

**Staging and Follow-up of Ovarian Cancer
EVIDENCE TABLE**

Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
<p>1. Siegel RL, Miller KD, Jemal A. Cancer Statistics, 2017. CA Cancer J Clin. 2017;67(1):7-30.</p>	<p>Review/Other-Dx</p>	<p>N/A</p>	<p>To estimate the numbers of new cancer cases and deaths that will occur in the United States in the current year and compile the most recent data on cancer incidence, mortality, and survival.</p>	<p>Mortality data were collected by the National Center for Health Statistics. In 2017, 1,688,780 new cancer cases and 600,920 cancer deaths are projected to occur in the United States. For all sites combined, the cancer incidence rate is 20% higher in men than in women, while the cancer death rate is 40% higher. However, sex disparities vary by cancer type. For example, thyroid cancer incidence rates are 3-fold higher in women than in men (21 vs 7 per 100,000 population), despite equivalent death rates (0.5 per 100,000 population), largely reflecting sex differences in the "epidemic of diagnosis." Over the past decade of available data, the overall cancer incidence rate (2004-2013) was stable in women and declined by approximately 2% annually in men, while the cancer death rate (2005-2014) declined by about 1.5% annually in both men and women. From 1991 to 2014, the overall cancer death rate dropped 25%, translating to approximately 2,143,200 fewer cancer deaths than would have been expected if death rates had remained at their peak. Although the cancer death rate was 15% higher in blacks than in whites in 2014, increasing access to care as a result of the Patient Protection and Affordable Care Act may expedite the narrowing racial gap; from 2010 to 2015, the proportion of blacks who were uninsured halved, from 21% to 11%, as it did for Hispanics (31% to 16%). Gains in coverage for traditionally underserved Americans will facilitate the broader application of existing cancer control knowledge across every segment of the population.</p>	<p>4</p>

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2. Kurman RJ, Shih Ie M. The origin and pathogenesis of epithelial ovarian cancer: a proposed unifying theory. <i>Am J Surg Pathol.</i> 2010;34(3):433-443.	Review/Other-Dx	N/A	To discuss the origin and pathogenesis of epithelial ovarian cancer - a proposed unifying theory	No results listed in abstract.	4
3. Gadducci A, Fuso L, Cosio S, et al. Are surveillance procedures of clinical benefit for patients treated for ovarian cancer?: A retrospective Italian multicentric study. <i>Int J Gynecol Cancer.</i> 2009; 19(3):367-374.	Review/Other-Dx	412 patients	Retrospective study to assess the pattern of failures of patients with recurrent ovarian cancer followed up with different surveillance protocols.	Symptoms at relapse were referred by 81 women (19.7%). Among the 331 asymptomatic patients, the surveillance procedure that raised the suspect of recurrent disease was clinical examination in 49 (14.8%), imaging technique in 90 (27.2%), serum CA-125 in 77 (23.3%), and both serum CA-125 and imaging technique in 115 (34.7%). At univariate analysis, survival from initial diagnosis was related to stage (P=0.004), residual disease after initial surgery (P<0.0001), time to recurrence (P<0.0001), site of relapse (P=0.04), and treatment at recurrence (P<0.0001), and survival after recurrence was related to stage (P=0.01), residual disease (P<0.0001), time to recurrence (P<0.0001), and treatment at recurrence (P<0.0001). Conversely, symptoms at recurrence had no prognostic relevance. Cox proportional hazards model showed that residual disease and time to recurrence were the only independent prognostic variables for both survival from initial diagnosis (P<0.0001) and survival after recurrence (P<0.0001). There was no survival difference between asymptomatic and symptomatic patients at the time of relapse, and therefore, the diagnostic anticipation allowed by a scheduled follow-up protocol did not seem to improve the clinical outcome of patients who ultimately developed recurrent disease.	4

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4. Lutz AM, Willmann JK, Drescher CW, et al. Early diagnosis of ovarian carcinoma: is a solution in sight? <i>Radiology</i> . 2011; 259(2):329-345.	Review/Other-Dx	N/A	To review serum biomarkers and imaging tests for the early detection of ovarian cancer and provide an outlook on the potential improvements in these noninvasive diagnostic tools that may lead to successful implementation in a screening program.	TVUS is an already established first-line imaging modality in the diagnostic work-up of ovarian lesions and is therefore widely available. TVUS costs less than other imaging modalities, has reasonable diagnostic performance, and has the potential for improving sensitivity and specificity with the application of molecularly targeted microbubbles. These facts render US the most likely imaging tool to be successful for screening purposes.	4
5. Chandrashekhara SH, Thulkar S, Srivastava DN, et al. Pre-operative evaluation of peritoneal deposits using multidetector computed tomography in ovarian cancer. <i>Br J Radiol</i> . 2011; 84(997):38-43.	Observational-Dx	38 patients	Prospective study to evaluate the role of MDCT in identifying peritoneal deposits pre-operatively.	Sensitivity, specificity, positive and negative predictive values and accuracy of CT in the detection of peritoneal deposits were similar to those reported in the literature. The most common anatomical sites to have peritoneal deposits were the pouch of Douglas (18 cases) and the right subdiaphragmatic region (18 cases). Despite the improved scanning technology, image reconstruction and viewing ability of MDCT, its overall accuracy for the detection of peritoneal deposits is not significantly improved when compared with conventional CT; however, MDCT is useful in the assessment of disease at specific locations in the abdomen and pelvis.	3
6. Jeong YY, Outwater EK, Kang HK. Imaging evaluation of ovarian masses. [Review] [175 refs]. <i>Radiographics</i> . 20(5):1445-70, 2000 Sep-Oct.	Review/Other-Dx	N/A	Review values of US, CT, and MRI in the evaluation of suspected ovarian neoplasms in various clinical settings.	CT, US, and MRI have similar accuracy for staging ovarian cancer, but CT is used before and after cytoreductive surgery.	4
7. Jung SE, Lee JM, Rha SE, Byun JY, Jung JI, Hahn ST. CT and MR imaging of ovarian tumors with emphasis on differential diagnosis. <i>Radiographics</i> . 2002; 22(6):1305-1325.	Review/Other-Dx	N/A	Review typical and atypical CT and MRI findings in ovarian tumors with emphasis on differential diagnosis.	Imaging features can distinguish specific types of ovarian tumors.	4

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8. Liu J, Xu Y, Wang J. Ultrasonography, computed tomography and magnetic resonance imaging for diagnosis of ovarian carcinoma. <i>Eur J Radiol.</i> 2007; 62(3):328-334.	Meta-analysis	69 studies with 6,364 patients; 2 observers	Meta-analysis was performed to compare US, CT, and MRI in differentiation of malignant from benign ovarian tumors.	Results suggest that US techniques seems to be similar with CT and MRI in differentiation of malignant from benign ovarian tumors. The results also revealed that color Doppler flow imaging alone is significantly inferior to combined US techniques, morphologic assessment alone and contrast enhanced US in diagnosis of ovarian cancer. US morphologic assessment still is the most important and common modality in detecting ovarian cancer.	Inadequate
9. Rettenmaier NB, Rettenmaier CR, Wojciechowski T, et al. The utility and cost of routine follow-up procedures in the surveillance of ovarian and primary peritoneal carcinoma: a 16-year institutional review. <i>Br J Cancer.</i> 2010; 103(11):1657-1662.	Observational-Dx	287 patients	Retrospective study to evaluate the number of ovarian cancer and primary peritoneal cancer progressive disease cases identified via routine follow-up procedures and the corresponding cost throughout a 16-year period at a single medical institution.	In the group of 287 patients, there were 151 cases of disease progression. Serial imaging detected the highest number of progressive disease cases (66 initial and 45 confirmatory diagnoses), but the cost was high (\$13,454 per patient recurrence), whereas CA-125 testing (74 initial and 20 corroborative diagnoses) was the least expensive (\$3,924 per recurrent diagnosis). The total cost of surveillance during the 16-year period was nearly \$2,400,000. Ultimately, serial imaging and the CA-125 assay detected the highest number of ovarian cancer and peritoneal carcinomatosis progressive disease cases in comparison to physical examination and vaginal cytology, but nevertheless, all of the procedures were conducted at a considerable financial expense.	3

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10. Son H, Khan SM, Rahaman J, et al. Role of FDG PET/CT in staging of recurrent ovarian cancer. <i>Radiographics</i> . 2011; 31(2):569-583.	Review/Other-Dx	N/A	Review role of FDG-PET combine with CT in staging of recurrent ovarian cancer.	FDG-PET combined with CT is useful for detection of recurrent or residual ovarian cancer and for monitoring response to therapy. However, PET/CT may yield false-negative results in patients with small, necrotic, mucinous, cystic, or low-grade tumors. In addition, in the post-therapy setting, inflammatory and infectious processes may lead to false-positive PET/CT results. Despite these drawbacks, PET/CT is superior to CT and MRI for depiction of recurrent disease.	4
11. NCCN Clinical Practice Guidelines in Oncology. Epithelial Ovarian Cancer (including Fallopian Tube Cancer and Primary Peritoneal Cancer). Version 3.2017. Available at: https://www.nccn.org/professionals/physician_gls/pdf/ovarian.pdf .	Review/Other-Dx	N/A	To provide clinical guidelines on epithelial ovarian cancer (including fallopian tube cancer and primary peritoneal cancer).	No results stated in abstract.	4

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<p>12. Chi DS, Barlin JN, Ramirez PT, et al. Follow-up study of the correlation between postoperative computed tomographic scan and primary surgeon assessment in patients with advanced ovarian, tubal, or peritoneal carcinoma reported to have undergone primary surgical cytoreduction to residual disease of 1 cm or smaller. <i>Int J Gynecol Cancer</i>. 2010; 20(3):353-357.</p>	<p>Observational-Dx</p>	<p>67 patients</p>	<p>Follow-up study of the correlation between postoperative CT and primary surgeon assessment in patients with advanced ovarian, tubal, or peritoneal carcinoma reported to have undergone primary surgical cytoreduction to residual disease of 1 cm or smaller.</p>	<p>Postoperative CT scans confirmed the primary surgeon's assessment of no residual disease >1 cm in 38 cases (57%). In 29 cases (43%), the radiologist found residual disease >1 cm and reported it as probably or definitely malignant. Comparing concordant vs discordant findings, there was no significant difference in median progression-free survival (21 vs 17 months; P=0.365) or overall survival (60 vs 43 months; P=0.146). Age (P=0.040), stage (P=0.038), and residual disease of 0.5 mm or smaller vs 0.6 to 1.0 cm (P=0.018) were significant for overall survival on multivariate analysis. On this follow-up analysis, only age, stage, and residual disease were significant prognostic factors for overall survival. Discordant findings between the primary surgeon's assessment and the postoperative CT scan findings of residual disease was not an independent prognostic factor.</p>	<p>2</p>

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13. Risum S, Hogdall C, Loft A, et al. Prediction of suboptimal primary cytoreduction in primary ovarian cancer with combined positron emission tomography/computed tomography--a prospective study. <i>Gynecol Oncol.</i> 2008; 108(2):265-270.	Observational-Dx	179 patients	To prospectively identify combined PET/CT predictors of incomplete/suboptimal primary cytoreduction in advanced ovarian cancer.	Complete cytoreduction (no macroscopic residual disease) was achieved in 35% and optimal cytoreduction (<1 cm residual disease) was achieved in 56%. Using univariate analysis, predictors of incomplete cytoreduction were large bowel mesentery implants (P<0.003), pleural effusion (P<0.009), ascites (P<0.009) and peritoneal carcinosis (P<0.01). Large bowel mesentery implants (P<0.03) and ascites (P<0.05) were also predictors of suboptimal cytoreduction. Using multivariate analysis, large bowel mesentery implants was the only independent predictor of incomplete cytoreduction (P=0.004) and no predictor of suboptimal cytoreduction was found. PET/CT predictors of cytoreduction were found. But they should not be used to withhold patients from primary cytoreductive surgery. Authors suggest PET/CT as a supplementary image modality prior to surgery in primary ovarian cancer patients whenever accurate and comprehensive preoperative evaluation of primary tumor and metastases is desired.	2
14. Forstner R, Hricak H, Occhipinti KA, Powell CB, Frankel SD, Stern JL. Ovarian cancer: staging with CT and MR imaging. <i>Radiology.</i> 1995; 197(3):619-626.	Observational-Dx	82 women underwent CT (n=43) or MRI (n=50); 11 of these 82 underwent both	Prospective, comparative study to evaluate ovarian cancer staging and tumor resectability with CT or MRI.	Staging accuracy was similar for CT and MRI: (77% [33/43] vs 78% [39/50]). For CT, the PPV for cancer nonresectability was 100%; the NPV was 92% (37 of 40 patients). The PPV and NPV for MRI were 91% (10/11 patients) and 97% (38/39 patients). Prediction of tumor resectability is excellent for both CT and MRI.	3

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15. Azad NS, Annunziata CM, Steinberg SM, et al. Lack of reliability of CA125 response criteria with anti-VEGF molecularly targeted therapy. <i>Cancer</i> . 2008; 112(8):1726-1732.	Observational-Dx	42 patients	To analyze the utility of CA-125 to predict disease behavior in patients who were receiving sorafenib, a Raf-kinase/VEGFR2 inhibitor, and bevacizumab, an anti-VEGF monoclonal antibody.	14/15 patients had abnormal CA-125 concentrations at study entry (median 1056 U/mL; range, 67 U/mL to 9813 U/mL). Seven (47%) patients had partial response by imaging criteria. Five of these 7 patients had partial response by CA-125 criteria (71% sensitivity). 8 (53%) patients would have had partial responses if CA-125 criteria were used; only 5 were confirmed by CT (63% specificity). Imaging and CA-125 criteria combined yielded a higher total response rate of 10 of 15 (67%). Three patients with objective partial response by imaging lasting >20, >22, and >24 cycles would have terminated treatment prematurely if CA-125 had been used. CA-125 changes may not correspond to imaging response criteria for EOC patients who are receiving sorafenib and bevacizumab. Caution is recommended when using CA-125 as a response criterion of molecularly targeted agents until prospective studies validate CA-125 changes with objective imaging response results.	3
16. Jacobs I, Davies AP, Bridges J, et al. Prevalence screening for ovarian cancer in postmenopausal women by CA 125 measurement and ultrasonography. <i>BMJ</i> . 1993; 306(6884):1030-1034.	Observational-Dx	22,000 women volunteers	To assess performance of serum CA-125 and US (abdominal) for ovarian cancer screening in 22,000 asymptomatic postmenopausal women volunteers.	Screening protocol had specificity of 99.9%, PPV of 26.8%, and sensitivity of 78.6% and 57.9% at one year and two year follow-up respectively. Screening protocol is highly specific for ovarian cancer and can detect a substantial proportion of cases at a preclinical stage.	3

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17. Kim HS, Kim JW, Cho JY, et al. The role of serum CA-125 levels in early-stage epithelial ovarian cancer on preoperative CT and MRI. <i>Eur J Surg Oncol.</i> 2009; 35(8):870-876.	Observational-Dx	101 patients; 2 blinded reviewers	Retrospective study to evaluate the efficacy of serum CA-125 levels for predicting advanced-stage disease, to identify the accuracy of preoperative CT and MRI and to investigate the role of serum CA-125 levels for survival in early-stage EOC on preoperative CT and MRI.	Results of preoperative CT and MRI were concordant with no peritoneal implants outside the pelvis in 50/101 (50%) and no lymph node metastasis in 71/101 (70%) patients. The receiver operating characteristic curves showed that best cut-off values of serum CA-125 levels were 320 U/ml (71% sensitivity, 84% specificity) and 510 U/ml (67% sensitivity, 80% specificity) for the prediction of peritoneal implants outside the pelvis and lymph node metastasis. The serum CA-125 level (≥ 320 U/ml) was a significant factor for the prediction of advanced-stage disease (adjusted OR, 7.43; 95% CI, 2.39-23.04). However, it was not an independent prognostic factor for survival. Serum CA-125 levels may be very useful for the prediction of advanced-stage disease in early-stage EOC on preoperative CT and MRI.	3
18. Haglund C. Tumour marker antigen CA125 in pancreatic cancer: a comparison with CA19-9 and CEA. <i>Br J Cancer.</i> 1986;54(6):897-901.	Observational-Dx	95 patients	To compare cancer antigen (CA)19-9 and carcinoembryonic antigen (CEA) levels in patients with pancreatic cancer.	Almost half (45%) of the patients with pancreatic cancer had an elevated CA125 level (greater than 35 U ml ⁻¹). Elevated values were also found in benign diseases (24%), especially in patients with pancreatitis and benign hepatocellular diseases, but more seldom in extrahepatic cholestasis. It seems that CA125 is of limited value in the diagnosis of pancreatic cancer. Combination of the CA125 with the CA19-9 test increases the sensitivity only 6% as compared to the CA19-9 assay alone.	3

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19. Murakami M, Miyamoto T, Iida T, et al. Whole-body positron emission tomography and tumor marker CA125 for detection of recurrence in epithelial ovarian cancer. <i>Int J Gynecol Cancer</i> . 2006; 16 Suppl 1:99-107.	Observational-Dx	90 patients	Evaluate combination of PET with FDG and tumor marker CA-125, in the detection of recurrence after initial therapy for EOC.	FDG-PET confirmed recurrence in 46 patients (51%), and the recurrent site was confirmed by PET alone in 17 (37%). Sensitivity of the combination of PET and CA-125 was 97.8% with one false-negative case. Combination of FDG-PET and CA-125 is useful for the accurate detection of recurrence.	3
20. Kelly PJ, Archbold P, Price JH, Cardwell C, McCluggage WG. Serum CA19.9 levels are commonly elevated in primary ovarian mucinous tumours but cannot be used to predict the histological subtype. <i>J Clin Pathol</i> . 2010;63(2):169-173.	Observational-Dx	144 patients	To correlate the serum cancer antigen (CA) 19.9 level with the histological features in a large series of primary ovarian mucinous neoplasms.	Serum CA19.9 levels were elevated in 27%, 38% and 40% of mucinous cystadenomas, borderline mucinous tumours and mucinous carcinomas, respectively. Markedly elevated levels of serum CA19.9 were observed in each group, with the highest serum CA19.9 measurements being noted in borderline mucinous tumours. There was no relationship between the serum CA19.9 level and whether the tumours were benign, borderline or malignant (Kruskal-Wallis test p value=0.32). A weak but statistically significant correlation was found between tumour maximum dimension and CA19.9 level (Spearman's rank correlation coefficient=0.17, p=0.04). In those cases in which CA19.9 immunohistochemistry was performed, all tumours showed positive staining for CA19.9, with 60% of these cases being associated with an elevated serum CA19.9 level.	3

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21. Yedema CA, Kenemans P, Wobbes T, et al. Use of serum tumor markers in the differential diagnosis between ovarian and colorectal adenocarcinomas. <i>Tumour Biol.</i> 1992;13(1-2):18-26.	Observational-Dx	71 patients	To report on differences found, preoperatively, in serum tumor marker levels between patients with an ovarian and those with a colorectal adenocarcinoma.	Levels of CA 125, CA 15.3, CEA and CA M29 showed significant differences between both groups. In predicting ovarian cancer, sensitivity was highest for CA 125 at 94% (35 U/ml cutoff level). However, the specificity of CA 125 was at 71% low. Specificity increased significantly by using a combination of a CA 125-positive score (greater than 35 U/ml) and a simultaneous negative CEA score (less than or equal to 5 ng/ml) (specificity 100%, sensitivity 81%). A CA 125/CEA serum ratio greater than 25 resulted in the highest discriminative power with a specificity of 100% and a sensitivity of 91% resulting in an overall test accuracy of 94%.	3
22. American College of Radiology. ACR Appropriateness Criteria®: Ovarian Cancer Screening. Available at: https://acsearch.acr.org/docs/69463/Narrative/ .	Review/Other-Dx	N/A	To evaluate the appropriateness of radiologic procedures for screening for ovarian cancer	No abstract available.	4

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23. Kinkel K, Hricak H, Lu Y, Tsuda K, Filly RA. US characterization of ovarian masses: a meta-analysis. <i>Radiology</i> . 2000; 217(3):803-811.	Meta-analysis	46 studies (5,159 patients)	Meta-analysis to compare the effectiveness of current US techniques for characterizing ovarian masses.	Among 89 data sets from 46 included studies (5,159 subjects), 35 sets used morphologic information, 36 measured Doppler US indexes, 10 assessed tumor vascularity with color Doppler flow imaging, and eight used combined techniques. Summary receiver operating characteristic curves revealed significantly higher performance for combined techniques than for morphologic information (P: =.003), Doppler US indexes (P: =.003), or color Doppler flow imaging alone (P: =.001). The Q* point (and 95% CI) for combined techniques was 0.92 (0.87, 0.96) versus 0.85 (0.83, 0.88) for morphology, 0.82 (0.78, 0.86) for Doppler US, and 0.73 (0.58, 0.87) for color Doppler flow imaging. Morphologic assessment showed a trend toward better performance than color Doppler flow imaging (P: =.09) or Doppler US indexes (P: =.07). Doppler US index results were better in earlier studies (P: =.005).	Inadequate
24. Twickler DM, Moschos E. Ultrasound and assessment of ovarian cancer risk. [Review] [39 refs]. <i>AJR Am J Roentgenol</i> . 194(2):322-9, 2010 Feb.	Review/Other-Dx	N/A	Review the US characteristics of ovarian and adnexal masses and discuss the prediction of the likelihood of ovarian cancer based on these characteristics and clinical parameters.	US characteristics can be used to diagnose the classic-appearing nonneoplastic entities, benign neoplasms and malignancies. In cases in which the appearance of an ovarian mass is not classic, assignment of RR of malignancy using a multiparametric model is appropriate and beneficial for patient management.	4

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25. Ueland FR, DePriest PD, Pavlik EJ, Kryscio RJ, van Nagell JR, Jr. Preoperative differentiation of malignant from benign ovarian tumors: the efficacy of morphology indexing and Doppler flow sonography. <i>Gynecol Oncol.</i> 2003; 91(1):46-50.	Observational-Dx	442 women with ovarian tumors; Doppler studies performed in 371	To determine the efficacy of morphology indexing and Doppler flow sonography as methods to predict risk of malignancy in sonographically confirmed ovarian tumors.	Of 315 tumors with a morphology index <5 there was only 1 malignancy (a stage IA granulosa cell tumor <2 cm in diameter), whereas there were 52 malignancies in 127 tumors with a morphology index =5. Stage of disease was as follows: stage I, 33; stage II, 6; stage III, 14. Risk of malignancy was related directly to morphology index score, varying from 0.3% in tumors with a morphology index <5 to 84% in tumors with a morphology index =8. A morphology index value of =5 as indicative of malignancy was associated with the following statistical parameters: sensitivity 0.981, specificity 0.808, PPV 0.409, NPV 0.997. A pulsatility index <1.0 as indicative of malignancy was associated with: sensitivity 0.528, specificity 0.776, PPV 0.288, NPV 0.906. A resistive index <0.4 as indicative of malignancy was associated with: sensitivity 0.222, specificity 0.867, PPV 0.222, and NPV 0.867. Morphology indexing is an accurate and inexpensive method of differentiating benign from malignant ovarian tumors, and can be a valuable adjunct in treatment planning. The addition of Doppler flow studies did not improve diagnostic accuracy of morphology index.	3
26. van Nagell JR, Jr., DePriest PD, Ueland FR, et al. Ovarian cancer screening with annual transvaginal sonography: findings of 25,000 women screened. <i>Cancer.</i> 2007; 109(9):1887-1896.	Observational-Dx	25,327 women	Analysis of patients in an ovarian cancer screening project to determine the value of annual TVUS as a screening method for ovarian cancer.	TVUS had sensitivity of 85%, specificity of 98.7%, PPV of 14.01%, and NPV of 99.9%. TVUS screening, when performed annually, was associated with a decrease in disease stage at detection and with case-specific ovarian cancer mortality, but it was not effective in detecting ovarian cancers in women who had normal ovarian volume.	3

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27. Yazbek J, Ameye L, Testa AC, et al. Confidence of expert ultrasound operators in making a diagnosis of adnexal tumor: effect on diagnostic accuracy and interobserver agreement. <i>Ultrasound Obstet Gynecol.</i> 35(1):89-93, 2010 Jan.	Observational-Dx	166 patients; 3 independent assessors	To assess the degree of confidence with which expert US operators make a diagnosis of benign, borderline and invasive malignant ovarian tumors and its effect on diagnostic accuracy and interobserver agreement.	Diagnostic accuracy of all 3 experts decreased with decreasing level of confidence. Interobserver agreement between any two experts was very high when they were certain of the diagnosis (rates of agreement 98%, 99% and 100%), but it was significantly lower with a moderate level of confidence (rates of agreement 78%, 71% and 76%) ($P < 0.01$ for any two experts). The agreement in both diagnosis and confidence was lowest in cases of borderline ovarian tumors compared to benign and primary invasive lesions. The accuracy of expert US operators using pattern recognition depends on the degree of certainty with which the diagnosis is made. Interobserver variability is also influenced by the operators' confidence in making the diagnosis. Findings suggest that the level of confidence with which the diagnosis is made should be included in the US report.	4

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28. Yazbek J, Raju SK, Ben-Nagi J, Holland TK, Hillaby K, Jurkovic D. Effect of quality of gynaecological ultrasonography on management of patients with suspected ovarian cancer: a randomised controlled trial. <i>Lancet Oncol</i> 2008; 9(2):124-131.	Experiment al-Dx	165 patients 150 randomly assigned to either level II (routine) US (n=73) or to level III (expert) US (n=77)	To assess the effect of the quality of gynaecological US on the management of patients with suspected ovarian cancer in a randomized controlled trial.	More major surgical staging procedures for suspected ovarian cancer were done in the level II group than in the level III group of the study (27/73 [37%] vs 17/77 [22%], respectively; difference between groups 15% [95% CI, 0-29]; RR 1.68 [1.00-2.81]; P=0.049). The total number of surgical procedures was similar between the two groups: 35/73 (48%) in the level II group and 33/77 (43%) in the level III group (RR 1.12 [0.79-1.59]; P=0.53). The median duration of hospital stay for patients who were operated on was 6 days (range 3-13) in the level II group and 5 days (range 1-9) in the level III group (P=0.01). A likely histological diagnosis was provided to clinicians after US for 76/77 (99%) patients in the level III group compared with only 38/73 (52%) patients in the level II group. 18/150 (12%) patients recruited were eventually diagnosed with ovarian malignancy. Sensitivity and specificity of US was 2/5 (40%; [95% CI, 6.5-84.6]) and 10/10 (100%; [34-100]), respectively, in the level II group and 7/8 (88%; [47-98]) and 27/28 (96%; [82-99]), respectively, in the level III group. Improved quality of US has a measurable effect on the management of patients with suspected ovarian cancer in a tertiary gynaecology cancer centre, and results in a significant decrease in the number of major staging procedures and a shorter inpatient hospital stay.	2
29. American College of Radiology. ACR Appropriateness Criteria®: Clinically Suspected Adnexal Mass. Available at: https://acsearch.acr.org/docs/69466/Narrative/ .	Review/Ot her-Dx	N/A	To assess the appropriateness of modalities for scenarios related to clinically suspected adnexal mass.	No abstract available.	4

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30. Conway C, Zalud I, Dilella M, et al. Simple cyst in the postmenopausal patient: detection and management. J Ultrasound Med. 17(6):369-72; quiz 373-4, 1998 Jun.	Review/Other-Dx	1769 postmenopausal women	To determine the prevalence of simple ovarian cysts in asymptomatic postmenopausal women and natural history of these cysts on follow-up US.	Simple ovarian cysts are more common in postmenopausal women than previously thought and can be followed conservatively; unlikely to be malignant.	4
31. Low RN, Sebrechts CP, Barone RM, Muller W. Diffusion-weighted MRI of peritoneal tumors: comparison with conventional MRI and surgical and histopathologic findings--a feasibility study. AJR.2009; 193(2):461-470.	Observational-Dx	34 consecutive oncology patients; 2 independent observers	To evaluate the utility of single-shot spin-echo echo-planar DWI using a b value of 400-500 s/mm ² for depicting peritoneal tumors.	255 sites of peritoneal tumor were proven by surgical and histopathologic findings. The combination of DWI and conventional MRI was most sensitive and accurate for peritoneal tumors, depicting 230 and 214 tumor sites for the two observers (sensitivity, 0.90, 0.84; and accuracy, 0.91, 0.88) compared with DWI alone, which depicted 182 and 182 tumor sites with sensitivity (0.71, 0.71; and accuracy, 0.81, 0.81), and conventional MRI alone, which depicted 185 and 132 tumor sites (sensitivity, 0.73, 0.52; and accuracy, 0.81, 0.72). Peritoneal tumor showed restricted diffusion on DWI and ascites was of low signal intensity, increasing tumor conspicuity. Adding DWI to routine MRI improves the sensitivity and specificity for depicting peritoneal metastases.	2

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32. Nam EJ, Yun MJ, Oh YT, et al. Diagnosis and staging of primary ovarian cancer: correlation between PET/CT, Doppler US, and CT or MRI. <i>Gynecol Oncol.</i> 2010; 116(3):389-394.	Observational-Dx	133 women	Prospective study to compare the diagnostic accuracy of PET/CT, pelvic Doppler US, abdomino-pelvic CT, and pelvic MRI for detection of ovarian cancer and to assess the role of PET/CT in evaluating the dissemination of ovarian cancer.	Histopathology showed benign tumors in 25 patients, borderline tumors in 13 patients, and malignant tumors in 95 patients. In distinguishing malignant/borderline from benign ovarian tumors, the accuracy of PET/CT (0.921) was higher than that of pelvis US (0.830) and abdomino-pelvic CT or pelvis MRI (0.749; P=0.013). Radiologic staging by PET/CT was concordant with surgical staging in 78% of patient and PET/CT revealed 15 (15.8%) unpredicted extra-abdominal lymph node metastasis in 95 patients with ovarian cancer. PET/CT detected new, unexpected co-existing malignant tumors in 5 (3.8%) cases including two thyroid tumors, two breast tumors, and one pancreatic neuroendocrine cancer. PET/CT is superior to pelvis US, abdomino-pelvic CT, and pelvic MRI for diagnosis of malignant ovarian tumors and is useful in revealing metastatic ovarian cancer and co-existing malignant tumors. Authors suggest that PET/CT could be used during pre-operative evaluation of patients suspected to have ovarian cancer.	2
33. Rieber A, Nussle K, Stohr I, et al. Preoperative diagnosis of ovarian tumors with MR imaging: comparison with transvaginal sonography, positron emission tomography, and histologic findings. <i>AJR Am J Roentgenol.</i> 177(1):123-9, 2001 Jul.	Observational-Dx	103 consecutive patients	Comparative study to evaluate the diagnostic performance of MRI compared with TVUS and PET in patients with clinically asymptomatic adnexal findings.	Sensitivity, specificity, accuracy of MRI was 83%, 84% and 83% respectively. Sensitivity, specificity, accuracy of TVUS was 92%, 59% and 63% respectively. Sensitivity, specificity, accuracy of PET was 58%, 78% and 76% respectively. PET is unsuitable for primary diagnosis due to limited specificity. US remains the preferred screening method for adnexal masses.	3

Staging and Follow-up of Ovarian Cancer
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Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
34. Fagotti A, Fanfani F, Rossitto C, et al. A treatment selection protocol for recurrent ovarian cancer patients: the role of FDG-PET/CT and staging laparoscopy. <i>Oncology</i> . 2008; 75(3-4):152-158.	Observational-Dx	70 consecutive patients	To investigate the best diagnostic and staging strategy for recurrent ovarian cancer.	NPV of FDG-PET/CT was 83.3%, whereas the PPV was 76.9%. Specificity was 55.6%, whereas sensitivity was 93.0%. Accuracy rate was 78.6%. NPV, specificity, PPV, sensitivity, and accuracy rate of staging laparoscopy were 88.9%, 64.0%, 80.8%, 95.0% and 83.1%, respectively. Combined radiological and laparoscopic evaluation showed a NPV of 88.9%, a specificity of 59.3%, a PPV of 78.8%, a sensitivity of 95.3%, and an accuracy rate of 81.4%. The number of nodules identified by FDG-PET/CT corresponded in only 23 patients (40.3%) at laparotomy, whereas 15/30 patients were correctly diagnosed (50.0%) by staging laparoscopy. Combination of FDG-PET/CT and staging laparoscopy has a significant effect on the multimodal approach to the population of patients with recurrent ovarian cancer. Such techniques should be considered complementary, because of the potential of each one to identify a different setting of the disease.	3

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Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
35. Kitajima K, Murakami K, Yamasaki E, et al. Diagnostic accuracy of integrated FDG-PET/contrast-enhanced CT in staging ovarian cancer: comparison with enhanced CT. <i>Eur J Nucl Med Mol Imaging</i> . 2008; 35(10):1912-1920.	Observational-Dx	40 patients; 2 reviewers	To evaluate the accuracy of integrated PET/CT with FDG with IV contrast for preoperative staging of ovarian cancer, in comparison with enhanced CT, using surgical and histopathological findings as the reference standard.	Staging revealed stage I in 18 patients (IA, n=9; IB, n=3; IC, n=6), stage II in seven (IIA, n=2; IIB, n=3; IIC, n=2), stage III in 14 (IIIA, n=1; IIIB, n=3; IIIC, n=10), and stage IV in one. The results of CT and PET/CT were concordant with the final pathological staging in 22 out of 40 (55%) and 30 out of 40 (75%) cases, respectively. The overall lesion-based sensitivity improved from 37.6% (32 out of 85) to 69.4% (59 out of 85), specificity from 97.1% (578 out of 595) to 97.5% (580 out of 595), and accuracy from 89.7% (610 out of 680) to 94.0% (639 out of 680) between CT and PET/CT. There were significant differences in sensitivity and accuracy, with p values of 5.6×10^{-7} and 1.2×10^{-7} , respectively. Integrated FDG-PET/contrast-enhanced CT is a more accurate imaging modality for staging ovarian cancer and useful for selecting appropriate treatment than enhanced CT.	2

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Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
36. Pfannenberg C, Konigsrainer I, Aschoff P, et al. (18)F-FDG-PET/CT to select patients with peritoneal carcinomatosis for cytoreductive surgery and hyperthermic intraperitoneal chemotherapy. Ann Surg Oncol. 2009; 16(5):1295-1303.	Observational-Dx	22 patients with peritoneal carcinomatosis from gastrointestinal (n=13), ovarian cancer (n=8), and mesothelioma (n=1)	Retrospective analysis to predict tumor load in patients with peritoneal carcinomatosis using dual-modality FDG-PET/CT and to compare the results with those of PET and CT alone by correlating imaging findings with intraoperative staging.	There was a strong correlation between the Peritoneal Cancer Index (PCI) obtained with PET/CT and the surgical PCI with respect to the total score ($r = 0.951$) as well as in the regional analysis (small bowel, $r = 0.838$; other, $r = 0.703$). The correlation was slightly lower for CT alone (total score, $r = 0.919$; small bowel, $r = 0.754$; other, $r = 0.666$) and significantly lower ($p = 0.002$) for PET alone (total score, $r = 0.793$; small bowel, $r = 0.553$, other, 0.507). Contrast-enhanced CT is superior compared with PET alone to predict the extent of peritoneal carcinomatosis. In this patient group, the combination of both modalities (contrast enhanced PET/CT) yielded the best results and proved to be a useful tool for selecting candidates for peritonectomy and hyperthermic intraperitoneal chemotherapy.	2

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Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
37. Risum S, Hogdall C, Loft A, et al. Does the use of diagnostic PET/CT cause stage migration in patients with primary advanced ovarian cancer? <i>Gynecol Oncol.</i> 2010; 116(3):395-398.	Observational-Dx	66 patients	Prospective study to investigate if the use of diagnostic FDG-PET/CT leads to stage migration in patients with advanced ovarian cancer and to evaluate the prognostic significance of FDG-PET/CT.	Median follow-up was 30.2 months; median age was 62.5 years (range 35-85 years); 97% (64/66) had a performance status =2; 38% (25/66) underwent complete debulking (no macroscopic residual tumor); 51% (39/66) was diagnosed with PET/CT stage III and 41% (27/66) was diagnosed with PET/CT stage IV. Survival was significantly longer for patients with PET/CT stage III than for patients with PET/CT stage IV (P=0.03). Using univariate analysis, PET/CT stage III (P=0.03), complete debulking (no macroscopic residual tumor) (P=0.002), and GOG performance status =2 (P=0.04) were statistically significant prognostic variables. Using multivariate Cox regression analysis, complete debulking was the only statistically significant independent prognostic variable (P=0.02). In primary advanced ovarian cancer the use of diagnostic FDG-PET/CT leads to stage migration. Adequate staging is the foundation for ovarian cancer treatment and advanced imaging for optimal evaluation of metastases should be promoted in clinical trials. The strongest determinant of patient outcome is residual abdominal tumor after primary surgery.	2

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Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
38. Grueneisen J, Beiderwellen K, Heusch P, et al. Simultaneous positron emission tomography/magnetic resonance imaging for whole-body staging in patients with recurrent gynecological malignancies of the pelvis: a comparison to whole-body magnetic resonance imaging alone. Invest Radiol. 2014;49(12):808-815.	Observational-Dx	34 patients	To assess the diagnostic value of integrated positron emission tomography/magnetic resonance imaging (PET/MRI) for whole-body staging of patients with recurrent gynecological pelvic malignancies, in comparison to whole-body MRI alone.	Malignant lesions were present in 25 of the 34 patients. Positron emission tomography/magnetic resonance imaging offered correct and superior identification of all 25 patients with cancer recurrence, compared with MRI alone (23/25). A total of 118 lesions (malignant, 89; benign, 29) were detected. Positron emission tomography/magnetic resonance imaging correctly identified 88 (98.9%) of 89 malignant lesions, whereas MRI alone allowed for correct identification of 79 (88.8%) of the 89 malignant lesions. In addition, PET/MRI provided significantly higher lesion contrast and diagnostic confidence in the detection of malignant lesions ($P < 0.001$) compared with MRI alone.	2

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Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
39. Akin O, Sala E, Moskowitz CS, et al. Perihepatic Metastases from Ovarian Cancer: Sensitivity and Specificity of CT for the Detection of Metastases with and Those without Liver Parenchymal Invasion. Radiology. 2008; 248(2):511-517.	Observational-Dx	121 patients; 2 blinded reviewers	To determine retrospectively the sensitivity and specificity of CT for the differentiation of perihepatic metastases with and those without liver parenchymal invasion in patients with ovarian cancer by using interpretations of radiologists with different experience levels and staging laparotomy and pathologic examination findings as the reference standards.	Pathologic examination results showed 66 perihepatic metastases in 43 (36%) of 121 patients. 60 (91%) of 66 perihepatic metastases did not show signs of liver parenchymal invasion and six (9%) did. Sensitivity and specificity combinations for radiologists 1 and 2 were 56% and 87% and 86% and 99%, respectively, for detecting the presence of perihepatic metastases and 46% and 97% and 82% and 100%, respectively, for determining liver regions involved. Radiologists 1 and 2 had sensitivities of 35% and 80%, respectively, for detecting regions with perihepatic metastases without liver parenchymal invasion and sensitivities of 50% and 100%, respectively, for detecting regions with perihepatic metastases with liver parenchymal invasion. CT can be used to detect perihepatic metastases in patients with ovarian cancer and allows for distinction between metastases that invade the liver and those that do not.	2

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Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
40. Kolev V, Mironov S, Mironov O, et al. Prognostic significance of supradiaphragmatic lymphadenopathy identified on preoperative computed tomography scan in patients undergoing primary cytoreduction for advanced epithelial ovarian cancer. <i>Int J Gynecol Cancer</i> . 2010; 20(6):979-984.	Observational-Tx	212 patients	Retrospective chart review to determine the prognostic significance of enlarged supradiaphragmatic nodes noted on preoperative CT scan in patients undergoing primary cytoreduction for advanced EOC.	With a median follow-up time of 52 months, median overall survival for the entire cohort was 48 months. Of 212 patients, 92 (43%) had supradiaphragmatic adenopathy. Median survival was 50 months for patients without adenopathy and 45 months for patients with adenopathy (P=0.09). Of the 212 patients, 155 (73%) underwent optimal cytoreduction. In these patients, median survival was 55 months for the 91 without adenopathy and 50 months for the 64 patients with supradiaphragmatic adenopathy (P=0.09). Authors observed a trend toward worse survival in patients with enlarged supradiaphragmatic nodes. The prognostic impact of supradiaphragmatic adenopathy remains uncertain and deserves further study.	2

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Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
41. Thomassin-Naggara I, Bazot M, Darai E, Callard P, Thomassin J, Cuenod CA. Epithelial ovarian tumors: value of dynamic contrast-enhanced MR imaging and correlation with tumor angiogenesis. <i>Radiology</i> . 2008; 248(1):148-159.	Observational-Dx	41 women with 48 epithelial ovarian tumors	To retrospectively evaluate the diagnostic performance of dynamic contrast material-enhanced MRI for the characterization of ovarian epithelial tumors, by using histologic findings as the reference standard, and to correlate dynamic contrast-enhanced MRI findings with angiogenesis biomarkers.	Enhancement amplitude was higher for invasive tumors than for benign (P<.001) and borderline (P<.05) tumors. Time of half rising [T (max)] was longer for benign tumors than for borderline (P<.05) and invasive (P<.01) tumors. Maximal slope was steeper for invasive tumors than for benign (P<.001) and borderline (P<.001) tumors. PCI was lower in invasive tumors than in borderline (P<.05) and benign (P<.05) tumors. Microvessels showed stronger immunohistochemical vascular endothelial growth factor receptor 2 (VEGFR-2) expression in invasive tumors than in benign or borderline tumors (P<.05). Maximal slope correlated with a lower PCI (r = -0.34, P=.04) and stronger VEGFR-2 expression by using both epithelial (r = 0.41, P<.01) and endothelial (r = 0.66, P<.001) cells. The early enhancement patterns of ovarian epithelial tumors on dynamic contrast-enhanced MRI can help distinguish among benign, borderline, and invasive tumors and were found to correlate with tumoral angiogenic status.	3

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Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
42. Buy JN, Ghossain MA, Scioc C, et al. Epithelial tumors of the ovary: CT findings and correlation with US. <i>Radiology</i> . 1991; 178(3):811-818.	Observational-Dx	130 patients with 170 ovarian tumors	Prospective study to assess the value of CT in detection, characterization, and extension of epithelial tumors of the ovary and to compare the CT findings with US, surgical, and pathologic findings.	CT enabled detection of 148 of 170 tumors (87%), and US enabled detection of 118 of 138 tumors (86%). Benign serous cystadenomas (n = 42) were correctly characterized with a sensitivity of 69% at CT and 70% at US. Benign mucinous cystadenomas (n = 21) were correctly characterized with a sensitivity of 62% at CT and 50% at US. Malignancy was suggested in nine of 14 patients (64%) with borderline tumors at CT and in five of 14 (36%) at US. The overall accuracy of characterization of benign versus malignant tumors (including borderline tumors) was 94% with CT and 80% with US. In the 108 patients studied with both CT and US, the sensitivity of CT was significantly superior to that of US (P less than .03), whereas there was no significant difference in specificity (P = .125).	2
43. Ghossain MA, Buy JN, Ligner C, et al. Epithelial tumors of the ovary: comparison of MR and CT findings. <i>Radiology</i> . 1991; 181(3):863-870.	Observational-Dx	40 patients with 50 ovarian epithelial tumors of the ovary	Retrospective study to compare CT with MR in ovarian epithelial tumors.	Accuracy for overall characterization of benign vs malignant tumors was 86% with MRI and 92% with CT. There was no difference in sensitivity (P=1) or specificity (P=.5).	3

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Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
44. Semelka RC, Lawrence PH, Shoenut JP, Heywood M, Kroeker MA, Lotocki R. Primary ovarian cancer: prospective comparison of contrast-enhanced CT and pre-and postcontrast, fat-suppressed MR imaging, with histologic correlation. J Magn Reson Imaging. 1993; 3(1):99-106.	Observational-Dx	16 patients	Prospective comparison of contrast-enhanced CT and precontrast and postcontrast, fat-suppressed MRI, with histologic correlation in ovarian cancer staging.	MRI showed the internal architecture of ovarian tumors better than CT in 9 patients and equivalently in 7. MRI showed the relationship between ovarian tumors and adjacent pelvic structures (uterus [n=9], sigmoid colon [n=7], bladder [n=7], and rectum [n=3]) better than CT in 9 patients and equivalently in 7. Intra-abdominal extent of disease was better defined on MRI than on CT images in 9 patients, equivalently in 6, and worse in one. Peritoneal metastases 1-2 cm in diameter were detected on MRI and missed on CT scans in 6 patients. Results suggest MRI is at least equivalent and may be superior to CT in the evaluation of ovarian malignancy.	2
45. Qayyum A, Coakley FV, Westphalen AC, Hricak H, Okuno WT, Powell B. Role of CT and MR imaging in predicting optimal cytoreduction of newly diagnosed primary epithelial ovarian cancer. Gynecol Oncol. 2005; 96(2):301-306.	Observational-Dx	137 women	To determine the relative accuracy of CT or MRI in the detection of inoperable tumor sites prior to cytoreductive surgery in a large series of patients with newly diagnosed primary epithelial ovarian cancer.	Cytoreductive surgery was suboptimal in 21 of the 137 (15%) patients. 16 of these patients had inoperable tumor on preoperative imaging, while one additional patient had apparently inoperable tumor on imaging but was optimally debulked at surgery. The sensitivity, specificity, PPV and NPV of preoperative imaging for the prediction of suboptimal debulking were 76% (16/21), 99% (115/116), 94% (16/17), and 96% (115/120), respectively. CT and MRI were equally effective (P=1.0) in the detection of inoperable tumor. Preoperative CT and MRI are equally accurate in the detection of inoperable tumor and the prediction of suboptimal debulking in newly diagnosed epithelial ovarian cancer. This suggests imaging may help select patients who might be more appropriately managed by neoadjuvant chemotherapy.	2

**Staging and Follow-up of Ovarian Cancer
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Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
46. Mutch DG, Prat J. 2014 FIGO staging for ovarian, fallopian tube and peritoneal cancer. <i>Gynecol Oncol.</i> 2014;133(3):401-404.	Review/Other-Dx	N/A	To standardize care and staging systems throughout the world by presenting the 2014 FIGO staging for ovarian, fallopian tube, and peritoneal cancer.	No abstract available.	4

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Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
47. Przybycin CG, Kurman RJ, Ronnett BM, Shih Ie M, Vang R. Are all pelvic (nonuterine) serous carcinomas of tubal origin? <i>Am J Surg Pathol.</i> 2010;34(10):1407-1416.	Review/Ot her-Dx	52 cases	To determine if all pelvic (nonuterine) serous carcinomas are of tubal origin.	These 52 cases were classified as ovarian (n=37), peritoneal (n=8), or fallopian tube (n=7) in origin as per conventional criteria based on disease distribution. The presence of TIC and its location and relationship to invasive carcinoma in the fallopian tubes and ovaries were assessed. Among the 45 cases of ovarian/peritoneal origin, carcinoma subtypes included 41 high-grade serous, 1 endometrioid, 1 mucinous, 1 high-grade, not otherwise specified, and 1 malignant mesodermal mixed tumor. TIC was identified in 24 cases (59%) of high-grade serous carcinoma but not among any of the other subtypes; therefore, the term serous TIC (STIC) is a more specific appellation. STICs were located in the fimbriated end of the tube in 22 cases (92%) and in the ampulla in 2 (8%); they were unilateral in 21 (88%) and bilateral in 3 (13%). STICs in the absence of an associated invasive carcinoma in the same tube were detected in 7 cases (30%) and with invasive carcinoma in the same tube in 17 (71%). Unilateral STICs were associated with bilateral ovarian involvement in 15 cases and unilateral (ipsilateral) ovarian involvement in 5 (the remaining case with a unilateral STIC had a primary peritoneal tumor with no ovarian involvement); the bilateral STICs were all associated with bilateral ovarian involvement. Six of the 7 primary tubal tumors were high-grade serous carcinomas, and 4 of these 6 (67%) had STICs. Based on conventional criteria, 70%, 17%, and 13% of high-grade serous carcinomas qualified for classification as ovarian, peritoneal, and tubal in origin, respectively; however, using STIC as a supplemental criterion to define a case as	4

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				tubal in origin, the distribution was modified to 28%, 8%, and 64%, respectively. Features of tumors in the ovary that generally suggest metastatic disease (bilaterality, small size, nodular growth pattern, and surface plaques) were identified with similar frequency in cases with and without STIC and were, therefore, not predictive of tubal origin. The findings, showing that nearly 60% of high-grade pelvic (nonuterine) serous carcinomas are associated with STICs, are consistent with the proposal that the fallopian tube is the source of a majority of these tumors.	
48. American College of Radiology. Manual on Contrast Media. Available at: https://www.acr.org/Clinical-Resources/Contrast-Manual .	Review/Other-Dx	N/A	Guidance document on contrast media to assist radiologists in recognizing and managing risks associated with the use of contrast media.	N/A	4
49. Hou JY, Kelly MG, Yu H, et al. Neoadjuvant chemotherapy lessens surgical morbidity in advanced ovarian cancer and leads to improved survival in stage IV disease. <i>Gynecol Oncol.</i> 2007; 105(1):211-217.	Observational-Tx	172 patients	Retrospective review to compare the survival and peri-operative morbidities of patients with advanced EOC (stage IIIc and IV) treated with PDS followed by adjuvant platinum-based chemotherapy, or neoadjuvant chemotherapy followed by cytoreductive surgery.	Cytoreductive surgery patients had significantly less intraoperative blood loss, operating time, units of transfusion, and shorter hospital stay (P<0.05). Optimal cytoreduction was achieved in 95% of cytoreductive surgery patients, vs 71% of PDS group (P<0.001). Study shows that cytoreductive surgery is associated with less peri-operative morbidity, less need for further aggressive surgery, and similar survival.	2
50. Tangjitgamol S, Manusirivithaya S, Laopaiboon M, Lumbiganon P. Interval debulking surgery for advanced epithelial ovarian cancer: a Cochrane systematic review. <i>Gynecol Oncol.</i> 2009; 112(1):257-264.	Review/Other-Dx	3 randomized trials (781 women); 2 observers	Systematic review to assess the effectiveness of interval debulking surgery (IDS) for patients with advanced stage EOC.	Study could not conclude whether IDS would improve the survival of women with advanced EOC compared with conventional treatment. IDS appeared to yield benefit only in patients whose primary surgery was not performed by expert surgeons.	4

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Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
51. Lund B, Jacobsen K, Rasch L, Jensen F, Olesen K, Feldt-Rasmussen K. Correlation of abdominal ultrasound and computed tomography scans with second- or third-look laparotomy in patients with ovarian carcinoma. <i>Gynecol Oncol.</i> 1990; 37(2):279-283.	Observational-Dx	50 US and CT scans performed in 47 patients	Prospective study comparing US and CT to SLL in ovarian cancer to determine the best noninvasive means of evaluating response in patients with advanced ovarian carcinoma.	US had accuracy of 50%, PPV of 80%, and NPV of 47%. CT had accuracy of 46%, PPV of 60%, and NPV of 44%. Neither CT nor US sensitive to preclude SLL.	2
52. Meyer JI, Kennedy AW, Friedman R, Ayoub A, Zepp RC. Ovarian carcinoma: value of CT in predicting success of debulking surgery. <i>AJR.</i> 1995; 165(4):875-878.	Observational-Dx	28 women	Retrospective study to determine the value of CT in predicting the success of debulking surgery in ovarian cancer.	10-point preoperative CT scoring system, a score of =3 identified patients whose tumors were not successfully debulked with a sensitivity of 58% (7/12) and a specificity of 100% (16/16). Study shows CT can be used to predict the success of PDS in women with metastatic ovarian carcinoma.	3
53. Nelson BE, Rosenfield AT, Schwartz PE. Preoperative abdominopelvic computed tomographic prediction of optimal cytoreduction in epithelial ovarian carcinoma. <i>J Clin Oncol.</i> 1993; 11(1):166-172.	Observational-Dx	51 women; 42 CT scans	Retrospective analysis of CT to assess the ability of CT to predict the likelihood of optimal primary tumor cytoreduction in women with epithelial ovarian carcinoma.	CT had sensitivity of 92.3%, specificity of 79.3%, PPV of 67% and NPV of 96%. CT is accurate for the prediction of successful surgical cytoreduction.	3
54. Kebapci M, Akca AK, Yalcin OT, Ozalp SS, Calisir C, Mutlu F. Prediction of suboptimal cytoreduction of epithelial ovarian carcinoma by preoperative computed tomography. <i>Eur J Gynaecol Oncol.</i> 2010;31(1):44-49.	Observational-Dx	48 patients	To evaluate the diagnostic efficacy of preoperative abdominal-pelvic computed tomography (CT) for the prediction of suboptimal cytoreduction of epithelial ovarian carcinoma (EOC) at primary surgery, CT scans of 48 patients who underwent primary surgery for EOC were retrospectively analyzed.	Suboptimal surgery, defined as leaving a residual tumor mass > 1 cm, was determined in 18 (37.5%) patients. CT predicted suboptimal cytoreduction with 83.3% (15/18) sensitivity, 90% (27/30) specificity and 87.5% (42/48) accuracy. PPV and NPV values were 83.3% (15/18) and 90% (27/30), respectively.	2
55. Rutten IJ, van de Laar R, Kruitwagen RF, et al. Prediction of incomplete primary debulking surgery in patients with advanced ovarian cancer: An external validation study of three models using computed tomography. <i>Gynecol Oncol.</i> 2016;140(1):22-28.	Observational-Dx	151 patients	To test the ability of three prospectively developed computed tomography (CT) models to predict incomplete primary debulking surgery in patients with advanced (International Federation of Gynecology and Obstetrics stages III-IV) ovarian cancer.	The AUC of the Ferrandina models was 0.56, 0.59 and 0.59 in model A, and 0.55, 0.60 and 0.59 in model B for readers 1, 2 and 3, respectively. The AUC of Gerestein's model was 0.69, 0.61 and 0.69 for readers 1, 2 and 3, respectively. AUC values of 0.69 and 0.63 for reader 1 and 3 were found for subjective assessment.	2

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Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
56. Suidan RS, Ramirez PT, Sarasohn DM, et al. A multicenter prospective trial evaluating the ability of preoperative computed tomography scan and serum CA-125 to predict suboptimal cytoreduction at primary debulking surgery for advanced ovarian, fallopian tube, and peritoneal cancer. <i>Gynecol Oncol.</i> 2014;134(3):455-461.	Observational-Dx	350 patients	To assess the ability of preoperative computed tomography (CT) scan of the abdomen/pelvis and serum cancer antigen (CA)-125 to predict suboptimal (>1cm residual disease) primary cytoreduction in advanced ovarian, fallopian tube, and peritoneal cancer.	From 7/2001 to 12/2012, 669 patients were enrolled; 350 met eligibility criteria. The optimal debulking rate was 75%. On multivariate analysis, three clinical and six radiologic criteria were significantly associated with suboptimal debulking: age \geq 60 years ($p=0.01$); CA-125 \geq 500 U/mL ($p<0.001$); ASA 3-4 ($p<0.001$); suprarenal retroperitoneal lymph nodes >1 cm ($p<0.001$); diffuse small bowel adhesions/thickening ($p<0.001$); and lesions >1 cm in the small bowel mesentery ($p=0.03$), root of the superior mesenteric artery ($p=0.003$), perisplenic area ($p<0.001$), and lesser sac ($p<0.001$). A 'predictive value score' was assigned for each criterion, and the suboptimal debulking rates of patients who had a total score of 0, 1-2, 3-4, 5-6, 7-8, and \geq 9 were 5%, 10%, 17%, 34%, 52%, and 74%, respectively. A prognostic model combining these nine factors had a predictive accuracy of 0.758.	3
57. Schmidt S, Meuli RA, Ahtari C, Prior JO. Peritoneal carcinomatosis in primary ovarian cancer staging: comparison between MDCT, MRI, and 18F-FDG PET/CT. <i>Clin Nucl Med.</i> 2015;40(5):371-377.	Observational-Dx	15 women	To compare multidetector CT (MDCT), MRI, and FDG PET/CT imaging for the detection of peritoneal carcinomatosis (PC) in ovarian cancer.	Ten women had PC (67%). Altogether, 135 abdominopelvic sites were compared. Multidetector CT, MRI, and FDG PET/CT had a sensitivity of 96%, 98%, and 95%, and specificity was 92%, 84%, and 96%, respectively. Corresponding receiver operating characteristics area was 0.94, 0.90, and 0.96, respectively, without any significant differences between them ($P = 0.12$). FDG PET/CT detected supradiaphragmatic disease in 3 women (20%) not seen by MDCT or MRI.	2

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Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
58. Pannu HK, Horton KM, Fishman EK. Thin section dual-phase multidetector-row computed tomography detection of peritoneal metastases in gynecologic cancers. <i>J Comput Assist Tomogr.</i> 2003; 27(3):333-340.	Observational-Dx	17 women; 2 observers	Retrospectively review CT scans to determine the sensitivity, specificity, and accuracy of MDCT in detection of peritoneal implants from ovarian cancer.	Sensitivity, specificity, and accuracy are improved using MDCT compared to axial CT imaging. Specificities nearly 100% for most sites of disease. Accuracy >80% for all sites except diaphragm and pelvis.	2
59. Hynninen J, Kempainen J, Lavonius M, et al. A prospective comparison of integrated FDG-PET/contrast-enhanced CT and contrast-enhanced CT for pretreatment imaging of advanced epithelial ovarian cancer. <i>Gynecol Oncol.</i> 2013;131(2):389-394.	Observational-Dx	41 women	To compare (18)F-fluorodeoxyglucose (FDG) positron emission tomography/contrast-enhanced computed tomography (PET/CT) to contrast-enhanced CT for the detection of dissemination into the abdominal cavity preventing successful primary debulking surgery.	FDG-PET/CT was superior to conventional CT for the detection of carcinomatosis in subdiaphragmatic peritoneal surfaces (p=0.020) and in the bowel mesentery (p=0.001). Patient-based analysis of upper abdominal areas requiring extensive surgical procedures showed no significant differences between the two imaging methods. The sensitivity of PET/CT and CT was poor in certain areas of the peritoneal cavity (64% vs. 27% in the small bowel mesentery and 65% vs. 55% in the right upper abdomen). Extra-abdominal disease spread was detected by PET/CT in 32 patients and by CT in 25 patients.	2
60. Griffin N, Grant LA, Freeman SJ, et al. Image-guided biopsy in patients with suspected ovarian carcinoma: a safe and effective technique? <i>Eur Radiol.</i> 2009; 19(1):230-235.	Observational-Dx	60 consecutive image-guided percutaneous biopsies	To determine the diagnostic accuracy and complication rate of percutaneous biopsies performed under US or CT guidance.	47 patients had omental biopsies, 12 pelvic mass biopsies, and 1 para-aortic lymph node biopsy. 35 biopsies were performed under US, 25 under CT guidance. Biopsy needle gauges ranged from 14-20 swg with two to five passes for each patient. There were no complications. Histology was obtained in 52 (87%) patients. Percutaneous image-guided biopsy of peritoneal disease or pelvic mass is safe with high diagnostic accuracy. The large-gauge biopsy needle is as safe as the small gauge needle, but has the added value of obtaining tissue samples for immunohistochemistry and genomic studies.	3

**Staging and Follow-up of Ovarian Cancer
EVIDENCE TABLE**

Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
<p>61. Hewitt MJ, Anderson K, Hall GD, et al. Women with peritoneal carcinomatosis of unknown origin: Efficacy of image-guided biopsy to determine site-specific diagnosis. BJOG. 2007; 114(1):46-50.</p>	<p>Observational-Dx</p>	<p>149 consecutive women</p>	<p>Retrospective study to evaluate the use of image-guided biopsy in routine clinical practice to obtain site-specific diagnoses in women presenting with peritoneal carcinomatosis.</p>	<p>In 138 (93%) women, a site-specific cancer diagnosis was made on the image-guided biopsy (including 111 müllerian tract, 8 gastrointestinal tract, 4 breast and 3 lymphoma); in ten women, a repeat biopsy was necessary, giving an overall failure rate of 7%. In a further 6 women, malignancy was confirmed but a site-specific diagnosis could not be made, and in four women, biopsy showed benign tissue. A site-specific diagnosis was obtained in 29 of the 32 women (94%) with previous malignancy, of which 18/32 (56%) showed a new primary cancer. Image-guided biopsy is a safe and accurate technique for providing site-specific diagnoses in women with peritoneal carcinomatosis in routine clinical practice, including those with a previous relevant malignancy. Image-guided biopsy can replace laparoscopic or open biopsy in defining primary therapeutic options.</p>	<p>3</p>

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Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
62. Souza FF, Mortele KJ, Cibas ES, Erturk SM, Silverman SG. Predictive value of percutaneous imaging-guided biopsy of peritoneal and omental masses: results in 111 patients. <i>AJR</i> . 2009; 192(1):131-136.	Observational-Dx	111 patients	Retrospective study to determine the predictive value of percutaneous imaging-guided biopsy of peritoneal and omental masses.	Overall diagnostic rate was 89% (99/111); there were 86 true-positive, one false-positive, six true-negative, and six false-negative results (sensitivity, 93% [86/92]; specificity, 86% [6/7]; NPV, 50% [6/12]). There were no statistically significant differences between patients with and without known cancer. Among 79 patients with known cancer, 52 (66%) had metastatic disease from the known cancer; in eight (10%) patients, the biopsy result yielded new primary cancers. Of 32 patients with no known cancer, 23 (72%) had malignant results. Biopsy test characteristics did not differ with respect to mass or needle size. Minor complications were seen in three (3%) patients. Percutaneous imaging-guided biopsy of peritoneal and omental masses is a safe, effective procedure that is useful in clinical practice. A second malignancy was revealed in a substantial number of patients with a known primary cancer. A new malignancy was diagnosed in most patients without a history of cancer.	3
63. Spencer JA, Weston MJ, Saidi SA, Wilkinson N, Hall GD. Clinical utility of image-guided peritoneal and omental biopsy. <i>Nat Rev Clin Oncol</i> . 2010; 7(11):623-631.	Review/Other-Dx	N/A	Review clinical applications of image-guided core biopsy and omental biopsy and examine the currently available alternative options.	With current clinical trials for ovarian cancer directed to specific morphological subtypes of the disease, image-guided core biopsy offers a rapid and well tolerated nonsurgical means of providing this information.	4

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Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
64. Axtell AE, Lee MH, Bristow RE, et al. Multi-institutional reciprocal validation study of computed tomography predictors of suboptimal primary cytoreduction in patients with advanced ovarian cancer. <i>J Clin Oncol.</i> 2007; 25(4):384-389.	Observational-Dx	65 patients	Retrospective, blinded study to identify features on preoperative CT scans to predict suboptimal primary cytoreduction in patients treated for advanced ovarian cancer in institution A. Reciprocally cross validate predictors identified with those from two previously published cohorts from institutions B and C.	High accuracy rates of CT predictors of suboptimal cytoreduction in the original cohorts could not be confirmed in the cross validation. Preoperative CT predictors should be used with caution when deciding between surgical cytoreduction and neoadjuvant chemotherapy. Diaphragm disease and large-bowel mesentery implants were the only CT predictors of suboptimal cytoreduction.	3
65. Megibow AJ, Bosniak MA, Ho AG, Beller U, Hulnick DH, Beckman EM. Accuracy of CT in detection of persistent or recurrent ovarian carcinoma: correlation with second-look laparotomy. <i>Radiology.</i> 1988; 166(2):341-345.	Observational-Dx	39 patients	Retrospective study to compare CT to SLL in ovarian cancer.	There were 16 true-positive, ten true-negative, two false-positive, and 11 false-negative examinations. Five false-negative studies resulted from microscopic disease found at SLL. In group 1, there were eight false-negative studies. In five, macroscopic disease was not recognized. In group 2, there were three false-negative studies; in one, macroscopic disease was not recognized. Statistical analysis showed an observable improvement in the accuracy in group 2. The differences included use of faster scanners, routine use of thin sections for the pelvis, and air-contrast colonic opacification in group 2.	3
66. Reuter KL, Griffin T, Hunter RE. Comparison of abdominopelvic computed tomography results and findings at second-look laparotomy in ovarian carcinoma patients. <i>Cancer.</i> 1989; 63(6):1123-1128.	Observational-Dx	35 women	To compare results of restaging laparotomy with the preoperative abdominopelvic CT findings to evaluate the accuracy of CT for determining tumor status.	CT accuracy 86%, sensitivity 84%, specificity 88%. CT is not accurate enough to completely replace the restaging laparotomy, its high accuracy in determining residual disease after treatment is helpful for patient management.	3
67. Silverman PM, Osborne M, Dunnick NR, Bandy LC. CT prior to second-look operation in ovarian cancer. <i>AJR.</i> 1988; 150(4):829-832.	Observational-Dx	48 patients	Retrospective review to evaluate the role of CT in detecting residual or recurrent tumor in patients in whom 64 abdominopelvic CT scans were obtained. 48 patients had a second-look operation, and 8 of these patients had an additional third-look operation.	CT sensitivity 40%, specificity 99%. CT obviates surgery in bulky disease, but insensitive to minimal disease and carcinomatosis.	3

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Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
68. Woodward PJ, Hosseinzadeh K, Saenger JS. From the archives of the AFIP: radiologic staging of ovarian carcinoma with pathologic correlation. <i>Radiographics</i> . 2004; 24(1):225-246.	Review/Other-Dx	N/A	Review the use of CT and MRI for preoperative staging of ovarian cancer.	Imaging can affect choice of treatment and enable optimal debulking of ovarian cancer, but no imaging modality can demonstrate clinically important microscopic disease.	4
69. MacKintosh ML, Rahim R, Rajashanker B, et al. CT scan does not predict optimal debulking in stage III-IV epithelial ovarian cancer: a multicentre validation study. <i>J Obstet Gynaecol</i> . 2014;34(5):424-428.	Observational-Dx	91 patients	To design and validate a model of CT findings that predict suboptimal cytoreduction in primary surgery (PS) for Stage III-IV epithelial ovarian cancer (EOC).	Radiological features predictive of suboptimal cytoreduction were identified and the model tested in a second cohort undergoing PS in Manchester, June 2005 - March 2007 (n = 35). In the London cohort, liver surface disease and infrarenal para-aortic lymph node involvement predicted suboptimal cytoreduction with 80% accuracy. Accuracy of these predictors dropped to 63% when applied to the Manchester cohort.	2
70. Cohen-Mouly S, Badia A, Bats AS, et al. Role of video-assisted thoracoscopy in patients with ovarian cancer and pleural effusion. <i>Int J Gynecol Cancer</i> . 2009; 19(9):1662-1665.	Observational-Dx	16 video-assisted thoracoscopy procedures in 15 patients	To retrospectively evaluate the feasibility of video-assisted thoracoscopy for staging advanced ovarian cancer, to measure the performance of preoperative CT for diagnosing pleural metastases, to assess the correlation between pleural and abdominal involvement, and to measure the impact of video-assisted thoracoscopy on patient management.	The right side of the chest was examined 12 times; and the left side, 4 times. There were no complications; 1 procedure was stopped because of ventilatory intolerance. Video-assisted thoracoscopy identified metastases <1 cm in 5 patients and >1 cm in 2 additional patients; there was no evidence of pleural involvement in 6 patients. CT had 14% sensitivity and 25% specificity for pleural status determination, using video-assisted thoracoscopy biopsy as the reference standard. Pleural involvement did not correlate with involvement of the hepatic pedicle, mesentery, or right side of the diaphragm. Video-assisted thoracoscopy performs better than CT for evaluating pleural involvement in ovarian cancer. Video-assisted thoracoscopy supplies accurate data on thoracic involvement, which does not seem predictable from the peritoneal involvement. Video-assisted thoracoscopy may impact patient management.	4

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Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
<p>71. Mironov O, Ishill NM, Mironov S, et al. Pleural effusion detected at CT prior to primary cytoreduction for stage III or IV ovarian carcinoma: effect on survival. Radiology. 2011; 258(3):776-784.</p>	<p>Observational-Dx</p>	<p>203 patients stage III (n=172) or IV (n=31)</p>	<p>Retrospective study to determine the prognostic importance of pleural effusions on preoperative CT images in patients with advanced epithelial ovarian cancer.</p>	<p>Median survival was 50 months (95% CI: 45, 55 months) for patients with stage III disease and 41 months (95% CI: 27, 58 months) for patients with stage IV disease. Readers 1 and 2 found pleural effusions in 40 and 41 stage III and 20 and 21 stage IV patients, respectively. At multivariate analysis, after controlling for stage, age at surgery, preoperative serum CA-125 level, debulking status, and ascites, moderate-to-large pleural effusion on CT images was significantly associated with worse overall survival (reader 1: HR = 2.27 [95% CI: 1.31, 3.92], P<.01; reader 2: HR = 2.25 [95% CI: 1.26, 4.01], P=.02). Preoperative CA-125 level, debulking status, and ascites were also significant survival predictors (P=.03 for all for both readers). Readers agreed substantially in distinguishing small from moderate-to-large effusions (? = 0.764). Moderate-to-large pleural effusion on preoperative CT images in patients with stage III or IV epithelial ovarian cancer was independently associated with poorer overall survival after controlling for age, preoperative CA-125 level, surgical stage, ascites, and cytoreductive status.</p>	<p>2</p>

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Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
72. Dachman AH, Visweswaran A, Battula R, Jameel S, Waggoner SE. Role of chest CT in the follow-up of ovarian adenocarcinoma. AJR. 2001; 176(3):701-705.	Review/Other-Dx	96 patients	To describe the prevalence of metastatic chest disease in ovarian adenocarcinoma as seen on CT and determine whether routine chest CT added any pertinent information to the follow-up examination of patients with ovarian adenocarcinoma.	266 CT scans were obtained. Forty (41.7%) of the 96 patients had abnormalities attributable to metastatic chest disease on one or more scans. In the absence of disease progression in the abdomen and pelvis, chest disease progression was seen in only six (2.7%) of the 226 follow-up CT scans. Five of the six patients had rising CA-125 levels. Correlation of the findings of abdominal and pelvic CT with the physical findings and the CA-125 levels serves as effective follow-up in patients with ovarian adenocarcinoma. The contribution of additional chest CT in these patients is small.	4

**Staging and Follow-up of Ovarian Cancer
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Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
73. Sella T, Rosenbaum E, Edelmann DZ, Agid R, Bloom AI, Libson E. Value of chest CT scans in routine ovarian carcinoma follow-up. AJR. 2001; 177(4):857-859.	Review/Ot her-Dx	127 patients	Retrospective study to examine the role of chest CT scans in routine follow-up of patients who had been treated for ovarian carcinoma.	Of 127 women, 82 (65%) had had at least one chest CT scan obtained, with more than 50% having had three or more scans. 32 (39%) patients had no radiologic evidence of disease. 28 (34%) showed disease in the abdomen or pelvis but no disease in the chest. 18 (22%) had both chest and abdominal or pelvic CT scans that indicated disease. In all of these patients, abdominal or pelvic disease had appeared on scans before spreading to the chest. Four (5%) of the patients had isolated chest disease. The rate of lung metastases from ovarian carcinoma in our series was 6%. In all of these patients, pulmonary metastases were preceded either by abdominal or pelvic disease or by a rise in tumor markers. Pulmonary metastases in ovarian carcinoma are rare and usually preceded by recurrence of carcinoma in the abdomen or pelvis. Authors suggest that chest CT scanning could be eliminated in the routine follow-up of patients who have been treated for ovarian carcinoma; yet it should be performed for those patients with elevated serum tumor markers but without evidence of abdominal or pelvic disease.	4
74. Hricak H, Chen M, Coakley FV, et al. Complex adnexal masses: detection and characterization with MR imaging--multivariate analysis. Radiology. 2000; 214(1):39-46.	Observatio nal-Dx	128 consecutive patients; 2 observers	Prospective, cross-sectional study to evaluate accuracy of MRI for detection and characterization of complex adnexal masses.	Gadolinium-enhanced MR imaging depicted 176 (94%) of 187 adnexal masses, with an overall accuracy for the diagnosis of malignancy of 93%. The MR imaging findings that were most predictive of malignancy were necrosis in a solid lesion (odds ratio, 107) and vegetations in a cystic lesion (odds ratio, 40). Use of gadolinium-based contrast material contributed significantly to lesion characterization. Interobserver (K, 0.79-0.85) and intraobserver (K, 0.84-0.86) agreement were excellent.	3

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Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
75. Low RN, Barone RM. Combined diffusion-weighted and gadolinium-enhanced MRI can accurately predict the peritoneal cancer index preoperatively in patients being considered for cytoreductive surgical procedures. <i>Ann Surg Oncol.</i> 2012;19(5):1394-1401.	Observational-Dx	33 patients	To determine whether abdominal and pelvic magnetic resonance imaging (MRI) with diffusion-weighted and dynamic gadolinium-enhanced imaging can be used to accurately calculate the peritoneal cancer index (PCI) before surgery compared to the PCI tabulated at surgery.	There was no significant difference between the MRI PCI and surgical PCI for the 33 patients ($P = 0.12$). MRI correctly predicted the PCI category in 29 (0.88) of 33 patients. Compared to surgical findings, MRI correctly predicted small-volume tumor in 6 of 7 patients, moderate-volume tumor in 3 of 4 patients, and large-volume tumor in 20 of 22 patients. MRI and surgical PCI scores were identical in 8 patients (24%). A difference of <5 was noted in 16 patients (49%) and of 5-10 in 9 patients (27%). Compared to surgical-site findings, MRI depicted 258 truly positive sites of peritoneal tumor, 35 falsely negative sites, 35 falsely positive sites, and 101 truly negative sites, with a corresponding sensitivity of 0.88, specificity of 0.74, and accuracy of 0.84.	3
76. Tempany CM, Zou KH, Silverman SG, Brown DL, Kurtz AB, McNeil BJ. Staging of advanced ovarian cancer: comparison of imaging modalities--report from the Radiological Diagnostic Oncology Group. <i>Radiology.</i> 2000;215(3):761-767.	Observational-Dx	118 patients	To compare ultrasonography (US), magnetic resonance (MR) imaging, and computed tomography (CT) for diagnosing and staging advanced ovarian cancer.	There were 118 patients with malignant tumors; 73 (62%) had stage III or IV disease. Metastases were found in the peritoneum in 70 (59%), nodes in 20 (17%), and liver in seven (6%) cases. In the peritoneum, MR imaging and CT ($A(z) = 0.96$ for both) were more accurate than US ($A(z) = 0.86$), especially in the subdiaphragmatic spaces and hepatic surfaces. MR imaging and CT were more sensitive than US (95%, 92%, and 69%, respectively) for peritoneal metastases. MR imaging was more accurate than CT for detection of lymph node metastases ($A(z) = 0.76$ vs 0.57 , $P = .04$). In the liver, the $A(z)$ values for the three modalities were 0.77-0.94.	1
77. Mironov S, Akin O, Pandit-Taskar N, Hann LE. Ovarian cancer. <i>Radiol Clin North Am.</i> 2007; 45(1):149-166.	Review/Other-Dx	N/A	Review imaging findings of patients with ovarian cancer.	Multimodality approach is useful in patients with ovarian cancer, but success is dependent on available resources and on the skills of the physicians involved.	4

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Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
78. Booth SJ, Turnbull LW, Poole DR, Richmond I. The accurate staging of ovarian cancer using 3T magnetic resonance imaging--a realistic option. <i>BJOG</i> . 2008; 115(7):894-901.	Observational-Dx	191 women	Retrospective study to determine whether staging primary ovarian cancer using 3.0 Tesla (3T) MRI is comparable to surgical staging of the disease. 77 women had primary ovarian malignancy (20 of whom had borderline tumors).	3T MRI detected ovarian malignancy with sensitivity of 92% and specificity of 76%. Overall accuracy in detecting malignancy with 3T MRI was 84%, PPV of 80% and NPV of 90%. MRI can achieve staging of ovarian cancer comparable with the accuracy seen with surgical staging.	3
79. Castellucci P, Perrone AM, Picchio M, et al. Diagnostic accuracy of 18F-FDG PET/CT in characterizing ovarian lesions and staging ovarian cancer: correlation with transvaginal ultrasonography, computed tomography, and histology. <i>Nucl Med Commun</i> . 2007; 28(8):589-595.	Observational-Dx	50 consecutive patients	To compare FDG-PET/CT to TVUS for distinguishing malignant from benign pelvic lesions and to compare FDG-PET/CT to contrast enhanced CT in staging patients with ovarian cancer.	FDG-PET/CT had sensitivity of 87%, specificity 100%, NPV 81%, PPV 100% and accuracy 92%. TVUS had sensitivity of 90%, specificity 61%, NPV 78%, PPV 80% and accuracy 80%. FDG-PET/CT results were concordant with final pathological staging in 22/32 (69%) patients while CT results were concordant in 17/32 (53%) patients. PET/CT with FDG is beneficial.	3
80. Fenchel S, Grab D, Nuessle K, et al. Asymptomatic adnexal masses: correlation of FDG PET and histopathologic findings. <i>Radiology</i> . 223(3):780-8, 2002 Jun.	Observational-Dx	99 consecutive patients	Prospective study to analyze asymptomatic adnexal masses at PET with FDG in correlation with histopathologic findings and evaluate FDG-PET for assessing malignancy in comparison with TVUS B-mode and Doppler US and MRI.	Overall sensitivities and specificities were 58% and 76%, respectively, for FDG-PET; 92% and 60%, respectively, for US; 83% and 84%, respectively, for MRI; and 92% and 85% respectively, for the combination of 3 modalities. US remains the method of choice for diagnosis and assessment of asymptomatic adnexal masses.	2

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Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
81. Alessi A, Martinelli F, Padovano B, et al. FDG-PET/CT to predict optimal primary cytoreductive surgery in patients with advanced ovarian cancer: preliminary results. <i>Tumori</i> . 2016;102(1):103-107.	Observational-Dx	29 patients	To evaluate the contribution of fluorodeoxyglucose (FDG)-positron emission tomography (PET)/computed tomography (CT) in the presurgical identification of disease sites that may preclude EOC cytoreducibility.	Between August 2013 and January 2014, 29 patients were evaluated. The histopathology showed 23 EOC and 6 benign tumors. The FDG-PET/CT was positive (maximum standardized uptake value [SUVmax] 11.3 +/- 5.4) in 21/23 (91%) patients with EOC and provided 2 false-negatives (1 mucinous and 1 clear cell carcinoma; SUVmax <=2.8). The FDG-PET/CT was true-negative (SUVmax 2.2 +/- 1.6) in 4 out of 6 patients (67%). False-positive FDG-PET results were obtained in 2 cellular fibromas (SUVmax 4.8 and 5.6). The sensitivity, specificity, and accuracy of PET/CT to characterize ovarian masses were 91%, 67%, and 86%, respectively. Among the 21 FDG-PET/CT-positive EOC, we detected factors limiting optimal CRS in 6 cases (29%): 4 hepatic hilum infiltration and 2 root mesentery involvement, confirmed at surgical exploration. The FDG-PET did not find limiting factors in the remaining 15 patients (71%) in whom optimal CRS was obtained.	2

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Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
82. Tanizaki Y, Kobayashi A, Shiro M, et al. Diagnostic value of preoperative SUVmax on FDG-PET/CT for the detection of ovarian cancer. <i>Int J Gynecol Cancer</i> . 2014;24(3):454-460.	Observational-Dx	160 patients	To investigate the preoperative diagnostic value of F-fluoro-2-deoxy-D-glucose (FDG) positron emission tomography and computed tomography (PET/CT) in patients with ovarian cancer.	Postoperative pathological diagnoses showed that 67 were malignant, 14 were borderline malignant, and 79 were benign tumors. With the use of a cutoff SUVmax of 2.9 obtained from the receiver operating characteristic curve analysis, the sensitivity, specificity, positive predictive value, and negative predictive value for detecting malignancy were 80.6%, 94.6%, 91.5%, and 87.1%, respectively. Positive FDG accumulation (SUVmax \geq 2.9) was shown in 89.5% of serous adenocarcinoma and in 92.3% of endometrioid adenocarcinoma. In contrast, lower frequencies of positive FDG accumulation were shown in clear cell adenocarcinoma (54.5%), mucinous adenocarcinoma (66.7%), and metastatic carcinoma (66.7%), and the median SUVmax of these 3 histological types were significantly lower than those of serous and endometrioid types. In addition, a positive FDG accumulation was shown in all patients with malignant transformation of mature cystic teratoma. Finally, of the 14 borderline malignant tumors, only 2 (14.3%) showed positive FDG accumulation.	3
83. Yoshida Y, Kurokawa T, Kawahara K, et al. Incremental benefits of FDG positron emission tomography over CT alone for the preoperative staging of ovarian cancer. <i>AJR</i> . 2004; 182(1):227-233.	Observational-Dx	15 patients	To determine whether the addition of PET with the radiotracer FDG to CT increases accuracy in the detection of tumor spread.	CT staging correlated with postoperative staging in 8 (53%) of 15 patients. Consensus evaluation of CT with FDG-PET staging improved correlation with postoperative staging in 13 (87%) of 15 patients.	2

Staging and Follow-up of Ovarian Cancer
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Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
84. Sala E, Mannelli L, Yamamoto K, et al. The value of postoperative/preadjuvant chemotherapy computed tomography in the management of patients with ovarian cancer. <i>Int J Gynecol Cancer</i> . 2011;21(2):296-301.	Observational-Tx	206 patients	To compare the operative assessment of residual disease with the postoperative computed tomography (CT) findings in patients with ovarian cancer who underwent primary surgical cytoreduction or interval debulking surgery to residual disease 1 cm or less and to assess the effect of potential prognostic factors on patient survival.	Between September 2005 and December 2008, 206 consecutive patients were enrolled; 51 were eligible. In 30 cases (59%), the postoperative CT findings correlated with the surgeon's assessment of residual disease. For the univariate analyses, the only significant prognostic factors associated with overall survival were no residual disease versus residual disease of less than 1 cm as assessed by the surgeon (hazard ratio [HR], 3.06; 95% confidence interval [CI], 1.29--7.27; P = 0.011) and no residual disease versus residual disease greater than 1 cm on CT (HR, 2.57; 95% CI, 1.02--6.48; P = 0.045). The interaction of surgical residual disease and stage 3 was significant (HR, 3.40; 95% CI, 1.42--8.16; P = 0.006) in the multivariate Cox model.	2
85. Rustin GJ, van der Burg ME, Griffin CL, et al. Early versus delayed treatment of relapsed ovarian cancer (MRC OV05/EORTC 55955): a randomised trial. <i>Lancet</i> . 2010;376(9747):1155-1163.	Experimental-Tx	529 patients	To establish the benefits of early treatment on the basis of increased cancer antigen (CA)125 concentrations compared with delayed treatment on the basis of clinical recurrence.	1442 patients were registered for the trial, of whom 529 were randomly assigned to treatment groups and were included in our analysis (265 early, 264 delayed). With a median follow-up of 56.9 months (IQR 37.4-81.8) from randomisation and 370 deaths (186 early, 184 delayed), there was no evidence of a difference in overall survival between early and delayed treatment (HR 0.98, 95% CI 0.80-1.20, p=0.85). Median survival from randomisation was 25.7 months (95% CI 23.0-27.9) for patients on early treatment and 27.1 months (22.8-30.9) for those on delayed treatment.	2

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Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
86. Kitajima K, Murakami K, Yamasaki E, et al. Performance of integrated FDG-PET/contrast-enhanced CT in the diagnosis of recurrent ovarian cancer: comparison with integrated FDG-PET/non-contrast-enhanced CT and enhanced CT. <i>Eur J Nucl Med Mol Imaging</i> . 2008;35(8):1439-1448.	Observational-Dx	132 patients	To evaluate the accuracy of integrated positron emission tomography and computed tomography (PET/CT) using (18)F-fluorodeoxyglucose with IV contrast for depiction of suspected recurrent ovarian cancer and to assess the impact of PET/contrast-enhanced CT findings on clinical management, compared with PET/non-contrast-enhanced CT and CT component.	Patient-based analysis showed that the sensitivity, specificity, and accuracy of PET/contrast-enhanced CT were 78.8% (52 of 66), 90.9% (60 of 66), and 84.8% (112 of 132), respectively, whereas those of PET/non-contrast-enhanced CT were 74.2% (49 of 66), 90.9% (60 of 66), and 82.6% (109 of 132), respectively, and those of enhanced CT were 60.6% (40 of 66), 84.8% (56 of 66), and 72.7% (96 of 132), respectively. Sensitivity, specificity, and accuracy differed significantly among the three modalities (Cochran Q test: $p = 0.0001$, $p = 0.018$, and $p < 0.0001$, respectively). The findings of PET/contrast-enhanced CT resulted in a change of management for 51 of the 132 patients (39%) and had an effect on patient management in 16 patients (12%) diagnosed by enhanced CT alone and three patients (2%) diagnosed by PET/non-contrast-enhanced CT.	3
87. Tawakol A, Abdelhafez YG, Osama A, Hamada E, El Refaei S. Diagnostic performance of 18F-FDG PET/contrast-enhanced CT versus contrast-enhanced CT alone for post-treatment detection of ovarian malignancy. <i>Nucl Med Commun</i> . 2016;37(5):453-460.	Observational-Dx	111 patients	To evaluate the diagnostic performance of combined fluorine-18 fluorodeoxyglucose (F-FDG) positron emission tomography (PET)/contrast-enhanced computed tomography (Ce-CT) in comparison with Ce-CT alone for the detection of residual/recurrent tumor after initial treatment of malignant ovarian tumors.	Of the 136 studies evaluated, 97 (71%) studies had recurrent/residual disease and 39 (29%) studies were disease free on the basis of the final diagnosis. F-FDG PET/Ce-CT and Ce-CT had a sensitivity, specificity, negative predictive value, positive predictive value, and accuracy of 96 versus 84%, 92 versus 59%, 90 versus 59%, 97 versus 84%, and 95 versus 76%, respectively. F-FDG PET/Ce-CT was significantly more sensitive, specific, and accurate compared with Ce-CT, with P-values of 0.002, 0.001, and less than 0.0001, respectively. Site-based analyses also showed significant differences.	3

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Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
88. Gu P, Pan LL, Wu SQ, Sun L, Huang G. CA 125, PET alone, PET-CT, CT and MRI in diagnosing recurrent ovarian carcinoma: a systematic review and meta-analysis. <i>Eur J Radiol.</i> 2009;71(1):164-174.	Meta-analysis	34 studies	To systematically assess the accuracy of CA 125, PET alone, PET-CT, CT and MRI in diagnosing the recurrent ovarian carcinoma	In 34 included studies, CA 125 had the highest pooled specificity, 0.93 (95% CI: 0.89-0.95); PET-CT had highest pooled sensitivity, 0.91 (95% CI: 0.88-0.94). The AUC of CA 125, PET alone, PET-CT, CT and MRI were 0.9219, 0.9297, 0.9555, 0.8845 and 0.7955, respectively. Results of pairwise comparison between each modality demonstrated AUC of PET, whether interpreted with or without the use of CT, was higher than that of CT or MR, $p < 0.05$. The pooled sensitivity, pooled specificity and AUC showed no statistical significance between PET alone and PET-CT. There was heterogeneity among studies and evidence of publication bias.	Good
89. Sebastian S, Lee SI, Horowitz NS, et al. PET-CT vs. CT alone in ovarian cancer recurrence. <i>Abdom Imaging.</i> 2008; 33(1):112-118.	Observational-Dx	51 consecutive patients	Retrospective study to compare fusion, PET/CT with CT alone in detecting ovarian cancer recurrence.	38/53 (72%) cases had recurrence, with 2 showing isolated chest recurrence. PET/CT accuracy exceeded CT for body 92% (49/53) vs 83% (44/53), chest 96% (51/53) vs 89% (47/53), and abdomen 91% (48/53) vs 79% (42/53). Study concludes that PET-CT has greater accuracy and less interobserver variability than CT alone.	2
90. Nakamoto Y, Saga T, Ishimori T, et al. Clinical value of positron emission tomography with FDG for recurrent ovarian cancer. <i>AJR.</i> 2001; 176(6):1449-1454.	Observational-Dx	24 women	Prospective study to evaluate the value of PET with FDG for detecting recurrent ovarian cancer.	PET gave valuable information for seven of 12 patients in group A in addition to the information obtained from findings on conventional imaging, and treatment was affected in five patients. On the other hand, in group B, additional information was obtained in only three of 12 patients, and treatment of only one patient was affected. Overall sensitivity, specificity, and accuracy of conventional imaging modalities were 72.7%, 75.0%, and 73.3%, respectively, and these rates improved to 92.3%, 100.0%, and 94.4%, respectively, by considering both conventional imaging modalities and PET findings.	3

Staging and Follow-up of Ovarian Cancer
EVIDENCE TABLE

Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
91. Thrall MM, DeLoia JA, Gallion H, Avril N. Clinical use of combined positron emission tomography and computed tomography (FDG-PET/CT) in recurrent ovarian cancer. <i>Gynecol Oncol.</i> 2007; 105(1):17-22.	Observational-Dx	39 patients; 59 scans	Retrospective chart review to examine use of combined FDG-PET and CT in detection of recurrent ovarian cancer.	51 FDG-PET/CT performed with sensitivity of 94.5% and specificity of 100%. FDG-PET/CT is useful in settings of suspected ovarian cancer recurrence, especially patients with rising CA-125 levels and negative conventional imaging. FDG-PET/CT was helpful in optimizing the selection of patients for site-specific treatment. Combined FDG-PET/CT may replace single imaging procedures.	3
92. Salani R, Backes FJ, Fung MF, et al. Posttreatment surveillance and diagnosis of recurrence in women with gynecologic malignancies: Society of Gynecologic Oncologists recommendations. <i>Am J Obstet Gynecol.</i> 2011;204(6):466-478.	Review/Other-Tx	N/A	To review the most recent data on surveillance for gynecologic cancer recurrence in women who have had a complete response to primary cancer therapy.	Although gynecologic cancers account for only 10% of all new cancer cases in women, these cancers account for 20% of all female cancer survivors. Improvements in cancer care have resulted in almost 10 million cancer survivors, and this number is expected to grow. Therefore, determining the most cost-effective clinical surveillance for detection of recurrence is critical. Unfortunately, there has been a paucity of research in what are the most cost-effective strategies for surveillance once patients have achieved a complete response. Currently, most recommendations are based on retrospective studies and expert opinion. Taking a thorough history, performing a thorough examination, and educating cancer survivors about concerning symptoms is the most effective method for the detection of most gynecologic cancer recurrences. There is very little evidence that routine cytologic procedures or imaging improves the ability to detect gynecologic cancer recurrence at a stage that will impact cure or response rates to salvage therapy.	4

Staging and Follow-up of Ovarian Cancer
EVIDENCE TABLE

Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
93. National Institutes of Health Consensus Development Conference Statement. Ovarian cancer: screening, treatment, and follow-up. <i>Gynecol Oncol.</i> 1994;55(3 Pt 2):S4-14.	Review/Other-Dx	N/A	To determine what is the current status of screening and prevention in ovarian cancer, what is the appropriate management of early-stage ovarian cancer, what is the appropriate management of advanced epithelial ovarian cancer, what is the appropriate follow-up after primary therapy, and what are the directions for future research.	The consensus panel concluded that there is no evidence available as yet that the current screening modalities of CA 125 and transvaginal ultrasonography can be effectively used for widespread screening to reduce mortality from ovarian cancer nor that their use will result in decreased rather than increased morbidity and mortality. They recommended that further prospective research be done to evaluate this very important issue. Women with stage IA grade 1 and most IB grade 1 ovarian cancer do not require postoperative adjuvant therapy. Many remaining stage I patients do require chemotherapy. Subsets of stage I must be fully defined and ideal treatment must be determined. Women with stages II, III, and IV epithelial ovarian cancer (other than low malignant potential tumors) should receive postoperative chemotherapy. Physicians should be encouraged to discuss clinical trial participation with women, and women should be encouraged to participate. All women should have access to accurate and complete information regarding ovarian cancer. Furthermore, there must be no barriers to women's access to qualified specialists, optimal therapy, and protocols. The full text of the consensus panel's statement follows.	4
94. Suh DH, Kim HS, Chang SJ, Bristow RE. Surgical management of recurrent ovarian cancer. <i>Gynecol Oncol.</i> 2016;142(2):357-367.	Review/Other-Dx	N/A	To offer a preliminary answer to the question of whether and on whom to perform surgery in recurrent ovarian cancer (ROC).	No results stated in abstract.	4

Staging and Follow-up of Ovarian Cancer
EVIDENCE TABLE

Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
95. Franchi D, Boveri S, Fruscio R, et al. Imaging in gynecological disease (8): ultrasound characteristics of recurrent borderline ovarian tumors. <i>Ultrasound Obstet Gynecol.</i> 41(4):452-8, 2013 Apr.	Review/Other-Dx	62 patients	To describe the sonographic characteristics of borderline ovarian tumor (BOT) recurrence.	Sixty-two patients had a serous BOT recurrence and six a mucinous BOT recurrence. All patients except one were premenopausal, 84% of them being < 40 years old. All but one patient were asymptomatic at diagnosis of the recurrence. Fertility-sparing surgery of the recurrent tumor was performed in 57/68 (84%) patients. The most frequent ultrasound feature of recurrent serous BOT was a unilocular solid cyst (49/62, 79%) and almost half of the recurrent serous BOTs (29/62, 47%) had multiple papillary projections. In 89% of the recurrent serous BOTs there was at least one papillation with irregular surface and in 73% there was at least one papillation vascularized at color Doppler examination. Recurrent mucinous BOTs appeared mainly as multilocular or multilocular solid cysts (5/6, 83%).	4
96. American College of Radiology. ACR Appropriateness Criteria® Radiation Dose Assessment Introduction. Available at: https://www.acr.org/-/media/ACR/Files/Appropriateness-Criteria/RadiationDoseAssessmentIntro.pdf .	Review/Other-Dx	N/A	Guidance document on exposure of patients to ionizing radiation.	No results stated in abstract.	4

Evidence Table Key

Study Quality Category Definitions

- *Category 1* The study is well-designed and accounts for common biases.
- *Category 2* The study is moderately well-designed and accounts for most common biases.
- *Category 3* There are important study design limitations.
- *Category 4* The study is not useful as primary evidence. The article may not be a clinical study or the study design is invalid, or conclusions are based on expert consensus. For example:
 - a. The study does not meet the criteria for or is not a hypothesis-based clinical study (e.g., a book chapter or case report or case series description);
 - b. The study may synthesize and draw conclusions about several studies such as a literature review article or book chapter but is not primary evidence;
 - c. The study is an expert opinion or consensus document.
- Meta-analysis
 - a. *Good quality* – the study design, methods, analysis, and results are valid and the conclusion is supported.
 - b. *Inadequate quality* – the study design, analysis, and results lack the methodological rigor to be considered a good meta-analysis study.

Abbreviations Key

Dx = Diagnostic

Tx = Treatment