

American College of Radiology
ACR Appropriateness Criteria®

Multiple Gestations

Variant 1: Known or suspected multiple gestations. Monochorionic or dichorionic. First trimester. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
US pregnant uterus transabdominal	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	9	9	0	0	0	0	0	0	0	3	7
		References		Study Quality											
		9 (32861686)		4											
		27 (29115085)		4											
		24 (27180271)		Good											
		28 (21308842)		3											
		35 (31710737)		3											
		34 (24585501)		4											
		33 (27622859)		3											
		32 (27363529)		3											
		31 (26466907)		3											
		30 (25989950)		3											
		29 (23754823)		4											
US pregnant uterus transvaginal	Usually appropriate	Moderate	O 0 mSv	O 0 mSv [ped]	7	7	0	0	0	0	0	4	2	3	1
		References		Study Quality											
		9 (32861686)		4											
		24 (27180271)		Good											

US cervix transvaginal	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	2	2	4	3	3	1	0	0	0	0	0
		References	Study Quality												
		25 (26363481)	3												
		26 (28942691)	4												
US assessment for TTTS	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	2	2	5	0	2	3	0	0	0	0	0
		References	Study Quality												
		9 (32861686)	4												
US pregnant uterus biophysical profile	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	10	0	0	0	0	0	0	0	0
US echocardiography fetal	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	1	1	7	1	1	1	0	0	0	0	0
		References	Study Quality												
		9 (32861686)	4												
US duplex Doppler fetal middle cerebral artery	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	9	1	0	0	0	0	0	0	0
US duplex Doppler fetal umbilical artery	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	1	1	8	1	1	0	0	0	0	0	0
		References	Study Quality												
		9 (32861686)	4												
MRI fetal without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	9	1	0	0	0	0	0	0	0
MRI fetal without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	9	1	0	0	0	0	0	0	0

Variant 2: Multiple gestations. Monochorionic or dichorionic. First trimester. First trimester ultrasound performed. Next imaging study.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
US pregnant uterus transabdominal	Usually appropriate	Limited	0 0 mSv	0 0 mSv [ped]	9	9	0	0	0	0	0	1	0	2	7
		References		Study Quality											
		40 (24371108)		3											
		39 (27766995)		4											
		38 (21234973)		4											
		37 (31773823)		3											
		33 (27622859)		3											
		16 (34839475)		4											
		15 (32852128)		4											
		14 (31788879)		3											
		9 (32861686)		4											
		5 (31697621)		4											
		US pregnant uterus transvaginal	Usually appropriate	Expert Consensus	0 0 mSv										0 0 mSv [ped]
US cervix transvaginal	May be appropriate	Limited	0 0 mSv	0 0 mSv [ped]	5	5	1	0	0	4	4	2	0	0	0
		References		Study Quality											
		25 (26363481)		3											
		26 (28942691)		4											
US echocardiography fetal	May be appropriate	Limited	0 0 mSv	0 0 mSv [ped]	4	4	0	0	2	5	1	3	0	0	0
		References		Study Quality											
		16 (34839475)		4											
		15 (32852128)		4											
US assessment for TTTS	Usually not appropriate	Limited	0 0 mSv	0 0 mSv [ped]	3	3	3	1	2	2	1	0	1	0	0
		References		Study Quality											

		9 (32861686)	4												
		33 (27622859)	3												
		36 (17444560)	3												
US pregnant uterus biophysical profile	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	10	0	0	0	0	0	0	0	0
US duplex Doppler fetal middle cerebral artery	Usually not appropriate	Limited	0 0 mSv	0 0 mSv [ped]	1	1	8	1	0	0	0	1	0	0	0
		References	Study Quality												
		9 (32861686)	4												
US duplex Doppler fetal umbilical artery	Usually not appropriate	Limited	0 0 mSv	0 0 mSv [ped]	1	1	7	1	1	0	0	0	0	0	1
		References	Study Quality												
		9 (32861686)	4												
MRI fetal without and with IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	9	1	0	0	0	0	0	0	0
MRI fetal without IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	9	1	0	0	0	0	0	0	0

Variant 3: Multiple gestations. Dichorionic twins or multichorionic higher order multiples. Second trimester anatomy examination. Follow-up imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
US pregnant uterus transabdominal	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	9	9	0	0	0	0	0	0	0	1	9
		References		Study Quality											
		5 (31697621)		4											
		41 (30308091)		4											
		47 (26428508)		4											
US echocardiography fetal	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	8	8	0	0	0	0	1	3	1	4	1

		References		Study Quality											
		46 (22713497)		4											
US cervix transvaginal	Usually appropriate	Limited	0 0 mSv	0 0 mSv [ped]	7	7	0	0	0	0	2	2	3	1	2
		References		Study Quality											
		43 (31878811)		4											
		44 (27133011)		4											
US pregnant uterus transvaginal	May be appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	6	6	0	0	0	1	0	7	1	0	1
US duplex Doppler fetal umbilical artery	May be appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	5	5	0	0	0	5	4	2	0	0	0
US duplex Doppler fetal middle cerebral artery	Usually not appropriate	Limited	0 0 mSv	0 0 mSv [ped]	3	3	2	2	5	0	0	1	0	0	0
		References		Study Quality											
		45 (19012187)		4											
US pregnant uterus biophysical profile	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	2	2	5	1	2	0	1	1	0	0	0
US assessment for TTTS	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	2	2	5	1	2	1	0	1	0	0	0
MRI fetal without IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	2	2	5	2	0	2	0	1	0	0	0
MRI fetal without and with IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	9	1	0	0	0	0	0	0	0

Variant 4: Multiple gestations. Monochorionic twins. Second trimester anatomy examination. Follow-up imaging.

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Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
		References		Study Quality											
		58 (20215730)		3											
		57 (31875322)		3											
		56 (29024208)		3											
		55 (24011780)		3											
		54 (25925425)		4											
		49 (20516671)		4											
		41 (30308091)		4											
		9 (32861686)		4											
US echocardiography fetal	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	9	9	0	0	0	0	0	0	1	3	6
		References		Study Quality											
		9 (32861686)		4											
		52 (23223160)		4											
		53 (25560113)		4											
US assessment for TTTS	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	9	9	0	0	0	0	0	0	1	2	7
		References		Study Quality											
		9 (32861686)		4											
		12 (27561094)		3											
US duplex Doppler fetal umbilical artery	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	9	9	0	0	0	0	0	0	1	3	6
		References		Study Quality											
		9 (32861686)		4											
US cervix transvaginal	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	7	7	0	0	0	1	0	3	3	2	1

		References	Study Quality												
		43 (31878811)	4												
		44 (27133011)	4												
		48 (30107361)	3												
		47 (26428508)	4												
		49 (20516671)	4												
US pregnant uterus transvaginal	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	6	6	0	0	0	1	0	6	2	0	1
US duplex Doppler fetal middle cerebral artery	May be appropriate	Moderate	O 0 mSv	O 0 mSv [ped]	6	6	0	0	0	0	1	7	0	1	1
		References	Study Quality												
		51 (31605505)	4												
		50 (31277521)	4												
		20 (-3120926)	4												
		9 (32861686)	4												
		3 (26094734)	2												
MRI fetal without IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	5	5	0	0	0	5	2	4	0	0	0
US pregnant uterus biophysical profile	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	5	4	1	1	0	0	0	0	0
MRI fetal without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	9	0	1	0	0	0	0	0	0

Variant 5: Multiple gestations. Dichorionic twins or multichorionic higher order multiples. Growth and antepartum surveillance.

US pregnant uterus transvaginal	May be appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	6	6	0	0	0	1	3	3	2	0	1
US cervix transvaginal	May be appropriate	Limited	0 0 mSv	0 0 mSv [ped]	6	6	0	1	0	0	3	3	2	0	1
		References			Study Quality										
		43 (31878811)			4										
US duplex Doppler fetal umbilical artery	May be appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	6	6	0	0	1	1	3	4	0	1	0
US pregnant uterus biophysical profile	May be appropriate	Limited	0 0 mSv	0 0 mSv [ped]	5	5	0	0	0	0	6	3	1	1	0
		References			Study Quality										
		62 (17154226)			3										
		63 (26453124)			3										
US echocardiography fetal	May be appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	5	5	0	0	2	2	4	2	0	0	0
US duplex Doppler fetal middle cerebral artery	May be appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	5	5	0	0	1	3	3	3	0	0	0
US assessment for TTTS	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	2	2	4	2	1	2	0	1	0	0	0
MRI fetal without IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	2	2	5	2	1	1	0	1	0	0	0
MRI fetal without and with IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	10	0	0	0	0	0	0	0	0

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Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations									
							1	2	3	4	5	6	7	8	9	
		References	Study Quality													
		9 (32861686)	4													
		12 (27561094)	3													
US assessment for TTTS	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	9	9	0	0	0	0	0	0	1	3	6	
		References	Study Quality													
		9 (32861686)	4													
		12 (27561094)	3													
		13 (30306664)	4													
		References	Study Quality													
		9 (32861686)	4													
		12 (27561094)	3													
		13 (30306664)	4													
		References	Study Quality													
9 (32861686)	4															
42 (27062653)	3															
US duplex Doppler fetal umbilical artery	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	9	9	0	0	0	0	0	0	1	3	6	
		References	Study Quality													
		9 (32861686)	4													
		42 (27062653)	3													
US duplex Doppler fetal middle cerebral artery	Usually appropriate	Moderate	O 0 mSv	O 0 mSv [ped]	7	7	0	0	0	0	1	3	3	1	2	
		References	Study Quality													
		3 (26094734)	2													
		9 (32861686)	4													
		50 (31277521)	4													
		51 (31605505)	4													
US pregnant uterus biophysical profile	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	6	6	0	0	0	0	2	5	3	1	0	
		References	Study Quality													
		62 (17154226)	3													
		63 (26453124)	3													

US pregnant uterus transvaginal	May be appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	6	6	0	0	0	1	1	5	2	0	1
US cervix transvaginal	May be appropriate	Limited	0 0 mSv	0 0 mSv [ped]	6	6	0	0	0	1	4	6	0	0	0
		References		Study Quality											
		43 (31878811)		4											
US echocardiography fetal	May be appropriate	Limited	0 0 mSv	0 0 mSv [ped]	6	6	0	0	0	1	2	3	1	1	2
		References		Study Quality											
		9 (32861686)		4											
		12 (27561094)		3											
MRI fetal without IV contrast	May be appropriate	Limited	0 0 mSv	0 0 mSv [ped]	5	5	2	1	0	2	4	1	0	0	0
		References		Study Quality											
		17 (25377504)		3											
MRI fetal without and with IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	9	1	0	0	0	0	0	0	0

Variant 7: Multiple gestations. Dichorionic or multichorionic higher order multiples or monochorionic gestations. Known abnormality or discordance between fetuses (fluid, size, weight). Growth and antepartum surveillance.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
US pregnant uterus transabdominal	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	9	9	0	0	0	0	0	0	0	1	9
		References		Study Quality											
		9 (32861686)		4											
		83 (29363848)		4											
		84 (24751835)		M											
		4 (29287298)		4											

		58 (20215730)			3											
US duplex Doppler fetal umbilical artery	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	8	8	0	0	0	0	2	0	3	2	3	
		References		Study Quality												
		42 (27062653)		3												
		77 (20878679)		3												
		76 (21962139)		3												
		75 (32573847)		3												
		70 (14533898)		4												
US pregnant uterus biophysical profile	Usually appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	7	7	0	0	0	0	1	4	3	0	2	
US duplex Doppler fetal middle cerebral artery	Usually appropriate	Moderate	O 0 mSv	O 0 mSv [ped]	7	7	0	0	0	0	2	2	4	1	1	
		References		Study Quality												
		3 (26094734)		2												
		51 (31605505)		4												
		72 (30125414)		3												
		73 (30207009)		3												
		74 (22418955)		4												
US pregnant uterus transvaginal	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	6	6	0	0	0	0	3	7	1	0	0	
US echocardiography fetal	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	6	6	0	0	0	1	3	4	1	0	1	
		References		Study Quality												
		32 (27363529)		3												
		52 (23223160)		4												
		82 (27813120)		3												
		81 (23495173)		3												
		80 (27150066)		3												
		79 (21998013)		3												
		78 (24919586)		3												

		58 (20215730)		3											
		22 (-3196434)		4											
US assessment for TTTS	May be appropriate	Limited	0 0 mSv	0 0 mSv [ped]	6	6	0	0	0	1	3	3	4	0	0
		References		Study Quality											
		71 (32832884)		3											
		70 (14533898)		4											
		69 (23617829)		4											
		12 (27561094)		3											
		9 (32861686)		4											
		5 (31697621)		4											
		4 (29287298)		4											
MRI fetal without IV contrast	May be appropriate	Limited	0 0 mSv	0 0 mSv [ped]	6	6	0	0	0	2	3	2	3	0	0
		References		Study Quality											
		68 (32358676)		3											
		67 (29688161)		3											
		66 (31220847)		3											
		65 (26268524)		3											
		18 (28444780)		3											
		17 (25377504)		3											
US cervix transvaginal	May be appropriate	Limited	0 0 mSv	0 0 mSv [ped]	5	5	0	0	0	2	4	5	0	0	0
		References		Study Quality											
		43 (31878811)		4											
MRI fetal without and with IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	9	1	0	0	0	0	0	0	0

Appendix Key

A more complete discussion of the items presented below can be found by accessing the supporting documents at the designated hyperlinks.

Appropriateness Category: The panel's recommendation for a procedure based on the assessment of the risks and benefits of performing the procedure for the specified clinical scenario.

SOE: Strength of Evidence. The assessment of the amount and quality of evidence found in the peer reviewed medical literature for an appropriateness recommendation.

- **References:** The citation number and PMID for the reference(s) associated with the recommendation.
- **Study Quality:** The assessment of the quality of an individual reference based on the number of study quality elements described in the reference.

RRL: Relative Radiation Level. A population based assessment of the amount of radiation a typical patient may be exposed to during the specified procedure.

Rating: The final rating (1-9 scale) for the procedure as determined by the panel during rating rounds.

Median: The median rating (1-9 scale) for the procedure as determined by the panel during rating rounds.

Final tabulations: A histogram showing the number of panel members who rated the procedure as noted in the column heading (ie, 1, 2, 3, etc.).

Additional supporting documents about the AC methodology and processes can be found at www.acr.org/ac.