

Manipal Manual of Surgery

As per the latest CBME Guidelines |
Competency Based Undergraduate
Curriculum for the Indian Medical Graduate
Sixth Edition

Volume
1

Volume
1

The Iconic Textbook
now in 2 Volumes

Volume
1

is the completely rewritten, carefully updated and thoroughly revised edition of the popular Manual, specially aimed at the undergraduate medical students. This edition has been designed and cast according to the latest CBME Guidelines and most recent Competency Based Undergraduate Curriculum for the Indian Medical Graduate as recommended by National Medical Commission. All the chapters have been modified, rearranged and sequenced to suit the teaching-learning of the subject under the current CBME pattern.

The limited time-frame available to the undergraduate students makes it necessary for them to be able to read a good comprehensive book reliably, and this edition fully meets just that requirement. The book presents the entire information necessary for the undergraduate students in an easy-to-read format which helps them in long-term retention and effortless recollection. The theory behind the practice of surgery is covered in a simple manner.

The rich collection of clinical photographs, precisely drawn colour graphics, crisply presented flowcharts, high value tables, keyboxes and algorithms lucidly explain and supplement the facts given in the text which will help even the postgraduate students of surgery and practising surgeons. Clinical notes, wisdom lines, most interesting and most common facts and ten commandments are the highlighting features of the *Manual*. Multiple choice questions have been added which will help the students not only in the MBBS but also in the postgraduate examinations.

This edition presents

Illustrations	2502
Multiple Choice Questions	806
Key Boxes	705
Wisdom Lines	259
Tables	198
Clinical Notes and Key Notes	61
Flowcharts and Algorithms	21
Ten Commandments	12
CBME Competencies	174

and is

Concise
Comprehensive
Complete
Precise
Simple
Updated and Colourful
Profusely Illustrated
As per the CBME Guidelines and Competencies

K Rajgopal Shenoy MBBS MS FRCS (Glasgow)

is Professor and former head, Department of Surgery, and ex-Associate Dean, Kasturba Medical College (KMC), Manipal, and Consultant Surgeon at the associated KMC Hospital, Manipal Academy of Higher Education (MAHE)-Deemed to be University, Manipal. He has had a brilliant undergraduate and postgraduate career with ranks and distinction.



Prof Shenoy has been on the faculty of Surgery at KMC, Manipal, since 1986. He stresses on the basics and at the same time makes efforts to teach the students evidence-based medicine. He has been an invited faculty in many CMEs. An acclaimed and a popular teacher, he has received 'good teacher' award in the institution several times. As an undergraduate and postgraduate examiner, he has examined students from many universities for the last 27 years.

He is vibrant and innovative, and has a multifaceted personality. A born-leader and loved by his students, colleagues and friends, it is hard to find him alone. He constantly features at all the academic and cultural activities of the institution. During covid times, for the benefit of undergraduates and postgraduates, he was actively involved in online teaching programs such as lectures, theory classes and clinical discussions from many virtual platforms and from many states of India.

He is author of the popular CBS books *Manipal Manual of Clinical Methods in Surgery*, *Manipal Manual of Instruments*, 2/e and *Manipal Manual of Surgery with Clinical Methods for Dental Students*, 4/e.

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Dr Nileshwar has edited the entire text of this Manual with tremendous devotion. She is the coauthor of the other popular CBS book *Manipal Manual of Clinical Methods in Surgery*.



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for Students and Teachers

Manipal Manual of Surgery

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Sixth Edition

the CBME edition

with

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- 2502 Illustrations
- 806 Multiple Choice Questions
- 705 Key Boxes
- Wisdom Lines 259
- Tables 198
- Clinical Notes and Key Notes 61
- Flowcharts and Algorithms 21



**K Rajgopal Shenoy
Anitha Nileshwar**

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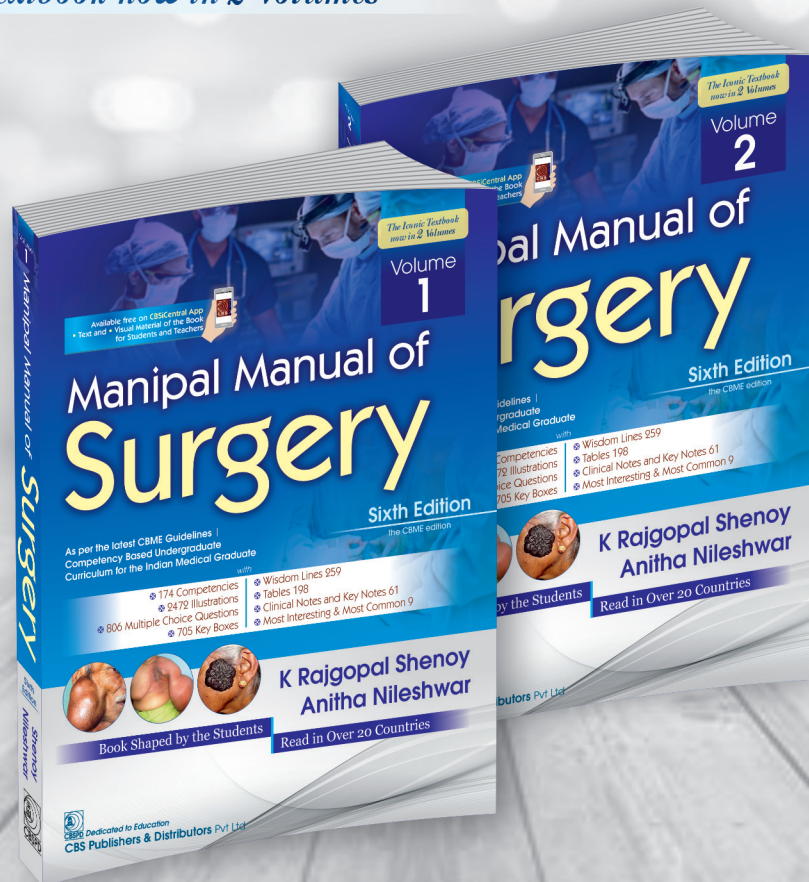
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- *Manipal Manual of Clinical Methods in Surgery*
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Manipal Manual of Surgery

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Volume 1

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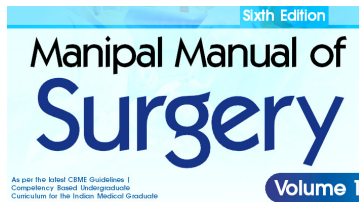


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to

our children

Ranjan

and

Rachana

Forewords

I am extremely happy to write the foreword to this edition of *Manipal Manual of Surgery*.

Having close association with Dr Rajgopal Shenoy for over 30 years, I am fully aware of his extraordinary ability as a teacher and as a skilful surgeon. His additional qualities of being a brilliant scholar and a prolific writer makes him unique. Dr Shenoy is respected as one of the great teachers in the country. Many years of hard work and dedication is visible in the content of the books, he has authored. The new editions being released on regular intervals is the proof of the popularity.

The clinical photographs are of high quality and the summary of each chapter being highlighted makes the revision study easier for the students nearer to examinations.

The latest edition is sure to have more information with the latest advances which obviously will be of value to the student community at large both in India and abroad. National Medical Commission has brought out few changes in the curriculum with emphasis on Competency Based Medical Education (CBME). Authors have incorporated most of these competencies in this edition which will further help the students in preparing for studies and enhance their knowledge.

As the current President of the Association of Surgeons of India, I have no hesitation in recommending the book for both the undergraduate and postgraduate students in surgery and I wish Dr Rajgopal Shenoy all the best in his sincere efforts to spread the knowledge.

Prof Siddesh G

President, Association of Surgeons of India
Senior Consultant and Director, SIGMA Hospital, Mysore
Former Professor and Head, Department of Surgery, JSS Medical College, Mysore

The sixth edition of *Manipal Manual of Surgery* edited by Dr K Rajgopal Shenoy is a welcome book which is meant for both the undergraduate and postgraduate students. A very popular book in general surgery, liked by both undergraduate and postgraduate students, and even the faculty members because of the easy language, well-explained text and a number of tables, diagrams and photographs. The book is really a pleasant read. The authors in the latest edition have tried to revamp the book to include the newer scenarios included in the Competency Based Medical Education (CBME) recommended by National Medical Commission and National Board of Examinations. The MCQs given after the chapters are very helpful in answering the multiple choice questions in examinations and will also be helpful in OSCE. I will especially recommend this book to the students before they take their examinations, whether theory or practical, as this book provides a lot of quotes and mnemonics that the student can use as memory-aids. The author has extensive teaching experience of more than 35 years. During the covid pandemic, he was associated with many teaching activities and participated in hundreds of clinical teaching program. I even like the paper which is used for this book as it is just very comfortable to read, handle, does not tear and is also lightweight. The colours used in the book are very soothing. This book is comprehensive, fully updated as per the recent needs and easy to assimilate. So, I recommend this book be kept as a personal copy by all undergraduate and postgraduate students, practitioners, and even the faculty members. This book must be available in all medical libraries both in India as well as overseas.

Prof Ajay K Khanna

MS, FRCS, FAMS, FACS, FICS, FACRSI, FMAS, FCLS, FRSTMH, FAIS, FUICC, FFIM, FUWAI, MNAMS, DSc, MBA, PDCR
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We are living in an ocean of knowledge but which drop is useful to us is a big question. Dr K Rajgopal Shenoy is a teacher par excellence and I have known him for the last so many years. He took the challenge to collect all the pearls and compiled them in the form of *Manipal Manual of Surgery* which is undoubtedly one of the most favourite books read by medical undergraduates internationally.

Sixth edition of the book has been revamped to meet the requirements of competency based medical education recently promoted by the NMC curriculum complemented with simple language, diagrams and photographs. I am sure that the sixth edition will provide great learning experience for both the undergraduates and “aide-memoire” for surgical postgraduates. I convey my best wishes for the latest edition and happy reading for all the students.

Prof Sanjay Jain

Professor of Surgery
Gandhi Medical College, Bhopal
Vice-President, Association of Surgeons of India

This edition of *Manipal Manual of Surgery* by Prof Rajgopal Shenoy is the first surgical manual to be brought out in India based on Competency Based Medical Education (CBME) introduced by the NMC in 2019 in Indian medical curriculum. It is a welcome addition to the textbooks in the vast discipline of surgery. Written in a clear and lucid style by the master of the subject, it is full of illustrations and would certainly serve as a very valuable textbook for the students, teachers of surgery and practicing surgeons. It is an outstanding and remarkable contribution by Prof Shenoy, with his rich experience of 36 years in teaching undergraduate and postgraduate students.

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Preface to the Sixth Edition

It gives us great pleasure to write the preface to the sixth edition of *Manipal Manual of Surgery (MMS)*. As we complete 35 years of teaching in a single institute, we find our role as teacher and clinician very satisfying. I never imagined in 2000, when we brought out the first edition 'Millennium edition', that it will be accepted by the students. Thank you, my dear students for your support.

When we look back, we realize that many changes have been incorporated in the previous five editions. The necessity of the sixth edition arose because of introduction of Competency Based Medical Education (CBME) by National Medical Commission. The aim of the CBME is that the teachers should be able to assess the students for whatever is taught. Assessment can be done during theory classes, small group teachings, student-directed learning, etc. Learning objectives are included within the theory topic itself, even though they are not written separately. In the new curriculum, a few topics have been deleted from the older curriculum and a few have been added. However, we have not deleted those topics from our book because we want students to get a thorough knowledge about the subject and secure very good marks.

We also have introduced in the beginning of the book a new section called 'Principles of Surgery' which deals with ethics, communication, conduct, consent, research, audit, medicolegal aspects, biomedical waste disposal and many other important topics. We want you to understand the subject rather than just study by rote. We want you to be able to write essay and short answers properly rather than being able to answer only MCQs. The subject is vast and to incorporate all these changes is extremely difficult. We are aware that additional knowledge is required for students to appear for qualifying examinations for postgraduation—NEET specialty exams. Knowledge may also help you in preparing for foreign entrance examinations. In spite of so many changes in the new book, very few additional pages have been added because we have deleted unnecessary and outdated information and obsolete surgeries.

Keeping all these things in mind, we have prepared the sixth edition and we call it as CBME edition. Most of the competencies have been given the specific numbers for your quick reference. Clinical competencies have not been given any number because it will be dealt by your teachers when they take bedside clinics. **Clinics are learnt bedside, not 'bookside'. The more clinical cases you see, the better clinician you will become. However, a wide range of clinical topics are discussed, including clinical methods, with excellent quality photographs which will help in your university clinical examination also.**

I am also proud to say that very senior, internationally famous Prof Desarda MP from Pune himself contributed his repair, popularly called as Desarda repair for hernia, in my book. At the same time, another surgeon of repute, young Prof Amith Kumar Jain from Bengaluru, himself wrote his original work on diabetic foot in detail in this edition. Our aim is also to popularise Indian authors' work.

In the last two years, the world has seen COVID pandemic all over the world. It has affected teaching very badly. However, Association of Surgeons of India, Learning General Surgery, National PG Clinics, White Army and many other platforms provided extensive online discussions. I am proud today that I was part of these discussions. The knowledge that I gained from this has also been incorporated in this edition. Bringing a new edition with changes was also a challenge to the publishers due to nonavailability of quality paper and the cost of the book also. This was one of the reasons for bringing out the book in 2 volumes. Hope you will take advantage of the 2 volumes—ease of carrying and using it as and when required. We wish and pray that the Sixth Edition (CBME edition) will be of immense benefit to all of you. Read well, look at the figures properly, make use of the flowcharts, practice drawing the line diagrams—you will definitely be successful and will grow to become a good compassionate doctor. Wish you all the best.

Enjoy reading *Manipal Manual of Surgery*, sixth edition.

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Preface to the First Edition

I developed interest in surgery and teaching due to my eminent teachers (role models) in my undergraduate days at Government Medical College, Bellary (1977–1983) and postgraduate days at Kasturba Medical College, Mangalore (1983–1986). Kasturba Medical College, Manipal, gave me enough opportunities, encouragement, and confidence to develop interest in teaching. The genesis of the manual is attributed to the tremendous response to my lecture notes in surgery. The book has been named as a manual as it is complete, comprehensive, precise and simple.

Manipal Manual of Surgery is written, keeping in mind the time constraint and vastness of the subject, that the student has to face before an examination. Reference books are not essential to learn basic facts of surgery. The standard books are undoubtedly necessary to gain in-depth knowledge as well as understanding of the subject. Every student should refer to them whenever necessary. This manual is best utilized as a revision and handbook that gives precise facts in a clear, concise way that makes a student feel that surgery is after all not an insurmountable obstacle to pass the final MBBS examination.

One may wonder what is the necessity of another book when you have so many established books in the market? With the voluminous advances in surgery the **textbooks have virtually become jungles** where students get lost. I have made this book simple, easily understandable with flow charts, tables and key boxes. The manual covers the text, clinics and coloured photographs. Relevant clinical cases kept for clinical examination are discussed similar to bedside clinics. At the same time, some important and illustrative clinical problems discussed in this manual are actual case reports. Speciality topics which are written by senior faculty members of our institution add glory to the book. We have tried to shed light through the jungles so that one can come out safely.

I call this as a complete book in surgery, but do not believe in including orthopaedics in it because it is a subject that has developed as a separate speciality. By merely adding some more pages the purpose will not be served when good orthopaedics books are available in the market. The *viva voce* examination is a unique section which helps in reducing your *anxiety* before you appear for viva.

I take this opportunity to express my gratitude to all the staff from the department of surgery and specialities who have helped me in one or more ways in the outcome of the book. I should make a special mention of Prof U Santosh Pai who has been a constant source of inspiration to me while I was preparing this manual. It is him who gave me an appropriate title for this book. My wife, Dr Anitha, not only contributed anaesthesiology topics but also helped me in editing this manual.

My close friend and classmate, Dr L Ramachandra, Associate Professor in the department of surgery who has helped me in editing many chapters and has given me valuable suggestions. Dr Gopinath Pai, Dr Sreedharan, Dr Shashidhar Matta (Assistant Professor), Dr Shashikumar, (Urologist), Dr Gautham Prakash, Dr Divya Shenoy, Dr Juliana Samuel, Dr Krishnamurthy, Dr Anand Nadkarni (Interns) also have contributed to the completion of the book.

I sincerely thank Mr Umesh Acharya from dental college for drawing simple and beautiful diagrams, Mr Parashuram Bhat and Kiran from photography section for the coloured photographs. **I believe that students should spend more time in looking at those simple line diagrams and photographs which can often illustrate more than the text.**

I thank Prof KP Rao, Dept of Printing, MIT, Manipal, for timely help, guidance, and encouragement given to me during the preparation of the computer prints Ms Shailashree (Supriya Computers, Udupi), Mr Ganesh (Ganesh Computers, Udupi), and Ms Vatsala (MAHE, Manipal), for helping me in the first phase of the computer work. The final work has been completed by Mr Dharmvir of CBS Publishers & Distributors, New Delhi. He has done an excellent job and I am very grateful to him.

I greatly appreciate the constant support and encouragement given to me by Mr SK Jain, Managing Director, Late Mr BR Sharma of CBS Publishers & Distributors, New Delhi and Mr VK Jain, Production Director, deserves special thanks for the excellent production of the book.

I sincerely hope that this *Manual* will be useful to you. Any criticisms, and contributions to this book are welcome. **I wish all my dear students the very best. Do enjoy reading this book.**

K Rajgopal Shenoy

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Anitha Shenoy (Nileshwar)

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