Complete Summary

GUIDELINE TITLE

Evaluation of multiple gestations.

BIBLIOGRAPHIC SOURCE(S)

Fleischer AC, Andreotti RF, Bohm-Velez M, Horrow MM, Hricak H, Javitt MC, Thurmond A, Zelop C, Expert Panel on Women's Imaging. Evaluation of multiple gestations. [online publication]. Reston (VA): American College of Radiology (ACR); 2005. 10 p. [22 references]

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: American College of Radiology (ACR), Expert Panel on Women's Imaging. Evaluation of multiple gestations. Reston (VA): American College of Radiology (ACR); 2001. 11 p. (ACR appropriateness criteria).

The appropriateness criteria are reviewed annually and updated by the panels as needed, depending on introduction of new and highly significant scientific evidence.

COMPLETE SUMMARY CONTENT

SCOPE
METHODOLOGY - including Rating Scheme and Cost Analysis
RECOMMENDATIONS
EVIDENCE SUPPORTING THE RECOMMENDATIONS
BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS
QUALIFYING STATEMENTS
IMPLEMENTATION OF THE GUIDELINE
INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES
IDENTIFYING INFORMATION AND AVAILABILITY
DISCLAIMER

SCOPE

DISEASE/CONDITION(S)

Multiple gestations

Note: For simplicity and clarity, the appropriateness criteria have been applied to twin pregnancies initially diagnosed in the second trimester. They are applicable to twins first identified in the third trimester with little if any alteration of the schema. For twins identified in the first trimester, a scan for detailed anatomic evaluation and comparative growth is recommended at 18-20 weeks, with other aspects of these guidelines applicable thereafter. Triplet and higher order multiple gestations are not specifically addressed, but these should all be treated as very high-risk pregnancies.

GUIDELINE CATEGORY

Diagnosis
Evaluation

CLINICAL SPECIALTY

Obstetrics and Gynecology
Radiology

INTENDED USERS

Health Plans
Hospitals
Managed Care Organizations
Physicians
Utilization Management

GUIDELINE OBJECTIVE(S)

To evaluate the appropriateness of radiologic examinations for women with multiple gestations

TARGET POPULATION

Women with multiple gestations (specifically, women with twin pregnancies initially diagnosed in the second trimester)

INTERVENTIONS AND PRACTICES CONSIDERED

Diagnosis/Evaluation

1. Ultrasound diagnosis of multiple gestation
    - Characterization of type of twinning
    - Determination of chorionicity and amnionicity
    - Assessment of size of each twin and degree of discordance
2. Timing of follow-up ultrasound examinations
3. Additional evaluations
    - Assessment of amniotic fluid for each twin
    - Assessment of cervix
    - Umbilical artery Doppler for each twin
    - Biophysical profile for each twin
    - Nonstress test for each twin

MAJOR OUTCOMES CONSIDERED

Diagnostic utility (i.e., sensitivity, specificity) of ultrasound techniques

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The guideline developer performed literature searches of peer-reviewed medical journals, and the major applicable articles were identified and collected.

NUMBER OF SOURCE DOCUMENTS

The total number of source documents identified as the result of the literature search is not known.

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Not Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not stated

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

One or two topic leaders within a panel assume the responsibility of developing an evidence table for each clinical condition, based on analysis of the current literature. These tables serve as a basis for developing a narrative specific to each clinical condition.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus (Delphi)

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Since data available from existing scientific studies are usually insufficient for meta-analysis, broad-based consensus techniques are needed to reach agreement in the formulation of the appropriateness criteria. The American College of Radiology (ACR) Appropriateness Criteria panels use a modified Delphi technique

to arrive at consensus. Serial surveys are conducted by distributing questionnaires to consolidate expert opinions within each panel. These questionnaires are distributed to the participants along with the evidence table and narrative as developed by the topic leader(s). Questionnaires are completed by the participants in their own professional setting without influence of the other members. Voting is conducted using a scoring system from 1 to 9, indicating the most to the least appropriate imaging examination or therapeutic procedure. The survey results are collected, tabulated in anonymous fashion, and redistributed after each round. A maximum of three rounds is conducted and opinions are unified to the highest degree possible. Eighty percent agreement is considered a consensus. This modified Delphi technique enables individual, unbiased expression, is economical, easy to understand, and relatively simple to conduct.

If consensus cannot be reached by the Delphi technique, the panel is convened and group consensus techniques are utilized. The strengths and weaknesses of each test or procedure are discussed and consensus reached whenever possible. If "No consensus" appears in the rating column, reasons for this decision are added to the comment sections.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Criteria developed by the Expert Panels are reviewed by the American College of Radiology (ACR) Committee on Appropriateness Criteria.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

ACR Appropriateness Criteria®

Clinical Condition: Multiple Gestations

Variant 1: Indications for use of ultrasound to diagnose multiple gestations.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Pregnancy Circumstances		
Large for dates pregnancy	9	
Pregnancy as result of assisted reproductive techniques	9	
Elevated maternal serum alpha-fetoprotein	9	Elevated maternal serum alpha-fetoprotein may be due to multiple gestations, as well.
Pregnancy with family history of twins	6	
All pregnancies	6	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Variant 2: Initial ultrasound has diagnosed twins on the same scan.

Radiologic Exam Procedure	Appropriateness Rating	Comments
On the Same US Exam		
Determine chorionicity and amnionicity	9	
Assess twin sizes and discordancy	9	
Assess amniotic fluid for each	9	
Assess cervix	9	
Detailed anatomic survey	9	Fetal anomalies are more frequent in twins than in singletons.
Umbilical artery Doppler for each	3	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9		

Radiologic Exam Procedure	Appropriateness Rating	Comments
1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Clinical Condition: Multiple Gestations: Follow-up Scans

Variant 3: First ultrasound: dichorionic twins, concordant.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Timing of Follow-up US Exam		
At 26-28 weeks only, if still concordant	8	
At 30-32 weeks only, if still concordant	7	
Every 6 weeks	6	
Every 4 weeks	4	
Every 3 weeks	2	
Every 2 weeks	1	
Evaluate on Follow-up Scans		
Assess amniotic fluid for each twin	9	
Assess cervix	9	
Umbilical artery Doppler for each twin	3	
Biophysical profile for each twin	3	
Nonstress test for each twin	3	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 4: First ultrasound: monochorionic twins, concordant.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Timing of Follow-up US Exam		
Every 4 weeks	6	Although there was no consensus on the exact timing of follow-up, the trend favored periodic scans at 3- to 6-week intervals.
Every 6 weeks	4	
Every 3 weeks	3	
Every 2 weeks	2	
At 26-28 weeks only, if still concordant	1	
At 30-32 weeks only, if still concordant	1	
Evaluate on Follow-up Scans		
Assess amniotic fluid for each twin	9	
Assess cervix	9	
Umbilical artery Doppler for each twin	3	
Biophysical profile for each twin	3	
Nonstress test for each twin	3	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 5: First ultrasound: monoamniotic twins, concordant.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Timing of Follow-up US Exam		
Every 4 weeks	7	Although there was no consensus on the exact timing of follow-up, the trend favored periodic scans at 3- to 4-week intervals.
Every 3 weeks	6	
Every 2 weeks	4	
Every 6 weeks	3	
At 26-28 weeks only, if still concordant	2	
At 30-32 weeks only, if still concordant	2	
Evaluate on Follow-up US Exam		
Assess amniotic fluid	9	There is a single amniotic cavity for both twins together.
Assess cervix	9	
Umbilical artery Doppler for each twin	3	
Biophysical profile for each twin	3	
Nonstress test for each twin	3	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 6: First or subsequent ultrasound: 5% twin discordance.

Radiologic Exam Procedure	Appropriateness Rating	Comments

Radiologic Exam Procedure	Appropriateness Rating	Comments
Timing of Follow-up US Exam		
Every 4 weeks	7	
At 26-28 weeks only, if still concordant	6	
Every 6 weeks	6	
At 30-32 weeks only, if still concordant	3	
Every 3 weeks	2	
Every 2 weeks	1	
Evaluate on Follow-up US Exam		
Assess amniotic fluid for each twin	9	
Assess cervix	9	
Umbilical artery Doppler for each twin	3	
Biophysical profile for each twin	3	
Nonstress test for each twin	3	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 7: First or subsequent ultrasound: 10% twin discordance.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Timing of Follow-up US Exam		
Every 4 weeks	7	

Radiologic Exam Procedure	Appropriateness Rating	Comments
Every 6 weeks	6	
Every 3 weeks	2	
Every 2 weeks	2	
At 26-28 weeks only, if still concordant	2	
At 30-32 weeks only, if still concordant	2	
Evaluate on Follow-up US Exam		
Assess amniotic fluid for each twin	9	
Assess cervix	9	
Umbilical artery Doppler for each twin	4	
Biophysical profile for each twin	4	
Nonstress test for each twin	3	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 8: First or subsequent ultrasound: 15% twin discordance.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Timing of Follow-up US Exam		
Every 3 weeks	7	It is possible for both twins to be growth-restricted. If the larger twin is below 10% by weight for gestational age by menstrual dates and/or a first sonogram, increased pregnancy

Radiologic Exam Procedure	Appropriateness Rating	Comments
		surveillance is indicated, even if the twins are close to concordant.
Every 4 weeks	4	
Every 2 weeks	3	
Every 6 weeks	3	
At 26-28 weeks only, if still concordant	2	
At 30-32 weeks only, if still concordant	2	
Evaluate on Follow-up US Exam		
Assess amniotic fluid for each twin	9	
Assess cervix	9	
Umbilical artery Doppler for each twin	7	
Biophysical profile for each twin	5	
Nonstress test for each twin	4	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 9: First or subsequent ultrasound: 20% twin discordance.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Timing of Follow-up US Exam		
Every 3 weeks	8	It is possible for both twins to be growth-restricted. If the larger twin is

Radiologic Exam Procedure	Appropriateness Rating	Comments
		below 10% by weight for gestational age by menstrual dates and/or a first sonogram, increased pregnancy surveillance is indicated, even if the twins are close to concordant.
Every 2 weeks	7	
Every 4 weeks	3	
Every 6 weeks	1	
At 26-28 weeks only, if still concordant	1	
At 30-32 weeks only, if still concordant	1	
Evaluate on Follow-up US Exam		
Assess amniotic fluid for each twin	9	
Assess cervix	9	
Umbilical artery Doppler for each twin	8	
Biophysical profile for each twin	8	
Nonstress test for each twin	8	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 10: First or subsequent ultrasound: 25% twin discordance.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Timing of Follow-up US Exam		

Radiologic Exam Procedure	Appropriateness Rating	Comments
Every 2 weeks	8	It is possible for both twins to be growth-restricted. If the larger twin is below 10% by weight for gestational age by menstrual dates and/or a first sonogram, increased pregnancy surveillance is indicated, even if the twins are close to concordant.
Every 3 weeks	7	
Every 4 weeks	1	
Every 6 weeks	1	
At 26-28 weeks only, if still concordant	1	
At 30-32 weeks only, if still concordant	1	
Evaluate on Follow-up US Exam		
Assess amniotic fluid for each twin	9	
Assess cervix	9	
Biophysical profile for each twin	9	
Nonstress test for each twin	9	
Umbilical artery Doppler for each twin	8	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 11: First or subsequent ultrasound: oligohydramnios in one or both sacs.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Timing of Follow-up US Exam		
Every 2 weeks	9	
Every 3 weeks	2	
Every 4 weeks	1	
Every 6 weeks	1	
At 26-28 weeks only, if still concordant	1	
At 30-32 weeks only, if still concordant	1	
Evaluate on Follow-up US Exam		
Assess amniotic fluid for each twin	9	
Assess cervix	9	
Biophysical profile for each twin	9	
Nonstress test for each twin	9	
Umbilical artery Doppler for each twin	8	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 12: First or subsequent ultrasound: anomaly in a twin.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Timing of Follow-up Scans		
Every 3 weeks	8	The frequency of follow-up depends on the type and severity of anomaly. The

Radiologic Exam Procedure	Appropriateness Rating	Comments
		listed ratings are for a serious anomaly, which might affect the well-being of one or both twins.
Every 4 weeks	7	
Every 2 weeks	4	
Every 6 weeks	2	
At 26-28 weeks only, if still concordant	2	
At 30-32 weeks only, if still concordant	2	
Evaluate on Follow-up US Exam		
Assess amniotic fluid for each twin	9	
Assess cervix	9	
Umbilical artery Doppler for each twin	4	
Biophysical profile for each twin	4	
Nonstress test for each twin	3	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 13: Parameters to measure for twin discordance.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Measurement Parameter		
Weight	9	

Radiologic Exam Procedure	Appropriateness Rating	Comments
Abdominal circumference	9	
Biparietal diameter	8	
Head circumference	8	
Femur	8	
Head/abdomen circumference ratio	4	
Femur/abdomen circumference ratio	3	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Variant 14: Tables to use for twin measurement.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Measurement Tables		
Same tables as for singletons	8	
Specific twin-generated tables	3	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

All multiple gestations are high-risk as compared with singleton pregnancies. Dichorionic twin pregnancies, all of which must also be diamniotic, are the safest form of twinning and carry a 10% risk that one or both fetuses will not survive beyond the neonatal period. When twins share one placenta--monochorionic-diamniotic twinning--that risk increases to 25%, with the increased mortality due to complications related to blood vessel communications between the cardiovascular circulations of the individual twins. These conditions include twin-twin transfusion syndrome (TTTS), twin embolization syndrome, and acardius, or twin-reversed arterial perfusion sequence. When twins also share the same compartment--monochorionic-monoamniotic twinning--the loss rate jumps to 50%, with the incremental mortality attributable to cord entanglement accidents.

The major sources of morbidity and mortality common to all twin gestations are prematurity and intrauterine growth restriction, which may affect one or both fetuses. There may be an earlier onset to placental postmaturity complications. There is also an increased incidence of congenital anomalies among all twins, although anatomic malformations occur 4 to 5 times as frequently in monozygotic as in dizygotic twins. All categories of perinatal morbidity and mortality among twins occur with even greater frequency in higher order multiple gestations.

It has been the task of the guideline committee to determine, by evaluation of the medical literature and use of consensus techniques, the appropriate modalities (sonographic and others) and the timing and frequency of their use for assessing the health status of multiple gestations. For simplicity and clarity, the appropriateness criteria have been applied to twin pregnancies initially diagnosed in the second trimester. They are applicable to twins first identified in the third trimester with little if any alteration of the schema. For twins identified in the first trimester, a scan for detailed anatomic evaluation and comparative growth is recommended at 18 to 20 weeks, with other aspects of these guidelines applicable thereafter.

Triplet and higher order multiple gestations are not specifically addressed, but these should all be treated as very high-risk pregnancies. Growth scans should be performed no less frequently than every 3 to 4 weeks. Some form of fetal monitoring, probably best accomplished by some variant of the sonographic biophysical profile (since it is very difficult to confirm that nonstress tests have successfully interrogated each fetus of a triplet or greater multifetal pregnancy), should be considered on a weekly or more frequent basis once the pregnancy has reached the point of potential postnatal viability. Even closer surveillance may be indicated if there is a monochorionic or monoamniotic twin pair as part of the multifetal pregnancy, particularly if there is discordance in fetal sizes or amniotic fluid volumes.

Firm indications for use of sonography to diagnose multiple gestations include those pregnancies that measure larger than anticipated by menstrual dates and all pregnancies conceived with assisted reproductive techniques. A less strong, but possible, indication is pregnancy when there is a family history of spontaneous twins. Some would argue that the timely diagnosis of multiple gestations and the consequent alteration of obstetrical management could be used to consider sonographic second trimester screening of all pregnancies, but no statistically significant fetal benefits were demonstrated in the recent RADIUS trial. Elevation of maternal serum alpha-fetoprotein is an indication for sonography, and one of the causes for a high value is multiple pregnancy.

Once a twin pregnancy is diagnosed, sonography is an important method by which to characterize the type of twinning that has occurred and to identify prognostic indicators of possible adverse outcome. During the scan that has diagnosed twins, it is necessary to attempt to determine chorionicity and amnionicity; assess the size of each twin and the degree of discordance, if any, between them; evaluate the amount of amniotic fluid for each; and image the cervix to check for changes of effacement or dilatation. On each indicated follow-up sonogram, it remains equally important to measure twins for development of discordance, and to evaluate the cervix and each twin's amniotic fluid. Unless there is evidence of significant growth restriction or fluid volume abnormality for one or both twins, it

is probably not indicated to perform umbilical artery Doppler waveform analysis (UAD) or biophysical profile (BPP) on the twins. While Doppler interrogation is not indicated, even in concordant twins, nonstress test (NST) is warranted starting at 32 weeks. It is similarly important and possible to determine chorionicity and amnionicity in triplet pregnancies.

The timing and frequency of follow-up sonograms should be adjusted based on the chorionicity and amnionicity of the twin pregnancy, attempting to minimize the number of scans performed, unless growth or fluid disturbances indicate a need for closer surveillance. There was no consensus on the ideal study intervals, but there were definite opinion trends for concordant twins without detected sonographic complicating factors. For dichorionic-diamniotic twins, a single follow-up scan in the first portion of the third trimester, 26 to 32 weeks, is most probably sufficient, although some preferred periodic scans at 6-week intervals. For monochorionic-diamniotic twins, there was a definite preference for sequential scans at timed intervals between 3 and 6 weeks, with 3- to 4-week intervals most commonly selected because of the increased risk of TTTS in 15% if these cases. The scanning pattern recommendation for monochorionic-monoamniotic twins was similar, between 3 and 6 weeks, but with 3 to 4 week intervals preferred.

The necessary parameters to measure or calculate in assessing the likelihood of intrauterine growth restriction include weight and abdominal circumference. Measurements of biparietal diameter, head circumference, and femur length are all indicated, but ratios of head or femur to abdominal circumference are probably not needed. The use of the same measurement tables developed for singleton pregnancies is indicated for twins rather than tables specifically generated for twins. Twin pregnancies are at greater risk of intrauterine growth restriction, which may affect one or both fetuses, and there is concern that growth tables for twins, which do show smaller measurements than singletons in the third trimester, may be incorporating tendencies toward growth restriction within their normal values. It is important to remember that twins can be concordantly growth-restricted, and if both are becoming small for dates on follow-up sonograms, protocols for monitoring fetal well-being will still be indicated, just as they would be in significantly discordant twins.

Twin discordance is considered mild if weight estimates for the twins are 15% different, moderate if 20% different, and severe if 25% different or greater. For mild discordance, scans for growth at 3-week intervals with use of umbilical artery Doppler analysis are probably indicated. For moderate discordance, scans for growth at 2 to 3 week intervals should be considered, and UAD, BPP, and/or NST are indicated. When discordance is severe, growth scans at 2-week intervals are preferred, with BPP and/or NST necessary and UAD also indicated. If both twins have fallen below the 10th percentile for gestational age relative to menstrual dates and/or dating by the initial sonogram, that should also be taken as an indication for increased surveillance of growth and fetal health.

Approximately 10 to 20% of monochorionic twin pregnancies may be associated with TTTS, a type of twin discordance. In addition to the evaluation of amniotic fluid volume, bladder volume, and hydrops in each twin, Doppler findings may be used to assess these pregnancies complicated by intertwin vascular connections within the placenta, between cord insertion sites, for the presence of an A-A anastomosis. Other Doppler findings include absent or reversed end-diastolic flow

within the umbilical artery, pulsatile umbilical vein flow, and absent or reversed end-diastolic flow within the ductus venosus.

Testing for fetal well-being by BPP and NST are generally performed weekly, twice weekly, or even more frequently when there is strong clinical concern for imminent fetal decompensation. Umbilical artery Doppler is, in general, not a rapidly fluctuating or deteriorating parameter, but rather a long-term predictor of the status of the utero-placental circulation. As such, it has prognostic significance for the likelihood of growth restriction and perinatal morbidity and mortality, and it may change weekly if abnormal.

Oligohydramnios in one or both amniotic sacs is an important risk factor for poor perinatal outcome. In monochorionic twins, oligohydramnios for one fetus may indicate severe growth restriction if amniotic fluid for the other is normal, or it may indicate the possibility of the twin-twin transfusion syndrome if the other twin has polyhydramnios. With oligohydramnios, growth scans are needed every 2 weeks, and frequent well-being assessment by BPP and/or NST is also necessary. UAD, at appropriate intervals, is also indicated.

Closer surveillance of twin pregnancies in which one or both twins have anatomic anomalies is also indicated, generally at 3- to 4-week intervals. The intervals and the potential use of UAD, BPP, and/or NST should be based on the specific abnormality present and the likelihood that it would affect fetal well-being or amniotic fluid volume.

The evaluation of multiple gestations is a challenging and important task. The intensity of the obstetrical management of such pregnancies must be titrated to the degree of risk present in each individual case. The number of fetuses present, their chorionic and amniotic status, and risk factors such as growth restriction of one or more fetuses, amniotic fluid alterations, or presence of fetal anomalies must all be taken into account. These parameters will all affect the frequency of growth assessment, the intensity of surveillance for fetal well-being, and the institution of pharmacological and other medical therapeutic interventions. Ultrasonographic imaging, together with its associated techniques for monitoring fetal compensation or distress, serves as the mainstay for evaluating the complexities of each multifetal pregnancy, helping the obstetrician chart a course toward a successful outcome.

Abbreviation

US, ultrasound

CLINICAL ALGORITHM(S)

Algorithms were not developed from criteria guidelines.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The recommendations are based on analysis of the current literature and expert panel consensus.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Selection of appropriate radiologic imaging procedures for evaluation of women with multiple gestations

POTENTIAL HARMS

Not stated

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

An American College of Radiology (ACR) Committee on Appropriateness Criteria and its expert panels have developed criteria for determining appropriate imaging examinations for diagnosis and treatment of specified medical condition(s). These criteria are intended to guide radiologists, radiation oncologists, and referring physicians in making decisions regarding radiologic imaging and treatment. Generally, the complexity and severity of a patient's clinical condition should dictate the selection of appropriate imaging procedures or treatments. Only those exams generally used for evaluation of the patient's condition are ranked. Other imaging studies necessary to evaluate other co-existent diseases or other medical consequences of this condition are not considered in this document. The availability of equipment or personnel may influence the selection of appropriate imaging procedures or treatments. Imaging techniques classified as investigational by the U.S. Food and Drug Administration (FDA) have not been considered in developing these criteria; however, study of new equipment and applications should be encouraged. The ultimate decision regarding the appropriateness of any specific radiologic examination or treatment must be made by the referring physician and radiologist in light of all the circumstances presented in an individual examination.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

IMPLEMENTATION TOOLS

Personal Digital Assistant (PDA) Downloads

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Staying Healthy

IOM DOMAIN

Effectiveness
Timeliness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Fleischer AC, Andreotti RF, Bohm-Velez M, Horrow MM, Hricak H, Javitt MC, Thurmond A, Zelop C, Expert Panel on Women's Imaging. Evaluation of multiple gestations. [online publication]. Reston (VA): American College of Radiology (ACR); 2005. 10 p. [22 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2001 (revised 2005)

GUIDELINE DEVELOPER(S)

American College of Radiology - Medical Specialty Society

SOURCE(S) OF FUNDING

The American College of Radiology (ACR) provided the funding and the resources for these ACR Appropriateness Criteria®.

GUIDELINE COMMITTEE

Committee on Appropriateness Criteria, Expert Panel on Women's Imaging

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Panel Members: Arthur C. Fleischer, MD (Co-Author and Panel Chair); Rochelle F. Andreotti, MD (Co-Author); Marcela Böhm-Vélez, MD; Mindy M. Horrow, MD; Hedvig Hricak, MD, PhD; Marcia C. Javitt, MD; Amy Thurmond, MD; Carolyn Zelop, MD

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: American College of Radiology (ACR), Expert Panel on Women's Imaging. Evaluation of multiple gestations. Reston (VA): American College of Radiology (ACR); 2001. 11 p. (ACR appropriateness criteria).

The appropriateness criteria are reviewed annually and updated by the panels as needed, depending on introduction of new and highly significant scientific evidence.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the American College of Radiology (ACR) Web site.

ACR Appropriateness Criteria® Anytime, Anywhere™ (PDA application). Available from the ACR Web site.

Print copies: Available from the American College of Radiology, 1891 Preston White Drive, Reston, VA 20191. Telephone: (703) 648-8900.

AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- ACR Appropriateness Criteria®. Background and development. Reston (VA): American College of Radiology; 2 p. Electronic copies: Available in Portable Document Format (PDF) from the American College of Radiology (ACR) Web site.

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on November 19, 2004. The information was verified by the guideline developer on December 21, 2004. This summary was updated by ECRI on March 23, 2006.

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Date Modified: 10/2/2006