



ORAU TEAM Dose Reconstruction Project for NIOSH

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New
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FOR DOCUMENTS MARKED AS A TOTAL REWRITE, REVISION, OR PAGE CHANGE, REPLACE THE PRIOR REVISION AND DISCARD / DESTROY ALL COPIES OF THE PRIOR REVISION.

PUBLICATION RECORD

EFFECTIVE DATE	REVISION NUMBER	DESCRIPTION
11/03/2003	00	ORAU technical information bulletin to clarify IMBA organ and IREP model selection First approved issue. Initiated by Elizabeth M. Brackett.
01/23/2004	01	Incorporates applicable external dosimetry organ selection. Approved issue of Revision 01. Initiated by Elizabeth M. Brackett.
03/05/2004	01-PC-1	IREP model correction for ICD-9 code 238.7 (added Bone model), remove IMBA/External/IREP model info from header rows for ICD-9 codes 194 and 205. Approved issue of page change 1. Initiated by Elizabeth M. Brackett.
05/07/2004	01-PC-2	IMBA and External model correction for ICD-9 code 231.8 (changed to med review on page 15), IMBA model correction for ICD-9 codes 235.8 and 235.9 (changed to med review on page 16), External model correction for ICD-9 code 185 (changed to bladder on page 8). Approved issue of page change 2. Initiated by Elizabeth M. Brackett.
10/29/2004	01-PC-3	IMBA model correction for ICD-9 code 189.2, 189.3, and 189.4 (changed to highest non-met organ/tissue on page 9), added footnote number 5 to Table 1 for ICD-9 code 232 on page 18. Changed DOL documentation to NIOSH Referral Summary Document (NRSD) on page 20. Approved issue of page change 3. Initiated by Scott R. Siebert.
12/02/2005	02	Adds information for ICD-9 codes 289.7 and 289.9, clarifies handling adenocarcinoma of the distal (lower third) esophagus, corrects external organ for ICD-9 codes 233.4 and 236.5, updates correct model selections for various cancers (to reflect guidance in OCAS TIB-012, except as directed by OCAS to mark many 200-204 organs as "Reserved"), adds likely primary cancer selection for secondary cancers. Changes references to "IMBA organ" to "Internal Dosimetry organ." Approved issue of Revision 02. Training required: As determined by the Task Manager. Initiated by Scott R. Siebert.

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1.0 PURPOSE

Technical Information Bulletins (TIBs) are general working documents that provide guidance concerning the preparation of dose reconstructions at particular sites or categories of sites. They will be revised in the event additional relevant information is obtained. TIBs may be used to assist the National Institute for Occupational Safety and Health in the completion of individual dose reconstructions.

This Technical Information Bulletin (TIB) provides guidance on selecting appropriate ICRP modeled organs/tissues to estimate the internal dose for specific ICD-9 codes, the appropriate organs/tissues to estimate external dose, and the appropriate model in the Interactive RadioEpidemiological Program (IREP). This TIB also provides information for selecting and assessing likely primary cancers for secondary cancers.

2.0 BACKGROUND

Under EEOICPA, the organs/tissues for which doses must be estimated are those delineated by the specified ICD-9 code received from the Department of Labor (DOL). While many ICD-9 codes are clear in their intended organ/tissue, additional guidance is necessary to identify the appropriate internal dosimetry organ, organ/tissue for external dose estimate, and IREP model to use for the organ/tissue. This TIB designates the appropriate internal dosimetry organ/tissue selection for the various ICD-9 coded cancers, the appropriate organ/tissue to estimate external dose, and the appropriate IREP model to use as well.

3.0 GUIDANCE

3.1 SELECTION OF APPROPRIATE ORGAN/MODEL

Table 3-1 correlates ICD-9 codes to the appropriate organ/tissue selection for internal dose estimate, the appropriate organ/tissue selection for external dose estimate, and the appropriate IREP model. Organs/tissues labeled "Highest non-met org/tiss" indicate that dose to the highest non-metabolic organ is to be used to represent the dose to the ICD-9 Code designated organ/tissue. A discussion of this term is included in section 4.0 of this bulletin. The remaining regions are described by the term used in the Integrated Modules for Bioassay Analysis (IMBA) software program.

3.2 SECONDARY CANCERS WITH UNKNOWN PRIMARY CANCER SITE

Another situation that needs to be assessed is the diagnosis of a secondary cancer with an unknown primary cancer location. It is accepted in medicine that cancer-causing agents such as ionizing radiation produce primary cancers. This means, in a case in which the primary site of cancer is unknown, the primary site must be established by inference to establish probability of causation. For each secondary cancer, the set of primary cancers producing approximately 75% of that secondary cancer among the U.S. population was identified (males and females were considered separately). Therefore, for secondary cancers with unknown primary site, Table 3-2 will be consulted to select likely primary sites, which will then be evaluated using IREP (reproduced from Table 7 in the IREP technical documentation).

Since each secondary cancer in Table 3-2 has more than one likely primary cancer site, each likely primary site must be evaluated using IREP to determine a probability of causation. If any one of the likely primary cancer sites yields a probability of causation greater than or equal to 50%, this site will be assumed to be the originating site for the secondary cancer and shall be submitted as such.

Table 3-1.

ICD-9 Code	Cancer code explanation	Internal Organ	External organ	IREP model
140	MALIGANT NEOPLASM LIP			
140.0	MALIG NEO UPPER VERMILION	Highest non-met org/tiss	Skin	Oral Cav and pharynx
140.1	MALIG NEO LOWER VERMILION	Highest non-met org/tiss	Skin	Oral Cav and pharynx
140.3	MALIG NEO UPPER LIP, INNER	Highest non-met org/tiss	Skin	Oral Cav and pharynx
140.4	MALIG NEO LOWER LIP, INNER	Highest non-met org/tiss	Skin	Oral Cav and pharynx
140.5	MALIG NEO LIP, INNER NOS	Highest non-met org/tiss	Skin	Oral Cav and pharynx
140.6	MALIG NEO LIP, COMMISSURE	Highest non-met org/tiss	Skin	Oral Cav and pharynx
140.8	MALIG NEO LIP NEC	Highest non-met org/tiss	Skin	Oral Cav and pharynx
140.9	MALIG NEO LIP/VERMIL NOS	Highest non-met org/tiss	Skin	Oral Cav and pharynx
141	MALIG NEO TONGUE			
141.0	MALIG NEO TONGUE BASE	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral Cav and pharynx
141.1	MALIG NEO DORSAL TONGUE	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral Cav and pharynx
141.2	MALIG NEO TIP/LAT TONGUE	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral Cav and pharynx
141.3	MALIG NEO VENTRAL TONGUE	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral Cav and pharynx
141.4	MALIG NEO ANT 2/3 TONGUE	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral Cav and pharynx
141.5	MALIG NEO TONGUE JUNCTION	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral Cav and pharynx
141.6	MALIG NEO LINGUAL TONSIL	LNET	Thyroid/Remainder ¹	Oral Cav and pharynx
141.8	MALIG NEO TONGUE NEC	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral Cav and pharynx
141.9	MALIG NEO TONGUE NOS	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral Cav and pharynx
142	MALIG NEO MAJOR SALIVARY			
142.0	MALIG NEO PAROTID	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral Cav and pharynx
142.1	MALIG NEO SUBMANDIBULAR	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral Cav and pharynx
142.2	MALIG NEO SUBLINGUAL	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral Cav and pharynx
142.8	MALIG NEO MAJ SALIVARY NEC	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral Cav and pharynx
142.9	MALIG NEO SALIVARY NOS	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral Cav and pharynx
143	MALIGNANT NEOPLASM GUM			
143.0	MALIG NEO UPPER GUM	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral Cav and pharynx
143.1	MALIG NEO LOWER GUM	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral Cav and pharynx
143.8	MALIG NEO GUM NEC	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral Cav and pharynx
143.9	MALIG NEO GUM NOS	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral Cav and pharynx
144	MALIG NEO MOUTH FLOOR			
144.0	MALIG NEO ANT FLOOR MOUTH	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral Cav and pharynx
144.1	MALIG NEO LAT FLOOR MOUTH	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral Cav and pharynx
144.8	MALIG NEO MOUTH FLOOR NEC	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral Cav and pharynx
144.9	MALIG NEO MOUTH FLOOR NOS	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral Cav and pharynx
145	MALIG NEO MOUTH NEC/NOS			
145.0	MALIG NEO CHEEK MUCOSA	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral Cav and pharynx
145.1	MALIG NEO MOUTH VESTIBULE	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral Cav and pharynx

Table 3-1 (Continued).

ICD-9 Code	Cancer code explanation	Internal Organ	External organ	IREP model
145.2	MALIG NEO HARD PALATE	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral Cav and pharynx
145.3	MALIG NEO SOFT PALATE	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral Cav and pharynx
145.4	MALIG NEO UVULA	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral Cav and pharynx
145.5	MALIG NEO PALATE NOS	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral Cav and pharynx
145.6	MALIG NEO RETROMOLAR	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral Cav and pharynx
145.8	MALIG NEO MOUTH NEC	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral Cav and pharynx
145.9	MALIG NEO MOUTH NOS	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral Cav and pharynx
146	MALIG NEO OROPHARYNX			
146.0	MALIG NEO TONSIL	LNET	Esophagus	Oral Cav and pharynx
146.1	MALIG NEO TONSILLAR FOSSA	LNET	Esophagus	Oral Cav and pharynx
146.2	MALIG NEO TONSIL PILLARS	LNET	Esophagus	Oral Cav and pharynx
146.3	MALIG NEO VALLECULA	ET2	Esophagus	Oral Cav and pharynx
146.4	MALIG NEO ANT EPIGLOTTIS	ET2	Esophagus	Oral Cav and pharynx
146.5	MALIG NEO EPIGLOTTIS JUNCT	ET2	Esophagus	Oral Cav and pharynx
146.6	MALIG NEO LAT OROPHARYNX	ET2	Esophagus	Oral Cav and pharynx
146.7	MALIG NEO POST OROPHARYNX	ET2	Esophagus	Oral Cav and pharynx
146.8	MALIG NEO OROPHARYNX NEC	ET2	Esophagus	Oral Cav and pharynx
146.9	MALIG NEO OROPHARYNX NOS	ET2	Esophagus	Oral Cav and pharynx
147	MALIG NEO NASOPHARYNX			
147.0	MALIG NEO SUPER NASOPHARYN	ET2	Esophagus	Oral Cav and pharynx
147.1	MALIG NEO POST NASOPHARYNX	ET2	Esophagus	Oral Cav and pharynx
147.2	MALIG NEO LAT NASOPHARYNX	ET2	Esophagus	Oral Cav and pharynx
147.3	MALIG NEO ANT NASOPHARYNX	ET2	Esophagus	Oral Cav and pharynx
147.8	MALIG NEO NASOPHARYNX NEC	ET2	Esophagus	Oral Cav and pharynx
147.9	MALIG NEO NASOPHARYNX NOS	ET2	Esophagus	Oral Cav and pharynx
148	MALIG NEO HYPOPHARYNX			
148.0	MALIG NEO POSTCRICOID	ET2	Esophagus	Oral Cav and pharynx
148.1	MALIG NEO PYRIFORM SINUS	ET2	Esophagus	Oral Cav and pharynx
148.2	MALIG NEO ARYEPIGLOTT FOLD	ET2	Esophagus	Oral Cav and pharynx
148.3	MALIG NEO POST HYPOPHARYNX	ET2	Esophagus	Oral Cav and pharynx
148.8	MALIG NEO HYPOPHARYNX NEC	ET2	Esophagus	Oral Cav and pharynx
148.9	MALIG NEO HYPOPHARYNX NOS	ET2	Esophagus	Oral Cav and pharynx
149	OTHER MALIG OROPHARYNX			
149.0	MALIG NEO PHARYNX NOS	ET2	Esophagus	Oral Cav and pharynx
149.1	MALIG NEO WALDEYER'S RING	LNET	Esophagus	Oral Cav and pharynx
149.8	MALIG NEO ORAL/PHARYNX NEC	ET2	Esophagus	Oral Cav and pharynx
149.9	MALIG NEO OROPHRYN ILL-DEF	ET2	Esophagus	Oral Cav and pharynx
150	MALIG NEO ESOPHAGUS			

Table 3-1 (Continued).

ICD-9 Code	Cancer code explanation	Internal Organ	External organ	IREP model
150.0	MALIG NEO CERVICAL ESOPHAG	Esophagus	Esophagus	Esophagus
150.1	MALIG NEO THORACIC ESOPHAG	Esophagus/stomach ⁶	Esophagus/stomach ⁶	Esophagus/stomach ⁶
150.2	MALIG NEO ABDOMIN ESOPHAG	Esophagus/stomach ⁶	Esophagus/stomach ⁶	Esophagus/stomach ⁶
150.3	MALIG NEO UPPER 3RD ESOPH	Esophagus	Esophagus	Esophagus
150.4	MALIG NEO MIDDLE 3RD ESOPH	Esophagus	Esophagus	Esophagus
150.5	MALIG NEO LOWER 3RD ESOPH	Esophagus/stomach ⁶	Esophagus/stomach ⁶	Esophagus/stomach ⁶
150.8	MALIG NEO ESOPHAGUS NEC	Esophagus/stomach ⁶	Esophagus/stomach ⁶	Esophagus/stomach ⁶
150.9	MALIG NEO ESOPHAGUS NOS	Esophagus/stomach ⁶	Esophagus/stomach ⁶	Esophagus/stomach ⁶
151	MALIGNANT NEO STOMACH			
151.0	MALIG NEO STOMACH CARDIA	Stomach	Stomach	Stomach
151.1	MALIG NEO PYLORUS	Stomach	Stomach	Stomach
151.2	MALIG NEO PYLORIC ANTRUM	Stomach	Stomach	Stomach
151.3	MALIG NEO STOMACH FUNDUS	Stomach	Stomach	Stomach
151.4	MALIG NEO STOMACH BODY	Stomach	Stomach	Stomach
151.5	MALIG NEO STOM LESSER CURV	Stomach	Stomach	Stomach
151.6	MALIG NEO STOM GREAT CURV	Stomach	Stomach	Stomach
151.8	MALIG NEO STOMACH NEC	Stomach	Stomach	Stomach
151.9	MALIG NEO STOMACH NOS	Stomach	Stomach	Stomach
152	MALIG NEO SMALL BOWEL			
152.0	MALIG NEO DUODENUM	SI	Stomach	All digestive
152.1	MALIG NEO JEJUNUM	SI	Stomach	All digestive
152.2	MALIG NEO ILEUM	SI	Stomach	All digestive
152.3	MALIG NEO MECKEL'S DIVERT	SI	Stomach	All digestive
152.8	MALIG NEO SMALL BOWEL NEC	SI	Stomach	All digestive
152.9	MALIG NEO SMALL BOWEL NOS	SI	Stomach	All digestive
153	MALIGNANT NEOPLASM COLON			
153.0	MALIG NEO HEPATIC FLEXURE	ULI	Colon	Colon
153.1	MALIG NEO TRANSVERSE COLON	ULI	Colon	Colon
153.2	MALIG NEO DESCEND COLON	LLI	Colon	Colon
153.3	MALIG NEO SIGMOID COLON	LLI	Colon	Colon
153.4	MALIG NEO CECUM	ULI	Colon	Colon
153.5	MALIG NEO APPENDIX	ULI	Colon	Colon
153.6	MALIG NEO ASCEND COLON	ULI	Colon	Colon

Table 3-1 (Continued).

ICD-9 Code	Cancer code explanation	Internal Organ	External organ	IREP model
153.7	MALIG NEO SPLENIC FLEXURE	LLI	Colon	Colon
153.8	MALIG NEO COLON NEC	Colon	Colon	Colon
153.9	MALIG NEO COLON NOS	Colon	Colon	Colon
154	MALIG NEO RECTUM/ANUS			
154.0	MALIG NEO RECTOSIGMOID JCT	LLI	Colon	Rectum
154.1	MALIG NEO RECTUM	LLI	Colon	Rectum
154.2	MALIG NEO ANAL CANAL	LLI	Colon	Rectum
154.3	MALIG NEO ANUS NOS	LLI	Colon	Rectum
154.8	MALIG NEO RECTUM/ANUS NEC	LLI	Colon	Rectum
155	MALIGNANT NEOPLASM LIVER			
155.0	MALIG NEO LIVER, PRIMARY	Liver	Liver	Liver
155.1	MALIG NEO INTRAHEPAT DUCTS	Gallbladder	Bladder	Gallbladder
155.2	MALIG NEO LIVER NOS	Liver	Liver	Liver
156	MALIG NEO GB/EXTRAHEPATIC			
156.0	MALIG NEO GALLBLADDER	Gallbladder	Bladder	Gallbladder
156.1	MALIG NEO EXTRAHEPAT DUCTS	Gallbladder	Bladder	Gallbladder
156.2	MALIG NEO AMPULLA VATER	Gallbladder	Bladder	Gallbladder
156.8	MALIG NEO BILIARY NEC	Gallbladder	Bladder	Gallbladder
156.9	MALIG NEO BILIARY NOS	Gallbladder	Bladder	Gallbladder
157	MALIGNANT NEO PANCREAS			
157.0	MALIG NEO PANCREAS HEAD	Pancreas	Stomach	Pancreas
157.1	MALIG NEO PANCREAS BODY	Pancreas	Stomach	Pancreas
157.2	MALIG NEO PANCREAS TAIL	Pancreas	Stomach	Pancreas
157.3	MALIG NEO PANCREATIC DUCT	Pancreas	Stomach	Pancreas
157.4	MALIG NEO ISLET LANGERHANS	Pancreas	Stomach	Pancreas
157.8	MALIG NEO PANCREAS NEC	Pancreas	Stomach	Pancreas
157.9	MALIG NEO PANCREAS NOS	Pancreas	Stomach	Pancreas
158	MALIG NEO PERITONEUM			
158.0	MALIG NEO RETROPERITONEUM	Highest non-met org/tiss	Stomach	All digestive
158.8	MALIG NEO PERITONEUM NEC	Highest non-met org/tiss	Stomach	All digestive
158.9	MALIG NEO PERITONEUM NOS	Highest non-met org/tiss	Stomach	All digestive
159	OTHER MALIG NEO GI/PERITON			
159.0	MALIG NEO INTESTINE NOS	Colon	Stomach	All digestive
159.1	MALIG NEO SPLEEN NEC	Spleen	Stomach	All digestive
159.8	MALIG NEO GI/INTRA-ABD NEC	Highest non-met org/tiss	Stomach	All digestive
159.9	MALIG NEO GI TRACT ILL-DEF	Highest non-met org/tiss	Stomach	All digestive
160	MALIG NEO NASAL CAV/SINUS			
160.0	MALIG NEO NASAL CAVITIES	ET1	Thyroid/Remainder ¹	Other respiratory

Table 3-1 (Continued).

ICD-9 Code	Cancer code explanation	Internal Organ	External organ	IREP model
160.1	MALIG NEO MIDDLE EAR	Highest non-met org/tiss	Thyroid/Remainder ¹	Other respiratory
160.2	MALIG NEO MAXILLARY SINUS	Highest non-met org/tiss	Thyroid/Remainder ¹	Other respiratory
160.3	MALIG NEO ETHMOIDAL SINUS	Highest non-met org/tiss	Thyroid/Remainder ¹	Other respiratory
160.4	MALIG NEO FRONTAL SINUS	Highest non-met org/tiss	Thyroid/Remainder ¹	Other respiratory
160.5	MALIG NEO SPHENOID SINUS	Highest non-met org/tiss	Thyroid/Remainder ¹	Other respiratory
160.8	MALIG NEO ACCESS SINUS NEC	Highest non-met org/tiss	Thyroid/Remainder ¹	Other respiratory
160.9	MALIG NEO ACCESS SINUS NOS	Highest non-met org/tiss	Thyroid/Remainder ¹	Other respiratory
161	MALIGNANT NEO LARYNX			
161.0	MALIG NEO GLOTTIS	ET2	Esophagus	Other respiratory
161.1	MALIG NEO SUPRAGLOTTIS	ET2	Esophagus	Other respiratory
161.2	MALIG NEO SUBGLOTTIS	ET2	Esophagus	Other respiratory
161.3	MALIG NEO CARTILAGE LARYNX	ET2	Esophagus	Other respiratory
161.8	MALIG NEO LARYNX NEC	ET2	Esophagus	Other respiratory
161.9	MALIG NEO LARYNX NOS	ET2	Esophagus	Other respiratory
162	MALIG NEO TRACHEA/LUNG			
162.0	MALIG NEO TRACHEA	Lung	Lung	Lung
162.2	MALIG NEO MAIN BRONCHUS	Lung	Lung	Lung
162.3	MALIG NEO UPPER LOBE LUNG	Lung	Lung	Lung
162.4	MALIG NEO MIDDLE LOBE LUNG	Lung	Lung	Lung
162.5	MALIG NEO LOWER LOBE LUNG	Lung	Lung	Lung
162.8	MALIG NEO BRONCH/LUNG NEC	Lung	Lung	Lung
162.9	MALIG NEO BRONCH/LUNG NOS	Lung	Lung	Lung
163	MALIGNANT NEOPL PLEURA			
163.0	MALIG NEO PARIETAL PLEURA	Highest non-met org/tiss	Lung	Other respiratory
163.1	MALIG NEO VISCERAL PLEURA	Highest non-met org/tiss	Lung	Other respiratory
163.8	MALIG NEO PLEURA NEC	Highest non-met org/tiss	Lung	Other respiratory
163.9	MALIG NEO PLEURA NOS	Highest non-met org/tiss	Lung	Other respiratory
164	MALIG NEO THYMUS/MEDIASTIN			
164.0	MALIG NEO THYMUS	Thymus	Thymus	Other respiratory
164.1	MALIG NEO HEART	Heart Wall	Thymus	Other respiratory
164.2	MALIG NEO ANT MEDIASTINUM	Highest non-met org/tiss	Thymus	Other respiratory
164.3	MALIG NEO POST MEDIASTINUM	Highest non-met org/tiss	Thymus	Other respiratory
164.8	MALIG NEO MEDIASTINUM NEC	Highest non-met org/tiss	Thymus	Other respiratory
164.9	MALIG NEO MEDIASTINUM NOS	Highest non-met org/tiss	Thymus	Other respiratory
165	OTH/ILL-DEF MAL NEO RESP			
165.0	MALIG NEO UPPER RESP NOS	Lung	Lung	Other respiratory
165.8	MALIG NEO THORAX/RESP NEC	Lung	Lung	Other respiratory
165.9	MALIG NEO RESP SYSTEM NOS	Lung	Lung	Other respiratory

Table 3-1 (Continued).

ICD-9 Code	Cancer code explanation	Internal Organ	External organ	IREP model
170	MALIG NEO BONE/ARTIC CART			
170.0	MALIG NEO SKULL/FACE BONE	Bone surface	Bone Surface	Bone
170.1	MALIG NEO MANDIBLE	Bone surface	Bone Surface	Bone
170.2	MALIG NEO VERTEBRAE	Bone surface	Bone Surface	Bone
170.3	MALIG NEO RIBS/STERN/CLAV	Medical review	Bone Surface	Bone
170.4	MALIG NEO LONG BONES ARM	Bone surface	Bone Surface	Bone
170.5	MALIG NEO BONES WRIST/HAND	Bone surface	Bone Surface	Bone
170.6	MALIG NEO PELVIC GIRDLE	Medical review	Bone Surface	Bone
170.7	MALIG NEO LONG BONES LEG	Medical review	Bone Surface	Bone
170.8	MALIG NEO BONES ANKLE/FOOT	Bone surface	Bone Surface	Bone
170.9	MALIG NEO BONE NOS	Medical review	Bone Surface	Bone
171	MALIG NEO SOFT TISSUE			
171.0	MALIG NEO SOFT TISSUE HEAD	Highest non-met org/tiss	Thyroid/Remainder ¹	Connective Tissue
171.2	MALIG NEO SOFT TISSUE ARM	Highest non-met org/tiss	Remainder ²	Connective Tissue
171.3	MALIG NEO SOFT TISSUE LEG	Highest non-met org/tiss	Remainder ²	Connective Tissue
171.4	MALIG NEO SOFT TIS THORAX	Highest non-met org/tiss	Remainder ²	Connective Tissue
171.5	MALIG NEO SOFT TIS ABDOMEN	Highest non-met org/tiss	Remainder ²	Connective Tissue
171.6	MALIG NEO SOFT TIS PELVIS	Highest non-met org/tiss	Remainder ²	Connective Tissue
171.7	MALIG NEO TRUNK NOS	Highest non-met org/tiss	Remainder ²	Connective Tissue
171.8	MALIG NEO SOFT TISSUE NEC	Highest non-met org/tiss	Remainder ²	Connective Tissue
171.9	MALIG NEO SOFT TISSUE NOS	Highest non-met org/tiss	Remainder ²	Connective Tissue
172	MALIGNANT MELANOMA SKIN			
172.0	MALIG MELANOMA LIP	Skin	Skin	Malignant melanoma
172.1	MALIG MELANOMA EYELID	Skin	Skin	Malignant melanoma
172.2	MALIG MELANOMA EAR	Skin	Skin	Malignant melanoma
172.3	MALIG MELANOMA FACE NEC/NOS	Skin	Skin	Malignant melanoma
172.4	MALIG MELANOMA SCALP/NECK	Skin	Skin	Malignant melanoma
172.5	MALIG MELANOMA TRUNK	Skin	Skin	Malignant melanoma
172.6	MALIG MELANOMA ARM	Skin	Skin	Malignant melanoma
172.7	MALIG MELANOMA LEG	Skin	Skin	Malignant melanoma
172.8	MALIG MELANOMA SKIN NEC	Skin	Skin	Malignant melanoma
172.9	MALIG MELANOMA SKIN NOS	Skin	Skin	Malignant melanoma
173	OTHER MALIG NEOPL SKIN			
173.0	MALIG NEO SKIN LIP	Skin	Skin	Non-melanoma skin-Basal cell OR Non-melanoma skin-Squamous cell
173.1	MALIG NEO SKIN EYELID	Skin	Skin	Non-melanoma skin-Basal cell OR Non-melanoma skin-Squamous cell

Table 3-1 (Continued).

ICD-9 Code	Cancer code explanation	Internal Organ	External organ	IREP model
173.2	MALIG NEO SKIN EAR	Skin	Skin	Non-melanoma skin-Basal cell OR Non-melanoma skin-Squamous cell
173.3	MALIG NEO SKIN FACE NEC	Skin	Skin	Non-melanoma skin-Basal cell OR Non-melanoma skin-Squamous cell
173.4	MALIG NEO SCALP/SKIN NECK	Skin	Skin	Non-melanoma skin-Basal cell OR Non-melanoma skin-Squamous cell
173.5	MALIG NEO SKIN TRUNK	Skin	Skin	Non-melanoma skin-Basal cell OR Non-melanoma skin-Squamous cell
173.6	MALIG NEO SKIN ARM	Skin	Skin	Non-melanoma skin-Basal cell OR Non-melanoma skin-Squamous cell
173.7	MALIG NEO SKIN LEG	Skin	Skin	Non-melanoma skin-Basal cell OR Non-melanoma skin-Squamous cell
173.8	MALIG NEO SKIN NEC	Skin	Skin	Non-melanoma skin-Basal cell OR Non-melanoma skin-Squamous cell
173.9	MALIG NEO SKIN NOS	Skin	Skin	Non-melanoma skin-Basal cell OR Non-melanoma skin-Squamous cell
174	MALIG NEO FEMALE BREAST			
174.0	MALIG NEO NIPPLE	Breast	Breast	Breast
174.1	MALIG NEO BREAST-CENTRAL	Breast	Breast	Breast
174.2	MALIG NEO BREAST UP-INNER	Breast	Breast	Breast
174.3	MALIG NEO BREAST LOW-INNER	Breast	Breast	Breast
174.4	MALIG NEO BREAST UP-OUTER	Breast	Breast	Breast
174.5	MALIG NEO BREAST LOW-OUTER	Breast	Breast	Breast
174.6	MALIG NEO BREAST-AXILLARY	Breast	Breast	Breast
174.8	MALIG NEO BREAST NEC	Breast	Breast	Breast
174.9	MALIG NEO BREAST NOS	Breast	Breast	Breast
175	MALIG NEO MALE BREAST			
175.0	MALIG NEO MALE NIPPLE	Breast	Breast	Breast
175.9	MALIG NEO MALE BREAST NEC	Breast	Breast	Breast
176	KAPOSI'S SARCOMA			
176.0	SKIN-KAPOSI'S SARCOMA	Skin	Skin	Connective tissue AND Non-melanoma skin-Squamous cell
176.1	SOFT TISSUE-KAPOSI'S SARCOMA	Highest non-met org/tiss	Remainder ²	Connective tissue AND Non-melanoma skin-Squamous cell
176.2	PALATE-KAPOSI'S SARCOMA	Highest non-met org/tiss	Thyroid/Remainder ¹	Connective tissue AND Non-melanoma skin-Squamous cell
176.3	GI SITES-KAPOSI'S SARCOMA	Colon	Stomach/Colon (location dependant)	Connective tissue AND Non-melanoma skin-Squamous cell

Table 3-1 (Continued).

ICD-9 Code	Cancer code explanation	Internal Organ	External organ	IREP model
176.4	LUNG-KAPOSII'S SARCOMA	Lung	Lung	Connective tissue AND Non-melanoma skin-Squamous cell
176.5	LYMPH NODES-KAPOSII'S SARCOMA	Highest non-met org/tiss	Remainder ²	Connective tissue AND Non-melanoma skin-Squamous cell
176.8	SPF STS-KAPOSII'S SARCOMA	Highest non-met org/tiss	Remainder ²	Connective tissue AND Non-melanoma skin-Squamous cell
176.9	KAPOSII'S SARCOMA NOS	Highest non-met org/tiss	Remainder ²	Connective tissue AND Non-melanoma skin-Squamous cell
179	MALIG NEO UTERUS NOS	Uterus	Uterus	Female genitalia less ovary
180	MALIG NEO CERVIX UTERI			
180.0	MALIG NEO ENDOCERVIX	Uterus	Uterus	Female genitalia less ovary
180.1	MALIG NEO EXOCERVIX	Uterus	Uterus	Female genitalia less ovary
180.8	MALIG NEO CERVIX NEC	Uterus	Uterus	Female genitalia less ovary
180.9	MALIG NEO CERVIX UTERI NOS	Uterus	Uterus	Female genitalia less ovary
181	MALIG NEO PLACENTA	Uterus	Uterus	Female genitalia less ovary
182	MALIG NEO UTERUS BODY			
182.0	MALIG NEO CORPUS UTERI	Uterus	Uterus	Female genitalia less ovary
182.1	MALIG NEO UTERINE ISTHMUS	Uterus	Uterus	Female genitalia less ovary
182.8	MALIG NEO BODY UTERUS NEC	Uterus	Uterus	Female genitalia less ovary
183	MALIG NEO UTERINE ADNEXA			
183.0	MALIG NEO OVARY	Ovaries	Ovaries	Ovary
183.2	MALIG NEO FALLOPIAN TUBE	Ovaries	Ovaries	Ovary
183.3	MALIG NEO BROAD LIGAMENT	Ovaries	Ovaries	Ovary
183.4	MALIG NEO PARAMETRIUM	Uterus	Ovaries	Ovary
183.5	MALIG NEO ROUND LIGAMENT	Uterus	Ovaries	Ovary
183.8	MALIG NEO ADNEXA NEC	Ovaries	Ovaries	Ovary
183.9	MALIG NEO ADNEXA NOS	Ovaries	Ovaries	Ovary
184	MALIG NEO FEM GEN NEC/NOS			
184.0	MALIG NEO VAGINA	Muscle	Uterus	Female genitalia less ovary
184.1	MALIG NEO LABIA MAJORA	Skin	Uterus	Female genitalia less ovary
184.2	MALIG NEO LABIA MINORA	Skin	Uterus	Female genitalia less ovary
184.3	MALIG NEO CLITORIS	Skin	Uterus	Female genitalia less ovary
184.4	MALIG NEO VULVA NOS	Skin	Uterus	Female genitalia less ovary
184.8	MALIG NEO FEMALE GENIT NEC	Uterus	Uterus	Female genitalia less ovary
184.9	MALIG NEO FEMALE GENIT NOS	Uterus	Uterus	Female genitalia less ovary
185	MALIG NEO PROSTATE	Highest non-met org/tiss	Bladder	All male genitalia
186	MALIG NEO TESTIS			
186.0	MALIG NEO UNDESCEND TESTIS	Testes	Testes	All male genitalia

Table 3-1 (Continued).

ICD-9 Code	Cancer code explanation	Internal Organ	External organ	IREP model
186.9	MALIG NEO TESTIS NEC	Testes	Testes	All male genitalia
187	MALIG NEO MALE GENITAL NEC			
187.1	MALIG NEO PREPUCE	Skin	Testes	All male genitalia
187.2	MALIG NEO GLANS PENIS	Skin	Testes	All male genitalia
187.3	MALIG NEO PENIS BODY	Testes	Testes	All male genitalia
187.4	MALIG NEO PENIS NOS	Testes	Testes	All male genitalia
187.5	MALIG NEO EPIDIDYMIS	Testes	Testes	All male genitalia
187.6	MALIG NEO SPERMATIC CORD	Testes	Testes	All male genitalia
187.7	MALIG NEO SCROTUM	Testes	Testes	All male genitalia
187.8	MALIG NEO MALE GENITAL NEC	Testes	Testes	All male genitalia
187.9	MALIG NEO MALE GENITAL NOS	Testes	Testes	All male genitalia
188	MALIG NEO BLADDER			
188.0	MALIG NEO BLADDER-TRIGONE	Bladder	Bladder	Bladder
188.1	MALIG NEO BLADDER-DOME	Bladder	Bladder	Bladder
188.2	MALIG NEO BLADDER-LATERAL	Bladder	Bladder	Bladder
188.3	MALIG NEO BLADDER-ANTERIOR	Bladder	Bladder	Bladder
188.4	MALIG NEO BLADDER-POST	Bladder	Bladder	Bladder
188.5	MALIG NEO BLADDER NECK	Bladder	Bladder	Bladder
188.6	MALIG NEO URETERIC ORIFICE	Bladder	Bladder	Bladder
188.7	MALIG NEO URACHUS	Bladder	Bladder	Bladder
188.8	MALIG NEO BLADDER NEC	Bladder	Bladder	Bladder
188.9	MALIG NEO BLADDER NOS	Bladder	Bladder	Bladder
189	MALIG NEO URINARY NEC/NOS			
189.0	MALIG NEO KIDNEY	Kidney	Liver	Urinary organs less bladder
189.1	MALIG NEO RENAL PELVIS	Kidney	Liver	Urinary organs less bladder
189.2	MALIG NEO URETER	Highest non-met org/tiss	Liver	Urinary organs less bladder
189.3	MALIG NEO URETHRA	Highest non-met org/tiss	Liver	Urinary organs less bladder
189.4	MALIG NEO PARAURETHRAL	Highest non-met org/tiss	Liver	Urinary organs less bladder
189.8	MALIG NEO URINARY NEC	Bladder	Liver	Urinary organs less bladder
189.9	MALIG NEO URINARY NOS	Medical review	Liver	Urinary organs less bladder
190	MALIGANT NEOPLASM EYE			
190.0	MALIG NEO EYEBALL	Brain	Eye Lens	Eye
190.1	MALIG NEO ORBIT	Brain	Eye Lens	Eye
190.2	MALIG NEO LACRIMAL GLAND	Skin	Eye Lens	Eye
190.3	MALIG NEO CONJUNCTIVA	Skin	Eye Lens	Eye
190.4	MALIG NEO CORNEA	Skin	Eye Lens	Eye
190.5	MALIG NEO RETINA	Brain	Eye Lens	Eye
190.6	MALIG NEO CHOROID	Brain	Eye Lens	Eye

Table 3-1 (Continued).

ICD-9 Code	Cancer code explanation	Internal Organ	External organ	IREP model
190.7	MALIG NEO LACRIMAL DUCT	Skin	Eye Lens	Eye
190.8	MALIG NEO EYE NEC	Skin	Eye Lens	Eye
190.9	MALIG NEO EYE NOS	Skin	Eye Lens	Eye
191	MALIG NEOASM BRAIN			
191.0	MALIG NEO CEREBRUM	Brain	Thyroid/Remainder ¹	Nervous system
191.1	MALIG NEO FRONTAL LOBE	Brain	Thyroid/Remainder ¹	Nervous system
191.2	MALIG NEO TEMPORAL LOBE	Brain	Thyroid/Remainder ¹	Nervous system
191.3	MALIG NEO PARIETAL LOBE	Brain	Thyroid/Remainder ¹	Nervous system
191.4	MALIG NEO OCCIPITAL LOBE	Brain	Thyroid/Remainder ¹	Nervous system
191.5	MALIG NEO CEREB VENTRICLE	Brain	Thyroid/Remainder ¹	Nervous system
191.6	MALIG NEO CEREBELLUM NOS	Brain	Thyroid/Remainder ¹	Nervous system
191.7	MALIG NEO BRAIN STEM	Brain	Thyroid/Remainder ¹	Nervous system
191.8	MALIG NEO BRAIN NEC	Brain	Thyroid/Remainder ¹	Nervous system
191.9	MALIG NEO BRAIN NOS	Brain	Thyroid/Remainder ¹	Nervous system
192	MALIG NEO NERVE NEC/NOS			
192.0	MALIG NEO CRANIAL NERVES	Brain	Thyroid/Remainder ¹	Nervous system
192.1	MALIG NEO CEREBRAL MENING	Brain	Thyroid/Remainder ¹	Nervous system
192.2	MALIG NEO SPINAL CORD	Brain	Thyroid/Remainder ¹	Nervous system
192.3	MALIG NEO SPINAL MENINGES	Brain	Thyroid/Remainder ¹	Nervous system
192.8	MALIG NEO NERVOUS SYST NEC	Brain	Thyroid/Remainder ¹	Nervous system
192.9	MALIG NEO NERVOUS SYST NOS	Brain	Thyroid/Remainder ¹	Nervous system
193	MALIG NEO THYROID	Thyroid	Thyroid	Thyroid
194	MALIG NEO OTHER ENDOCRINE			
194.0	MALIG NEO ADRENAL	Adrenals	Thyroid/Remainder ¹	Other endocrine glands
194.1	MALIG NEO PARATHYROID	Thyroid	Thyroid/Remainder ¹	Other endocrine glands
194.3	MALIG NEO PITUITARY	Brain	Thyroid/Remainder ¹	Other endocrine glands
194.4	MALIG NEO PINEAL GLAND	Brain	Thyroid/Remainder ¹	Other endocrine glands
194.5	MALIG NEO CAROTID BODY	Brain	Thyroid/Remainder ¹	Other endocrine glands
194.6	MALIG NEO PARAGANGLIA NEC	Brain	Thyroid/Remainder ¹	Other endocrine glands
194.8	MALIG NEO ENDOCRINE NEC	Medical review	Remainder ²	Other endocrine glands
194.9	MALIG NEO ENDOCRINE NOS	Medical review	Remainder ²	Other endocrine glands
195	MALIG NEO OTH/ILL-DEF SITE			
195.0	MALIG NEO HEAD/FACE/NECK	Highest non-met org/tiss	Thyroid/Remainder ¹	Other and ill-defined sites
195.1	MALIG NEO THORAX	Highest non-met org/tiss	Remainder ²	Other and ill-defined sites
195.2	MALIG NEO ABDOMEN	Highest non-met org/tiss	Remainder ²	Other and ill-defined sites
195.3	MALIG NEO PELVIS	Highest non-met org/tiss	Remainder ²	Other and ill-defined sites
195.4	MALIG NEO ARM	Highest non-met org/tiss	Remainder ²	Other and ill-defined sites
195.5	MALIG NEO LEG	Highest non-met org/tiss	Remainder ²	Other and ill-defined sites

Table 3-1 (Continued).

ICD-9 Code	Cancer code explanation	Internal Organ	External organ	IREP model
195.8	MALIG NEO SITE NEC	Highest non-met org/tiss	Remainder ²	Other and ill-defined sites
196	MALIG NEO LYMPH NODES			
196.0	MALIG NEO LYMPH-HEAD/NECK	NA ³	NA ³	NA ³
196.1	MALIG NEO LYMPH-INTRATHOR	NA ³	NA ³	NA ³
196.2	MALIG NEO LYMPH-INTRA-ABD	NA ³	NA ³	NA ³
196.3	MALIG NEO LYMPH-AXILLA/ARM	NA ³	NA ³	NA ³
196.5	MALIG NEO LYMPH-INGUIN/LEG	NA ³	NA ³	NA ³
196.6	MALIG NEO LYMPH-INTRAPELV	NA ³	NA ³	NA ³
196.8	MALIG NEO LYMPH-MULT	NA ³	NA ³	NA ³
196.9	MALIG NEO LYMPH NOS	NA ³	NA ³	NA ³
197	SEC MALIG NEO GI/RESP			
197.0	SEC MALIG NEO LUNG	NA ³	NA ³	NA ³
197.1	SEC MALIG NEO MEDIASTINUM	NA ³	NA ³	NA ³
197.2	SEC MALIG NEO PLEURA	NA ³	NA ³	NA ³
197.3	SEC MALIG NEO RESP NEC	NA ³	NA ³	NA ³
197.4	SEC MALIG NEO SM BOWEL	NA ³	NA ³	NA ³
197.5	SEC MALIG NEO LG BOWEL	NA ³	NA ³	NA ³
197.6	SEC MALIG NEO PERITONEUM	NA ³	NA ³	NA ³
197.7	SEC MALIG NEO LIVER	NA ³	NA ³	NA ³
197.8	SEC MALIG NEO GI NEC	NA ³	NA ³	NA ³
198	SEC MALIG NEO OTHER SITES			
198.0	SEC MALIG NEO KIDNEY	NA ³	NA ³	NA ³
198.1	SEC MALIG NEO URIN NEC	NA ³	NA ³	NA ³
198.2	SEC MALIG NEO SKIN	NA ³	NA ³	NA ³
198.3	SEC MALIG NEO BRAIN/SPINE	NA ³	NA ³	NA ³
198.4	SEC MALIG NEO NERVE NEC	NA ³	NA ³	NA ³
198.5	SEC MALIG NEO BONE	NA ³	NA ³	NA ³
198.6	SEC MALIG NEO OVARY	NA ³	NA ³	NA ³
198.7	SEC MALIG NEO ADRENAL	NA ³	NA ³	NA ³
198.8	OTHER SECONDARY MALIG NEO			
198.81	SEC MALIG NEO BREAST	NA ³	NA ³	NA ³
198.82	SEC MALIG NEO GENITAL	NA ³	NA ³	NA ³
198.89	SEC MALIG NEO NEC	NA ³	NA ³	NA ³
199	MALIG NEOPLASM NOS			
199.0	MALIG NEO DISSEMINATED	Highest non-met org/tiss	Remainder ²	Other and ill-defined sites
199.1	MALIG NEO NOS	Highest non-met org/tiss	Remainder ²	Other and ill-defined sites
200	LYMPHOSARC/RETICULOSARC			
200.0	RETICULOSARCOMA	Reserved	Reserved	Lymphoma and multiple myeloma

Table 3-1 (Continued).

ICD-9 Code	Cancer code explanation	Internal Organ	External organ	IREP model
200.00	RETCLSRC UNSPEC EXT ORG	Reserved	Reserved	Lymphoma and multiple myeloma
200.01	RETICULOSARCOMA HEAD	Reserved	Reserved	Lymphoma and multiple myeloma
200.02	RETICULOSARCOMA THORAX	Reserved	Reserved	Lymphoma and multiple myeloma
200.03	RETICULOSARCOMA ABDOM	Reserved	Reserved	Lymphoma and multiple myeloma
200.04	RETICULOSARCOMA AXILLA	Reserved	Reserved	Lymphoma and multiple myeloma
200.05	RETICULOSARCOMA INGUIN	Reserved	Reserved	Lymphoma and multiple myeloma
200.06	RETICULOSARCOMA PELVIC	Reserved	Reserved	Lymphoma and multiple myeloma
200.07	RETICULOSARCOMA SPLEEN	Reserved	Reserved	Lymphoma and multiple myeloma
200.08	RETICULOSARCOMA MULT	Reserved	Reserved	Lymphoma and multiple myeloma
200.1	LYMPHOSARCOMA	Reserved	Reserved	Lymphoma and multiple myeloma
200.10	LYMPHSRC UNSPEC EXT ORG	Reserved	Reserved	Lymphoma and multiple myeloma
200.11	LYMPHOSARCOMA HEAD	Reserved	Reserved	Lymphoma and multiple myeloma
200.12	LYMPHOSARCOMA THORAX	Reserved	Reserved	Lymphoma and multiple myeloma
200.13	LYMPHOSARCOMA ABDOM	Reserved	Reserved	Lymphoma and multiple myeloma
200.14	LYMPHOSARCOMA AXILLA	Reserved	Reserved	Lymphoma and multiple myeloma
200.15	LYMPHOSARCOMA INGUIN	Reserved	Reserved	Lymphoma and multiple myeloma
200.16	LYMPHOSARCOMA PELVIC	Reserved	Reserved	Lymphoma and multiple myeloma
200.17	LYMPHOSARCOMA SPLEEN	Reserved	Reserved	Lymphoma and multiple myeloma
200.18	LYMPHOSARCOMA MULT	Reserved	Reserved	Lymphoma and multiple myeloma
200.2	BURKITT'S TUMOR/LYMPHOMA	Reserved	Reserved	Lymphoma and multiple myeloma
200.20	BURKITT'S TUMOR UNSPEC EXT ORG	Reserved	Reserved	Lymphoma and multiple myeloma
200.21	BURKITT'S TUMOR HEAD	Reserved	Reserved	Lymphoma and multiple myeloma
200.22	BURKITT'S TUMOR THORAX	Reserved	Reserved	Lymphoma and multiple myeloma
200.23	BURKITT'S TUMOR ABDOM	Reserved	Reserved	Lymphoma and multiple myeloma
200.24	BURKITT'S TUMOR AXILLA	Reserved	Reserved	Lymphoma and multiple myeloma
200.25	BURKITT'S TUMOR INGUIN	Reserved	Reserved	Lymphoma and multiple myeloma
200.26	BURKITT'S TUMOR PELVIC	Reserved	Reserved	Lymphoma and multiple myeloma
200.27	BURKITT'S TUMOR SPLEEN	Reserved	Reserved	Lymphoma and multiple myeloma
200.28	BURKITT'S TUMOR MULT	Reserved	Reserved	Lymphoma and multiple myeloma
200.8	MIXED LYMPHOSARCOMA	Reserved	Reserved	Lymphoma and multiple myeloma
200.80	OTHER VARN UNSPEC EXT ORG	Reserved	Reserved	Lymphoma and multiple myeloma
200.81	MIXED LYMPHOSARC HEAD	Reserved	Reserved	Lymphoma and multiple myeloma
200.82	MIXED LYMPHOSARC THORAX	Reserved	Reserved	Lymphoma and multiple myeloma
200.83	MIXED LYMPHOSARC ABDOM	Reserved	Reserved	Lymphoma and multiple myeloma
200.84	MIXED LYMPHOSARC AXILLA	Reserved	Reserved	Lymphoma and multiple myeloma
200.85	MIXED LYMPHOSARC INGUIN	Reserved	Reserved	Lymphoma and multiple myeloma
200.86	MIXED LYMPHOSARC PELVIC	Reserved	Reserved	Lymphoma and multiple myeloma
200.87	MIXED LYMPHOSARC SPLEEN	Reserved	Reserved	Lymphoma and multiple myeloma

Table 3-1 (Continued).

ICD-9 Code	Cancer code explanation	Internal Organ	External organ	IREP model
200.88	MIXED LYMPHOSARC MULT	Reserved	Reserved	Lymphoma and multiple myeloma
201	HODGKIN'S DISEASE			
201.0	HODGKIN'S PARAGRANULOMA	Reserved	Reserved	Lymphoma and multiple myeloma
201.00	HODGKINS PARAGRANULOMA UNSPEC EXT ORG	Reserved	Reserved	Lymphoma and multiple myeloma
201.01	HODGKINS PARAGRAN HEAD	Reserved	Reserved	Lymphoma and multiple myeloma
201.02	HODGKINS PARAGRAN THORAX	Reserved	Reserved	Lymphoma and multiple myeloma
201.03	HODGKINS PARAGRAN ABDOM	Reserved	Reserved	Lymphoma and multiple myeloma
201.04	HODGKINS PARAGRAN AXILLA	Reserved	Reserved	Lymphoma and multiple myeloma
201.05	HODGKINS PARAGRAN INGUIN	Reserved	Reserved	Lymphoma and multiple myeloma
201.06	HODGKINS PARAGRAN PELVIC	Reserved	Reserved	Lymphoma and multiple myeloma
201.07	HODGKINS PARAGRAN SPLEEN	Reserved	Reserved	Lymphoma and multiple myeloma
201.08	HODGKINS PARAGRAN MULT	Reserved	Reserved	Lymphoma and multiple myeloma
201.1	HODGKIN'S GRANULOMA	Reserved	Reserved	Lymphoma and multiple myeloma
201.10	HODGKINS GRANULOM UNSPEC EXT ORG	Reserved	Reserved	Lymphoma and multiple myeloma
201.11	HODGKINS GRANULOM HEAD	Reserved	Reserved	Lymphoma and multiple myeloma
201.12	HODGKINS GRANULOM THORAX	Reserved	Reserved	Lymphoma and multiple myeloma
201.13	HODGKINS GRANULOM ABDOM	Reserved	Reserved	Lymphoma and multiple myeloma
201.14	HODGKINS GRANULOM AXILLA	Reserved	Reserved	Lymphoma and multiple myeloma
201.15	HODGKINS GRANULOM INGUIN	Reserved	Reserved	Lymphoma and multiple myeloma
201.16	HODGKINS GRANULOM PELVIC	Reserved	Reserved	Lymphoma and multiple myeloma
201.17	HODGKINS GRANULOM SPLEEN	Reserved	Reserved	Lymphoma and multiple myeloma
201.18	HODGKINS GRANULOM MULT	Reserved	Reserved	Lymphoma and multiple myeloma
201.2	HODGKIN'S SARCOMA	Reserved	Reserved	Lymphoma and multiple myeloma
201.20	HODGKINS SRC UNSPEC EXT ORG	Reserved	Reserved	Lymphoma and multiple myeloma
201.21	HODGKINS SARCOMA HEAD	Reserved	Reserved	Lymphoma and multiple myeloma
201.22	HODGKINS SARCOMA THORAX	Reserved	Reserved	Lymphoma and multiple myeloma
201.23	HODGKINS SARCOMA ABDOM	Reserved	Reserved	Lymphoma and multiple myeloma
201.24	HODGKINS SARCOMA AXILLA	Reserved	Reserved	Lymphoma and multiple myeloma
201.25	HODGKINS SARCOMA INGUIN	Reserved	Reserved	Lymphoma and multiple myeloma
201.26	HODGKINS SARCOMA PELVIC	Reserved	Reserved	Lymphoma and multiple myeloma
201.27	HODGKINS SARCOMA SPLEEN	Reserved	Reserved	Lymphoma and multiple myeloma
201.28	HODGKINS SARCOMA MULT	Reserved	Reserved	Lymphoma and multiple myeloma
201.4	HODGKINS LYMPH-HISTIOCYT	Reserved	Reserved	Lymphoma and multiple myeloma
201.40	LYM-HST UNSPEC EXT ORGN	Reserved	Reserved	Lymphoma and multiple myeloma
201.41	HODGKINS LYMPH-HISTIO HEAD	Reserved	Reserved	Lymphoma and multiple myeloma
201.42	HODGKINS LYMPH-HISTIO THORAX	Reserved	Reserved	Lymphoma and multiple myeloma

Table 3-1 (Continued).

ICD-9 Code	Cancer code explanation	Internal Organ	External organ	IREP model
201.43	HODGKINS LYMPH-HISTIO ABDOM	Reserved	Reserved	Lymphoma and multiple myeloma
201.44	HODGKINS LYMPH-HISTIO AXILLA	Reserved	Reserved	Lymphoma and multiple myeloma
201.45	HODGKINS LYMPH-HISTIO INGUIN	Reserved	Reserved	Lymphoma and multiple myeloma
201.46	HODGKINS LYMPH-HISTIO PELVIC	Reserved	Reserved	Lymphoma and multiple myeloma
201.47	HODGKINS LYMPH-HISTIO SPLEEN	Reserved	Reserved	Lymphoma and multiple myeloma
201.48	HODGKINS LYMPH-HISTIO MULT	Reserved	Reserved	Lymphoma and multiple myeloma
201.5	HODGKINS NODULAR SCLEROS	Reserved	Reserved	Lymphoma and multiple myeloma
201.50	NODULAR SCLEROS UNSPEC EXT ORG	Reserved	Reserved	Lymphoma and multiple myeloma
201.51	HODGKINS NODUL SCLERO HEAD	Reserved	Reserved	Lymphoma and multiple myeloma
201.52	HODGKINS NODUL SCLERO THORAX	Reserved	Reserved	Lymphoma and multiple myeloma
201.53	HODGKINS NODUL SCLERO ABDOM	Reserved	Reserved	Lymphoma and multiple myeloma
201.54	HODGKINS NODUL SCLERO AXILLA	Reserved	Reserved	Lymphoma and multiple myeloma
201.55	HODGKINS NODUL SCLERO INGUIN	Reserved	Reserved	Lymphoma and multiple myeloma
201.56	HODGKINS NODUL SCLERO PELVIC	Reserved	Reserved	Lymphoma and multiple myeloma
201.57	HODGKINS NODUL SCLERO SPLEEN	Reserved	Reserved	Lymphoma and multiple myeloma
201.58	HODGKINS NODUL SCLERO MULT	Reserved	Reserved	Lymphoma and multiple myeloma
201.6	HODGKINS MIX CELLULARITY	Reserved	Reserved	Lymphoma and multiple myeloma
201.60	MXD CELR UNSPEC EXT ORG	Reserved	Reserved	Lymphoma and multiple myeloma
201.61	HODGKINS MIX CELL HEAD	Reserved	Reserved	Lymphoma and multiple myeloma
201.62	HODGKINS MIX CELL THORAX	Reserved	Reserved	Lymphoma and multiple myeloma
201.63	HODGKINS MIX CELL ABDOM	Reserved	Reserved	Lymphoma and multiple myeloma
201.64	HODGKINS MIX CELL AXILLA	Reserved	Reserved	Lymphoma and multiple myeloma
201.65	HODGKINS MIX CELL INGUIN	Reserved	Reserved	Lymphoma and multiple myeloma
201.66	HODGKINS MIX CELL PELVIC	Reserved	Reserved	Lymphoma and multiple myeloma
201.67	HODGKINS MIX CELL SPLEEN	Reserved	Reserved	Lymphoma and multiple myeloma
201.68	HODGKINS MIX CELL MULT	Reserved	Reserved	Lymphoma and multiple myeloma
201.7	HODG LYMPHOCYTIC DEPLET	Reserved	Reserved	Lymphoma and multiple myeloma
201.70	LYM DPLT UNSPEC EXT ORG	Reserved	Reserved	Lymphoma and multiple myeloma
201.71	HODGKINS LYMPH DEPLET HEAD	Reserved	Reserved	Lymphoma and multiple myeloma
201.72	HODGKINS LYMPH DEPLET THORAX	Reserved	Reserved	Lymphoma and multiple myeloma
201.73	HODGKINS LYMPH DEPLET ABDOM	Reserved	Reserved	Lymphoma and multiple myeloma
201.74	HODGKINS LYMPH DEPLET AXILLA	Reserved	Reserved	Lymphoma and multiple myeloma
201.75	HODGKINS LYMPH DEPLET INGUIN	Reserved	Reserved	Lymphoma and multiple myeloma
201.76	HODGKINS LYMPH DEPLET PELVIC	Reserved	Reserved	Lymphoma and multiple myeloma
201.77	HODGKINS LYMPH DEPLET SPLEEN	Reserved	Reserved	Lymphoma and multiple myeloma
201.78	HODGKINS LYMPH DEPLET MULT	Reserved	Reserved	Lymphoma and multiple myeloma
201.9	HODGKINS DISEASE NOS	Reserved	Reserved	Lymphoma and multiple myeloma
201.90	HODGK DISEASE UNSPEC EXT ORG	Reserved	Reserved	Lymphoma and multiple myeloma

Table 3-1 (Continued).

ICD-9 Code	Cancer code explanation	Internal Organ	External organ	IREP model
201.91	HODGKINS DISEASE NOS HEAD	Reserved	Reserved	Lymphoma and multiple myeloma
201.92	HODGKINS DISEASE NOS THORAX	Reserved	Reserved	Lymphoma and multiple myeloma
201.93	HODGKINS DISEASE NOS ABDOM	Reserved	Reserved	Lymphoma and multiple myeloma
201.94	HODGKINS DISEASE NOS AXILLA	Reserved	Reserved	Lymphoma and multiple myeloma
201.95	HODGKINS DISEASE NOS INGUIN	Reserved	Reserved	Lymphoma and multiple myeloma
201.96	HODGKINS DISEASE NOS PELVIC	Reserved	Reserved	Lymphoma and multiple myeloma
201.97	HODGKINS DISEASE NOS SPLEEN	Reserved	Reserved	Lymphoma and multiple myeloma
201.98	HODGKINS DISEASE NOS MULT	Reserved	Reserved	Lymphoma and multiple myeloma
202	OTHER MALIG NEO LYMPH/HISTIO			
202.0	NODULAR LYMPHOMA	Reserved	Reserved	Lymphoma and multiple myeloma
202.00	NDLR LYM UNSPEC EXT ORG	Reserved	Reserved	Lymphoma and multiple myeloma
202.01	NODULAR LYMPHOMA HEAD	Reserved	Reserved	Lymphoma and multiple myeloma
202.02	NODULAR LYMPHOMA THORAX	Reserved	Reserved	Lymphoma and multiple myeloma
202.03	NODULAR LYMPHOMA ABDOM	Reserved	Reserved	Lymphoma and multiple myeloma
202.04	NODULAR LYMPHOMA AXILLA	Reserved	Reserved	Lymphoma and multiple myeloma
202.05	NODULAR LYMPHOMA INGUIN	Reserved	Reserved	Lymphoma and multiple myeloma
202.06	NODULAR LYMPHOMA PELVIC	Reserved	Reserved	Lymphoma and multiple myeloma
202.07	NODULAR LYMPHOMA SPLEEN	Reserved	Reserved	Lymphoma and multiple myeloma
202.08	NODULAR LYMPHOMA MULT	Reserved	Reserved	Lymphoma and multiple myeloma
202.1	MYCOSIS FUNGOIDES	Reserved	Skin	Lymphoma and multiple myeloma
202.10	MYCS FNG UNSPEC EXT ORG	Reserved	Skin	Lymphoma and multiple myeloma
202.11	MYCOSIS FUNGOIDES HEAD	Reserved	Skin	Lymphoma and multiple myeloma
202.12	MYCOSIS FUNGOIDES THORAX	Reserved	Skin	Lymphoma and multiple myeloma
202.13	MYCOSIS FUNGOIDES ABDOM	Reserved	Skin	Lymphoma and multiple myeloma
202.14	MYCOSIS FUNGOIDES AXILLA	Reserved	Skin	Lymphoma and multiple myeloma
202.15	MYCOSIS FUNGOIDES INGUIN	Reserved	Skin	Lymphoma and multiple myeloma
202.16	MYCOSIS FUNGOIDES PELVIC	Reserved	Skin	Lymphoma and multiple myeloma
202.17	MYCOSIS FUNGOIDES SPLEEN	Reserved	Skin	Lymphoma and multiple myeloma
202.18	MYCOSIS FUNGOIDES MULT	Reserved	Skin	Lymphoma and multiple myeloma
202.2	SEZARY'S DISEASE	Reserved	Reserved	Lymphoma and multiple myeloma
202.20	SZRY DISEASE UNSPEC EXT ORG	Reserved	Reserved	Lymphoma and multiple myeloma
202.21	SEZARY'S DISEASE HEAD	Reserved	Reserved	Lymphoma and multiple myeloma
202.22	SEZARY'S DISEASE THORAX	Reserved	Reserved	Lymphoma and multiple myeloma
202.23	SEZARY'S DISEASE ABDOM	Reserved	Reserved	Lymphoma and multiple myeloma
202.24	SEZARY'S DISEASE AXILLA	Reserved	Reserved	Lymphoma and multiple myeloma
202.25	SEZARY'S DISEASE INGUIN	Reserved	Reserved	Lymphoma and multiple myeloma
202.26	SEZARY'S DISEASE PELVIC	Reserved	Reserved	Lymphoma and multiple myeloma
202.27	SEZARY'S DISEASE SPLEEN	Reserved	Reserved	Lymphoma and multiple myeloma

Table 3-1 (Continued).

ICD-9 Code	Cancer code explanation	Internal Organ	External organ	IREP model
202.28	SEZARY'S DISEASE MULT	Reserved	Reserved	Lymphoma and multiple myeloma
202.3	MALIG HISTIOCYTOSIS	Reserved	Reserved	Lymphoma and multiple myeloma
202.30	MLG HIST UNSPEC EXT ORG	Reserved	Reserved	Lymphoma and multiple myeloma
202.31	MALIG HISTIOCYTOSIS HEAD	Reserved	Reserved	Lymphoma and multiple myeloma
202.32	MALIG HISTIOCYTOSIS THORAX	Reserved	Reserved	Lymphoma and multiple myeloma
202.33	MALIG HISTIOCYTOSIS ABDOM	Reserved	Reserved	Lymphoma and multiple myeloma
202.34	MALIG HISTIOCYTOSIS AXILLA	Reserved	Reserved	Lymphoma and multiple myeloma
202.35	MALIG HISTIOCYTOSIS INGUIN	Reserved	Reserved	Lymphoma and multiple myeloma
202.36	MALIG HISTIOCYTOSIS PELVIC	Reserved	Reserved	Lymphoma and multiple myeloma
202.37	MALIG HISTIOCYTOSIS SPLEEN	Reserved	Reserved	Lymphoma and multiple myeloma
202.38	MALIG HISTIOCYTOSIS MULT	Reserved	Reserved	Lymphoma and multiple myeloma
202.4	LEUKEM RETICULOENDOTHEL	Reserved	Reserved	Lymphoma and multiple myeloma
202.40	LK RTCTL UNSPEC EXT ORG	Reserved	Reserved	Lymphoma and multiple myeloma
202.41	HAIRY-CELL LEUKEM HEAD	Reserved	Reserved	Lymphoma and multiple myeloma
202.42	HAIRY-CELL LEUKEM THORAX	Reserved	Reserved	Lymphoma and multiple myeloma
202.43	HAIRY-CELL LEUKEM ABDOM	Reserved	Reserved	Lymphoma and multiple myeloma
202.44	HAIRY-CELL LEUKEM AXILLA	Reserved	Reserved	Lymphoma and multiple myeloma
202.45	HAIRY-CELL LEUKEM INGUIN	Reserved	Reserved	Lymphoma and multiple myeloma
202.46	HAIRY-CELL LEUKEM PELVIC	Reserved	Reserved	Lymphoma and multiple myeloma
202.47	HAIRY-CELL LEUKEM SPLEEN	Reserved	Reserved	Lymphoma and multiple myeloma
202.48	HAIRY-CELL LEUKEM MULT	Reserved	Reserved	Lymphoma and multiple myeloma
202.5	LETTERER-SIWE DISEASE	Reserved	Reserved	Lymphoma and multiple myeloma
202.50	LTR-SIWE UNSPEC EXT ORG	Reserved	Reserved	Lymphoma and multiple myeloma
202.51	LETTERER-SIWE DISEASE HEAD	Reserved	Reserved	Lymphoma and multiple myeloma
202.52	LETTERER-SIWE DISEASE THORAX	Reserved	Reserved	Lymphoma and multiple myeloma
202.53	LETTERER-SIWE DISEASE ABDOM	Reserved	Reserved	Lymphoma and multiple myeloma
202.54	LETTERER-SIWE DISEASE AXILLA	Reserved	Reserved	Lymphoma and multiple myeloma
202.55	LETTERER-SIWE DISEASE INGUIN	Reserved	Reserved	Lymphoma and multiple myeloma
202.56	LETTERER-SIWE DISEASE PELVIC	Reserved	Reserved	Lymphoma and multiple myeloma
202.57	LETTERER-SIWE DISEASE SPLEEN	Reserved	Reserved	Lymphoma and multiple myeloma
202.58	LETTERER-SIWE DISEASE MULT	Reserved	Reserved	Lymphoma and multiple myeloma
202.6	MALIG MAST CELL TUMORS	Reserved	Reserved	Lymphoma and multiple myeloma
202.60	MALIG MAST UNSPEC EXT ORG	Reserved	Reserved	Lymphoma and multiple myeloma
202.61	MALIG MASTOCYTOSIS HEAD	Reserved	Reserved	Lymphoma and multiple myeloma
202.62	MALIG MASTOCYTOSIS THORAX	Reserved	Reserved	Lymphoma and multiple myeloma
202.63	MALIG MASTOCYTOSIS ABDOM	Reserved	Reserved	Lymphoma and multiple myeloma
202.64	MALIG MASTOCYTOSIS AXILLA	Reserved	Reserved	Lymphoma and multiple myeloma
202.65	MALIG MASTOCYTOSIS INGUIN	Reserved	Reserved	Lymphoma and multiple myeloma

Table 3-1 (Continued).

ICD-9 Code	Cancer code explanation	Internal Organ	External organ	IREP model
202.66	MALIG MASTOCYTOSIS PELVIC	Reserved	Reserved	Lymphoma and multiple myeloma
202.67	MALIG MASTOCYTOSIS SPLEEN	Reserved	Reserved	Lymphoma and multiple myeloma
202.68	MALIG MASTOCYTOSIS MULT	Reserved	Reserved	Lymphoma and multiple myeloma
202.8	LYMPHOMAS NEC	Reserved	Reserved	Lymphoma and multiple myeloma
202.80	OTHER LYMP UNSPEC EXT ORG	Reserved	Reserved	Lymphoma and multiple myeloma
202.81	LYMPHOMAS NEC HEAD	Reserved	Reserved	Lymphoma and multiple myeloma
202.82	LYMPHOMAS NEC THORAX	Reserved	Reserved	Lymphoma and multiple myeloma
202.83	LYMPHOMAS NEC ABDOM	Reserved	Reserved	Lymphoma and multiple myeloma
202.84	LYMPHOMAS NEC AXILLA	Reserved	Reserved	Lymphoma and multiple myeloma
202.85	LYMPHOMAS NEC INGUIN	Reserved	Reserved	Lymphoma and multiple myeloma
202.86	LYMPHOMAS NEC PELVIC	Reserved	Reserved	Lymphoma and multiple myeloma
202.87	LYMPHOMAS NEC SPLEEN	Reserved	Reserved	Lymphoma and multiple myeloma
202.88	LYMPHOMAS NEC MULT	Reserved	Reserved	Lymphoma and multiple myeloma
202.9	MALIG NEO LYM/HIST TIS NEC	Reserved	Reserved	Lymphoma and multiple myeloma
202.90	UNSPEC LYM UNSPEC EXT ORG	Reserved	Reserved	Lymphoma and multiple myeloma
202.91	LYMPHOID MALIG NEC HEAD	Reserved	Reserved	Lymphoma and multiple myeloma
202.92	LYMPHOID MALIG NEC THORAX	Reserved	Reserved	Lymphoma and multiple myeloma
202.93	LYMPHOID MALIG NEC ABDOM	Reserved	Reserved	Lymphoma and multiple myeloma
202.94	LYMPHOID MALIG NEC AXILLA	Reserved	Reserved	Lymphoma and multiple myeloma
202.95	LYMPHOID MALIG NEC INGUIN	Reserved	Reserved	Lymphoma and multiple myeloma
202.96	LYMPHOID MALIG NEC PELVIC	Reserved	Reserved	Lymphoma and multiple myeloma
202.97	LYMPHOID MALIG NEC SPLEEN	Reserved	Reserved	Lymphoma and multiple myeloma
202.98	LYMPHOID MALIG NEC MULT	Reserved	Reserved	Lymphoma and multiple myeloma
203	MULTIPLE MYELOMA ET AL			
203.0	MULTIPLE MYELOMA	Red Bone Marrow	Red Bone Marrow	Lymphoma and multiple myeloma
203.00	MULT MYELM W/O REMISSION	Red Bone Marrow	Red Bone Marrow	Lymphoma and multiple myeloma
203.01	MULT MYELM W/REMISSION	Red Bone Marrow	Red Bone Marrow	Lymphoma and multiple myeloma
203.1	PLASMA CELL LEUKEMIA	Red Bone Marrow	Red Bone Marrow	Lymphoma and multiple myeloma
203.10	PLSM CELL LEUK W/O REMISSION	Red Bone Marrow	Red Bone Marrow	Lymphoma and multiple myeloma
203.11	PLSM CELL LEUK W/REMISS	Red Bone Marrow	Red Bone Marrow	Lymphoma and multiple myeloma
203.8	IMMUNOPROLIFERAT NEOPLASM NEC	Reserved	Red Bone Marrow	Lymphoma and multiple myeloma
203.80	OTHER IMNPRFL NPL W/O REMISS	Reserved	Red Bone Marrow	Lymphoma and multiple myeloma
203.81	OTHER IMNPRFL NPL W/REMISS	Reserved	Red Bone Marrow	Lymphoma and multiple myeloma
204	LYMPHOID LEUKEMIA			
204.0	ACUTE LYMPHOID LEUKEMIA	Reserved	Red Bone Marrow	Acute lymphoid leukemia
204.00	ACT LYM LEUK W/O REMISS	Reserved	Red Bone Marrow	Acute lymphoid leukemia
204.01	ACT LYM LEUK W/REMISS	Reserved	Red Bone Marrow	Acute lymphoid leukemia
204.1	CHRONIC LYMPHOID LEUKEMIA	NA	NA	NA ⁴

Table 3-1 (Continued).

ICD-9 Code	Cancer code explanation	Internal Organ	External organ	IREP model
204.10	CHRONIC LYM LEUK W/O REMISS	NA	NA	NA ⁴
204.11	CHRONIC LYM LEUK W/REMISS	NA	NA	NA ⁴
204.2	SUBACUTE LYMPHOID LEUKEMIA	Reserved	Red Bone Marrow	Leukemia, less CLL
204.20	SBAC LYM LEUK W/O REMISS	Reserved	Red Bone Marrow	Leukemia, less CLL
204.21	SBAC LYM LEUK W/REMISS	Reserved	Red Bone Marrow	Leukemia, less CLL
204.8	LYMPHOID LEUKEMIA NEC	Reserved	Red Bone Marrow	Leukemia, less CLL
204.80	OTHER LYM LEUK W/O REMISS	Reserved	Red Bone Marrow	Leukemia, less CLL
204.81	OTHER LYM LEUK W/REMISS	Reserved	Red Bone Marrow	Leukemia, less CLL
204.9	LYMPHOID LEUKEMIA NOS	Reserved	Red Bone Marrow	Acute lymphoid leukemia
204.90	UNS LYM LEUK W/O REMISS	Reserved	Red Bone Marrow	Acute lymphoid leukemia
204.91	UNS LYM LEUK W/REMISS	Reserved	Red Bone Marrow	Acute lymphoid leukemia
205	MYELOID LEUKEMIA			
205.0	ACUTE MYELOID LEUKEMIA	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL AND Acute myeloid leukemia
205.00	ACT MYL LEUK W/O REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL AND Acute myeloid leukemia
205.01	ACT MYL LEUK W/REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL AND Acute myeloid leukemia
205.1	CHRONIC MYELOID LEUKEMIA	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL AND Chronic myeloid leukemia
205.10	CHRONIC MYL LEUK W/O REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL AND Chronic myeloid leukemia
205.11	CHRONIC MYL LEUK W/REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL AND Chronic myeloid leukemia
205.2	SUBACUT MYELOID LEUKEMIA	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
205.20	SBAC MYL LEUK W/O REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
205.21	SBAC MYL LEUK W/REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
205.3	MYELOID SARCOMA	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
205.30	MYL SRCOMA W/O REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
205.31	MYL SRCOMA W/REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
205.8	MYELOID LEUKEMIA NEC	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
205.80	OTHER MYL LEUK W/O REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
205.81	OTHER MYL LEUK W/REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
205.9	MYELOID LEUKEMIA NOS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL AND Acute myeloid leukemia
205.90	UNS MYL LEUK W/O REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL AND Acute myeloid leukemia

Table 3-1 (Continued).

ICD-9 Code	Cancer code explanation	Internal Organ	External organ	IREP model
205.91	UNS MYL LEUK W/REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL AND Acute myeloid leukemia
206	MONOCYTIC LEUKEMIA			
206.0	ACUTE MONOCYTIC LEUKEMIA	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
206.00	ACT MONO LEUK W/O REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
206.01	ACT MONO LEUK W/REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
206.1	CHRONIC MONOCYTIC LEUKEMIA	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
206.10	CHRONIC MONO LEUK W/O REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
206.11	CHRONIC MONO LEUK W/REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
206.2	SUBAC MONOCYTIC LEUKEMIA	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
206.20	SBACUTE MONO LEUK W/O REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
206.21	SBACUTE MONO LEUK W/REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
206.8	MONOCYTIC LEUKEMIA NEC	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
206.80	OTHER MONO LEUK W/O REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
206.81	OTHER MONO LEUK W/REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
206.9	MONOCYTIC LEUKEMIA NOS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
206.90	UNS MONO LEUK W/O REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
206.91	UNS MONO LEUK W/REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
207	OTHER SPECIFIED LEUKEMIA			
207.0	ACUTE ERYTHREMIA	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
207.00	ACT ERTH/ERYLK W/O REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
207.01	ACT ERTH/ERYLK W/REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
207.1	CHRONIC ERYTHREMIA	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
207.10	CHRONIC ERYTHRM W/O REMISION	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
207.11	CHRONIC ERYTHRM W/REMISION	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
207.2	MEGAKARYOCYTIC LEUKEMIA	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
207.20	MGKRYCYT LEUK W/O REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
207.21	MGKRYCYT LEUK W/REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
207.8	SPECIFIED LEUKEMIA NEC	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
207.80	OTHER SPF LEUK W/O REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
207.81	OTHER SPF LEUK W/REMISION	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
208	LEUKEMIA-UNSPECIF CELL			
208.0	ACT LEUK UNS CL W/O REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL AND Acute lymphoid leukemia AND Acute myeloid leukemia
208.00	ACT LEUK UNS CL W/O REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL AND Acute lymphoid leukemia AND Acute myeloid leukemia

Table 3-1 (Continued).

ICD-9 Code	Cancer code explanation	Internal Organ	External organ	IREP model
208.01	ACT LEUK UNS CL W/REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL AND Acute lymphoid leukemia AND Acute myeloid leukemia
208.1	CHRONIC LEUKEMIA NOS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL AND Chronic myeloid leukemia
208.10	CHRONIC LEUK UNS CL W/O REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL AND Chronic myeloid leukemia
208.11	CHRONIC LEUK UNS CL W/REMISS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL AND Chronic myeloid leukemia
208.2	SUBACUTE LEUKEMIA NOS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
208.20	SUBACUTE LEUKEMIA UNS CL W/O REMISSION	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
208.21	SUBACUTE LEUKEMIA UNS CL W/REMISSION	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
208.8	LEUKEMIA-UNSPEC CELL NEC	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
208.80	OTHER LEUK UNS CL W/O REMISSION	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
208.81	OTHER LEUK UNS CL W/REMISSION	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL
208.9	LEUKEMIA-UNSPEC CELL NOS	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL AND Acute lymphoid leukemia AND Acute myeloid leukemia AND Chronic myeloid leukemia
208.90	OTHER LEUK NOS W/O REMISSION	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL AND Acute lymphoid leukemia AND Acute myeloid leukemia AND Chronic myeloid leukemia
208.91	OTHER LEUK NOS W/REMISSION	Red Bone Marrow	Red Bone Marrow	Leukemia, less CLL AND Acute lymphoid leukemia AND Acute myeloid leukemia AND Chronic myeloid leukemia
230	CA IN SITU DIGESTIVE ORG			
230.0	CA IN SITU ORAL CAV/PHAR	Highest non-met org/tiss	Thyroid	Oral cav. and pharynx
230.1	CA IN SITU ESOPHAGUS	Esophagus	Esophagus	Esophagus
230.2	CA IN SITU STOMACH	Stomach	Stomach	Stomach
230.3	CA IN SITU COLON	Colon	Colon	Colon
230.4	CA IN SITU RECTUM	LLI	Colon	Rectum
230.5	CA IN SITU ANAL CANAL	LLI	Colon	Rectum
230.6	CA IN SITU ANUS NOS	LLI	Colon	Rectum
230.7	CA IN SITU BOWEL NEC/NOS	Colon	Colon	All digestive

Table 3-1 (Continued).

ICD-9 Code	Cancer code explanation	Internal Organ	External organ	IREP model
230.8	CA IN SITU LIVER/BILIARY	Liver	Liver	Liver
230.9	CA IN SITU GI NEC/NOS	Highest non-met org/tiss	Remainder ²	All digestive
231	CA IN SITU RESPIRATORY			
231.0	CA IN SITU LARYNX	ET2	Esophagus	Other respiratory
231.1	CA IN SITU TRACHEA	BB	Thyroid	Lung
231.2	CA IN SITU BRONCHUS/LUNG	Lung	Lung	Lung
231.8	CA IN SITU RESP SYS NEC	Medical review	Medical review	Other respiratory
231.9	CA IN SITU RESP SYS NOS	Lung	Lung	Other respiratory
232	CARCINOMA IN SITU SKIN			
232.0	CA IN SITU SKIN LIP	Skin	Skin	Malignant melanoma AND Non-melanoma skin-Squamous cell ⁵
232.1	CA IN SITU EYELID	Skin	Skin	Malignant melanoma AND Non-melanoma skin-Squamous cell ⁵
232.2	CA IN SITU SKIN EAR	Skin	Skin	Malignant melanoma AND Non-melanoma skin-Squamous cell ⁵
232.3	CA IN SITU SKIN FACE NEC	Skin	Skin	Malignant melanoma AND Non-melanoma skin-Squamous cell ⁵
232.4	CA IN SITU SCALP	Skin	Skin	Malignant melanoma AND Non-melanoma skin-Squamous cell ⁵
232.5	CA IN SITU SKIN TRUNK	Skin	Skin	Malignant melanoma AND Non-melanoma skin-Squamous cell ⁵
232.6	CA IN SITU SKIN ARM	Skin	Skin	Malignant melanoma AND Non-melanoma skin-Squamous cell ⁵
232.7	CA IN SITU SKIN LEG	Skin	Skin	Malignant melanoma AND Non-melanoma skin-Squamous cell ⁵
232.8	CA IN SITU SKIN NEC	Skin	Skin	Malignant melanoma AND Non-melanoma skin-Squamous cell ⁵
232.9	CA IN SITU SKIN NOS	Skin	Skin	Malignant melanoma AND Non-melanoma skin-Squamous cell ⁵
233	CA IN SITU BREAST/GU			
233.0	CA IN SITU BREAST	Breast	Breast	Breast
233.1	CA IN SITU CERVIX UTERI	Uterus	Uterus	Female genitalia less ovary
233.2	CA IN SITU UTERUS NEC	Uterus	Uterus	Female genitalia less ovary
233.3	CA IN SITU FEM GEN NEC	Uterus	Uterus	Female genitalia less ovary AND Ovary
233.4	CA IN SITU PROSTATE	Highest non-met org/tiss	Bladder	All male genitalia
233.5	CA IN SITU PENIS	Testes	Testes	All male genitalia
233.6	CA IN SITU MALE GEN NEC	Testes	Testes	All male genitalia

Table 3-1 (Continued).

ICD-9 Code	Cancer code explanation	Internal Organ	External organ	IREP model
233.7	CA IN SITU BLADDER	Bladder	Bladder	Bladder
233.9	CA IN SITU URINARY NEC	Medical review	Liver	Urinary organs less bladder
234	CA IN SITU NEC/NOS			
234.0	CA IN SITU EYE	Brain	Eye Lens	Eye
234.8	CA IN SITU NEC	Highest non-met org/tiss	Remainder ²	Other and ill-defined sites
234.9	CA IN SITU NOS	Highest non-met org/tiss	Remainder ²	Other and ill-defined sites
235	UNCERT BEHAV NEOPLASM GI/RESP			
235.0	UNCERT BEHAV NEOPLASM SALIVARY	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral cav. and pharynx
235.1	UNCERT BEHAV NEOPLASM ORAL/PHAR	Highest non-met org/tiss	Thyroid/Remainder ¹	Oral cav. and pharynx
235.2	UNCERT BEHAV NEOPLASM INTESTINE (stomach)	Stomach	Stomach	Stomach
235.2	UNCERT BEHAV NEOPLASM INTESTINE (colon)	Colon	Colon	Colon
235.2	UNCERT BEHAV NEOPLASM INTESTINE (rectum)	LLI	Colon	Rectum
235.3	UNCERT BEHAV NEOPLASM LIVER	Liver	Liver	Liver
235.4	UNCERT BEHAV NEOPLASM PERITONEUM	Highest non-met org/tiss	Colon	All digestive
235.5	UNCERT BEHAV NEOPLASM GI NEC	Colon	Colon	All digestive
235.6	UNCERT BEHAV NEOPLASM LARYNX	ET2	Esophagus	Other respiratory
235.7	UNCERT BEHAV NEOPLASM LUNG	Lung	Lung	Lung
235.8	UNCERT BEHAV NEOPLASM PLEURA	Medical review	Lung	Other respiratory
235.9	UNCERT BEHAV NEOPLASM RESP NEC	Medical review	Lung	Other respiratory
236	UNCERT BEHAV NEOPLASM GU			
236.0	UNCERT BEHAV NEOPLASM UTERUS	Uterus	Uterus	Female genitalia, less ovary
236.1	UNCERT BEHAV NEOPLASM PLACENTA	Uterus	Uterus	Female genitalia, less ovary
236.2	UNCERT BEHAV NEOPLASM OVARY	Ovaries	Ovaries	Ovary
236.3	UNCERT BEHAV NEOPLASM FEMALE NEC	Medical review	Uterus	Female genitalia, less ovary
236.4	UNCERT BEHAV NEOPLASM TESTIS	Testes	Testes	All male genitalia
236.5	UNCERT BEHAV NEOPLASM PROSTATE	Highest non-met org/tiss	Bladder	All male genitalia
236.6	UNCERT BEHAV NEOPLASM MALE NEC	Testes	Testes	All male genitalia
236.7	UNCERT BEHAV NEOPLASM BLADDER	Bladder	Bladder	Bladder
236.9	UNCERT BEHAV NEOPLASM OTHER URINAR	Medical review	Liver	Urinary organs less bladder
236.90	UNCERT BEHAV NEOPLASM URINAR NOS	Medical review	Liver	Urinary organs less bladder
236.91	UNCERT BEHAV NEOPLASM KIDNEY	Medical review	Liver	Urinary organs less bladder
236.99	UNCERT BEHAV NEOPLASM URINAR NEC	Medical review	Liver	Urinary organs less bladder
237	UNCER NEOPLASM ENDOCRINE/NERV			
237.0	UNCERT BEHAV NEOPLASM PITUITARY	Brain	Thyroid/Remainder ¹	Thyroid

Table 3-1 (Continued).

ICD-9 Code	Cancer code explanation	Internal Organ	External organ	IREP model
237.1	UNCERT BEHAV NEOPLASM PINEAL	Brain	Thyroid/Remainder ¹	Thyroid
237.2	UNCERT BEHAV NEOPLASM ADRENAL	Adrenal	Liver	Urinary organs less bladder
237.3	UNCERT BEHAV NEOPLASM PARAGANG	Brain	Thyroid/Remainder ¹	Nervous system
237.4	UNCER NEOPLASM ENDOCRINE NEC	Medical review	Remainder ²	Thyroid
237.5	UNCERT BEH NEOPLASM BRAIN/SPINAL	Brain	Thyroid/Remainder ¹	Nervous system
237.6	UNCERT BEHAV NEOPLASM MENINGES	Brain	Thyroid/Remainder ¹	Nervous system
237.7	NEUROFIBROMATOSIS	Medical review	Remainder ²	Nervous system
237.70	NEUROFIBROMATOSIS NOS	Medical review	Remainder ²	Nervous system
237.71	NEUROFIBROMATOSIS TYPE I	Medical review	Remainder ²	Nervous system
237.72	NEUROFIBROMATOSIS TYP II	Medical review	Remainder ²	Nervous system
237.9	UNCERT BEH NEOPLASM NERV SYS NEC	Medical review	Remainder ²	Nervous system
238	UNCERT BEHAV NEOPLASM NEC/NOS			
238.0	UNCERT BEHAV NEOPLASM BONE	Medical review	Red Bone Marrow	Bone
238.1	UNCERT BEHAV NEOPLASM SOFT TISSU	Medical review	Remainder ²	Connective Tissue
238.2	UNCERT BEHAV NEOPLASM SKIN	Medical review	Skin	Malignant melanoma AND non-melanoma skin-Basal cell
238.3	UNCERT BEHAV NEOPLASM BREAST	Medical review	Breast	Breast
238.4	POLYCYTHEMIA	Red Bone Marrow	Red Bone Marrow	Bone
238.5	MASTOCYTOMA NOS	Red Bone Marrow	Red Bone Marrow	Lymphoma and multiple myeloma
238.6	PLASMACYTOMA NOS	Red Bone Marrow	Red Bone Marrow	Lymphoma and multiple myeloma
238.7	LYMPHOPROLIFERAT DISEASE NOS	Red Bone Marrow	Red Bone Marrow	Bone AND Lymphoma and multiple myeloma
238.8	UNCERT BEHAVIOR NEOPLASM NEC	Medical review	Remainder ²	Other and ill-defined sites
238.9	UNCERT BEHAVIOR NEOPLASM NOS	Medical review	Remainder ²	Other and ill-defined sites
239	UNSPECIFIED NEOPLASM			
239.0	DIGESTIVE NEOPLASM NOS	Medical review	Stomach	All digestive
239.1	RESPIRATORY NEOPLASM NOS	Medical review	Lung	Lung AND Other respiratory
239.2	BONE/SKIN NEOPLASM NOS (Bone)	Medical review	Red Bone Marrow	Bone
239.2	BONE/SKIN NEOPLASM NOS (Skin)	Medical review	skin	Non-melanoma skin-Basal cell
239.3	BREAST NEOPLASM NOS	Breast	Breast	Breast
239.4	BLADDER NEOPLASM NOS	Bladder	Bladder	Bladder
239.5	OTHER GU NEOPLASM NOS (Female)	Medical review	Bladder	Female genitalia less ovary AND Ovary AND All urinary organs
239.5	OTHER GU NEOPLASM NOS (Male)	Medical review	Testes	All male genitalia AND All urinary organs
239.6	BRAIN NEOPLASM NOS	Brain	Thyroid/Remainder ¹	Nervous system

Table 3-1 (Continued).

ICD-9 Code	Cancer code explanation	Internal Organ	External organ	IREP model
239.7	BRAIN/NERV NEOPLASM NOS	Medical review	Remainder ²	Nervous system
239.7	ENDOCRINE NOS	Medical review	Remainder ²	Thyroid AND Other endocrine glands
239.8	NEOPLASM NOS, SITE NEC	Medical review	Remainder ²	Other and ill-defined sites
239.9	NEOPLASM NOS	Medical review	Remainder ²	Other and ill-defined sites
273	DISORDERS OF PLASMA PROTEIN METABOLISM			
273.3	WALDENSTROM'S MACROGLOBULINEMIA	Red Bone Marrow	Red Bone Marrow	Lymphoma and multiple myeloma
289	OTHER SPECIFIED BLOOD DISORDER			
289.7	ESSENTIAL THROMBOCYTOSIS	Red Bone Marrow	Red Bone Marrow	Bone
289.8	OTHER SPECIFIED DISEASES OF BLOOD AND BLOOD-FORMING ORGANS	Red Bone Marrow	Red Bone Marrow	Bone
289.9	ESSENTIAL THROMBOCYTHEMIA	Red Bone Marrow	Red Bone Marrow	Bone

1. 1 - See discussion in Section 4.3
2. 2 - See discussion in Section 4.4
3. 3 - For secondary cancers, doses are assessed for the likely primary cancer site(s), which are selected using guidance in Table 3-2.
4. 4 - 42 CFR 81.30 states this cancer is non-radiogenic for the purposes of EEOICPA and assigns zero probability of causation.
5. 5 - For ICD-9 code 232, if the type of cancer is specified by DOL (Malignant melanoma or Non-melanoma skin-Squamous cell) use only the specified IREP model (note that Bowden's disease is another name for Squamous Cell Carcinoma in situ). If the cancer is not specified, run both IREP models as discussed in Section 4.6.
6. 6 - See discussion in Section 4.7
7. 7 - The external target organ should be lung if the lymphoma is known to be a B-cell variety, or thymus if the lymphoma is known to be a T-cell variety or if the variety is unknown.

Table 3-2.

Secondary cancer	ICD-9 code of likely primary cancers ^{1,2,3}
196.0 Lymph nodes of head, face, and neck	141, 142(M), 146(M), 149(F), 161(M), 162, 172, 173, 174(F), 193(F)
196.1 Intrathoracic lymph nodes	150(M), 162, 174(F)
196.2 Intra-abdominal lymph nodes	150(M), 151(M), 153, 157(F), 162, 174(F), 180(F), 185(M), 189, 202(F)
196.3 Lymph nodes of axilla and upper limb	162, 172, 174(F)
196.5 Inguinal and lower limb lymph nodes	154(M), 162, 172, 173(F), 187(M)
196.6 Intrapelvic lymph nodes	153(M), 154(F), 162(M), 180(F), 182(F), 185(M), 188
196.8 Lymph nodes of multiple sites	150(M), 151(M), 153(M), 162, 174(F)
196.9 Lymph nodes, site unspecified	150(M), 151, 153, 162, 172, 174(F), 185(M)
197.0 Lung	153, 162, 172(M), 174(F), 185(M), 188(M), 189
197.1 Mediastinum	150(M), 162, 174(F)
197.2 Pleura	150(M), 153(M), 162, 174(F), 183(F), 185(M), 189(M)
197.3 Other respiratory organs	150, 153(M), 161, 162, 173(M), 174(F), 185(M), 193(F)
197.4 Small intestine, including duodenum	152, 153, 157, 162, 171, 172(M), 174(F), 183(F), 189(M)
197.5 Large intestine and rectum	153, 154, 162, 174(F), 183(F), 185(M)
197.6 Retroperitoneum and peritoneum	151, 153, 154(M), 157, 162(M), 171, 174(F), 182(F), 183(F)
197.7 Liver, specified as secondary	151(M), 153, 154(M), 157, 162, 174(F)
197.8 Other digestive organs	150(M), 151, 153, 157, 162, 174(F), 185(M)
198.0 Kidney	153, 162, 174(F), 180(F), 185(M), 188, 189, 202(F)
198.1 Other urinary organs	153, 174(F), 180(F), 183(F), 185(M), 188, 189(F)
198.2 Skin	153, 162, 171(M), 172, 173(M), 174(F), 189(M)
198.3 Brain and spinal cord	162, 172(M), 174(F)
198.4 Other parts of nervous system	162, 172(M), 174(F), 185(M), 202
198.5 Bone and bone marrow	162, 174(F), 185(M)
198.6 Ovary	153(F), 174(F), 183(F)
198.7 Suprarenal gland	153(F), 162, 174(F)
198.8 Other specified sites	153, 162, 172(M), 174(F), 183(F), 185(M), 188(M)

1 – “M” indicates cancer site should be used for males only, and “F” indicates cancer site should be used for females only.

2 – For likely primary cancer sites that have multiple possible IMBA or external organs, see Section 4.8.

3 – Whenever “173” is indicated as a likely primary cancer, the “non-melanoma skin-basal cell (BCC)” model should be used.

If none of the likely primary cancer sites yield a probability of causation greater than or equal to 50%, the supporting documentation for all of them shall be submitted, demonstrating that all of them were less than 50%.

4.0 DISCUSSION

4.1 HIGHEST NON-METABOLIC ORGAN

The dose estimate for a number of tissues is based on the highest non-metabolic organ dose, designated as “Highest non-met org/tiss” in the table. Metabolic organs are those that are specifically modeled by the ICRP for a particular element. The biokinetic models are based on the behavior of the particular element in the body, so the metabolic organs vary with the element of interest. The metabolic organs also include the gastrointestinal tract (ICRP 30) and, in the case of inhalation, the respiratory tract (ICRP 66).

For radionuclides that primarily emit alpha or beta radiation, the soft tissue compartment becomes the primary recipient of dose. This compartment contains all the organs not specifically accounted for in the metabolic model. This compartment accounts for the dose delivered by material actually deposited in that tissue. An additional source of exposure to the tissue is known as photon cross-irradiation. This cross-irradiation is the exposure to a tissue from photons originating in other tissues.

When the energy emitted by a radionuclide is primarily alpha or beta radiation, the soft tissue compartment becomes the primary source of dose. Under this scenario most of the non-metabolic organs receive the same dose. For radionuclides where photon emissions are a major source of energy emitted, the non-metabolic organ doses can vary due to their relative proximity to the metabolic organs in which the radionuclides concentrate. IMBA calculates the dose from both means of irradiation and sums them. For many radionuclides (predominately alpha and beta emitters) this will cause only minor differences in doses to non-metabolic organs, so choosing the highest is a realistic assumption with only minor (if any) overestimation.

It is conceivable that a situation could arise where a photon emitting radionuclide causes a large difference in doses delivered to non-metabolic organs. In accordance with the Internal Dose Reconstruction Implementation Guideline, it is acceptable in these situations to base the dose on an organ that is not the highest non-metabolic organ. The choice in these cases should be based on the proximity of the model organ to the actual organ of interest.

4.2 MEDICAL REVIEW

Due to the complexity of determining the appropriate organ/tissue for some ICD-9 code cancers, a medical review by an ORAU team physician is required to determine the organ/tissue to use in IMBA for those cancers. These cancers have been designated in the table as "Medical review." The ORAU team physician will recommend to the dose reconstructor the appropriate organ/tissue for dose estimation purposes.

4.3 THYROID/REMAINDER SELECTION FOR EXTERNAL DOSE

For cancer sites where "Thyroid/Remainder" is listed for the external organ selection, there is no external dose model for the organ of interest and the organ is located in close proximity to the thyroid.. The thyroid has higher organ dose conversion factors than the remainder selection, thereby maximizing the dose. If a more realistic dose assessment is required rather than a maximizing dose assessment, then the remainder organ should be selected to calculate dose.

4.4 REMAINDER SELECTION FOR EXTERNAL DOSE

When there are cancers of multiple organs or the cancer site are unknown, the remainder organ should be selected as the model to apply dose. However, if the organ location can be determined through the medical records or a medical review, then an organ in close physical proximity should be selected. The remainder selection provides a claimant favorable estimate of dose.

4.5 BLADDER

When the term "Bladder" is used in the table with no modifier, this represents the urinary bladder. When the organ of interest is the gallbladder, "Gallbladder" is specified clearly in the table above.

4.6 MULTIPLE IREP MODELS

When multiple IREP models are listed for a given cancer type, the IREP model(s) to be run is determined based upon the use of the words "OR" and "AND" in the IREP Model column.

For multiple IREP models listed that are connected by the word "OR", only the model that best fits the actual cancer type should be selected and run in IREP. For example, ICD-9 code 173.0 has listed "Non-melanoma skin-Basal cell OR Non-melanoma skin-Squamous cell" in the IREP Model column.

The appropriate IREP model would be selected and run based on the type of skin cancer (Basal cell or Squamous cell) listed in the claim's NIOSH Referral Summary Document (NRSD).

For multiple IREP models listed that are connected by the word "AND", separate IREP runs are made for each of the listed models, and compensability is determined based on the claimant favorable model resulting in the highest probability of causation. For example, ICD-9 code 233.3 has listed "Female genitalia less ovary AND Ovary " in the IREP Model column. Separate IREP runs would be made using each model and compensability would be based upon the model that resulted in the highest probability of causation.

4.7 ADENOCARCINOMA OF THE DISTAL (LOWER THIRD) ESOPHAGUS

If adenocarcinoma is indicated in the distal esophagus (also known as the lower third, abdominal, lower thoracic esophagus, gastro-esophageal, cardio-esophageal junction, or esophageal cardia), the appropriate IMBA, external, and IREP organ model is the stomach. In order to use the stomach, both conditions MUST be met (adenocarcinoma AND correct location). If either condition is not met, the use of the esophagus for the IMBA, external, and IREP organ model is appropriate.

4.8 SECONDARY CANCERS - LIKELY PRIMARY CANCER SITES WITH MULTIPLE IMBA, EXTERNAL, AND IREP ORGAN MODEL OPTIONS

For secondary cancers with unknown primary cancer sites, the likely primary cancer sites are listed in Table 2. Since the likely primary cancer sites are listed only by ICD-9 code (three digit code with no extensions), it is possible for a single likely primary cancer site to have multiple options for IMBA, external, and IREP organ model selection. In this case, each possible option must be assessed and the option that yields the largest probability of causation shall be submitted.

For example, secondary cancer code 196.2 has a likely primary cancer site of ICD-9 code 153. ICD-9 code 153 has an Internal Dosimetry Organ selection of ULI, LLI, and colon, depending on the extension of the ICD-9 code. Since it is an unknown location, each of these organs must be run for internal dose purposes and the one yielding the largest dose over the exposure period would be selected for use in the IREP run.

4.9 MULTIPLE SECONDARY CANCERS WITH UNKNOWN PRIMARY CANCER SITE OR MULTIPLE PRIMARY AND SECONDARY CANCERS

In some claims, multiple secondary cancers with unknown primary cancer location may be indicated. In such cases, unless the DOL specifically states differently, each likely primary cancer site from each secondary cancer is to be treated separately, with individual IREP probability of causation determinations and combined as separate primary cancers.

For example, consider a claim has indicated separate secondary cancers of 196.0 (Lymph nodes of head, face, and neck) and 197.7 (Liver, specified as secondary), with no indication of the cancers being metastasized from a single unknown primary cancer site. When each of the likely primary cancer sites are assessed, ICD-9 code 162 (Lung) yields the largest probability of causation for each of 38.00% (for this example only). Since it is possible that each secondary cancer came from a separate likely primary lung cancer, the probability of causation results for each likely primary lung cancer would be combined to yield a final probability of causation of 61.56% (per multiple cancer calculation in IREP).

The same type of situation may occur when primary and secondary cancers are both indicated by DOL. The same logic applies that, unless specifically directed otherwise by DOL, each cancer will be

treated as a totally separate cancer for the determination of Probability of Causation and for combining them for the final Probability of Causation. It should not be assumed by the Dose Reconstructor that any listed secondary cancer has metastasized from another listed primary cancer.

REFERENCES

- 42 CFR § 81, *Guidelines for Determining the Probability of Causation Under the Energy Employees Occupational Illness Compensation Program Act of 2000*; Final Rule, Federal Register/Vol.67, No. 85/Thursday, May 2, 2002, p 22296
- NIOSH, (2002) *Internal Dose Reconstruction Implementation Guideline, Rev 0*, OCAS-IG-002, National Institute for Occupational Safety and Health, Office of Compensation Analysis and Support, Cincinnati, Ohio, August 2002
- NIOSH, (2002) *External Dose Reconstruction Implementation Guideline, Rev 1*, OCAS-IG-001, National Institute for Occupational Safety and Health, Office of Compensation Analysis and Support, Cincinnati, Ohio, August 2002
- ACJ & Associates and the UK National Radiological Protection Board, *Integrated Modules for Bioassay Analysis, (IMBA)*, Software produced for NIOSH-OCAS as part of the EEOICPA Program, UK, July 2003
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- Energy Employees Occupational Illness Compensation Program Act of 2000, EEOICPA Bulletin No. 03-32, *Clarification by NCI of Certain Primary Cancers*, August 27, 2003.