

**Consultant's report
Dose reconstruction project**

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General comments:

In general, anything currently classified as a Leukemia (including those discussed below that I feel should be reclassified as leukemia) should be classified as red bone marrow under IMBA applicable organ, rather than "medical review". Thus, in my opinion, all of the "leukemias" should be classified similarly to the classification currently used for acute myeloid leukemia (ICD9 205) and others. One could have a complicated semantic argument about whether all leukemias originate in the marrow; clearly, some do not but we presume that the majority do. Presumably the exposure causing the leukemia occurred in the marrow although again one could probably find examples where this is not true. Similarly, non-marrow exposures are probably responsible for the "lymphomas" and other non-leukemic hematologic malignancies. However, again, one would have a hard time finding good quality scientific evidence to back this up and there is no doubt that there are examples of non-leukemic hematologic malignancies where the exposure occurred in the marrow (early in leukocyte development) or in other non-marrow and non-lymphatic sites.

For the purposes of this proposal I would include organs such as the thymus within the "lymphatic system" since it would be difficult to pin down any particular diseases which occurred within or outside the thymus. The lymphatic system can be assumed to spread widely throughout the body and although concentrated in the chest and abdomen it has components throughout the body. It is my understanding that the lymphatic system is classified with in the "remainder" category.

All forms of hematological malignancy (with the possible exception of limited stage Hodgkin's disease) are assumed to be widely disseminated at presentation; thus they are treated with systemic therapy. Hodgkin's disease is assumed to start at a single location and spread to contiguous lymph node groups. Thus, classifying a specific site of exposure for non-Hodgkin's hematological malignancies is illogical; even if the bulk of disease is confined to a single location (for example massive lymphadenopathy in the left cervical region) it cannot be assumed that this was the site of original exposure. Similarly, if a patient had a limited exposure (for example, radiation exposure confined to a limb) and later presented with a lymphoma at a remote site, it cannot be assumed that they are unrelated, since the exposed organ (in this case the lymphoreticular system) is not confined to a discrete body section or organ.

I presume that the classification "leukemia, less CLL" is a carryover from the concept that CLL is not a radiation related disease. As noted, many disorders (for example Sezary syndrome and hairy cell leukemia as well as some forms of indolent lymphomas such as small lymphocytic lymphoma) behave very similarly to CLL and would best be classified as a CLL like disorder. However, it appears to me this would require the generation of a new IREP model since it is not included in this document.

I realize that you are confined to ICD codes however many of the diseases presented are illogical; for example, I'm not sure what "subacute leukemia" is and many of the disorders (such as leukemias limited to body cavities) are also illogical.

Specific review comments:

202.2 SEZARY DISEASE AND ALL SUBTYPES (202.20 TO 202.28)

This would generally be regarded as a form of leukemia and thus probably is better classified as a "red bone marrow" disorder, rather than "Remainder". Under IREP model I would suggest that they should be classified as a leukemia, although it would difficult to classify them as "leukemia, less CLL" since they all behave like CLL.

202.4 LEUKEMIA RETICULENDOTHELIAL AND HAIRY CELL LEUKEMIA (202.4 TO 202.48)

These would generally be regarded as a form of leukemia and thus probably is better classified as a "red bone marrow" disorder, rather than "Remainder". Under IREP model I would suggest that they should be classified as a leukemia, although it would difficult to classify them as "leukemia, less CLL" since they all behave like CLL.

204.1 TO 204.11 CHRONIC LYMPHOID LEUKEMIA

These are regarded as a form of leukemia and thus should be classified as a "red bone marrow" disorder, rather than "NA". Under IREP model I would suggest that they should be classified as a leukemia, (cannot, logically, be classified as "leukemia, less CLL" ; see comments above).

205.0 TO 205.11 ACUTE MYELOID LEUKEMIA

Not clear to me why they are classified as "Leukemia, less CLL AND Acute Myeloid Leukemia" – this classification is illogical since they are acute myeloid leukemia.