

Evidence Discussion (AB 1.0)

Red Flags

Except as noted in condition-specific sections of these Abdominal Guidelines, initial evaluation by ultrasound is generally prerequisite to advanced imaging modalities. Ultrasound requires no ionizing radiation, is cost effective, helps determine most appropriate next advanced imaging study (CT vs. MRI), contrast level, readily accessible, and often can be scheduled same day.

When Red Flag signs and symptoms are present, literature supports early use of computer tomography (CT) and/or magnetic resonance imaging (MRI) without need for a prior ultrasound. Red Flags include:

- **Risk of metastases:** Liver, lung, and regional lymph nodes are frequent metastatic targets readily identified by advanced abdominal imaging. Metastatic foci are less readily identified by ultrasound in the hollow viscus than solid abdominal organs—e.g., in high prevalence metastatic spread to the gas-filled stomach by breast cancer (27%), lung cancer (23%), renal cell cancer (7.6%), and malignant melanoma (7%). [1]
- **Fever:** Accompanied by abdominal pain, or in combination with vomiting, bloody stools, unexplained weight loss, persistent fever requires urgent imaging evaluation. CT and MRI are better suited than ultrasound in localizing and characterizing gut-related urgencies such as bowel blockage, abdominal ischemia, acute inflammatory conditions (diverticulitis, flares of inflammatory bowel disease, perforation), and obstructing tumors. [2]
- **Abnormal white cell number:** Neutropenia or leukocytosis warrants definitive advanced imaging to avoid delays in diagnosis and treatment, especially in immunocompromised settings, for life-threatening pathology such as neutropenic enterocolitis (typhilitis) [3] or the various infectious, inflammatory, or injurious conditions described in the Abdominal Guideline sections in which an elevated white cell count is seen.
- **Concerning palpable mass:** The imaging approach to diagnosis varies by location and clinician-concern. For intra-abdominal masses, contrast-enhanced CT and ultrasound examination have demonstrated accuracy. For abdominal wall masses, which may arise from muscle, subcutaneous tissue, or connective tissue, MRI, CT, and ultrasound all provide diagnostic value. When mass is accompanied by abdominal pain, advanced imaging modalities may facilitate care. [4]
- **GI Bleeding:** When the source of bleeding is unidentified after upper endoscopy and/or colonoscopy, subsequent diagnostic modalities should be guided by clinical presentation, hemodynamic stability, and local expertise. CT angiography

demonstrates a sensitivity of 86% and specificity of 95% in acute GI bleeding, and is useful in directing definitive hemostatic treatment. [5]

- **Significant abdominal tenderness, with or without peritoneal signs:** Rapid onset of severe abdominal pain with significant tenderness, an acute abdomen or surgical abdomen, may indicate a potentially life-threatening condition requiring urgent surgical intervention for which accurate and timely diagnosis is critical. Advanced imaging also offers greater accuracy than ultrasound in the setting of a painless acute abdomen seen in older people, children, the immunocompromised, and in the last trimester of pregnancy. [6]
- **Suspected complication of bariatric surgery:** Early advanced imaging followed by emergent intervention avoids morbidity in roux-en-Y patients with internal hernias or in balloon recipients with bowel obstruction or perforated gastrojejunal ulcer. [7]
- **Unexplained weight loss:** Problematic weight loss in the older adult is defined by the United States Omnibus Budget Reconciliation Act of 1987 (Title IV: subtitle C: Nursing Home Reform) as a loss of 5% of body weight in one month or 10% over a period of six months or longer. Unintentional weight loss is associated with an increased risk of death among older adults [8].

References:

1. Weigt J, Malfertheiner P. Metastatic disease in the stomach. *Gastrointest Tumors*. 2015;2(2):61–64. doi:10.1159/000431304.
2. Banerjee A. Emergency clinical diagnosis. *Gastrointestinal Emergencies*. 2017;235–260. doi:10.1007/978-3-319-50718-7.
3. Chow EJ, Bishop KD. Painless neutropenic enterocolitis in a patient undergoing chemotherapy. *Curr Oncol*. 2016;23(5):e514–e516. doi:10.3747/co.23.3119.
4. Fowler KJ, Garcia EM, Kim DH, et al. ACR Appropriateness Criteria® Palpable Abdominal Mass-Suspected Neoplasm. *J Am Coll Radiol*. 2019;16(11S):S384-S391. doi:10.1016/j.jacr.2019.05.014.
5. Sik B, Kim M, Li BT, et al. Diagnosis of gastrointestinal bleeding: A practical guide for clinicians. *World J Gastrointest Pathophysiol*. 2014;5(4):467–478. doi:10.4291/wjgp.v5.i4.467.
6. Ragsdale L, Southerland L. Acute abdominal pain in the older adult. *Emerg Med Clin North Am*. 2011;29(2):429-48. doi:10.1016/j.emc.2011.01.012.
7. Fry BT, Finks JF. Abdominal pain after roux-en-y gastric bypass-a review. *JAMA Surg*. 2023;158(10):1096-1102. doi:10.1001/jamasurg.2023.3211.
8. Stajkovic S, Aitken EM, Holryod-Leduc J. Unintentional weight loss in older adults. *CMAJ*. 2011;183(4):443–449. doi:10.1503/cmaj.101471.