

Competency-Based Practicals in **Community Medicine**

Second
Edition

is designed as per the latest CBME Guidelines | Competency Based Undergraduate Curriculum for the Indian Medical Graduate prescribed by the National Medical Commission. The book will help students learn practical concepts in community medicine and enhance their scores and performance in practical and viva voce examinations.

Salient features of the book

- Competency-based approach with a guide for teaching-learning methods
- Follows the learner-centric approach which is concise, comprehensive, and easy to read
- Covers all topics with examples such as field visits, clinical social cases, epidemiology and biostatistics, and visits to public health institutions.
- Includes sections on spots, national health programs, and important definitions for quick revision.

Anjana Verma MD, DNB (Community Medicine), MNAMS, PGDHFWM, ACME

is currently Associate Professor, Department of Community Medicine, Geetanjali Medical College and Hospital, Udaipur, Rajasthan. She completed her MD in Community Medicine from Maulana Azad Medical College, New Delhi. She is a member of the medical education unit of the institution and is involved in implementing the new CBME curriculum of the subject.



Jitendra Kr Meena MD, DNB (Community Medicine), PGDHFWM, ACME

is currently Assistant Professor, Department of Preventive Oncology, National Cancer Institute, Jhajjar, under All India Institute of Medical Sciences, New Delhi. He completed his MBBS and MD in Community Medicine from Maulana Azad Medical College, New Delhi. He has been involved in various academic projects and research for implementing competency-based curriculum in medical education.



Scan for
price of this
book and
catalogue

ISBN: 978-93-5466-094-8



9 789354 660948



CBS Publishers & Distributors Pvt Ltd

4819/XI, Prahlad Street, 24 Ansari Road, Daryaganj, New Delhi 110 002, India
E-mail: delhi@cbspd.com, customecare@cbspd.com; Website: www.cbspd.com
New Delhi | Bengaluru | Chennai | Kochi | Kolkata | Lucknow | Mumbai

Hyderabad | Jharkhand | Nagpur | Patna | Pune | Uttarakhnad

Second
Edition

Competency-Based Practicals in
Community Medicine

Verma
Meena



Competency-Based Practicals in **Community Medicine**

Second
Edition

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



Anjana Verma | Jitendra Kr Meena



CBSPD Dedicated to Education

CBS Publishers & Distributors Pvt Ltd



Second Edition

Competency-Based
Practicals in
**Community
Medicine**

As per Competency-Based Undergraduate Curriculum for the
Indian Medical Graduate prescribed by Medical Council of India



Second Edition

Competency-Based Practicals in Community Medicine

As per Competency-Based Undergraduate Curriculum for the
Indian Medical Graduate prescribed by Medical Council of India

Anjana Verma

MD, DNB (Community Medicine), MNAMS, PGDHFWM, ACME
Associate Professor
Department of Community Medicine
Geetanjali Medical College and Hospital, Udaipur, Rajasthan

Jitendra Kr Meena

MD, DNB (Community Medicine), PGDHFWM, ACME
Assistant Professor
Department of Preventive Oncology
National Cancer Institute (NCI)
All India Institute of Medical Sciences (AIIMS), New Delhi

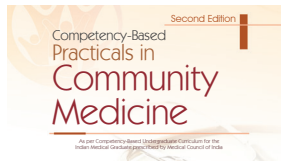


CBS Publishers & Distributors Pvt Ltd

New Delhi • Bengaluru • Chennai • Kochi • Kolkata • Lucknow • Mumbai
Hyderabad • Jharkhand • Nagpur • Patna • Pune • Uttarakhand

Disclaimer

Science and technology are constantly changing fields. New research and experience broaden the scope of information and knowledge. The authors have tried their best in giving information available to them while preparing the material for this book. Although all efforts have been made to ensure optimum accuracy of the material, yet it is quite possible some errors might have been left uncorrected. The publisher, the printer and the authors will not be held responsible for any inadvertent errors or inaccuracies.



ISBN: 978-93-5466-094-8

Copyright © Authors and Publisher

Second Edition: 2023

First Edition: 2021

All rights reserved. No part of this book may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage and retrieval system without permission, in written from the authors and the publisher.

Published by Satish Kumar Jain and produced by Varun Jain for

CBS Publishers & Distributors Pvt Ltd

4819/XI Prahlad Street, 24 Ansari Road, Daryaganj, New Delhi 110 002, India

Ph: 011-23289259, 23266861, 23266867

Fax: 011-23243014

Website: www.cbspd.com

e-mail: delhi@cbspd.com

Corporate Office: 204 FIE, Industrial Area, Patparganj, Delhi 110 092, India

Ph: 011-49344934

Fax: 011-49344935

e-mail: publishing@cbspd.com; publicity@cbspd.com

Branches

- **Bengaluru:** Seema House 2975, 17th Cross, K.R. Road, Banasankari 2nd Stage, Bengaluru 560 070, Karnataka, India
Ph: +91-80-26771678/79 Fax: +91-80-26771680 e-mail: bangalore@cbspd.com
- **Chennai:** 7, Subbaraya Street, Shenoy Nagar, Chennai 600 030, Tamil Nadu, India
Ph: +91-44-26680620, 26681266 Fax: +91-44-42032115 e-mail: chennai@cbspd.com
- **Kochi:** 42/1325, 1326, Power House Road, Opposite KSEB, Power House, Ernakulum 682018, Kochi, Kerala, India
Ph: +91-484-4059061-67 Fax: +91-484-4059065 e-mail: kochi@cbspd.com
- **Kolkata:** 147, Hind Ceramics Compound, 1st Floor, Nilgunj Road, Belghoria, Kolkata 700 056, West Bengal, India
Ph: +91-33-25330055/56 e-mail: kolkata@cbspd.com
- **Lucknow:** Basement, Khushuma Complex, 7 Meerabai Marg (behind Jawahar Bhawan), Lucknow 226 001, UP, India
Ph: +91-522-4000032 e-mail: tiwari.lucknow@cbspd.com
- **Mumbai:** PWD Shed, Gala No. 25/26, Ramchandra Bhatt Marg, Next JJ Hospital Gate No. 2, Opp. Union Bank of India, Noorbaug, Mumbai 400 009, Maharashtra, India
Ph: +91-22-66661880/89 e-mail: mumbai@cbspd.com

Representatives

- | | | | | | |
|--------------------|--------------|--------------------|--------------|----------------------|--------------|
| • Hyderabad | 0-9885175004 | • Jharkhand | 0-9811541605 | • Nagpur | 0-9421945513 |
| • Patna | 0-9334159340 | • Pune | 0-9623451994 | • Uttarakhand | 0-9716462459 |

Printed at: Goyal Offset Works (P) Ltd, Sonipat, Haryana, India.

Foreword

Today, in the time of emerging infectious diseases, the importance of public health measures in the prevention and management of the diseases has been reemphasized. Community medicine is one of the pivotal subjects for providing training to the next-generation competent medical graduates who can manage community health. The first edition of this book has been well received, and it is a testimony to the efforts of the authors and contributors. I am glad to know that the second edition of this book has been released. I congratulate the authors, Dr Anjana Verma and Dr Jitendra Kr Meena who have done exemplary work in updating the book, while maintaining its precise and comprehensive structure. This book is highly recommended for undergraduate medical, dental, nursing, and paramedical students and those preparing for postgraduate examinations. I am sure the students will benefit greatly from community medicine practical concepts detailed in the book.



FS Mehta

Vice Chancellor
Geetanjali University
Udaipur, Rajasthan

Preface to the Second Edition

Firstly, we wish to thank all the students and the faculty members who showed formidable support for the first edition of this book. We are highly indebted to those who provided us with valuable feedback and suggestions. It gives us immense pleasure to share with you the second edition of the book. In this edition, the following additions have been done:

1. Updated socioeconomic scales (Chapter 6)
2. COVID-19 and other important vaccines (Chapter 13)
3. Instruments used in community medicine (Chapter 18)
4. Representative images of insecticides (Chapter 19)
5. A chapter on epidemiology and epidemiological studies (Chapter 21)
6. Brief notes on statistical tests of significance (Chapter 25)
7. Representative images of public health institutions during field visits (Section IV)
8. Brief notes on important national health programmes (Section V)

We revised and updated the first edition as per the suggestions of our readers and faculty members. The second edition will provide undergraduate and postgraduate medical students a broader insight into the practical aspects and vital topics of community medicine, i.e, epidemiology and national health programmes, etc. The book will also benefit students of dentistry, nursing, physiotherapy, general practitioners, etc. Owing to its vast contents, students often perceive community medicine as a difficult subject. Therefore, we have made significant efforts to present the study material in a concise and explanatory fashion by including coloured images wherever possible. It will be immensely gratifying for us if the readers find this book useful and fun to read. The authors welcome and look forward to having feedback and suggestions from readers for forthcoming editions. We sincerely thank Mr YN Arjuna (Senior Vice-President, Publishing, Editorial, and Publicity) and his team of CBS Publishers and Distributors for taking up this project, and beautifully designing and developing the book for the 2nd edition.

We are grateful to our teachers of the Department of Community Medicine, Maulana Azad Medical College, New Delhi who have constantly inspired us to excel. We extend our heartfelt thanks to Dr FS Mehta, Vice Chancellor, Geetanjali University and Dr Mukul Dixit, Head, Department of Community Medicine, GMCH, Udaipur for their continued support and encouragement. We also like to thank Dr Medha Mathur and Prof Hemlata Mittal (GMCH), Prof JP Singh (ASMC, Shahajahanpur), Dr Manju Pilia (KPGMC, Karnal), Shiv Virmani (GMCH), and Vishwa Mehta (GMCH) for their valuable inputs to this edition.

Anjana Verma
Jitendra Kr Meena

Preface to the First Edition

Over the years, there has been a widening gap between community needs and the availability of health care with traditional medical education approach. This has led the Medical Council of India (MCI) to devise and implement reforms in the medical education by introducing the Competency-Based Undergraduate Medical Curriculum (CBME). It focuses on learning pre-identified competencies for clinical practice and provides appropriate guidance for various teaching–learning methods and performance assessment. It aims to produce competent Indian Medical Graduates (IMGs) who can appropriately and effectively function as physicians of the first contact in the community.

This book has been designed as per the new CBME curriculum. All chapters have been formulated according to the specified competencies. The curriculum has been introduced in a concise but comprehensive manner to make it student-friendly whilst not deviating from fundamentals of community medicine practicals. This book will provide undergraduate (UG) and postgraduate (PG) students in medical and paramedical specialties a broad insight into the practical aspect of community medicine. We sincerely wish students and teachers will benefit immensely from the book and welcome their continuous feedback and suggestions for improvement.

We are very grateful to our respected teachers and seniors at the Department of Community Medicine, Maulana Azad Medical College, New Delhi, who inspired us to work hard. We are thankful to Dr FS Mehta, Dean, Dr. Mukul Dixit, Head, Department of Community Medicine and colleagues at Geetanjali Medical College and Hospital (GMCH) for their support and encouragement.

We sincerely thank Mr YN Arjuna (Senior Vice-President, Publishing, Editorial and Publicity) and the team at CBS Publishers and Distributors for taking up this project, beautifully designing and developing the First Edition of the book.

Anjana Verma
Jitendra Kr Meena

Contents

<i>Foreword</i>	v
<i>Preface to the Second Edition</i>	vii
<i>Preface to the First Edition</i>	viii
<i>Index of Competencies</i>	xi

Section I Family Survey and Clinico-social Cases

1. Spot Map of Field Practice Area	3
2. Demographic Details and House Survey	5
3. Immunization Status	9
4. Personal Hygiene	10
5. Environmental Health Status	12
6. Socioeconomic Status	16
7. Sociocultural Environment	19
8. Preventive Check-up (ANC/PNC, Under 5)	23
9. Preventive Check-up (Other Individuals)	43
10. Dietary Assessment	44
11. Case Presentations (Diabetes, Hypertension, etc.)	47

Section II Spots

12. Cold Chain Equipment	63
13. Vaccines	68
14. Biomedical Waste Management	80
15. Contraceptives	84
16. Medicines	92
17. Nutrition	97
18. Instruments	102
19. Entomology	108
20. Miscellaneous	118

Section III Epidemiological and Statistical Exercises

21. Epidemiology	123
22. Fertility-based Indicators	129
23. Data and its Presentation	133
24. Measures of Central Tendency and Dispersion	135
25. Tests of Significance	138
26. Screening Test	142
27. Investigation of an Outbreak	144

Section IV Field Visits to Public Health Institutions

28. Milk Processing Unit (Dairy)	149
29. District Health Store (Cold Chain)	151
30. District Tuberculosis Centre	153
31. Biomedical Waste Management Facility	155
32. Anganwadi Centre (icds Scheme)	157
33. Non-governmental Health Agency (ngo)	158
34. Immunization Clinic	159
35. Subcentre	161
36. Primary Health Centre	162
37. Community Health Centre	164
38. Urban Health Training Centre (UHTC)	166
39. Rural Health Training Centre (RHTC)	168
40. Industrial Unit	170

Section V Additional Resources

41. National Health Programmes	175
42. Research Project	193
43. Important Definitions	195
<i>Index</i>	198

Index of Competencies

Section I Family Survey and Clinico-social Cases

S. No.	Competency	Chapter	Page No.
1.	CM 1.9 Demonstrate the role of effective communication skills in health in a simulated environment	2, 3, 4, 5, 6, 7, 8, 9, 10, 11	5, 9, 10, 12, 16, 19, 23, 28 43, 44, 47
2.	CM1.10 Demonstrate the important aspects of the doctor–patient relationship in a simulated environment	3, 8, 9, 10, 11	9, 23, 28 43, 44, 47
3.	CM2.1 Describe the steps and perform a clinical socio-cultural and demographic assessment of the individual, family and community	1, 2	3, 5
4.	CM2.2 Describe the correct assessment of socioeconomic status	6, 7	14, 19
5.	CM2.3 Describe and demonstrate in a simulated environment the assessment of barriers to good health and health seeking behavior	7	19
6.	CM2.5 Describe poverty and social security measures and its relationship to health and disease	6	14
7.	CM3.5 Describe the standards of housing and the effect of housing on health	5	12
8.	IM25.13 Counsel the patient and family on prevention of various infections due to environmental issues	5	12
9.	OG19.2 Counsel in a simulated environment, contraception and puerperal sterilization	8	23
10.	PE8.4 Elicit history on the complementary feeding habits	7	19
11.	PE8.5 Counsel and educate mothers on the best practices in complimentary feeding	7	19
12.	PE18.3 Conduct antenatal examination of women independently and apply the at-risk approach in antenatal care	8	23
13.	PE18.6 Perform postnatal assessment of newborn and mother, provide advice on breastfeeding, weaning and on family planning	8	23
14.	PE10.4 Identify children with under nutrition as per IMNCI criteria and plan referral	8	28
15.	PE9.4 Elicit, document and present an appropriate nutritional history and perform a dietary recall	10	44
16.	PE9.5 Calculate the age-related calorie requirement in health and disease and identify gap	10	44

Section II Spots

S. No.	Competency	Chapter	Page No.
1.	PE19.3 Vaccine description with regard to classification of vaccines, strain used, dose, route, schedule, risks, benefits and side effects, indications and contraindications	12, 13	63, 68
2.	PE19.4 Define cold chain and discuss the methods of safe storage and handling of vaccines	12	63
3.	PE19.12 Observe the administration the UIP vaccines	13	68
4.	PE 19.1 Explain the components of the Universal Immunization Program and the Sub-National Immunization Programs	13	68
5.	PE 19.2 Explain the epidemiology of vaccine preventable diseases	13	68
6.	CM14.1 Define and classify hospital waste	14	80
7.	CM14.2 Describe various methods of treatment of hospital waste	14	80
8.	CM14.3 Describe laws related to hospital waste management	14	80
9.	OG21.1 Describe and discuss the temporary and permanent methods of contraception, indications, technique and complications; selection of patients, side effects and failure rate including OC, male contraception, emergency contraception and IUCD	15	84
10.	PH1.55 Describe and discuss the following national health programmes including tuberculosis, leprosy, malaria, filaria, diarrheal diseases, anaemia and nutritional disorders, blindness.	16	92
11.	BI8.5 Summarize the nutritional importance of commonly used items of food including fruits and vegetables. (macromolecules and its importance)	17	97
12.	CM5.1 Describe the common sources of various nutrients and special nutritional requirements according to age, sex, activity, physiological conditions	17	97
13.	CM5.3 Define and describe common nutrition related health disorders (including macro-PEM, micro-iron, Zn, iodine, Vit. A), their control and management	17	97
14.	CM5.8 Describe and discuss the importance and methods of food fortification and effects of additives and adulteration	17	97
15.	CM8.1 Describe and discuss the epidemiological and control measures including the use of essential laboratory tests at the primary care level for communicable diseases.	18	102
16.	CM8.2 Describe and discuss the epidemiological and control measures including the use of essential laboratory tests at the primary care level for noncommunicable diseases.	18	102
17.	CM3.6 Describe the role of vectors in the causation of diseases. Also discuss National Vector Borne Disease Control Program	19	107
18.	CM3.7 Identify and describe the identifying features and life cycles of vectors of public health importance and their control measures	19	107
19.	CM3.8 Describe the mode of action, application cycle of commonly used insecticides and rodenticides	19	107

20.	CM5.5	Describe the methods of nutritional surveillance, principles of nutritional education and rehabilitation in the context of sociocultural factors.	20	117
21.	CM 5.6	Enumerate and discuss the National Nutrition Policy, important national nutritional programs including the Integrated Child Development Services (ICDS) Scheme, etc	20	117
22.	PE9.2	Describe the tools and methods for assessment and classification of nutritional status of infants, children and adolescents	20	117
23.	CM3.2	Describe concepts of safe and wholesome water, sanitary sources of water, water purification processes, water quality standards.	20	117

Section III Epidemiological and Statistical Exercises

<i>S. No.</i>	<i>Competency</i>	<i>Chapter</i>	<i>Page No.</i>
1.	CM9.1 Define and describe the principles of demography, demographic cycle, vital statistics	22	129
2.	CM9.2 Define, calculate and interpret demographic indices including birth rate, death rate, fertility rates	22	129
3.	CM6.2 Describe and discuss the principles and demonstrate the methods of collection, classification, analysis, interpretation and presentation of statistical data	21, 23	123, 133
4.	CM6.3 Describe, discuss and demonstrate the application of elementary statistical methods including test of significance in various study designs	23	133
5.	CM7.4 Define, calculate and interpret morbidity and mortality indicators based on given set of data	21, 23	123
6.	CM6.4 Enumerate, discuss and demonstrate common sampling techniques, simple statistical methods, frequency distribution, measures of central tendency and dispersion	24, 25	135, 138
7.	CM7.6 Enumerate and evaluate the need of screening tests	26	142
8.	CM20.2 Describe various issues during outbreaks and their prevention	27	144
9.	CM8.1 Describe and discuss the epidemiological and control measures including the use of essential laboratory tests at the primary care level for communicable diseases	21	123

Section IV Field Visits to Public Health Institutions

<i>S. No.</i>	<i>Competency</i>	<i>Chapter</i>	<i>Page No.</i>
1.	CM5.7 Describe food hygiene (milk)	28	149
2.	PE19.3 Vaccine description with regard to classification of vaccines, strain used, dose, route, schedule, risks, benefits and side effects, indications and contraindications	29	151

3.	PE19.4	Define cold chain and discuss the methods of safe storage and handling of vaccines	29	151
4.	PH1.55	Describe and discuss the following National Health Programmes including tuberculosis.	30	153
5.	PE34.3	Discuss the various regimens for management of tuberculosis as per National Guidelines	30	153
6.	PE34.4	Discuss the preventive strategies adopted and the objectives and outcome of the National Tuberculosis Control Program	30	153
7.	CT1.1	Describe and discuss the epidemiology of tuberculosis and its impact on the work, life and economy of India	30	153
8.	CT1.4	Describe the epidemiology, the predisposing factors and microbial and therapeutic factors that determine resistance to drugs	30	153
9.	CT1.15	Prescribe an appropriate antituberculosis regimen based on the location of disease, smear positivity and negativity and comorbidities based on current national guidelines including directly observed tuberculosis therapy (DOTS)	30	153
10.	CT1.18	Educate health care workers on national programs of tuberculosis and administering and monitoring the DOTS program	30	153
11.	CM14.1	Define and classify hospital waste	31	155
12.	CM14.2	Describe various methods of treatment of hospital waste	31	155
13.	CM14.3	Describe laws related to hospital waste management	31	155
14.	CM5.6	Enumerate and discuss the National Nutrition Policy, important national nutritional programs including the Integrated Child Development Services Scheme (ICDS), etc.	32	157
15.	CM5.2	Describe and demonstrate the correct method of performing a nutritional assessment of individuals, families and the community by using the appropriate method	32	157
16.	CM18.1	Define and describe the concept of international health	33	158
17.	CM18.2	Describe roles of various international health agencies	33	158
18.	PE19.3	Vaccine description with regard to classification of vaccines, strain used, dose, route, schedule, risks, benefits and side effects, indications and contraindications	34	159
19.	PE19.4	Define cold chain and discuss the methods of safe storage and handling of vaccines	34	159
20.	PE19.12	Observe the administration the UIP vaccines	34	159
21.	CM17.1	Define and describe the concept of health care to community	35, 36, 37, 38, 39	161, 162, 164, 166, 168
22.	CM17.3	Describe primary health care, its components and principles	35, 36, 37, 38, 39	161, 162, 164, 166, 168

23.	CM17.5 Describe health care delivery in India	35, 36, 37, 38, 39	161, 162,164, 166, 168
24.	CM17.2 Describe community diagnosis	38, 39	166, 168
25.	CM17.4 Describe national policies related to health and health planning and sustainable development goals	38, 39	166, 168
26.	CM11.1 Enumerate and describe the presenting features of patients with occupational illness including agriculture	40	170
27.	CM11.2 Describe the role, benefits and functioning of the employees state insurance scheme	40	170
28.	CM11.3 Enumerate and describe specific occupational health hazards, their risk factors and preventive measures	40	170
29.	CM11.4 Describe the principles of ergonomics in health preservation	40	170
30.	CM11.5 Describe occupational disorders of health professionals and their prevention and management	40	170
31.	CM8.3 Enumerate and describe disease-specific National Health Programs including their prevention and treatment of a case	41	175

