

国际医学名著精品系列

(英文原版)

# Chest Radiology

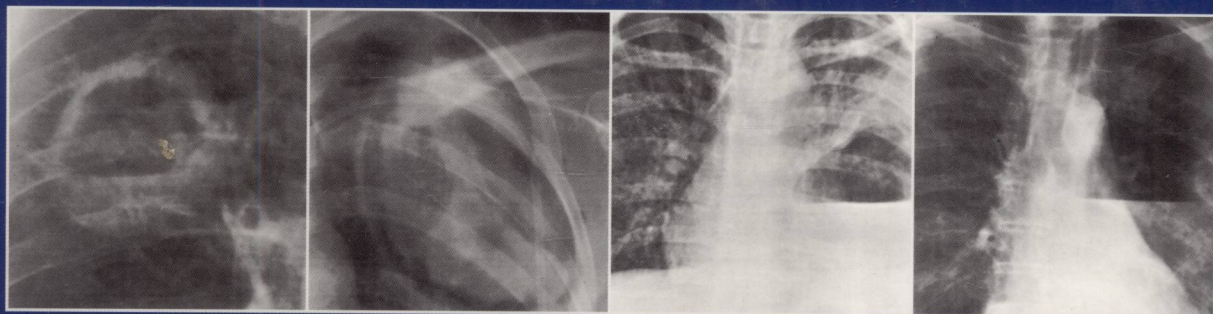
Plain Film Patterns  
and Differential Diagnoses

## 胸部放射学

平片表现与鉴别诊断

第 5 版

*James C. Reed*



人民军医出版社

PEOPLE'S MILITARY MEDICAL PRESS

国际医学名著精品系列

(英文原版)

# CHEST RADIOLOGY

Plain Film Patterns and Differential Diagnoses

---

## 胸部放射学

平片表现与鉴别诊断

第 5 版

JAMES C. REED, M. D.

Professor of Radiology  
University of Louisville  
Louisville, Kentucky

*with 448 illustrations*



人民军医出版社  
PEOPLE'S MILITARY MEDICAL PRESS

北 京

Chest Radiology, 5<sup>th</sup> edition

James C. Reed

ISBN-13: 9780323026178

ISBN-10: 0323026176

Copyright © 2003 by Elsevier. All rights reserved.

Authorized reprint edition from English edition published by the Proprietor.

ISBN-13: 9789812599650

ISBN-10: 9812599657

Copyright © 2007 by Elsevier (Singapore) Pte Ltd. All rights reserved.

Elsevier (Singapore) Pte Ltd.

3 Killiney Road

#08-01 Winsland House I

Singapore 239519

Tel: (65) 6349-0200

Fax: (65) 6733-1817

First Published 2007

2007 年初版

Printed in China by People's Military Medical Press under special arrangement with Elsevier (Singapore) Pte Ltd. This edition is authorized for sale in China only, excluding Hong Kong SAR and Taiwan. Unauthorized export of this edition is a violation of the Copyright Act. Violation of this Law is subject to Civil and Criminal Penalties.

本书英文影印版由 Elsevier (Singapore) Pte Ltd. 授权人民军医出版社在中国大陆境内独家发行。本版仅限在中国境内（不包括香港特别行政区及台湾）出版及标价销售。未经许可之出口，视为违反著作权法，将受法律之制裁。

---

**图书在版编目 (CIP) 数据**

胸部放射学：平片表现与鉴别诊断 = Chest Radiology: Plain Film Patterns and Differential Diagnoses: 英文 / (美) 里德 (Reed, J. C) 编著. —5 版. —北京: 人民军医出版社, 2007.4

ISBN 978-7-5091-0780-5

I. 胸... II. 里... III. 胸腔疾病—X 射线诊断—英文 IV. R816.4

中国版本图书馆 CIP 数据核字 (2007) 第 042957 号

著作权合同登记号: 图字—军—2007—008

---

**策划编辑:** 高爱英

**出版人:** 齐学进

**出版发行:** 人民军医出版社 **经 销:** 新华书店

**通信地址:** 北京市 100036 信箱 188 分箱 **邮 编:** 100036

**电话:** (010) 66882586 (发行部)、51927290 (总编室)

**传真:** (010) 68222916 (发行部)、66882583 (办公室)

**网址:** www.pmmp.com.cn

---

**印装:** 北京佳信达艺术印刷有限公司

**开本:** 787 mm × 1 092 mm 1/16

**印张:** 32.5 **字数:** 1 048 千字

**版、印次:** 2007 年 4 月第 1 版第 1 次印刷

**印数:** 0001 ~ 1 500

**定价:** 168.00 元

---

**版权所有 侵权必究**

购买本社图书, 凡有缺、倒、脱页者, 本社负责调换

**电话:** (010) 66882585、51927252

*To my wife, Sharon, and our children  
James, Peter, Brent, and Cameron*

# PREFACE TO THE FIFTH EDITION

---

The practice of chest radiology continues to evolve with rapid changes in technology and our understanding of diseases. I have continued to refer to the chest radiographic image as a plain film for simplicity. As a result of digital photography, the techniques for creating and viewing the chest radiograph are more variable than ever, but the basic principles requiring a high-quality image and careful interpretation still apply. The impact of CT on chest radiology has continued to expand with the technical advances of spiral and multi-detector CT, which have made CT angiography a reality. HRCT has also continued to have a greater impact on the diagnosis and management of diffuse lung diseases. The improved imaging of the diffuse diseases, combined with changes in the pathologic and clinical understanding of these diseases, has resulted in significant changes in the classification of diffuse lung diseases. Lung cancer detection is a continuing problem, but there are significant changes in the way lung cancer is detected, staged, and followed. Infectious diseases also remain a cause of more life-threatening complications. Since September 11, 2001, there are new threats in the form of biologic terror that have even impacted chest radiology. Anthrax previously has not been considered a likely human disease, but it is now included as an important cause of acute onset of mediastinal adenopathy and mediastinal widening. Continued study leads to ongoing improvements in the diagnosis and management of chest diseases. Chest radiology is a discipline that requires the mind of a detective and the ability to find answers to the unknown by careful review of the shadows.

*James C. Reed, M.D.*

# PREFACE TO THE FOURTH EDITION

---

Progress in the diagnosis and treatment of chest diseases continues to expand the scope of chest radiology. In an effort to avoid confusing terminology I have reconsidered an old semantic concern for description of basic observations: The term *density* is correctly used to describe the mass of a substance per unit volume. The radiologist recognizes that an increase in tissue may cast a shadow or opacity that appears white on the film. Such a shadow is frequently described as a density, but density has an opposite meaning when it is used to describe film blackening or optical density. The term *density* has therefore been a recurring source of confusion. While *density* is still often used to describe a white abnormality on exams such as mammograms, the glossary of terms published by the Fleischner Society has shown a strong preference for the term *opacity*. New advances in our understanding of diffuse pulmonary diseases have also led to some updates in pathologic and radiologic descriptive terminology.

Our advancing knowledge of diseases such as AIDS continues to expand our understanding of the diversity of patterns of chest disease. Many common diseases including lung cancer, tuberculosis, and AIDS-related diseases produce a variety of plain film patterns. AIDS-related diseases are considered causes of mediastinal adenopathy, diffuse air-space disease, multifocal opacities, and hyperlucent abnormalities. The major technical advances to affect chest disease are in CT. High-resolution thin section CT has replaced bronchography for the diagnosis of bronchiectasis and has advanced our understanding of the patterns and distributions of diffuse pulmonary diseases. Single-breath hold spiral CT has reduced artifacts and provides a new area for further research. The plain film, however, continues to be the most frequently performed of all radiologic procedures, and while it appears to be simple to perform, it is often the most challenging of radiologic exams to interpret.

James C. Reed, M.D.

# PREFACE TO THE THIRD EDITION

---

In the last decade we have seen the emergence of exciting new techniques and the appearance of new diseases. AIDS has profoundly affected many aspects of our society and the practice of medicine, including interpretation of the plain chest film. Computer technologies are changing the way we examine patients, and offer a host of new imaging options. Computed radiography is addressing some old technical problems and should provide better quality bedside plain films. High-resolution CT is very sensitive for confirming abnormalities that are only suspected from plain film or the clinical information, particularly fine reticular or nodular interstitial diseases and early emphysema. To optimize our use of these new technologies, we still need a thorough understanding of the diseases and their plain film patterns. This edition continues to emphasize plain film interpretation and uses radionuclide scans, ultrasound, CT, MR, and angiography to provide clarification of the patterns and to confirm specific diagnoses.

*James C. Reed, M.D.*



# PREFACE TO THE SECOND EDITION

---

**T**his book utilizes a unique format in order to walk the reader through the differential diagnoses of 23 common plain film patterns of chest disease.

Each chapter opens with one or more unidentified radiographs. A series of questions follow, all designed to help identify the pattern of disease presented on the film. For those desiring immediate answers, the legends for the introductory radiographs are at the end of each chapter. So, too, are the answers to the multiple choice, yes-no, and true-false questions.

Sandwiched between the presentation of the case at each chapter's beginning and the answers at the end are a tabular listing of differential considerations and a discussion of the problem case. The discussion follows a step-by-step approach to eliminating inappropriate diagnoses and arriving at the correct one or by suggesting that other radiology procedures and laboratory tests be performed, concluding with a summary. This section makes reference to several additional radiographs, all of which are fully identified and grouped after the discussion and summary.

It has been my intention to simulate within the confines of a book the radiologist's decision-making process of going from film to diagnosis. Although limitations of the format make it impossible to realistically reenact the process, it is hoped that your trip through these pages is both instructive and enjoyable.

The second edition of this book has expanded some of the differentials, and emphasized the impact of the newer modalities, particularly CT scanning, on the diagnosis of chest disease. While the role of MR appears to be limited mainly to the evaluation of the mediastinum, CT has impacted almost all of the patterns in chest radiology. While a number of cases have been added to demonstrate the use of CT, the emphasis of this text continues to be the plain film patterns and their differential diagnoses.

The reference list is also substantially expanded because of the continued rapid growth of the medical literature related to chest radiology. Since this is intended to be an introductory text, a large number of topics are considered in a simplistic manner. The reference list is intended to be used as a suggested reading list. This will provide the reader with a more comprehensive work on a particular entity.

*James C. Reed, M.D.*

# PREFACE TO THE FIRST EDITION

---

**T**his manual is designed to provide a comprehensive differential diagnosis for 23 of the most common radiologic patterns of chest disease. Each chapter is introduced with problem cases and a set of questions, followed by a tabular listing of the appropriate differential considerations. The discussion centers on the problem case and demonstrates how the radiologist can use additional radiologic procedures along with correlative clinical and laboratory data to narrow the differential diagnosis or to suggest a specific diagnosis.

The book aims to provide a thorough background in the differential diagnosis of chest disease for residents in radiology, internal medicine, pulmonary medicine, family medicine, and emergency medicine. It also offers the practicing radiologist an updated review of the radiologic patterns of chest disease and a concise reference on differential diagnosis.

## ACKNOWLEDGMENTS

It is impossible to acknowledge adequately all of the sources of inspiration, background, and support for this text. It began when Captain Q. E. Crews, Jr., M.C., U.S.N., and Dr. Elias G. Theros appointed me to the faculty at the Armed Forces Institute of Pathology. Dr. Theros created a stimulating environment and inspired early interest in chest radiology. Many of the ideas in this text were developed in the rich and dynamic atmosphere of the APIP. My interaction with Drs. Theros, Madewell, Allman, Olmsted, and Korsower in radiology and Drs. Johnson, Hockholzer, Sobonya, Kagan-Hallet, and Daroca in pathology provided the framework on which this text has been built.

Preparation of the text and illustrations were accomplished during my tenure on the radiology faculty at Duke University. Special mention must be given to Dr. Charles E. Putman, who arranged for photographic support, David Page, who prepared the illustrations, Brenda Peele and Susan Morrison, who typed the text, and Dr. Lawrence Hedlund, whose editorial suggestions and proofreading were invaluable.

The list of friends providing support for a text cannot be complete, nor would enumeration express my gratitude adequately.

Finally, the completion of the text is due in no small measure to the untiring support and encouragement of my wife, Sharon.

*James C Reed, M.D.*

# ACKNOWLEDGMENTS

---

The preparation of the manuscript and illustrations for the fifth edition would not have been possible without assistance in word processing from Willie Riddle and photographic production by Estill Robinson.

# CONTENTS

---

Preface to the Fifth Edition	vii
Preface to the Fourth Edition	ix
Preface to the Third Edition	xi
Preface to the Second Edition	xiii
Preface to the First Edition	xv

## **PART I**

### **Chest Wall, Pleura, and Mediastinum**

#### **CHAPTER 1**

Introduction / 3

#### **CHAPTER 2**

Chest Wall Lesions / 6

Questions / 7

Discussion / 8

Summary / 11

Answer Guide / 24

#### **CHAPTER 3**

Pleural and Subpleural Opacities / 25

Questions / 28

Discussion / 29

Summary / 34

Answer Guide / 46

#### **CHAPTER 4**

Pleural Effusions / 47

Questions / 50

Discussion / 53

Summary / 58

Answer Guide / 62

#### **CHAPTER 5**

Pleural Thickening and Pleural Calcification / 63

Questions / 65

Discussion / 66

Summary / 69

Answer Guide / 75

#### **CHAPTER 6**

Elevated Diaphragm / 76

Questions / 76

Discussion / 77

Summary / 80  
Answer Guide / 83

## **C H A P T E R 7**

### **Shift of the Mediastinum / 84**

Questions / 86  
Discussion / 87  
Summary / 90  
Answer Guide / 96

## **C H A P T E R 8**

### **Widening of the Mediastinum / 97**

Questions / 97  
Discussion / 99  
Summary / 102  
Answer Guide / 111

## **C H A P T E R 9**

### **Anterior Mediastinal Mass / 112**

Questions / 112  
Discussion / 114  
Summary / 118  
Answer Guide / 130

## **C H A P T E R 10**

### **Middle Mediastinal Mass / 131**

Questions / 133  
Discussion / 135  
Summary / 141  
Answer Guide / 151

## **C H A P T E R 11**

### **Hilar Masses / 152**

Questions / 153  
Discussion / 154  
Summary / 160  
Answer Guide / 168

## **C H A P T E R 12**

### **Posterior Mediastinal Mass / 167**

Questions / 168  
Discussion / 170  
Summary / 174  
Answer Guide / 187

## **P A R T II**

### **Pulmonary Opacities**

## **C H A P T E R 13**

### **Atelectasis / 193**

Questions / 194  
Discussion / 196  
Summary / 204  
Answer Guide / 218

**CHAPTER 14**

**Segmental and Lobar Opacities / 219**

Questions / 220  
 Discussion / 221  
 Summary / 227  
 Answer Guide / 233

**CHAPTER 15**

**Diffuse Air-Space Opacities / 234**

Questions / 235  
 Discussion / 238  
 Summary / 249  
 Answer Guide / 258

**CHAPTER 16**

**Multifocal Ill-Defined Opacities / 259**

Questions / 260  
 Discussion / 262  
 Summary / 274  
 Answer Guide / 286

**CHAPTER 17**

**Diffuse Fine Nodular Opacities / 287**

Questions / 288  
 Discussion / 289  
 Summary / 294  
 Answer Guide / 303

**CHAPTER 18**

**Fine Reticular Opacities / 304**

Questions / 305  
 Discussion / 308  
 Summary / 315  
 Answer Guide / 325

**CHAPTER 19**

**Coarse Reticular Opacities (Honeycomb Lung) / 326**

Questions / 327  
 Discussion / 329  
 Summary / 335  
 Answer Guide / 341

**CHAPTER 20**

**Solitary Pulmonary Nodule / 342**

Questions / 345  
 Discussion / 349  
 Summary / 360  
 Answer Guide / 369

**CHAPTER 21**

**Multiple Nodules and Masses / 370**

Questions / 371  
 Discussion / 373  
 Summary / 378  
 Answer Guide / 383

**P A R T   I I I**

**Hyperlucent Abnormalities**

**C H A P T E R   2 2**

**Hyperlucent Thorax / 387**

Questions / 390

Discussion / 391

Summary / 396

Answer Guide / 405

**C H A P T E R   2 3**

**Solitary Lucent Defect / 406**

Questions / 409

Discussion / 410

Summary / 418

Answer Guide / 426

**C H A P T E R   2 4**

**Multiple Lucent Lesions / 427**

Questions / 429

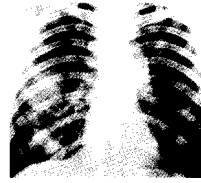
Discussion / 431

Summary / 437

Answer Guide / 445

**Bibliography / 447**

**Index / 475**



# P A R T I

---

## Chest Wall, Pleura, and Mediastinum



