Contents

1. HEALTH AND DISEASE **1**

- Introduction 1
  - The rise of public health 1
  - Health 4
  - Disease 15
- Statistics 25
  - The mathematicians dilemma 25
  - Data 25
  - Measurements 28
  - Sampling 29
  - Patterns of data 30
  - Probability 32
  - Testing for truth 34
  - Hypothesis testing 37

2. EPIDEMIOLOGY **48**

- The two faces of medicine 48
  - Three common components 49
  - Aims of epidemiology 49
  - Sources of data 50
  - What epidemiologists measure 50
  - Descriptive epidemiology 56
  - Analytic epidemiology 59
  - Experimental epidemiology 64
  - Association 66
  - Uses of epidemiology 66
  - Epidemiologic triangle 67
- Screening 67
  - Types of screening 68

3. HEALTH AND THE INDIVIDUAL **69**

- Genes 69
  - Chromosomal diseases 69
  - Single gene (Mendelian) diseases 69
  - Multifactorial diseases 70
  - Prevention of genetic diseases 70
- Nutrition 72
  - Energy 72
  - The proteins 74
  - Lipids 76
  - Carbohydrates 78
  - Vitamins 78
  - Minerals 85
  - Antioxidants 88
  - Water 88
  - Nutritional assessment of community 88
  - Food hygiene 91

- Foodborne diseases 93
- Nutritional problems in public health 94
- Protein energy malnutrition 101
- Nutritional anemia 104
- Vitamin A deficiency 107
- Iodine deficiency disorders 110
- Endemic fluorosis 112
- Solutions for nutritional problems 112
- Status of principal foods 115

4. HEALTH AND THE COMMUNITY 120

▮ People 120
- The demographic cycle 121
- Demographic trends in India 122
- Fertility 126
- Family planning 128

▮ Society 149
- Social medicine 149
- Sociology 150
- The family 154
- Cultural factors in health and disease 157
- Socioeconomy 158
- Social security 161

▮ Women and children 163
- The maternity cycle 164
- Problems of women and children 165
- Growth and development 178
- The RCH package 182
- RCH II (2005–2010) 198
- Integrated Child Development Services 202
- School health 204
- Postpartum program 215

▮ The elderly 206
- Problems of the elderly 206
- Ideal geriatric health services 206

▮ Information, education and communication 207
- Common terms 207
- Communication 207
- Health education 209

5. HEALTH AND ENVIRONMENT 213

▮ Sanitation 214

▮ Water 214
- How should ideal water be? 214
- How much water do we need? 214
- From where do we get this water? 215
- Water pollution 216
- What can unsafe water cause? 217
- How can water be purified? 218
- Principles of chlorination 220
- Household water purification 220
- Disinfection 222

- Case study: How to clean a well? 222
- Case study: Swimming pool sanitation 223
- Water surveillance: How to investigate a complaint about water? 223
- Water quality standards (WHO) 225

■ Air 227
- Comfort 227
- Air pollution 229
- Prevention of air pollution 235

■ Housing 236
- The 'residential environment' 236
- Overcrowding 237
- Indicators of good housing 238

■ Waste disposal 238
- Solid wastes 239
- Liquid wastes 241
- Hospital waste disposal 241

■ Disposal of human excreta 244
- Excreta disposal in unsewered areas ('on site' latrines) 245
- Excreta disposal in sewered areas 248
- Sewage treatment 249

■ Noise 251
- Measurements of sound 251
- Effects of noise 252
- Control 253

■ Radiation 253
- Unit of radiation 253
- Types of radiation 254
- Sources 254
- Effects 254

■ Sterilization and disinfection 255
- Types of disinfection 255

■ Occupational environment 257
- Aims of occupational health services 258
- Psychosocial environment 258
- Physical environment 258
- Chemical environment 259
- Biological environment 262
- Sickness absenteeism 263
- Prevention of occupational diseases 263

■ Disasters 267
- Classification 267
- Disaster cycle 267

■ (Medical) entomology 272
- Vector dynamics 272
- Control of (arthropod) vectors 272
- Mosquitoes 274
- Flies 278
- Ticks 279
- Mites 280
- Lice 281
- Fleas 282

- Cyclops 284
- Antivector chemical treatment—Insecticides 284
- List of vectors 286

6. HEALTH AND THE STATE 289

- Health care delivery 289
  - How must a good health care service be? 289
  - The Indian situation analysis 290
  - Changing terminologies 296
  - The public health sector 298
  - National rural health mission (2005–12) 305
  - National health policy 2002 309
  - The Indian Public Health Standards 310
  - Private health sectors 310
  - Voluntary health agencies/NGO 310
  - Drugs 310
- Health information 312
  - Sources of information 314
- Planning 318

7. HEALTH AND THE PLANET 322

- Health internationale 322
  - Beginning 322
  - WHO's WHO 322
  - United Nations International Children's Emergency Fund 325
  - International Committee of the Red Cross 325
- Other intermediate health organizations 326

8. NONCOMMUNICABLE DISEASES 327

- Problem 328
  - Epidemiologic transition 328
- Cardiovascular system 329
  - Problem 329
  - Summary of cardiovascular risk factors 330
  - Ischemic heart diseases 331
  - Hypertension 333
  - Cerebrovascular accidents (stroke) 334
  - Rheumatic fever/rheumatic heart disease 335
- Cancer 337
  - Problem 337
  - Agent 338
  - Host 339
  - Prevention 340
  - Epidemiology of selected cancers 341
- Endocrine 345
  - Obesity 345
  - Diabetes mellitus 347
- Eyes 352
  - Blindness 352
- Accidents 355
  - Problem 356
  - Agent 356
  - Host 356

- Environment 356
- Road traffic accidents 356
- Preventing accidents 358

9. COMMUNICABLE DISEASES 359

- Epidemiology of infectious diseases 359
  - The chain of transmission 359
  - Investigation of epidemic 380
- Intestinal infections 382
  - Acute diarrheal disease 382
  - Cholera 388
  - Enteric fever 391
  - Acute bacterial gastroenteritis (Food poisoning) 396
  - Dracunculiasis 399
  - Poliomyelitis 399
  - Hepatitis A 408
  - Teniasis 410
  - Hydatid disease 411
- Parenteral routes 412
  - Hepatitis B 412
  - Hookworm infestation 417
  - Malaria 418
  - Dengue 431
  - Lymphatic filariasis 435
  - Yellow fever 443
  - Kyasanur forest disease 444
  - Chikungunya fever 444
  - Japanese encephalitis 445
  - Leishmaniasis 448
  - National vector borne disease control program 452
  - Plague 453
  - Rabies 459
  - Tetanus 465
- Respiratory infections 469
  - Smallpox 469
  - Chickenpox (Varicella) 470
  - Diphtheria 473
  - Pertussis 476
  - Influenza 479
  - Mumps 485
  - Rubella 487
  - Severe acute respiratory syndrome (SARS) 488
  - Measles 490
  - Acute respiratory infections 495
  - Tuberculosis 503
  - Leprosy 525
- Sexually transmitted diseases 540
  - Reproductive tract infections 540
  - HIV infection 550
- *Appendix* 575
- *References* 583
- *Index* 603