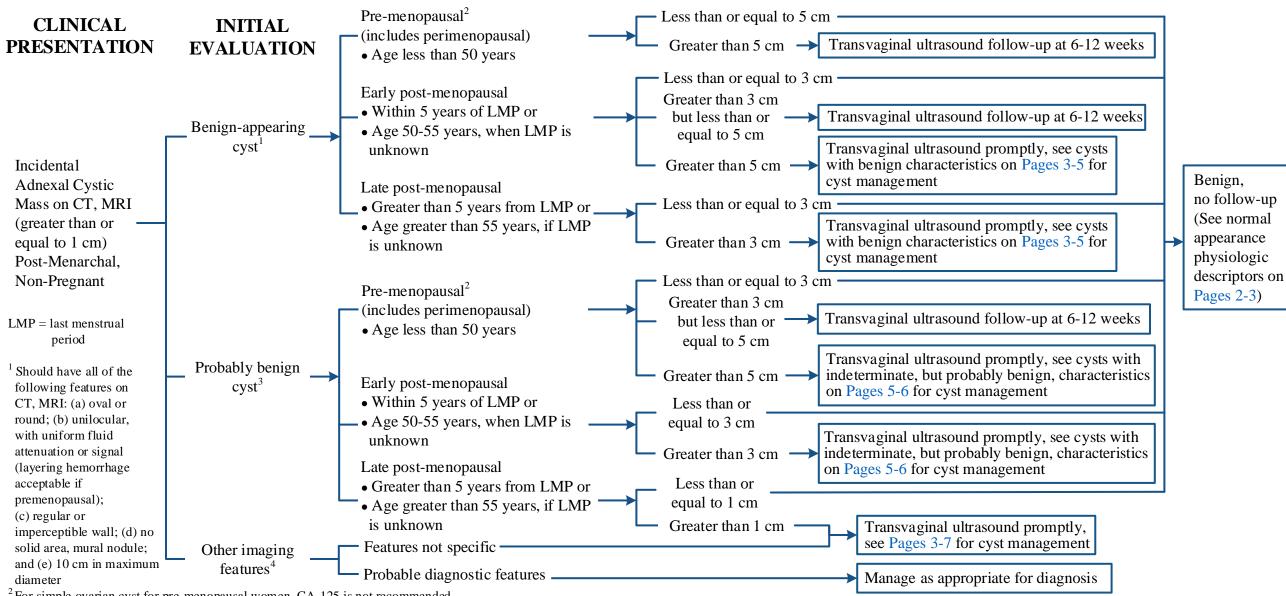


Disclaimer: This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson's specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient's care. This algorithm should not be used to treat pregnant women.



² For simple ovarian cyst for pre-menopausal women, CA-125 is not recommended

Features of masses in this category include: (a) solid component, (b) mural nodule, (c) septations, (d) higher than fluid attenuation, and (e) layering hemorrhage if postmenopausal

³ Refers to an adnexal cyst that would otherwise meet the criteria for a benign-appearing cyst except for one or more of the following specific observations: (a) angulated margins, (b) not round or oval in shape, (c) a portion of the cyst is poorly imaged (e.g., a portion of the cyst may be obscured by metal streak artifact on CT pelvis), and (d) the image has reduced signal-to-noise ratio, usually because of technical parameters or in some cases the study was performed without intravenous contrast



Page 2 of 10

Cancer Center Disclaimer: This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson's specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient's care. This algorithm should not be used to treat pregnant women.

APPENDIX A: Recommendations for Management of Asymptomatic Ovarian and Other Adnexal Cysts

Normal appearance		Follow-up	Comments
Normal ovary appearance: Reproductive age Follicles • Thin and smooth walls • Round or oval • Anechoic • Size less than or equal to 3 cm • No blood flow		Not needed	Developing follicles and dominant follicle less than or equal to 3 cm are normal findings
Normal ovary appearance: Reproductive age Corpus luteum • Diffusely thick wall • Peripheral blood flow • Size less than or equal to 3 cm • With or without internal echoes • With or without crenulated appearance		Not needed	Corpus luteum less than or equal to 3 cm is a normal finding
Normal ovary appearance: Postmenopausal • Small • Homogenous	* * * * * * * * * * * * * * * * * * *	Not needed	Normal postmenopausal ovary is atrophic without follicles

From "Management of asymptomatic ovarian and other adnexal cysts imaged at US: Society of Radiologists in Ultrasound Consensus Conference Statement," by D. Levine, D. L. Brown, R. F. Andreotti, B. Benacerraf, C. B. Benson, W. R. Brewster, ... U. M. Hamper, 2010. Radiology, 256, p. 949-951. Copyright 2010 by The Radiological Society of North America. Reprinted with permission.

Continued on Next Page



Page 3 of 10

Cancer Center Disclaimer: This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson's specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient's care. This algorithm should not be used to treat pregnant women.

Normal appearance		Follow-up	Comments
Clinically inconsequential: Postmenopausal Simple cyst less than or equal to 1 cm • Thin wall • Anechoic • No flow		Not needed	Small simple cysts are common; cyst less than or equal to 1 cm are considered clinically unimportant

Cysts with benign characteristics		Follow-up	Comments
Simple cysts (includes ovarian and extraovarian cysts) • Round or oval • Anechoic • Smooth, thin walls • No solid component or septation • Posterior acoustic enhancement • No internal flow		Reproductive age: • Less than or equal to 5 cm: Not needed • Greater than 5 cm and less than or equal to 7 cm: Yearly Postmenopausal (PM): • Greater than 1 cm and less than or equal to 7 cm: Yearly Any age: • Greater than 7 cm: Further imaging (e.g.,MRI) or surgical evaluation	Simple cysts, regardless of age of patient, are almost certainly benign For cysts less than or equal to 3 cm in women of reproductive age, it is at the discretion of the interpreting physician whether to describe them in imaging report



Page 4 of 10

Cancer Center Disclaimer: This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson's specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient's care. This algorithm should not be used to treat pregnant women.

Cysts with benign	characteristics	Follow-up	Comments
Hemorrhagic cyst Reticular pattern of internal echoes With or without solid appearing area with concave margins No internal flow		Reproductive age: • Less than or equal to 5 cm: Not needed • Greater than 5 cm: 6-12 weeks follow-up to ensure resolution Early PM: Any size: Follow-up to ensure resolution Late PM: Consider surgical evaluation	Use Doppler to ensure no solid elements For cysts less than or equal to 3 cm in women of reproductive age, it is at the discretion of the interpreting physician whether to describe them in imaging report
 Endometrioma Homogenous low level internal echoes No solid component With or without tiny echogenic foci in wall 		Any age: Initial follow-up at 6-12 weeks, then if not surgically removed, follow-up yearly	
Dermoid • Focal or diffuse hyperechoic component • Hyperechoic lines and dots • Area of acoustic shadowing • No internal flow		Any age: If not surgically removed, follow-up yearly to ensure stability	



Page 5 of 10

Cancer Center Disclaimer: This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson's specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient's care. This algorithm should not be used to treat pregnant women.

Cysts with benign char	racteristics	Follow-up	Comments
 Hydrosalpinx Tubular shaped cystic mass With or without short round projections ("beads on a string") With or without waist sign (i.e. indentations on opposite sides) May or may not be seen separate from the ovary 		Any age: As clinically indicated	
Peritoneal inclusion cyst • Follow the contour of adjacent pelvic organs • Ovary at the edge of the mass or suspended within the mass • With or without septations	6.5 1:00 400 6.7	Any age: As clinically indicated	

Cysts with indeterminate, but probably benign, characteristics		Follow-up	Comments
Findings suggestive of, but not classic for, hemorrhagic cyst, endometrioma or dermoid		Reproductive age: 6-12 weeks follow-up to ensure resolution. If the lesion is unchanged, then hemorrhagic cyst is unlikely, and continued follow-up with either ultrasound or MRI should then be considered. If these studies do not confirm an endometrioma or dermoid, then surgical evaluation should be considered. Postmenopausal: Consider surgical evaluation	



Page 6 of 10

Cancer Center Disclaimer: This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson's specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient's care. This algorithm should not be used to treat pregnant women.

Cysts with indeterminate, but prob	ably benign, characteristics	Follow-up	Comments
Thin-walled cyst with single thin septation or focal calcification in the wall of a cyst		Follow-up based on size and menopausal status, same as simple cyst described above	
Multiple thin septations (less than 3 mm)		Consider surgical evaluation	Multiple septations suggest a neoplasm, but if thin, the neoplasm is likely benign
Nodule (non-hyperechoic) without flow		Consider surgical evaluation or MRI	Solid nodule suggests neoplasm, but if no flow (and not echogenic as would be seen in a dermoid) this is likely a benign lesion such as a cystadenofibroma



Page 7 of 10

Cancer Center Disclaimer: This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson's specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient's care. This algorithm should not be used to treat pregnant women.

Cyst with characteristics worrisome for malignancy		Follow-up	Comments
Thick (greater than 3 mm) irregular septations		Any age: Consider surgical evaluation	
Nodule with blood flow		Any age: Consider surgical evaluation	



Page 8 of 10

T Disclaimer: This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson's specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient's care. This algorithm should not be used to treat pregnant women.

SUGGESTED READINGS

- Andreotti, R. F., Timmerman, D., Benacerraf, B. R., Bennett, G. L., Bourne, T., Brown, D. L., ... Glanc, P., (2018). Ovarian-adnexal reporting lexicon for ultrasound: A white paper of the ACR Ovarian-Adnexal Reporting and Data System Committee. *Journal of the American College of Radiology* 15(10), 1415-1429. doi: 10.1016/j.jacr.2018.07.004
- Andreotti, R. F., Timmerman, D., Strachowski, L. M., Froyman, W., Benacerraf, B. R., Bennett, G. L., ... Glanc, P., (2020). O-RADS US risk stratification and management system: A consensus guideline from the ACR ovarian-Adnexal Reporting and Data System committee. *Radiology*, 294(1) 2020, 168-185. doi:10.1148/radiol.2019191150
- Baheti, A. D., Lewis, C. E., Hippe, D. S., O'Malley, R. B., & Wang, C. L. (2019). Adnexal lesions detected on CT in postmenopausal females with non-ovarian malignancy: Do simple cysts need follow-up? *Abdominal Radiology*, 44(2), 661-668. doi: 10.1007/s00261-018-1676-z
- Baheti, A. D., Lewis, C. E., Hippe, D. S., O'Malley, R. B., & Wang, C. L. (2018). Imaging characterization of adnexal lesions: Do CT findings correlate with US? *Abdominal Radiology* 43(7),1764-1771. doi:10.1007/s00261-017-1357-3
- Boos, J., Brook, O. R., Fang, J., Brook, A., & Levine, D. (2018). Ovarian cancer: Prevalence in incidental simple adnexal cysts initially identified in CT examinations of the abdomen and pelvis. *Radiology*, 286(1), 196-204. doi:10.1148/radiol.2017162139
- Broder, J. C., Jimenez, J. J., & Flye, C. W. (2017). R-SCAN: Follow-Up for adnexal cysts. Journal of the American College of Radiology, 14(7), 944-946. doi:10.1016/j.jacr.2017.04.006
- Grant, E. G. (2019). The SRU consensus statement on simple adnexal cysts: Updated guidelines for the practitioner. Radiology 293(2), 372-373. doi:10.1148/radiol.2019191894
- Levine, D. (2019). Evaluating an asymptomatic adnexal cyst found on pelvic ultrasonography. JAMA Internal Medicine. 179(1) 78-79. doi:10.1001/jamainternmed.2018.5133
- Levine, D., Brown, D. L., Andreotti, R. F., Benacerraf, B., Benson, C. B., Brewster, W. R., ... Hamper, U. M. (2010). Management of asymptomatic ovarian and other adnexal cysts imaged at US: Society of Radiologists in Ultrasound Consensus Conference Statement. *Radiology*, 256(3), 943-954. doi:10.1148/radiol.10100213
- Levine, D., Patel, M. D., Suh-Burgmann, E. J., Andreotti, R. F., Benacerraf, B. R., Benson, C. B., ... Brown, D. L. (2019). Simple adnexal cysts: SRU consensus conference update on follow-up and reporting. *Radiology*, 293(2), 359-371. doi:10.1148/radiol.2019191354
- Maturen, K. E., Blaty, A. D., Wasnik, A. P., Patel-Lippmann, K., Robbins, J. B., Barroilhet, L., & Sadowski, E. A.(2017). Risk stratification of adnexal cysts and cystic masses: Clinical performance of society of radiologists in ultrasound guidelines. *Radiology*, 285(2), 650-659. doi:10.1148/radiol.2017161625
- Patel, M. D., Ascher, S. M., Horrow, M. M., Pickhardt, P. J., Poder, L., Goldman, M., ... Maturen, K. E. (2020). Management of incidental adnexal findings on CT and MRI: A white paper of the ACR incidental findings Committee. *Journal of the American College of Radiology*, 17(2), 248-254. doi:10.1016/j.jacr.2019.10.008
- Patel, M. D., Ascher, S. M., Paspulati, R. M., Shanbhogue, A. K., Siegelman, E. S., Stein, M. W., & Berland, L. L. (2013). Managing incidental findings on abdominal and pelvic CT and MRI, part 1: White paper of the ACR Incidental Findings Committee II on adnexal findings. *Journal of the American College of Radiology*, 10(9), 675-681. doi:10.1016/j.jacr.2013.05.023



Page 9 of 10

TDisclaimer: This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson's specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient's care. This algorithm should not be used to treat pregnant women.

SUGGESTED READINGS - continued

- Patel-Lippmann, K. K., Sadowski, E. A., Robbins, J. B., Paroder, V., Barroilhet, L., Maddox, E., ... Maturen, K.E. (2020). Comparison of international ovarian tumor analysis simple rules to society of radiologists in ultrasound guidelines for detection of malignancy in adnexal cysts. *American Journal of Roentgenology*. 214(3), 694-700. doi:10.2214/AJR.18.20630
- Shinagare, A. B., Alper, E., Wang, A., Ip, I. K., & Khorasani, R. (2019). Impact of a multifaceted information technology—enabled intervention on the adoption of ACR white paper follow-up recommendations for incidental adnexal lesions detected on CT. *American Journal of Roentgenology*, 213(1), 127-133.10.2214/AJR.18.20468
- Smith-Bindman, R., Poder, L., Johnson, E., & Miglioretti, D. L. (2019). Risk of malignant ovarian cancer based on ultrasonography findings in a large unselected population. *JAMA Internal Medicine*, 179(1), 71-77. doi: 10.1001/jamainternmed.2018.5113
- Stefanopol, I. A., Tiron, Z., Neagu, A. I., Pavel, L. L., Sarbu, V., & Dragomir-Ananie, E. T. (2020). Diagnostic and treatment of ovarian cystic lesions in premenarcheal girls: A 3 year study. *Revista de Chimie*, 71(2), 460-465. doi:10.37358/RC.20.2.7950
- Tsakiridis, I., & Dagklis, T. (2019). Evolution of a corpus luteum cyst: How to avoid a pitfall due to its varying appearance. *Journal of Obstetrics and Gynecology*. doi:10.1080/01443615.2019.1693526



Page 10 of 10

ancer Center Disclaimer: This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson's specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient's care. This algorithm should not be used to treat pregnant women.

DEVELOPMENT CREDITS

This practice consensus statement is based on majority opinion of the Ovarian Cyst Management workgroup at the University of Texas MD Anderson Cancer Center for the patient population. These experts included:

> Tharakeswara Bathala, MD (Diagnostic Radiology - Body Imaging)[†] Deepak Bedi, MD (Diagnostic Radiology - Body Imaging)^T Therese Bevers, MD (Clinical Cancer Prevention)^T Priya Bhosale, MD (Diagnostic Radiology - Body Imaging) Wui K. Chong, MBBS (Diagnostic Radiology - Body Imaging) Olga N. Fleckenstein Thoa Kazantsev, MSN, RN, OCN Ott Le, MD (Diagnostic Radiology - Body Imaging) Leonardo P. Marcal, MD (Diagnostic Radiology - Body Imaging) Denise Nebgen, MD, PhD (Gynecologic Oncology and Reproductive Medicine)[†] Gaiane Rauch, MD, PhD (Diagnostic Radiology - Body Imaging)

[†] Core Development Team

^{*} Clinical Effectiveness Development Team