Two-Dimensional and
M-Mode Echocardiography
for the Small Animal
Practitioner
Books in the *Rapid Reference* series are ideal quick references, using a concise, practical approach to provide small animal practitioners with fast access to essential information. Designed to be used at a patient’s side, these books make it easy to quickly diagnose and treat patients. With a spiral binding to lie flat, *Rapid Reference* books are an indispensable tool for the exam room.

**Other Rapid Reference Series Titles**

*Life-Threatening Cardiac Emergencies for the Small Animal Practitioner*
By Maureen McMichael and Ryan Fries
Two-Dimensional and M-Mode Echocardiography for the Small Animal Practitioner

SECOND EDITION

June A. Boon MS
Instructor and Echocardiographer
College of Veterinary Medicine and Biomedical Sciences
Colorado State University
Fort Collins, Colorado, USA

WILEY Blackwell
This book is dedicated to my family – you all make my life rich.
Contents

Preface, ix
About the Companion Website, xi

1 The Basics, 1

2 Knobology for the Echocardiogram: Improving Image Quality, 7

3 Two-Dimensional Imaging Planes and Subjective Assessment, 24

4 Imaging Planes: Technique in the Dog and Cat, 51

5 M-Mode Echocardiography, 75

6 Measurement and Assessment of Two-Dimensional and M-Mode Images, 83

7 Echocardiographic Features of Common Acquired Heart Diseases, 106

Recommended Reading, 136

Glossary, 137

Index, 139
Preface

With increasing affordability, ultrasound equipment has made its way into many private practices. Whilst entire books and sections of large books are devoted to the study of cardiac ultrasound, this handbook is meant to be a starter resource and a quick handy reference for fundamental echocardiographic information, and is by no means a comprehensive resource on veterinary echocardiography. The handbook starts with the controls on your machine, because presets do not always work well, moves on to discussing normal imaging planes and their subjective assessment, discusses how to obtain the imaging planes, then covers basic measurements of size and function, and finally reviews the typical features of common acquired heart disease. Videos of technique and features of disease are utilized to help you develop the skill necessary to perform the echocardiogram and aid in its interpretation. As with any skill set, it will require practice, patience and more in-depth reading to develop these techniques and assessments.
About the Companion Website

This book is accompanied by a companion website:

www.wiley.com/go/boon/two-dimensional

The website includes:

- Supplementary videos clips that demonstrate scanning techniques and disease features.
- A play icon 🎥 appears in the margin whenever a relevant video clip is available on the website.
- Each video corresponds to certain figures within the text, appearing beside the video for ease of reference.
- The password for the site is the last word in the caption for Figure 3.10.
Chapter 1 The Basics

Echocardiographic Applications

Some Indications for an Echocardiogram

Cardiac Anatomy

Orientation of the Heart in the Thorax

How To

Echocardiographic Applications

• Evaluation of:
  ◦ Valve morphology
  ◦ Chamber sizes
  ◦ Wall thickness
  ◦ Myocardial function
  ◦ Pericardial effusion

• Aid in the Diagnosis of:
  ◦ Chronic valve disease
  ◦ Endocarditis
  ◦ Cardiomyopathies (hypertrophic, dilated, unclassified)
  ◦ Pericardial effusions
  ◦ Cardiac neoplasia
  ◦ Pulmonary hypertension
  ◦ Congenital heart disease
Some Indications for an Echocardiogram

- Coughing
- Exercise intolerance
- Arrhythmia
- Pulmonary edema
- Pulmonary congestion
- Collapse or syncope
- Murmurs
- Cyanosis
- Lethargy
- Weak pulses
- Radiographic evidence of heart enlargement

Cardiac Anatomy

Figure 1.1 Heart Diagram. Diagram of the heart showing the chambers, valves and vessels of the heart. Flow through the heart is indicated. Note the relationships between the mitral valve and the aorta, and the pulmonary artery and the tricuspid valve. For details of abbreviations used in the figures, see the Glossary.