National Imaging Associates, Inc.*	
Clinical guideline PELVIS CT	Original Date: September 1997
CPT Codes: 72192, 72193, 72194	Last Revised Date: April 2021
Guideline Number: NIA_CG_036	Implementation Date: January 2022

Note: For syndromes for which imaging starts in the pediatric age group, MRI preferred

Note: PELVIS CT ALONE SHOULD ONLY BE APPROVED WHEN DISEASE PROCESS IS SUSPECTED TO BE LIMITED TO THE PELVIS. CT Abdomen/Pelvis Combo (CPT Codes: 74176, 74177, 74178) is the correct study when the indication(s) include both the abdomen AND pelvis, such as CTU (CT Urography), CTE (CT Enterography), acute abdominal pain, widespread inflammatory disease or neoplasm. Otherwise, the exam should be limited to the appropriate area. (i.e., Abdomen OR Pelvis) which includes the specific organ, area of known disease/abnormality or the area of concern. ~~CT Abdomen/Pelvis Combo (CPT Codes: 74176, 74177, 74178) is the better study when the indication(s) include both the abdomen AND pelvis, such as CTU (CT Urography), CTE (CT Enterography), widespread inflammatory disease or neoplasm. Otherwise, the exam should be limited to the appropriate area. (i.e., Abdomen OR Pelvis) which includes the specific organ, area of known disease/abnormality or the area of concern.~~

INDICATIONS FOR PELVIS CT

Pelvic Pain for Unknown Etiology

- **CT allowed after initial workup is inconclusive and must include results of the following:**
  - **Initial imaging, such as, ultrasound (although ultrasound does have limitations, it is a common misconception ~~is~~ that ultrasound is not a good tool in ALL obese patients, such that it is often useful even in obese patients and quite reasonable to attempt as a first-line imaging modality particularly given the benefit of no radiation), scope study, or x-ray AND**
  - **Appropriate laboratory testing (chemistry profile, complete blood count, and urinalysis)**
  - **?**

* National Imaging Associates, Inc. (NIA) is a subsidiary of Magellan Healthcare, Inc.

- ○
- For acute pelvic pain in a patient over the age of 65 (ACR, 2018; Lehtimaki, 2017)

Initial staging of prostate cancer:

- High Risk and above (T3a or higher, PSA >20*, Gleason 8-10)
- Intermediate Risk (T2b-T2c or PSA 10-20* or Gleason 7) when Nomogram predicts >10% probability of lymph node involvement (MSKCC/Kattan is the nomogram recommended by NCCN 2021)

*Note: In patients who have been on a 5-alpha reductase inhibitor (such as proscar) in the past 12 months, an "adjusted PSA" should be used. To adjust, multiply PSA by a factor of 2 (e.g., PSA 6 on finasteride adjusts to a PSA of 12)

~~Prostate cancer for intermediate risk or greater(+- abdomen CT) when PSA levels ≥10 ng/mL or biopsy GS ≥7, or clinically advanced disease (T2b, T2c, T3, or T4) **AND** nomogram (e.g., Partin, Cancer of Prostate Risk Assessment CAPRA) indicating probability of lymph node involvement >10%) (NCCN, 2019).~~

Known prostate cancer for workup of recurrence and response to treatment when there is a contraindication for MRI
(NCCN, 2019)

- Initial treatment by radical prostatectomy:
  - Failure of PSA to fall to undetectable levels or PSA detectable and rising on at least 2 subsequent determinations.
- Initial treatment radiation therapy:
  - Post-RT rising PSA or positive digital exam and is candidate for local therapy ~~and is a candidate for local therapy.~~
  - ○

Evaluation of suspicious or known mass/tumors:

- Initial evaluation of suspicious pelvic masses/tumors found only in the pelvis by physical exam and ultrasound has been performed
- ~~or for~~ Further evaluation of abnormality seen on ultrasound (US) or when US would be inconclusive (ACR, 2013, 2014).
- Surveillance: One follow-up exam to ensure no suspicious change has occurred in a tumor in the pelvis. No further surveillance CT unless tumor(s) are specified as highly suspicious or change was found on exam or last follow-up imaging.
- Initial staging of known cancer:
- Follow-up of known cancer (Bourgioti, 2016; NCCN, 2019):
  - Follow-up of known cancer of patient undergoing active treatment within the past year.

- Known cancer with suspected pelvis metastasis based on a sign, symptom (~~,~~e.g., anorexia, early satiety, intestinal obstruction, night sweats, pelvic pain, weight loss, vaginal bleeding), ~~-~~or an abnormal lab value (alpha-fetoprotein, CEA, CA 19-9, p53 mutation)~~.~~

Indication for combination studies for the initial pre-therapy staging of cancer, OR active monitoring for recurrence as clinically indicated, OR evaluation of suspected metastases~~:~~

- < 5 concurrent studies to include CT or MRI of any of the following areas as appropriate depending on the cancer: Neck, Abdomen, Pelvis, Chest, Brain, Cervical Spine, Thoracic Spine or Lumbar Spine~~.~~

For evaluation of suspected infection or inflammatory disease
(ACR, 2018; Cartwright, 2015)

- Suspected perianal fistula or occult anorectal abscess (MRI preferred) (Liang, 2014; O'Malley, 2012; Vogel, 2016)
- Suspected infection in the pelvis (based on elevated WBC, fever, anorexia, or nausea and vomiting)~~ in the pelvis.~~
- CT cystourethrography (CTCUG) in the preoperative setting (Maciejewski, 2015)
- For suspected urethral stricture or periurethral pathology only if MRI cannot be done (Aldamanhori, 2018; Lv, 2016)~~.~~

For evaluation of known infection or inflammatory disease follow~~ -~~up
(ACR, 2013, 2014)

- Any known infection to have created an abscess in the pelvis that requires re-evaluation~~.~~
- Any history of fistula limited to the pelvis that requires re-evaluation or is suspected to have recurred~~.~~
- For patients with recurrent fistula ~~in ano~~in anal or perianal Crohn's disease (MRI preferred) (Vogel, 2016)
- Abnormal fluid collection seen on prior imaging that needs follow-up evaluation and limited to the pelvis~~.~~

For evaluation of suspected inflammatory bowel disease or follow-up (includes CT enterography and can also approve a~~A~~bdomen CT/CTE)~~:~~

- **For suspected inflammatory bowel disease (Crohn's disease or ulcerative colitis) with abdominal pain AND one of the following (ACR, 2019; Arif-Tiwari, 2019; Lichtenstein, 2018):**
  - **Chronic diarrhea**
  - **Bloody diarrhea**

  Note: For patients under 35 years old, consider MRE
- **High clinical suspicion after complete work up including physical exam, labs, endoscopy with biopsy (ACR, 2019; Arif-Tiwari, 2019; Lichtenstein, 2018; Rubin, 2019)**~~For suspected Crohn's disease with abdominal pain, AND chronic diarrhea, or bloody diarrhea, AND~~

~~fatigue, or when there is a high clinical suspicion after complete work up including physical exam, labs, endoscopy with biopsy (ACR, 2019; Arif-Tiwari, 2019; Lichtenstein, 2018).~~

- ~~For ulcerative colitis that is suspected clinically, however abdominal symptoms (e.g., abdominal pain, diarrhea, or hematochezia) are not explained by endoscopy (Rubin, 2019)~~
- For CT enterography (CTE) if CT or MRI of the abdomen and pelvis are inconclusive~~.~~
- Known inflammatory bowel disease (Crohn's or ulcerative colitis) with ~~recurrence or worsening~~ signs/~~symptoms~~ **symptoms (e.g., abdominal pain, diarrhea, or hematochezia)** requiring re-evaluation~~,~~ or for monitoring therapy (ACR, 2019)

For suspected or known hernia~~:~~

- **For pelvic pain due to a suspected occult, spigelian, or incisional hernia when physical exam and prior imaging are non-diagnostic or equivocal or if requested as a preoperative study**
- **For confirming the diagnosis of a recurrent hernia when ultrasound is negative or non-diagnostic~~.~~**
- **Hernia with suspected complications (e.g., bowel obstruction or strangulation, or non-reducible) based on symptoms (e.g., diarrhea, hematochezia, vomiting, severe pain~~, or guarding~~), physical exam (guarding, rebound) or prior imaging (Halligan, 2018)~~.~~**

For evaluation of known or suspected vascular disease (e.g., aneurysms, hematomas)
(Khosa, 2011; Uberoi, 2011)
NOTE: CT/MRI should not be approvable without a contraindication to CTAngiography /MRAngiography, ~~(~~such as severe renal dysfunction, contrast allergy, or another specific reason CT/MRI (rather than CTA/MRA) is preferred~~.~~

- Evidence of vascular abnormality identified on imaging studies and limited to the pelvis~~.~~
- Evaluation of suspected or known aneurysms limited to the pelvis or in evaluating pelvic extent of aortic aneurysm
  - Known or suspected iliac artery aneurysm > 2.5 cm AND equivocal or indeterminate ultrasound results
  - Prior imaging (e.g., ultrasound) demonstrating iliac artery aneurysm > 2.5 cm in diameter
  - Suspected complications of known aneurysm as evidenced by clinical findings, such as new onset of pelvic pain~~.~~
  - ~~Follow~~ **Follow-**up of iliac artery aneurysm (CTA preferred): Every three years for diameter 2.0-2.9 cm and annually for 3.0-3.4 cm. If > 3.5 cm, < ~~six~~ **six-**month ~~follow~~ **follow-**up (and consider intervention) (Wa~~i~~nhainen, 2019)
- Scheduled follow-up evaluation of aorto/iliac endograft or stent~~.~~

- Routine, baseline study (post-op/intervention) is warranted within 1-3 months (Chaikof, 2018).
- Asymptomatic at six (6)) month intervals, for one (1) year, then annually.
- Symptomatic/complications related to stent graft – more frequent imaging may be needed.

- Suspected retroperitoneal hematoma or hemorrhage.

For suspected or known hernia:

- For pelvic pain due to a suspected occult, spigelian or incisional hernia when physical exam or prior imaging are non-diagnostic or equivocal or if requested as a preoperative study
- For confirming the diagnosis of a recurrent hernia when ultrasound is negative or non-diagnostic.
- Hernia with suspected complications (e.g., bowel obstruction or strangulation, or non-reducible)

Musculoskeletal Indications:

- Known or suspected aseptic/avascular necrosis of hip(s) and MRI is contraindicated after completion of initial x-ray (ACR, 2015).
- Sacroiliitis (infectious or inflammatory) after completion of initial**abnormal** x-ray and MRI is contraindicated (ACR, 2016; Jans, 2014; Kang, 2015).
- Sacroiliac joint dysfunction and MRI contraindicated when there is:
  - Persistent back and/or sacral pain unresponsive to four (4) weeks of conservative treatment, received within the past six (6) months, including physical therapy or physician **physician** supervised home exercise plan (HEP).

For evaluation of trauma

(ACR, 2012)

- For evaluation of trauma with lab or physical findings of pelvic bleeding.
- For evaluation of physical or radiological evidence of complex or occult pelvic fracture or for pre-operative planning of complex pelvic fractures.

Other Indications for Pelvic CT:

Subacute or chronic pelvic pain not explained by previous imaging/procedure (ACR, 2018).

- For assessment of pelvic congestion syndrome when findings on ultrasound are indeterminate (CTA/MRA preferred) (Bookwalter, 2019)
- For diffuse, unexplained lower extremity edema with negative or inconclusive ultrasound (Hoshino, 2016)
- For evaluation of suspected May-Thurner syndrome (CTV/MRV preferred) (Ibrahim, 2012); Wan-ling, 2012)
- For further evaluation of an isolated right varicocele with additional signs and symptoms (e**.g., jaundice, lymphadenopathy, night sweats or weight loss)** that suggest malignancy or suspicious prior imaging (Gleason, 2019)

- To provide an alternative to initial or follow-up of an indeterminate or inconclusive finding on ultrasound and MRI cannot be ~~done.~~**performed**
- To locate an intrauterine device after ultrasound and plain x-ray are equivocal or non-diagnostic (imaging of the abdomen may also be indicated) (Boortz, 2012; Nowitski, 2015)
- For diagnosis or to guide treatment of urachal anomalies when ultrasound is non-diagnostic (Buddha, 2019; Villavicencio, 2016)

Pre-operative evaluation~~:~~
- For diagnostic purposes prior to pelvic surgery or procedure~~.~~

For post-operative/procedural evaluation~~:~~
- Follow-up of known or suspected post-operative complication involving the hips or the pelvis (Davis, 2016; Yanny, 2012) within six months~~.~~
- A follow-up study to help evaluate a patient's progress after treatment, procedure, intervention, or surgery. Documentation requires a medical reason that clearly indicates why additional imaging is needed~~.~~

~~**If an Abdomen/Pelvis CT combo is indicated and the Abdomen CT has already been approved, then the Pelvis CT may be approved.**~~

BACKGROUND

CT provides direct visualization of anatomic structures in the abdomen and pelvis and is a fast imaging tool used to detect and characterize disease involving the abdomen and pelvis. Pelvic imaging begins at the iliac crests through pubic symphysis. It has an ability to demonstrate abnormal calcifications or fluid/gas patterns in the viscera or peritoneal space.

In general, ionizing radiation from CT should be avoided during pregnancy. Ultrasound is clearly a safer imaging option and is the first imaging test of choice~~;~~, although, CT after equivocal ultrasound has been validated for diagnosis. Clinicians should exercise increased caution with CT imaging in children, pregnant women, and young adults due to the risks of exposure to ionizing radiation. Screening for pregnancy as part of a work-up is suggested to minimize the number of unexpected radiation exposures for women of childbearing age.

OVERVIEW

***Conservative Therapy**: **This** ~~(spine)~~ should include a multimodality approach consisting of a **combination of active and inactive components**. Inactive components, such as rest, ice, heat, modified activities, medical devices, acupuncture and/or stimulators, medications, injections (epidural, facet, bursal, and/or joint, not including trigger point), and diathermy can be utilized. Active modalities may consist of physical therapy, a ~~physician~~ **physician** supervised home exercise program**, and/or chiropractic care.

****Home Exercise Program - (HEP)/Therapy:** ~~–~~ the following elements are required to meet guidelines for completion of conservative therapy (ACR, 2015):

- Information provided on exercise prescription/plan AND
- ~~Follow~~ **Follow**-up with member with documentation provided regarding lack of improvement (failed) after completion of HEP (after suitable 4 week period), or inability to complete HEP due to physical reason- i.e., increased pain, inability to physically perform exercises. (Patient inconvenience or noncompliance without explanation does not constitute "inability to complete" HEP).
- Dates and duration of failed PT, ~~physician~~ **physician**-supervised HEP, or chiropractic treatment should be documented in the original office notes or an addendum to the notes.

Ultrasound should be considered prior to a request for Pelvis CT for the following ~~evaluations~~:

- Initial evaluation or ~~follow~~ **follow**-up of ovarian mass or abnormal physical finding

Combination request of Abdomen CT/Chest CT - A Chest CT will produce images to the level of L3. Documentation for combo is required.

Helical CT of Prostate Cancer – Conventional CT is not useful in detecting prostate cancer as it does not allow direct visualization. Contrast-enhanced MRI is more useful in detecting prostate cancer. MRI is recommended in patients with suspected cancer but prior negative biopsy because MRI alone can miss up to 26% of clinically significant cancers that would be detected on systemic biopsy (Borofsky, 2018). Helical CT of the prostate may be a useful alternative to MRI in patients with an increasing PSA level and negative findings on biopsy but is not the imaging study of choice.

Pelvic Trauma and CT Imaging – Helical CT is useful in the evaluation of low- or high-flow vascular injuries in patient with blunt or penetrating pelvic trauma. It provides detailing of fractures and position of fracture fragments along with the extent of diastasis of the sacroiliac joints and pubic symphysis. CT helps determine whether pelvic bleeding is present and can identify the source of bleeding. With CT, high flow hemorrhage can be distinguished from low flow hemorrhage aiding the proper treatment.

Imaging of hernias – M~~s: M~~ost hernias are diagnosed clinically with imaging recommended for the diagnosis of occult hernias or in the evaluation of hernia complications, such as bowel obstruction or strangulation. Groin hernias are at increased risk for incar**ceration/strangulation in women, right femoral hernias, and when there is a ~~hernia~~ **hernia**-related hospitalization in the year preceding hernia repair. Morbidity and mortality are increased for strangulated hernias in patients over 65, prolonged symptoms, incarceration of over 24 hours, symptoms of > 3 days, bowel obstruction, anticoagulant use (Simons, 2018). To detect occult hernias, ultrasound is a ~~first~~ **first**-line study with a sensitivity of 86% and specificity of 77% compared to 80% sensitivity and 65% specificity for CT (Robinson, 2013). According to Miller et al, "Magnetic resonance imaging is generally not considered a first- or even second-line evaluation modality

for hernias…"" -(Miller, 2014). Based on this analysis MRI is recommended only when ultrasound and CT have been performed and fail to make a diagnosis.

POLICY HISTORY

Date	Summary
April 2021	• Updated prostate cancer imaging section to reflect current NCCN 2021 changes and adjusted PSA
May 2020	• Perianal fistula or abscess (MR preferred) • CT cystourethrography for pre op • Urethral stricture (MR preferred) • IBD for CTE • Hernia section • Pelvic congestion syndrome • To find an IUD after other studies completed • Urachal anomalies • Added for diffuse LE edema with neg or inconclusive US • May-Thurner • LE edema and isolated right varicocele • Updated background section
June 2019	• Changed PSA levels from ≥ 20 ng/mL to ≥ 10 ng/mL or clinically advanced disease (T2b, T2c, T3, or T4) AND nomogram per NCCN; deleted Gleason score • Modified guideline to align with abdomen pelvis CT guideline • Added 'routine, baseline study (post-op/intervention) is warranted within 1-3 months for scheduled f/u evaluation of aorto/iliac endograft or stent • Specified pelvic pain by adding subacute or chronic • Added: ○ to provide an alternative to initial or f/u of an indeterminate or inconclusive finding on US and MRI cannot be performed ○ suspected perianal fistula; ○ hernia with suspected complications • Added 'within 6 months' time specification for f/u of known or suspected post-operative complication involving hips or pelvis • Updated background information and references

~~**Review Date**: June 2019~~
~~**Review Summary:**~~

- ~~Changed PSA levels from ≥ 20 ng/mL to ≥ 10 ng/mL or clinically advanced disease (T2b, T2c, T3, or T4) AND nomogram per NCCN; deleted Gleason score~~
- ~~Modified guideline to align with abdomen pelvis CT guideline~~
- ~~Added 'routine, baseline study (post-op/intervention) is warranted within 1-3 months for scheduled f/u evaluation of aorto/iliac endograft or stent~~
- ~~Specified pelvic pain by adding subacute or chronic~~
- ~~Added:~~
    - ~~to provide an alternative to initial or f/u of an indeterminate or inconclusive finding on US and MRI cannot be performed~~
    - ~~suspected perianal fistula;~~
    - ~~hernia with suspected complications~~
- ~~Added 'within 6 months' time specification for f/u of known or suspected post-operative complication involving hips or pelvis~~
- ~~Updated background information and references~~

~~**Review Date**: May 2020~~

~~**Review Summary:**~~

- ~~Perianal fistula or abscess (MR preferred)~~
- ~~CT cystourethrography for pre op~~
- ~~Urethral stricture (MR preferred)~~
- ~~IBD for CTE~~
- ~~Hernia section~~
- ~~Pelvic congestion syndrome~~
- ~~To find an IUD after other studies completed~~
- ~~Urachal anomalies~~
- ~~Added for diffuse LE edema with neg or inconclusive US~~
- ~~May Thurner~~
- ~~LE edema and isolated right varicocele~~
- ~~Updated background section~~

~~April 2021~~

- ~~Updated prostate cancer imaging section to reflect current NCCN 2021 changes and adjusted PSA~~

REFERENCES

Aldamanhori R, Inman R. The treatment of complex female urethral pathology. *Asian J Urol*. 2018 Jul; 5(3):160-63.

American College of Radiology (ACR). ACR Appropriateness Criteria®. https://acsearch.acr.org/list. Published 2018.

American College of Radiology (ACR). PI-RADS Prostate Imaging-Reporting and Data System. V2.1. 2019.

Arif-Tiwari H, Taylor P, Kalb BT, Martin DR. Magnetic resonance enterography in inflammatory bowel disease. *Appl Radiol*. 2019;48(1):9-15.

Bookwalter CA, VanBuren WM, Neisen MJ, Bjarnason H. Imaging appearance and nonsurgical management of pelvic venous congestion syndrome. *Radiographics*. 2019;39(2):596-608. doi:10.1148/rg.2019180159.

Boortz HE, Margolis DFA, et al. Migration of Intrauterine Devices: Radiologic Findings and Implications for Patient Care. *Radiographics*. 2012; 32:335-352.

Borofsky S, George AK, Gaur S, et al. What are we missing? False-negative cancers at multiparametric MR imaging of the prostate. *Radiology*. January 2018; 286(1):186-195. https://www.ncbi.nlm.nih.gov/pubmed/29053402. Retrieved February 7, 2018.

Bourgioti C, Chatoupis K, Moulopoulos LA. Current imaging strategies for the evaluation of uterine cervical cancer. *World J Radiol*. April 28, 2016; 8(4):342-354. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4840192/. Retrieved February 7, 2018.

Buddha S, Menia CO, Katabathina VS, et al. Imaging of Urachal Anomalies. Abdom Radiol (NY). 2019 Dec; 44(12):3978-3989.

Cartwright SL, Knudson MP. Diagnostic imaging of acute abdominal pain in adults. *Am Fam Physician.* April 1, 2015; 91(7):452-459. https://www.aafp.org/afp/2015/0401/p452.html. Retrieved February 7, 2018.

Chaikof EL, Dalman RL, Eskandari MK, et al. The Society for Vascular Surgery practice guideline on the care of patients with an abdominal aortic aneurysm. *J Vasc Surg*. 2018 Jan; 67(1):2-77.

Choosing Wisely®. Lists. http://www.choosingwisely.org/clinician-lists/#topic-area=Radiology.

Ciaschini, MW, Remer EM, Baker ME, et al. Urinary calculi: Radiation dose reduction of 50% and 75% at CT—effect on sensitivity. *Radiology*. 2009 Apr; 251(1):105-11. https://doi.org/10.1148/radiol.2511081084.

Davis D, Morrison JJ. Hip arthroplasty pseudotumors: Pathogenesis, imaging, and clinical decision making. *J Clin Imaging Sci*. 2016; 6:17. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4863402/. Retrieved February 8, 2018.

Dhatt HS, Behr SC, Miracle A, et al. Radiological evaluation of bowel ischemia. *Radiol Clin North Am.* November 2015; 53(6):1241–1254. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4633709/. Retrieved February 8, 2018.

Gerhard-Herman ME, Gornik HL, Barrett C, et al. 2016 AHA/ACC Guideline on the Management of Patients with Lower Extremity Peripheral Artery Disease: Executive Summary: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *Circulation*. 2017; 135:e686–e725. https://doi.org/10.1161/CIR.0000000000000470

Gleason A, Bishop K, Xi Y, et al. Isolated Right-Sided varicocele: Is Further Work-up Necessary? *AJR Am J Roentgenol*. 2019; 212(4):802-807.

Halligan S, Parker SG, Plumb AAO, et al. Use of imaging for pre- and post-operative characterisation of ventral hernia: Systematic review. *Br J Radiol*. 2018;91(1089):20170954. doi:10.1259/bjr.20170954.

Hoshino Y, Machida M, Shimano S, et al. Unilateral Leg Swelling: Differential Diagnostic Issue other than Deep Vein Thrombosis. *J Gen Fam Med*. 2016; 17(4):311-14.

Ibrahim W, Zakareya AS, et al. Endovascular Management of May-Thurner Syndrome. *Ann Vasc Dis*. 2012; 5(2):217-221.

Jans L, Van Praet L, Elewaut D, et al. MRI of the SI joints commonly shows non-inflammatory disease in patients clinically suspected of sacroiliitis. *Eur J Radiol*. January 2014; 83(1):179-184. https://www.ncbi.nlm.nih.gov/pubmed/24168927. Retrieved February 7, 2018.

Kang Y, Hong SH, et al. Unilateral Sacroiliitis: Differential Diagnosis Between Infectious Sacroiilitis and Spondyloarthritis Based on MRI Findings. *Musculoskel Imaging*. 2015; 205(5).

Khosa F, Krinsky G, Macari M, et al. Managing incidental findings on abdominal and pelvic CT and MRI, Part 2: White paper of the ACR Incidental Findings Committee II on vascular findings. *J Am Coll Radiol*. 2013; 10(10):789-794. doi: 10.1016/j.jacr.2013.05.021.

Kranokpiraksa P, Kaufman JA. Follow-up of endovascular aneurysm repair: plain radiography, ultrasound, CT/CT angiography, MR imaging/MR angiography, or what? *J Vasc Interv Radiol*. June 2008; 19(6 Suppl):S27-S36. http://www.jvir.org/article/S1051-0443(08)00282-0/abstract.

Lassandro F, Iasiello F, Pizza NL, et al. Abdominal hernias: Radiological features. *World J Gastrointest Endosc.* June 16, 2011; 3(6):110-117. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3158902/. Retrieved February 8, 2018.

Lehtimäki TT, Valtonen H, Miettinen P, Juvonen P, Paajanen H, Vanninen R. A randomised clinical trial of routine versus selective CT imaging in acute abdomen: Impact of patient age on treatment costs and hospital resource use. *Eur J Radiol*. 2017;87:1-7. doi:10.1016/j.ejrad.2016.11.031.

Liang C, Lu Y, et al. Imaging of anal fistulas: Comparison of computed tomography fistulography and magnetic resonance imaging. *Korean J Radiol*. 2014 Nov-Dec; 15(6):712-723.

Lichtenstein GR, Loftus EV, Isaacs KL, Regueiro MD, Gerson LB, Sands BE. ACG clinical guideline: Management of Crohn's disease in adults. *American Journal of Gastroenterology*. 2018;113(4):481-517. doi:10.1038/ajg.2018.27.

Lv XG, Peng XF, Feng C, et al. The application of CT voiding urethrography in the evaluation of urethral stricture associated with fistula: A preliminary report. *Int Urol Nephrol*. 2016; 48(8):1267-1273.

Maciejewski C, Rourke K. Imaging of Urethral stricture disease. *Transl Androl Urol*. 2015; 4(1):2-9.

Miller J, Cho J, Michael MJ, et al. Role of imaging in the diagnosis of occult hernias. *JAMA Surg*. October 2014; 149(10):1077-1080. doi: 10.1001/jamasurg.2014.484. https://jamanetwork.com/journals/jamasurgery/fullarticle/1893806. Retrieved February 15, 2018.

National Comprehensive Cancer Network (NCCN). NCCN Imaging Appropriate Use Criteria (NCCN Imaging AUC). 2019. **https://www.nccn.org/professionals/imaging/default.aspx.**

National Comprehensive Cancer Network (NCCN). *Practice Guidelines in Oncology v.4.2013.* Retrieved from http://www.nccn.org/professionals/physician_gls/pdf/prostate.pdf.

National Comprehensive Cancer Network (NCCN). *Guidelines: Prostate Cancer Updates v.2.2017.* https://www.nccn.org/professionals/physician_gls/pdf/prostate.pdf. Retrieved February 7, 2018.

Nowitzki KM, Holmes ML, et al. Ultrasonography of Intrauterine devices. *Ultrasonogr*. 2015; 34(3):183-194.

Oguzkurt L, Tercan F, Pourbagher MA, et al. Computed tomography findings in 10 cases of iliac vein compression (May-Thurner) syndrome. *Eur J Radiol*. 2005; 55(3):421-25. http://www.ejradiology.com/article/S0720-048X(04)00360-2/abstract.

O'Malley RB, Al-Hawary MM, Kaza RK, et al. Rectal imaging: Part 2, perianal fistula evaluation on pelvic MRI: What the radiologist needs to know. *AJR Am J Roentgenol.* 2012 Jul; 199(1):W43-53.

Pickhardt P, Lawrence E, Pooler B, et al. Diagnostic performance of multidetector computed tomography for suspected acute appendicitis. *Ann Intern Med*. 2011; 154(12):789. http://annals.org/article.aspx?volume=154&page=789.

Risko R, Merdan S, Womble PR, et al. Clinical predictors and recommendations for staging CT scan among men with prostate cancer. *Urology*. December 2014; 84(6):1329-1334. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4743735/.

Robinson A. A systematic review and meta-analysis of the role of radiology in the diagnosis of occult inguinal hernia. *Surg Endosc*. January 2013; 27(1):11-18. https://www.ncbi.nlm.nih.gov/pubmed/22733195. Retrieved February 8, 2018.

Rubin DT, Ananthakrishnan AN, Siegel CA, Sauer BG, Long MD. ACG clinical guideline: Ulcerative colitis in adults. *Am J Gastroenterol*. 2019;114(3):384-413. doi:10.14309/ajg.0000000000000152.

Sanchez TR, Corwin MT, et al. Sonography of adominal pain in children. *J Ultrasound Med*. 2016; 35:627–635.

Simons MP, Smietanski H, et al. International guidelines for groin hernia management. *Hernia*. 2018; 22:1-165.

Thompson IM, Goodman PJ, Tangen CM et a:. The influence of finasteride on the development of prostate cancer. N Engl J Med 2003; 349: 215.

Tonolini M, Ippilito S. Cross-sectional imaging of complicated urinary infections affecting the lower tract and male genital organs. *Insights Imaging*; 2016:7(5):689-711.

Uberoi R, Tsetis D, Shrivastava V, et al. Standard of practice for the interventional management of isolated iliac artery aneurysms. *Cardiovasc Intervent Radiol*. 2011; 34(1):3-13. doi:10.1007/s00270-010-0055-0.

US Preventive Services Task Force (USPSTF). *Screening for Abdominal Aortic Aneurysm*. AHRQ: Agency for Healthcare Research and Quality. https://www.uspreventiveservicestaskforce.org/Page/Document/RecommendationStatementFinal/abdominal-aortic-aneurysm-screening. Published 2014.

Vikram R, Sandler CM, Ng CS. Imaging and staging of transitional cell carcinoma: Part 1, upper urinary tract. *AJR Am J Roentgenol*. 2009a; 192(6):1481-1487. http://www.ncbi.nlm.nih.gov/pubmed/19457808.

Vikram R, Sandler CM, Ng CS. Imaging and staging of transitional cell carcinoma: Part 2, upper urinary tract. *AJR Am J Roentgenol*. 2009b; 192(6):1488-93. http://www.ncbi.nlm.nih.gov/pubmed/19457809.

Villavicencio CP, Adam SZ, et al. Imaging of the Urachus: Anomalies, Complications and Mimics. *Radiographics*. 2016; 36(7).

Vogel JD, Johnson EK, et al. Clinical Practice Guideline for Management of Anorectal Abscess, Fistula-in-Ano, and Rectovaginal Fistula. *Dis Colon Rect*. 2016; 59:1117-1133.

Wanhainen A, Verzini F, Van Herzeele I, et al. Editor's choice - European Society for Vascular Surgery (ESVS) 2019 clinical practice guidelines on the management of abdominal aorto-iliac artery aneurysms. *Eur J Vasc Endovasc Surg*. 2019;57(1):8-93. doi:10.1016/j.ejvs.2018.09.020.

Wollin DA, Markov DV. Guideline of guidelines: Imaging of localized prostate cancer. *BJU Int*. Octover 2015; 116(4):526-530. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4768736/.

Yanny S, Cahir JG, Barker T, et al. MRI of aseptic lymphocytic vasculitis–associated lesions in metal-on-metal hip replacements. *AJR Am J Roentgenol*. 2012; 198: 1394-1402. doi: 10.2214/AJR.11.7504.

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GENERAL INFORMATION

It is an expectation that all patients receive care/services from a licensed clinician. All appropriate supporting documentation, including recent pertinent office visit notes, laboratory data, and results of any special testing must be provided. If applicable: All prior relevant imaging results and the reason that alternative imaging cannot be performed must be included in the documentation submitted.

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