**Abdominal Imaging I**

1. **Abdominal Abscess**

* Indicated for ANY ONE of the following:
  + ALL of the following are present:
    - ANY ONE of the following symptoms:
      * Persistent abdominal pain
      * Unexplained fever
    - Suspected abscess due to the presence of ANY ONE of the following:
      * Fever of unknown origin, i.e., intermittent or persistent temperature of 101⁰F for > 3 weeks without other explanation
      * Recent abdominal surgery
      * Recent infection elsewhere
      * Diverticular disease
      * Recent trauma
      * Immunosuppression
      * Inflammatory bowel disease, i.e., Crohn’s disease or ulcerative colitis
  + Follow-up of previously diagnosed abscess

1. **Abdominal Aortic Aneurysm**

* Indicated as an alternative to ultrasound for ANY ONE of the following:
  + Symptoms suggesting a leak
  + Preoperative evaluation before surgery to assess vascular anatomy or configuration (spiral)
  + As a replacement for ultrasound when images are inadequate due to gas, obesity, or other causes for ANY ONE of the following:
    - Asymptomatic pulsatile mass
    - Initial screening if ALL of the following are present:
      * Male, 65 years of age and older
      * ANY ONE of the following:
        + Significant smoking history
        + Other atherosclerotic disease
        + First-degree relatives with abdominal aortic aneurysms
    - A second screening test after an initial normal screening study, probably after at least 8 years
    - As follow-up test for known abdominal aortic aneurysms
      * Every 6 months if ANY ONE of the following is present; otherwise every year:
        + Growth is >0.4 cm/year
        + Persistently elevated diastolic blood pressure >90 mm Hg
        + Patient continues smoking

1. **Abdominal Pain**

* Indicated for abdominal pain when ANY ONE of the following is present:
  + Equivocal cases of suspected acute appendicitis, (helical)
  + Palpable mass
  + History of malignancy
  + Diverticulitis with suspected abscess
  + Suspected intestinal ischemia
  + Suspected pancreatitis
  + Suspected leaking abdominal aortic aneurysm (AAA)
  + Intestinal obstruction, when plain films cannot identify obstruction
  + Blunt or penetrating abdominal trauma

1. **Adrenal Mass**

* Indicated for ANY ONE of the following (enhanced only when unenhanced is indeterminate):
  + Incidental mass seen on ultrasound with ANY ONE of the following:
    - Initial evaluation
    - Follow-up of benign adenoma
      * 6 to 12 months for lesions < 3 cm
      * 3 to 6 months for lesions between 3 cm and 5 cm
  + Findings suggestive of ANY ONE of the following:
    - Pheochromocytoma (contrast risky if pheochromocytoma suspected)
    - Cushing’s syndrome
    - Hyperaldosteronism

1. **Appendicitis**

* Indicated for cases of suspected acute appendicitis when ALL of the following are present:
  + After surgical consult
  + ANY ONE of the following:
    - Uncertain diagnosis, but only after ultrasound for child, young female, or pregnant patient
    - Suspected abdominal or pelvic abscess, including suspected appendiceal perforation
    - Suspected renal calculi

1. **Bladder Cancer, Invasive**

* Indicated for staging of invasive bladder cancer

1. **Breast Cancer**

* Indicated for breast cancer staging when ANY ONE of the following is present:
  + Abnormal liver function tests or hepatosplenomegaly
  + Locally advanced breast cancer, i.e., lymph nodes matted or cancer extends to chest wall
  + Lymph node involvement
  + Distant metastases, known or suspected
  + Bone symptoms

1. **Colon Cancer and Colonic Polyps**

* Indicated for ANY ONE of the following:
  + During staging process for larger rectal carcinomas and all colon cancers
  + Periodically after initial treatment, usually every 3 to 5 years

1. **Crohn’s Disease**

* Indicated for ANY ONE of the following:
  + Acute flare-ups
  + Symptoms unresponsive to medical therapy
  + Suspected abscess

1. **Fever of Unknown Origin (FUO)**

* Indicated when ALL of the following are present:
  + Intermittent or persistent temperature of 101⁰F for > 3 weeks
  + NONE of the following diagnostic evaluations identify a source of the fever:
    - Blood culture
    - Urine culture
    - Chest x-ray
    - PPD skin test
    - Rheumatoid factor
    - ANA
    - Physical exam for ALL of the following:
      * Source of infection
      * Inflammatory process
      * Malignancy

1. **Hematuria**

* Indicated, increasingly as first choice, for ANY ONE of the following:
  + As initial test for evaluation of hematuria
  + Staging of bladder and renal tumors
  + Evaluation of the renal parenchyma in trauma
  + Evaluation of a mass seen on IVP or ultrasound
  + Perirenal infections
  + Suspected renal colic or calculi

1. **Hypertension, Renovascular**

* Indicated for ALL of the following (helical CT angiogram, unenhanced):
  + ANY ONE of the following:
    - Hypertension and ANY ONE of the following:
      * Abrupt onset
      * Accelerated or malignant
      * Refractory to at least 3 drugs and a compliant patient
      * Onset of hypertension before 20 years of age
    - Unilateral small kidney
    - Epigastric or renal artery bruits
    - Recurrent, i.e., flash, pulmonary edema
  + ANY ONE of the following:
    - Surgical planning after diagnosis by duplex exam
    - Negative duplex but suspected accessory renal artery
    - Inadequate duplex exam due to bowel gas or obesity

1. **Jaundice, Painless**

* Indicated when ALL of the following are present (helical):
  + Painless jaundice
  + Negative or indeterminate ultrasound
  + No other etiology for jaundice is present, e.g., medications or infectious hepatitis.

1. **Liver Cancer, Primary or Metastatic**

* Indicated for ANY ONE of the following (biphasic, with hepatic arterial and portal venous phases is necessary):
  + Suspected metastatic lesion in the liver, due to presence of ANY ONE of the following:
    - Current or past history of cancer
    - Abnormal liver enzymes
  + Indeterminate mass on ultrasound
  + Surveillance after treatment for liver cancer

1. **Liver Cirrhosis**

* Indicated for patient with chronic cirrhosis due to any reason and ANY ONE of the following:
  + Elevated alpha-fetoprotein (AFP)
  + Palpable mass
  + Change in clinical condition, i.e., weight loss, jaundice, or worsening anemia

1. **Palpable Abdominal Mass**

* Indicated for evaluation of palpable abdominal mass (standard or helical)

1. **Pancreatic Disease**

* Indicated for ANY ONE of the following (with IV contrast):
  + Acute pancreatitis as test of choice
  + Chronic pancreatitis
  + Evaluation of mass seen on ultrasound
  + Pancreatic pseudocyst and ANY ONE of the following:
    - Initial diagnosis or suspicion
    - Periodic follow-up until resolved
    - Follow-up studies after surgical drainage
  + Suspected neuroendocrine tumor, i.e., insulinoma or gastrinoma, due to presence of ANY ONE of the following (helical):
    - Suspected or known insulinoma due to presence of ALL of the following:
      * Fasting hypoglycemia
      * Elevated plasma insulin levels
    - Suspected or known carcinoid tumor
    - Suspected or known gastrinoma
  + Pancreatic cancer and ANY ONE of the following:
    - Suspected pancreatic cancer due to presence of ANY ONE of the following:
      * Painless jaundice
      * Weight loss
      * Abdominal pain
    - Follow-up of pancreatic cancer

1. **Pyelonephritis**

* Indicated for ANY ONE of the following (helical):
  + Lack of response to treatment within 48 to 72 hours, probably as second-line test after ultrasound
  + Diabetic patient with severe pyelonephritis
  + Recurrent infection, although ultrasound may better demonstrate anatomy
  + Suspected renal stone disease
  + Interventional procedures such as drainage of renal abscess or perinephric or para-renal collections is being planned.

1. **Renal Cell Cancer, Staging**

* Indicated for ANY ONE of the following (enhanced):
  + Initial staging
  + Follow-up after treatment

1. **Renal Mass, Incidental**

* Indicated for indeterminate mass seen on ultrasound (enhanced equals unenhanced)

1. **Renal Colic and Kidney Stones**

* Indicated as initial test for all patients with suspected renal stones, when ANY ONE of the following is present:
  + Acute onset of severe, unilateral flank or lower quadrant abdominal pain
    - Radiation to the groin or genitalia is typical
    - Pain tends to be colicky
    - Unable to find a position of comfort when the pain is at its peak
  + Nausea, vomiting, and diarrhea associated with hematuria
  + Urinary frequency and urgency associated with hematuria
  + Acute pyelonephritis poorly responsive to treatment

1. **Soft Tissue Mass, Abdominal Wall**

* Indicated for ANY ONE of the following:
  + Calcium is seen on plain film
  + Motion prevents ability to perform adequate MRI

1. **Testicular Cancer**

* Indicated for ANY ONE of the following:
  + Staging of testicular malignancy
  + Evidence of recurrence

1. **Trauma, Abdomen**

* Indicated after blunt abdominal trauma and ANY ONE of the following:
  + Hematuria
  + Falling hematocrit
  + Hypotension
  + Abdominal pain
  + Clinical suspicion of intra-abdominal injury

**Reference:**

Milliman Care Guidelines, “Ambulatory Care”, 10th Edition.