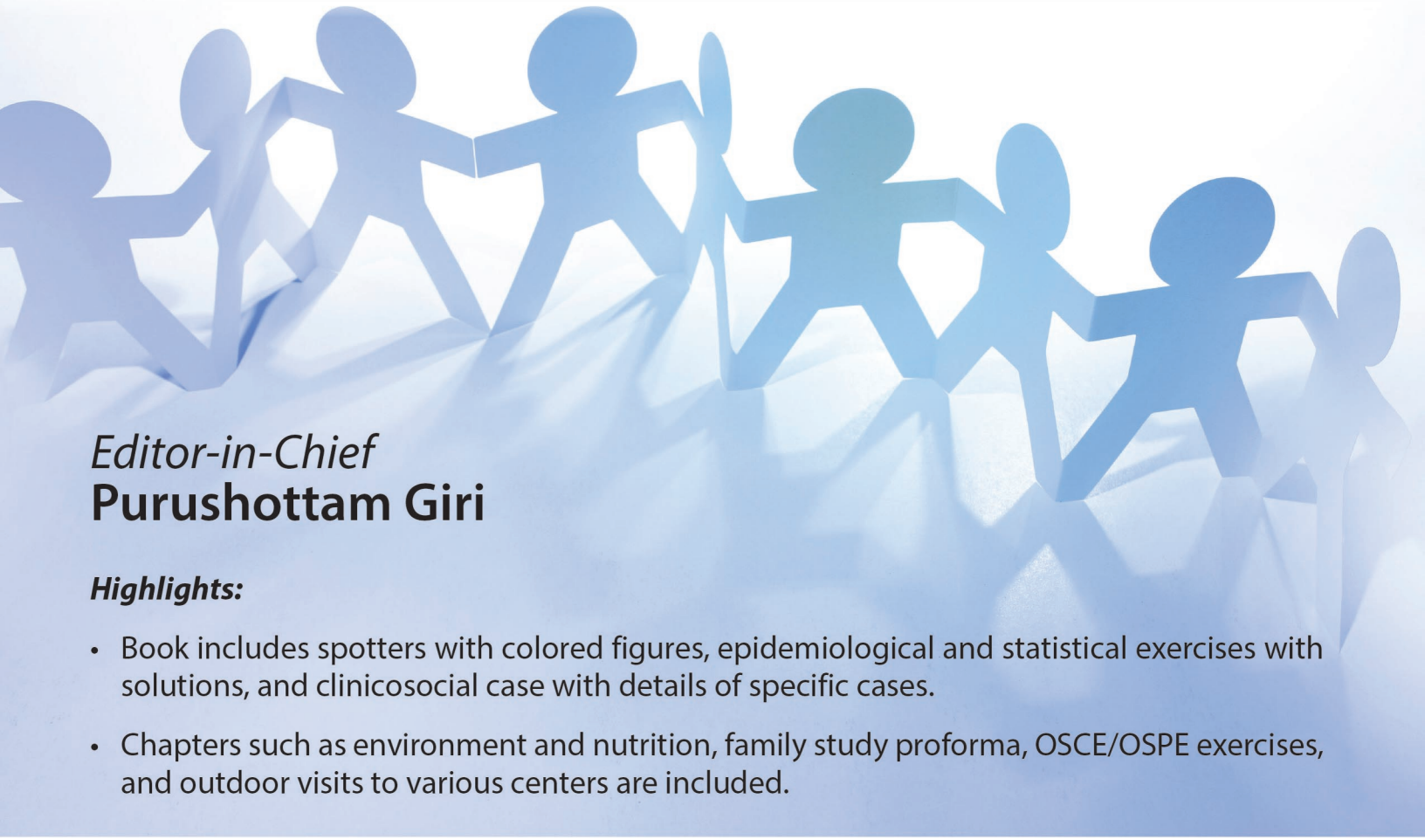
Practical Application in COMMUNITY MEDICINE

Comprehensive Guide in Mastering the Basics of Practical Approaches in Community Medicine Aligned with Latest NMC Competency Based Curriculum for UG & PG Students



Editor-in-Chief
Purushottam Giri

Highlights:

- Book includes spotters with colored figures, epidemiological and statistical exercises with solutions, and clinicosocial case with details of specific cases.
- Chapters such as environment and nutrition, family study proforma, OSCE/OSPE exercises, and outdoor visits to various centers are included.

Editors
Seema Jain
Animesh Jain

Associate Editors
Pankaj Shah
Bhavna Jain

Foreword
Sanjay Zodpey

JAYPEE

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SECTION 2

Family Health

LEARNING OBJECTIVES

- To identify key sociocultural and demographic variables that impact individual and community health.
- To assess socioeconomic status of the family and its influences on health behaviors and access to health care.
- To identify common barriers to good health and develop communication strategies to address these barriers.
- To identify key housing standards that impact health (e.g., sanitation, ventilation, overcrowding, etc.).

FAMILY HEALTH

CM 2.1: Describe the steps and perform a clinical sociocultural and demographic assessment of the individual, family and community.
CM 2.2: Describe the correct assessment of socioeconomic status.
CM 2.3: Describe and demonstrate in a simulated environment the assessment of barriers to good health and health-seeking behavior.
CM 2.4: Describe social psychology, community behavior and community relationship and their impact on health and disease.
CM 3.5: Describe the standards of housing and the effect of housing on health.

A. BACKGROUND INFORMATION ABOUT THE FAMILY HEALTH SURVEY

Year	*Student Learning Objectives (SLOs)*
1st	➢ How to take an interview? ➢ Developing communication skills to inspire confidence among families. ➢ How to effectively gather family details and do a general assessment of family health? ➢ Understand the dynamics of the rural set-up of that region. ➢ What are urban, rural and slum areas? ➢ Educating families about government-sponsored health programs. ➢ Learn to analyze the data collected from their families. ➢ Identify diseases/ill-health/malnutrition of allotted families and try to improve the standards.
2nd	➢ Inspire active community participation through families allotted. ➢ Continue active involvement to become the first doctor/reference point of the family by continued active interaction. ➢ How to assess the housing standard? ➢ Assess the physical, biological and psychosocial environment. ➢ Kitchen, water supply, refuse disposal. ➢ How is the SES determined? What are the various SES scales used in rural and urban settings? ➢ Learn to draw a spot map and cross-sectional map for the house. ➢ Effectively compiling the targets achieved. ➢ Study high-risk individuals in the family. ➢ To identify the good cultural practices and high-risk behaviors and health habits in the community.
3rd	➢ To identify the health problems, health needs and health demands of the family. ➢ Analysis of their involvement and impact on existing sociopoliticoeconomic dynamics in addition to improvement in health conditions. ➢ Describe the significance of these variable in health and disease. ➢ Understand the role of family in health and disease. ➢ Recommendation and health advice that can be given to families. ➢ Achievements in the last few visits should be evaluated.

HOW TO TAKE INTERVIEW?

- Whenever a student enters the community/house it is the teacher's responsibility to develop doctor-community communication.
- History taking in apparently healthy must be taught to the students.
- Highlight the difference between clinical and community medicine.

FAMILY ADOPTION PROGRAM (FAP)

Rationale Behind FAP

The idea behind the FAP is that an undergraduate (UGs) adopts a family for 3.5 years to improve the health status of the family and provide support in addressing their social, mental, and environmental challenges throughout this period. The undergraduate students were being posted in rural areas or urban slums under the Community Medicine department. FAP also helps postgraduate students (PGs) to improve their skills on clinic-social case-based study during their course. They should be taught to make the family aware of the existing healthcare delivery system and the government's free-of-cost health programs and their utilization.

The introduction of the FAP is aimed towards enhancing the village outreach program for MBBS students. It goes beyond mere data collection, aiming to foster a well-informed community and empower undergraduate students to effectively educate the families based on their knowledge and skills to utilize the available resources.

Key Persons in FAP

Medico-social workers, ASHAs, ANM, AWWs, Important political persons and registered medical practitioners in the area.

Allotted Duration for FAP

As per the National Medical Commission (Undergraduate medical education) Guidelines, 2024, the allotted duration for FAP is:

- **First Professional Year:** (Total: 27 hours, 9 visits)
- **Second Professional Year** (Total: 30 hours, 6 visits)
- **Third Professional Year:** (Total: 21 hours, 5 visits)

A report is to be submitted at the end of 3rd professional and to be submitted to the department addressing improvements made by the effort of the student in improving the health status of the family and role in supporting families during illnesses or medical emergencies. It also highlights the student's contribution to social responsibility, including initiatives like environment protection programs, and plantation.

Important Definitions

Family

It is a group of biologically related individuals living together and eating from a common kitchen.

Head of the Family

- Main decision-maker in the family, who takes decisions in the family concerning health seeking, health expenditure, marriages, preparation of food items, etc.
- Does not depend on age, earning capacity, or gender.

Type of the Family: Joint/Nuclear

- **Nuclear (elementary) family:** It consists of a married couple and their dependent children. A "new family" is a nuclear family within the first 10 years of formation (marriage).
- **Joint (extended) family:** It consists of several married couples and their children living in the same household. All the men in the household are related by blood and the women are their wives, unmarried daughters, or widows.

- *Three-generation family:* It occurs when the married children of a couple continue to stay with their parents and have their own children.
- *Broken family:* Where the parents are separated or divorced or where one or both parents die.

Urban Area

According to the Census of India 2011, an urban area is one which fulfills the following criteria:

❖ All statutory places with a municipality, corporation, cantonment board or notified town area committee, etc.;

OR

❖ A place satisfying these three criteria simultaneously:
- A minimum population of 5,000;
- At least 75% of the male working population engaged in non-agricultural pursuits; and
- A density of population of at least 400 per sq. km. (1,000 per sq. mile)

Rural Area

According to the Census of India 2011, all those areas which do not fulfill the criteria for urban areas are grouped as rural areas.

Slum Area

A compact area of a population of at least 300; or about 60–70 households of poorly built congested tenements, in unhygienic environments usually with inadequate infrastructure and lacking in proper sanitary and drinking water facilities.

Household

A "household" is usually a group of persons who normally live together and take their meals from a common kitchen unless the exigencies of work prevent any of them from doing so. Persons in a household may be related or unrelated or a mix of both.

SCALES TO DETERMINE SOCIOECONOMIC STATUS

Urban area	*Rural area*	*Can be used in both settings*
➢ Modified Kuppuswamy's scale ➢ Srivastava scale ➢ Jalota scale	➢ Uday Pareekh Scale ➢ Kulashreshta's classification ➢ Shirpurkar scale ➢ Rahudkar scale	➢ Modified BG Prasad's classification ➢ Standard of living index ➢ BPL/APL card

Updated BG Prasad's Classification for the Year 2023

❖ BG Prasad's classification was introduced in 1961.

❖ It is based on the Consumer Price Index for Industrial Workers (CPIIW) which is designed to measure a change over time in prices of a given basket of goods and services consumed by a defined population (i.e., Industrial Workers). This index is revised every month by the Labour Bureau, Government of India.

❖ The base year of price index numbers is revised at regular intervals, reflecting the changes in the population's consumption pattern.

Linking factor between year series	*Value*
1960–1982	4.63
1982–2001	4.93
2001–2016	2.88

Price index year	*Value*
1960	100
1982	100
2001	100
2016	100

Updated and modified value for BG Prasad's socioeconomic classification for July 2022 can be calculated as follows: Multiplying factor = Current index value for May 2022 (= 129.0)/Base index value in 2016 (= 100) = 1.29.

The formula for calculating new income value for July 2022:

New value = Multiplying factor (1.29) × [Old value × Linking factor between 1960 and 1982 series (4.93) × Linking factor between 1982 and 2001 series (4.63) × Linking factor between 2001 and 2016 series (2.88)].

The multiplication factor after the above calculation came out to be 84.80. The updated and modified value for BG Prasad's socioeconomic classification was calculated as per the new income value for May 2024 **(Table 2.1)** is given.

TABLE 2.1: Modified BG Prasad classification for May 2024.

Social class	*Per capita income (in INR) as per original classification in 1961*	*Per capita income (in INR) as per modified classification for May 2024*
I	≥100	≥9,098
II	50–99	4,549–9,097
III	30–49	2,729–4,548
IV	15–29	1,364–2,728
V	<15	<1364

Modified Kuppuswamy Scale (Table 2.2)

Initially, the scale formulated by Kuppuswamy (1976) was used for determining the SES of an individual. It was modified to determine the SES of a family rather than an individual.

In the first draft, 3 important variables contribute to SES in urban areas: Education, Occupation and Income of the individual. Each Variable was scaled on a 7-point scale providing equal weightage to all 21 items (7 points each for the 3 variables). The total score ranged from 3 to 21. The Kuppuswamy now includes 3 parameters. And each parameter is further classified into subgroups and the total score of Kuppuswamy SES ranges from 3 to 29.

TABLE 2.2: Modified Kuppuswamy scale.

Sl. No.	*Education of the head*	*Score*
1.	Professional and Honors	7
2.	Graduate	6
3.	Intermediate or Diploma (up to 12th standard)	5
4.	High school certificate (up to 10th standard)	4
5.	Middle school certificate (up to 8th standard)	3
6.	Primary school certificate (up to 5th standard)	2
7.	Illiterate (person above the age of 7 years who is not able to read and write in any language with understanding)	1

Previous Classification of Occupation

- **Unskilled** work requiring neither education nor training, e.g., coolie, peon, watchman, domestic helpers, etc.
- **Semiskilled** work requiring some training e.g., factory laborer, lab attendee, petty shopkeeper.
- **Skilled** complicated work requiring long training, e.g., carpenter, mason, mechanic, car driver, telephone operator, mechanics, etc.
- **Clerical** training in arithmetic, reading and writing. Essentially repetitive nature of work, e.g., clerk, typist, accountant. Shopkeeper, salesman farm owner, etc.
- **Semi-professional** occupation requiring post-high school or college education, e.g., lecturers, insurance inspectors, musicians, etc.
- **Professional** involved in decision-making process, policy, and execution e.g., doctors, senior administrative officers, senior lecturers, readers and professors, college principles, advocates, engineers, planters, auditors, newspaper editors, expert musicians, architects, managing directors of industrial and business firms, managers.

Now used:

Sl. No.	*Occupation of head*	*Score*
1.	Legislators, senior officials, and managers	10
2.	Professionals	9
3.	Technicians and Associate professionals	8
4.	Clerks	7
5.	Skilled workers and shop and market sales workers	6
6.	Skilled agricultural and fishery workers	5
7.	Craft and related trade workers	4
8.	Plant and machine operators and assemblers	3
9.	Elementary occupation	2
10.	Unemployed	1

	Updated Monthly Family Income in Rupees				
Sl. No.	*(2018)*	*(2020)*	*(2022)*	*(2024)*	*Score*
1.	≥1,26,360	≥1,99,862	≥1,85,895	≥1,35,169	12
2.	63,182–126,359	99,931–1,99,861	92,951–1,85,894	67,587–1,35,168	10
3.	47,266–63,181	74,755–99,930	69,535–92,950	50,560–67,586	6
4.	31,591–47,265	49,962–74,755	46,475–69,534	33,793–50,559	4
5.	18,953–31,590	29,973–49,961	27,883–46,474	20,274–33,792	3
6.	6,327–18,952	10,002–29,972	9,308–27,882	6,768–20,273	2
7.	≤6,326	≤10,001	≤9,307	≤6,767	1

Kuppuswamy SES is revised, as per changes in the consumer price index (CPI): Industrial workers. For calculation of CPI, the current inflation rate is taken into account. If we multiply the generated income scale values of the base year with the conversion factor that will update the Kuppuswamy SES scale for that year.

Grade	*Category*	*Score on scale*
I	Upper class	>43
II	Upper middle class	33–42
III	Middle class	24–32
IV	Lower middle class	13–23
V	Lower class	<13

MODIFIED UDAI PAREEK SCALE FOR CLASSIFICATION

Used in rural area and it contains 9 items.

Sl. No.	*Score*	*Socioeconomic status*
1.	26–29	Upper (I)
2.	16–25	Upper middle (II)
3.	11–15	Lower middle (III)
4.	5–10	Upper lower (IV)
5.	<5	Lower (V)

Components	*Score*	*Components*	*Score*
Caste		**Social participation**	
Scheduled caste	1	None	0
Lower caste	2	Members of one organization	1
Artisan caste	3	Members of more than one organization	2
Agriculture caste	4	Office holder in such an organization	3
Prestige caste	5	Wide public leader	4
Dominant caste	6	**House**	
Occupation		No house	0
None	0	Hut	1
Laborer	1	Kutcha house	2
Case occupation	2	Mixed house	3
Business	3	Pucca house	4
Independent profession	4	Mansion	5
Cultivation	5	**Farm power**	
Service	6	No draught animal	1
Education		1–2 Draught animal	2
Illiterate	0	3–4 Draught animal	4
Can read only	1	5–6 Draught animal	6
Can read and write	2	**Material possessions**	
Primary	3	Bullock cart	0
Middle	4	Cycle	1
High school	5	Radio	2
Graduate	6	Chairs	3
And above	7	Mobile phone	4
Land		Television	5
No land	0	Refrigerators	6
<1	1	**Family members**	
1–5 acre	2	Up to 5	2
5–10 acre	3	>5	1
10–15 acre	4		
15–20 acre	5		
≥20	6		

STANDARDS OF HOUSING

Types of House

Pucca	*Kutcha*	*Semi-Pucca/Mixed*
➢ Floor—paved ➢ Walls—stone brick ➢ Roof—tin/asbestos/concrete	➢ Floor—mud ➢ Walls—mud/thatched ➢ Roof—thatched/state/other stone	Any combination of Pucca and Kutcha house.

Set-back

Open space around the house is called set-back. It should be a minimum:
- **In urban areas:** One-third of the total area (33.3%), and
- **In rural areas:** Two-thirds of total (66.7%)

Criteria for Adequate Lighting

- Person should be able to read the fine print of newspaper in the darkest corner of room.
- In case of illiteracy, a person should be able to perform an intricate task like separating husk from rice, etc.
- There should be no sharp shadows, no glare.
- The source of light should be steady with distribution of light and absence of any flickering.

Criteria for Adequate Ventilation

- The window area: 1/5th of the floor area.
- Doors and windows combined: 2/5th of floor area.
- Every room to be provided with at least two windows; at least one of them should open directly to an open space. There should be cross ventilation.
- The windows should be placed at a height of 3 ft (1 meter) above the ground in living rooms
- It is considered that a space of 1,000 to 1,200 cubic feet per person is quite sufficient.

Cattle Shed

It should be a minimum 25 feet away from the house.

Criteria for Overcrowding

Persons per Room

The criteria for counting persons are as follows:
- An infant (a child under 12 months of age) is not counted.
- Children aged 1-10 years counted as half a person each.
- All >10 years are counted as one person each.

Taking the above into consideration, person-per-room criteria are as below:

No. of rooms	*Max no. of recommended persons*
1.	Two
2.	Three
3.	Five
4.	Seven
5.	Ten

*Additional 2 persons for each further room after 5 rooms.

Floor Space

- Measure the length (L) and breadth (B) of all the rooms and calculate the floor area by the formula: Floor area = L × B
- Add up all the room area to calculate the total area.
- Calculate the number of occupants in the same manner as in persons per room.
- The floor space per person: The total area ÷ The number of persons residing in the house.

❖ Assess overcrowding using the standards given below:

Area (sq. ft)	*Max. no. of persons recommended*
50–70	Half
70–90	One
90–100	One and half
110 and above	Two

Sex Separation

Overcrowding is considered to exist if 2 persons over 9 years of age, not husband and wife and of opposite sex are obliged to sleep in the same room.

EPIDEMIOLOGICAL EXERCISES/PROBLEM-SOLVING EXERCISES

1. The Gupta family has 4 members, Mr Gupta a, 65-year-old retired private employee, his wife a 62-year-old housewife, and his 2 sons 26-year-old and a 22-year-old working in MNC. The elder son makes all the main decisions in the family. Who is the head of the family?
2. Family of 5 members, parents with their 3 children, what type of family is this?
3. A family of 5, with a couple, parents and their 2 children what type of family is this?
4. A family of 10 members, 2 brothers living with their parents, children and wives. What type of family is this?
5. Ramesh resides in an urban slum area and holds a Graduate degree in business administration but has been unable to secure a stable job for the past two years. His family has a small agricultural land, from which the income is ₹ 10,000 per month. Evaluate Ramesh's socioeconomic status.
6. Ajay is a skilled artisan specializing in traditional handicrafts. He lives in a metropolitan city and earns a decent income from his craft. Which scale will be used to assess Ajay's socioeconomic status?
7. A family of six lives in a two-bedroom apartment. Is the housing standard appropriate?
8. A family resides in a thatched hut with improper lighting. How will you analyze the lighting conditions of the house?
9. A house in the rural part of the city is having 1 window and 1 door adjacent to each other. Is the ventilation of the house appropriate?
10. A family living in an urban setting has 20% open space in the house. Is the setback apt as per the housing standard?
11. A family of 5 lives in a village in a two-floor house with 3 rooms. The younger two children, a 12-year-old boy and a 9-year-old girl share a room. Is the housing standard met in this scenario?

ENVIRONMENT

CM 2.3: Describe and demonstrate in a simulated environment the assessment of barriers to good health and health-seeking behavior.
CM 3.2: Describe concepts of safe and wholesome water, sanitary sources of water, water purification process, water quality standards, concepts of water conservation and rainwater harvesting.
CM 3.7: Identify and describe the identifying features and life cycles of vectors of Public Health importance and their control measures.

Year	*Student Learning Objectives (SLOs)*
1st	➢ Describe concepts of safe and wholesome water. ➢ List the sanitary source of water. ➢ List vectors of public health importance. ➢ Identify different vectors of public health importance.
2nd	➢ Different methods of water purification. ➢ Describe water quality standards. ➢ Explain various methods of waste disposal. ➢ Describe the life cycle of vectors of public health importance.
3rd	➢ Identify instruments used to assess the environment. ➢ Describe the good health practices in the family with respect to physical, biological and psychosocial environment. ➢ Describe control measures of different vectors of public health importance.

SAFE AND WHOLESOME WATER

Safe and wholesome water has been defined as water that is:
- ❖ Free from pathogenic agents
- ❖ Free from harmful chemical substances
- ❖ Pleasant to taste (free from color and odor)
- ❖ Usable for domestic purposes

Water is said to be 'polluted' or 'contaminated' if it does not fulfill above criteria.

Portable/wholesome water: It is a safe water which is pleasant to taste, odorless, cool and colorless and does not stain clothes.
Distilled water: This type of water is prepared by boiling and recondensing the steam. Distilled water is used for the reconstitution of powder form of antibiotics and certain vaccines, such as measles vaccine.
Purified water: Reverse osmosis-treated water.

Water Purification

Purification of Water on Large Scale

A. Storage

- ❖ **Physical:** 90% of the suspended impurities settle down by gravity.
- ❖ **Chemical:** Aerobic bacteria oxidize organic matter, which reduces free ammonia into nitrates.
- ❖ **Biological:** When river water is stored properly, bacteria count drops 90% in first 5–7 days.

B. Filtration–99% bacteria are removed, apart from other impurities

- ❖ Slow sand filter or biological filters
- ❖ Rapid sand filter or mechanical filters

C. Disinfection

- ❖ Chlorination
- ❖ Ozonation
- ❖ Membrane process:
  - ■ High-pressure process—reverse osmosis; nanofiltration
  - ■ Low-pressure process—ultrafiltration; microfiltration

Purification of Water on Small Scale

A. Household purification of water:

- Boiling
- Chemical disinfection:
  - Bleaching powder/chlorinated lime/$CaCl_2$
  - Chlorine solution
  - Chlorine tablet (halazone)
  - Iodine
  - Potassium permanganate
- Filtration (ceramic filters): Pasteur Chamberland filter; Berkefeld filter; Katadyn filter
- Ultraviolet filtration
- Multistage reverse osmosis

B. Disinfection of well

Chlorination

Bactericidal and moderately viricidal but not sporicidal.
Used for purification of highly polluted water on large scale.

Action of chlorine:

$H_2O + Cl_2 \rightarrow HCl$ (Hydrochloric acid) + HOCl (Hypochlorous acid)

$HOCI \rightarrow H^+$ (Hydrogen ion) + OCI^- (Hypochlorite ion)

Free Residual Chlorine

Recommended level of free residual chlorine in water (1 mg/L = 1 ppm)

Drinking water		>0.5 mg/L
Post-disaster water bodies		>0.7 mg/L
Swimming pool		>1 mg/L
Post-epidemic	Piped supply	0.5 mg/L
	Wells	1 mg/L
	Tankers	2 mg/L

Breakpoint Chlorination

Addition of chlorine to water produces chloramines. The point at which the residual chlorine appears and when all combined chlorines have been completely destroyed is the breakpoint and corresponding dosage is the breakpoint dosage. Breakpoint chlorination achieves the same results as superchlorination in a rational manner and can therefore be construed as controlled superchlorination.

Superchlorination

Superchlorination followed by dechlorination comprises the addition of large doses of chlorine to the water, and removal of excess of chlorine after disinfection, this method is applicable to heavily polluted waters whose quality fluctuates greatly.

Orthotolidine (OT) Test

The orthotolidine (OT) test is a rapid and accurate method for determining both free and combined chlorine levels in water. It is crucial to take readings within 10 seconds to estimate free chlorine, as the color produced after a longer duration (say 15–20 minutes) reflects the combined action of both free and combined chlorine.

Orthotolidine-Arsenite (OTA) Test

This is a modification of the OT test to determine the free and combined chlorine residuals separately.

Contact Period

Presence of free residual chlorine for a period of at least 1 hour is essential to kill bacteria and viruses.

Steps in Well Disinfection

Find the Volume of Water in a Well

- Measure the depth of water column (h) meter
- Measure the diameter of well (d) meter
  Take the average of several readings of the above measurements.
- Substitute h and d in:
  - Volume (liters) = $(3.14 \times d^2 \times h \times 1{,}000)/4$
  - One cubic meter = 1,000 liters of water

Find the Amount of Bleaching Powder Required for Disinfection

Estimate the chlorine demand of the well water by *"Horrock's Apparatus"* and calculate the amount of bleaching powder required to disinfect the well.

Roughly, 2.5 grams of good quality bleaching powder would be required to disinfect 1,000 liters of water. This will give an approximate dose of 0.7 mg of applied chlorine per liter of water.

Dissolve Bleaching Powder in Water

The bleaching powder required for disinfecting the well is placed in a bucket (not more than 100 g in one bucket of water) and made into a thin paste. More water is added till the bucket is nearly three-fourths full. The contents are stirred well, and allowed to sediment for 5–10 minutes when lime settles down. The supernatant solution which is chlorine solution, is transferred to another bucket, and the chalk or lime is discarded. (Note: the lime sediment should not be poured into the well, as it increases the hardness of well water).

Delivery of Chlorine Solution into the Well

The bucket containing the chlorine solution is lowered some distance below the water surface, and the well water is agitated by moving the bucket violently both vertically and laterally. This should be done several times so that the chlorine solution mixes intimately with the water inside the well. A contact period of one hour is allowed before the water is drawn for use.

Horrock's Apparatus (Fig. 2.1)

The apparatus is designed to find out the dose of bleaching powder required for the disinfection of water.

Contents

- 6 white cups (200 mL capacity each)
- 1 black cup with a circular mark on the inside
- 2 metal spoons (each holds 2 g of bleaching powder when filled level with the brim)
- 7 glass stirring rods
- 1 special pipette
- 2 droppers
- Starch-iodide indicator solution
- Instruction folder

Procedure

- Create a stock solution by mixing one level spoonful (2 g) of bleaching powder with water in a black cup. Make it into a thin paste with a little water bringing it to the circular mark through stirring. Let it settle.

Fig. 2.1: Horrock's apparatus.

- Fill six white cups with water to be tested, leaving a gap of about 1 cm below the brim.
- Use the provided pipette to add drops of the stock solution to each cup in increasing order (1 drop to the 1st cup, 2 drops to the 2nd, and so on).
- Stir each cup separately with a rod.
- Allow half an hour for chlorine action to take place.
- Add 3 drops of starch-iodide indicator to each cup, stirring again. A blue color indicates the presence of free residual chlorine.
- Note the first cup with a distinct blue color; in this example, if the 3rd cup shows blue, then 3 level spoonful or 6 grams of bleaching powder are needed to disinfect 455 liters of water.

The guidelines for drinking water quality recommended by the WHO (2011) relate to the following variable:

Acceptability Aspects

- Physical parameters
- Chemical aspects

Constituents or characteristics	*Thresholds for consumer complaints*	*Reasons for consumer complaints*
Physical Parameters		
Color	15 TCU	Appearance
Taste and odor	–	Should be acceptable
Temperature	–	Should be acceptable
Turbidity	1 NTU	Appearance; for effective terminal disinfection, median turbidity ≤1 NTU
Inorganic Constituents		
Aluminum	0.2 mg/L	Depositions, discoloration
Ammonia	1.5 mg/L	Odor and taste
Chloride	250 mg/L	Taste, corrosion
Copper	1 mg/L	Staining of laundry and sanitary ware (health-based provisional guideline value 2 mg/L)
Hardness	–	High hardness: Scale deposition, scum formation; low hardness: Possible corrosion

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Practical Application in COMMUNITY MEDICINE

This book aims to develop soft skills of UG and PG students in community medicine and public health. It covers family studies, spotters with colored figures, environmental assessments, and community diagnosis comprehensively. Experts provide clinicosocial case (UG + PG) detailing history taking, examination, diagnosis, and management. High-quality images, OSCE and OSPE exercises, and microbiology guidance are included, alongside epidemiological and statistical exercises. Exam-related topics for grand viva preparation are covered as well. Each topic is thoroughly discussed with exercises to reinforce learning, using clear language, to ensure student understanding. This book is a comprehensive resource for essential community medicine skills.

Editor-in-Chief

Purushottam Giri MBBS MD (PSM) MIPHA FIAPSM CCEBDM (Diabetic) is currently working as Professor and Head, Department of Community Medicine, Indian Institute of Medical Science and Research (IIMSR) Medical College, Badnapur, Dist. Jalna, Maharashtra, India. He has 18 years of teaching experience and has been an examiner for both UG and PG in more than 22 medical universities including deemed-to-be universities in various states of India. He has published more than 198 scientific papers in various national and international indexed medical journals and has received citations of 2,562 (h-index: 24, i10-index: 59) till date. He has been an Executive Editor, Associate Editor, Assistant Editor, and Editorial Board Member of more than 25 national/international indexed medical journals related to Community Medicine and Public Health. He is also a peer reviewer for more than 25 indexed medical journals.

He has written three medical books, titled *Epidemiology and Programmatic Management of NCDs in India (2023), Case-Based Learning in Community Medicine (2024),* and *Essential Medical Guide for General Practitioners (2024)*. At present, he also holds the posts of Secretary General of National IAPSM (2022–25), President of IAPSM Maharashtra State Chapter (2024–27), Vice-President of IPHA Maharashtra State (2021–24), Zonal Representative (West Zone) of APCRI (2022–24 and 2024–26), Secretary of IAPSM Maharashtra State (2015–18 and 2021–24), Central Council Member (West Zone) at National IPHA (2023–25), and Accredited Faculty of Maharashtra Medical Council (MMC), Mumbai, Maharashtra, since 2014.

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