

C.1 International Classification Of Disease (ICD-9-CM) Codes For WHI Outcomes**C.1.1 Cardiovascular Outcomes:**

- 410. _ _ Myocardial infarction (410._1)
Also review codes:
427.4 Ventricular fibrillation and flutter
427.5 Cardiac arrest
- 997.1 Cardiac complications during or resulting from a procedure
- 413. _ Angina pectoris (413.9)
Also review codes:
411 Other acute and subacute forms of ischemic (postmyocardial infarction syndrome, preinfarction angina, unstable angina, coronary occlusion without myocardial infarction
412 Old myocardial infarction
414 Other forms of chronic ischemic heart disease (coronary atherosclerosis, ASHD, of heart, coronary artery disease)
- 411.1 Other acute and subacute forms of ischemic (postmyocardial infarction syndrome, preinfarction angina, unstable angina, coronary occlusion without myocardial infarction
- 428 Congestive heart failure (428.0)
Also review codes:
425 Cardiomyopathy (endomyocardial fibrosis, hypertrophic obstructive cardiomyopathy, endocardial fibroelastosis)
- 398.91 Rheumatic heart failure (congestive)
- 433.1 _ Occlusion and stenosis of carotid artery
- 435.9 Transient ischemic attack / TIA
- 430 Subarachnoid hemorrhage
- 431 Intracerebral hemorrhage
- 432. _ Other and unspecified intracranial hemorrhage (nontraumatic extradural hemorrhage subdural hemorrhage)
- 434. _ _ Occlusion of cerebral arteries (cerebral thrombosis, cerebral embolism)
- 436 Acute cerebrovascular disease (stroke/CVA)
- 437. _ Other cerebrovascular disease
- 997.0 Central nervous system complications during or resulting from a procedure
- 443.9 Peripheral vascular disease, claudication
- 440.2 _ Atherosclerosis of arteries of the extremities

C.1.1.1 Procedure/Operative Codes:

- | | |
|--|--|
| 36.0 _ Percutaneous transluminal coronary angioplasty (PTCA) | 38.48 Excision lower limb arteries |
| 36.06 Coronary Artery Stent | 38.49 Excision lower limb veins |
| 36.1 _ Coronary bypass grafting (CABG) | 39.22 Aorta-subclavian-carotid bypass |
| 37.2 _ Cardiac catheterization | 39.25 Aorta-iliac-femoral bypass |
| 37.7 _ Insertion of temporary pacemaker | 39.5 _ Other repair of vessels |
| 37.8 _ Insertion of cardiac pacemaker | 39.8 Insertion of carotid pacemaker |
| 37.9 _ Implantation of defibrillator | 84.1 _ Amputation of lower limb |
| 38.12 Carotid endarterectomy | 88.5 _ Angiocardiology using contrast material |
| 38.42 Resection of vessels of head and neck | |

C.1.2 Cancer Outcomes:

140-195 and 199-208	Malignant neoplasms, primary
230-233	Carcinoma in situ, all sites
239	Neoplasms of unspecified nature
235-238	Neoplasms of uncertain behavior

	Malignant	In Situ	Uncertain	Unspecified
Breast	174.__*	233.0*	238.3	239.3
Endometrium	182.0, 179	233.2	236.0	239.5
Ovary	183.0	233.3	236.2	239.5
Colon (intestine) Large	153.__	230.3	235.2	239.0
Rectum	154.__	230.4	235.2	239.0

* includes microinvasive breast cancer (malignant and in situ)

C.1.2.1 Procedure/Operative Codes:**Breast:**

85.0	Incision of breast
85.11	Closed biopsy of breast
85.12	Open biopsy of breast
85.19	Other diagnostic procedures on breast
85.21	Local excision of lesion of breast
85.22	Resection of quadrant of breast
85.23	Subtotal mastectomy
85.33	Unilateral subcutaneous mastectomy
85.34	Other unilateral subcutaneous mastectomy
85.35	Bilateral subcutaneous mastectomy
85.36	Other bilateral subcutaneous mastectomy
85.4_	Mastectomy
85.91	Aspiration of breast
85.99	Other operations on the breast

Colon (intestine):

45.0	Enterotomy
45.00	Incision of intestine, not otherwise specified
45.03	Incision of large intestine
45.2_	Diagnostic procedures on large intestine
45.4_	Local excision or destruction of lesion or tissue of large intestine
45.7_	Partial excision or large intestine
45.8	Total intra abdominal colectomy
45.90	Intestinal anastomosis, not otherwise specified
45.94	Large to large intestinal anastomosis
45.95	Anastomosis to anus
46.03	Exteriorization of large intestine
46.04	Resection of exteriorized segment of large intestine
46.1_	Colostomy
46.3	Other enterostomy
46.7_	Other repair of intestine
46.9_	Other operations on intestine

Rectum:

48.0	Proctotomy
48.1	Proctostomy
48.2_	Diagnostic procedures on rectum, rectosigmoid, and perirectal tissue
48.3_	Local excision or destruction of lesion or tissue of rectum
48.4_	Pull-through resection of rectum
48.5	Abdominoperineal resection of rectum
48.6_	Other resection of rectum

- 48.7_ Repair of rectum
- 48.8_ Incision or excision of perirectal tissue or lesion
- 48.9_ Other operations on rectum and perirectal tissue

Endometrium:

- 68.13 Open biopsy of uterus
- 68.16 Closed biopsy of uterus
- 68.3 through 68.9 Hysterectomy
- 69.09 Diagnostic D and C
- 69.59 Other aspiration curettage of uterus

Ovary:

- 65.0 Oophorotomy
- 65.1_ Diagnostic procedures on ovaries/biopsy
- 65.22 Wedge resection of ovary
- 65.29 Other local excision of ovary
- 65.3 Unilateral oophorectomy
- 65.4 Unilateral salpingo-oophorectomy
- 65.5_ Bilateral oophorectomy
- 65.6_ Bilateral salpingo-oophorectomy
- 65.9_ Other operations on ovary

C.1.3 Fracture Outcomes:

Fracture codes range from 800 to 829. The ICD-9-CM Pathologic fracture codes (733) refer to Osteoporosis and spontaneous fracture. This differs from the WHI definition of Pathologic fracture. (See *Section 6 - Outcome Classifications: Fractures Outcomes* for details.)

Hip fracture:

- 820 Fracture of neck of femur
- 820.0_ Transcervical fracture, closed
- 820.1_ Transcervical fracture, open
- 820.20 Trochanteric fracture, closed
- 820.21 Intertrochanteric fracture, closed
- 820.30 Trochanteric fracture, open
- 820.31 Intertrochanteric, open
- 820.8 Unspecified part of neck of femur, closed
- 820.9 Unspecified part of neck of femur, open

Upper leg (not hip):

- 820.22 Subtrochanteric fracture, closed
- 820.32 Subtrochanteric fracture, open
- 821.01 Fracture shaft of femur, closed
- 821.11 Fracture shaft of femur, open
- 827._ Other, multiple, and ill-defined fractures of lower limb
- 828._ Multiple fractures involving both lower limbs, lower with upper limb, and lower limb with rib and sternum

Pelvis:

- 808._ _ Fracture of pelvis
- 809._ Multiple fractures

Knee (patella):

- 822._ Fracture of patella

Lower leg or ankle:

- 823._ _ Fracture of tibia and fibula
- 824._ Fracture of ankle

Foot (not toe):

- 825._ _ Fracture of one or more tarsal and metatarsal bones (heel, calcaneus)

Tailbone:

- 805.6 Fracture of sacrum and coccyx, closed
- 805.7 Fracture of sacrum and coccyx, open
- 806.6_ Fracture of sacrum and coccyx, closed with spinal cord injury
- 806.7_ Fracture of sacrum and coccyx, open with spinal cord injury

Spine or back (vertebra):

- 805.2 Fracture of thoracic (dorsal), closed
- 805.3 Fracture of thoracic, open
- 805.4 Fracture of lumbar, closed
- 805.5 Fracture of lumbar, open
- 806.2_ Fracture of thoracic, closed with spinal cord injury
- 806.3_ Fracture of thoracic, open with spinal cord injury
- 806.4 Fracture of lumbar, closed with spinal cord injury
- 806.5 Fracture of lumbar, open with spinal cord injury

Lower arm or wrist:

- 813._ _ Fracture of radius or ulna
- 814._ _ Fracture of carpal bone(s) (wrist)

Hand (not finger):

- 815._ _ Fracture of metacarpal bone(s)
- 817._ _ Multiple fractures of hand bones

Elbow:

- 812.4_ Fracture lower end of humerus, closed
- 812.5_ Fracture lower end of humerus, open

Upper arm or shoulder (humerus):

- 812.0_ Fracture of humerus, upper end, closed
- 812.1_ Fracture of humerus, upper end, open
- 812.2_ Fracture of humerus, shaft or unspecified part, closed
- 812.3_ Fracture of humerus, shaft or unspecified part, open
- 818._ _ Ill-defined fractures of upper limb

C.1.3.1 Procedure/Operative Codes:

- 79.0_ Closed reduction of fracture without internal fixation
- 79.1_ Closed reduction of fracture with internal fixation
- 79.2_ Open reduction of fracture without internal fixation
- 79.3_ Open reduction of fracture with internal fixation
- 79.6_ Debridement of open fracture site
- 81.5_ Hip replacement

C.1.4 Hysterectomy:**Procedure Codes:**

- 68._ _ Hysterectomy

C.1.5 Other Procedure Codes:**Monitor for HRT safety:**

- 87.37 Mammogram
- 69.09 D and C
- 68.13 Endometrial biopsy - open
- 68.16 Endometrial biopsy – closed

C.1.5.1 Fatal Events from

Cause specific mortality will be subclassified into one of the following:

- 1) Atherosclerotic Cardiac Death (Coronary heart Disease/Cardiac Arrest)

When the underlying cause of death was a condition which would be coded to ICD-9-CM 410-414 or 427.5 for example:

- Acute myocardial (410.9)
- Heart attack (410.9)
- Cardiac infarction (410.9)
- Cardiac arrest (427.5, 410.9)
- Coronary artery embolism, occlusion or rupture (410.9)
- Subendocardial infarction (410.7)

- Coronary occlusion (410.9)
- Infarction of any wall segment of heart (410.1, 400.4, 410.2, 410.6)
- Microinfarct of heart (411.89)
- Old myocardial infarction (412)
- Angina pectoris (413.9)
- Coronary insufficiency (411.89)
- Chronic ischemic heart disease (414.9)
- Post-myocardial infarction syndrome (411.0)
- Impending infarction (411.1)
- Preinfarction angina (411.1)
- Unstable angina (411.1)
- Subendocardial ischemia (411.89)
- Nocturnal angina (413.0)
- Prinzmetal angina (413.1)
- Angina, NOS (413.9)
- Anginal syndrome (413.9)
- Arteriosclerotic heart disease (414.0)
- Atherosclerotic heart disease (414.0)
- Coronary artery atherosclerosis, atheroma, sclerosis, stricture (414.0)
- Chronic coronary artery insufficiency (414.8)
- Chronic myocardial ischemia (414.8)
- Ischemic heart disease, NOS (414.9)
- Coronary aneurysm (414.11)

2) Cerebrovascular Disease

When the underlying cause of death was a condition which would be coded to ICD-9-CM 430-438. See the following examples:

- Subarachnoid hemorrhage (430)
- Intracerebral hemorrhage (431)
- Other intracranial hemorrhage (432.9)
- Subdural hemorrhage (432.1)
- Embolism, narrowing, obstruction, thrombosis of basilar, carotid or vertebral arteries (433.0, 433.1, 433.2)
- Occlusion of cerebral arteries (434.9)
- Cerebral thrombosis, embolism or infarction (434.0, 434.1, 434.9)
- Cerebral artery insufficiency (437.1)
- Cerebrovascular accident/stroke (436)
- Cerebral atherosclerosis (437.0)
- Hypertensive encephalopathy (437.2)
- Cerebral arteritis (437.4)
- Thrombotic stroke (434.0)
- Transient cerebral ischemia (435.9)
- Transient ischemic attack (435.9)

3) Cancer

- a) Breast (174.9); (198.81); (233.0)
- b) Ovary (183.0); (198.6); (233.3)
- c) Endometrium (182.0); (198.82); (233.2)
- d) Colon (153.9); (197.5); (230.3)
- e) Rectum (154.1); (197.5); (230.4)
- f) Other (140-208)

4) Other Cardiovascular Disease

When the underlying cause of death was a condition which would be coded to ICD-9-CM, 415-429 (except 427.5) or 440-452. For example:

- Valvular diseases (endocarditis) (424.9)
- Endocarditis (424.90)
- Rheumatic fever (390) (with heart involvement 391.9)

- Congestive heart disease(428.0)
- Congestive cardiomyopathy (425.4)
- Cardiomyopathy (425.4)
- Right heart failure (428.0)
- Right heart failure, secondary to left heart failure (428.0)
- Left heart failure (428.1)
- Acute edema of lung (518.4)
- Acute pulmonary edema (518.4)
- Left ventricular failure (428.1)
- Heart/cardiac/myocardial failure, NOS (428.9)
- Acute and chronic pulmonary heart diseases (415.0, 416.9)
- Dysrhythmias, arrhythmia (427.9)
- Conduction heart disorders(426.9)
- Hypertension (401.0 malignant); (401.1 benign); (401.9 unspecified)
- Hypertensive heart disease (402.90)
- Hypertensive renal disease (403.90)
- Pericarditis (423.9)
- Myocarditis (429.0)
- Atherosclerosis (440.9)
- Aneurysm (any vessel) (442.9)
- Peripheral vascular disease (443.9)
- Arterial embolism or thrombosis (444.9)

5) Injury

Homicide: Homicides include injuries inflicted by another person with the intent to injure or kill (ICD-9 E-960 - E-969) including legal intervention inflicted by the police, and/or other law-enforcing agents, including military on duty, in the course of arresting or attempting to arrest lawbreakers, suppressing disturbances, maintaining order, and other legal action including execution (legal) (ICD-9 970-978).

Suicide Injury: Injuries in suicides and attempted suicides and self-inflicted injuries specified as intentional. (ICD-9 E950-E959)

Other Injury: Other injuries include injuries undetermined whether accidentally or purposefully inflicted (ICD-9 E 980-989).

6) Other/Unknown

When the underlying cause of death was a condition which would be coded to an ICD-9-CM code not listed above. This includes causes due to non cardiovascular, non-cancer and non-traumatic death violent/accidental (suicidal). "Unknown" when the underlying cause of death cannot be determined from information currently available. (See *Section 7- Fatal Events* for details).

C.1.5.2 Other Outcomes

- 38.7 Interruption of the vena cava (Greenfilter or other filter for DVT)
- 415 Acute pulmonary heart disease (415.1 - pulmonary embolism)
- 997.3 Respiratory complications resulting from a procedure
- 444.2_ Arterial embolism and thrombosis of the extremities
- 453.8 Venous embolism and thrombosis (DVT)
- 451._ Phlebitis and thrombophlebitis of lower extremities
- 997.2 Phlebitis and thrombophlebitis during or resulting from a procedure

C.2 Cancer Coding Reference

C.2.1 ICD-0-2 CODES (Alphabetical Index)

31	Accessory Sinuses (Maxillary, ethmoid, frontal, and sphenoid sinus; overlapping lesion of accessory sinuses; accessory sinus, NOS)
74	Adrenal Gland (Cortex of adrenal gland; medulla of adrenal gland; adrenal gland, NOS)
21	Anus and Anal Canal (Anus, NOS; anal canal; cloacogenic zone; overlapping lesion of rectum, anus and anal canal)
86***	Appendix (Cancer of the appendix will not be collected as a colon sub-site for the study)
01	Base of Tongue (Base of tongue, NOS)
67	Bladder (Trigone of bladder; dome of bladder; lateral wall, anterior wall, and posterior wall of bladder; bladder neck; ureteric orifice; urachus; overlapping lesion of bladder; bladder, NOS)
40	Bones, Joints and Articular Cartilage of Limbs (Long bones and short bones of upper limb and associated joints; long bones and short bones of lower limb and associated joints; overlapping lesion of bones, joints and articular cartilage of limbs; bone of limb, NOS)
41	Bones, Joints and Articular Cartilage of Other and Unspecified Sites (Bones of skull and face and associated joints; mandible; vertebral column; rib, sternum, clavicle and associated joints; pelvic bones, sacrum, coccyx and associated joints; overlapping lesion of bones, joints and articular cartilage; bone, NOS)
71	Brain (Cerebrum; frontal lobe; temporal lobe; parietal lobe; occipital lobe; ventricle, NOS; brain stem; overlapping lesion of brain; brain, NOS)
50**	Breast (Nipple; central portion of breast; upper-inner, lower-inner, upper-outer, and lower-outer quadrant of breast; axillary tail of breast, overlapping lesion of breast; breast, NOS)
34	Bronchus and Lung (Main bronchus; upper, middle, and lower lobe, lung; overlapping lesion of lung; lung, NOS)
53	Cervix Uteri (Endocervix; exocervix; overlapping lesion of cervix uteri)
18**	Colon (Cecum; ascending colon; hepatic flexure of colon; transverse colon; splenic flexure of colon; descending colon; sigmoid colon; overlapping lesion of colon; colon, NOS. Appendix is not a colon sub-site for the study. See 86-Appendix.)
49	Connective, Subcutaneous, and Other Soft Tissues (Head, face, and neck; upper limb and shoulder; lower limb and hip; thorax; abdomen; pelvis, trunk, NOS; overlapping lesion of connective, subcutaneous and other soft tissues; connective, subcutaneous and other soft tissues, NOS)
54**	Corpus Uteri (Isthmus uteri; endometrium; myometrium; fundus uteri; overlapping lesion of corpus uteri)
15	Esophagus (Cervical, thoracic, abdominal, upper third, middle third, and lower third of esophagus; overlapping lesion of esophagus; esophagus, NOS)

69	Eye and Adnexa (Conjunctive; cornea, NOS; retina; choroid; ciliary body; lacrimal gland; orbit, NOS; overlapping lesion of eye and adnexa; eye, NOS)
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04	Floor of Mouth (Anterior and lateral floor of mouth; overlapping lesion of floor of mouth; floor of mouth, NOS)
23	Gallbladder
03	Gum (Upper and lower gum; gum, NOS)
38	Heart , Mediastinum, and Pleura (Anterior and posterior mediastinum; mediastinum, NOS; pleura, NOS; overlapping lesion of heart, mediastinum and pleura)
42	Hematopoietic and Reticuloendothelial Systems (Blood; bone marrow; spleen; reticuloendothelial system, NOS; hematopoietic system, NOS, Leukemia, Plasmacytoma) [Excluding Multiple Myeloma]
13	Hypopharynx (Postcricoid region; hypopharyngeal aspect of aryepiglottic fold; posterior wall of hypopharynx; overlapping lesion of hypopharynx; hypopharynx, NOS)
84 ***	Kaposi's Sarcoma
64	Kidney (Kidney, NOS)
32	Larynx (Glottis; supraglottis; subglottis; laryngeal cartilage; overlapping lesion of larynx; larynx, NOS; trachea)
00	Lip (External upper lip; external lower lip; external lip, NOS; mucosa of upper lip; mucosa of lower lip; mucosa of lip, NOS; commissar of lip; overlapping lesion of lip; lip, NOS)
22	Liver and Intrahepatic Bile Ducts (Hepatic, NOS; biliary canaliculus, cholangiole)
77	Lymph Nodes (Lymph nodes of head, face and neck; intrathoracic lymph nodes; intra-abdominal lymph nodes; lymph nodes of axilla or arm; lymph nodes of inguinal region or leg; pelvic lymph nodes; lymph nodes of multiple regions; lymph node, NOS)
82 ***	Lymphoma , Non-Hodgkin's
83 ***	Lymphoma , Hodgkin's Disease
70	Meninges (Cerebral meninges; spinal meninges; meninges, NOS)
85 ***	Multiple Myeloma
43 ***	Mycosis Fungoides and Sezary's Disease
30	Nasal Cavity and Middle Ear (Internal nose; inner ear)
11	Nasopharynx (Superior wall, posterior wall, lateral wall, and anterior wall of nasopharynx; overlapping lesion of nasopharynx; nasopharynx, NOS)
10	Oropharynx (Vallecula; anterior surface of epiglottis; lateral wall and posterior wall of oropharynx; branchial cleft; overlapping lesion of oropharynx; oropharynx, NOS)
26	Other and Ill-Defined Digestive Organs (Intestinal tract, NOS; overlapping lesion of digestive system; gastrointestinal tract, NOS)

76	Other and Ill-Defined Sites (Head, face or neck, NOS; thorax, NOS; abdomen, NOS; pelvis, NOS; upper limb, NOS; lower limb, NOS; other ill-defined sites; overlapping lesion of ill-defined sites)
14	Other and Ill-Defined Sites in Lip, Oral Cavity, and Pharynx (Pharynx, NOS; laryngopharynx; Waldeyer's ring; overlapping lesion of lip, oral cavity and pharynx)
39	Other and Ill-Defined Sites within Respiratory System and Intrathoracic Organs (Upper respiratory tract, NOS; overlapping lesion of respiratory system and intrathoracic organs; ill-defined sites within respiratory system)
57	Other and Unspecified Female Genital Organs (Fallopian tube; broad ligament; round ligament; parametrium; uterine adnexa; other specified parts of female genital organs; overlapping lesion of female genital organs; female genital tract, NOS)
08	Other and Unspecified Major Salivary Glands (Submandibular gland; sublingual gland; overlapping lesion of major salivary glands; major salivary gland, NOS)
24	Other and Unspecified Parts of Biliary Tract (Extrahepatic bile duct; Ampulla of Vater; overlapping lesion of biliary tract; biliary tract, NOS)
06	Other and Unspecified Parts of Mouth (Cheek mucosa; vestibule of mouth; retromolar area; overlapping lesion of other and unspecified parts of mouth; mouth, NOS)
02	Other and Unspecified Parts of Tongue (Dorsal surface of tongue, NOS; border of tongue; ventral surface of tongue, NOS; anterior 2/3 of tongue, NOS; lingual tonsil; overlapping lesion of tongue; NOS)
68	Other and Unspecified Urinary Organs (Urethra; paraurethral gland; overlapping lesion of urinary organs; urinary system, NOS)
75	Other Endocrine Glands and Related Structures (Parathyroid gland, pituitary gland; craniopharyngeal duct; pineal gland, carotid body; aortic body and other paraganglia; overlapping lesion of endocrine glands and related structures; endocrine gland, NOS)
56**	Ovary
05	Palate (Hard palate; soft palate, NOS; uvula; overlapping lesion of palate; palate, NOS)
25	Pancreas (Head, body, and tail of pancreas; pancreatic duct; islets of Langerhans; other specified parts of pancreas; overlapping lesion of pancreas; pancreas, NOS)
07	Parotid Gland (Stensen's duct)
47	Peripheral Nerves and Autonomic Nervous System (Head, face, neck, upper limb and shoulder, lower limb and hip, thorax, abdomen, pelvis, trunk, NOS; overlapping lesion of peripheral nerves and autonomic nervous system; autonomic nervous system, NOS)
58	Placenta
12	Pyiform Sinus
19**	Rectosigmoid Junction (Colon and rectum; pelvirectal junction)
20**	Rectum (Rectum, NOS; rectal ampulla)

65	Renal Pelvis
48	Retroperitoneum and Peritoneum (Retroperitoneum; specified parts of peritoneum; peritoneum, NOS; overlapping lesion of retroperitoneum and peritoneum)
44	Skin (Melanoma) (Skin of lip, NOS; eyelid; external ear; skin of other an unspecified parts of face; skin of scalp and neck; skin of trunk; skin of upper limb and shoulder; skin of lower limb and hip; overlapping lesion of skin; skin, NOS)
45	Skin (Not melanoma nor mycosis fungoides), includes basal cell and squamous cell cancers.
17	Small Intestine (Duodenum; jejunum; ileum; Meckel's diverticulum; overlapping lesion of small intestine; small intestine, NOS)
72	Spinal Cord, Cranial Nerves, and Other Parts of Central Nervous System (Spinal cord, cauda equina; olfactory nerve; optic nerve; acoustic nerve; cranial nerve, NOS; overlapping lesion of brain and central nervous system; nervous system, NOS)
16	Stomach (Cardia, NOS; fundus of stomach; body of stomach; gastric antrum; Pylorus; lesser and greater curvature of stomach, NOS; overlapping lesion of stomach; stomach, NOS)
37	Thymus
73	Thyroid Gland
09	Tonsil (Tonsillar fossa; tonsillar pillar; overlapping lesion of tonsil; tonsil, NOS)
33	Trachea
80	Unknown Primary Site
66	Ureter
55**	Uterus, Not Otherwise Specified
52	Vagina (Vagina, NOS)
51	Vulva (Labium majus; labium minus; clitoris; overlapping lesion of vulva; vulva, NOS)

* Reference: International Classification of Diseases for Oncology (ICD-0)
Second Edition
World Health Organization
Geneva
1990.

** WHI Major Cancer Outcome

*** 2 Digit code assigned for WHI study only

C.2.2 Tumor Laterality

Laterality at diagnosis describes the primary site only, and will be coded by the CCC for breast and ovarian cancer.

Code:

- 0 Not a paired site
- 1 Right: origin of primary
- 2 Left: origin of primary
- 3 Only one side involved, right or left origin unspecified
- 4 Bilateral involvement, lateral origin unknown: stated to be single primary
- 5 Paired site, but no information concerning laterality; midline tumor

C.2.3 Tumor Morphology

Tumor morphology will be coded at the CCC for the five main cancer outcomes of interest. (*International Classification of Diseases for Oncology*, Second Edition, World Health Organization, Geneva, 1990).

Morphology is a 6-digit code consisting of three parts:

- A - Histologic type (4 digits)
- B - Behavior code (1 digit)
- C - Grading or differentiation (1 digit)

To code morphology (histology, behavior, and grade) the BEST information from the entire pathology report is used (microscopic description, final diagnosis, comments, and TNM staging form if signed by a physician).

C.2.3.1 Histologic Type

In coding histologic type, usually the FINAL pathologic diagnosis is coded. All pathology reports for the primary diagnosis under consideration are used. Although the report from the most representative tissue is usually the best, sometimes all of the cancerous tissue may be removed at biopsy, and therefore, the report from the biopsy must be used. If a definitive statement of a more specific histologic type (higher code in ICD-0-2) is found in the microscopic description or in the comment, the more specific histologic diagnosis is coded.

C.2.3.2 Behavior Code

The usual behavior codes are listed in both the numeric and alphabetic indices of ICD-0-2, following the histology code.

The following codes are used for defining tumor behavior;

0 = benign

1 = uncertain whether benign or malignant; borderline malignancy; low malignant potential; indeterminate malignancy.

2 = carcinoma *in situ*; intraepithelial; non-infiltrating; non-invasive

3 = malignant, primary site.

C.2.3.3 Grade Code

The grading or differentiation is described on page 23 of ICD-0-2.

The following codes are used:

1 = grade I: well differentiated; differentiated, NOS

2 = grade II: moderately differentiated; moderately well differentiated; intermediate differentiation

3 = grade III: poorly differentiated

4 = grade IV: undifferentiated; anaplastic

9 = grade or differentiation not determined, not stated or not applicable; unknown

The grade or degree of differentiation as stated in the *FINAL* pathologic diagnosis is coded. If the grade or degree of differentiation is *not* stated in the final pathologic diagnosis, the grade or degree of differentiation as given in the microscopic description is coded.

C.2.4 Stage of Disease

Stage of disease will be coded at the CCC for the five main cancer outcomes of interest. The major components of extent of disease at diagnosis are size of the tumor, extension of the tumor, metastases, and lymph node involvement. Extent of disease codes are site-specific.

For WHI, two systems of coding the extent of the disease will be used: TNM and SEER.

C.2.4.1 TNM System

The American Joint Committee on Cancer (AJCC) classification is based on the premise that cancers of similar histology or site of origin share similar patterns of growth and extension. (TNM Staging Guide, Manual for Staging of Cancer, Fourth Edition, 1992.)

The size of the untreated primary cancer or tumor (T) increases progressively, and at some point in time regional lymph node involvement (N) and, finally, distant metastases (M) occur. These three significant events in the life history of a cancer--tumor growth (T), spread to primary lymph nodes (N), and metastasis (M)--are used to indicate the extension of the cancer. There are rules in place for the documentation of separate clinical and pathological stages.

The TNM system for describing the anatomic extent of disease is based on the assessment of three components:

T - The extent of the primary tumor.

N - The absence or presence and extent of regional lymph node metastasis.

M - The absence or presence of distant metastasis.

The addition of numbers to these three components indicates the extent of the malignant disease, thus showing progressive increase in tumor size or involvement. The following general definitions are used:

Primary Tumor (T):

TX	Primary tumor cannot be assessed.
T0	No evidence of primary tumor
Tis	Carcinoma <i>in situ</i>
T1, T2, T3, T4	Increasing size and/or local extent of the primary tumor

Regional Lymph Nodes (N)

NX	Regional lymph nodes cannot be assessed
N0	No regional lymph node metastasis
N1, N2, N3	Increasing involvement of regional lymph nodes

Distant Metastasis (M)

MX	Presence of distant metastasis cannot be assessed
M0	No distant metastasis
M1	Distant metastasis

Classification by the TNM system achieves a reasonably precise description and recording of the apparent anatomic extent of disease. A tumor with four degrees of T, three degrees of N, and two degrees of M will have 24 TNM categories. For purposes of tabulation and analysis, except in very large series, it is necessary to condense these categories into a convenient number of TNM stage-groupings.

Carcinoma *in situ* is categorized Stage 0; cases with distant metastasis are categorized Stage IV. The grouping adopted is such as to ensure, as far as possible, that each group is more or less homogeneous in respect to survival, and that the survival rates of these groups for each cancer site are distinctive.

C.2.4.2 SEER System

The Surveillance, Epidemiology and End Results (SEER) program of NCI collects extent of disease data and not a summarization of stage per se. This allows collapsibility to different staging schemes and flexibility for consistency over time even if a staging scheme is changed. Using the SEER system will allow for direct comparison between cancer incidence rates by stage in WHI participants with the rates by stage in the national SEER data.

The SEER scheme used for cancers is a 10-digit Extent of Disease. It is composed of:

- Size of Primary Tumor (3 digits)
- Extension (2 digits)
- Lymph Nodes (1 digit)
- Number of Pathologically Positive Regional Lymph Nodes (2 digits)
- Number of Regional Lymph Nodes Examined Pathologically (2 digits)

The SEER Extent of Disease scheme can be collapsed for analysis of stage:

- In situ
- Localized: an invasive neoplasm confined entirely to the organ of origin.
- Regional: a neoplasm that has extended beyond the limits of the organ of origin directly into surrounding organs or tissues; into regional lymph nodes; or both direct extension and regional lymph node involvement.
- Distant: a neoplasm that has spread to parts of the body remote from the primary tumor either by direct extension or by discontinuous metastasis.
- Unstaged: information is not sufficient to assign a stage.

The codes and coding instructions for the SEER Extent of Disease - 1988 are detailed in *SEER Extent of Disease 1988: Codes and Coding Instructions, Second Edition*. Extent of Disease is limited to all information available within two months of diagnosis. The priority for using information is pathologic, operative, and clinical findings.

C.2.5 Hormone Receptor Status

WHI will collect estrogen and progesterone receptor status for all primary breast cancers. The results of hormone receptor assays are recorded only when done on the **primary** tumor. CCs should request copies of estrogen receptor and progesterone receptor assay results for all participants diagnosed with primary breast cancer. These data will be forwarded to the CCC for coding.

Estrogen and Progesterone Receptor Assay Codes:

- 1 Positive
- 2 Negative
- 3 Borderline (undetermined whether positive or negative)

- 8 Ordered, but results not available
- 9 Not done, no information, or unknown

Code '9' for all "Death Certificate Only" and "Autopsy Only" cases.

Estrogen Receptor Assay (ERA) and Progesterone Receptor Assay (PRA):

If done, and coded above as 1, 2 or 3:

Code:

- Units
- ☐ fmol/mg protein
 - ☐ ICC/IHC
 - ☐ Other (Specify_____)

Tumors too small to evaluate by the conventional estrogen/progesterone receptor assays may be measured by immunostaining (ICC or IHC), which are tests based on an antigen-antibody reaction.

Appendix C Coding Reference

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