**Overview of the general approach to diagnosis and treatment of fetal arrhythmias**

[Authors](http://www.uptodate.com/contents/overview-of-the-general-approach-to-diagnosis-and-treatment-of-fetal-arrhythmias/contributors): [Jami C Levine, MD](http://www.uptodate.com/contents/overview-of-the-general-approach-to-diagnosis-and-treatment-of-fetal-arrhythmias/contributors), [Mark E Alexander, MD](http://www.uptodate.com/contents/overview-of-the-general-approach-to-diagnosis-and-treatment-of-fetal-arrhythmias/contributors), [Deborah Levine, MD](http://www.uptodate.com/contents/overview-of-the-general-approach-to-diagnosis-and-treatment-of-fetal-arrhythmias/contributors)

INTRODUCTION

Arrhythmias result from abnormal automaticity, abnormal conduction, or both. Fetal arrhythmias complicate 1 to 2 percent of pregnancies and have the potential to compromise fetal health. They are categorized according to their rhythm (irregular, regular) and rate (tachycardia, bradycardia). The type and distribution of arrhythmias in one large series are shown in the table (table 1).

Fetal arrhythmias will be reviewed here. Diagnosis and management of arrhythmias in neonates and children are discussed separately. IDENTIFICATION

The conduction system of the fetal heart is functionally mature by 16 weeks of gestation, and produces a regular rhythm and rate between 110 and 160 beats per minute (bpm) for the remainder of the pregnancy. Fetal arrhythmias are defined by deviations from these parameters. They are typically detected when auscultating the fetal heart, while monitoring the fetal heart rate (FHR) with external or internal devices, or during an antenatal ultrasound examination. (See ["Nonstress test and contraction stress test", section on 'Physiologic basis of fetal heart rate changes'](http://www.uptodate.com/contents/nonstress-test-and-contraction-stress-test?source=see_link&sectionName=PHYSIOLOGIC+BASIS+OF+FETAL+HEART+RATE+CHANGES&anchor=H2#H2).)

EVALUATION

At present, ultrasonography is the best modality for evaluation of fetal arrhythmias. It is important to differentiate fetal arrhythmias, particularly intrapartum, from nonreassuring FHR changes related to hypoxemia or other factors. This distinction is usually obvious because of the clinical circumstances. For example, repetitive bradycardia that begins and ends with (or following) uterine contractions is probably related to hypoxemia, while tachycardia associated with prolonged fetal activity or maternal fever probably reflects a normal physiological response rather than a conduction abnormality. When there are concerns, fetal well-being can be evaluated by assessing the FHR response to fetal stimulation or movement, biophysical profile score, or through umbilical blood gas analysis. (See ["Nonstress test and contraction stress test"](http://www.uptodate.com/contents/nonstress-test-and-contraction-stress-test?source=see_link) and ["Intrapartum fetal heart rate assessment"](http://www.uptodate.com/contents/intrapartum-fetal-heart-rate-assessment?source=see_link) and ["The fetal biophysical profile"](http://www.uptodate.com/contents/the-fetal-biophysical-profile?source=see_link).)

Two-dimensional ultrasound — Two-dimensional ultrasound is used to diagnose the specific arrhythmia, evaluate cardiac anatomy, evaluate cardiac function, and look for signs of hydrops fetalis. The cardiac anatomy should be carefully reviewed, as arrhythmias can be associated with congenital heart disease. This risk is about 10 percent in patients with tachycardia and about 50 percent in patients with bradycardia.