

CARDIOLOGY

Clinical Cardiology

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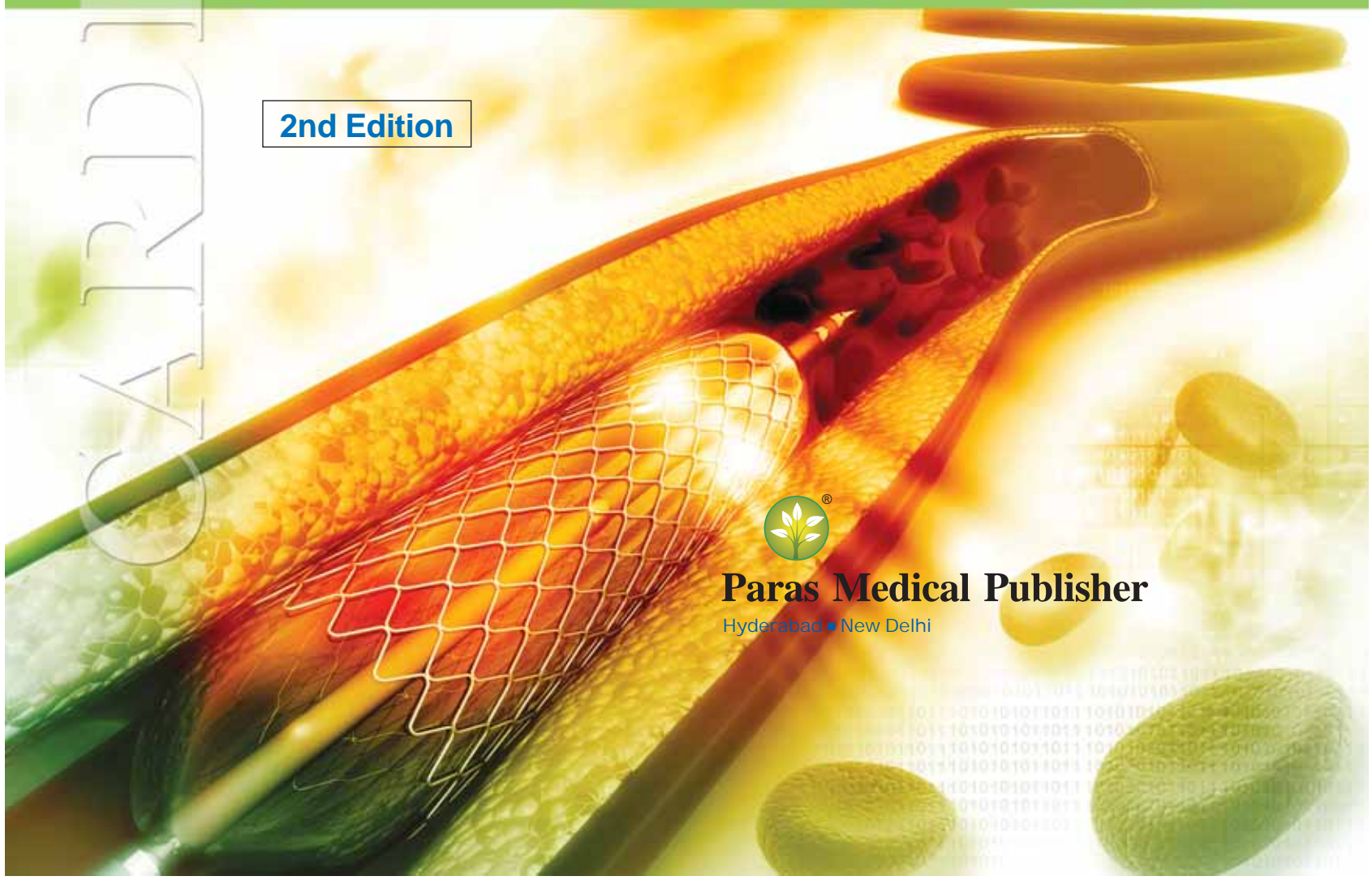
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To

My beloved parents

Arunangshu & Sankari Basu Ray

whose strive & sacrifice made me a physician

PREFACE TO THE SECOND EDITION

It was a pilot attempt by me to write a book that specifically catered to the cardiology syllabus for the DM/DNB (Card) & MD/DNB (Med) exams. The first edition of this book was sold out in 9 months; thus, the success of the book and the tremendous demand proved that it did succeed in attaining its goal, which is to have a cardiology book intended for Indian board exams in order to become a certified cardiologist. There is no dearth of good books in cardiology. However, this book mainly fills a niche that other cardiology books do not. It is a short and crisp, but at the same time updated, while still catering to those who wish to practice cardiovascular disease as well hope to pass MD or DM exam that has both theory and practical parts. Most of the cardiology reference books available in the market fail to achieve this. Either they cater to American board examination, which does not have a practical portion, but only multiple choice or they are too large to grasp either for the exam or daily practice point of view. In the same token, this book does not claim to replace the time-tested books of cardiology like Braunwald and Hurst, which remain the torch bearer of modern-day cardiology. Readers of this book are encouraged to use such references where and when required to enhance their knowledge.

The second edition keeps to its promise of providing a short, succinct book that specifically caters to the syllabus of typical MD/DM/DNB examination. It does away with unnecessary details; however, it ensures that core knowledge is gained in a quick manner to enable success not only in the examination but day-to-day clinical practice. Unlike the first edition, this has been written by 36 authors from all over the world including India, UK, Canada, Australia, and the US. The contributors have been chosen with due diligence. They are all famous in their field with an established career in academic cardiology. Some of them like me have been through formal cardiology training in India and have re-trained abroad. Thus having acquired the unique perspective of both the systems - cardiology in the developing and the developed world. This experience entailed them to write chapters by using the basic parameters of Indian examination while at the same time incorporate the latest in the field. The practice of cardiology has indeed changed considerably in India, which can now claim to provide the best of care on earth. Thus, it is imperative that we train cardiologist to take this challenge to the next paradigm where India can not only provide a clinically advanced practice, but also becomes the hub of latest in cardiovascular research.

This book has been extensively updated compared to its predecessor. Multiple new chapters added includes one whole section that deals with heart failure, cardiovascular disease with kidney dysfunction, psychiatric problems in cardiology and geriatric cardiology. The chapter on DM and heart diseases has been overhauled. A new chapter on exercise training and rehabilitation has been added, written by world-renowned experts. Chapters that existed in the earlier edition have thoroughly revised or completely re-written. This book would not have seen the light of the day other than for the dedication of the authors, all of who are senior consultants with busy jobs, but have taken the time to write their chapters. I am thankful to Julie, my wife and Ishan, my son who have painstakingly put up with my busy schedule away from them to make this endeavor of mine a success. I thank Divyesh Kothari, Paras Medical Publisher, for being with me in this long sojourn of getting all the materials together to bring out the book. His dedication and support have been exemplary.

I will fail in my duty if I do not thank my mentors who have relentlessly strived to bring out the best in me and sacrificed their time and effort with limitless love to teach me. I had many of them and it would be impossible to name all of them. My heartfelt thanks go to Dr Mark Josephson, Dr Thierry LeJemtel and Dr Shankar Krishnaswami without whom I would never have learned the basics of this incredible science.

Last but not the least, I have to thank my batch mates in MBBS, MD & DNB (Cards), the hundreds of MD/DM/DNB students, physicians, private practitioners who have directly emailed me for bringing out such a book. I would request them to continue writing to me.

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PREFACE TO THE FIRST EDITION

Since my undergraduate days, whenever I faced a cardiology case for examination, I was gutted with the fear of unknown. When approaching a particular case, it was not clear to me as to what questions that I must ask myself, to generate a comprehensive knowledge on the case. This would particularly be pertinent to decide what line of treatment would be appropriate. As a corollary to this, when I confronted a cardiology case during board examination whether in specialty or super specialty I had to decide in my own mind what possible questions might be thrown at me relating to the case by my examiners.

It is known to all and sundry, that systematic evaluation of a case, based on answering certain discrete questions leads to a diagnosis & delineation of the possible line of management both in office practice as well during certification exams. However, despite the presence of a plethora of good reference books in cardiology, few take this approach. The existing books in cardiology are filled with too much detail, which are either beyond comprehension or much more than needed by students and practitioners.

In addition, these books do not detail the exact bedside approach to a potential cardiac case that is vital for a medical student or a family practitioner. Finally, almost all existing books in cardiology are of foreign origin thus stress more on diagnostic modalities than on clinical skills, which is quite inappropriate for an Indian setting. This book is intended to exactly fill these lacunae. It will thus prove to be a faithful companion to medical students, residents in internal medicine and cardiology in their efforts to swim the vast expanse of burgeoning knowledge in cardiology to achieve a passing grade in their graduation, postgraduation and super specialty exams. It will also guide general practitioners on how to deal with a patient with heart disease, if they face one in clinical practice.

Thus, to write a small but comprehensive book on cardiology meant for noncardiologists—residents, medical students, and general practitioners—I have inevitably committed two great sins. One, there is always a danger that some topics may have been left out and two that I have leaned maybe excessively towards oversimplification. I have tried as far as feasible to avoid the former; within of course, the limitations that a book of this nature will allow. Regarding the second crime, I must admit I have diligently tried to keep this book as away from complexities as desirable without losing the essence of the matter discussed.

The book has been designed in sections. The first section deals with general cardiology & includes questions pertaining to clinical examination & diagnostic modalities in cardiology, asked in various forums like during case examination or during table viva. The other sections are on different topics that come either as a long or a short case in specialty or super specialty examination or as patients in office practice.

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CONTENTS

SECTION I : GENERAL CARDIOLOGY

1. Cardiac Examination	2
— <i>Indranill Basu Ray</i>	
2. Symptoms in Cardiology	5
— <i>Vinod Thomas, Rajesh G, Johnson Francis, Suneet Mittal, Indranill Basu Ray</i>	
3. Physical Examination in Cardiology	15
— <i>Indranill Basu Ray</i>	
4. Cardiac Radiology	30
— <i>Part A: Johnson Francis, Vinod Thomas, Rajesh G; Part B: Raman Danrad</i>	
5. Echocardiography	43
— <i>Arup Das Biswas</i>	
6. Nuclear Cardiology	65
— <i>Pushan Bharadwaj</i>	
7. Electrocardiograph (ECG)	83
— <i>Ashok Thawani, Sheetal Deshmukh, Gopi Krishna Panicker, Yash Lokhandwala</i>	
8. Catheterization and Haemodynamics	97
— <i>Indranill Basu Ray</i>	

SECTION II : VALVULAR HEART DISEASE

9. Rheumatic Fever	108
— <i>AK Kar, Indranill Basu Ray</i>	
10. Mitral Stenosis	120
— <i>Indranill Basu Ray</i>	
11. Mitral Regurgitation	135
— <i>Indranill Basu Ray</i>	
12. Valvular Aortic Stenosis	144
— <i>Sathyamurthy I, Jayanthi K</i>	
13. Aortic Regurgitation	149
— <i>Indranill Basu Ray</i>	
14. Pulmonary Valve Disease and Right Ventricular Outflow Tract Disorders	154
— <i>Indranill Basu Ray</i>	
15. Tricuspid Valve Anomalies	158
— <i>Indranill Basu Ray</i>	
16. Prosthetic Valve	164
— <i>Indranill Basu Ray</i>	

17. Mitral Valve Prolapse	167
— <i>Indranill Basu Ray</i>	
18. Infective Endocarditis	170
— <i>Julia Garcia-Diaz, Sylvia Oleck</i>	

SECTION III : CONGENITAL HEART DISEASE

19. Atrial Septal Defect and Related Defects	180
— <i>Scott Machicek, Bharat Dalvi</i>	
20. Ventricular Septal Defect	191
— <i>Scott Machicek</i>	
21. Patent Ductus Arteriosus and Aortopulmonary Window	199
— <i>Scott Machicek</i>	
22. Tetralogy of Fallot	202
— <i>Scott Machicek</i>	
23. Transposition Physiology	212
— <i>Scott Machicek</i>	
24. Vascular Rings and Slings	221
— <i>Scott Machicek</i>	

SECTION IV : CONDUCTION DEFECTS OF THE HEART

25. Tachyarrhythmias	224
— <i>Indranill Basu Ray</i>	
26. Clinical Management of Tachycardias	254
Part 1: Narrow Complex Tachycardia	
— <i>Indranill Basu Ray</i>	
27. Part 2: Wide Complex Tachycardia Clinical Management	264
— <i>Indranill Basu Ray</i>	
28. Bradyarrhythmias	270
— <i>Indranill Basu Ray</i>	

SECTION V : ISCHAEMIC HEART DISEASE

29. Acute Coronary Syndrome: General Considerations	278
— <i>Atul Mathur, Subramanyam K</i>	
30. CAD: Unstable Angina & Non-ST Elevated Myocardial Infarction	284
— <i>Atul Mathur, Subramanyam K, Indranill Basu Ray</i>	
31. Acute Coronary Syndrome: STEMI	293
— <i>Indranill Basu Ray</i>	

SECTION VI : PERICARDIAL & MYOCARDIAL DISEASE

32. Constrictive Pericarditis & Restrictive Cardiomyopathy306
—*Indranill Basu Ray*
33. Cor Pulmonale 315
—*RK Saran, Louie Fischer*
34. Hypertrophic Cardiomyopathy 325
—*Abraham KA, Margaret D'Mello*

SECTION VII : INTERVENTIONAL CARDIOLOGY

35. Interventional Cardiology332
—*Asim Cheema*
36. Interventional Electrophysiology344
—*Indranill Basu Ray*
37. Cardiac Rhythm Devices 349
—*Joydeep Ghosh, Gabriel Bombino*

SECTION VIII : DISEASES OF THE GREAT VESSELS

38. Aortic Disorders360
—*M Panja*
39. Pulmonary Artery Hypertension368
—*Indranill Basu Ray*

SECTION IX : MISCELLANEOUS

40. Heart Failure 378
—*Prithwish Banerjee*
41. Heart Failure with Preserved Ejection Fraction392
—*Indranill Basu Ray, Krishna Chaitanya Katikitala, Drey Anthony Pavlov*
42. Diabetes and Cardiovascular Disease 402
—*Tilak Mallik*
43. Hypertension 416
—*Prithwish Banerjee, J Pohl, AY Chong*
44. Physical Fitness, Exercise Training, and Cardiac Rehabilitation421
—*Arthur R Menezes, Carl J Lavie, Richard V Milani*
45. Women and Heart Disease 425
—*Anjan Chaudhury, Shwetha Shrivatsa*
46. Peripheral Arterial Disease 428
—*Indranill Basu Ray*

47. Cardiac Tumours	434
<i>—Vinod Thomas, Rajesh G, Johnson Francis</i>	
48. Kidney and Heart Disease	436
<i>—Saubhik Sural, Damodar Kumbala</i>	
49. Geriatric Cardiology	440
<i>—Somnath Sinha</i>	
50. Psychiatric Aspects of Cardiovascular Diseases	450
<i>—Piyal Sen, AN Chowdhury</i>	
51. Inherited Cardiovascular Diseases	454
<i>—Julie Basu Ray, Indranill Basu Ray</i>	

SECTION X : DRUG THERAPY

52. Cardiovascular Drugs	462
<i>—Mohammed Fahimuddin, Indranill Basu Ray</i>	
<i>Index</i>	484

ABBREVIATIONS

AF	—	Atrial fibrillation
AO	—	Aorta
ARF	—	Acute rheumatic fever
AVD	—	Atrioventricular disassociation
ACLS	—	Advanced Cardiac Life Support
AP	—	Action potential
APB	—	Atrial premature beat
AR	—	Aortic regurgitation
AS	—	Aortic stenosis
ASD	—	Atrial septal defect
AT	—	Atrial tachycardia
AV	—	Atrioventricular
AVNRT	—	Atrioventricular nodal reentry tachycardia
AVRT	—	Atrioventricular reentry tachycardia
BBB	—	Bundle branch block
BMV	—	Balloon mitral valvuloplasty
bid	—	Twice a day
BP	—	Blood pressure
bpm	—	Beats per minute
CHB	—	Complete heart block
CHD	—	Congenital heart disease
CMV	—	Closed mitral valvuloplasty
CAD	—	Coronary artery disease
CHB	—	Complete heart block
COPD	—	Chronic obstructive pulmonary disorder
CVP	—	Central venous pressure
DAD	—	Delayed after-depolarization
DLCO	—	Diffusion capacity
DORV	—	Double outlet right ventricle
D-TGA	—	Dextro-transposition of the great arteries
ERO	—	Effective regurgitant orifice
EAD	—	Early after-depolarization
ECG	—	Electrocardiogram
echo	—	Echocardiography
EDV	—	End-diastolic volume
EEG	—	Electroencephalogram

EP — Electrophysiologic
ESV — End-systolic volume
H/O — History of
Hb — Hemoglobin
HOCM — Hypertrophic cardiomyopathy
HRV — Heart rate variability
IC — Intercostal
ICD — Implantable cardioverter defibrillator
IE — Infective endocarditis
INR — International normalized ratio
IVC — Inferior vena cava
IE — Infective endocarditis
IVDU — Intravenous drug users
JVP — Jugular venous pressure
LA — Left atrial
LAD — Left anterior descending coronary artery
LAD — Left axis deviation
LCX — Left circumflex coronary artery
LAO — Left anterior oblique
LBBB — Left bundle-branch block
LGL — Lown-Ganong-Levine
LQT3 — Long QT syndrome
L-TGA — Levo-transposition of the great arteries
LV — Left ventricular
LVOT — Left ventricular outflow tract
LMA — Left main coronary artery
LLSB — Left lower sternal border
LV — Left ventricle
LVSb — Left upper sternal border
MDM — Mid diastolic murmur
MS — Mitral stenosis
MAT — Multifocal atrial tachycardia
METs — Metabolic equivalents
MI — Myocardial infarction
MPA — Main pulmonary artery
MR — Mitral regurgitation
MRI — Magnetic resonance imaging
MS — Mitral stenosis
MUGA — Multiple-gated acquisition
MV — Mitral valve
MVP — Mitral valve prolapse

NCT — Narrow complex tachycardia
NYHA — New York Heart Association
OC — Open commissurotomy
OMV — Open mitral valvuloplasty
OP-ASD — Ostium primum atrial septal defect
OS-ASD — Ostium secundum atrial septal defect
PADP — Pulmonary artery diastolic pressure
PAH — Pulmonary arterial hypertension
PAPVC — Partial anomalous pulmonary venous connection
PBMV — Percutaneous balloon mitral valvuloplasty
PCP — Pulmonary capillary pressure
PA — Pulmonary artery
PAH — Pulmonary artery hypertension
PBF — Pulmonary blood flow
PCWBP — Pulmonary capillary wedge pressure
PDA — Patent ductus arteriosus
PET — Positron emission tomography
PISA — Proximal isovelocity surface area
PMVT — Polymorphic ventricular tachycardia
PND — Paroxysmal nocturnal dyspnea
PS — Pulmonary stenosis
PSVT — Paroxysmal ventricular tachycardia
PV — Pulmonary vein
PVH — Periventricular hemorrhage
PVR — Pulmonary vascular resistance
PCWBP — Pulmonary capillary wedge pressure
PDA — Patent ductus arteriosus
PHT — Pulmonary hypertension
PR — Pulmonary regurgitation
PS — Pulmonary stenosis
PTMV — Percutaneous transluminal mitral valvuloplasty
PVC — Pulmonary valve click
PVH — Pulmonary venous hypertension
RAD — Right axis deviation
RLSB — Right lower sternal border
RSCA — Right subclavian artery
RA — Right atrial
RBBB — Right bundle-branch block
RCA — Right coronary artery
RF — Regurgitant flow
RMS — Root mean square

RMVT — Repeated monomorphic VT
RV — Right ventricle
RSVC — Right superior vena cava
RUSB — Right upper sternal border
RV — Right ventricle
SAM — Systolic anterior motion
SA — Sinoatrial
SCD — Sudden cardiac death
SDNN — Standard deviation of the NN
SEP — Systolic ejection phase
SSRI — Selective serotonin reuptake inhibitor
SUT — Systolic upstroke time
SVC — Superior vena cava
SLE — Systemic lupus erythematosus
TAPVC — Total anomalous pulmonary venous connection
TEE — Transesophageal echo
TGA — Transposition of the great arteries
TOF — Tetralogy of Fallot
TSH — Thyroid-stimulating syndrome
TTE — Transthoracic echo
TV — Tricuspid valve
TVI — Time-velocity integral
TAPVC — Total anomalous pulmonary venous connection
TEE — Trans esophageal echocardiography
TTE — Trans thoracic echocardiography
TV — Tricuspid valve
UA — Unstable angina
UFCT — Ultrafast computed tomography
VSD — Ventricular septal defect
VCG — Vectorcardiography
Vit — Vitamin
VSD — Ventricular septal defect
VF — Ventricular fibrillation
VT — Ventricular tachycardia
VSD — Ventricular septal defect
WCT — Wide complex tachycardia
WPW — Wolff-Parkinson-White
2D — Two-dimensional
3D — Three-dimensional
4D — Four-dimensional