;32(1):37-52. doi:10.1016/j.hoc.2017.09.004
63. Oyaert M, Boone E, De Ceuninck L, et al. Clonal multicentric Castleman's disease with increased free Kappa light chains in a patient with systemic lupus erythematosus. *Ann Hematol*. Jul 2014;93(7):1255-7. doi:10.1007/s00277-013-1962-3
64. Stankowski-Drengler T, Gertz MA, Katzmman JA, et al. Serum immunoglobulin free light chain measurements and heavy chain isotype usage provide insight into disease biology in patients with POEMS syndrome. *Am J Hematol*. Jun 2010;85(6):431-4. doi:10.1002/ajh.21707
65. Merlini G, Wechalekar AD, Palladini G. Systemic light chain amyloidosis: an update for treating physicians. *Blood*. Jun 27 2013;121(26):5124-30. doi:10.1182/blood-2013-01-453001
66. Dispenzieri A. Clinical presentation, laboratory manifestations, and diagnosis of immunoglobulin light chain (AL) amyloidosis. Updated February 19, 2025. <https://www.uptodate.com/contents/clinical-presentation-laboratory-manifestations-and-diagnosis-of-immunoglobulin-light-chain-al-amyloidosis>
67. Kumar S, Dispenzieri A, Katzmman JA, et al. Serum immunoglobulin free light-chain measurement in primary amyloidosis: prognostic value and correlations with clinical features. *Blood*. Dec 9 2010;116(24):5126-9. doi:10.1182/blood-2010-06-290668
68. Bhole MV, Sadler R, Ramasamy K. Serum-free light-chain assay: clinical utility and limitations. *Ann Clin Biochem*. Sep 2014;51(Pt 5):528-42. doi:10.1177/0004563213518758
69. Akar H, Seldin DC, Magnani B, et al. Quantitative serum free light chain assay in the diagnostic evaluation of AL amyloidosis. *Amyloid*. Dec 2005;12(4):210-5. doi:10.1080/13506120500352339
70. Chaulin AM. Biology of Cardiac Troponins: Emphasis on Metabolism. *Biology (Basel)*. Mar 11 2022;11(3)doi:10.3390/biology11030429
71. Sharma S, Jackson PG, Makan J. Cardiac troponins. *J Clin Pathol*. Oct 2004;57(10):1025-6. doi:10.1136/jcp.2003.015420
72. Perfetto F, Bergesio F, Emdin M, Cappelli F. Troponins in cardiac amyloidosis: multipurpose markers. *Nat Rev Cardiol*. Mar 2014;11(3):179. doi:10.1038/nrcardio.2013.129-c1
73. Pejler G, Ronnberg E, Waern I, Wernersson S. Mast cell proteases: multifaceted regulators of inflammatory disease. *Blood*. Jun 17 2010;115(24):4981-90. doi:10.1182/blood-2010-01-257287
74. Payne V, Kam PC. Mast cell tryptase: a review of its physiology and clinical significance. *Anaesthesia*. Jul 2004;59(7):695-703. doi:10.1111/j.1365-2044.2004.03757.x

75. Leru PM. Evaluation and Classification of Mast Cell Disorders: A Difficult to Manage Pathology in Clinical Practice. *Cureus*. Feb 2022;14(2):e22177. doi:10.7759/cureus.22177
76. AAAAI. Systemic Mastocytosis. <https://www.aaaai.org/conditions-treatments/related-conditions/systemic-mastocytosis>
77. Stephens RW, Brunner N, Janicke F, Schmitt M. The urokinase plasminogen activator system as a target for prognostic studies in breast cancer. *Breast cancer research and treatment*. 1998;52(1-3):99-111. doi:10.1007/978-1-4615-5195-9_15
78. Malmstrom P, Bendahl PO, Boiesen P, Brunner N, Idvall I, Ferno M. S-phase fraction and urokinase plasminogen activator are better markers for distant recurrences than Nottingham Prognostic Index and histologic grade in a prospective study of premenopausal lymph node-negative breast cancer. *Journal of clinical oncology : official journal of the American Society of Clinical Oncology*. Apr 01 2001;19(7):2010-9. doi:10.1200/jco.2001.19.7.2010
79. Foekens JA, Peters HA, Look MP, et al. The urokinase system of plasminogen activation and prognosis in 2780 breast cancer patients. *Cancer Res*. Feb 01 2000;60(3):636-43.
80. Chappuis PO, Dieterich B, Sciretta V, et al. Functional evaluation of plasmin formation in primary breast cancer. *Journal of clinical oncology : official journal of the American Society of Clinical Oncology*. May 15 2001;19(10):2731-8. doi:10.1200/jco.2001.19.10.2731
81. Foukakis T, Bergh J. Prognostic and predictive factors in early, nonmetastatic breast cancer - UpToDate. Updated March 17, 2025. <https://www.uptodate.com/contents/prognostic-and-predictive-factors-in-early-non-metastatic-breast-cancer>
82. Harris LN, Ismaila N, McShane LM, et al. Use of Biomarkers to Guide Decisions on Adjuvant Systemic Therapy for Women With Early-Stage Invasive Breast Cancer: American Society of Clinical Oncology Clinical Practice Guideline. *Journal of clinical oncology : official journal of the American Society of Clinical Oncology*. Apr 01 2016;34(10):1134-50. doi:10.1200/jco.2015.65.2289
83. Raby B. Personalized medicine. Updated September 6, 2023. <https://www.uptodate.com/contents/personalized-medicine>
84. Chen Y, Xie Y, Xu L, et al. Protein content and functional characteristics of serum-purified exosomes from patients with colorectal cancer revealed by quantitative proteomics. *International journal of cancer*. 2017/02/15 2017;140(4):900-913. doi:10.1002/ijc.30496
85. Qin J, Yang Q, Ye H, et al. Using Serological Proteome Analysis to Identify and Evaluate Anti-GRP78 Autoantibody as Biomarker in the Detection of Gastric Cancer. *J Oncol*. 2020;2020:9430737. doi:10.1155/2020/9430737
86. NCCN. NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) Ovarian Cancer Version 2.2025. https://www.nccn.org/professionals/physician_gls/pdf/ovarian.pdf
87. Van Poznak C, Somerfield MR, Bast RC, et al. Use of Biomarkers to Guide Decisions on Systemic Therapy for Women With Metastatic Breast Cancer: American Society of Clinical Oncology Clinical Practice Guideline. *Journal of clinical oncology : official journal of the American Society of Clinical Oncology*. Aug 20 2015;33(24):2695-704. doi:10.1200/jco.2015.61.1459

88. Stoffel EM, McKernin SE, Brand R, et al. Evaluating Susceptibility to Pancreatic Cancer: ASCO Provisional Clinical Opinion. *Journal of Clinical Oncology*. 2019/01/10 2018;37(2):153-164. doi:10.1200/JCO.18.01489
89. Kindler HL, Ismaila N, Armato SG, et al. Treatment of Malignant Pleural Mesothelioma: American Society of Clinical Oncology Clinical Practice Guideline. *Journal of Clinical Oncology*. 2018/05/01 2018;36(13):1343-1373. doi:10.1200/JCO.2017.76.6394
90. Sturgeon CM, Duffy MJ, Hofmann BR, et al. National Academy of Clinical Biochemistry Laboratory Medicine Practice Guidelines for use of tumor markers in liver, bladder, cervical, and gastric cancers. *Clin Chem*. Jun 2010;56(6):e1-48. doi:10.1373/clinchem.2009.133124
91. Sturgeon CM, Duffy MJ, Stenman UH, et al. National Academy of Clinical Biochemistry laboratory medicine practice guidelines for use of tumor markers in testicular, prostate, colorectal, breast, and ovarian cancers. *Clin Chem*. Dec 2008;54(12):e11-79. doi:10.1373/clinchem.2008.105601
92. ADLM. Human Chorionic Gonadotropin (hCG). <https://myadlm.org/cln/articles/2021/april/using-human-chorionic-gonadotropin-as-a-tumor-marker>
93. ADLM. Serum Free Light Chains: Optimal Testing Recommendations. <https://www.myadlm.org/advocacy-and-outreach/optimal-testing-guide-to-lab-test-utilization/g-s/serum-free-light-chains>
94. NANETS. NANETS 2024 Compendium. 2025. https://nanets.net/images/NANETS_2024_Symposium_Guidelines_Compendium.pdf
95. Bowlus CL, Arrive L, Bergquist A, et al. AASLD practice guidance on primary sclerosing cholangitis and cholangiocarcinoma. *Hepatology*. Feb 1 2023;77(2):659-702. doi:10.1002/hep.32771
96. ATA. Revised ATA Management Guidelines for MTC. <https://www.thyroid.org/wp-content/uploads/2017/03/revised-ata-management-guidelines-for-MTC.pdf>

Policy Update History

Approval Date	Effective Date; Summary of Changes
09/05/2025	01/01/2026: New policy