**American College of Radiology**
**ACR Appropriateness Criteria®**
**Staging and Follow-up of Ovarian Cancer**

## Variant: 1  Adult. Ovarian cancer. Pretreatment staging.

| Procedure | Appropriateness Category | Relative Radiation Level |
|---|---|---|
| CT abdomen and pelvis with IV contrast | Usually Appropriate | ☢☢☢ |
| CT chest with IV contrast | Usually Appropriate | ☢☢☢ |
| MRI abdomen and pelvis without and with IV contrast | May Be Appropriate | O |
| MRI abdomen and pelvis without IV contrast | May Be Appropriate | O |
| CT abdomen and pelvis without IV contrast | May Be Appropriate | ☢☢☢ |
| CT chest without IV contrast | May Be Appropriate | ☢☢☢ |
| FDG-PET/MRI skull base to mid-thigh | May Be Appropriate | ☢☢☢ |
| FDG-PET/CT skull base to mid-thigh | May Be Appropriate | ☢☢☢☢ |
| US abdomen and pelvis transabdominal | Usually Not Appropriate | O |
| US pelvis transvaginal | Usually Not Appropriate | O |
| CT chest without and with IV contrast | Usually Not Appropriate | ☢☢☢ |
| CT abdomen and pelvis without and with IV contrast | Usually Not Appropriate | ☢☢☢☢ |

## Variant: 2  Adult. Ovarian cancer. Posttreatment response evaluation.

| Procedure | Appropriateness Category | Relative Radiation Level |
|---|---|---|
| CT abdomen and pelvis with IV contrast | Usually Appropriate | ☢☢☢ |
| CT chest with IV contrast | Usually Appropriate | ☢☢☢ |
| FDG-PET/CT skull base to mid-thigh | Usually Appropriate | ☢☢☢☢ |
| MRI abdomen and pelvis without and with IV contrast | May Be Appropriate | O |
| MRI abdomen and pelvis without IV contrast | May Be Appropriate | O |
| CT abdomen and pelvis without IV contrast | May Be Appropriate | ☢☢☢ |
| CT chest without IV contrast | May Be Appropriate | ☢☢☢ |
| FDG-PET/MRI skull base to mid-thigh | May Be Appropriate | ☢☢☢ |
| US abdomen and pelvis transabdominal | Usually Not Appropriate | O |
| US pelvis transvaginal | Usually Not Appropriate | O |
| CT chest without and with IV contrast | Usually Not Appropriate | ☢☢☢ |
| CT abdomen and pelvis without and with IV contrast | Usually Not Appropriate | ☢☢☢☢ |

## Variant: 3  Adult. Ovarian cancer. Posttreatment routine surveillance. Asymptomatic patient, no suspected recurrence.

| Procedure | Appropriateness Category | Relative Radiation Level |
|---|---|---|
| MRI abdomen and pelvis without and with IV contrast | May Be Appropriate | O |
| MRI abdomen and pelvis without IV contrast | May Be Appropriate | O |
| CT abdomen and pelvis with IV contrast | May Be Appropriate | ☢☢☢ |
| CT abdomen and pelvis without IV contrast | May Be Appropriate | ☢☢☢ |
| CT chest with IV contrast | May Be Appropriate | ☢☢☢ |
| CT chest without IV contrast | May Be Appropriate | ☢☢☢ |

| Procedure | Appropriateness Category | Relative Radiation Level |
|---|---|---|
| FDG-PET/MRI skull base to mid-thigh | May Be Appropriate | ☢☢☢ |
| FDG-PET/CT skull base to mid-thigh | May Be Appropriate | ☢☢☢☢ |
| US abdomen and pelvis transabdominal | Usually Not Appropriate | O |
| US pelvis transvaginal | Usually Not Appropriate | O |
| CT chest without and with IV contrast | Usually Not Appropriate | ☢☢☢ |
| CT abdomen and pelvis without and with IV contrast | Usually Not Appropriate | ☢☢☢☢ |

## Variant: 4  Adult. Ovarian cancer. Posttreatment evaluation. Suspected or known recurrence.

| Procedure | Appropriateness Category | Relative Radiation Level |
|---|---|---|
| CT abdomen and pelvis with IV contrast | Usually Appropriate | ☢☢☢ |
| CT chest with IV contrast | Usually Appropriate | ☢☢☢ |
| FDG-PET/CT skull base to mid-thigh | Usually Appropriate | ☢☢☢☢ |
| MRI abdomen and pelvis without and with IV contrast | May Be Appropriate | O |
| MRI abdomen and pelvis without IV contrast | May Be Appropriate | O |
| CT abdomen and pelvis without IV contrast | May Be Appropriate | ☢☢☢ |
| CT chest without IV contrast | May Be Appropriate | ☢☢☢ |
| FDG-PET/MRI skull base to mid-thigh | May Be Appropriate | ☢☢☢ |
| US abdomen and pelvis transabdominal | Usually Not Appropriate | O |
| US pelvis transvaginal | Usually Not Appropriate | O |
| CT chest without and with IV contrast | Usually Not Appropriate | ☢☢☢ |
| CT abdomen and pelvis without and with IV contrast | Usually Not Appropriate | ☢☢☢☢ |

## Panel Members

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## Summary of Literature Review

### Introduction/Background

Ovarian cancer remains the sixth most common cause of cancer mortality in women in the United States and is a leading cause of cancer mortality among patients with gynecologic malignancies [1]. Ovarian cancer can affect anyone who has ovaries, including cisgender females as well as transgender men and nonbinary gender–identifying groups who have ovaries.

There are several different histopathologic subtypes of ovarian cancer, with epithelial ovarian cancer being the most common and accounting for approximately 90% of all malignant ovarian neoplasms [2]. Most of the information in this document regarding imaging use for staging and recurrence applies to epithelial ovarian cancers. There are two major subtypes of epithelial ovarian cancers that are distinguished by molecular, genetic, and morphologic characteristics. Type I is the more indolent form that includes low-grade serous, low-grade endometrioid, mucinous tumors, and clear cell carcinomas. Type II includes aggressive neoplasms, such as high-grade serous or endometrioid, and undifferentiated cancer [3]. The aggressive, or type II ovarian cancers, typically present in advanced stages (stage III-IV), after the disease has spread beyond the pelvis [4,5].

This document largely applies to staging and follow-up for type II ovarian cancers. Diagnostic imaging plays a major role in characterizing ovarian mass(es), determining presurgical disease extent, predicting tumor resectability, evaluating response to chemotherapy, and evaluating for posttreatment recurrence [2,5-11].

Although surgical staging is the reference standard in ovarian cancer, initial management recommendations rely on presurgical imaging to assess disease extent. Pretreatment imaging can assess the likelihood of optimal primary cytoreduction, which is the surgical removal of macroscopic disease but small sites of visible disease <1 cm in size may remain [12]. In addition to disease extent, preoperative imaging can also identify sites of disease that are deemed potentially unresectable or challenging to resect; for example, disease involving the small bowel mesentery or porta hepatis and suprarenal lymph node metastases [12]. If complete or optimal cytoreduction is not felt to be achievable, then neoadjuvant chemotherapy may be considered prior to interval debulking surgery.


**Discussion of Procedures by Variant**

**Variant 1: Adult. Ovarian cancer. Pretreatment staging.**

The goal of imaging is to appropriately stage ovarian cancer in treatment-naive patients. Imaging plays a crucial role in guiding the most appropriate therapeutic interventions, thereby optimizing patient outcomes and overall management of the disease.

**Variant 1: Adult. Ovarian cancer. Pretreatment staging.**
**A. CT abdomen and pelvis with IV contrast**

Contrast-enhanced CT is the most useful procedure in the preoperative evaluation of ovarian cancer [13]. It can provide clinically relevant information, including assessment of locoregional tumor extent and distant sites of disease including peritoneum, omentum, mesentery, liver, and lymph nodes. Contrast-enhanced CT has a reported accuracy for ovarian cancer staging of up to 94% [14], and accurate abdominopelvic disease assessment can predict successful surgical cytoreduction [13]. The sensitivity of CT staging varies depending on the anatomical location being examined. One of the significant drawbacks of CT in staging ovarian cancer is its limited ability to consistently identify tumor implants on the bowel surface, mesentery, or peritoneum that are smaller than 5 mm, particularly in in the absence of ascites [6,15-17].

The addition of oral contrast on CT imaging, typically performed with positive oral contrast, can help differentiate peritoneal implants from adjacent bowel. Rectal contrast administration can increase the sensitivity in detecting rectosigmoid serosal implants [2].

CT imaging can be instrumental in planning biopsies of the omentum or other abdominopelvic tumor sites when preoperative histology is necessary [18-21].

**Variant 1: Adult. Ovarian cancer. Pretreatment staging.**
**B. CT abdomen and pelvis without and with IV contrast**

There is no relevant literature to support the use of CT of the abdomen and pelvis without and with intravenous (IV) contrast for ovarian cancer staging.

**Variant 1: Adult. Ovarian cancer. Pretreatment staging.**
**C. CT abdomen and pelvis without IV contrast**

CT of the abdomen and pelvis without IV contrast can be considered in certain clinical settings but offers limited ability to identify small peritoneal or mesenteric implants or lymphadenopathy from bowel or adjacent organs.

**Variant 1: Adult. Ovarian cancer. Pretreatment staging.**
**D. CT chest with IV contrast**

CT of the chest with IV contrast is a useful modality for detecting pulmonary metastases during the baseline staging of ovarian cancer. Presence of pleural metastases and pleural effusions may suggest transdiaphragmatic tumor spread. Presence of a moderate-to-large pleural effusion on preoperative CT is a predictor of poor posttreatment outcome and may impact decisions to pursue neoadjuvant chemotherapy over primary cytoreductive surgery [22].

**Variant 1: Adult. Ovarian cancer. Pretreatment staging.**
**E. CT chest without and with IV contrast**

There is no relevant literature to support the use of CT of the chest without and with IV contrast for ovarian cancer staging.

**Variant 1: Adult. Ovarian cancer. Pretreatment staging.**
**F. CT chest without IV contrast**

CT of the chest without IV contrast may be useful for staging evaluation. CT of the chest without IV contrast can detect small pulmonary nodules; however, pleural metastases may be difficult to delineate without IV contrast

**Variant 1: Adult. Ovarian cancer. Pretreatment staging.**
**G. FDG-PET/CT skull base to mid-thigh**

Fluorine-18-2-fluoro-2-deoxy-D-glucose (FDG)-PET, when combined with CT, is a valuable tool for staging advanced ovarian cancer. Although this modality has a limited role for locoregional staging, it is helpful in identifying sites of distant metastatic disease, such as peritoneal and lymph node metastases when lesion characterization may alter clinical management. A recent meta-analysis showed no statistical difference in sensitivity between CT with IV contrast and FDG-PET/CT in the detection of stage III ovarian cancer; however, there was improved specificity with FDG-PET/CT [23].

**Variant 1: Adult. Ovarian cancer. Pretreatment staging.**
**H. FDG-PET/MRI skull base to mid-thigh**

FDG-PET, when combined with MRI, is a diagnostic alternative to more established imaging modalities, such as contrast-enhanced CT and FDG-PET/CT, and may be useful for pretreatment staging. MRI allows for high contrast and spatial resolution of soft tissues as compared with CT, and when paired with the functional capabilities of FDG it may offer improved diagnostic performance compared with FDG-PET/CT [24-26]. FDG-PET/MRI can better resolve sites of physiologic FDG activity in the pelvis (eg, pelvic ureters), distinguishing them from peritoneal deposits, which is an advantage over FDG-PET/CT [27].

**Variant 1: Adult. Ovarian cancer. Pretreatment staging.**
**I. MRI abdomen and pelvis without and with IV contrast**

MRI of the abdomen and pelvis can be used for ovarian cancer staging, specifically in certain clinical settings such as in patients with a history of fertility preservation for borderline tumors and/or inconclusive CT findings [28,29]. MRI has shown similar accuracy to CT for initial staging and has been shown to predict peritoneal tumor volume comparable to surgery [30,31].

Limitations in the use of MRI for ovarian cancer staging include nonroutine use of intraluminal gastrointestinal contrast agents and greater likelihood of patient motion due to examination length.

**Variant 1: Adult. Ovarian cancer. Pretreatment staging.**
**J. MRI abdomen and pelvis without IV contrast**

MRI of the abdomen and pelvis without IV contrast has a limited role in baseline ovarian cancer staging, but it can offer better soft tissue resolution when compared with CT abdomen pelvis without IV contrast.

**Variant 1: Adult. Ovarian cancer. Pretreatment staging.**
**K. US abdomen and pelvis transabdominal**

Transabdominal ultrasound (US) of the abdomen and pelvis is not useful for pretreatment ovarian cancer staging. A recent meta-analysis observed that although US had a good diagnostic performance in detecting disease in certain anatomical sites (eg, rectosigmoid), it had low diagnostic performance in other anatomical sites (eg, root of the mesentery) [32]. Although few studies have shown sensitivity comparable to that of CT [33], the use of US in ovarian cancer staging does not reflect universal practice or experience. National Comprehensive Cancer Network (NCCN) guidelines state that in patients with newly diagnosed ovarian cancer after recent surgical procedure that imaging with US can be used as clinically indicated [2].

**Variant 1: Adult. Ovarian cancer. Pretreatment staging.**
**L. US pelvis transvaginal**

There is no relevant literature to support the use of transvaginal pelvic US for ovarian cancer staging. Transvaginal pelvis US is helpful to determine site of origin of a pelvic mass, characterize the lesion, and assist in image-guided core biopsy [34].

**Variant 2: Adult. Ovarian cancer. Posttreatment response evaluation.**

The goal of imaging is to assess the posttreatment response evaluation in ovarian cancer. With the relevant imaging information, an appropriate clinical and follow-up plan can be determined.

**Variant 2: Adult. Ovarian cancer. Posttreatment response evaluation.**
**A. CT abdomen and pelvis with IV contrast**

CT of the abdomen and pelvis with IV and oral contrast is the most useful procedure to assess disease extent following treatment [35]. NCCN guidelines state that contrast-enhanced CT of the abdomen and pelvis can be performed for monitoring and follow-up of tumor burden [2].

**Variant 2: Adult. Ovarian cancer. Posttreatment response evaluation.**
**B. CT abdomen and pelvis without and with IV contrast**

There is no relevant literature to support the use of CT of the abdomen and pelvis without and with IV contrast for posttreatment ovarian cancer response evaluation.

**Variant 2: Adult. Ovarian cancer. Posttreatment response evaluation.**
**C. CT abdomen and pelvis without IV contrast**

CT of the abdomen and pelvis without IV contrast can be considered in certain clinical settings but offers limited ability to identify metastases, especially differentiating small peritoneal or mesenteric implants, or lymphadenopathy from bowel or adjacent organs.

**Variant 2: Adult. Ovarian cancer. Posttreatment response evaluation.**
**D. CT chest with IV contrast**

CT of the chest with IV contrast is a useful modality to assess posttreatment response in patients with ovarian cancer [2].

**Variant 2: Adult. Ovarian cancer. Posttreatment response evaluation.**
**E. CT chest without and with IV contrast**

There is no relevant literature to support the use of CT of the chest without and with IV contrast for posttreatment ovarian cancer response evaluation.

**Variant 2: Adult. Ovarian cancer. Posttreatment response evaluation.**
**F. CT chest without IV contrast**

CT of the chest without IV contrast may be considered to assess posttreatment response. CT of the chest without IV contrast can detect small pulmonary nodules; however, pleural metastases may be difficult to delineate without IV contrast.

**Variant 2: Adult. Ovarian cancer. Posttreatment response evaluation.**
**G. FDG-PET/CT skull base to mid-thigh**

FDG-PET/CT may be useful in the posttreatment response evaluation of ovarian cancer [2]. Resolution or regression of neoplastic implants with concomitant reduction in metabolic activity indicates a favorable response to therapy.

**Variant 2: Adult. Ovarian cancer. Posttreatment response evaluation.**
**H. FDG-PET/MRI skull base to mid-thigh**

FDG-PET/MRI may be useful in the posttreatment response evaluation of ovarian cancer. In postoperative patients, FDG-PET/MRI is at least equivalent to FDG-PET/CT and provides additional diagnostic benefits, such as higher soft tissue resolution [27,36].

**Variant 2: Adult. Ovarian cancer. Posttreatment response evaluation.**
**I. MRI abdomen and pelvis without and with IV contrast**

MRI of the abdomen and pelvis may be useful in the posttreatment response evaluation of ovarian cancer [2]. MRI has comparable sensitivity and specificity to CT scans [37,38].

**Variant 2: Adult. Ovarian cancer. Posttreatment response evaluation.**
**J. MRI abdomen and pelvis without IV contrast**

MRI of the abdomen and pelvis without IV contrast may be considered in the posttreatment response evaluation of ovarian cancer and may offer improved soft tissue contrast compared with CT without IV contrast.

**Variant 2: Adult. Ovarian cancer. Posttreatment response evaluation.**
**K. US abdomen and pelvis transabdominal**

There is no relevant literature to support the use of transabdominal US of the abdomen and pelvis in evaluating posttreatment response.

**Variant 2: Adult. Ovarian cancer. Posttreatment response evaluation.**
**L. US pelvis transvaginal**

There is no relevant literature to support the use of transvaginal US of the pelvis for the evaluation of posttreatment response.

**Variant 3: Adult. Ovarian cancer. Posttreatment routine surveillance. Asymptomatic patient, no suspected recurrence.**

The goal of imaging is to identify disease recurrence in asymptomatic patients on surveillance with

a history of treated ovarian cancer. With the relevant imaging information, early and unexpected recurrence can be identified, thus improving patient outcomes.

The role for routine surveillance with imaging is unclear in patients considered to be in clinical remission. Imaging has limited sensitivity for the detection of small tumor deposits in the abdomen and pelvis, with or without monitoring of cancer antigen 125 (CA-125) levels [4,39]. NCCN guidelines for follow-up after primary treatment includes scheduled clinical visits, imaging when clinically indicated (CT of the chest, abdomen, and pelvis; MRI; FDG-PET/CT; or PET), and CA-125 monitoring if initial elevation was present [2].

Surveillance imaging may be warranted in asymptomatic patients under circumstances in which tumor markers are deemed unreliable, physical examinations are inconclusive, or there is a significant risk of recurrence [2].

The patient population defined in this scenario is an asymptomatic patient in whom no recurrence is suspected (eg, no concerning physical examination findings and no elevation of serum tumor markers).

**Variant 3: Adult. Ovarian cancer. Posttreatment routine surveillance. Asymptomatic patient, no suspected recurrence.**
**A. CT abdomen and pelvis with IV contrast**

The use of surveillance with CT of the abdomen and pelvis with IV contrast is unclear in those patients considered to be in clinical remission. In one study with CT surveillance, a higher rate of optimal secondary cytoreductive surgery and improved overall survival was reported in those with asymptomatic recurrences compared with patients with symptomatic recurrences [38,40]. However, in another study of 412 patients, recurrence in 80% of the patient population was detected by either physical examination (15%), imaging (27%), CA-125 level (23%), or CA-125 level combined with imaging (35%) [4,38]. In this same study, no difference in overall survival was shown between asymptomatic and symptomatic patients with recurrence.

**Variant 3: Adult. Ovarian cancer. Posttreatment routine surveillance. Asymptomatic patient, no suspected recurrence.**
**B. CT abdomen and pelvis without and with IV contrast**

There is no relevant literature to support the use of CT of the abdomen and pelvis without and with IV contrast in asymptomatic patients without suspected recurrence.

**Variant 3: Adult. Ovarian cancer. Posttreatment routine surveillance. Asymptomatic patient, no suspected recurrence.**
**C. CT abdomen and pelvis without IV contrast**

In instances for which CT of the abdomen and pelvis is clinically indicated, CT of the abdomen and pelvis without IV contrast may be considered in some clinical instances.

**Variant 3: Adult. Ovarian cancer. Posttreatment routine surveillance. Asymptomatic patient, no suspected recurrence.**
**D. CT chest with IV contrast**

Surveillance with CT of the chest with IV contrast is unclear in patients without suspected recurrence. Per NCCN guidelines, CT of the chest may be considered as part of monitoring and follow-up, as clinically useful [2].

**Variant 3: Adult. Ovarian cancer. Posttreatment routine surveillance. Asymptomatic patient, no suspected recurrence.**
**E. CT chest without and with IV contrast**

There is no relevant literature to support the use of CT of the chest without and with IV contrast in asymptomatic patients without suspected recurrence.

**Variant 3: Adult. Ovarian cancer. Posttreatment routine surveillance. Asymptomatic patient, no suspected recurrence.**
**F. CT chest without IV contrast**

The utility of surveillance imaging is unclear in those patients considered to be in clinical remission. Per NCCN guidelines, CT of the chest may be considered as part of monitoring and follow-up, as clinically indicated [2].

**Variant 3: Adult. Ovarian cancer. Posttreatment routine surveillance. Asymptomatic patient, no suspected recurrence.**
**G. FDG-PET/CT skull base to mid-thigh**

The use of surveillance FDG-PET/CT is unclear in those patients considered to be in clinical remission. Per NCCN guidelines, PET/CT or PET may be considered as part of monitoring and follow-up, as clinically indicated [2].

**Variant 3: Adult. Ovarian cancer. Posttreatment routine surveillance. Asymptomatic patient, no suspected recurrence.**
**H. FDG-PET/MRI skull base to mid-thigh**

There is no relevant literature to support the use of FDG-PET/MRI in asymptomatic patients without suspected recurrence.

**Variant 3: Adult. Ovarian cancer. Posttreatment routine surveillance. Asymptomatic patient, no suspected recurrence.**
**I. MRI abdomen and pelvis without and with IV contrast**

Per NCCN guidelines, MRI may be considered as part of monitoring and follow-up for patients with ovarian cancer in the posttreatment routine surveillance setting, as clinically indicated [2]. As such, MRI of the abdomen without and with IV contrast may be useful.

**Variant 3: Adult. Ovarian cancer. Posttreatment routine surveillance. Asymptomatic patient, no suspected recurrence.**
**J. MRI abdomen and pelvis without IV contrast**

Per NCCN guidelines, MRI may be considered as part of monitoring and follow-up for patients with ovarian cancer in the posttreatment routine surveillance setting, as clinically indicated [2]. As such, MRI of the abdomen and pelvis without IV contrast may be useful.

**Variant 3: Adult. Ovarian cancer. Posttreatment routine surveillance. Asymptomatic patient, no suspected recurrence.**
**K. US abdomen and pelvis transabdominal**

There is no evidence to support the use of transabdominal US of the abdomen and pelvis for posttreatment surveillance in asymptomatic patients.

**Variant 3: Adult. Ovarian cancer. Posttreatment routine surveillance. Asymptomatic patient, no suspected recurrence.**
**L. US pelvis transvaginal**

There is no evidence to support the use of transvaginal US of the pelvis for posttreatment surveillance in asymptomatic patients with a history of treated ovarian cancer.

**Variant 4: Adult. Ovarian cancer. Posttreatment evaluation. Suspected or known recurrence.**

The goal of imaging is to identify sites of disease recurrence in patients with a history of treated ovarian cancer with suspected or known recurrence. The relevant imaging information can inform treatment planning and specifically guide decisions related to surgical or medical treatment.

In the evaluation for recurrence and extent of disease, imaging of the chest, abdomen, and pelvis plays a key role. The suspicion of recurrence after treatment may arise from clinical symptoms, findings during physical examination, or an increase in CA-125 levels, which would then prompt the need for imaging to evaluate for recurrence.

**Variant 4: Adult. Ovarian cancer. Posttreatment evaluation. Suspected or known recurrence. A. CT abdomen and pelvis with IV contrast**

CT of the abdomen and pelvis with IV and oral contrast is the most useful procedure for confirming recurrent disease and determining the extent in patients with suspected or known recurrence (based on clinical symptoms, physical examination, or CA-125 level) [38]. Contrast-enhanced CT has a reported sensitivity ranging from 58% to 84% and a specificity in the range of 59% to 100% in identifying tumor recurrence [41-43]. Recurrent disease often presents as peritoneal implants, both within the peritoneal cavity and along the surface of visceral organs. A limitation with CT is detecting peritoneal, mesenteric, or serosal lesions that are <5 mm in size [40].

**Variant 4: Adult. Ovarian cancer. Posttreatment evaluation. Suspected or known recurrence. B. CT abdomen and pelvis without and with IV contrast**

There is no relevant literature to support the use of CT of the abdomen and pelvis without and with IV contrast in the evaluation of suspected or known ovarian cancer recurrence.

**Variant 4: Adult. Ovarian cancer. Posttreatment evaluation. Suspected or known recurrence. C. CT abdomen and pelvis without IV contrast**

CT of the abdomen and pelvis without IV contrast offers limited ability to identify small peritoneal or mesenteric implants, or lymphadenopathy among bowel loops and other adjacent organs.

**Variant 4: Adult. Ovarian cancer. Posttreatment evaluation. Suspected or known recurrence. D. CT chest with IV contrast**

CT of the chest with IV contrast is the most useful modality in evaluating recurrent or metastatic disease in the thorax.

**Variant 4: Adult. Ovarian cancer. Posttreatment evaluation. Suspected or known recurrence. E. CT chest without and with IV contrast**

There is no relevant literature to support the use of CT of the chest without and with IV contrast in the evaluation of suspected or known ovarian cancer recurrence.

**Variant 4: Adult. Ovarian cancer. Posttreatment evaluation. Suspected or known recurrence. F. CT chest without IV contrast**

CT of the chest without IV contrast is not typically useful in this setting.

**Variant 4: Adult. Ovarian cancer. Posttreatment evaluation. Suspected or known recurrence. G. FDG-PET/CT skull base to mid-thigh**

FDG-PET/CT can be used in the evaluation of recurrent ovarian cancer [2]. In a recent meta-

analysis, FDG-PET/CT showed a sensitivity of 88% and a specificity of 89% in diagnosing recurrent epithelial ovarian cancer [44]. FDG-PET/CT can also be used as an adjunct imaging study when there is a high clinical suspicion for recurrence but CT is indeterminate [45]. Certain limitations of FDG-PET/CT including poor detection of subcentimeter metastases due to suboptimal spatial resolution of PET, high concentration of excreted FDG obscuring lesions near the bladder, and metabolic activity on or between bowel loops, particularly after surgery when adhesions or inflammation are present, may be difficult to assess [44,45].

**Variant 4: Adult. Ovarian cancer. Posttreatment evaluation. Suspected or known recurrence. H. FDG-PET/MRI skull base to mid-thigh**

In specific patient scenarios, FDG-PET/MRI may be useful in the suspected recurrence. Example scenarios include those patients with high clinical suspicion (such as rising CA-125 levels or worsening clinical symptoms) but indeterminate CT findings [27].

**Variant 4: Adult. Ovarian cancer. Posttreatment evaluation. Suspected or known recurrence. I. MRI abdomen and pelvis without and with IV contrast**

MRI of the abdomen and pelvis may be useful as a problem-solving tool in those patients with suspected or known disease recurrence and when CT is indeterminate.

**Variant 4: Adult. Ovarian cancer. Posttreatment evaluation. Suspected or known recurrence. J. MRI abdomen and pelvis without IV contrast**

MRI without IV contrast may be considered in those patients with suspected or known disease recurrence of ovarian cancer and when CT is indeterminate. However, IV contrast is preferable for the detection and characterization of lesions suspected to represent tumor deposits.

**Variant 4: Adult. Ovarian cancer. Posttreatment evaluation. Suspected or known recurrence. K. US abdomen and pelvis transabdominal**

There is no relevant literature to support the use of transabdominal US of the abdomen and pelvis in the evaluation of suspected or known ovarian cancer recurrence.

**Variant 4: Adult. Ovarian cancer. Posttreatment evaluation. Suspected or known recurrence. L. US pelvis transvaginal**

There is no relevant literature to support the routine use of pelvic US in the evaluation of suspected or known ovarian cancer recurrence following treatment.

**Summary of Highlights**

This is a summary of the key recommendations from the variant tables. Refer to the complete narrative document for more information.

- **Variant 1:** For initial pretreatment staging of ovarian cancer, CT abdomen and pelvis with IV contrast and CT chest with IV contrast are recommended complementary studies to stage the tumor and evaluate for distant metastases. MRI abdomen and pelvis without and with IV contrast, MRI abdomen and pelvis without IV contrast, CT abdomen and pelvis without IV contrast, CT chest without IV contrast, FDG-PET/MRI, and FDG-PET/CT may be appropriate in staging ovarian cancer prior to treatment.

- **Variant 2:** For follow-up imaging evaluation following treatment for ovarian cancer, CT abdomen and pelvis with IV contrast, CT chest with IV contrast, and FDG-PET/CT are

recommended complementary studies to evaluate the posttreatment response. MRI abdomen and pelvis without and with IV contrast, MRI abdomen and pelvis without IV contrast, CT abdomen and pelvis without IV contrast, CT chest without IV contrast, and FDG-PET/MRI may be appropriate in the posttreatment response evaluation.

- **Variant 3:** For posttreatment imaging evaluation in asymptomatic patients without suspected recurrence, the role of imaging is unclear in those patients considered to be in clinical remission. CT abdomen and pelvis with or without IV contrast, CT chest with or without IV contrast, MRI abdomen and pelvis without and with IV contrast, MR abdomen and pelvis without IV contrast, FDG-PET/MRI, and FDG-PET/CT may be appropriate, as clinically indicated.

- **Variant 4:** For follow-up imaging evaluation following treatment for ovarian cancer in patients with suspected or known recurrence, CT abdomen and pelvis with IV contrast, CT chest with IV contrast, and FDG-PET/CT are recommended complementary studies to evaluate for local recurrence and metastatic disease. MRI abdomen and pelvis without and with IV contrast, MRI abdomen and pelvis without IV contrast, CT abdomen and pelvis without IV contrast, CT chest without IV contrast, and FDG-PET/MRI may be appropriate in the posttreatment evaluation of patients with suspected or known recurrence.

**Supporting Documents**

The evidence table, literature search, and appendix for this topic are available at https://acsearch.acr.org/list. The appendix includes the strength of evidence assessment and the final rating round tabulations for each recommendation.

For additional information on the Appropriateness Criteria methodology and other supporting documents, please go to the ACR website at https://www.acr.org/Clinical-Resources/Clinical-Tools-and-Reference/Appropriateness-Criteria.

**Gender Equality and Inclusivity Clause**

The ACR acknowledges the limitations in applying inclusive language when citing research studies that predates the use of the current understanding of language inclusive of diversity in sex, intersex, gender, and gender-diverse people. The data variables regarding sex and gender used in the cited literature will not be changed. However, this guideline will use the terminology and definitions as proposed by the National Institutes of Health.

**Appropriateness Category Names and Definitions**

| Appropriateness Category Name | Appropriateness Rating | Appropriateness Category Definition |
|---|---|---|
| Usually Appropriate | 7, 8, or 9 | The imaging procedure or treatment is indicated in the specified clinical scenarios at a favorable risk-benefit ratio for patients. |
| May Be Appropriate | 4, 5, or 6 | The imaging procedure or treatment may be indicated in the specified clinical scenarios as an alternative to imaging procedures or treatments with |

| | | |
|---|---|---|
| | | a more favorable risk-benefit ratio, or the risk-benefit ratio for patients is equivocal. |
| May Be Appropriate (Disagreement) | 5 | The individual ratings are too dispersed from the panel median. The different label provides transparency regarding the panel's recommendation. "May be appropriate" is the rating category and a rating of 5 is assigned. |
| Usually Not Appropriate | 1, 2, or 3 | The imaging procedure or treatment is unlikely to be indicated in the specified clinical scenarios, or the risk-benefit ratio for patients is likely to be unfavorable. |

## Relative Radiation Level Information

Potential adverse health effects associated with radiation exposure are an important factor to consider when selecting the appropriate imaging procedure. Because there is a wide range of radiation exposures associated with different diagnostic procedures, a relative radiation level (RRL) indication has been included for each imaging examination. The RRLs are based on effective dose, which is a radiation dose quantity that is used to estimate population total radiation risk associated with an imaging procedure. Patients in the pediatric age group are at inherently higher risk from exposure, because of both organ sensitivity and longer life expectancy (relevant to the long latency that appears to accompany radiation exposure). For these reasons, the RRL dose estimate ranges for pediatric examinations are lower as compared with those specified for adults (see Table below). Additional information regarding radiation dose assessment for imaging examinations can be found in the ACR Appropriateness Criteria® [Radiation Dose Assessment Introduction](#) document.

## Relative Radiation Level Designations

| Relative Radiation Level* | Adult Effective Dose Estimate Range | Pediatric Effective Dose Estimate Range |
|---|---|---|
| O | 0 mSv | 0 mSv |
| ☢ | <0.1 mSv | <0.03 mSv |
| ☢☢ | 0.1-1 mSv | 0.03-0.3 mSv |
| ☢☢☢ | 1-10 mSv | 0.3-3 mSv |
| ☢☢☢☢ | 10-30 mSv | 3-10 mSv |
| ☢☢☢☢☢ | 30-100 mSv | 10-30 mSv |

*RRL assignments for some of the examinations cannot be made, because the actual patient doses in these procedures vary as a function of a number of factors (e.g., region of the body exposed to ionizing radiation, the imaging guidance that is used). The RRLs for these examinations are designated as "Varies."

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## Disclaimer

The ACR Committee on Appropriateness Criteria and its expert panels have developed criteria for

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