CLINICAL NOTES:
Diagnosing Feline Heart Disease

Feline heart disease can be either congenital or acquired. Congenital disease is usually diagnosed in very young patients, but acquired disease may be diagnosed in cats ranging from 3 months to 19 years of age. Acquired disease can be further categorized as either primary cardiomyopathy or secondary heart disease, which may result from such conditions as systemic hypertension, heartworm infection, and thyroid disease. Heart disease is fairly common in the cat, and an animal can have the disease for many years before exhibiting any clinical signs. In fact, not all cats with heart disease will develop clinical signs. In one study of 103 privately owned cats that appeared healthy, 16 of them had asymptomatic cardiomyopathy.1

Cats with cardiomyopathy can have the condition for years before the onset of clinical signs and many may never develop clinical signs. By detecting and staging asymptomatic cardiac disease earlier, the clinician can decide whether therapy should be initiated or if the cat should just be monitored.

CHALLENGES IN DIAGNOSING FELINE HEART DISEASE

Although cardiomyopathy may be quite common in apparently healthy cats, diagnosis is not always easy.

Auscultation and Heart Murmurs
The reported incidence of heart murmurs in apparently healthy cats is 21% to 50%.1,3-6 Thus, careful thoracic auscultation should be part of every routine physical examination. However, cats with cardiomyopathy may not have a murmur and many cats that have murmurs have no evidence of heart disease based on an echocardiogram. In two studies, 80% to 95% of cats with murmurs had no evidence of disease and 2% to 15% of cats with no murmur had echocardiographic evidence of heart disease.1,5 Currently, if a cat has a murmur, an echocardiogram is recommended and considered the gold standard. However, this study is frequently declined due to issues associated with convenience and/or cost.

Thoracic Radiographs
Thoracic radiographs can reveal alterations in the cardiac silhouette, such as overall enlargement or chamber enlargement. However, these changes are neither sensitive nor specific for feline cardiomyopathy. Thoracic radiographs are the gold standard for diagnosing congestive heart failure and in this setting may demonstrate the presence of pulmonary edema or pleural effusion with or without venous congestion. However, the lack of pathopneumonic findings of CHF is a limitation.
Echocardiography can provide a definitive diagnosis as to the etiology of cardiac disease, by allowing assessment of cardiac structure—its dimensions and ventricular function. Echocardiography also enables the clinician to assess the direction, nature, and velocity of blood flow but is not the test of choice to diagnose CHF. Unfortunately, access to echocardiography is limited and may require referral, so it is often declined by clients.

Cardiac Biomarkers
Cardiac biomarkers are substances (typically a gene product or hormone) elaborated by the heart that can be objectively evaluated and are an indicator of a pathologic process. B-type natriuretic protein (BNP) is a peptide hormone synthesized and released from the myocardium. N-terminal pro–B-natriuretic peptide (NTproBNP) is formed when the parent pro-hormone (proBNP) is cleaved into 2 molecules. NTproBNP is the more stable compound, whereas C-BNP is rapidly degraded. NTproBNP concentrations increase under conditions that lead to ventricular stretch and stress, such as heart disease and heart failure. Consequently, determinations of NTproBNP can be used to support the diagnosis of heart disease and heart failure.

**SUMMARY**
NTproBNP offers unique clinical information that can help identify cats that have a high risk of heart disease and congestive heart failure. When used in conjunction with other diagnostic tests, it may increase the accuracy and confidence of diagnosis of both heart disease and congestive heart failure by primary care veterinarians. It may also provide an alternative screening modality to assess cardiac risk in apparently healthy cats, particularly when echocardiography is recommended but declined.

**REFERENCES**