Hematopoietic and Lymphoid Neoplasm Coding Manual

Effective with Cases Diagnosed 1/1/2010 and Forward

Published November 2024

In Appreciation

Dedication

The Hematopoietic and Lymphoid Neoplasm Coding Manual (Heme manual) and the companion Hematopoietic and Lymphoid Neoplasm Database (Heme DB) are dedicated to the hard-working cancer registrars across the world who meticulously identify, abstract, and code cancer data. Cancer registrars are the foundation for statewide, provincial, territorial, national, and international cancer surveillance programs which support cancer prevention and cancer control efforts worldwide.

Education

SEER*Educate provides training on how to use the Heme Manual and DB. Step-by-step instructions are provided for each case scenario to learn how to use the application and manual to arrive at the answer provided.

Use this manual and the corresponding database to abstract and code cases diagnosed **January 1, 2010** and forward. Some information for cases diagnosed prior to 2010 is also provided to assist registrars in coding those cases and in making multiple primary decisions.

These rules are for cancer registries and are not followed by physicians. Follow the rules stated in this manual and abstract the number of primaries based on the rules. This may, or may not, agree with what the physician indicates in the patient record. However, physician interpretation can sometimes factor into determining reportability, diagnostic confirmation, or primary site; this is addressed in the specific coding instructions for those sections.

Hematopoietic Comparison Documents
Starting January 1, 2014, only one database for diagnosis years 2010 and forward is available and is referred to as the "Hematopoietic and Lymphoid Neoplasm Database." The consolidated manual and database include changes from 2010, 2012 and 2014. Earlier versions (2010 and 2012) are no longer available.

Comparison documents have been developed to identify the differences between the 2010, 2012 and 2014 changes of the Hematopoietic manual and database. These documents are meant to be a guide for registrars on how their data may have changed over time. Included with the rules is a column that comments on possible changes to incidence. Most of the changes will not affect incidence. There is an explanation of how and what to review where incidence may be affected. The documents can be found at: http://www.seer.cancer.gov/tools/heme/comparison.html

Versions
2010 Hematopoietic Coding Manual and Database (Effective dates 1/1/2010-12/31/2011)
- Release date: March 2010, Version 1.4 (initial release)
- Release date: April 2010, Version 1.5
- Release date: June 2010, Version 1.6

2012 Hematopoietic Coding Manual and Database (Effective dates 1/1/2012-12/31/2013)
- Release date: May 4, 2012, Version 2.1
- Release date: May 23, 2012, Version 2.1
- Release date: February 25, 2013, Version 2.2

Hematopoietic and Lymphoid Neoplasm Coding Manual (Effective 1/1/2010)
- Release date: January 2014

Hematopoietic and Lymphoid Neoplasm Coding Manual (Effective 1/1/2010)
- Release date: January 2015

Hematopoietic and Lymphoid Neoplasm Coding Manual (Effective 1/1/2010)
- Release date: May 2018

Hematopoietic and Lymphoid Neoplasm Coding Manual (Effective 1/1/2010)
- Release date: January 2019

Hematopoietic and Lymphoid Neoplasm Coding Manual (Effective 1/1/2010)
- Release date: September 2020

Hematpoietic and Lymphoid Neoplasm Coding Manual (Effective 1/1/2010)
- Release date: August 2021

Contents

Revision History

2025 Revisions

9738/3 was made obsolete starting 2021 and changed to 9738/1. This was done in error. 9738/3 is still a valid code (2010+), along with 9738/1 (2021+).
- This is a very rare lymphoma, so registrars will not be required to go back and look for missed cases.

Post Transplant Lymphoproliferative Disorder (PTLD) was previously reportable as 9971/3 for 2010-2020 when it was the only diagnosis. In 2021, based on the 4th edition of WHO Hematopoietic Blue Book, PTLD became 9971/1, where it was only reportable if it occurred in the brain. Starting in 2025, PTLD as the only diagnosis will become a /3 (malignant) again and will be reportable for all cases.

In addition, a new SSDI has been added to several schemas (Lymphoma, Lymphoma-CLL/SLL, Primary Cutaneous Lymphoma (excluding MF/SS), Plasma Cell Disorders, Plasma Cell Myeloma) for when a PTLD is diagnosed WITH a lymphoma, plasmacytoma, or multiple myeloma. (See the Hematopoietic Manual, Rules M14, PH1).
- See the SSDI manual for further instructions on coding the new SSDI

2023 and 2024 Revisions: None

2022 Revisions

1. Diagnostic confirmation section of the manual updated to indicate which histologies have a default code of 3 (histology plus immunophenotyping/genetics), those that should never have a code 3.
2. The Hematopoietic database has a new field called "Diagnostic Confirmation." Information for each /3 histology has information about diagnostic confirmation added.
3. For 9896/3: Alternate name "AML with recurrent genetic abnormalities, NOS" was removed from this code and was moved to 9861/3.
   a. Due to questions received about a case presented at NCRA and then consultation with a Hematopoietic expert, it was determined that this alternate name was incorrectly placed in code 9896/3 and the appropriate place for this alternate name was in 9861/3.
4. Additional information added in 9861/3 about the "AML with recurrent genetics abnormalities" group.
5. For 9811/3, the more specific B-cell lymphoma/leukemias were added as a reference.

2021 Revisions

Update to "Steps in Priority Order for Using the Heme DB and Hematopoietic Coding Manual"

Several changes in histologies have been incorporated for 2021 based on the *WHO Classification of Tumors of Hematopoietic and Lymphoid Tissues*, Revised 4th edition, Volume 2, 2017. These histologies are part of the ICD-O-3.2 update and are effective for cases diagnosed 2021 and later.

New histologies. These histologies can only be used for cases diagnosed 2021+

Note: In the Hematopoietic database, the "Help me code for diagnosis year" must be 2021 to view information on these histologies
9715/3: Anaplastic large cell lymphoma, ALK-negative/ Breast implant-associated anaplastic large cell lymphoma
9749/3: Erdheim-Chester Disease
9766/3: Lymphomatoid granulomatosis grade 3
9819/3: B-lymphoblastic leukemia/lymphoma, BCR-ALB1 like
9877/3: Acute myeloid leukemia with mutated NPM1
9878/3: Acute myeloid leukemia with biallelic mutation of CEBPA
9879/3: Acute myeloid leukemia with mutated RUNX1
9912/3: Acute myeloid leukemia with BCR-ABL1
9968/3: Myeloid/lymphoid neoplasm with PCM1-JAK2
9993/3: Myelodysplastic syndrome with ring sideroblasts and multilineage dysplasia
Note: Same primaries and transformations were also updated to incorporate the new histologies

The following histologies are now a /1 (instead of a /3) and are no longer reportable starting with 2021 diagnoses
9725/3: Hydroa vacciniforme-like lymphoma (New preferred name: Hydroa vacciniforme-like lymphoproliferative disorder)
  Note: See 9725/1 for 2021+
9971/3: Post-transplant lymphoproliferativer disorder (PTLD)
  Note: See 9971/1 for 2021+

The following histolog codes and terms are obsolete and have a new code starting with 2021 diagnoses
9826/3: Burkitt Leukemia (for diagnosis 2021+, coded as 9687/3 Burkitt lymphoma with primary site C421)
9991/3: Refractory neutropenia (for diagnosis 2021+, coded as 9980: Myelodysplastic syndrome with single lineage dysplasia)
9992/3: Refractory thrombocytopenia (for diagnosis 2021+, coded as 9980: Myelodysplastic syndrome with single lineage dysplasia)

Change in histology 9751/3
Only Langerhans cell histiocytosis, disseminated is a /3 for 2021+ diagnoses. All other terminology, including Langerhans cell histiocytosis, NOS, is now a /1 (see updated alternate names list when "help me code for diagnosis" is 2021)

The following histologies are new, but are /1 and not reportable. They have been included in the Hematopoietic Database for informational purposes
9591/1: Monoclonal B-cell lymphocytosis, non-CLL type
9673/1: In situ mantle cell neoplasia
9680/1: EBV-positive mucocutaneous ulcer
9695/1: In situ follicular neoplasia
9702/1: Indolent T-cell lymphoproliferative disorder of the gastrointestinal tract
9709/1: Primary cutaneous CD4-positive small/medium T-cell lymphoproliferative disorder (previously listed as an alternate name in 9709/3)
9738/1: HHV8-positive germinotropic lymphoproliferative disorder
9761/1: IgM monoclonal gammopathy of undetermined significance
9823/1: Monoclonal B-cell lymphocytosis, CLL-type

Appendix D: Introduction to Genetic Nomenclature

2019 Revisions
- Histologies fixed in Module 6 and Module 7

2018 Revisions
The 2018 revisions include
- Rule clarifications and revisions
- Correction of typographical errors (in both manual and database)
- Grade is no longer applicable for cases diagnosed 2018 and forward. Grade is still required for cases diagnosed prior to 2018
- Non-reportable terms removed from Hematopoietic Manual Appendix F and added to the database
- Glossary removed from the Manual and entered into the new Glossary database
- Deleted Sections: Several sections have been deleted from the Hematopoietic manual because they are no longer relevant
  - Appendix E: Obsolete Hematopoietic Histology Codes: This section covered the neoplasms that were made obsolete as of 1/1/2010 and forward. This information is in the database. In January 2015, all cases that included one of these codes for 1/1/2010 and forward were converted to the current applicable code
  - Obsolete Terms as Defined in ICD-O Hematopoietic and Lymphoid Neoplasms (part of Appendix A). The obsolete terms are part of the Hematopoietic database.
  - Appendix D: New Histology Terms and Codes Hematopoietic and Lymphoid Neoplasms: These were the new histology codes as of 1/1/2010. These are no longer new.

Many of the revisions are based on questions submitted to Ask a SEER Registrar. Selected questions and answers from Ask a SEER Registrar are posted in SEER Inquiry System (SINQ), which is updated on a regular basis.

Introduction and Background

The Hematopoietic Working Group was led by the Surveillance, Epidemiology, and End Results (SEER) Program of the National Cancer Institute (NCI) and included members from many professional organizations: the National Cancer Registrars Association (NCRA), the North American Association of Central Cancer Registries (NAACCR), the National Program of Cancer Registries (NPCR) of the Centers for Disease Control and Prevention (CDC), the Commission on Cancer (CoC) of the American College of Surgeons (ACoS), and the Canadian Cancer Registries (CCR). The Working Group also included cancer registrars who work independently (contractors), hospital registrars, central cancer registry registrars, and clinical and research physicians who are experts in the hematopoietic and lymphoid neoplasm fields.

This working group has developed rules, guidelines and an interactive desktop Heme DB reference to assist registrars in determining case reportability, the number of primaries, as well as instructions for coding primary site, histology, grade, diagnostic confirmation and other therapy for a hematopoietic and/or lymphoid neoplasm. The rules, guidelines, and the Hematopoietic DB follow the *World Health Organization (WHO) Classification of Tumours of Haematopoietic and Lymphoid Tissues*, 4th Edition, 2008, also called the "WHO Blue Book." Both the *International Classification of Diseases for Oncology (ICD-O)* and the series of Blue Books are produced by the World Health Organization (WHO), but the content of the books are very different. Each has a prominent place in the oncology world.

The original ICD-O, the ICD-O-2, and the ICD-O-3 provide standard primary site and histology codes for specific benign, borderline, and malignant conditions. The ICD-O series also provides generic "not otherwise specified" or "NOS" codes for some conditions so registrars are able to code cases that have limited information, such as death-certificate-only cases and historic cases. When ICD-O assigns a code to a specific histology, the original code is rarely changed. The intent is that the code should never change; for example, code 8140/3 for adenocarcinoma, NOS has remained unchanged since the first edition of ICD-O. The ICD-O manuals are the standard for coding neoplasms throughout the world. To preserve the integrity of historical data and to allow for comparison of data over time, it is imperative that standard codes remain unchanged. Although the stability of these codes is necessary to interpret data over time, that process has some less-than-desirable results. When the clinical world reclassifies diseases to reflect the current state of science and knowledge about a particular disease or condition, that disease will remain in the same numeric position in ICD-O. When the ICD-O editors assign new codes for a neoplasm, the new code may not be placed in the desired category because there may not be room within that category to add a new code. An example of this problem is the placement of the non-Hodgkin lymphomas that were first added in ICD-O-3.

The WHO Blue Books, by contrast, are histo-pathology reference books used by pathologists and oncologists throughout the world. The Blue Books are revised and published when new information is available. The *WHO Classification of Tumours of Haematopoietic and Lymphoid Tissues*, 4th Edition, a collaborative project of the Society for Hematopathology/European Association for Hematopathology was published in 2008. The reference includes new disease classifications, changes to existing classifications and cell lineages, and new conditions that reflect the state-of-the-science for these neoplasms. This reference was the primary source of information used to develop the *2010 Hematopoietic and Lymphoid Neoplasm Case Reportability and Coding Manual,* the *2012 Hematopoietic Coding Manual,* and the accompanying Hematopoietic DB as the WHO Blue Book is periodically updated with the current classification by cell lines or lineages and classification groupings. Using the WHO classifications gives the registrar reference material that is clinically relevant and compatible with current pathology reports and medical records. When the clinical field finds specific tumor markers, immunohistochemical testing, genetic testing, or other characteristics that define or refine a diagnosis or a particular histology, the WHO Blue Books introduce proposed new codes for new or more specific histologies, and these new histologies may be grouped or classified in categories based on information about the phenotype or behavior of the neoplasm.

> *Note*: The WHO is the directing and coordinating authority for health within the United Nations system. It is responsible for providing leadership on global health matters, shaping the health research agenda, setting norms and standards, articulating evidence-based policy options, providing technical support to countries and monitoring and assessing health trends. (From http://www.who.int/about/en/)

The *Hematopoietic and Lymphoid Neoplasm Coding Manual* and Heme DB are designed to help the registrar understand and interpret the information written by pathologists and clinicians. The Heme DB will be updated as needed to ensure that the registrar has the most current information available to interpret and code a hematopoietic or lymphoid neoplasm.

The classification of the leukemias and lymphomas can be confusing because of the variety of cell types involved, the site of origin of the neoplastic process (bone marrow, lymph node, GI tract, etc.), and the relative frequency or infrequency of tumor cells circulating in the peripheral blood.

Leukemia and lymphoma are terms that reflect the primary behavior and often the primary site of a neoplasm. Leukemias have cells circulating in the peripheral blood, which can originate in lymph nodes or the marrow. Lymphomas generally form solid masses in lymph nodes or organs containing lymphoid tissue; they may occasionally have circulating tumor cells as well.

Leukemias and lymphomas may also be defined as being chronic or acute. Chronic neoplasms are of longer duration and are slowly progressive while acute neoplasms are of shorter duration and rapidly progressing.

Some examples of chronic and acute

Cell Type	Chronic	Acute
Lymphocyte	Chronic lymphocytic leukemia/small lymphocytic leukemia (CLL/SLL); follicular lymphoma	Lymphoblastic leukemia (T or B cell); diffuse large B-cell lymphoma, plasma cell myeloma
Granulocyte	Chronic myeloid leukemia	Acute myeloid leukemia
Erythrocyte	Polycythemia vera	Acute erythroid leukemia
Megakaryocytic	Essential thrombocythemia	Acute megakaryocytic leukemia

Leukemias and Lymphomas

Leukemia vs. Lymphoma

One of the differences between leukemia and lymphoma is that leukemia most commonly presents in the bone marrow and/or blood while lymphoma most commonly manifests in lymph nodes, lymphoid tissue, or lymphoid organs. When only the bone marrow is involved, the diagnosis is usually leukemia. Although rare, a lymphoma may present only in the bone marrow. (See PH rules, Modules 6 and 7, for instructions on coding primary site for lymphomas.)

Both leukemia and lymphoma patients may have splenomegaly (enlargement of the spleen). Patients with leukemia may have leukemic infiltrate of the spleen. Splenomegaly does not mean that the leukemia originated in the spleen or that this neoplasm is lymphoma. The spleen filters and stores blood cells. The spleen involvement is usually secondary, much like metastases in solid tumors. The rare histologies that are primary in the spleen are identified in the Heme DB. The Primary Site will be listed as C422.

Diagnostic Process for Leukemia

For most patients, the first suspicion or presentation of a hematopoietic neoplasm will be symptoms such as unexplained weight loss, weakness, chronic fatigue, easy bruising, etc. When the physician suspects leukemia, he/she usually orders a complete blood count (CBC) and/or a peripheral blood smear. The CBC will identify abnormalities of the platelets, hemoglobin, white blood cells or red blood cells. When an abnormality is identified in the blood cell analysis, a bone marrow (BM) biopsy is usually the next procedure. The CBC or bone marrow alone seldom provide a definitive diagnosis; however, the results usually provide one or more provisional diagnoses such as: myeloproliferative neoplasms, myeloid neoplasms, myelodysplastic/myeloproliferative neoplasms, myelodysplastic syndromes, or leukemia. These non-specific diagnoses are differential or provisional. More testing is needed to identify the specific hematopoietic or lymphoid neoplasm. Many of the neoplasms in the 2008 WHO Classification require immunophenotyping or genetic information to identify the specific histology. The Heme DB contains information on the types of diagnostic tests that are used to identify the specific histology for the hematopoietic or lymphoid neoplasm being abstracted. See the "Definitive Diagnostic Method" section in the Heme DB.

Lymphoma

Biopsies

The most accessible involved lymph node or site is usually biopsied when lymphoma is suspected. For example, if a CT or PET scan identified enlarged cervical and mediastinal lymph nodes, the physician would biopsy the cervical lymph nodes because that would be the least invasive procedure; i.e. the cervical nodes are more accessible than the mediastinal nodes. Do **not** assume that the more accessible site chosen for biopsy is the primary site. Follow the primary site rules and instructions when coding Primary Site.

Hodgkin Lymphoma

Hodgkin lymphoma (HL) is a type of lymphoma originating in lymphocytes (a type of white blood cell). HL is characterized by the presence of Reed-Sternberg cells (RS cells) on microscopic examination. HL usually originates in the lymph nodes and is characterized by the orderly spread of neoplasm from one lymph node chain to another. The neoplasm may progress to involve the spleen, liver, and/or bone marrow.

Non-Hodgkin Lymphoma

Non-Hodgkin lymphoma (NHL) comprises a diverse group of malignant neoplasms which include all lymphomas other than Hodgkin. NHL arises in lymphocytes (a type of white blood cell). Lymphocytes are present in lymph nodes and throughout the body. NHL occurs in extranodal sites including: tonsils, spleen, ileum, stomach, Waldeyer ring, bone marrow, skin, bone, central nervous system, lung, gonads, conjunctiva, ocular adnexa, liver, kidneys, and uterus.

Note: For the purpose of using the rules, a non-Hodgkin lymphoma is any lymphoma (including the leukemia/lymphomas) not stated to be Hodgkin lymphoma, NOS or a type of Hodgkin lymphoma.
- Hodgkin lymphomas are: 9650/3-9653/3, 9655/3, 9659/3, 9663/3

Myeloid neoplasms

WHO lists the following major subgroups of Myeloid neoplasms:
- Acute myeloid leukemia (AML)
- Myelodysplastic syndromes (MDS)
- Myelodysplastic/myeloproliferative neoplasms (MDS/MPN)
- Myeloid/lymphoid neoplasms with eosinophilia and abnormalities of PDGFRA, PDGFRB, or FGFR1
- Myeloproliferative neoplasms (MPN)

MDS are among the most challenging of the myeloid neoplasms for diagnosis and classification. MDS include the following
- Childhood myelodysplastic syndrome
- Myelodysplastic syndrome with isolated del(5q)
- Myelodysplastic syndrome, unclassifiable (MDS-U)
- Myelodysplastic syndrome with excess blasts (MDS-EB-1, MDS-EB-2)
- Myelodysplastic syndrome with ring sideroblasts (RARS) and single lineage dysplasia (MDS-RS-SLD)Myelodysplastic syndrome with multilineage dysplasia (MDS-MLD)
- Myelodysplastic syndrome with ring sideroblasts and multilineage dysplasia (MDS-RS-MLD)
- Myelodysplastic syndrome   with single lineage dysplasia (MDS-SLD)
    - Refractory anemia (RA)
    - Refractory neutropenia (RN)
    - Refractory thrombocytopenia (RT)
- Refractory cytopenia of childhood

MDS/MPN present with findings supporting a diagnosis of MDS and other findings supporting a diagnosis of MPN. MDS/MPN include the following
- Atypical chronic myeloid leukemia BCR-ABL1 negative (aCML)
- Chronic myelomonocytic leukemia (CMML)
- Juvenile myelomonocytic leukemia (JMML)
- Myelodysplastic/myeloproliferative neoplasm, unclassifiable (MDS/MPN, U)
- Myelodysplastic/myeloproliferative neoplasm with ring sideroblasts and thrombocytosis

MPN are stem cell disorders characterized by proliferation of one or more myeloid linage. MPNs include the following

- Chronic eosinophilic leukemia, NOS (CEL, NOS)
- Chronic myeloid leukemia, BCR-ABL positive (CML)
- Chronic neutrophilic leukemia (CNL)
- Essential thrombocythemia (ET)
- Myeloproliferative neoplasm, unclassifiable (MPN-U)
- Polycythemia vera (PV)
- Primary myelofibrosis (PMF)

The Hematopoietic Database (Heme DB)

The Heme DB is available online through the SEER website. Access the database at http://seer.cancer.gov/seertools/hemelymph/. An internet connection is required. Please note that the online version cannot be downloaded onto a PC or laptop.

Please note: The stand-alone version of the Hematopoietic database is no longer provided. The web-based tool provides the most up-to-date information.

The Heme DB enables registrars to identify and understand hematopoietic and lymphoid neoplasms as well as to correctly and consistently abstract and code cases. Users are able to query any final, differential, or provisional diagnosis in the Heme DB. The diagnostic or confirmatory tests are listed under "Definitive Diagnostic Methods" for each neoplasm. The information needed to search the medical record for specific diagnostic test results is provided. Some healthcare institutions may "file" confirmatory test results, such as immunophenotyping or genetic testing, in a location other than that used for standard laboratory tests in the medical record. We recommend that the registrar ask the laboratory for examples of test results, such as immunophenotyping or genetic testing, to become familiar with the test names and format of the test results as well as other information that may be included with the lab analysis. We also recommend that the registrar ask the Health Information Management or Medical Records Department where these tests are located within the patient record

Multiple Primaries Calculator
The multiple primaries calculator (MPC) is be used ONLY when the rules instruct you to do so. Use of the MPC without applying the rules first may result in an incorrect number of primaries and/or histologies.

Coding Diagnostic Confirmation (NAACCR Item #490)

Codes for Hematopoietic and Lymphoid Neoplasms (9590/3-9993/3)

Microscopically Confirmed

Code	Description
1	Positive histology • Includes: peripheral blood smear only
2	Positive cytology
3	Positive histology PLUS: • Positive immunophenotyping AND/OR • Positive genetic studies • Includes: peripheral blood smear followed by flow cytometry (***Effective for cases diagnosed 1/1/2010 and later***)
4	Positive microscopic confirmation, method not specified

Not Microscopically Confirmed

Code	Description
5	Positive laboratory test/marker study ***Note 1***: Includes cases with positive immunophenotyping or genetic studies and ***no*** histological confirmation ***Note 2:*** This does **not** include cases where a peripheral blood smear is done (code 1) and peripheral blood smear followed by flow cytometry (code 3)
6	Direct visualization without microscopic confirmation
7	Radiology and other imaging techniques without microscopic confirmation
8	Clinical diagnosis only (other than 5, 6 or 7)

Confirmation Unknown

Code	Description
9	Unknown whether or not microscopically confirmed; death certificate only

Coding Instructions continued on next page

Diagnostic Confirmation Coding Instructions for Hematopoietic and Lymphoid Neoplasms (9590/3-9993/3)

Note 1: Other than microscopic confirmation (1-4) taking priority over clinical diagnosis only (5-8), there is no priority order or hierarchy for coding the Diagnostic Confirmation for hematopoietic or lymphoid neoplasms. Most commonly the bone marrow provides several provisional diagnoses and the specific histologic type is determined through immunophenotyping or genetic testing.

Note 2: Use code 1 when **ONLY** the tissue, bone marrow, or blood was used to diagnose the specific histology. Do **not** use code 1 if the provisional diagnosis was based on tissue, bone marrow, or blood **and** the immunophenotyping or genetic testing on that same tissue, bone marrow, or blood identified the specific disease (see Code 3).

Note 3: If a neoplasm is originally confirmed by histology (code 1), and later has immunophenotyping, genetic testing or JAK2 which confirms a more specific neoplasm and there is no evidence of transformation, change the histology code to the more specific neoplasm and change the diagnostic confirmation to code 3.
- Do **not** use diagnostic confirmation code 3 for cases diagnosed prior to 1/1/2010.
    - *Example*: Patient presented to physician for annual exam and noted to be anemic. An electrophoresis was done, which showed the Bence-jones protein. A bone marrow biopsy was done which was non-diagnostic. Based on the electrophoresis, physician diagnosed patient with early stage multiple myeloma (diagnostic confirmation code 8). Patient monitored for several years and then was noted to have increasing bone pain. Skeletal survey was done which showed osseous lesions. A repeat bone marrow biopsy was done, which was diagnostic of plasma cell myeloma, confirmed by immunophenotyping (change diagnostic confirmation code to 3).

Code 1: Positive histology

Code 1 includes a provisional diagnosis and/or several provisional (differential) diagnoses which may or may not be preceded by approved ambiguous terminology.

Assign code 1 for
1. Tissue from lymph node(s), organ(s) or other tissue specimens from biopsy, frozen section, surgery, or autopsy
2. Bone marrow specimens (aspiration and biopsy)
3. Peripheral blood smear
    a. Can be used as a histological diagnosis for any of the hematopoietic histologies (9590/3-9993/3)
4. **Leukemia** only (9800/3-9948/3): positive histology also includes
    a. Complete blood count (CBC)
    b. White blood count (WBC)
    Note: A registrar may not abstract a hematopoietic neoplasm based on a CBC or WBC with abnormal counts alone. There must be a diagnosis of a reportable Heme neoplasm on the CBC or WBC report or a subsequent physician diagnosis based on the WBC or CBC.
    c. Immunophenotyping, genetic testing, or JAK2 **not** done **OR**
    d. Immunophenotyping, genetic testing, or JAK2 done but **negative** (non-diagnostic) for the neoplasm being abstracted
    Example: Acute myelomonocytic leukemia (9867/3) CD7-. CD7 is listed under Immunophenotyping for this histology and this case is CD7-, so diagnostic confirmation should be 1.
5. IHC studies are done, but the patient has a provisional (NOS) diagnosis or one or more provisional diagnoses.
6. Historical cases not already in the database if information states that there was histologic confirmation

Example: Patient diagnosed in 2012 with Stage III mantle cell lymphoma, diagnosed by LN biopsy. Mantle cell lymphoma not in the database. Now presents with DLBCL in 2015.

Code 2: Positive cytology

Code 2 is rarely used for Hematopoietic and Lymphoid neoplasms.

Assign code 2 for

1. Examination of fluid such as spinal fluid, peritoneal fluid, or pleural fluid
2. Paraffin block specimens from concentrated spinal fluid, peritoneal fluid, or pleural fluid
3. A specimen that fails to provide enough tissue to do a histologic examination - in this case, the report will be a cytology report rather than a pathology report

Code 3: Positive histology PLUS positive immunophenotyping or genetic testing

Code 3 can be used for cases diagnosed **2010+** with histologic confirmation (see code 1) **AND** immunophenotyping, genetic testing, or JAK2 confirmation

Note 1: While every attempt is made to keep the Hematopoietic database updated, it is impossible to keep the Hematopoietic database updated with all the immunophenotyping or genetics that can be done for a specific histology since clinical medicine continues to evolve. If immunophenotyping or genetics are used by the pathologist/managing physician to identify a **specific** neoplasm that are not included in the Hematopoietic database, and genetic testing and/or immunophenotyping are listed as Definitive Diagnostic methods for that histology, go ahead and use these.

Note 2: The following histologies are diagnosed based on immunophenotyping or genetics and therefore should only be diagnostic confirmation 3: 9806/3, 9807/3, 9808/3, 9809/3, 9812/3, 9813/3, 9814/3, 9815/3, 9816/3, 9817/3, 9818/3, 9819/3, 9865/3, 9866/3, 9869/3, 9871/3, 9877/3, 9878/3, 9879/3, 9896/3, 9897/3, 9911/3, 9912/3, 9965/3, 9966/3, 9967/3, 9968/3, 9986/3.

Note 3: The following histologies should never be assigned diagnostic confirmation 3 since they are non specific codes and neither genetic testing or immunophenotyping are listed as Definitive Diagnostic Methods for these histologies. If there is immunophenotyping or genetics available, then a more specific histology code may be able to be assigned: 9590/3, 9655/3, 9800/3, 9820/3, 9860/3, 9863/3, 9980/3, 9982/3, 9989/3, 9991/3.

Assign code 3 for

1. Cases with positive histology for the neoplasm being abstracted (including acceptable ambiguous terminology and provisional diagnosis) **AND** immunophenotyping, genetic testing, or JAK2 is listed in the Definitive Diagnosis in the Heme DB **AND** the testing
   a. Confirms the neoplasm **OR**
   b. Identifies a more specific histology (not preceded by ambiguous terminology)
      Note 1: Do not use code 3 for positive immunophenotyping or genetic testing identifying a more specific histology when preceded by ambiguous terminology.
      Note 2: Do not use code 3 for positive immunophenotyping or genetic testing identifying a more specific histology when the test result is preceded by "patchy weak staining."
   c. Peripheral blood smear followed by flow cytometry (most commonly done with CLL/SLL, 9823/3)

Note: Flow cytometry studies are normally done based on an abnormal blood smear. If unable to find documentation that a peripheral blood smear was done first, assume that it was and code 3

Example: Peripheral blood flow cytometry report: Flow cytometry express HLA-DR, CD5, CD19, moderate CD20, CD22, bright CD45, bright CD200 and exhibit lambda immunoglobin light chain restriction by intracellular staging. These cells lack expression of CD38. Taken together, these results demonstrate the presence of a clonal population of B-cell, immonphenotypically diagnostic of CLL/SLL

2. NOS histology diagnosed and not a provisional diagnosis and genetics/immunophenotyping was performed.

> **Example 1 (Identifying a more specific histology):** Bone marrow biopsy positive for acute myeloid leukemia (9861/3). Genetic testing positive for AML with inv (16) (p13.1q22) (9871/3). Code Diagnostic Confirmation code 3, positive histology and positive genetic testing, which identified a more specific histology.

> **Example 2 (Identifying a more specific histology):** Peripheral blood smear with lymphoblastic lymphoma (9671/3). Bone marrow biopsy with immunophenotyping showing CD5 negative and IgM positive, diagnosis Waldenstrom Macroglobulinemia (9761/3). Code Diagnostic Confirmation code 3, positive histology and positive immunophenotyping testing which identified a more specific histology.

> **Example 3 (Confirming the histologic diagnosis):** Bone marrow biopsy diagnosis is plasma cell dyscrasia. Peripheral blood smear is compatible with plasma cell leukemia. FISH and chromosome analysis revealed plasma cell myeloma. Both plasma cell leukemia and plasma cell myeloma are coded to the same ICD-O code, 9732/3, so there is only one disease process. The peripheral blood smear is histologic diagnosis for the plasma cell leukemia and FISH confirmed the diagnosis of multiple myeloma/plasma cell myeloma. Code Diagnostic Confirmation 3, positive histology and positive genetic testing.

> **Example 4 (Histologic confirmation plus genetic and immunophenotyping confirmation):** Patient diagnosed with CLL by CBC and flow cytometry that was positive for both the genetic and CD antigens (immunophenotyping) for CLL. A bone marrow biopsy not performed. Since this is leukemia, the CBC is histologic confirmation, so this patient had histologic confirmation, genetic, and immunophenotyping positive for CLL. Code Diagnostic Confirmation 3, positive histology and positive genetic testing/immunophenotyping.

> **Example 5 (Ambiguous terminology used with immunophenotyping)**: Bone marrow biopsy shows B lymphoblastic leukemia. Abnormal FISH results most likely represent a hyperdiploid clone. Code the histology to 9811 (B-ALL, NOS) and assign a diagnostic confirmation code of 1. Neither Diagnostic confirmation code 3 nor the more specific hyperdiploidy histology is coded because the associated FISH result is preceded by ambiguous terminology.

Code 4: Positive microscopic confirmation, method not specified
Code 4 is rarely used for Hematopoietic and Lymphoid neoplasms.
   1.   Assign code 4 when there is information that the diagnosis of cancer was microscopically confirmed, but the type of confirmation is unknown

Code 5: Positive laboratory test/marker study
Assign code 5 when the diagnosis of cancer is based on laboratory tests, tumor marker studies, genetics or immunophenotyping that are diagnostic for that specific cancer. Laboratory tests are listed under Definitive Diagnostic Methods in the Hematopoietic Database. Do not assign code 5 when there is histologic confirmation (See code 1).

> **Example 1:** CT scan consistent with plasma cell myeloma (9732/3). Twenty-four-hour urine protein elevated with the presence of Bence-Jones kappa. Assign code 5 because the diagnosis is based on the positive Bence-Jones and there is no histologic confirmation in this case. Bence-Jones protein is a lab test listed in the Heme DB as one of the definitive diagnostic methods for plasma cell myeloma.

Note: Do not use this code when a peripheral blood smear is done (which qualifies for a code 1) or a peripheral blood smear followed by flow cytometry (which qualifies for a code 3). Flow cytometry studies are normally done based on an abnormal peripheral blood smear. If unable to find documentation that a peripheral blood smear was done first, assume that it was and code 3

Code 6: Direct visualization without microscopic confirmation
Code 6 is rarely used for Hematopoietic and Lymphoid neoplasms.
Assign code 6 when
1. The operative report states the patient had lymphoma, but no biopsy or cytology was done
   a. Surgeon documents lymphoma but not tisse same was obtained
2. The diagnosis is determined by gross autopsy findings (no tissue or cytologic confirmation)

Code 7: Radiology and other imaging techniques without microscopic confirmation
Code 7 is rarely used for Hematopoietic and Lymphoid neoplasms.
Assign code 7 when
1. The diagnosis is confirmed by radiology or other imaging techniques only

   Example*:* Terminally ill patient who has a CT scan with the impression: suspicious for lymphoma. The patient refused further workup.

Code 8: Clinical diagnosis only (other than 5, 6, or 7)
Assign code 8 when
1. While clinical diagnosis is seldom used for solid tumors, it is a valid diagnostic method for certain hematopoietic neoplasms.
2. The Heme DB will list Clinical Diagnosis as the definitive diagnostic method for certain hematopoietic neoplasms. For these neoplasms, biopsy, immunophenotyping, and genetic testing do not confirm the neoplasm.
3. The diagnosis is determined based on the physician's clinical expertise, combined with the information from the biopsy, equivocal or negative tests, and the clinical symptoms. This is called a "diagnosis of exclusion" because the physician's judgment and the work-up literally exclude all other possible diagnoses, leaving one diagnosis. Ambiguous terminology may precede the diagnosis.

   Example: Bone marrow biopsy shows anemia NOS; physician notes states the patient's overall clinical presentation of hypercalcemia, fever, and anemia is consistent with Myelodysplastic Syndrome, unclassifiable (9989/3). Code Diagnostic Confirmation 8, clinical diagnosis only.

Code 9: Unknown whether or not microscopically confirmed; death certificate only
Assign code 9
1. When it is unknown if the diagnosis was confirmed microscopically
2. For death-certificate-only (DCO) cases
3. For historical cases not already in the registry database when there is no information available about the diagnostic confirmation
   Example: "History of follicular lymphoma in 2010, now presents with DLBCL." Follicular lymphoma not in the registry database. Assign diagnostic confirmation of 9 for the follicular lymphoma.

Transformations: Chronic Neoplasms and Acute Neoplasms

Transformations to

If a chronic neoplasm can transform to an acute/more severe neoplasm, the Heme DB will show the acute neoplasm in the "Transformations to" section. For example, if you search the Heme DB for chronic lymphocytic leukemia/small lymphocytic lymphoma (CLL/SLL) (9823/3), the "Transformations to" section shows that CLL/SLL transforms to diffuse large B-cell lymphoma (9680/3). That indicates CLL/SLL is a chronic neoplasm and diffuse large B-cell lymphoma is an acute neoplasm.

Transformations from

Information in this field is intendedoi to help registrars determine which histologies are chronic and which are acute. Acute neoplasms may have multiple histologies listed in the "Transformations from" field. Histologies listed in the "Transformations from" field are chronic. For example, in the Heme DB under plasma cell myeloma (9732/3), the "Transformations from" field lists solitary plasmacytoma of bone (9731/3) and extraosseous plasmacytoma (9734/3). That means that plasma cell myeloma (9732/3) is an acute neoplasm which could have transformed from the two listed plasmacytomas (9731/3 and 9734/3) which are chronic neoplasms.

See Rules M8-M13 for determination of single or multiple primaries involving cases noting both chronic and acute diagnoses.
The most common form of transformation is when a neoplasm progresses from chronic to acute; however, neoplasms may be diagnosed in an acute phase and transform to a less aggressive chronic phase after treatment. In these cases, it is important to determine if the patient received treatment for the acute neoplasm. If the patient was treated, abstract the chronic neoplasm as a second primary (see Rule M13). If the patient was not treated for the acute neoplasm, code only the acute neoplasm (see Rule M12). Follow back is definitely recommended to determine whether there was any further diagnostic workup that proved the acute diagnosis was incorrect or documentation that the acute diagnosis was provisional.

The inclusion of the terms "chronic" or "acute" in a neoplasm do not mean the neoplasm may transform. The terms "chronic" and "acute" refer to the indolent or aggressive nature of the neoplasm, respectively. The key to determining if the chronic/acute rules apply is following the information in the Heme database. If a neoplasm has transformations listed (either in "transformation to" or "transformation from"), then usually the chronic/acute rules apply. If no transformations are listed, then the chronic acute rules do not apply.
- Note: For cases involving DLBCL (9680/3), Rule M4 may apply first.

Steps for Using the Heme DB and Hematopoietic Coding Manual

Note: The search function for the Hematopoietic Database has recently changed. For most users, there will not be a noticeable difference. Information regarding the search function has been updated below.

Follow each step in the order listed

1. Identify the working (preliminary) **histology code(s)**
   a. Search the Heme DB using any of the methods below
      i. Search using a **unique word** in the diagnosis; for example, "precursor" if the diagnosis is precursor acute lymphoblastic leukemia
         - Avoid searching on general terms such as "leukemia" or "lymphoma." This type of search will return too many results.
      ii. Search on the **complete name** (diagnosis). For example, "acute myelomonocytic leukemia". Two different results will appear
         - 107 neoplasms match any term. The words may appear in any part of the entry (alternate names, abstractor notes, transformations, etc.)
         - 10 neoplasms match all terms. This is when all three words occur together
      iii. You can also search on **abbreviations** such as AMML for acute myelomonocytic leukemia, DLBCL for diffuse large B-cell lymphoma, or AML for acute myeloid leukemia.
   b. "Show Alternate Names": This box appears under the Search box. If this box is checked, the results will include an additional column that shows where alternate names include the words being search
   c. Search on histology code if desired, i.e., 9867/3.
   d. When multiple results are displayed, click on the desired term (e.g. acute myelomonocytic leukemia) to display the record.

2. Use the Multiple Primary Rules to determine the number **of primaries** using the working histology code(s)
   a. Start with rule M1, move through the rules in consecutive order and stop at the first rule that applies. The M rule references in the Heme DB are to be used as a guide only.
   b. Use the Hematopoietic Multiple Primaries Calculator in the Heme DB **only** when instructed by the rules in the Hematopoietic Manual.

3. Verify or revise the working histology code(s) using the Primary Site and Histology (PH) Rules
   a. When the PH rules lead you to a different histology code, enter that code in the Heme DB search box and display the record for that histology
   b. The PH rules referenced in the Heme DB are the most common rule(s) used to code Primary Site and Histology for the selected histology. More than one Module/PH Rule may be needed to code Primary Site and Histology.

4. Determine **primary site using the Primary Site and Histology Rules in this manual** *(see Note on next page)*
   a. See Primary Site Coding Instructions.
   b. For certain histologies, only one primary site code is displayed in the Heme DB
      i. The primary site code displayed under **Primary Site(s)** is the **only** site code to be used for that histology

ii. All leukemia, myelodysplastic syndromes and chronic myeloproliferative diseases are assigned primary site bone marrow C421. There are no exceptions. This rule was implemented in ICD-O-2 in 1992.

c. When there is no primary site code listed under **Primary Site(s)** in the Heme DB
    i. Review the **Primary Site Text** field for common primary sites or other primary site instructions and rules.
    ii. Search the Hematopoietic Manual and/or database to find applicable modules.
    iii. Read the **Abstractor Notes** to find other information regarding sites of involvement for stages II, III, and IV lymphomas. Use the **Abstractor Notes** to confirm that the **site/histology combination indicated by the involvement documented in the medical record is probable**. You may also seek a physician's help in determining the primary site.

***Note*:** The PH rules in this manual are organized in Modules
Use Modules 1-9 (PH1-PH31) to help determine primary site and histology.
Modules 1-6 are histology specific.
The remaining are:

Module 7: All lymphomas, extraosseous plasmacytomas, histiocytic and dendritic cell neoplasms, mast cell sarcoma, heavy chain disease, myeloid sarcoma and post-transplant lymphoproliferative disease (PTLD)
Module 8: All hematopoietic neoplasms (NOS and more specified histologies)
Module 9: All hematopoietic neoplasms

5. Determine the grade **(applicable only for cases diagnosed 2010-2017)**
    Note: Grade is no longer collected for cases diagnosed 1/1/2018 and forward
    a. See the Grade field in the Heme DB
    b. See the Grade rules in the manual when grade cannot be coded using the Heme DB

First Course of Treatment for Hematopoietic Neoplasms

Treatment varies by the type of hematopoietic neoplasm.

Lymphomas can be treated with surgery (extranodal or nodal), chemotherapy, and radiation, while leukemias are often treated with chemotherapy and bone marrow transplants. In addition, immunotherapy (biologic response modifiers) and hormones are frequently used to treat hematopoietic neoplasms. Also, for many of these diseases, the principal treatment is either supportive care, observation, or another type of treatment that does not meet the usual definition of treatment that "modifies, controls, removes or destroys proliferating cancer tissue."

Starting in 2010, some neoplasms that have undergone a transformation are reported as new primaries (see rules M10-M13 for specific instructions), and treatment can affect this. For purposes of determining multiple primaries in the Hematopoietic diseases, "treatment" refers to the patient receiving at least one form of cancer-directed treatment such as surgery or systemic therapy, not passive treatment plans like supportive care or observation.

Coding Instructions
1. When there is only one neoplasm (one primary), use the documented first course of therapy (treatment plan) from the medical record. First course of therapy ends when the treatment plan is completed, no matter how long it takes to complete the plan.
2. Chronic neoplasm followed by an acute neoplasm
   a. The presence/absence of treatment **DOES NOT** affect the number of primaries when a chronic neoplasm transforms to an acute neoplasm
      Example: Patient diagnosed in 2000 with follicular lymphoma. Patient refused treatment. Patient returns in 2014 with DLBCL. Abstract the DLBCL as a second primary even though there was no treatment for the follicular lymphoma.
   b. First course of treatment for the chronic neoplasm may or may not be completed when the chronic neoplasm transforms to the acute neoplasm.
3. Acute neoplasm followed by a chronic neoplasm
   a. The presence/absence of treatment **DOES** impact the determination of the number of primaries when the acute neoplasm reverts to a chronic neoplasm (see Rules M12 and M13).
   b. The planned first course of therapy may not have been completed when a biopsy/pathologic specimen shows only chronic neoplasm after an initial diagnosis of an acute neoplasm.
   c. The patient may have completed the first course of treatment and have been cancer free (clinically, no evidence of the acute neoplasm) for an interim when diagnosed with the chronic neoplasm.
   d. The patient may not have been cancer free, but completed the first course of treatment and biopsy/pathology shows only chronic neoplasm.

Code the treatment on both abstracts when a patient has multiple primaries and the treatment given for one primary also affects/treats the other primary.

Example: Patient is diagnosed in May 2014 with both multiple myeloma (9732/3) and mantle cell lymphoma (9673/3), which are separate primaries per rule M15. The oncologist states she began Velcade chemotherapy for the lymphoma. Velcade would affect both primaries, so it should be coded on both abstracts.

Reporting Phlebotomy, Blood-Thinners/Anti-Clotting Medications, and Transfusions as Other Therapy (NAACCR Item #1420)

Note: These instructions apply to cases diagnosed 2010 and forward.

- Do **not** collect **blood transfusions** (whole blood, platelets, etc.) as treatment. Blood transfusions are widely used to treat anemia and it is not possible to collect this procedure in a meaningful way.

- Collect **phlebotomy** for polycythemia vera (9950/3) ONLY.

- Collect **blood-thinners** and/or **anti-clotting agents** for essential thrombocythemia (9962/3) **ONLY**

  - Previously, instructions stated that blood thinners and/or anti-clotting agents were also collected for the histologies listed below. Review of treatment protocols for these histologies shows that these are no longer treatment for these histologies. This change is effective for cases diagnosed 1/1/2010 and forward; however, there is no requirement to change cases already abstracted
    - 9740/3 Mast cell sarcoma
    - 9741/3 Systemic mastocytosis with an associated hematological neoplasm
    - 9742/3 Mast cell leukemia
    - 9875/3 Chronic myeloid leukemia *BCR-ABL1*-positive
    - 9950/3 Polycythemia vera
    - 9961/3 Primary myelofibrosis
    - 9963/3 Chronic neutrophilic leukemia
    - 9975/3 Myelodysplastic/myeloproliferative neoplasm, unclassifiable

Donor Leukocyte Infusions

The use of donor leukocyte infusions for treatment of hematopoietic neoplasms, specifically leukemias, is increasing. Abstract as immunotherapy when a reportable hematopoietic neoplasm is treated with donor leukocyte infusion, even if it is not listed in the treatment section of the Heme DB for the specific neoplasm.

Case Reportability Instructions

Note: Make inquiries to the physician's office to confirm the diagnosis whenever possible. Unless that type of follow-back is done, hematopoietic cases will be under-reported.

1. Search the **Heme DB** to determine case reportability.

2. Report all cases with morphology codes **9590-9993** with a **/3** behavior.
    Note : Report the case and change the behavior code to a /0 or /1 in the rare instances of a benign or borderline hematopoietic neoplasm occurring in the brain and/or CNS diagnosed 1/1/2004 or later.

3. Report hematopoietic and lymphoid neoplasms with morphology codes **9590-9993** listed in ICD-O as **/1** that are **described as malignant** by a physician. Apply the matrix rule and change the behavior code to /3.
    Note: Do **not** report in situ (/2) lymphomas.

4. Report the case when the diagnosis of a hematopoietic neoplasm is preceded by one or more of the **ambiguous terms listed below:**
    a. **This instruction pertains to reportability and casefinding only. See the [Histology Coding Instructions, #3-5](#) for instructions on assigning histology with ambiguous terminology.**
       *   Apparently
       *   Appears
       *   Comparable with
       *   Compatible with
       *   Consistent with
       *   Favor(s)
       *   Malignant appearing
       *   Most likely
       *   Presumed
       *   Probable
       *   Suspect(ed)
       *   Suspicious (for)
       *   Typical (of)
    Note 1: Use these terms when screening all reports other than cytology and tumor markers.
    Note 2: Report cases that use only the words on the list or an equivalent word such as "favored" rather than "favor(s)".   Do not substitute synonyms such as "supposed" for "presumed" or "equal" for "comparable with." Do not substitute "likely" for "most likely." See [SEER coding manual](#) - Reportability section.
    Note 3: Accept the reportable term and report the case when one part of the medical record uses a reportable ambiguous term such as "apparently" and another section of the medical record(s) uses a term that is not on the reportable list.
    Note 4: Follow back is recommended for diagnoses based on ambiguous terminology to see if the diagnosis has been confirmed or proven to be incorrect (see note 5).
    Note 5: Do **not** report the case when biopsy or physician's statement confirms a non-reportable condition or proves the ambiguous diagnosis is **wrong.**

Example: CT scan shows enlarged lymph nodes suspicious for lymphoma. Subsequent biopsies of the lymph nodes thought to be involved with a neoplasm are negative for malignancy. The pathology is more reliable than the scan; the negative biopsy proves that the ambiguous diagnosis was wrong. Do **not** report the case.

Note 6: Do **not** report cases diagnosed only by ambiguous **cytology** (cytology diagnosis preceded by ambiguous term).

Example: Parotid ultrasound guided FNA: consistent with non-Hodgkin's lymphoma. This case was diagnosed based on cytology/fine needle aspiration (FNA) preceded by ambiguous terminology (**consistent with**). Do not report this case based on ambiguous cytology.

5. Report the case when the patient is **treated** for a reportable neoplasm.
   Note 1: Report the case even if the diagnostic tests are inconclusive, equivocal, or negative.
   Note 2: For treatment information see the National Cancer Institute's Physicians' Data Query (PDQ) website at http://www.cancer.gov/cancertopics/pdq or the SEER*Rx Antineoplastic Drugs Database.

6. Report the case when there is a **clinical diagnosis** (physician's statement) of reportable hematopoietic or lymphoid neoplasm.
   Note 1: The clinical diagnosis may be a final diagnosis found within the medical record or recorded on a scan (CT, MRI for example).
   Note 2: Report the case even if the diagnostic tests are equivocal. A number of hematopoietic neoplasms are "diagnoses of exclusion" in which the diagnostic tests are equivocal and the physician makes the clinical diagnosis based on the equivocal tests and the clinical picture. See the Heme DB for definitive diagnostic methods for the specific neoplasm being abstracted.

7. Report the case when a reportable diagnosis appears in any text or report described as a **Definitive Diagnostic Method** in the Heme DB.
   Note: Definitive diagnostic methods differ depending upon the histology. See the Heme DB for details.

Multiple Primary Rules

General Instructions for Multiple Primary Rules

1. Start with M1 for each case, move through the rules and stop at the first rule that applies. Use the M rule references in the Heme DB as a guide only.
2. Within these rules, the term "chronic neoplasm" means that a neoplasm has the potential to transform into another, more acute neoplasm. When the chronic neoplasm is displayed in the Heme DB, the "Transformations to" field will show the acute neoplasm.
   Example: Essential thrombocythemia (9962/3). Under the "Transformations to" field, all the acute myeloid leukemias will be listed. In this case, the essential thrombocythemia is the chronic disease while the AML's are the acute diseases.
3. The registrar must recognize that during the diagnostic workup the physician may start with a provisional or several provisional (differential) diagnoses (NOS) and as testing is completed, a more specific diagnosis may be identified. These diagnoses are not multiple primaries; they represent steps in the diagnostic work-up.
4. The Heme DB Multiple Primaries Calculator is to be used **only** when the rules instruct you to do so.

Rule M1   Abstract a single primary* when **minimal information** is available (such as a death certificate only [DCO] case or a pathology-report-only case).

Rule M2   Abstract a single primary* when there is a single histology.
   Exception: Abstract multiple primaries when a nodal MALT (C770-779, 9699/3) occurs before or after an extranodal MALT (all other sites, 9699/3).
      Note: These are two distinct lymphomas that have the same histology code.
      Example: Marginal zone lymphoma (MALT) of right inguinal node (C774) diagnosed in 2013. Stage I with no recurrence. In March 2018, diagnosed with Stage III ocular marginal zone lymphoma. Abstract a new primary.
   Note 1: Bilateral involvement of lymph nodes and/or organs with a single histology is a single primary.
   Note 2: Recurrence of the same histology is always the same primary (timing is not relevant).
   Note 3: A single histology is diagnosed by the definitive diagnostic method as defined in the Heme DB. For example, the patient had several provisional diagnoses but the definitive diagnostic method identified a single histology. Abstract as a single primary.
   Example 1:   The diagnosis is multiple myeloma (9732/3). Abstract as a single primary.
   Example 2: Right and left breast both involved with diffuse large B-cell lymphoma (9680/3). Abstract as a single primary.

Rule M3   Abstract a single primary* when a **sarcoma** is diagnosed simultaneously or after a **leukemia of the same lineage**
   - **Mast cell sarcoma (9740/3)** diagnosed simultaneously with or after **mast cell leukemia (9742/3)**
   - **Myeloid sarcoma (9930/3)** diagnosed simultaneously with or after **acute myeloid leukemia (9861/3)** or another leukemia of the myeloid lineage **(9840/3, 9865/3-9867/3, 9869/3-9874/3, 9877/3-9879/3, 9891/3, 9895/3-9898/3, 9910/3-9912/3, and 9931/3)**
     - *Exception*: **Chronic myeloid leukemia (CML) codes: 9863/3, 9875/3, 9876/3 are not classified as leukemias of the same lineage as myeloid sarcoma**
      Note 1:   These sarcomas are solid manifestations of the associated leukemias. For example, when acute myeloid leukemia and myeloid sarcoma are diagnosed simultaneously, the myeloid sarcoma is the result of myeloid cells migrating from the bone marrow or blood into tissue. It is part of the disease process for the acute leukemia.
      Note 2:   See [Module 5](#) (PH9 and PH10) for information regarding primary site and histology
      Example: Acute myeloid leukemia (AML) diagnosed in 2012. In 2013, a soft tissue mass was biopsied and the pathology report final diagnosis was myeloid sarcoma. The myeloid sarcoma is a manifestation of the AML. The malignant myeloid cells are present in the blood. One of the malignant myeloid

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* Prepare one abstract. Use the primary site and histology coding rules to assign the appropriate primary site and histology codes.

cells lodged in a capillary and grew in the tissue forming a myeloid cell soft tissue mass (referred to as myeloid sarcoma). This is not a second primary; it is a direct result of the myeloid cells circulating in the blood. It is not unlike a solid tumor in the colon metastasizing to the liver.

Rule M4   Abstract a single primary* when **two or more types of non-Hodgkin lymphoma** are simultaneously present in the **same anatomic location(s)**, such as the same lymph node or lymph node region(s), the same organ(s), and/or the same tissue(s).

Note 1:   For the purpose of using the rules, a non-Hodgkin lymphoma is any lymphoma (including the leukemia/lymphomas) not stated to be Hodgkin lymphoma, NOS or a type of Hodgkin lymphoma.
  o   Hodgkin lymphomas are: 9650/-9653/3, 9655/3, 9659/3, 9663/3

Note 2:   Do **not** use this rule for cutaneous lymphomas. Simultaneous occurrences of two or more cutaneous lymphomas, other than an NOS and more specific, are extremely rare. If there are simultaneous cutaneous lymphomas, **DO NOT** use this rule; proceed to **rule M15** (use Multiple Primaries Calculator).

Note 3:   When the neoplasm is in an early stage, the involved lymph node(s) will be in the same region as defined by ICD-O codes. See [Appendix C] for help identifying lymph node names, chains, regions and codes.

Note 4:   When the neoplasm is in a more advanced stage, both non-Hodgkin lymphomas may be present in multiple lymph nodes in the same regions as defined by ICD-O, or in an organ and that organ's regional lymph nodes, or in multiple organs.
  •   Although the combination of two or more types of non-Hodgkin lymphoma must be present in each of the involved sites in order to abstract as a single primary, it is not required that all involved organs be biopsied. If the physician biopsies one of the involved sites and diagnoses the combination of two or more types of non-Hodgkin lymphoma, assume that all of the nodes, tissues, and/or organs and associated lymph nodes are involved with the same combination of non-Hodgkin lymphomas.

Note 5:   Do **not** query the Heme DB Multiple Primaries Calculator in this situation.

Note 6:   See Rules [PH11] and [PH15] for assigning primary site and histology.

Example: Biopsy of cervical lymph node shows follicular lymphoma and DLBCL. Abstract as a single primary.

Rule M5   Abstract a single primary* when both **Hodgkin and non-Hodgkin lymphoma** are simultaneously present in the **same anatomic location(s)**, such as the same lymph node or same lymph node region(s), the same organ(s), and/or the same tissue(s).

Note 1:   For the purpose of using the rules, a non-Hodgkin lymphoma is any lymphoma (including the leukemia/lymphomas) not stated to be Hodgkin lymphoma, NOS or a type of Hodgkin lymphoma.
  o   Hodgkin lymphomas are: 9650/-9653/3, 9655/3, 9659/3, 9663/3

Note 2:   Do **not** query the Heme DB Multiple Primaries Calculator in this situation

Note 3:   When the neoplasm is in an early stage, the involved lymph node(s) will be in the same region as defined by ICD-O codes. See [Appendix C] for help identifying lymph node names, chains, regions and codes.

Note 4:   When the neoplasm is in a more advanced stage, both Hodgkin and non-Hodgkin lymphomas may be present in multiple lymph node regions as defined by ICD-O, or in an organ and that organ's regional lymph nodes, or in multiple organs.
  •   Although both Hodgkin and non-Hodgkin lymphomas must be present in each of the involved sites in order to abstract as a single primary, it is not required that all involved organs be biopsied. If the physician biopsies one of the involved sites and diagnoses the combination Hodgkin and non-Hodgkin lymphomas, assume that all of the nodes, tissue, and/or organs are involved with the combination of Hodgkin and non-Hodgkin lymphomas.

Note 5:   See [PH14] for information regarding primary site and histology

Example: Biopsy of cervical lymph node shows Hodgkin and non-Hodgkin lymphomas. Abstract as a single primary.

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* Prepare one abstract. Use the primary site and histology coding rules to assign the appropriate primary site and histology codes.

Rule M6   Abstract as multiple primaries** when **Hodgkin lymphoma** is diagnosed in one anatomic location and **non-Hodgkin lymphoma** is diagnosed in another anatomic location.

> *Note:* For the purpose of using the rules, a non-Hodgkin lymphoma is any lymphoma (including the leukemia/lymphomas) not stated to be Hodgkin lymphoma, NOS or a type of Hodgkin lymphoma.
> - o Hodgkin lymphomas are: 9650/-9653/3, 9655/3, 9659/3, 9663/3
>
> *Example 1:* Patient diagnosed with HL in the cervical lymph nodes and with NHL in the GI tract. Abstract as multiple primaries.
> *Example 2:* Hodgkin lymphoma in a mediastinal mass and non-Hodgkin lymphoma in the tonsil. Abstract as multiple primaries.
> *Example 3*: NHL in a right cervical node and HL in a left cervical node. Abstract as multiple primaries. Left and right node chains are separate regions. See Appendix C.

Rule M7   Abstract as a single primary* when a more specific histology is diagnosed after an NOS **ONLY** when the Heme DB Multiple Primaries Calculator confirms that the NOS and the more specific histology are the same primary.

> *Note 1:* The more specific histology confirmation does not have to occur in the same anatomic location.
> *Note 2*: There are no time restrictions on these diagnoses; the interval between the NOS and the more specific histology does not affect this rule.
> *Note 3*: The Heme DB Multiple Primaries Calculator will identify these histologies as a same primary.
> *Note 4*: Change the histology code on the original abstract to the more specific histology when the original diagnosis is in your registry database. Use previous editions of ICD-O (i.e. ICD-O-1, ICD-O-2) or the Heme DB to assign the code applicable to the year of diagnosis for the more specific histology.
> *Example 1:* Patient diagnosed with non-Hodgkin lymphoma (9591/3) in 2003. Patient returns in 2013 with a diagnosis of CD30 positive lymphoproliferative disorder (9718/3). 9591/3 is an NOS histology and 9718/3 is more specific. Per the Multiple Primaries Calculator, 9591/3 and 9718/3 are the same primary. 9718/3 was a valid code in 2003; change the histology to 9718/3 for the 2003 diagnosis.
> *Example 2:* CT guided core biopsy pelvic mass positive for lymphoma (9590/3) diagnosed in 2008. In November 2014, lymph node biopsy shows T-cell/histiocyte rich large B-cell lymphoma (9688/3). 9590/3 is an NOS histology and 9688/3 is more specific. Per the Multiple Primaries Calculator, 9590/3 and 9688/3 are the same primary. Per the Hematopoietic Database, 9688/3 was not valid until 2010. Since the original diagnosis was in 2008, 9688/3 cannot be used. Keep the original code of 9590/3.

Rule M8   Abstract as a single primary* and code the acute neoplasm when both a **chronic** and an **acute** neoplasm are diagnosed **simultaneously or within 21 days AND** there is documentation of **only one** positive biopsy (bone marrow biopsy, lymph node biopsy, or tissue biopsy).

> *Note 1:* When these diagnoses happen within 21 days, it is most likely that one diagnosis was provisional and the biopsy identified the correct diagnosis. Abstract the acute neoplasm.
> *Note 2*: "Transformations to" (acute neoplasms) and "Transformations from" (chronic neoplasms) are defined for each applicable histology in the database. If no "Transformation to" or "Transformation from" is listed, or the neoplasms in question are not listed as "Transformations to" or "Transformations from" each other, then this rule does not apply, go to Rule M14.

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* Prepare one abstract. Use the primary site and histology coding rules to assign the appropriate primary site and histology codes.
** Prepare two or more abstracts. Use the primary site and histology coding rules to assign the appropriate primary site and histology codes to each case abstracted.

Rule M9   Abstract a single primary[*] and **code the later diagnosis** when both a **chronic** and an **acute** neoplasm are diagnosed **simultaneously or within 21 days AND** there is **no available documentation** on biopsy (bone marrow biopsy, lymph node biopsy, or tissue biopsy.) The later diagnosis could be either the chronic or the acute neoplasm.

Note 1:   The two diagnoses are likely the result of an ongoing diagnostic work-up. The later diagnosis is usually based on all of the test results and correlated with any clinical information.

Note 2:   "Transformations to" (acute neoplasms) and "Transformations from" (chronic neoplasms) are defined for each applicable histology in the database. If no "Transformation to" or "Transformation from" is listed, or the neoplasms in question are not listed as "Transformations to" or "Transformations from" each other, then this rule does not apply, go to Rule M14.

Rule M10   Abstract as multiple primaries[**] when a neoplasm is **originally diagnosed** as a **chronic** neoplasm **AND** there is a **second diagnosis** of an **acute** neoplasm **more than 21 days** after the chronic diagnosis.

For plasmacytoma (9731, 9734) and plasma cell myeloma (9732): This rule would only apply if the initial workup was completed and a single plasmacytoma was diagnosed. If plasma cell myeloma is diagnosed after the initial workup and treatment, then this rule would be applicable and the multiple myeloma would be a second primary.

Note 1:   The presence of multiple plasmacytomas is diagnostic of multiple myeloma, see Hematopoietic Database, 9732/3.

Note 2:   **This is a change from the pre-2010 rules**.

Note 3:   "Transformations to" (acute neoplasms) and "Transformations from" (chronic neoplasms) are defined for each applicable histology in the database. If no "Transformation to" or "Transformation from" is listed, or the neoplasms in question are not listed as "Transformations to" or "Transformations from" each other, then this rule does not apply, go to Rule M14.

Example: Patient was diagnosed with MDS, unclassifiable in 2010. The patient presents in 2013 with a diagnosis of acute myeloid leukemia (AML) (9861/3). The transformation paragraph in the Heme DB says MDS (chronic neoplasm) transforms to AML (acute neoplasm). Because the chronic neoplasm (MDS) and the acute neoplasm (AML) are diagnosed more than 21 days apart, abstract the MDS and the AML (9861/3) as multiple primaries.

Rule M11   Abstract as multiple primaries[**] when both a **chronic** and an **acute** neoplasm are diagnosed **simultaneously or within 21 days AND** there is **documentation of two biopsies:** bone marrow , lymph node, or tissue: one confirming the **chronic** neoplasm and another confirming the **acute** neoplasm.

Exception for plasmacytoma (9731, 9734) and plasma cell myeloma (9732): This rule does not apply. The presence of the plasmacytomas and a diagnosis of plasma cell myeloma diagnosed at the same time (simultaneously) or during the initial workup, is evidence of advanced disease. Abstract one primary, plasma cell myeloma, 9732/3.

Note: "Transformations to" (acute neoplasms) and "Transformations from" (chronic neoplasms) are defined for each applicable histology in the database. If no "Transformation to" or "Transformation from" is listed, or the neoplasms in question are not listed as "Transformations to" or "Transformations from" each other, then this rule does not apply, go to Rule M14.

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[*] Prepare one abstract. Use the primary site and histology coding rules to assign the appropriate primary site and histology codes.

[**] Prepare two or more abstracts. Use the primary site and histology coding rules to assign the appropriate primary site and histology codes to each case abstracted.

Rule M12   Abstract a single primary* when a neoplasm is **originally diagnosed as acute AND reverts** to a related **chronic** neoplasm more than 21 days after the acute **AND** there is no confirmation available that the patient has been treated for the acute neoplasm.

    Note 1: If the two diagnoses happen within 21 days, see Rules M8-M11.

    Note 2: When the chronic diagnosis occurs more than 21 days after the original diagnosis of the acute neoplasm, it is important to follow-back to obtain information on treatment or a subsequent bone marrow biopsy that negates the diagnosis of the acute neoplasm.

    Note 3:   "Transformations to" (acute neoplasms) and "Transformations from" (chronic neoplasms) are defined for each applicable histology in the database. If no "Transformation to" or "Transformation from" is listed, or the neoplasms in question are not listed as "Transformations to" or "Transformations from" each other, then this rule does not apply, go to Rule M14.

    Example: 3/16/2013 biopsy of cervical nodes positive for diffuse large B-cell lymphoma (DLBCL) (9680/3). 4/18/2013 bone marrow shows follicular lymphoma (9690/3). No treatment given between the diagnoses of acute neoplasm (DLBCL) and chronic (follicular). Abstract one primary, DLBCL (9680/3).

Rule M13   Abstract multiple primaries** when a neoplasm is **originally** diagnosed as **acute AND reverts** to a **chronic** neoplasm **after treatment**.

    Exception: This does not apply to plasmacytoma(s) (9731/3, 9734/3) occurring after a diagnosis of plasma cell myeloma (9732/3). The presence of the plasmacytomas after a diagnosis of plasma cell myeloma is evidence of advanced disease and not a separate primary. Abstract one primary, plasma cell myeloma, 9732/3.

    Note 1:   Only abstract as multiple primaries when the patient has been treated for the acute neoplasm.

    Example: Patient was diagnosed in 2009 with AML, NOS (9861/3). The patient was treated with chemotherapy and a subsequent stem cell transplant. On 2/25/2013 a bone marrow biopsy was positive for myelodysplastic syndrome. Abstract a second primary with the histology MDS, unclassifiable (9989/3).

    Note 2:   Apply this rule when treatment for the acute neoplasm is given, even when all planned treatment is not completed.

    Example: Patient diagnosed with AML (9861/3). Plan of treatment chemotherapy. If remission achieved, followed by bone marrow transplant. After chemotherapy, bone marrow biopsy is done and shows a complete remission regarding the AML, but the bone marrow shows MDS, unclassifiable (9989/3). The MDS is a second primary even though the planned first course of treatment was not completed prior to the diagnosis of the MDS.

    Note 3:   The rules regarding first course of treatment are not the same for Solid Tumors and Hematopoietic. Do not apply the Note 2 to Solid Tumors.

    Note 4:   "Transformations to" (acute neoplasms) and "Transformations from" (chronic neoplasms) are defined for each applicable histology in the database. If no "Transformation to" or "Transformation from" is listed, or the neoplasms in question are not listed as "Transformations to" or "Transformations from" each other, then this rule does not apply, go to Rule M14.

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* Prepare one abstract. Use the primary site and histology coding rules to assign the appropriate primary site and histology codes.

** Prepare two or more abstracts. Use the primary site and histology coding rules to assign the appropriate primary site and histology codes to each case abstracted.

Rule M14   Abstract a single primary* when post-transplant lymphoproliferative disorder is diagnosed **simultaneously** with any B-cell lymphoma, T-cell lymphoma, Hodgkin lymphoma or plasmacytoma/myeloma.
Note 1: This rules applies to post-transplant lymphoproliferative disorders, which include, but are not limited to monomorphic PTLD, Classic Hodgkin Lymphoma-PTLD Type, Burkitt type PTLD.
Note 2: See Rule [PH1](#) for information regarding histology and Module 7 for assigning primary site.
Note 3: This rule does not apply to **polymorphic PTLD** (PTLD without an accompanying Hematopoietic neoplasm). See 9971/3 (2010-2020, 2025+) and 9971/1 (2021-2024) in the Hematopoietic Database for information on coding polymorphic PTLD.

Rule M15   Use the Heme DB Multiple Primaries Calculator to determine the number of primaries for all cases that do not meet the criteria of M1-M14.
Example: Polycythemia vera (PV) diagnosed in 2001, receiving anagrelide. Increasing leukocytosis seen, bone marrow biopsy done in 2013 showing primary myelofibrosis (PMF) with myeloid metaplasia. No rule in M1-M14 applies. Abstract multiple primaries because the Multiple Primaries Calculator shows that PV (9950/3) and PMF (9961/3) are separate primaries.

This is the end of the rules for determining the number of primaries.

Primary Site Coding Instructions

Instructions for assigning primary site have been added to this manual. These instructions correspond to the PH rules and to information in the Heme DB and apply to cases diagnosed 2010 and forward. The primary site code assignments have not changed.

1. Use these instructions, the PH Rules, and the Heme DB to code primary site.
2. The following two primary sites are not to be used for hematopoietic neoplasms.
    a. C423-Reticuloendothelial system, NOS
    b. C424-Hematopoietic system, NOS
3. Refer to two fields in the Heme DB for primary site instructions:
    a. Primary site: When applicable, a specific site (topography) code(s) will be listed.
    b. Primary site text: This field provides additional information on assigning primary site. Information on common primary sites (when applicable) has been moved from the Abstractor Notes to this field.
        Example 1: Histology 9800/3. Primary site field has "C421." Primary site text field has "Primary site must be bone marrow (C421)." For this histology, the primary site is C421 for all cases with this histology. There are no exceptions.
        Example 2: Histology 9650/3. Primary site field has "C770-C779." Primary site text field has "Lymph nodes (C770-C779) are the usual primary sites; however, involvement in other sites is possible. If you have confirmation that the only site is something other than the lymph nodes, then code to that primary site. See also Module 7." For this histology, the preferred primary sites are the lymph nodes; however, other sites are possible, but rare.

4. Code **primary site** using
    *   Scans
    *   Medical record documentation
    *   Pathology report
    *   Heme DB
    Note 1: Do not simply code the site of a lymph node biopsy; use the information available from scan to determine the correct primary site.
    Note 2: There is no hierarchy among the items on this list.
    Note 3: For hematopoietic neoplasms, the pathology report is not the default for determining the primary site, especially for lymphoma. The standard for determining primary site differs depending upon the specific histology.
    Note 4: If a hematopoietic neoplasm is diagnosed by peripheral blood smear and no other information is available, assign the primary site as bone marrow (C421). (See Rule PH26, Note 2).

5. Secondary involvement of distant lymph nodes (for an extranodal lymphoma), bone marrow, liver, spleen or CNS are included in the stage fields only. This secondary involvement excludes rare primary lymphoid neoplasms of spleen, multifocal lung involvement, liver or CNS (see PH Rules). Secondary involvement of distant site(s) is disregarded for the purpose of coding primary site. For lymphoid neoplasms, this secondary or distant involvement is akin to metastasis for solid tumors and does not alter the primary site assigned by the physician or determined using the PH Rules.

6. Code the primary site as indicated below for the following histologies.

   A. **Primary site C379 (Thymus) or C383 (Mediastinum, NOS).** Assign primary site to C379 or C383 when the histology is:

   9679/3-Primary mediastinal (<u>thymic</u>) large B-cell lymphoma
   Note: **Do not code this histology** based only on mediastinal involvement. Only assign this histology code when the diagnosis is stated as "primary mediastinal" large B-cell lymphoma.

   B. **Primary site C400-C419 (Bone).** The following histology is <u>always</u> coded to primary site C400-C419:

   9731/3-Solitary plasmacytoma of bone
   Note: 9731/3 for plasmacytomas of the bone. If there is an extramedullary plasmacytoma (not occurring in bone) see histology 9734/3. (See also <u>PH3</u> & <u>PH4</u>).

   C. **Primary site C420 (Blood).** Assign primary site to C420 (Blood) when the histology is

   9761/3-Waldenstrom Macroglobulinemia (9761/3) (See also Rules <u>PH16</u> & <u>PH17</u>)
   Note 1: This rule is effective for cases diagnosed 2010-2017 only.
   Note 2: For cases diagnosed 2018 and forward, the default primary site for 9761/3 has changed from C420 to C421. (See D).

   D. **Primary site C421 (Bone marrow).** Assign primary site C421 (Bone marrow) when the histology is:

   9732/3-Plasma cell myeloma
   9741/3-Systemic mastocytosis with an associated hematological neoplasm
   9742/3-Mast cell leukemia
   9761/3-Waldenstrom Macroglobulinemia **(for cases diagnosed 1/1/2018 and forward)**
   9800/3-Leukemia, NOS
   9801/3-Acute leukemia, NOS
   9806/3-Mixed-phenotype acute leukemia with t(9;22)(q34.1;q11.2); BCR-ABL1
   9807/3-Mixed-phenotype acute leukemia with t(v;11q23.3); *KMT2A*-rearranged
   9808/3- Mixed-phenotype acute leukemia, B/myeloid, not otherwise specified
   9809/3-Mixed-phenotype acute leukemia, T/myeloid, not otherwise specified
   9820/3-Lymphoid leukemia, NOS
   9826/3-Burkitt cell leukemia (2010-2020, see code 9687 for 2021+)
   9831/3-T-cell large granular lymphocytic leukemia
   9832-3-Prolymphocytic leukemia, NOS
   9833/3-B-cell prolymphocytic leukemia
   9834/3-T-cell prolymphocytic leukemia
   9840/3-Pure erythroid leukemia
   9860/3-Myeloid leukemia
   9861/3-Acute myeloid leukemia, NOS
   9863/3-Chronic myeloid leukemia

9865/3-Acute myeloid leukemia with t(6;9)(p23;q34.1) *DEK-NUP214*
9866/3-Acute promyelocytic leukemia with *PML-RARA*
9867/3-Acute myelomonocytic leukemia
9869/3-Acute myeloid leukemia with inv(3)(q21.3q26.2) or t(3;3)(q21.3;q26.2); *GATA2, MECOM*
9870/3-Acute basophilic leukemia
9871/3-Acute myeloid leukemia with inv(16)(p13.1q22) or t(16;16)(p13.1;q22); *CBFB-MYH11*
9872/3-Acute myeloid leukemia with minimal differentiation
9873/3-Acute myeloid leukemia without maturation
9874/3-Acute myeloid leukemia with maturation
9875/3-Chronic myeloid leukemia, *BCR-ABL1*-positive
9876/3-Atypical chronic myeloid leukemia, *BCR-ABL1*-negative
9877/3-Acute myeloid leukemia with mutated *NPM1* (2021+)
9878/3-Acute myeloid leukemia with Biallelic mutation of *CEBPA* (2021+)
9879/3-Acute myeloid leukemia with mutated *RUNX1* (2021+)
9891/3-Acute monoblastic and monocytic leukemia
9895/3-Acute myeloid leukemia with myelodysplasia-related changes
9896/3- Acute myeloid leukemia with t(8;21)(q22;q22.1) *RUNX1-RUNX1T1*
9897/3-Acute myeloid leukemia with t(9;11)(p21.3;q23.3); *KMT2A-MLLT3*
9898/3-Myeloid leukemia associated with Down syndrome
9910/3-Acute megakaryoblastic leukemia
9911/3-Acute myeloid leukemia (megakaryoblastic) with t(1;22)(p13.3;q13.1); *RBM15-MKL1*
9912/3-Acute myeloid leukemia with *BCR-ABL1* (2021+)
9920/3-Therapy-related myeloid neoplasm
9931/3-Acute panmyelosis with myelofibrosis
9940/3-Hairy cell leukemia
9945/3-Chronic myelomonocytic leukemia
9946/3-Juvenile myelomonocytic leukemia
9948/3-Aggressive NK-cell leukemia
9950/3-Polycythemia vera
9961/3-Primary myelofibrosis
9962/3-Essential thrombocythemia
9963/3-Chronic neutrophilic leukemia
9964/3-Chronic eosinophilic leukemia, NOS
9965/3-Myeloid/lymphoid neoplasms with PDGFRA rearrangement
9966/3-Myeloid/lymphoid neoplasm with PDGFRB rearrangement
9967/3-Myeloid/lymphoid neoplasms with *FGFR1* rearrangement
9968/3-Myeloid/lymphoid neoplasms with *PCM1-JAK2* (2021+)
9975/3-Myelodysplastic/myeloproliferative neoplasm, unclassifiable

9980/3-Myelodysplastic syndrome with single lineage dysplasia
9982/3-Myelodysplastic/myeloproliferative neoplasm with ring sideroblasts and thrombocytosis
9983/3-Myelodysplastic syndrome with excess blasts
9985/3-Myelodysplastic syndrome with multilineage dysplasia
9986/3-Myelodysplastic syndrome with isolated del (5q)
9989/3-Myelodysplastic syndrome, unclassifiable
9991/3-Refractory neutropenia (2010-2020, for 2021+, code 9980/3)
9992/3-Refractory thrombocytopenia (2010-2020, for 2021+, code 9980/3)
9993/3-Myelodysplastic syndrome with ring sideroblasts and multilineage dysplasia (2021+)

E. **Primary site C422 (Spleen).** Assign primary site C422 (Spleen) when the histology is:

9689/3-Splenic marginal zone lymphoma
9716/3-Hepatosplenic T-cell lymphoma
Note: Other lymphomas (e.g. DLBCL), may originate in the spleen, although this is rare. Spleen involvement does not necessarily mean the primary site is the spleen.

F. **Primary site C440-C449, C510-C512, C518-C519, C600-C602, C608-C609, C632 (Skin primary sites)** should be assigned when the histology is:

Note: The following histologies are skin lymphomas.
9597/3-Primary cutaneous follicle centre lymphomas (See also Rule PH12)
9700/3-Mycosis fungoides
9701/3-Sezary syndrome
9708/3-Subcutaneous panniculitis-like T-cell lymphoma (also C490-C499)
9709/3-Primary cutaneous CD8-positive aggressive epidermotropic cytotoxic T-cell lymphoma
9718/3-Primary cutaneous anaplastic large cell lymphoma
9725/3-Hydroa vacciniforme-like lymphoma (2010-2020 only)
9726/3-Primary cutaneous gamma-delta T-cell lymphoma (also C490-C499)

G. **Primary sites C770-C779 (Lymph nodes)** should be assigned **unless** there is confirmation that the primary site is extranodal when the histology is:

Note: The following histologies usually originate in the lymph nodes; however, in rare cases they may originate in extranodal sites
9596/3-B-cell lymphoma, unclassifiable, with features intermediate between diffuse large B-cell lymphoma and classic Hodgkin lymphoma (See also Rule PH14)
9650/3-Classic Hodgkin lymphoma
9651/3-Lymphocyte-rich classic Hodgkin lymphoma
9652/3-Mixed cellularity classic Hodgkin lymphoma
9653/3-Lymphocyte-depleted classic Hodgkin lymphoma
9655/3-Hodgkin lymphoma, lymphocyte depletion, reticular
9659/3-Nodular lymphocyte predominant Hodgkin lymphoma

9663/3-Nodular sclerosis classic Hodgkin lymphoma
9688/3-T-cell/histiocyte-rich large B-cell lymphoma

H. Assign the primary site code using **Modules 3 & 4: Rules PH5-PH8** when the histology is**:**

Note 1: These are lymphoma/leukemias and primary site code is based on presentation
Note 2: For the purpose of using the rules, a non-Hodgkin lymphoma is any lymphoma (including the leukemia/lymphomas) not stated to be Hodgkin lymphoma, NOS or a type of Hodgkin lymphoma.
   o   Hodgkin lymphomas are: 9650/-9653/3, 9655/3, 9659/3, 9663/3
9727/3-Blastic plasmacytoid dendritic cell neoplasm
9811/3-B-lymphoblastic leukemia/lymphoma, NOS
9812/3-B-lymphoblastic leukemia/lymphoma with t(9;22)(q34.1;q11.2); *BCR-ABL1*
9813/3-B-lymphoblastic leukemia/lymphoma with t(v;11q23.3); *KMT2A*-rearranged
9814/3-B-lymphoblastic leukemia/lymphoma with t(12;21)(p13;q22); *ETV6-RUNX1*
9815/3-B-lymphoblastic leukemia/lymphoma with hyperdiploidy
9816/3-B-lymphoblastic leukemia/lymphoma with hypodiploidy (hypodiploid ALL)
9817/3-B-lymphoblastic leukemia/lymphoma with t(5;14)(q31.1;q32.1); *IGH/IL3*
9818/3-B-lymphoblastic leukemia/lymphoma with t(1;19)(q23;p13.3); *TCF3-PBX1*
9819/3-B-lymphoblastic leukemia/lymphoma, *BCR-ABL1-like* (2021+)
9823/3-Chronic lymphocytic leukemia/small lymphocytic lymphoma (CLL/SLL)
9827/3-Adult T-cell leukemia/lymphoma
9837/3-T-lymphoblastic leukemia/lymphoma

I.   Assign the primary site code using Module 7 for lymphomas, extraosseous plasmacytomas, mast cell sarcoma, histiocytic and dendritic cell neoplasms, heavy chain disease, myeloid sarcoma and PTLD

*Note***:** More than one PH rule will be required to code the primary site for some cases.

Example 1: Patient diagnosed with CLL/SLL in the cervical lymph nodes. Per Rule PH6 (See Rule G), code primary site to the involved site. Per Note 5, go to Module 7 to code primary site for the lymphoma. Per Rule PH19, code the primary site to the specific lymph node region when only one lymph node is involved. Code primary site to C770, cervical lymph node.

Example 2: Lymph node biopsy confirmed plasmacytoma. Adenopathy in multiple locations. Per Rule PH2, code the histology to 9734/3 and the primary site to the involved site. Per Note 6, go to Module 7 to code primary site. Per Rule PH21, code the primary site to multiple lymph nodes, NOS (C778) when multiple lymph nodes are involved and it is not possible to identify the lymph node region where the plasmacytoma originated.

9590/3-Malignant lymphoma, NOS
9591/3-Non-Hodgkin lymphoma, NOS

9671/3-Lymphoplasmacytic lymphoma (See also Rules PH16 & PH17)

9673/3-Mantle cell lymphoma

9678/3-Primary effusion lymphoma

9680/3-Diffuse large B-cell lymphoma, NOS (See also Rule PH12)

9687/3-Burkitt lymphoma

9690/3-Follicular lymphoma, NOS

9691/3-Follicular lymphoma, grade 2

9695/3-Follicular lymphoma, grade 1

9698/3-Follicular lymphoma, grade 3

9699/3-Extranodal marginal zone lymphoma of mucosa-associated lymphoid tissue (MALT lymphoma)

9702/3-Peripheral T-cell lymphoma, NOS

9705/3-Angioimmunoblastic T-cell lymphoma

9712/3-Intravascular large B-cell lymphoma

9714/3-Anaplastic large cell lymphoma, ALK-positive

9715/3-Anaplastic large cell lymphoma, ALK-negative (2021+)

9717/3-Enteropathy-associated T-cell lymphoma

9719/3-Extranodal NK-/T-cell lymphoma, nasal type

9724/3-Systemic EBV-positive T-cell lymphoma of childhood

9734/3-Extraosseous Plasmacytoma (See also rule PH2)

9735/3-Plasmablastic lymphoma

9737/3-ALK-positive large B-cell lymphoma

9738/3-HHV8-positive diffuse large B-cell lymphoma, NOS

9740/3-Mast cell sarcoma (See also Rules M3 & PH9)

9749/3-Erdheim-Chester Disease (2021+)

9751/3-Langerhans cell histiocytosis

9755/3-Histiocytic sarcoma

9756/3-Langerhans cell sarcoma

9757/3-Indeterminate dendritic cell tumor

9758/3-Follicular dendritic cell sarcoma

9759/3-Fibroblastic reticular cell tumor

9762/3-Heavy chain diseases

9766/3-Lymphomatoid granulomatosis (2021+)

9930/3-Myeloid sarcoma (See also Rules M3 & PH10)

9971/3- Polymorphic post-transplant lymphoproliferative disorders (See also Rule PH1) (2010-2020, and 2025+)

Histology Coding Instructions

1. Code the **histology** that was identified by the method(s) listed under the **Definitive Diagnostic Method(s)** section of the Heme DB. Definitive diagnostic method(s) may be any of the following
    Note: There is no hierarchy among the items on this list
    *   Clinical diagnosis
    *   Genetic test
    *   Immunophenotyping
    *   Cytology
    *   Pathology
        o   Final diagnosis
        o   Comment on final diagnosis
        o   Addenda to final diagnosis
        o   CAP protocol/synoptic report

2. When tests or reports defined as Definitive Diagnostic Method(s) are **not available**, code histology using the following documentation. The list is in **hierarchical order.**
    *   **Documentation** in the medical record referring to the **original** scans, genetic testing, immunophenotyping, or pathology reports
    *   **Documentation** in the medical record that refers to the histology
    *   Death certificate (central or regional registries only)

3. When the test or report lists a specific histology with **ambiguous term(s)** and an "NOS" histology, code the **NOS histology**. This prevents coding a temporary/provisional histology that could change with further testing which may not appear in the patient's chart, such as subsequent flow cytometry sent from the physician's office to an outside lab. (See also Rule PH29)
    Note 1: Ambiguous terminology can be used for casefinding, reportability, and to assign a provisional histology code. For instruction on using ambiguous terminology for casefinding and reportability, go to the "Case Reportability Instructions, #4" at the beginning of the manual.
    Note 2: For hematopoietic and lymphoid neoplasms, ambiguous terminology may NOT be used when a specific histology has not been confirmed. In this situation, there is not enough proof for the physician to definitely diagnose the specific histology. If there is no further information regarding the more specific histology, the registrar is to assign the NOS equivalent for that histology.
    Example 1: Non-Hodgkin lymphoma consistent with DLBCL. No other information available. "Non-Hodgkin Lymphoma" is listed as an "NOS" histology in the Heme DB. Because it is preceded by the ambiguous term "consistent with", the more specific histology DLBCL would not be coded until confirmed by further testing. Assign 9591/3 for Non-Hodgkin lymphoma, NOS.
    Note 3: A specific histology can be assigned if there is documentation that the physician is treating the patient for the specific disease.
    Example 2: Biopsy: B-cell lymphoma, suspicious for DLBCL. Subsequent documentation from the physician indicates that the patient is being treated for DLBCL.

4. If there is only one histology available and it is preceded by ambiguous terminology, review the Abstractor Notes in the Heme DB for that histology to see if other information can be used to confirm the diagnosis.
   Example: CBC states abnormal lymphocytosis, no histology or provisional diagnosis on the CBC or peripheral blood smear. Flow cytometry states compatible with CLL. No other workup done. Per the Abstractor Notes in the database, "abnormal lymphocytosis" is present in CLL. Assign histology CLL (9823/3) since "abnormal lymphocytosis" is part of the CLL/SLL definition.

5. If relevant immunophenotyping or genetics information is present in Abstractor Notes, and the only histology available is preceded by ambiguous terminology, code the ambiguous histology so that the case can be reported for incidence. (See Case Reportability Instructions, #4). Follow back to the physician's office or other sources at a later date to determine if subsequent testing confirmed the specific histology or the patient was diagnosed with a different histology.

Primary Site and Histology Coding Rules

1. The primary site and histology coding rules are divided into nine modules. Each **module** covers a group of **related** hematopoietic or lymphoid neoplasms. However, a specific histology may be covered in more than one module.

2. The modules are **NOT** hierarchical, but the rules within each module are in hierarchical order. Apply the rules within each module in order. Stop at the first rule that applies.

Module 1: Post-Transplant Lymphoproliferative Disorder (PTLD)
WITH an accompanying lymphoma or plasmacytoma/myeloma
(including, but not limited to: Monomorphic PTLD, Classic Hodgkin lymphoma-PTLD type, Burkitt type PTLD)

Rule PH1 Code the primary site to the **site of origin**, lymph node(s) or lymph node region(s), tissue(s), or organ(s), and code the **histology of the accompanying lymphoma or plasmacytoma/myeloma when the diagnoses of post-transplant lymphoproliferative disorder and any B-cell lymphoma, T-cell lymphoma, Hodgkin lymphoma, or plasmacytoma/myeloma occur simultaneously.** See Rule M14

> *Note 1:* Rule PH1 applies to post-transplant lymphoproliferative disorders, which include, but are not limited to monomorphic PTLD, Classic Hodgkin Lymphoma-PTLD Type, Burkitt type PTLD.
> - Effective with diagnosis year 2025+, a new SSDI has been added to capture the presence of the PTLD. See the SSDI Manual, Version 3.2, for more information.
>
> *Note 2:* This rule does not apply to polymorphic PTLD (PTLD without an accompanying Hematopoietic neoplasm). See 9971/1 and 9971/3 in the Hematopoietic Database for information on coding polymorphic PTLD.
>
> *Note 3:* The patient **must** have a history of a solid organ transplant or an allogeneic bone marrow transplant.
>
> *Note 4:* Most cases of PTLD occur within a year of transplantation; however, they can occur any time after the transplant.
>
> *Note 5:* Monomorphic PTLD is also caused by the immunosuppressant drugs. Patients are treated for the lymphoma or plasmacytoma/myeloma.
>
> *Note 6:* See Appendix C for help identifying lymph node names, chains, regions and codes.
>
> *Note 7:* See Module 7 **for help in coding primary site for PTLD.**
>
> *Example:* Previous history of kidney transplant. Now presents for bone marrow biopsy. BM positive for B-cell lymphoma. Abdominal mass biopsy was positive for PTLD, monomorphic type and aggressive B-cell malignancy. Immunohistochemistry shows the B-cell malignancy to be Burkitt lymphoma. Code the histology to Burkitt lymphoma and primary site to the abdominal lymph nodes (C77.2).

Module 2: Plasmacytomas PH2 – PH4

Extraosseous plasmacytoma (9734/3)
Solitary plasmacytoma of bone (9731/3)

Note: For information on Plasma Cell Myeloma/Multiple Myeloma (9732/3), see the Hematopoietic database.

Rule PH2 Code the primary site to the **site of origin**, lymph node(s) or lymph node region(s), tissue(s), or organ(s), and code the **histology extraosseous plasmacytoma** (**9734/3**) when any of the following occur in a site **other than bone:**
- Extraosseous (extramedullary) plasmacytoma
- Plasmacytoma, extramedullary
- Plasmacytoma, NOS (occurring outside of bone)
- Solitary plasmacytoma (occurring outside of bone)

> *Note 1:* References to multiple areas of ICD-O involvement have been removed from this rule. Per the *WHO Classificatin of Tumours of Haematopoietic and Lymphoid Tissues* (October 2017), **the presence of multiple plasmacytomas is diagnostic of plasma cell myeloma (9732/3).**
> *Note 2:* Extramedullary and extraosseous means occurring outside of bone.
> *Note 3:* This is a localized solitary tumor outside the bone. Complete skeletal radiographs (preferably MRI) show no other lesions. If additional lesions are found on MRI or CT (or other radiological surveys), this is diagnostic of plasma cell myeloma (see 9732/3).
> *Note 4:* 80% of extramedullary plasmacytomas occur in the upper respiratory tract (oropharynx, nasopharynx, sinuses, and larynx) although they may occur in numerous other sites including the GI tract, lymph nodes, bladder, CNS, breast, thyroid, testis, parotid, and skin.
> *Note 5:* See Appendix C for help identifying lymph node names, chains, regions and codes.
> *Note 6:* See Module 7 for help in coding primary site for extraosseous plasmacytomas.
> *Example 1*: Pathology reports a solitary plasmacytoma wrapped around L4 vertebrae, no invasion of vertebrae. Code the primary site as soft tissue of back (C496) and histology to plasmacytoma (9734/3).
> *Example 2*: Scan shows a plasmacytoma in the nasopharyngeal wall. Biopsy confirms plasmacytoma. Code the primary site nasopharynx (C119) and histology to plasmacytoma (9734/3).

Rule PH3 Code the primary site to the **specific bone (C400-C419)** where the plasmacytoma originated and code the histology **solitary plasmacytoma** of bone (**9731/3)** when the diagnosis is:
- Osseous (medullary) plasmacytoma
- Plasma cell tumor
- Plasmacytoma, NOS (occurring in bone)
- Plasmacytoma of bone
- Solitary myeloma
- Solitary osseous (medullary) plasmacytoma
- Solitary plasmacytoma (occurring in bone)

Note 1: References to multiple areas of ICD-O involvement have been removed from this rule. Per the *WHO Classificatin of Tumours of Haematopoietic and Lymphoid Tissues* (October 2017), **the presence of multiple plasmacytomas is diagnostic of plasma cell myeloma (9732/3).**

Note 2: **Plasma cell neoplasm** is not an alternate name for 9731/3 and has been **removed** from the alternate names list for 9731/3.

Note 3: This is a localized solitary tumor occurring in the bone. Complete skeletal radiographs (preferably MRI) show no other lesions. If additional lesions are found on MRI or CT (or other radiological surveys), this is diagnostic of plasma cell myeloma (see 9732/3).

Note 4: The most common sites are bones with active bone marrow hematopoiesis; in order of frequency these include vertebrae, ribs, skull, pelvis, femur, clavicle, and scapula.

Rule PH4 Code the primary site **bone, NOS** (**C419**) and histology **solitary plasmacytoma, NOS (9731/3)** when the only information is that the patient had a **plasmacytoma, NOS** or a **solitary plasmacytoma**, **NOS** and there is no indication of bone or extramedullary involvement.

Note 1: References to multiple areas of ICD-O involvement have been removed from this rule. Per the *WHO Classificatin of Tumours of Haematopoietic and Lymphoid Tissues* (October 2017), **the presence of multiple plasmacytomas is diagnostic of plasma cell myeloma (9732/3).**

Note 2: Default to coding plasmacytoma of bone when the only information available is that the patient had a plasmacytoma (See 9731/3 in the Heme DB).

Example: Death-certificate-only case (central or regional registry only) with underlying cause of death listed as plasmacytoma.

Module 3: Chronic lymphocytic leukemia/small lymphocytic lymphoma (CLL/SLL) PH5-PH6

Chronic lymphocytic leukemia/small lymphocytic lymphoma (CLL/SLL) 9823/3

Rule PH5 Code the **primary site** to bone marrow (C421) when the bone marrow is involved or when only peripheral blood is involved.

Note 1: Do **not** code primary site to blood (C420) even when CLL/SLL is diagnosed only on peripheral blood. CLL/SLL will always have peripheral blood involvement. The bone marrow may or may not be involved. Assign primary site to C421 (bone marrow).

Note 2: In the later stages of CLL/SLL, there may be involvement of bone marrow AND lymph node(s), lymph node region(s), organ(s), or tissue(s). As long as the peripheral blood and/or bone marrow are involved, the primary site is bone marrow (C421). If **peripheral blood and bone marrow are not involved**, see Rule **PH6**.

Note 3: Do **not** change primary site code because the spleen is involved with infiltrate. Infiltrate refers to deposits of leukemia in the spleen as a result of the spleen filtering the blood.

Example: Positive peripheral smear for CLL with clinical lymph node involvement. No bone marrow biopsy done. Code primary site to C421 since the peripheral blood is involved.

Rule PH6 Code the **primary site** to the **involved lymph node(s) or lymph node region(s), the involved organ(s), or tissue(s)** when there is **no peripheral blood involvement AND no bone marrow involvement or when it is unknown if bone marrow is involved**.

Note 1: If **peripheral blood and/or bone marrow are involved, see Rule PH5.**

Note 2: CLL/SLL will always have involvement of lymph node(s) or lymph node region(s), organ(s) or tissue(s).

Note 3: Do **not** change primary site code because the spleen is involved with infiltrate. Infiltrate refers to deposits of leukemia in the spleen as a result of the spleen filtering the blood.

Note 4: See Appendix C for help identifying lymph node names, chains, regions and codes.

Note 5: See Module 7 for help in coding primary site for lymphomas.

Module 4: Leukemia/Lymphoma (Specific neoplasms that can manifest as either leukemia or lymphoma or both leukemia and lymphoma) PH7 – PH8
(9727/3, 9811/3-9819/3, 9827/3, 9837/3)

Adult T-cell leukemia/lymphoma (HTLV-1 positive) (9827/3)
B-lymphoblastic leukemia/lymphoma, *BCR-ABL1-like* (9819/3)
B-lymphoblastic leukemia/lymphoma, NOS (9811/3)
B-lymphoblastic leukemia/lymphoma with hyperdiploidy (9815/3)
B-lymphoblastic leukemia/lymphoma with hypodiploidy (hypodiploid ALL) (9816/3)
B-lymphoblastic leukemia/lymphoma with t(1;19)(q23;p13.3); *TCF3-PBX1* (9818/3)
B-lymphoblastic leukemia/lymphoma with t(5;14)(q31.1;q32.1); *IGH/IL3* (9817/3)
B-lymphoblastic leukemia/lymphoma with t(9;22)(q34.1;q11.2); *BCR-ABL1* (9812/3)
B-lymphoblastic leukemia/lymphoma with t(12;21)(p13.2;q22.1); *ETV6-RUNX1* (9814/3)
B-lymphoblastic leukemia/lymphoma with t(v;11q23.3); *KMT2A*-rearranged (9813/3)
Blastic plasmacytoid dendritic cell neoplasm (9727/3)
T-lymphoblastic leukemia/lymphoma (9837/3)

Note 1: For the purpose of using the rules, a non-Hodgkin lymphoma is any lymphoma (including the leukemia/lymphomas) not stated to be Hodgkin lymphoma, NOS or a type of Hodgkin lymphoma.
  - Hodgkin lymphomas are: 9650/-9653/3, 9655/3, 9659/3, 9663/3
Note 2: ICD-9-CM, ICD-10, and ICD-10-CM have separate codes for leukemia and lymphoma.
Note 3: Lymphoma commonly originates in lymph nodes, tissue, or an organ although it will metastasize to the bone marrow when the stage is IV or disseminated.
Note 4: Liver is usually a metastatic site; however, primary liver lymphoma is possible.

Rule PH7   For the histologies listed above, code the primary site to bone marrow (C421) when the **only** site involved is bone marrow or when only peripheral blood is involved.
  Note 1: **If lymph node(s), lymph node region(s), organ(s) or tissue(s) are involved, see Rule PH8.**
  Note 2: Do **not** change primary site code because the spleen is involved with infiltrate. The infiltrate refers to deposits of leukemia in the spleen as a result of the spleen filtering the blood.

Rule PH8   For the histologies listed above, code the primary site to the site of origin when lymph node(s) or lymph node region(s), tissue(s) or organs are involved.
  Note 1: Do **not** simply code the site of a biopsy; also use the information available from scans to determine the correct primary site.
  Note 2: Bone marrow may or may not be involved. If bone marrow is involved, record this information in stage.
  Note 3: See Appendix C for help identifying lymph node names, chains, regions and codes.
  Note 4: See Module 7 for more information on coding primary site for lymphomas.

Module 5: Myeloid Neoplasms and Mast Cell Neoplasms PH9 - PH10

Mast cell sarcoma (9740/3)
Mast cell leukemia (9742/3)
Myeloid sarcoma (9930/3)
Myeloid leukemias: (9840/3, 9861/3, 9865/3-9867/3, 9869/3-9874/3, 9877/3-9879, 9891/3, 9895/3-9898/3, 9910/3-9912/3, 9931/3)

Rule PH9   Code the primary site **bone marrow (C421)** and code the **histology** to **mast cell leukemia** (**9742/3**) when the diagnosis is **mast cell sarcoma AND** there is a simultaneous or previous diagnosis of **mast cell leukemia.** See Rule M3.
  Note: When mast cell sarcoma (9740/3) follows a diagnosis of mast cell leukemia (9742/3), the sarcoma is a manifestation of late-stage leukemia. The mast cells infiltrate soft tissue.

Rule PH10   Code the primary site **bone marrow (C421)** and code the histology **acute myeloid leukemia, NOS (9861/3) or any of the specific AML histologies (9840/3, 9865/3-9867/3, 9869/3-9874/3, 9877/3-9879/3, 9891/3, 9895/3-9898/3, 9910/3-9912/3, and 9931/3)** when the diagnosis is **myeloid sarcoma** (9930/3) **AND** there is a simultaneous or previous diagnosis of acute myeloid leukemia. See Rule M3.
  Note: When myeloid sarcoma (9930/3) follows a diagnosis of acute myeloid leukemia (histologies listed above), the sarcoma is a manifestation of late-stage leukemia.

Module 6: Non-Hodgkin Lymphomas (NHL) PH11 – PH17

Diffuse large B-cell lymphoma (9680/3)
Primary cutaneous follicle centre lymphoma (9597/3)
B-cell lymphoma, with features intermediate between diffuse large B-cell lymphoma and classic Hodgkin lymphoma (9596/3)
Waldenstrom Macroglobulinemia (9761/3)
Lymphoplasmacytic lymphoma (9671/3)
Other non-Hodgkin lymphomas (9590/3, 9591/3, 9673/3, 9678/3-9679/3, 9687/3-9726/3, 9735/3-9738/3, 9766/3, 9823/3, 9827/3)

Note 1: Liver is usually a metastatic site; however, primary liver lymphoma is possible.
Note 2: Do not simply code the site of a biopsy; use the information available from scans to determine the correct primary site.
Note 3: See Primary Site Coding Instructions and Module 7 for more information on coding primary site for lymphoma.

Rule PH11   Code the primary site to the **site of origin**, lymph node(s), lymph node region(s), tissue(s) or organ(s) **and histology** to **diffuse large B-cell lymphoma** (DLBCL) (9680/3) when DLBCL and any other B-cell non-Hodgkin lymphoma are present in the same lymph node(s), lymph node region(s), organ(s), tissue(s) or bone marrow. See Rule M4.
  Note 1:   For the purpose of using the rules, a non-Hodgkin lymphoma is any lymphoma (including the leukemia/lymphomas) not stated to be Hodgkin lymphoma, NOS or a type of Hodgkin lymphoma.
    o   Hodgkin lymphomas are: 9650/-9653/3, 9655/3, 9659/3, 9663/3

Note 2: Use this rule when DLBCL and another non-Hodgkin lymphoma are **diagnosed simultaneously in the same location.**
Note 3: Go to Rule PH15 if one or more of the histologies are not a B-cell.
Note 4: See Appendix C for help identifying lymph node names, chains, regions and codes.
Note 5: See Module 7 for more information on coding primary site for lymphomas.

Rule PH12 Code the primary site to **skin** (C44_) and the histology to **primary cutaneous follicle center cell lymphoma** (9597/3) when there is **skin infiltration** with **follicle cell lymphoma or B-cell lymphoma, follicle type** and the involvement is:
- Limited to **skin or**
- Limited to **skin** and the **regional lymph node(s) (regional nodes for the specific skin site)**

Note 1: All variants of follicular lymphoma (NOS, grade 1, grade 2, and grade 3) were once called "follicle center lymphoma." Although that term is obsolete, it is sometimes still used to describe follicular lymphoma. You may also see "follicle center" in the pathology reports for follicular lymphoma. However, the primary site and other sites of involvement will differ between follicular lymphoma and follicle center lymphoma. Follicle center lymphoma is a cutaneous neoplasm with only rare involvement of regional lymph nodes. Follicular lymphoma commonly occurs in nodes and extranodal sites. (See the Heme DB Abstractor Notes for both neoplasms for information on clinical presentation and common primary sites.)

Note 2: If there is involvement of lymph node(s) that are **not regional** for the skin site involved, or **involvement of bone marrow or organ(s),** do **not** code follicle center lymphoma and do **not** code skin as the primary site. Code histology to follicular lymphoma (9690/3, 9691/3, 9695/3 or 9698/3). See the Heme DB for information on coding follicular lymphoma.

Rule PH13 Code the primary site to **skin** (C44_) and the histology to **diffuse large B-cell lymphoma** (9680/3) when there is **skin infiltration** with **large B-cell lymphoma, B-cell lymphoma**, **large cell type, or large cell lymphoma** and the involvement is:
- Limited to **skin or**
- Limited to **skin** and the **regional lymph node(s)**

Note: If there is involvement of lymph node(s) that are not regional for the skin site involved, or involvement of bone marrow or organ(s), do **not** code skin as the primary site.

Rule PH14 Code the primary site to the **site of origin**, lymph node(s) or lymph node region(s), tissue(s), organ(s), or bone marrow and the histology B-cell lymphoma, unclassifiable, with features intermediate between diffuse large B-cell lymphoma and classic Hodgkin lymphoma/**composite Hodgkin and non-Hodgkin lymphoma (9596/3)** when **both** non-Hodgkin lymphoma and Hodgkin lymphoma are **simultaneously** present in the **same** lymph node(s) or lymph node region(s), tissue(s), organ(s), or bone marrow. See Rule M5.

Note 1: For the purpose of using the rules, a non-Hodgkin lymphoma is any lymphoma (including the leukemia/lymphomas) not stated to be Hodgkin lymphoma, NOS or a type of Hodgkin lymphoma.
  - Hodgkin lymphomas are: 9650/-9653/3, 9655/3, 9659/3, 9663/3

Note 2: Use the composite lymphoma code when
  - Both NHL and HL are present in one lymph node or multiple lymph nodes in one lymph node region **or**
  - Both NHL and HL are present in multiple lymph node regions as defined by ICD-O. e.g., NHL and HL present in superior hilum and superior rectal lymph nodes.
    - When only one node is biopsied, assume all lymph nodes are involved with both NHL and HL.

Note 3: See Appendix C for help identifying lymph node names, chains, regions and codes.
Note 4: See Module 7 for more information on coding primary site for lymphoma.

Rule PH15 Code the primary site to the **site of origin**, lymph node(s) or lymph node region(s), tissue(s), organ(s), or bone marrow and code the histology to the NHL with the **numerically highest ICD-O code** when two or more **non-Hodgkin lymphomas** are present in the **same** lymph node(s) or lymph node region(s), tissue(s), organ(s), or bone marrow. See Rule M4.

> *Note 1:* For the purpose of using the rules, a non-Hodgkin lymphoma is any lymphoma (including the leukemia/lymphomas) not stated to be Hodgkin lymphoma, NOS or a type of Hodgkin lymphoma.
> - o Hodgkin lymphomas are: 9650/-9653/3, 9655/3, 9659/3, 9663/3
>
> *Note 2:* Do **not** simply code the site of a biopsy; use the information available from scans to determine the correct primary site. See Primary Site Coding Instructions and Module 7 for more information on coding primary site for lymphoma.
>
> *Note 3:* See Appendix C for help identifying lymph node names, chains, regions, and codes.
>
> *Note 4:* This rule does **not** apply to an NOS and more specific histology.
>
> *Note 5:* This rule does **not** apply when different NHLs are present in different sites. Examples are:
> - Thymic extranodal marginal-zone B-cell lymphoma is present in the thymus and diffuse large B-cell lymphoma in the hilar lymph nodes.
> - B-cell lymphoma is present in the intrathoracic lymph nodes and peripheral T-cell NHL in the liver.
>
> *Example:* Biopsy revealed both small lymphocytic lymphoma (9823/3) and follicular lymphoma grade 2 (9691/3) in the same lymph node. Per Rule M4, this is one primary. Code histology to 9823/3 since it is the numerically higher ICD-O code.

Rule PH16 Code the primary site **bone marrow** (C421) and the histology **Waldenstrom macroglobulinemia** (9761/3) when there is
- Clinical diagnosis of Waldenstrom macroglobulinemia **WITH or WITHOUT**
- IgM monoclonal gammopathy in the blood **and/or** bone marrow

> *Note:* There may be a mention of lymphoplasmacytic lymphoma (LPL) in the bone marrow biopsy or blood. LPL is an NOS code and Waldenstrom Macroglobulinemia is one of the two specific LPLs (Gamma heavy chain disease is the other).

Rule PH17 Code the primary site to the **bone marrow, lymph nodes, or tissue** and the histology **lymphoplasmacytic lymphoma** (9671/3) when
- There is a clinical diagnosis of lymphoplasmacytic lymphoma **WITH or WITHOUT**
- Flow cytometry on bone marrow, lymph node(s), or tissue is positive for IgG, IgA and IgM monoclonal gammopathy

Hodgkin lymphomas-9650/3-9653/3, 9655/3, 9659/3, 9663/3
Non- Hodgkin lymphomas-9590/3, 9591/3, 9673/3, 9678/3-9680/3, 9687/3-9726/3, 9735/3-9738/3, 9766/3, 9811/3-9819/3, 9823/3, 9827/3
Extraosseous (not occurring in bone) plasmacytomas-9734/3
Mast cell sarcoma-9740/3
Histiocytic and dendritic cell neoplasms- 9749/3, 9751/3, 9755/3-9759/3
Heavy chain disease-9762/3
Myeloid sarcoma-9930/3
Polymorphic post-transplant lymphoproliferative disorders (polymorphic only)-9971/3 (2010-2020 only)

Note 1: For the purpose of using the rules, a non-Hodgkin lymphoma is any lymphoma (including the leukemia/lymphomas) not stated to be Hodgkin lymphoma, NOS or a type of Hodgkin lymphoma.
- Hodgkin lymphomas are: 9650/3-9653/3, 9655/3, 9659/3, 9663/3

Note 2: Do not simply code the site of a biopsy; use the information available from imaging to determine the correct primary site

Note 3: Secondary involvement of distant lymph nodes (for an extranodal lymphoma), bone marrow, liver, spleen or CNS are included in the stage fields only. This secondary involvement excludes rare primary lymphoid neoplasms of spleen, multifocal lung involvement, liver or CNS (see PH Rules). Secondary involvement of distant site(s) is disregarded for the purpose of coding primary site. For lymphoid neoplasms, this secondary or distant involvement is akin to metastasis for solid tumors and does not alter the primary site assigned by the physician or determined using the PH Rules

Rule PH18 **Applicable for Hodgkin & non-Hodgkin Lymphomas only:** Code the primary site to the specified **lymph node region** when the **site of lymphoma is described only as a mass.**

Note 1: This rule does not apply to other descriptions of "mass." For example, a "mass" in the neck is likely describing cervical lymph node involvement and does not meet the criteria for this rule.
- Mediastinal lymph nodes (C771) when the site of the lymphoma is described only as a **mediastinal mass**
- Intra-abdominal lymph nodes (C772) when the site of the lymphoma is described only as a **retroperitoneal mass or mesenteric mass**
- Inguinal lymph nodes (C774) when the site of the lymphoma is described only as an **inguinal mass**
- Pelvic lymph nodes (C775) when the site of the lymphoma is described only as a **pelvic mass**

Rule PH19 Code the primary site to the **specific lymph node region** when only **one lymph node or one lymph node region** is involved.

Rule PH20 Code the primary site to the **specific lymph node region** when **multiple** lymph node **chains** within the **same region** as defined by ICD-O are involved.

Note 1:   Use this rule when there is bilateral involvement of lymph nodes.
Note 2:   See Appendix C for help identifying lymph node names, chains, regions, and codes.
Example 1:   Code involvement of intra-abdominal, hepatic, and para-aortic lymph node chains to intra-abdominal lymph nodes (C772).
Example 2:   Code involvement of cervical lymph node chain and mandibular lymph node chain to lymph nodes of head, face and neck (C770).
Example 3:   Code to mediastinal lymph nodes (C771) when bilateral mediastinal lymph nodes are involved.

Rule PH21   Code the **primary site** to lymph nodes of multiple regions (C778) when multiple lymph node regions, as defined by ICD-O, are involved and it is **not possible to identify the lymph node region where the lymphoma or one of the other neoplasms originated.**

Note 1:   See Rule PH24 when there is also **organ** involvement.

Note 2:   Do **not** simply code the site of a biopsy; use the information available from scans to determine the correct primary site. See Primary Site Coding Instructions for more information on coding primary site for lymphoma.

Note 3:   See Appendix C for help identifying lymph node names, chains, regions, and codes.

Example 1:   Cervical (C770) and intra-thoracic (C771) lymph nodes involved with B-cell lymphoma. No indication of site of origin. Code the primary site to lymph nodes of multiple regions (C778).

Example 2:   Biopsy of an axillary lymph node (C773) confirmed lymphoma. CT scans showed involvement of the axillary lymph nodes (C773) and the pelvic lymph nodes (C775). No additional involvement was identified during the work-up and no indication of site of origin. Code the primary site to lymph nodes of multiple regions (C778).

Example 3:   Documentation at diagnosis includes mediastinal lymphadenopathy, unilateral left sided pleural effusion, questionable left lung nodular abnormality, splenomegaly, thrombocytopenia, and nodes present above and below the diaphragm, pleural fluid involvement. Pericardial soft tissue abnormality. Code the primary site to lymph nodes of multiple regions (C778).

Rule PH22   Code the **primary site** to **lymph nodes, NOS** (C779) when the neoplasm presents in:

- An organ and lymph nodes that are **not** regional (distant lymph nodes only, no regional lymph node involvement) for that organ and the origin of the lymphoma cannot be determined even after consulting the physician **OR**
- Multiple organs and the regional nodes for all involved organs **OR**
  - **Note:** Does not include distant involvement (e.g., bone marrow involvement)
- Multiple organs and some combination of regional and distant nodes for the involved organs **OR**
- Lymph node(s) and involved organ(s) and no primary site/particular lymph node region is identified
  - **Note**: Use for history only or path only cases
- Lymph node(s) and no primary site/particular lymph node region is identified
  - **Note**: Use when no other information is available

Note 1:   See Rule PH25 for involvement of an organ and its regional lymph nodes

Note 2:   **Do not use this rule for extraosseous plasmacytomas (9734/3) or Langerhans cell histiocytosis, disseminated (9751/3)**

Note 3:   Lymphoma can spread from organs to regional lymph nodes, but does not spread from the organ directly to distant lymph nodes.

Note 4:   See Appendix C for help identifying lymph node names, chains, regions, and codes.

Note 5:   Lymphoma only: Use this rule when there is no available information concerning where the lymphoma originated, such as historical cases.

Example 1:   The patient has positive mediastinal lymph nodes (C771) and cervical lymph nodes (C770) and involvement of the stomach (C169). No further information is available. Code to lymph node, NOS (C779).

Example 2:   Lymphoma is found in both lymph nodes and bone marrow. The pathology report is not available to help determine the primary site and no further information can be obtained. Code to lymph nodes, NOS (C779).

Example 3:   The patient has involvement of two extranodal sites and regional lymph nodes for only one of those sites. If the site of origin cannot be determined, code the primary site to lymph nodes, NOS (C779).

Example 4:   The patient has a history of Stage II lymphoma. No other information is available. Code to lymph nodes, NOS (C779).

Rule PH23 **Applicable for Hodgkin & non-Hodgkin Lymphomas only.** Code the **primary site** to the **lymph node region** as defined by ICD-O when there **is proof of extension from the regional lymph nodes** into an organ. In rare cases a neoplasm may spread from lymph nodes to an extranodal site.

Example: Patient presents with abdominal adenopathy. Surgical exploration documents direct invasion of the stomach from the regional lymph nodes. Code abdominal lymph nodes (C772).

Rule PH24 Code the **primary site** to the **organ** when neoplasm is present **only** in an **organ.**

Note 1: Includes lymphomas that are primary in the spleen. Splenic primaries are rare. Histologies that arise in the spleen include splenic marginal zone lymphoma (9689/3); hepatosplenic T-cell lymphoma (9716/3); splenic B-cell lymphoma/leukemia, unclassifiable (9591/3); splenic diffuse red pulp small B-cell lymphoma (9591/3); splenic marginal zone diffuse variant (9591/3); splenic EBV-associated B-cell lymphoproliferative disorder (9680/3). Follow-back for additional information when the histology is other than those listed **AND**

- The *only information is a biopsy of the spleen OR*
- There is a physician statement that the spleen is the organ of origin

Note 2: Secondary involvement of distant lymph nodes and/or bone marrow are recorded in staging.

Example 1: Pathology from stomach resection shows lymphoma. No other sites of involvement are identified. Code the primary site to stomach, NOS (C169).

Example 2: Excision of soft palate. Results showed plasmacytoma. No other involvement noted. Code the primary site to soft palate (C05.1)

Rule PH25 Code the primary site to the organ when a neoplasm is present in an **organ** and that **organ's regional lymph nodes**.

Note 1: In Stage II, III and IV disease, distant lymph nodes or other organs, such as spleen, may be involved. Disregard the distant lymph nodes and splenic involvement.

Note 2: Code the primary site to the organ.

Note 3: Secondary involvement of distant lymph nodes and/or bone marrow are coded in stage.

Example 1: Lymphoma is present in the kidney and peri-renal lymph nodes. Code the primary site to kidney (C649).

Example 2: Lymphoma is present in the stomach and the gastric lymph nodes. Code the primary site to stomach, NOS (C169).

Example 3: Lymphoma is present in the spleen and the splenic lymph nodes. Code the primary site to spleen (C422).

Rule PH26 Code the **primary site** to **bone marrow** (C421) when a neoplasm is **present only in the bone marrow** and/or **peripheral blood.**

Note 1: All available physical exams, scans, and other work-up must be negative for lymph node, tissue, or organ involvement **OR** no other workup was done **OR** unknown if other work-up done.

Note 2: Code primary site to C421 when the only information available is a positive peripheral blood smear.

Example: Bone marrow biopsy is positive for diffuse B-cell lymphoma (DLBCL). No other work up performed. Code primary site to bone marrow. If further workup is done that identifies a primary site, reassign primary site.

Rule PH27 Code **primary site** to **unknown** primary site (C809) when there is:

- No evidence of neoplasm in lymph nodes
- Neoplasm originates in organ(s) without nodal involvement and there is no information to identify primary site
- Physician does not document site of origin

Note 1: If lymph nodes are involved, see Rule PH22

Note 2: For Langerhans cell histiocytosis, disseminated (9751/3), if there is no information available, assign primary site to bone, NOS (C419).

Module 8: NOS and More Specific Histology PH28 – PH29
All hematopoietic and lymphoid neoplasms 9590/3-9993/3

Rule PH28 Code the **non**-**specific** (**NOS**) histology when the diagnosis is:
- **One non-**specific histology **AND**
- **Two or more specific** histologies **AND**
- The Heme DB Multiple Primaries Calculator documents the specific histologies and NOS are the **same primary AND**
- There is no further information regarding the physician's final diagnosis

Note 1: Use the Heme DB Multiple Primaries Calculator to confirm that the NOS and specific histologies are the same primary. (Note: If the multiple primaries calculator returns with "new primary," then this is not the correct rule.)

Note 2: See Instructions #3-5 in the Histology Coding Rules for cases with ambiguous terminology.

Example 1: The diagnosis is myelodysplastic/myeloproliferative neoplasm unclassifiable (9975/3), polycythemia vera (9950/3), essential thrombocythemia (9962/3). The Heme DB Multiple Primaries Calculator shows that myelodysplastic/myeloproliferative neoplasm unclassifiable and polycythemia vera are the same primary. The Multiple Primaries Calculator also shows that myelodysplastic/myeloproliferative neoplasm unclassifiable and essential thrombocythemia are the same primary. Follow-back produces no additional information. Code the histology myelodysplastic/myeloproliferative neoplasm, unclassifiable (9975/3).

Example 2: Pathology report states morphologic features and immunophenotype of low grade B-cell lymphoma are most compatible with lymphoplasmacytic lymphoma or marginal zone lymphoma. The term "compatible with LPL (9671/3) or MZL (9699/3)" means that the immunophenotype was not definitely diagnostic for either specific disease. Default to the NOS diagnosis, the B-cell lymphoma, (9591/3).

Rule PH29 Code the **specific** histology when the diagnosis is:
- **One non**-specific (NOS) histology **AND**
- **One specific** histology **AND**
- The Heme DB Multiple Primaries Calculator documents the specific histology and NOS are the **same primary**

Note 1: See Instructions #3-5 in the Histology Coding Rules for cases with ambiguous terminology. If the specific histology diagnosis includes ambiguous terminology, code the NOS histology.

Note 2: Use the Heme DB Multiple Primaries Calculator to confirm that the NOS and specific histology are the same primary.

Module 9: Coding Primary Site and Histology PH30 – PH31
All hematopoietic and lymphoid neoplasms 9590/3-9993/3
Use Only When Modules 1-8 are Not Applicable

Rule PH30   Use the Heme DB to determine the primary site and histology when rules PH1-PH29 do **not** apply.
            Note: For primary site, use the information under Primary Site(s) in the Heme DB **and/or** the Abstractor Notes as instructed in the introduction of this manual.

Rule PH31   Code the histology to **the numerically higher** ICD-O code when the histology code cannot be determined using the Heme DB.
            Note: This rule should **rarely be used**.

This is the end of the rules for coding primary site and histology.

Grade of Tumor Rules

There are now four grade fields for cases diagnosed 2018 and forward (Grade Clinical, Grade Pathological, Grade Post Therapy Clin (yc) (2021+), Grade Post Therapy Path (yp)). Grade Clinical and Grade Pathological should default to the "not applicable" grade (code 8), while Post Therapy Clin (yc) and Post Therapy Path (yp) should default to blank.

For cases diagnosed 1/1/2018, Grade is no longer applicable for Hematopoietic neoplasms. Grade Clinical and Grade Pathological should default to the "not applicable" grade (code 8), while Post Therapy Clin (yc) and Post Therapy Path (yp) should default to blank. Your software should automatically default to the "not applicable" grade code for Hematopoietic neoplasms.

> *Exception*: Grade is still coded for Lymphoma Ocular Adnexa cases diagnosed in any year (see the Grade Manual for further instructions on coding grade)

Cases with diagnoses 2010-2017 still need to have the grade field coded according to the rules below and/or the Hematopoietic database (make sure to choose diagnosis year of 2010-2017).

Note 1: A grade coding instruction is provided for each histology in the Heme DB based on the Grade of Tumor Rules below. The rules in the manual are the primary source for the grade rules. When applicable, the Heme DB can be used for a quick reference. Use of either the Heme DB grade coding instruction or the Grade of Tumor Rule will result in the same grade code.

Note 2: The only valid grade codes for hematopoietic neoplasms are 5 (T-cell), 6 (B-cell), 7 (Null cell), 8 (NK cell), and 9 (unknown)   .

Note 3: When there is no grade coding instruction, grade rule, or physician statement, code Grade/Phenotype "9" for unknown.

Note 4: Code the grade as indicated in the Heme DB and the Grade of Tumor Rules when the pathology report states a different grade than the one noted in the Heme DB or the Grade of Tumor Rules. **The grade instructions/rules take priority.**

Note 5: Do **not** use Table 13 on pages 16-17 of ICD-O to determine grade for primaries diagnosed after 01/01/2010. This table is outdated. *Table 13 may be used for cases diagnosed prior to 2010.*

Note 6: For those histologies that do not have a default grade (5-9), use a physician's statement to code the phenotype in the grade field, use statements from **any part** of medical record including but not limited to
- Pathology report
- History and physical
- Consultation
- Final diagnosis
- Face sheet

If no default grade or physician's statement for grade is documented, then assign "9" for unknown.

Note 7: Do **not** code descriptions "low grade", "intermediate grade", or "high grade" in the Tumor Grade field. These terms refer to the Working Formulation categories of lymphoma diagnosis. Do not code grade 1, 2 or 3 describing follicular lymphomas.

Rule G1   Code cell type not determined, not stated, not applicable, **code 9**, for the following myeloproliferative neoplasms, myeloproliferative/myelodysplastic syndromes, myelodysplastic syndrome, histiocytic and dendritic cell neoplasms

9740/3: Solitary mastocytoma of skin
9741/3: Systemic mastocytosis
9742/3: Mast cell leukemia
9751/3: Langerhans cell histiocytosis
9755/3: Histiocytic sarcoma
9756/3: Langerhans cell sarcoma
9757/3: Indeterminate dendritic cell tumor
9758/3: Follicular dendritic cell sarcoma
9759/3: Fibroblastic reticular cell tumor
9801/3: Acute undifferentiated leukemia
9805/3: Acute biphenotypic leukemia
9806/3: Mixed-phenotype acute leukemia with t(9;22)(q34.1;q11.2); *BCR-ABL1*
9807/3: Mixed-phenotype acute leukemia with t(v;11q23.3); *KMT2A*-rearranged
9808/3: Mixed-phenotype acute leukemia, B/myeloid, not otherwise specified
9809/3: Mixed-phenotype acute leukemia, T/myeloid, not otherwise specified
9875/3: Chronic myeloid leukemia, *BCR-ABL1* positive
9876/3: Atypical chronic myeloid leukemia, *BCR-ABL1* negative
9945/3: Chronic myelomonocytic leukemia
9946/3: Juvenile myelomonocytic leukemia
9950/3: Polycythemia vera
9961/3: Primary myelofibrosis
9962/3: Essential thrombocythemia
9963/3: Chronic neutrophilic leukemia
9964/3: Chronic eosinophilic leukemia, NOS
9975/3: Myelodysplastic/myeloproliferative neoplasm, unclassifiable
9980/3: Myelodysplastic syndrome with single lineage dysplasia
9982/3: Myelodysplastic/myeloproliferative neoplasm with ring sideroblasts and thrombocytosis
9983/3: Myelodysplastic syndrome with excess blasts
9985/3: Myelodysplastic syndrome with multilineage dysplasia
9986/3: Myelodysplastic syndrome with isolated del(5q)
9989/3: Myelodysplastic syndrome, unclassifiable
9991/3: Refractor neutropenia
9992/3: Refractory thrombocytopenia

Note 1:   These neoplasms do not have a specific codable phenotype
Note 2:   See Tables B1, B3, B4, and B11 in Appendix B for neoplasm terms and codes or the Heme DB.

Rule G2   Code T-cell, **code 5,** for the following neoplasms; **T-cell** is part of the neoplasm name or the neoplasm is of **T-cell origin.**

9700/3: Mycosis Fungoides
9701/3: Sezary's disease
9702/3: Peripheral T-cell lymphoma, NOS
9705/3: Angioimmunoblastic T-cell lymphoma
9708/3: Subcutaneous panniculitis-like T-cell lymphoma
9709/3: Primary cutaneous CD8-positive aggressive epidermotropic cytotoxic T-cell lymphoma
9714/3: Anaplastic large cell lymphoma, *ALK-positive* (unless pathologist specifically designates as a B-cell [code 6]
9716/3: Hepatosplenic T-cell lymphoma
9717/3: Enteropathy-associated T-cell lymphoma
9718/3: Primary cutaneous anaplastic large cell lymphoma
9724/3: Systemic EBV-positive T-cell lymphoma of childhood
9725/3: Hydroa vacciniforme-like lymphoma
9726/3: Primary cutaneous gamma-delta T-cell lymphoma
9827/3: Adult T-cell leukemia/lymphoma
9834/3: T-cell prolymphocytic leukemia
9837/3: T lymphoblastic leukemia/lymphoma

Note 1:   Record T-cell even though it is not mentioned as a specific phenotype in the pathology or other test report(s). Frequently physicians do not mention T-cell phenotype because they know the phenotype or they understand that the phenotype is inherent in the disease classification/name.
Note 2:   When the medical record or pathology report contains one of these terms with a different phenotype (B-cell, null-cell, or NK-cell) check with the pathologist to determine whether the disease name is correctly recorded. It is possible that the mention of a different phenotype may be the result of the pathologist using a different disease classification.

Rule G3   Code B-cell, **code 6**, for the following **B-cell precursor lymphoid neoplasms and the mature B-cell neoplasms**

9591/3: Non-Hodgkin lymphoma, NOS
9596/3: B-cell lymphoma, unclassifiable, with features intermediate between diffuse large B-cell lymphoma and classic Hodgkin lymphoma
9597/3: Primary cutaneous follicle centre lymphoma
9659/3: Nodular lymphocyte predominant Hodgkin lymphoma
9670/3: Malignant lymphoma, small B lymphocytes, NOS
9671/3: Lymphoplasmacytic lymphoma
9673/3: Mantle cell lymphoma
9678/3: Primary effusion lymphoma
9679/3: Primary mediastinal (thymic) large B-cell lymphoma
9680/3: Diffuse large B-cell lymphoma, NOS
9684/3: Malignant lymphoma, large B-cell, diffuse, immunoblastic, NOS
9687/3: Burkitt lymphoma

9688/3: T-cell/histiocyte-rich large B-cell lymphoma
9689/3: Splenic marginal zone lymphoma
9690/3: Follicular lymphoma
9691/3: Follicular lymphoma, grade 2
9695/3: Follicular lymphoma, grade 1
9698/3: Follicular lymphoma, grade 3
9699/3: Extranodal marginal zone lymphoma of mucosa-associated lymphoid tissue (MALT lymphoma)
9712/3: Intravascular large B-cell lymphoma
9728/3: Precursor B-cell lymphoblastic lymphoma
9731/3: Solitary plasmacytoma of bone
9732/3: Plasma cell myeloma
9734/3: Extraosseous plasmacytoma
9737/3: ALK-positive large B-cell lymphoma
9738/3: HHV8-positive diffuse large B-cell lymphoma, NOS9761/3: Waldenstrom macroglobulinemia
9762/3: Heavy chain diseases
9811/3: B lymphoblastic leukemia/lymphoma, NOS
9812/3: B lymphoblastic leukemia/lymphoma with t(9;22)(q34;q11.2); *BCR-ABL1*
9813/3: Lymphoblastic leukemia/lymphoma with t(v;11q23); *MLL*
9814/3: B lymphoblastic leukemia/lymphoma with t(12;21)(p13;q22); *TEL-AML1 (ETV6-RUNX1)*
9815/3: B lymphoblastic leukemia/lymphoma with hyperdiploidy
9816/3: B lymphoblastic leukemia/lymphoma with hypodiploidy (Hypodiploid ALL
9817/3: B lymphoblastic leukemia/lymphoma with t(5;14)(q31;q32); *IL3-IGH* (
9818/3: B lymphoblastic leukemia/lymphoma with t(1;19)(q23;p13.3); *E2A-PBX1 (TCF3-PBX1)*
9823/3: Chronic lymphocytic leukemia/small lymphocytic lymphoma
9826/3: Burkitt cell leukemia
9833/3: B-cell prolymphocytic leukemia
9940/3: Hairy cell leukemia

Note 1:   Record B-cell even though it is not mentioned as a specific phenotype in the pathology or other test report(s). Frequently physicians do not mention B-cell phenotype because they know the phenotype or they understand that the phenotype is inherent in the disease classification/name.
Note 2:   When the medical record or pathology report contains one of these terms with a different phenotype (NK-cell, T-cell, or null-cell) check with the pathologist to determine whether the disease name is correctly recorded. It is possible that the mention of a different phenotype may be the result of the pathologist using a different disease classification.
Note 3:   See Tables B7 and B8 in Appendix B or the Heme DB.

Rule G4   Code NK-cell (natural killer cell), code 8, for the following neoplasms:

9719/3: Extranodal NK-/T-cell lymphoma, nasal type
9948/3: Aggressive NK-cell leukemia

Note 1:   Record **NK-**cell even though it is not mentioned as a specific phenotype in the pathology or other test report(s). Frequently physicians do not mention NK-cell phenotype because they know the phenotype or they understand that the phenotype is inherent in the disease classification/name.
Note 2:   When the medical record or pathology report contains one of these terms with a different phenotype (B-cell, T-cell, or null-cell) check with the pathologist to determine whether the disease name is correctly recorded. It is possible that the mention of a different phenotype may be the result of the pathologist using a different disease classification.
Note 3:   See Table B9 in Appendix B or the Heme DB.

Rule G5   Code T-cell, **code 5**, when the neoplasm is identified as **T-cell, T-cell phenotype, T-precursor, Pre-T, gamma-delta-T, or null-cell and T-cell.**

Rule G6   Code B-cell, **code 6**, when the neoplasm is identified as **B-cell, B-cell phenotype, B-precursor, pre-B, or null-cell and B-cell.**

Rule G7   Code Null cell, non-T non-B, **code 7**, when the neoplasm is described as **null cell, non-T non-B,** or **common cell.**

Rule G8   Code Natural Killer (NK) cell, **code 8**, when the neoplasm is described as **NK cell, natural killer cell, nasal NK/T-cell lymphoma, or null-cell and NK cell.**

Rule G9   Code cell type not determined, not stated, not applicable, **code 9**, when Rules G1 – G8 do not fit the case **AND**
- There is **no statement describing the cell type OR**
- The cell type is described as **combined T AND B cell OR**
- The cell type is described as **combined B AND NK cell**

Appendix A
History of Hematopoietic and Lymphoid Neoplasm Coding

Note: **The information below is still applicable and has not changed. The changes for the 2018 release of the Hematopoietic Manual and Database is based on the** *World Health Organization Classification of Tumours of Haematopoietic and Lymphoid Tissues*. 4th Edition, vs. 2, World Health Organization, 2017.

History of Coding Lymphoid Tissue and Hematopoietic System Neoplasms
Historically, diseases of lymphoid tissues and the hematopoietic system were believed to be separate entities, and the coding structure of the International Classification of Diseases was developed with this in mind. Prior to the early 1990s, the classification systems for lymphomas described malignant cells by their morphologic characteristics; for example, the size and shape of the tumor cell and its pattern of tumor growth and spread. The *International Classification of Diseases for Oncology,* Third Edition says this about the historic classifications:

> Over the past 50 years many classifications of leukemia and lymphoma have been proposed. Some of these had a major impact on clinical practice while others are now largely forgotten. For most of this period, however, the distinction between lymphoma and leukemia has been regarded as of fundamental importance and classifications have tended to evolve separately (p. 13).

The *World Health Organization Classification of Tumors of Hematopoietic and Lymphoid Tissues*, 4th Edition, was published in 2008. The 4th Edition of this world-renowned reference describes the current standard classification system for tumors of the hematopoietic and lymphoid systems. The 2008 classification continues to be based on the principles originally outlined in the REAL classification system (grouping by phenotype). These principles have now been applied to the classification of myeloid, lymphoid, mast cell, and histiocytic/dendritic neoplasms. Additionally, when specialized testing demonstrates one or more disease-specific or disease-defining characteristics using immunophenotyping and/or genetic testing, these characteristics have been incorporated into the *WHO Classification of Tumours of Haematopoietic and Lymphoid Tissues,* 4th Edition classification system. Occasionally, a diagnosis may be based primarily on characteristic histologic features alone or in combination with clinical characteristics of the disease such as the presence or absence of a virus. Therefore, any combination of disease-specific characteristics may be described microscopically (histology/morphology), or may be identified by immunohistocytochemistry test, or identified by a specific immunophenotype or genetic abnormality. Part or all of these descriptive characteristics may be included in a new or updated hematopoietic or lymphoid neoplasm term or description (preferred term or synonym) or even in the disease classification (group) to which a specific disease entity may be assigned.

Several newly recognized conditions have been added to the 2008 classification. In addition, some conditions previously classified as borderline malignancy are now to be treated as malignant disease. The current classification divides hematopoietic and lymphoid neoplasms according to lineage. Three primary lines are used in the classification: myeloid, lymphoid, and histiocytic/dendritic. The 2008 *WHO Classification of Tumours of Haematopoietic and Lymphoid Tissues,* 4th Edition is used as the basis for this coding manual. The coding manual includes tables that describe the classification of disease along cell lines (lineage tables). Lineage tables are included in Appendix B.

The World *Health Organization Classification of Tumors of Hematopoietic and Lymphoid Tissues*, 3rd Edition, published in 2001, was based on principles defined in the Revised European-American Classification of Lymphoid Neoplasms (REAL), originally published by the International Lymphoma Study Group in 1994. Both the REAL and current classifications group borderline and malignant tumors into broad categories by hematologic lineage: myeloid, lymphoid, histiocytic/dendritic, and mast cell. Within these broad categories or phenotypes, tumors may present in solid or circulating phases. Solid phase is the presence

of malignant cells in tissue, such as lymph nodes, soft tissues, or organs; generally, these have historically been called lymphomas. The circulating phase is characterized by the presence of malignant cells in the circulating blood or bone marrow; historically these have been called leukemias. According to the introduction to the *WHO Classification of Tumours of Haematopoietic and Lymphoid Tissues,* 4th Edition, the "…distinction between them (lymphomas and leukemias) is artificial. Thus B-cell chronic lymphocytic leukemia and B-cell small lymphocytic lymphoma are simply different manifestations of the same neoplasm, as are lymphoblastic lymphomas and lymphoblastic leukemias and Burkitt lymphoma and Burkitt leukemia" (2001 WHO Classification, page 13).

Although each of these pairs of diagnoses is histopathologically the same malignant cell with different presentations, they have different morphology code numbers in the *International Classification of Diseases for Oncology,* Third Edition. This is because ICD-O is a subset of the *International Statistical Classification of Diseases and Related Health Problems,* Tenth Revision (ICD-10), in which the distinction between lymphomas and leukemias was maintained. ICD-10 was originally published in 1990, prior to the publication of the REAL classification that introduced the concept of grouping lymphoid and hematopoietic malignancies by phenotype rather than morphologic characteristics and clinical presentation. In order to ensure compatibility with ICD-10, the Third Edition of ICD-O differs from the structure of the WHO classification of hematologic malignancies.

The concept of cross-referencing two histology codes in ICD-O was necessary because ICD-10 had not yet caught up with current medical concepts in the area of classification of lymphoma and leukemia. The following is noted in the introductory text of ICD-O-3 (page 14):

> ### Compatibility with ICD-10
> In order to ensure compatibility with ICD-10, there are a number of ways in which the Third Edition of ICD-O differs from the structure of the WHO classification of hematologic malignances. Separate codes have been allocated to B-cell chronic lymphocytic leukemia and B-cell small lymphocytic lymphoma. These are now recognized to be exactly the same entity, and for presentation of data these categories may therefore be combined. The same argument applies to lymphoblastic lymphoma and acute lymphoblastic leukemia, which are now regarded as the same disease but for which separate codes are provided.

The existence of dual codes for the same WHO classification entities is further discussed in the first errata for ICD-O-3 (5-22-2001):

> ### 6. Assigning topography for hematopoietic diseases
> According to the medical understanding on which the World Health Organization Classification of Hematopoietic Neoplasms is based, some lymphomas and leukemias are the same disease with different presentations. For example, the WHO Classification lists B-cell chronic lymphocytic leukemia/small lymphocytic lymphoma (BCCLL/SLL) as a single entity, the same disease at different stages. The hemato-pathologists on the ICD-O development committee recommended a single code number to represent the disease. However, since ICD-O is a subset of ICD-10 and ICD-10 is used to code mortality throughout the world, if a single ICD-O code were used, there would be no way to determine whether a death was due to lymphoma or leukemia which are coded separately in ICD-10. As a result, it was necessary to retain separate codes for chronic lymphocytic leukemia and small lymphocytic lymphoma and link them. Thus, for the first time in ICD-O editions, some single disease entities are listed in two different categories and cross-referenced with the notation (see also M-9----). The topographic or primary site code for a diagnosis such as BCCLL/SLL depends on where the disease is diagnosed: if disease is diagnosed only in the blood or bone marrow, code the primary site to C421, bone marrow and assign the leukemia morphology code. For purposes of analysis according to the WHO Classification, cases from both morphology codes should be aggregated.

Resources used

World Health Organization Classification of Tumours of Haematopoietic and Lymphoid Tissues. 4th Edition, World Health Organization, 2008.

World Health Organization Classification of Tumours of Haematopoietic and Lymphoid Tissues. 3rd Edition, World Health Organization, 2001.

International Classification of Diseases for Oncology, Third Edition. World Health Organization, 2000.

International Classification of Disease for Oncology, Third Edition, Version 3.2. World Health Organization, 2020.

Essential Haematology, Fifth edition. Hoffbrand AV, Moss PAH and Pettit JE. Blackwell Publishing, 2006.

Abstracting and Coding Guide for the Hematopoietic Diseases. National Cancer Institute, 2002.

WHO Classification of Tumors of Hematopoietic and Lymphoid Tissues
Histology Lineage
Updated based on WHO Classification of Tumors of Hematopoietic and Lymphoid Tissues, Revised 4th edition, Volume 2, 2017.

Use the Hematopoietic Database to identify synonyms that correspond to the WHO Preferred Term.

Table B1: Myeloproliferative Neoplasms

WHO Preferred Term	ICD-O
Chronic eosinophilic leukemia, NOS	9964/3
Chronic myeloid leukemia, *BCR-ABL1*-positive	9875/3
Chronic neutrophilic leukemia	9963/3
Essential thrombocythemia	9962/3
Myeloproliferative neoplasm, unclassifiable	9975/3
Polycythemia vera	9950/3
Primary myelofibrosis	9961/3

Table B2: Mastocytosis

WHO Preferred Term	ICD-O
Aggressive systemic mastocytosis	9741/3
Cutaneous mastocytosis	9740/1
Indolent systemic mastocytosis	9741/1
Mast cell leukemia	9742/3
Mast cell sarcoma	9740/3
Systemic mastocytosis with an associated hematological neoplasm	9741/3

Table B3: Myeloid/Lymphoid Neoplasms with eosinophils and gene rearrangement

WHO Preferred Term	ICD-O
Myeloid/lymphoid neoplasms with *FGFR1* rearrangement	9967/3
Myeloid/lymphoid neoplasms with *PCM1-JAK2* (2021+)	9968/3*
Myeloid/lymphoid neoplasms with *PDGFRA* rearrangement	9965/3
Myeloid/lymphoid neoplasms with *PDGFRB* rearrangement	9966/3

*New histology per the *WHO Classification of Tumors of Hematopoietic and Lymphoid Tissues*, Revised 4th edition, Volume 2, 2017, effective for cases diagnosed 2021+

Table B4: Myelodysplastic/Myeloproliferative Neoplasms

WHO Preferred Term	ICD-O
Atypical chronic myeloid leukemia, *BCR-ABL1*-negative	9876/3
Chronic myelomonocytic leukemia	9945/3
Juvenile myelomonocytic leukemia	9946/3
Myelodysplastic/myeloproliferative neoplasm, unclassifiable	9975/3
Myelodysplastic/myeloproliferative neoplasm with ring sideroblasts and thrombocytosis	9982/3

Table B5: Myelodysplastic Syndromes

WHO Preferred Term	ICD-O
Myelodysplastic syndrome with isolated del(5q)	9986/3
Myelodysplastic syndrome, unclassifiable	9989/3
Myelodysplastic syndrome with single lineage dysplasia	9980/3
- Refractory neutropenia (2021+)	9980/3
- Refractory thrombocythemia (2021+)	9980/3
Myelodysplastic syndrome with excess blasts	9983/3
Myelodysplastic syndrome with ring sideroblasts and single lineage dysplasia	9982/3
Myelodysplastic syndrome with ring sideroblasts and multilineage dysplasia (2021+)	9993/3*
Myelodysplastic syndrome with multilineage dysplasia	9985/3
Refractory cytopenia of childhood	9985/3
Refractory neutropenia (2010-2020) (see code 9980 for 2021+)	9991/3
Refractory thrombocythemia (2010-2020) (see code 9980 for 2021+)	9992/3

*New histology per the *WHO Classification of Tumors of Hematopoietic and Lymphoid Tissues*, Revised 4th edition, Volume 2, 2017, effective for cases diagnosed 2021+

Table B6: Acute Myeloid Leukemia (AML) and Related Precursor Neoplasms

WHO Preferred Term	ICD-O
Acute myeloid leukemias with recurrent genetic abnormalities	
Acute myeloid leukemia (megakaryoblastic) with t(1;22)(p13.3;q13.1); *RBM15-MKL1*	9911/3
Acute myeloid leukemia with *BCR-ABL1* (2021)+	9912/3*
Acute myeloid leukemia with biallelic mutation of *CEBPA* (2021+)	9878/3*
Acute myeloid leukemia with inv(3)(q21.3q26.2) or t(3;3)(q21.3;q26.2); *GATA2, MECOM*	9869/3
Acute myeloid leukemia with inv(16)(p13.1q22) or t(16;16)(p13.1;q22); *CBFB-MYH11*	9871/3
Acute myeloid leukemia with mutated *NPM1* (2021+)	9877/3*
Acute myeloid leukemia with mutated *RUNX1* (2021+)	9879/3*

WHO Preferred Term	ICD-O
Acute myeloid leukemia with t(6;9)(p23;q34.1) *DEK-NUP214*	9865/3
Acute myeloid leukemia with t(8;21)(q22;q22.1); *RUNX1-RUNX1T1*	9896/3
Acute myeloid leukemia with t(9;11)(p21.3;q23.3); *KMT2A-MLLT3*	9897/3
Acute promyelocytic leukemia with *PML-RARA*	9866/3
Acute myeloid leukemia with myelodysplasia-related changes	9895/3
Therapy-related myeloid neoplasms	9920/3
Acute myeloid leukemia, NOS	9861/3
Acute basophilic leukemia	9870/3
Acute megakaryoblastic leukemia	9910/3
Acute monoblastic and monocytic leukemia	9891/3
Acute myeloid leukemia with maturation	9874/3
Acute myeloid leukemia with minimal differentiation	9872/3
Acute myeloid leukemia without maturation	9873/3
Acute myelomonocytic leukemia	9867/3
Acute panmyelosis with myelofibrosis	9931/3
Pure erythroid leukemia	9840/3
Myeloid sarcoma	9930/3
Myeloid proliferations related to Down syndrome	
Myeloid leukemia associated with Down syndrome	9898/3
Transient abnormal myelopoiesis associated with Down syndrome	9898/1
Blastic plasmacytoid dendritic cell neoplasm	9727/3

*New histology per the *WHO Classification of Tumors of Hematopoietic and Lymphoid Tissues*, Revised 4th edition, Volume 2, 2017, effective for cases diagnosed 2021+

Table B7: Acute Leukemias of Ambiguous Lineage

WHO Preferred Term	ICD-O
Acute undifferentiated leukemia	9801/3
Acute leukemias of ambiguous lineage, NOS	*No code*
Mixed-phenotype acute leukemia with t(v;11q23.3); *KMT2A*-rearranged	9807/3
Mixed-phenotype acute leukemia, B/myeloid, not otherwise specified	9808/3
Mixed-phenotype acute leukemia, NOS, rare types	*No code*
Mixed-phenotype acute leukemia, T/myeloid, not otherwise specified	9809/3
Mixed-phenotype acute leukemia with t(9;22)(q34.1;q11.2); *BCR-ABL1*	9806/3

Table B8: Precursor Lymphoid Neoplasms

Note: For the purpose of using the rules, a non-Hodgkin lymphoma is any lymphoma (including the leukemia/lymphomas) not stated to be Hodgkin lymphoma, NOS or a type of Hodgkin lymphoma.
- Hodgkin lymphomas are: 9650/-9653/3, 9655/3, 9659/3, 9663/3.

WHO Preferred Term	ICD-O
B-lymphoblastic leukemia/lymphoma, BCR-ABL1 like (2021+)	9819/3*
B-lymphoblastic leukemia/lymphoma, NOS	9811/3
B lymphoblastic leukemia/lymphoma with hyperdiploidy	9815/3
B lymphoblastic leukemia/lymphoma with hypodiploidy (hypodiploid ALL)	9816/3
B-lymphoblastic leukemia/lymphoma with *iAMP21*	9811/3
B-lymphoblastic leukemia/lymphoma with t(1;19)(q23;p13.3); *TCF3-PBX1*	9818/3
B-lymphoblastic leukemia/lymphoma with t(5;14)(q31.1;q32.1); *IGH/IL3*	9817/3
B-lymphoblastic leukemia/lymphoma with t(9;22)(q34.1;q11.2); *BCR-ABL1*	9812/3
B-lymphoblastic leukemia/lymphoma with t(12;21)(p13.2;q22.1); *ETV6-RUNX1*	9814/3
B-lymphoblastic leukemia/lymphoma with t(v;11q23.3); *KMT2A*-rearranged	9813/3
Early T-cell precursor lymphoblastic leukemia	9837/3
NK-lymphoblastic leukemia/lymphoma	*No Code*
T-lymphoblastic leukemia/lymphoma	9837/3

*New histology per the *WHO Classification of Tumors of Hematopoietic and Lymphoid Tissues*, Revised 4th edition, Volume 2, 2017, effective for cases diagnosed 2021+

Table B9: Mature B-Cell Neoplasms

Note: For the purpose of using the rules, a non-Hodgkin lymphoma is any lymphoma (including the leukemia/lymphomas) not stated to be Hodgkin lymphoma, NOS or a type of Hodgkin lymphoma.

- Hodgkin lymphomas are: 9650/-9653/3, 9655/3, 9659/3, 9663/3.

WHO Preferred Term	ICD-O
ALK positive large B-cell lymphoma	9737/3
B-cell lymphoma, unclassifiable, with features intermediate between DLBCL and classic Hodgkin lymphoma	9596/3
B-cell prolymphocytic leukemia	9833/3
Burkitt leukemia (2010-2020)	9826/3
Burkitt lymphoma	9687/3
- Burkitt like lymphoma with 11q aberration	9687/3*
- -Burkitt leukemia	9687/3*
Chronic lymphocytic leukemia/small lymphocytic lymphoma	9823/3
Diffuse large B-cell lymphoma , NOS	9680/3
- Activated B-cell subtype	9680/3
- B-cell lymphoma, unclassifiable, with features intermediate between diffuse large B-cell	9680/3
lymphoma and Burkitt lymphoma	9680/3
- DLBCL associated with chronic inflammation	9680/3
- EBV positive DLBCL, NOS	9680/3
o EBV-positive mucocutaneous ulcer (2021+)	9680/1*
- Fibrin-associated diffuse large B-cell lymphoma	9680/3
- Germinal centre B-cell lymphoma	9680/3
- High-grade B-cell lymphoma, NOS	9680/3*
- High-grade B-cell lymphoma with MYC and BCL2 and/or BCL6 rearrangements	9680/3*
- Primary cutaneous DLBCL, leg type	9680/3
- Primary DLBCL of the CNS	9680/3
Extranodal marginal zone lymphoma of mucosal-associated lymphoid tissue (MALT lymphoma)	9699/3
- Nodal marginal zone lymphoma	
- Pediatric nodal marginal zone lymphoma	
Follicular lymphoma	9690/3
- Pediatric follicular lymphoma	9690/3
- Testicular follicular lymphoma	9690/3
Follicular lymphoma, grade 1	9695/3
- Duodenal-type follicular lymphoma	9695/3
- In situ follicular neoplasia (2021+)	9695/1*
Follicular lymphoma, grade 2	9691/3

WHO Preferred Term	ICD-O
Follicular lymphoma, grade 3	9698/3
- Large B-cell lymphoma with IRF4 rearrangement	9698/3
Hairy cell leukemia	9940/3
Heavy chain diseases	9762/3
- Alpha heavy chain disease	
- Gamma heavy chain disease	
- Mu heavy chain disease	
High-grade B-cell lymphoma	9680/3
- High-grade B-cell lymphoma with *MYC and BCL2 and/or BCL6* rearrangements	
- High-grade B-cell lymphoma, NOS	
HHV8-positive diffuse large B-cell lymphoma, NOS	9738/3
- HHV8-positive germinotropic lymphoproliferative disorder (2021+)	9738/1
IgM monoclonal gammopathy of undetermined significance (2021+)	9761/1*
Intravascular large B-cell lymphoma	9712/3
Lymphomatoid granulomatosis, grade 1, 2	9766/1
Lymphomatoid granulomatosis, grade 3 (2021+)	9766/3
Lymphoplasmacytic lymphoma	9671/3
- Waldenstrom Macroglobulinemia	9761/3
Mantle cell lymphoma	9673/3
- In situ mantle cell neoplasia	9673/1*
Monoclonal B-cell lymphocytosis, CLL-type (2021+)	9823/1*
Monoclonal B-cell lymphocytosis, non-CLL-type (2021+)	9591/1*
Multicentric Castleman disease	*No code*
Plasma cell neoplasms	
- Extraosseous plasmacytoma	9734/3
- Monoclonal immunoglobulin deposition disease	
o Light chain and heavy chain deposition	9769/1
o Primary amyloidosis	9769/1
- Non-IgM monoclonal gammopathy of undetermined significance	9765/1
- Plasma cell myeloma	9732/3
- Solitary plasmacytoma of bone	9731/3
Plasmablastic lymphoma	9735/3
Primary cutaneous follicle centre lymphoma	9597/3
Primary effusion lymphoma	9678/3
Primary mediastinal (thymic) large B-cell lymphoma	9679/3

WHO Preferred Term	ICD-O
Splenic B-cell lymphoma/leukemia, unclassifiable - Hairy cell leukemia-variant - Splenic disuse red pulp small B-cell lymphoma	9591/3
Splenic marginal zone lymphoma	9689/3
T-cell/histiocyte rich large B-cell lymphoma	9688/3

*New histology per the *WHO Classification of Tumors of Hematopoietic and Lymphoid Tissues*, Revised 4th edition, Volume 2, 2017, effective for cases diagnosed 2021+

Table B10: Mature T-Cell and NK-Cell Neoplasms

Note: For the purpose of using the rules, a non-Hodgkin lymphoma is any lymphoma (including the leukemia/lymphomas) not stated to be Hodgkin lymphoma, NOS or a type of Hodgkin lymphoma.
- Hodgkin lymphomas are: 9650/-9653/3, 9655/3, 9659/3, 9663/3.

WHO Preferred Term	ICD-O
Adult T-cell leukemia/lymphoma	9827/3
Aggressive NK-cell leukemia	9948/3
Anaplastic large cell lymphoma, *ALK* negative (2021+) - Breast implant-associated anaplastic large cell lymphoma	9715/3*
Anaplastic large cell lymphoma, *ALK* positive	9714/3
Angioimmunoblastic T-cell lymphoma	9705/3
Enteropathy-associated T-cell lymphoma	9717/3
- Intestinal T-cell lymphoma, NOS	9717/3
- Monomorphic epitheliotropic intestinal T-cell lymphoma	9717/3
Extranodal NK-/T-cell lymphoma, nasal type	9719/3
Hepatosplenic T-cell lymphoma	9716/3
Hydroa vacciniforme-like lymphoma (2010-2020) - Severe mosquito bite allergy	9725/3**
Hydroa vacciniforme-like lymphoproliferative disorder (2021+) - Severe mosquito bite allergy	9725/1**
Indolent T-cell lymphoproliferative disorder of the gastrointestinal tract	9702/1*
Mycosis fungoides	9700/3
Peripheral T-cell lymphoma, NOS	9702/3
- Follicular T-cell lymphoma	9702/3
- Nodal peripheral T-cell lymphoma with T follicular helper phenotype	9702/3
Primary cutaneous CD30-positive T-cell lymphoproliferative disorders	
- Lymphomatoid papulosis	9718/1
- Primary cutaneous anaplastic large cell lymphoma	9718/3

WHO Preferred Term	ICD-O
Primary cutaneous CD4-positive small/medium T-cell lymphoproliferative disorder (2021+) - *Note: Alternate name previously collected as 9709/3*	9709/1*
Primary cutaneous lymphoma, NOS	9709/3
- Primary cutaneous CD8-positive aggressive epidermotropic cytotoxic T-cell lymphoma	9709/3
- Primary cutaneous acral CD8-positive T-cell lymphoma	9709/3
- *Note: For 2021+ excludes alternate name "Primary cutaneous CD-4 positive small/medium T-cell lymphoproliferative disorder (see 9709/1)*	
Primary cutaneous gamma-delta T-cell lymphoma	9726/3
Sezary syndrome	9701/3
Subcutaneous panniculitis-like T-cell lymphoma	9708/3
Systemic EBV-positive T-cell lymphoma of childhood	9724/3
- Chronic active EBV infection of T- and NK-cell type, systemic form	9724/3
T-cell large granular lymphocytic leukemia	9831/3
- Chronic lymphoproliferative disorder of NK cells	
T-cell prolymphocytic leukemia	9834/3

*New histology per the *WHO Classification of Tumors of Hematopoietic and Lymphoid Tissues*, Revised 4th edition, Volume 2, 2017, effective for cases diagnosed 2021+

**Per the *WHO Classification of Tumors of Hematopoietic and Lymphoid Tissues*, Revised 4th edition, Volume 2, 2017, Hydroa vacciniforme-like lymphoma is now a /1 and has a new preferred name

Table B11: Hodgkin Lymphoma

WHO Preferred Term	ICD-O
Classic Hodgkin lymphoma	9650/3
Lymphocyte-depleted classic Hodgkin lymphoma	9653/3
Lymphocyte-rich classic Hodgkin lymphoma	9651/3
Mixed cellularity classic Hodgkin lymphoma	9652/3
Hodgkin lymphoma, lymphocyte depletion, reticular	9655/3
Nodular lymphocyte predominant Hodgkin lymphoma	9659/3
Nodular sclerosis classic Hodgkin lymphoma	9663/3

Table B12: Immunodeficiency Associated Lymphoproliferative Disorders

WHO Preferred Term	ICD-O
Other iatrogenic immunodeficiency-associated lymphoproliferative disorders	*No code*
Post-transplant lymphoproliferative disorders (PTLD)	
- Classic Hodgkin Lymphoma PTLD	9650/3
- Monomorphic PTLD	*No code*
- Non-destructive PTLD	*No code*
o Florid follicular hyperplasia	*9971/1*
o Infectious mononucleiosis	*9971/1*
o Plasmacytic hyperplasia PTLD	*9971/1*
- Polymorphic PTLD (2010-2020 only)	9971/3*
- Polymorphic PTLD (2021+)	9971/1

*Per the *WHO Classification of Tumors of Hematopoietic and Lymphoid Tissues*, Revised 4th edition, Volume 2, 2017, Polymorphic PTLD is now a /1

Table B13: Histiocytic and Dendritic Cell Neoplasms

WHO Preferred Term	ICD-O
Disseminated juvenile xanthogranuloma	*No Code*
Erdheim-Chester disease (2021+)	9749/3*
Fibroblastic reticular cell tumor	9759/3
Follicular dendritic cell sarcoma	9758/3
Histiocytic sarcoma	9755/3
Indeterminate dendritic cell tumor - Interdigitating dendritic cell sarcoma	9757/3
Langerhans cell histiocytosis, disseminated	9751/3
Langerhans cell histiocytosis, NOS (2010-2020)	9751/3**
Langerhans cell histiocytosis, NOS (2021+)	9751/1**
Langerhans cell histiocytosis, monostoic (2010-2020)	9751/3**
Langerhans cell histiocytosis, monostoic (2021+)	9751/1**
Langerhans cell histiocytosis, polystoic (2010-2020)	9751/3**
Langerhans cell histiocytosis, polystoic (2021+)	9751/1**
Langerhans cell sarcoma	9756/3

*New histology per the *WHO Classification of Tumors of Hematopoietic and Lymphoid Tissues*, Revised 4th edition, Volume 2, 2017, effective for cases diagnosed 2021+

**Per the *WHO Classification of Tumors of Hematopoietic and Lymphoid Tissues*, Revised 4th edition, Volume 2, 2017, only "LCH, disseminated" is now reportable as a /3, all other terms are a /1

Appendix C
Lymph Node/Lymph Node Chain Reference Table

Use this table with the Primary Site and Histology Rules to determine whether involved lymph nodes are in a single ICD-O lymph node region or in multiple ICD-O lymph node regions.

This table contains the names of lymph nodes that have the capsule and sinus structure of true lymph nodes. Lymphoid tissue such as that in the GI tract, tonsils, etc., is not represented in this table.

Note: Pathology reports may identify lymph nodes within most organs, the most common being breast, parotid gland, lung, and pancreas. The lymph nodes in these organs are called intra- (organ name) lymph nodes such as intramammary lymph nodes. We have included the most common intra-organ lymph nodes on this table. For an intra-organ lymph node not listed on the table, code to the ICD-O topography code for that organ's regional lymph node chain(s).

Table C1: Lymph Node/Lymph Node Chain Reference Table
*The right and left are separate regions per AJCC

Lymph Node/Lymph Node Chain	Use for Multiple Primaries in Heme	ICD-O Lymph Node Region(s)	TNM Staging
Abdominal	C772	Intra-abdominal	Mesenteric
Anorectal (pararectal)	C775	Pelvic	Pelvic, right and left*
Anterior axillary (pectoral)	C773	Axilla or arm	Axillary, right and left*
Anterior cecal (prececal)	C772	Intra-abdominal	Mesenteric
Anterior deep cervical (laterotracheal, recurrent laryngeal, recurrent pharyngeal)	C770	Head, face and neck	Cervical, right and left*
Anterior jugular	C770	Head, face and neck	Cervical, right and left*
Anterior mediastinal	C771	Intrathoracic	Mediastinal
Aortic (ascending, lateral, lumbar, subaortic, NOS)	C772	Intra-abdominal	Para-aortic
Aortico-pulmonary window (subaortic)	C772	Intra-abdominal	Para-aortic
Apical (subclavian)	C770	Head, face and neck	Cervical, right and left*
Appendiceal	C772	Intra-abdominal	Mesenteric
Apical axillary (deep axillary, Level III axillary)	C773	Axilla or arm	Axillary, right and left*
Aselli's glands (nodes near pancreas)	C772	Intra-abdominal	Para-aortic
Auricular (infraauricular, postauricular, preauricalar, retroauricular, NOS)	C770	Head, face and neck	Cervical, right and left*
Axillary (anterior, brachial, deep, lateral, superficial, NOS)	C773	Axilla or arm	Axillary, right and left*
Axillary (Level I [low axillary, superficial axillary], Level II, Level III [apical, deep)	C773	Axilla or arm	Infraclavicular, right and left*
Azygos (lower paratracheal)	C771	Intrathoracic	Mediastinal
Brachial (lateral axillary)	C773	Axilla or arm	Axillary, right and left*
Brachiocephalic	C773	Axilla or arm	Axillary, right and left*

Lymph Node/Lymph Node Chain	Use for Multiple Primaries in Heme	ICD-O Lymph Node Region(s)	TNM Staging
Bronchial	C771	Intrathoracic	Hilar
Bronchopulmonary (hilar) (proximal lobar) (pulmonary root)	C771	Intrathoracic	Hilar
Buccal (buccinator)	C770	Head, face and neck	Cervical, right and left*
Calot's node (cystic, cysto-hepatic triangle or hepato-biliary triangle)	C772	Intra-abdominal	Para-aortic
Cardiac (cardial)	C771	Intrathoracic	Mediastinal
Cardioesophageal (tracheobronchial, tracheal bifurcation)	C771	Intrathoracic	Mediastinal
Carinal (tracheal bifurcation, tracheobronchial)	C771	Intrathoracic	Mediastinal
Caval (para-)	C772	Intra-abdominal	Para-aortic
Cecal (anterior, posterior, prececal, retrocecal, NOS)	C772	Intra-abdominal	Mesenteric
Celiac	C772	Intra-abdominal	Para-aortic
Central compartment (paralaryngeal, prelaryngeal [Delphian]) adjacent to thyroid gland	C770	Head, face and neck	Cervical, right and left*
Cervical, NOS	C770	Head, face and neck	Cervical, right and left*
Cervical paratracheal	C770	Head, face and neck	Cervical, right and left*
Cervical periesophageal	C770	Head, face and neck	Cervical, right and left*
Cloquet's node (inguinal)	C774	Inguinal region or leg	Inguino-femoral, right and left*
Colic (ileocolic, left, mesocolic, middle, right, NOS)	C772	Intra-abdominal	Mesenteric
Common bile duct(percholedochal)	C772	Intra-abdominal	Para-aortic
Common hepatic	C771	Intrathoracic	Mediastinal
Common iliac	C775	Pelvic	Pelvic, right and left*
Cubital	C773	Axilla or arm	Axillary, right and left*
Cystic (Calot's node, cysto-hepatic triangle or hepato-biliary triangle)	C772	Intra-abdominal	Para-aortic
Cystic duct	C772	Intra-abdominal	Para-aortic
Deep axillary	C773	Axilla or arm	Axillary, right and left*
Deep cervical (lower, middle, upper, NOS)	C771	Intrathoracic	Cervical, right and left*
Delphian node (precroid)	C770	Head, face and neck	Cervical, right and left*
Deltopectoral	C773	Axilla or arm	Axillary, right and left*
Diaphragmatic, sub	C771	Intrathoracic	Mediastinal
Duodenal	C772	Intra-abdominal	Para-aortic
Epicolic (Foramen of Winslow, omental)	C772	Intra-abdominal	Mesenteric
Epitrochlear	C773	Axilla or arm	Axillary, right and left*
Esophageal (para-, peri-)	C771	Intrathoracic	Mediastinal
Esophageal groove	C770	Head, face and neck	Cervical, right and left*

Lymph Node/Lymph Node Chain	Use for Multiple Primaries in Heme	ICD-O Lymph Node Region(s)	TNM Staging
External iliac	C775	Pelvic	Pelvic, right and left*
Facial (buccal, buccinator, nasolabial)	C770	Head, face and neck	Cervical, right and left*
Femoral (superficial inguinal)	C774	Inguinal region or leg	Inguino-femoral, right and left*
Foramen of Winslow (epicolic, omental)	C772	Intra-abdominal	Mesenteric
Gastric (inferior, left, right, superior, NOS)	C772	Intra-abdominal	Mesenteric
Gastrocolic	C772	Intra-abdominal	Mesenteric
Gastroduodenal	C772	Intra-abdominal	Mesenteric
Gastroepiploic (gastro-omental)	C772	Intra-abdominal	Mesenteric
Gastrohepatic	C772	Intra-abdominal	Mesenteric
Gastropancreatic	C772	Intra-abdominal	Mesenteric
Gerota's node (promontorial, middle sacral)	C775	Pelvic	Para-aortic
Greater curvature	C772	Intra-abdominal	Mesenteric
Greater omentum (greater omental)	C772	Intra-abdominal	Mesenteric
Groin	C774	Inguinal region or leg	Inguino-femoral, right and left*
Hemorrhoidal (inferior, middle, superior, NOS)	C775	Pelvic	Pelvic, right and left*
Hepatic (hepatic artery, hepatic pedicle, inferior vena cava, lienal, porta hepatis [hilar], NOS)	C772	Intra-abdominal	Para-aortic
Hepatic artery	C772	Intra-abdominal	Para-aortic
Hepatic pedicle	C772	Intra-abdominal	Para-aortic
Hepatoduodenal ligament (hilar)	C772	Intra-abdominal	Para-aortic
Highest deep inguinal (Rosenmuller or Node of Cloquet)	C774	Inguinal region or leg	Inguino-femoral, right and left*
Hilar ([in hilus of liver], hepatoduodenal ligament, porta hepatis, portal, splenic, NOS)	C772	Intra-abdominal	Mesenteric
Hilar (bronchial, bronchopulmonary, proximal lobar, pulmonary root)	C771	Intrathoracic	Hilar, right and left*
Hypogastric (internal iliac)	C775	Pelvic	Pelvic, right and left*
Ileocolic	C772	Intra-abdominal	Mesenteric
Iliac (common, external, internal [hypogastric, obturator])	C775	Pelvic	Pelvic, right and left*
Inferior deep cervical (scalene)	C770	Head, face and neck	Cervical, right and left*
Inferior gastric (right, NOS)	C772	Intra-abdominal	Mesenteric
Inferior hemorrhoidal	C775	Pelvic	Pelvic, right and left*
Inferior (deep) jugular	C770	Head, face and neck	Cervical, right and left*
Inferior mesenteric	C772	Intra-abdominal	Mesenteric
Inferior rectal (hemorrhoidal)	C775	Pelvic	Pelvic, right and left*
Inferior phrenic vein	C771	Intra-thoracic	Mediastinal

Lymph Node/Lymph Node Chain	Use for Multiple Primaries in Heme	ICD-O Lymph Node Region(s)	TNM Staging
Inferior vena cava	C772	Intra-abdominal	Para-aortic
Infrauricular	C770	Head, face and neck	Cervical, right and left*
Infraclavicular (subclavicular)	C773	Axilla or arm	Infraclavicular, right and left*
Infrapyloric	C772	Intra-abdominal	Para-aortic
Infundibulopelvic (utero-ovarian)	C775	Pelvic	Pelvic, right and left*
Inguinal (deep, sublingual, superficial, NOS)	C774	Inguinal region or leg	Inguino-femoral, right and left*
Interaortocaval	C772	Intra-abdominal	Para-aortic
Intercostal	C771	Intrathoracic	Mediastinal
Interlobar (within the lung) (intrapulmonary)	C771	Intrathoracic	Mediastinal
Internal iliac (hypogastric, obturator)	C775	Pelvic	Pelvic, right and left*
Internal jugular (upper deep cervical)	C770	Head, face, and neck	Cervical, right and left*
Internal mammary (parasternal)	C771	Intrathoracic	Mediastinal
Interpectoral (Rotter's node)	C773	Axilla or arm	Axillary, right and left*
Intestinal	C772	Intra-abdominal	Mesenteric
Intra-abdominal	C772	Intra-abdominal	Mesenteric
Intrabronchial, NOS	C771	Intrathoracic	Hilar
Intramammary	C773	Axilla or arm	Axillary, right and left*
Intrapancreatic	C772	Intra-abdominal	Para-aortic
Intraparotid	C770	Head, face and neck	Cervical, right and left*
Intrapelvic	C775	Pelvic	Pelvic, right and left*
Intrapulmonary (segmental, subsegmental)	C771	Intrathoracic	Mediastinal
Jugular (anterior, inferior [deep], internal, lateral, lower, mid, superior, NOS)	C770	Head, face and neck	Cervical, right and left*
Jugulodigastric (subdigastric)	C770	Head, face and neck	Cervical, right and left*
Jugulo-omohyoid (supraomohyoid)	C770	Head, face and neck	Cervical, right and left*
Lateral aortic (ascending, lumbar, subaortic)	C772	Intra-abdominal	Para-aortic
Lateral axillary (brachial)	C773	Axilla or arm	Axillary, right and left*
Lateral compartment (jugular, mid and lower; supraclavicular; upper deep jugular; spinal accessory; retropharyngeal; submandibular; submental)	C770	Head, face and neck	Cervical, right and left*
Lateral jugular	C770	Head, face and neck	Cervical, right and left*
Laterosacral (lateral sacral)	C775	Pelvic	Pelvic, right and left*
Laterotracheal (anterior deep cervical)	C771	Intrathoracic	Cervical, right and left*
Left colic	C772	Intra-abdominal	Mesenteric
Left gastric (superior gastric)	C772	Intra-abdominal	Mesenteric

Lymph Node/Lymph Node Chain	Use for Multiple Primaries in Heme	ICD-O Lymph Node Region(s)	TNM Staging
Left gastrocolic (superior gastrocolic)	C772	Intra-abdominal	Mesenteric
Left supraclavicular (Virchow's node, Trosier's node)	C770	Head, face, and neck	Cervical, right and left*
Leg/Lower limb	C774	Inguinal region or leg	Inguino-femoral, right and left*
Lesser curvature	C772	Intra-abdominal	Mesenteric
Lesser omentum (lesser omental)	C772	Intra-abdominal	Mesenteric
Level I axillary (low axillary) (superficial axillary)	C773	Axilla or arm	Infraclavicular, right and left*
Level II axillary	C773	Axilla or arm	Infraclavicular, right and left*
Level III axillary (deep axillary, high axillary)	C773	Axilla or arm	Infraclavicular, right and left*
Lienal (splenic)	C772	Intra-abdominal	Mesenteric
Lobar (intrapulmonary)	C771	Intrathoracic	Hilar
Lobar (proximal, pulmonary)	C771	Intrathoracic	Hilar
Low axillary (Level I axillary)	C773	Axilla or arm	Infraclavicular, right and left*
Lower deep cervical	C771	Intrathoracic	Cervical, right and left*
Lower jugular	C770	Head, face and neck	Cervical, right and left*
Lower paratracheal (azygos)	C771	Intrathoracic	Mediastinal
Lower periesophageal (intrathoracic esophagus)	C771	Intrathoracic	Mediastinal
Lower peritracheal	C771	Intrathoracic	Mediastinal
Lower thoracic paraesophageal	C771	Intrathoracic	Mediastinal
Lumbar aortic (ascending, lateral, subaortic)	C772	Intra-abdominal	Para-aortic
Mandibular	C770	Head, face and neck	Cervical, right and left*
Mastoid (postauricular, retroauricular, NOS)	C770	Head, face and neck	Cervical, right and left*
Mediastinal (anterior, posterior, superior, NOS)	C771	Intrathoracic	Mediastinal
Mesenteric (inferior, sigmoid [sigmoidal], superior, NOS)	C772	Intra-abdominal	Mesenteric
Mesocolic	C772	Intra-abdominal	Mesenteric
Mid jugular	C770	Head, face and neck	Cervical, right and left*
Midcolic	C772	Intra-abdominal	Pelvic, right and left*
Middle deep cervical	C771	Intrathoracic	Cervical, right and left*
Middle (right) colic	C772	Intra-abdominal	Mesenteric
Middle hemhorrhoidal	C775	Pelvic	Pelvic, right and left*
Middle sacral (Gerota's node, promontorial)	C775	Pelvic	Pelvic, right and left*
Middle thoracic paraesophageal	C771	Intrathoracic	Mediastinal
Nasolabial (facial)	C770	Head, face and neck	Cervical, right and left*
Node of Cloquet's or Rosenmuller (highest deep inguinal)	C774	Inguinal region or leg	Inguino-femoral, right and left*

Lymph Node/Lymph Node Chain	Use for Multiple Primaries in Heme	ICD-O Lymph Node Region(s)	TNM Staging
Obturator (internal iliac)	C775	Pelvic	Pelvic, right and left*
Occipital (suboccipital)	C770	Head, face and neck	Cervical, right and left*
Pancreatic (Aselli's glands [nodes near pancreas], parapancreatic; peripancreatic, NOS)	C772	Intra-abdominal	Para-aortic
Pancreaticoduodenal (anterior, posterior, NOS)	C772	Intra-abdominal	Para-aortic
Pancreaticosplenic (pancreaticolineal)	C772	Intra-abdominal	Mesenteric
Para-aortic	C772	Intra-abdominal	Para-aortic
Parabronchial (peribronchial)	C771	Intrathoracic	Mediastinal
Paracardial	C772	Intra-abdominal	Mesenteric
Paracaval	C772	Intra-abdominal	Para-aortic
Paracervical	C775	Pelvic	Pelvic, right and left*
Paracolic (pericolic)	C772	Intra-abdominal	Para-aortic
Paraesophageal	C771	Intrathoracic	Mediastinal
Paralaryngeal	C770	Head, face and neck	Cervical, right and left*
Parametrial	C775	Pelvic	Pelvic, right and left*
Parapancreatic	C772	Intra-abdominal	Para-aortic
Parapharyngeal	C770	Head, face and neck	Cervical, right and left*
Pararectal (anorectal)	C775	Pelvic	Pelvic, right and left*
Parasternal (internal mammary)	C771	Intrathoracic	Mediastinal
Paratracheal (lower, NOS)	C771	Intrathoracic	Mediastinal
Parotid (peri-, NOS)	C770	Head, face and neck	Cervical, right and left*
Pectoral (anterior axillary)	C773	Axilla or arm	Axillary, right and left*
Pelvic, NOS	C775	Pelvic	Pelvic, right and left*
Peri-aortic	C772	Intra-abdominal	Para-aortic
Peri-parotid	C770	Head, face and neck	Cervical, right and left*
Peri-thymic	C770	Head, face and neck	Cervical, right and left*
Peribronchial (parabronchial)	C771	Intrathoracic	Mediastinal
Pericardial (pericardiac)	C771	Intrathoracic	Mediastinal
Pericaval	C772	Intra-abdominal	Para-aortic
Pericholedochal (common bile duct)	C772	Intra-abdominal	Para-aortic
Pericolic (paracolic)	C772	Intra-abdominal	Mesenteric
Periduodenal	C772	Intra-abdominal	Para-aortic
Periesophageal	C771	Intrathoracic	Mediastinal

Lymph Node/Lymph Node Chain	Use for Multiple Primaries in Heme	ICD-O Lymph Node Region(s)	TNM Staging
Perigastric (except cardiac)	C772	Intra-abdominal	Mesenteric
Peripancreatic	C772	Intra-abdominal	Para-aortic
Periportal	C772	Intra-abdominal	Pelvic, right and left*
Periprostatic	C775	Pelvic	Pelvic, right and left*
Perirectal	C775	Pelvic	Pelvic, right and left*
Periparotid	C770	Head, face and neck	Cervical, right and left*
Perithyroidal	C771	Intrathoracic	Mediastinal
Peritracheal (lower)	C771	Intrathoracic	Mediastinal
Periureteral	C772	Intra-abdominal	Para-aortic
Perivesical	C775	Pelvic	Pelvic, right and left*
Pharyngeal (Delphian node, prepharyngeal, retropharyngeal, NOS)	C770	Head, face and neck	Cervical, right and left*
Phrenic vein (inferior, superior, NOS)	C771	Intra-thoracic	Mediastinal
Popliteal	C774	Inguinal region or leg	Inguino-femoral, right and left*
Porta hepatis [in hilus of liver]	C772	Intra-abdominal	Para-aortic
Portal (portal vein)	C772	Intra-abdominal	Para-aortic
Postauricular (mastoid, retroauricular)	C770	Head, face and neck	Cervical, right and left*
Posterior axillary (subscapular)	C773	Axilla or arm	Axillary, right and left*
Posterior cecal (retrocecal)	C772	Intra-abdominal	Para-aortic
Posterior cervical (spinal accessory)	C770	Head, face and neck	Cervical, right and left*
Posterior mediastinal (tracheoesophageal)	C771	Intrathoracic	Mediastinal
Postglandular	C770	Head, face and neck	Cervical, right and left*
Posterior triangle	C770	Head, face and neck	Cervical, right and left*
Postvascular	C770	Head, face and neck	Cervical, right and left*
Preaortic	C772	Intra-abdominal	Para-aortic
Preauricular	C770	Head, face and neck	Cervical, right and left*
Precarinal	C771	Intrathoracic	Mediastinal
Prececal (anterior cecal)	C772	Intra-abdominal	Mesenteric
Precricoid (Delphian node)	C770	Head, face and neck	Cervical, right and left*
Preglandular	C770	Head, face and neck	Cervical, right and left*
Prepharyngeal (Delphian node), adjacent to thyroid gland; anterior to thyroid isthmus	C770	Head, face and neck	Cervical, right and left*
Presacral	C775	Pelvic	Pelvic, right and left*
Presymphseal	C775	Pelvic	Pelvic, right and left*

Lymph Node/Lymph Node Chain	Use for Multiple Primaries in Heme	ICD-O Lymph Node Region(s)	TNM Staging
Pretracheal	C770	Head, face and neck	Cervical, right and left*
Prevascular	C770	Head, face and neck	Cervical, right and left*
Promontorial (Gerota's node, middle sacral)	C775	Pelvic	Para-aortic
Proximal lobar (bronchopulmonary, hilar, pulmonary root)	C771	Intrathoracic	Hilar
Proximal mesentery	C772	Intra-abdominal	Mesenteric
Pulmonary ligament	C771	Intrathoracic	Mediastinal
Pulmonary (pulmonary root, NOS)	C771	Intrathoracic	Hilar
Pyloric (infrapyloric, subpyloric, suprapyloric)	C772	Intra-abdominal	Para-aortic
Rectal (superior, NOS)	C775	Pelvic	Pelvic, right and left*
Recurrent laryngeal (anterior deep cervical, laterotracheal)	C770	Head, face and neck	Cervical, right and left*
Recurrent pharyngeal (anterior deep cervical)	C770	Head, face and neck	Cervical, right and left*
Renal artery	C772	Intra-abdominal	Para-aortic
Renal hilar	C772	Intra-abdominal	Para-aortic
Retroaortic	C772	Intra-abdominal	Para-aortic
Retro-auricular (mastoid, postauricular)	C770	Head, face and neck	Cervical, right and left*
Retrocaval	C772	Intra-abdominal	Para-aortic
Retrocecal (posterior cecal)	C772	Intra-abdominal	Para-aortic
Retrocrural	C771	Intra-thoracic	Mediastinal
Retropancreatic	C772	Intra-abdominal	Para-aortic
Retroperitoneal	C772	Intra-abdominal	Para-aortic
Retropharyngeal	C770	Head, face and neck	Cervical, right and left*
Retrotracheal (tracheal)	C771	Intrathoracic	Mediastinal
Right colic	C772	Intra-abdominal	Mesenteric
Right gastric	C772	Intra-abdominal	Mesenteric
Rosenmuller or Node of Cloquet (highest deep inguinal)	C774	Inguinal region or leg	Inguino-femoral, right and left*
Rotter's nodes (interpectoral between major and minor pectoralis)	C773	Axilla or arm	Axillary, right and left*
Rouviere's node (retropharyngeal)	C770	Head, face and neck	Cervical, right and left*
Sacral (lateral sacral, laterosacral, middle sacral, presacral, NOS)	C775	Pelvic	Pelvic, right and left*
Sacral (uterosacral)	C774	Pelvic	Pelvic, right and left*
Scalene (inferior deep cervical)	C770	Head, face and neck	Cervical, right and left*
Segmental (intrapulmonary, subsegmental)	C771	Intrathoracic	Mediastinal
Sigmoid (sigmoidal mesenteric, NOS)	C772	Intra-abdominal	Mesenteric
Sister Mary Joseph	C772	Intra-abdominal	Mesenteric

Lymph Node/Lymph Node Chain	Use for Multiple Primaries in Heme	ICD-O Lymph Node Region(s)	TNM Staging
Spermatic vein	C774	Inguinal region or leg	Inguino-femoral, right and left*
Spinal accessory (posterior cervical)	C770	Head, face and neck	Cervical, right and left*
Splenic (hilar, lienal)	C772	Intra-abdominal	Mesenteric
Subaortic (ascending, lateral, lumbar)	C772	Intra-abdominal	Para-aortic
Subcapsular (posterior axillary)	C773	Axilla or arm	Axillary, right and left*
Subcarinal	C771	Intrathoracic	Mediastinal
Subclavian (apical)	C770	Head, face and neck	Cervical, right and left*
Subclavicular (infraclavicular)	C773	Axilla or arm	Infraclavicular, right and left*
Subdigastric (jugulodigastric)	C770	Head, face and neck	Cervical, right and left*
Subinguinal (superficial inguinal)	C774	Inguinal region or leg	Inguino-femoral, right and left*
Sublingual	C770	Head, face and neck	Cervical, right and left*
Submandibular (submaxillary)	C770	Head, face and neck	Cervical, right and left*
Submaxillary (submandibular)	C770	Head, face and neck	Cervical, right and left*
Submental	C770	Head, face and neck	Cervical, right and left*
Suboccipital (occipital)	C770	Head, face and neck	Cervical, right and left*
Subpleural (in the periphery of the lung)	C771	Intrathoracic	Mediastinal
Subpyloric	C772	Intra-abdominal	Para-aortic
Subsegmental (intrapulmonary, segmental)	C771	Intrathoracic	Mediastinal
Substernal	C771	Intrathoracic	Mediastinal
Superficial axillary (Level I axillary)	C773	Axilla or arm	Infraclavicular, right and left*
Superficial inguinal (femoral, subinguinal)	C774	Inguinal region or leg	Inguino-femoral, right and left*
Superior gastric (left gastric)	C772	Intra-abdominal	Mesenteric
Superior gastrocolic (left gastrocolic)	C772	Intra-abdominal	Mesenteric
Superior hemorrhoidal	C775	Pelvic	Pelvic, right and left*
Superior hilum	C772	Intra-abdominal	Pelvic, right and left*
Superior jugular	C770	Head, face and neck	Cervical, right and left*
Superior mediastinal	C771	Intrathoracic	Mediastinal
Superior mesenteric	C772	Intra-abdominal	Pelvic, right and left*
Superior phrenic vein	C771	Intra-thoracic	Mediastinal
Superior rectal (hemorrhoidal)	C775	Pelvic	Pelvic, right and left*
Supraclavicular (transverse cervical)	C770	Head, face and neck	Cervical, right and left*
Supraomohyoid (jugulo-omohyoid)	C770	Head, face and neck	Cervical, right and left*
Suprapancreatic	C772	Intra-abdominal	Para-aortic

Lymph Node/Lymph Node Chain	Use for Multiple Primaries in Heme	ICD-O Lymph Node Region(s)	TNM Staging
Suprapyloric	C772	Intra-abdominal	Para-aortic
Thoracic	C771	Intrathoracic	Mediastinal
Thyroid	C770	Head, face and neck	Cervical, right and left*
Tibial	C774	Inguinal region or leg	Inguino-femoral, right and left*
Tracheal (retrotracheal, NOS)	C771	Intrathoracic	Mediastinal
Tracheal bifurcation (carinal, tracheobronchial)	C771	Intrathoracic	Mediastinal
Tracheobronchial (carinal, tracheal bifurcation)	C771	Intrathoracic	Mediastinal
Tracheoesophageal (posterior mediastinal)	C771	Intrathoracic	Mediastinal
Transverse cervical (supraclavicular)	C770	Head, face, and neck	Cervical, right and left*
Trosier's node (left supraclavicular)	C770	Head, face, and neck	Cervical, right and left*
Upper deep cervical (internal jugular)	C770	Head, face, and neck	Cervical, right and left*
Upper thoracic paraesophageal	C771	Intrathoracic	Mediastinal
Utero-ovarian (infundibulopelvic)	C775	Pelvic	Pelvic, right and left*
Uterosacral	C774	Pelvic	Pelvic, right and left*
Virchow's node (left supraclavicular)	C770	Head, face, and neck	Cervical, right and left*

*The right and left are separate regions per AJCC

Appendix D: Introduction to Genetic Nomenclature

The information included in Appendix D has been graciously provided by SEER*Educate.

Making sense of all the genetic abnormalities, mutations, and rearrangements involving the hematopoietic and lymphoid neoplasms is challenging. The following information is provided as a brief introduction to some of the nomenclature, genetic alterations and molecular information needed to successfully code hematopoietic histologies This document is not intended to be inclusive of all terminology you will encounter, but is intended to be an introduction to this subject matter.

Chromosomes

1. Human somatic cells are diploid, meaning they contain 46 chromosomes (2 copies of 23 chromosomes (or 23 pairs))

    a. Chromosomes are numbered 1 through 22 and the sex chromosomes are labeled X or Y.
    b. Only gametes (egg or sperm cells) are haploid, meaning they have 23 chromosomes each.

2. Hyperdiploid cells have greater than 46 chromosomes (more than the usual number).

3. Hypodiploid cells have less than 46 chromosomes (less than the usual number).

4. Chromosomes are comprised of a **short arm**, labeled "p," and a **long arm**, labeled "q."

    a. The location of genetic abnormalities may be further clarified by the arm on which it occurs:

        i. Example: A deletion of 5q (del(5q)) indicates there is a deletion on the long arm ("q") of chromosome 5.

How to Translate a Cytogenetic Location

Different genes are in different chromosomes, which are in the nucleus of a cell. Genes are given a genomic address (or a cytogenetic location). Mutations and chromosomal abnormalities may also be described using the cytogenetic location(s) of the mutation/abnormality.

The **cytogenetic location** is comprised of the following:

                Chromosome + Arm + Region + Band +/- Sub-band

A mnemonic can help you remember how to interpret the position of gene abnormalities/mutations described: **CARBS** (**C**hromosome + **A**rm + **R**egion + **B**and +/- **S**ub-band)

Notes:

1. The cytogenetic location may, or may not, be given down to the location of the sub-band. When the sub-band is noted, it follows a decimal point (e.g., ".1").

2. The region, band and/or sub-band may be combined and called the "position."

Example: In describing the TCF3 gene, the cytogenetic report (pathology report, chart note, etc.) may refer to it as: 19p13.3 (instead of TCF3). The term "19p13.3" is the cytogenetic location of that gene and it is broken down as follows:

19	=	Chromosome number 19	**C**
p	=	Short arm (of chromosome 19)	**A**
1	=	Region	**R**
3	=	Band	**B**
.3	=	Sub-band	**S**

Selected Types of Abnormalities/Mutations

Mutation Type	Abbreviation(s)	Description	Nomenclature Example(s)
Insertion *	ins	Addition of DNA into a gene.	ins(18;5)(q21.1;q31.2)
Deletion	del	Removal of DNA; may occur in one or more base pairs, entire gene(s), or chromosome arm (p or q).	del(5q); del(6q21)
Duplication *	dup	DNA abnormally copied one or more times.	dup(21); FLT3-ITD (Where ITD = internal tandem duplication)
Inversion	inv	Rearrangement within a single chromosome in which a chromosome segment undergoes breakage and rearrangement within itself.	inv(16); inv(3); inv(16)(p13.1;q22); inv(3)(q21;q26.2) (Sometimes described as a translocation between a single chromosome: t(16;16)(p13.1;q22))
Translocation	t(x;x) **	Rearrangement between two chromosomes in which a chromosome segment breaks off and attaches to a different chromosome.	t(9;22); t(8;21); t(9;22)(q34;q11.2); t(8;21)(q22;q22)
Trisomy	(XY, +x) **	An extra copy (three total copies) of the specified chromosome.	47(XY,+8); Trisomy 21; Gain of chromosome 9 (Sometimes these are referred to as just "Trisomy" or "Gain of" abnormalities without abbreviation or specific karyotype notation.)
Monosomy	(XY,-x) **	The presence of only one chromosome from the specified chromosome pair.	45(XY,-16); Monosomy 7; Loss of chromosome 5 (Sometimes these are referred to as just "Monosomy" or "Loss of" abnormalities without abbreviation or specific karyotype notation.)

*   Uncommon as a sole genetic/molecular abnormality documented in heme/lymphoid neoplasms.

**   Where lowercase "x" represents the chromosome number involved.

Important Reminders

1. Sometimes the pathology report will not provide the full position of the abnormality/rearrangement, but will only describe the chromosome(s) involved in the rearrangement (e.g., inversion or translocation), or will only describe the genes involved in the rearrangement. Just because the pathologist/clinician did not provide the full position of that rearrangement does not always mean the more specific histology cannot be coded. Keep in mind there are many variations in how pathologists/physicians refer to the same thing.

    Examples:
    a. BCR-ABL1 = BCR-ABL fusion protein = Philadelphia (Ph) chromosome = t(9;22)(q34.1;q11.2) = t(9;22)(q34;q11) = t(9;22) = ABL1 at 9q34.1 = BCR at 22q11.2 = BCR-ABL1 major p210 = p210 transcript = BCR-ABL1 minor p190, etc.

    b. CBFB-MYH11 = CBF-beta/MYH11 = inv(16)(p13q22) = inv(16)(p13.1q22) = inv(16)(p13;q22) = t(16;16)(p13.1;q22), etc.

2. Some specified translocations or abnormalities occur between variable chromosomes. That is, only one specific chromosome is identified in the Heme DB and the other is identified by a "v," where "v" stands for variable.

    Example:
    a. The translocation "t(v;11q23.3)" is identified in specific types of leukemia/lymphoma. This is a translocation between any chromosome (represented by "v") and 11q23.3. A number of different chromosomes may be substituted for "v."

3. Some heme/lymphoid neoplasms may be associated with multiple genetic abnormalities; not all of them are listed in the Heme DB. For example, acute myeloid leukemia with myelodysplasia-related changes (AML-MRC) does have multiple genetic abnormalities listed in the Heme DB. If a diagnosis of AML-MRC was made, but not all the genetic abnormalities listed match, it does not disprove this diagnosis. AML-MRC is frequently associated with other genetic abnormalities (like monosomies and trisomies) not listed in the Heme DB. Additional information can be found in online resources (see link below).

Additional Online Resources

· https://ghr.nlm.nih.gov/primer#howgeneswork

· http://atlasgeneticsoncology.org