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Introduction

This introductory chapter provides a brief description of the presentation format of the guidebook. It is where the reader will find what prerequisites are required prior to further reading. The learning approach is also described to the target audience. To gain the most benefit from this scanning guidebook in the areas of gynecology and obstetrics, it is strongly advised that the chapters in the guidebook be read in the order presented. A brief list of the most common terminology and abbreviations used within ultrasound scanning is also provided, as there is some variation in terminology. Other topics include the importance of ergonomics and its application to reduce the risk of repetitive strain injuries to the operator. Finally, the focus will shift to the ultrasound images within the guidebook. For transparency of ultrasound image editing, the reader is directed to the location where the nature of the image modifications are found.

1.1 Learning Approach

This book, *Ultrasound Scanning Guide for Obstetrics and Gynecology*, is meant for use as a learning tool to aid the clinical scanning component of an educational ultrasound program. For this reason, it is the recommendation of both authors that a clinical instructor guides the learner. While both authors acknowledge there may be some variation of ultrasound scanning techniques and interpretation of the acquired images, the scanning methods and protocols outlined in this book is based on the experience of the authors, both having each worked clinically in large teaching hospitals, outpatient clinics and educational facilities for over 20 years.

The purpose of this guide is to provide a solid foundation of ultrasound scanning techniques and interpretation to aid the learner. For this guidebook, the person who performs the ultrasound examination may be referred to as 'sonographer', 'reader', 'learner' or 'operator'; however, the target audience has a broader reach. The target audience includes sonography students, sonographers, nurses, midwives, sonologists and any other medical professional who is to perform ultrasound examinations in the specialties of gynecology and obstetrics.

The best approach to understanding gynecological and obstetrical ultrasound scanning is to read the following chapters in the order presented in this guidebook.

Chapter 1: Introduction
Chapter 2: Transabdominal Ultrasound Scanning of Female Pelvis
Chapter 3: Transvaginal Ultrasound Scanning of Female Pelvis
Chapter 4: Obstetrical Ultrasound Scanning

Ultrasound Scanning Guide for Obstetrics and Gynecology, First Edition. Haleema Rauf and Leonardo Faundez.
 Published 2026 by John Wiley & Sons, Inc.

1.2 Prerequisites for Guidebook

Ultrasound physics and instrumentation will not be outlined in the guidebook; however, it is an important prerequisite to have prior to operating an ultrasound machine. Understanding the purpose of the components of the machine console and the functions of the knobs ensures safe practices for the operator and the patient. A thorough grasp of the anatomy, physiology and pathophysiology of the organs and structures in the human body is equally essential, as it allows the medical sonographer to discern the difference between normal and abnormal findings. The fundamentals of patient care and how to communicate effectively with the patient, prior, during and after each examination is essential, and this is also a required area of study prior to continuing further.

There is no measurement guideline provided within this guidebook for the normal value or normal reference range for the anatomy of the female pelvis or for the maternal and fetal anatomy in obstetrical ultrasound. This information was intentionally omitted, as the purpose was to offer a condensed book specific to guiding the learner in the practical training of ultrasound scanning in these specialties. Over time, as more knowledge has been acquired in the sonography field, some of the normal values or normal reference ranges have changed; therefore, we wanted to use a more simplified approach to improve the content for better clarity without relying on specific numeric values or reference ranges of normal anatomy.

1.3 Common Terminology Used in Guidebook

Within the field of sonography, there are words and phrases that are often interchangeable. There is also some variation in terminology often used in ultrasound scanning; therefore, a brief list of some of the more frequently used words or phrases is listed below.

- Axial: The term ‘axial’ refers to either the ‘transaxial’ or ‘transverse’ plane or view.
- Longitudinal: The term ‘longitudinal’ or ‘long’ may refer to the axis, plane, or view.
- Probe: The term ‘probe’ is interchangeable with ‘transducer’.
- Short: The term ‘short’ may refer to the axis, plane, or view.
- Trans: The term ‘trans’ may refer to the axis, plane, or view.
- Transducer face: The term ‘transducer face’ or ‘probe face’ refers to the part of the transducer that is in contact with the patient.
- Transducer head: The term ‘transducer head’ or ‘probe head’ also refers to the part of the transducer that is in contact with the patient.
- Transvaginal probe: The term ‘transvaginal probe’ is interchangeable with the term ‘endocavity probe’.

1.4 Ultrasound Images

All the ultrasound images in this guidebook have been cropped to enhance the visual elements for the learner. For this reason, the image display marker (IDM) may not always be present on the ultrasound images throughout the material. In some instances, a symbol (solid circle) may have been added in its place to help orient the learner. The probe’s orientation marker corresponds to the image display marker on the viewing monitor to ensure the image direction aligns with the patient’s anatomy as it is viewed by the sonographer during scanning. The images and illustrations within this guide will reflect this standard orientation.

Please refer to Chapter 2, Section 2.1, ‘Orientation Markers of the Probe and Image Display’, for further explanation.

1.5 Transparency of Ultrasound Image Editing

To ensure ease of understanding the content for the reader, the ultrasound images in the figures have been edited with intention. Due to the limitations of space within the tables and to enhance readability, the ultrasound image modifications are described in a separate appendix at the end of the main content of the guidebook. See Appendix A for further information as to the nature of the ultrasound image modifications that apply to the specific figures.

Ultrasound image editing may include any of the following:

- Cropping of images. All images were cropped to remove any identifying element of any person or brand name of machine.
- The addition of text and/or symbols to identify key anatomical structures.
- Highlighting areas/structures for clarity.
- Image arrangement. This refers to multipart figures which have an image placed with another image, or the placement of an image with an illustration. The purpose of the arrangement of the multipart figures with images is to help understand both the visual elements and their orientation for ultrasound scanning.

1.6 Ergonomics

Adjustable beds, chairs and stools are helpful to find the best position for the sonographer to perform the ultrasound examination. The ultrasound machine, sonographer and the patient are to be close in proximity to one another to prevent any undue physical strain. The patient is asked to move closer to the edge of the bed (towards the operator) if lying on a stretcher. Maintain awareness of posture while scanning as there is an increased risk of repetitive strain injuries with any job that requires prolonged periods of repetitive motion. Use the ulnar side, specifically the fourth and fifth digits of the scanning hand to anchor the transducer to the patient's skin. Lowering the stretcher to an extent also allows for less pressure to be exerted on the wrist, elbow and shoulder while scanning.

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