



Cerebellum

Get the balance right

BTR PSM - 18-09-2025

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1. A diabetic patient's fasting blood glucose level is found to be 160 mg/dL. What will you advise the patient regarding non-pharmacological management?

A. At least 80g dietary fibre

B. <8 g salt intake everyday

C. < 30% of the calories should come from fat

D. Cholesterol < 100g

TABLE 2
Lifestyle modifications to manage hypertension

Modification	Recommendation Reduction, Range	Approximate systolic BP
Weight reduction	Maintain normal body weight (BMI, 18.5–24.9)	5–20 mm Hg/10 kg weight loss
Adopt DASH eating plan	Consume a diet rich in fruits, vegetables and low-fat dairy products with a reduced content of saturated fat and total fat	8–14 mm Hg
Dietary sodium reduction	Reduce dietary sodium intake to no more than 100 mEq/d (2.4 g sodium or 6 g sodium chloride)	2–8 mm Hg
Physical activity	Engage in regular aerobic physical activity such as brisk walking (at least 30 minutes per day, most days of the week)	4–9 mm Hg
Moderation of alcohol consumption	Limit consumption to no more than two drinks per day (1 oz or 30 ml ethanol eg, 24 oz beer, 10 oz wine, or 3 oz 80- proof whisky) in most men, and no more than one drink per day in women and lighter-weight persons	2–4 mm Hg

1. *Dietary changes* : Dietary modification is the principal preventive strategy in the prevention of CHD. The WHO Expert Committee (1) considered the following dietary changes to be appropriate for high incidence populations :

- reduction of fat intake to 20–30 per cent of total energy intake
- consumption of saturated fats must be limited to less than 10 per cent of total energy intake; some

- of the reduction in saturated fat may be made up by mono and poly-unsaturated fats
- a reduction of dietary cholesterol to below 100 mg per 1000 kcal per day
- an increase in complex carbohydrate consumption (i.e., vegetables, fruits, whole grains and legumes)
- avoidance of alcohol consumption; reduction of salt intake to 5 g daily or less.

2. A 70-year-old patient with a history of progressive vision loss is scheduled for cataract surgery under the National Program for Control of Blindness and Visual Impairment. Which of the following is not an accurate guideline or inclusion criterion for cataract surgery within this national program?

- A. Patients requiring cataract surgeries are selected and asked to report to base hospital**
- B. Perform more small incision cataract surgery**
- C. To do surgery in rural area with make shift hospital/Ots**
- D. To perform surgeries in fixed facility surgery by shifting patients from rural area.**

3. Identify the correct statement:

- A. The states with API <1 and all their districts reporting API <1 are in the elimination phase**
- B. NPU is the best for protein quality**
- C. Standardisation is done before comparing the mortality rates of two countries due to difference in number of deaths**
- D. Perflation ventilation is a type of mechanical ventilation**

Mechanical Ventilation:

- Exhaust ventilation
- Plenum ventilation
- Balanced ventilation.
- Air conditioning

Category	Criteria
Category 0	States/UTs with zero indigenous cases
Category 1	Elimination phase – States/UTs with API <1
Category 2	Pre-elimination phase – States/UTs with API <1 but some districts reporting API ≥1
Category 3	Intensified control phase – States/UTs with API ≥1

4. A city experiences a chemical plant leak and toxic fumes are released into the atmosphere. What is your immediate recommendation to the local residents?

A. Telephone to inform friends

B. Evacuate immediately

C. Open windows for ventilation

D. Seal cracks and close all windows and doors

5. The World Health Organization suggests the use of a new rapid diagnostic test for the diagnosis of malaria in resource-limited settings. The new test has a sensitivity of 70% and a specificity of 90% compared to the gold standard test (blood smear). The validity of the new test is evaluated at a satellite health center by testing 200 patients with a positive blood smear and 150 patients with a negative blood smear. How many of the tested individuals are expected to have a false negative result?

- A. 155**
- B. 15**
- C. 195**
- D. 60**

6. A 3-year-old girl presented to the PHC with difficulty in walking and bowing of legs. She was undernourished and had minimal exposure to the sun. Which programme deals with nutritional deficiency in children below 6 years of age?

A. Anaemia Mukh Bharat

B. Integrated Child Development Services

C. National Nutritional Deficiency and Control Programme

D. Mid-Day Meal Scheme

7. Which of the following is not an organophosphate insecticide?

A. DDT

B. Fenthion

C. Malathion

D. Diazinon

I. CONTACT POISONS

1. Natural:

- Pyrethrum-No residual
- Rotenone
- Derris
- Nicotine
- Mineral oils

2. Synthetic

A. Organo-chlorine Compounds:

- DDT-Least toxic-Residual 18mon
- Methoxychlor
- HCH (BHC)
- Lindane
- Chlordane
- Heptachlor
- Dieldrin
- Aldrin
- Toxaphene
- Kepone
- Mirex

B. Organo-phosphorus Insecticides:

- Chlorthion
- Diazinon
- Dioxathion
- Demethoate
- Malathion (OMS-1)-Least toxic
- Fenthion (OMS-2)
- Methyl parathion
- Parathion
- Ronnell
- Trichlorfon
- Dichlorvos
- Abate (OMS-786)
- Naled
- Gardona
- Chlorpyrifos
- Fenitrothion (OMS-43)
- Dicapthon (OMS-214)

C. Carbamates:

- Carbaryl
- Dimetilan
- Pyrolan
- Propoxur (OMS-33)

D. Synthetic Pyrethroids:

- Resmethrin
- Bioresmethrin
- Pothrin

II. STOMACH POISONS

- Paris green
- Sodium fluoride

III. FUMIGANTS

- Hydrogen cyanide
- Methyl bromide
- Sulphur dioxide
- Carbon disulphide

IV. REPELLENTS

- Meta-diethyltoluamide
- Benzyl benzoate
- Indalone
- Dimethyl phthalate
- Ethyl hexanediol

INTEGRATED VECTOR CONTROL

ANTI-LARVAL MEASURES

Chemical:

Paris green= Stomach poison

Temephos/Abate = Contact poison

Biological: Gambusia / Guppy

Bacillus thuringiensis

Environmental control

ANTI-ADULT MEASURES

Space spray: LOW API

Malathion

Cyphenothrin

Pyrethrum

Residual spray: HIGH API

DDT (2 rounds)

Malathion (3 rounds)

Deltamethrin (2 rounds)

PERSONAL PROTECTION

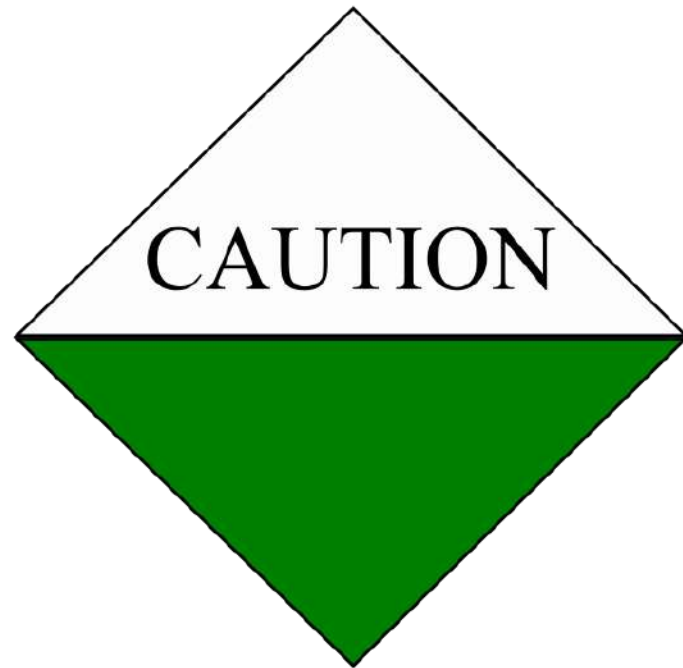
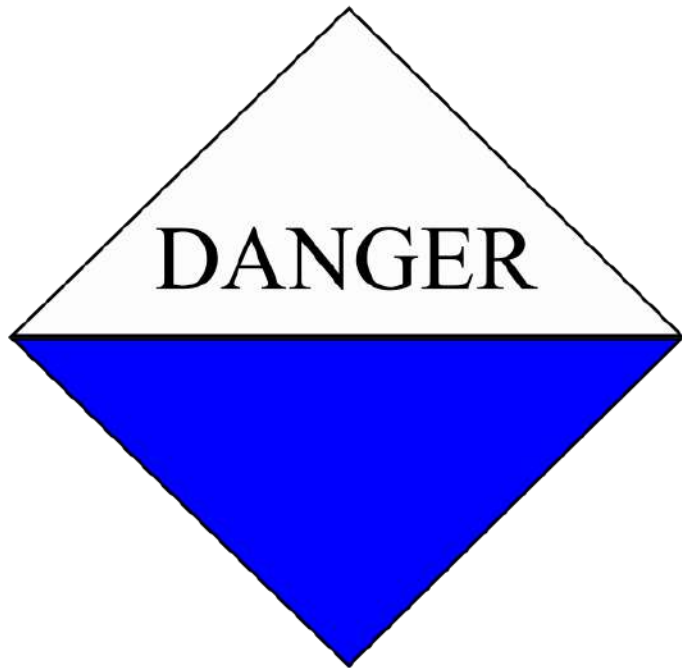
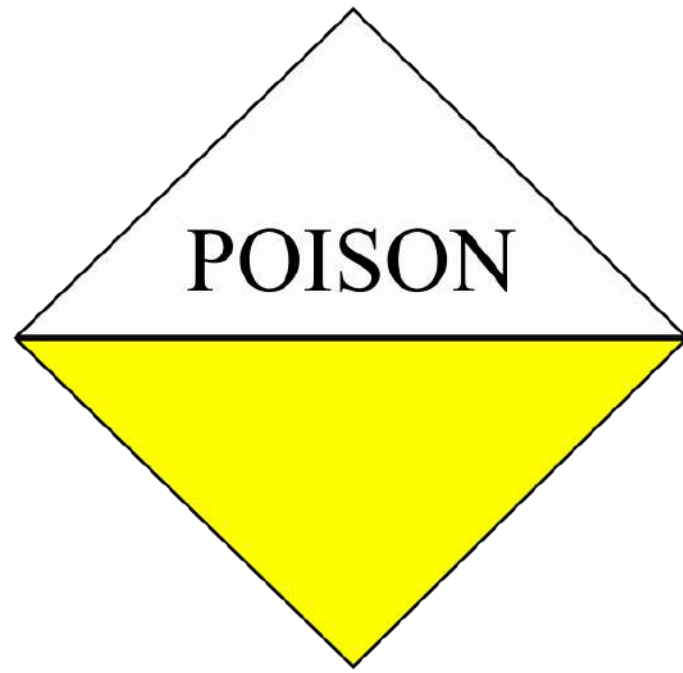
Deltamethrin

-ITBN: 6mon

-LLIN:3yrs

0.0475inch

>150 holes/ich



8. A city has 70,00,000 urban population, 30% of which live in slums. How many UPHCs are required for the slum population according to NUHM norms?

A. 42

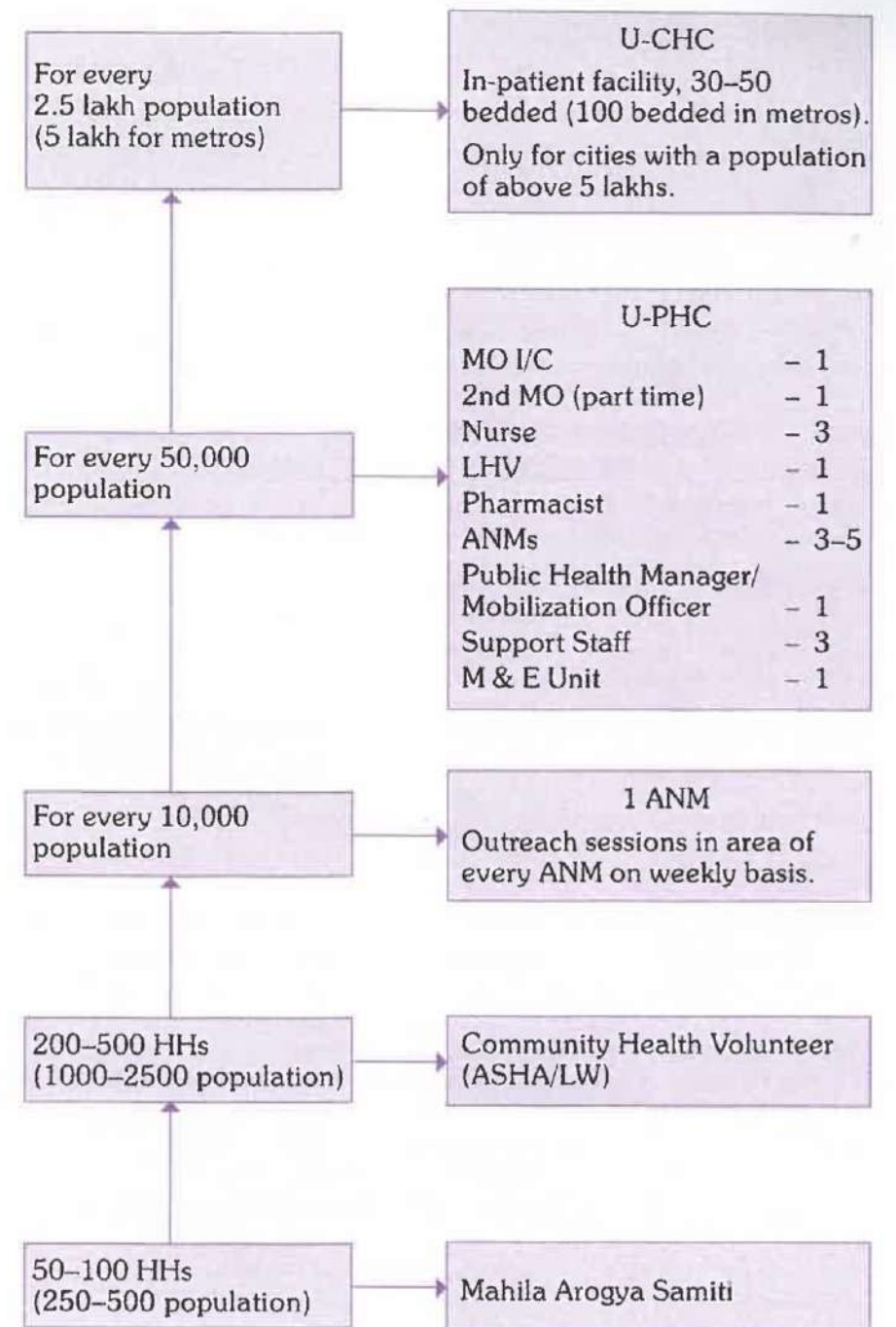
B. 52

C. 32

D. 22

	Hilly/ tribal	Plains	Beds
Sub-centre (HWC) A- B- Urban: 1/10k			
PHC A- B- School health Urban: 1/50k			
U-CHC Metro:			
Village level staff:			

Rogi kalyan Samiti: at PHC /CHC



9. The central value of a sample of 200 observations can be obtained by calculating which measure?

A. 90th percentile

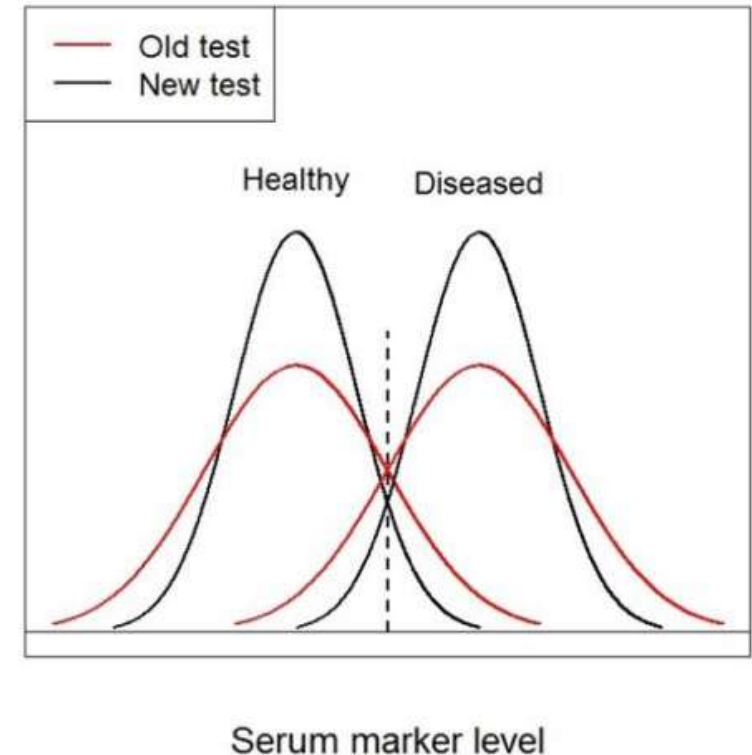
B. 2nd decile

C. Interquartile range

D. 2nd quartile

10. A standard test based on a serum marker is used to diagnose disease X. The distribution of the marker for this standard test in healthy and diseased patients is shown by the red curves in the graph below. A competitive company developed a new test based on the same marker. The distribution of the marker for the new test in healthy and diseased patients is shown by the black curves in the graph below. Compared to the old test, the new test has?

- A. Higher sensitivity and lower specificity
- B. Higher sensitivity and higher specificity
- C. Higher sensitivity and the same specificity
- D. Lower sensitivity and higher specificity



11. Which of the following statements is true about hospice care?

A. Disease is the centre of concern

B. The patient is sovereign

C. Death should neither be prolonged nor hastened

D. The aim is to improve the quality of life

E. The intention is to cure

F. Done when expected survival is <6months

A. B, C, D, F

B. C,E,F

C. B, D

D. A, B, E, F

12. In the context of Hardy-Weinberg equilibrium, which of the following factors does not affect the genetic equilibrium of a population? (PSM)

- A. Small population**
- B. Random mating**
- C. Mutations**
- D. Gene outflow**

Exceptions to Hardy-Weinberg law

Small and dynamic populations

Non-random or assortative mating

Mutations

Gene outflow and genetic drift

Migration

13. A 58-year-old male with T2DM presents with high grade fever and cough. He is diagnosed with COVID-19 and is admitted. He dies on the 7th day of illness. As part of surveillance, his death is recorded. What type of surveillance is this?

- A. Active**
- B. Passive**
- C. Sentinel**
- D. Syndromic**

14. As part of a health development project in rural India, you're asked about the key community group responsible for overseeing local health, sanitation, and nutrition initiatives. Which committee best fits this description?

- A. Panchayat Health Committee**
- B. Village Health Planning and Management Committee**
- C. Rogi Kalyan Samiti**
- D. Village Health Sanitation and Nutrition Committee**

15. Arrange the following steps of an interview in the correct order in a sequence.

- 1. Starting an interview**
- 2. Encouragement**
- 3. Establishing contact**
- 4. Securing rapport**

- A. 1-2-3-4**
- B. 3-4-1-2**
- C. 3-1-4-2**
- D. 2-3-4-1**

Technique of interview

Conducting an interview is both an art and science. Sociologists have described the following steps for conducting an interview (40).

1. ESTABLISHING CONTACT

The first requisite before conducting an interview is to establish contact with the interviewee. Prior appointment regarding the time and place of interview is always desirable. It gives the interviewee a sense of satisfaction and a feeling of importance that his time has been valued.

2. STARTING AN INTERVIEW

The beginning should always be made from a general discussion of the problem. The researcher should create an atmosphere in which the interviewee freely tells his story in his own way. The researcher should let the interviewee do most of the talking, while he should himself listen to it attentively guiding and directing the interviewee about the subject matter wherever necessary. All controversial matters must be carefully avoided.

3. SECURING RAPPORT

A state of rapport must be established between the interviewee and the researcher. In the beginning every interviewee proceeds very cautiously giving only formal information. He may not like to discuss personal matters with a stranger. It therefore requires tact on the part of the researcher to create a friendly atmosphere and gain the confidence of the interviewee. Once rapport is gained and hesitation and shyness are overcome, the interviewee may feel overzealous to tell everything that he knows, and all that he feels without any attempt at secrecy or formality. The research worker must utilize this situation to the fullest advantage, and use it as best as he can. The state of rapport, sometimes may not last long; once the interviewee has relapsed into his former state, it may be very difficult to bring him back to rapport.

4. RECALL

At times, during the course of an interview, the interviewee may be so full of emotion that he drifts away from the main subject, and may even go into silence at the end of the narration. At such times, the researcher should give enough time to the interviewee to recollect and start again. At times, it may be necessary to refresh his memory by pointing out what he had been saying last.

5. PROBE QUESTIONS

When the interviewee, during an interview knowingly or unknowingly side-tracks some important aspect of the problem, the researcher has to be very cautious in catching these slips. Great care should be taken in putting probe questions. They should appear to the interviewee to be born of mere curiosity. If the interviewee has deliberately side-tracked a particular point, a very shrewd effort is needed to make him discuss a point at length, the same should not be doggedly pursued, lest rapport should be lost.

6. ENCOURAGEMENT

During the course of an interview, it is necessary to encourage the interviewee from time to time, by interpolating such complimentary expressions as "what you have said is really very illuminating; I never had such an

enlightening discussion; you really have a very unique approach to the problem; I myself had never thought of it from that angle, etc." Great care should be taken that complimentary remarks should sound true appreciations, and not flattery otherwise they will lose all their effect.

7. GUIDING THE INTERVIEW

Sometimes, the interviewee digresses in his narration to less important topics, which he is most eager to relate, and if stopped from continuing the conversation he may get offended. It is the duty of the researcher to guide the subject in the right path without offending him.

8. RECORDING

Recording the statements should be reduced to a minimum during the course of an interview. If recording is continued, the flow of the conversation will slow down and the interview may take the form of questions and answers. Further, the interviewee will be conscious that his statements are being recorded. The researcher should jot down only important points.

9. CLOSING THE INTERVIEW

An interview should not be ended abruptly. The interviewee should not feel, at the close of the interview, that he has divulged many of his secrets to a stranger. The researcher should bring the interview to a natural close, followed by the usual forms of greetings.

10. REPORT

Soon after the interview, the report should be compiled when the mind is still fresh about the narration.

16. A new community-based initiative is designed to reduce neonatal sepsis. In a community, 20 randomly assigned PHCs follow standard care and 20 are designated to implement the new initiative. What type of study design is this?

- A. Quasi-experimental study**
- B. Cluster randomised controlled trial**
- C. Case-control study**
- D. Cross-sectional study**

17. Identify the correct statements about vaccines

- 1. Influenza and yellow fever vaccines are CI in egg allergy**
- 2. Abscess formation post-BCG is treated conservatively**
- 3. Live vaccines should not be given with Human immunoglobulin except measles**
- 4. All of the following are killed vaccines: Pertussis, Salk, SA14-14-2, 17D**
- 5. NS is used as diluent for Danish 1331**

A. 1,2,3,4

B. 1,3,5

C. 1,2,3,5

D. 1,5

BCG
MMR
Rotovac
JE SA 14-14-2
Typhoral-Ty21a (>6y, 3-4doses)
Varicella
OPV
17D
Influenza

Rabies
Cholera-Dukoral (Cholera O1)
Shanchol, mORCVAX (Cholera O1,O139)
Pertussis
JE-Nakayama Beijing/ Indian Kolar
IPV

Meningococcal
ACWY
Typhoid Vi (>2y, 1 dose with booster)
Pneumococcal
Hib

Toxoid-DT
Recombinant DNA-Hep B

Peak blood levels are reached in 2 days after intramuscular injection. The half-life is 20–35 days. Generally, immunoglobulins should not be given shortly before or after active immunization to avoid inhibiting the immune response; tetanus and hepatitis B immunization are exceptions to this rule (122).

18. In 'De facto' method of census data collection, information is collected based on which of the following?

- A. Place of birth**
- B. Place of employment**
- C. Usual place of residence**
- D. Location at the time of enumeration**

19. What is the correct sequence of steps in investigating an epidemic?

- 1. Confirm epidemic existence**
- 2. Verify the diagnosis**
- 3. Formulation of hypothesis**
- 4. Define the population at risk**
- 5. Rapid search of cases**

A. 1 → 3 → 2 → 5 → 4

B. 2 → 5 → 1 → 4 → 3

C. 1 → 2 → 5 → 3 → 4

D. 2 → 1 → 4 → 5 → 3

Guidelines for use of mask (156)

The correct procedure of wearing triple layer surgical mask is as follows:

1. Perform hand hygiene.
2. Unfold the pleats, make sure that they are facing down.
3. Place over nose, mouth and chin.
4. Fit flexible nose piece over nose bridge.
5. Secure with tie strings (upper string to be tied on top of head above the ears – lower string at the back of the neck.)
6. Ensure there are no gaps on either side of the mask, adjust to fit.
7. Do not let the mask hanging from the neck.
8. Change the mask after six hours or as soon as they become wet.
9. Disposable masks are never to be reused and should be disposed off.
10. While removing the mask great care must be taken not to touch the potentially infected outer surface of the mask.
11. To remove mask first untie the string below and then the string above and handle the mask using the upper strings.
12. Disposal of used masks: Used mask should be considered as potentially infected medical waste. Discard the mask in a closed bin immediately after use.

INVESTIGATION OF AN EPIDEMIC

The occurrence of an epidemic always signals some significant shift in the existing balance between the agent, host and environment. It calls for a prompt and thorough investigation of the cases to uncover the factor(s) responsible and to guide in advocating control measures to prevent further spread. Emergencies caused by epidemics remain one of the most important challenges to national health administrations. Epidemiology has an important role to play in the investigation of epidemics. The objectives of an epidemic investigation are (3, 22, 153).

- a. to define the magnitude of the epidemic outbreak or involvement in terms of time, place and person.
- b. to determine the particular conditions and factors responsible for the occurrence of the epidemic.
- c. to identify the cause, source(s) of infection, and modes of transmission to determine measures necessary to control the epidemic; and
- d. to make recommendations to prevent recurrence.

An epidemic investigation calls for inference as well as description. Frequently, epidemic investigations are called for after the peak of the epidemic has occurred; in such cases, the investigation is mainly retrospective. No step by step approach applicable in all situations can be described like a "cook-book" (153). However, in investigating an epidemic, it is desired to have an orderly procedure or practical guidelines as outlined below which are applicable for almost any epidemic study. Some of the steps can be done concurrently.

1. Verification of diagnosis

Verification of diagnosis is the first step in an epidemic investigation, as it may have

may be spurious, and arise from misinterpretation of signs and symptoms by the lay public. It is therefore necessary to have the verification of diagnosis on the spot, as quickly as possible. It is not necessary to examine all the cases to arrive at a diagnosis. A clinical examination of a sample of cases may well suffice. Laboratory investigations wherever applicable, are most useful to confirm the diagnosis but the epidemiological investigations should not be delayed until the laboratory results are available.

2. Confirmation of the existence of an epidemic

The next step is to confirm if epidemic exists. This is done by comparing the disease frequencies during the same period of previous years. An epidemic is said to exist when the number of cases (observed frequency) is in excess of the expected frequency for that population, based on past experience. An arbitrary limit of two standard errors from the endemic occurrence is used to define the epidemic threshold for common diseases such as influenza (3). Often the existence of an epidemic is obvious needing no such comparison, as in the case of common-source epidemics of cholera, food poisoning and hepatitis A. These epidemics are easily recognized. In contrast the existence of modern epidemics (e.g., cancer, cardiovascular diseases) is not easily recognized unless comparison is made with previous experience.

3. Defining the population at-risk

(a) Obtaining a map of the area : Before beginning the investigation, it is necessary to have a detailed and current map of the area. If this is not available, it may be necessary to prepare such a map. It should contain information concerning natural landmarks, roads and the location of all dwelling units along each road or in isolated areas. The area may be divided into segments, using natural landmarks as boundaries. This may again be divided into smaller sections. Within each section, the dwelling units (houses) may be designated by numbers.

(b) Counting the population : The denominator may be related to the entire population or sub-groups of a population. It may also be related to total events (see page 45 for more details). For example, if the denominator is the entire population a complete census of the population by age and sex should be carried out in the defined area by house-to-house visits. For this purpose lay health workers in sufficient numbers may be employed. Using this technique it is possible to establish the size of the population. The population census will help in computing the much-needed attack rates in various groups and subgroups of the population later on. Without an appropriate denominator of "population at risk" attack rates cannot be calculated.

4. Rapid search for all cases and their characteristics

(a) Medical survey : Concurrently, a medical survey should be carried out in the defined area to identify all cases including those who have not sought medical care, and those possibly exposed to risk. Ideally, the complete survey (screening each member of the population for the presence of the disease in question) will pick up all affected

health workers may be trained to administer the epidemiological case sheet or questionnaire to collect relevant data.

(b) Epidemiological case sheet : The epidemiologist should be armed with an "epidemiological case sheet" for collecting data from cases and from persons apparently exposed but unaffected. The epidemiological case sheet or "case interview form" should be carefully designed (based on the findings of a rapid preliminary inquiry) to collect relevant information. This includes : name, age, sex, occupation, social class, travel, history of previous exposure, time of onset of disease, signs and symptoms of illness, personal contacts at home, work, school and other places; special events such as parties attended, foods eaten and exposure to common vehicles such as water, food and milk; visits out of the community, history of receiving injections or blood products, attendance at large gathering, etc. The information collected should be relevant to the disease under study. For example, if the disease is food-borne, detailed food histories are necessary. A case review form will ensure completeness and consistency of data collection.

(c) Searching for more cases : The patient may be asked if he knew of other cases in the home, family, neighbourhood, school, work place having an onset within the incubation of the index case. Cases admitted to the local hospitals should also be taken into consideration. This may reveal not only additional cases but also person-to-person spread. The search for new cases (secondary cases) should be carried out everyday, till the area is declared free of epidemic. This period is usually taken as twice the incubation period of the disease since the occurrence of last case.

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5. Data analysis

The data collected should be analyzed on ongoing basis, using the classical epidemiological parameters – time, place and person. If the disease agent is known, the characteristics of time, place and person may be rearranged into Agent-Host-Environment model (3).

a. Time : Prepare a chronological distribution of dates of onset and construct an "epidemic curve". Look for time clustering of cases. An epidemic curve may suggest : (a) a time relationship with exposure to a suspected source (Fig. 4), (b) whether it is a common-source or propagated epidemic, and (c) whether it is a seasonal or cyclic pattern suggestive of a particular infection.

b. Place : Prepare a "spot map" (geographic distribution) of cases, and if possible, their relation to possible sources of infection, e.g., water supply, air pollution, foods eaten, occupation, etc. Clustering of cases may indicate a common source of infection. Analysis of geographic distribution may provide evidence of the source of disease and its mode of spread. This was demonstrated by John Snow in the cholera outbreak in the Golden Square district, London (Figure 6).

c. Person : Analyze the data by age, sex, occupation and other possible risk factors. Determine the attack rates/case fatality rates, for those exposed and those not exposed and according to host factors. For example, in most food-borne

outbreaks, food-specific attack rates must be calculated for each food eaten to determine the source of infection.

The purpose of data analysis is to identify common event or experience, and to delineate the group involved in the common experience.

6. Formulation of hypothesis

On the basis of time, place and person distribution or the Agent-Host-Environment model, formulate hypothesis to explain the epidemic in terms of (a) possible source (b) causative agent (c) possible modes of spread, and (d) the environmental factors which enabled it to occur. These hypothesis should be placed in order of relative likelihood. Formulation of a tentative hypothesis should guide further investigation.

7. Testing of hypothesis

All reasonable hypothesis need to be considered and weighed by comparing the attack rates in various groups for those exposed and those not exposed to each suspected factor. This will enable the epidemiologist to ascertain which hypothesis is consistent with all the known facts. When divergent theories are presented, it is not easy to distinguish immediately between those which are sound and those which are merely plausible. Therefore it is instructive to turn back to arguments which have been tested by the subsequent course of events (154).

8. Evaluation of ecological factors

An investigation of the circumstances involved should be carried out to undertake appropriate measures to prevent further transmission of the disease. Ecological factors which have made the epidemic possible should be investigated such as sanitary status of eating establishments, water and milk supply; breakdown in the water supply system; movements of the human population, atmospheric changes such as temperature, humidity and air pollution, population dynamics of insects and animal reservoirs. The outbreak can be studied in a case control fashion. One of the primary concerns of the epidemiologist is to relate the disease to environmental factors to know the source(s) of infection, reservoirs and modes of transmission.

9. Further investigation of population at risk

A study of the population at risk or a sample of it may be needed to obtain additional information. This may involve medical examination, screening tests, examination of suspected food, faeces or blood samples, biochemical studies, assessment of immunity status, etc. The approach may be retrospective or prospective. For example, serological study may reveal clinically inapparent cases and throw light on the pathogenesis of the condition. Healthy individuals (those who are not ill) from the same universe may be studied in a case control fashion. This will permit classification of all members as to :

- a. exposure to specific potential vehicles.
- b. whether ill or not.

10. Writing the report

The report should be complete and convincing. Information to be included in the final report on an epidemic is given in Table 47 (155).

20. In the context of the World Health Organization's International Health Regulations (IHR), "immediately notifiable diseases" refer to specific diseases that must be reported to the WHO. What is the time period to report them and the diseases included in the list? Identify the correct pair:

- A. 12hrs, Cholera**
- B. 24hrs, SARS**
- C. 48hrs, Polio**
- D. 96hrs, Small pox**

21. Which of the following is not a vital statistic?

A. Birth rate

B. Fertility rate

C. Dependency ratio

D. Life expectancy at birth

Vital Statistics include:

- Birth rate
- Death rate
- Natural growth rate
- Life expectancy at birth
- Mortality rate
- Fertility rate

22. A researcher studies the incidence of measles in a population of 100 children, where 10 children have a previous history of measles, and 20 have been affected by the disease for the first time. What is the incidence?

- A. 20%**
- B. 30%**
- C. 10%**
- D. 22.22%**

23. Researchers develop a new test to detect the presence of a recently identified biomarker NMP22 for ca UB. The initial evaluation of the test shows the following. Which of the following is the likelihood that a patient with a negative test does not have ca UB?

- A. 0.20**
- B. 0.60**
- C. 0.80**
- D. 0.96**

	CA UB		
	Present	Not present	
Test positive	45	30	75
Test negative	5	120	125
	50	150	200

24. The target demographic for latest RMNCAH+N includes which of the following?

- a. Maternal and child health**
- b. Family planning services**
- c. Geriatric health**
- d. Adolescent health**

- A. a, b and c only**
- B. a, b, c and d**
- C. a, b and d**
- D. a and b only**

25. Knowledge, Attitude, and Practice (KAP) studies were first introduced in India for studying:

- A. HIV**
- B. Family planning**
- C. Diabetes mellitus**
- D. Malaria**

26. During the Mahakumbh mela, the government set up health care camps and mobile medical units for surveillance. A syndromic surveillance is done for fever, diarrhoea and respiratory symptoms. What is the primary reason to do this?

- A. To confirm individual diagnoses with additional tests**
- B. To reduce the medical personnel**
- C. For immediate quarantine of symptomatic individuals**
- D. To detect warning signs of disease outbreak**

27. Any of the following should be considered as evidence of an outbreak of polio except:

- A. Detection of VDPV in a case of Acute Flaccid Paralysis**
- B. Detection of a single case of wild polio in a person with Acute Flaccid Paralysis**
- C. Detection of any cVDPV infected individuals**
- D. Detection of wild PV infection in a healthy asymptomatic individual**

28. Which of the following is true with respect to the prevention of Zika virus?

- A. Symptomatic treatment of cases with NSAIDs and isolation**
- B. Purified, inactivated FDA approved vaccine is found to be helpful in prevention**
- C. Sexual abstinence, using condoms, delaying pregnancy is helpful in controlling the disease**
- D. Immunoglobulin and plasmapheresis is used in the treatment of Zika**

29. A new biomarker has been shown to allow for the early detection of non-small cell lung carcinoma. A preliminary analysis on a cohort study of this new test demonstrates that its use prolongs survival of lung cancer patients by 3 months when compared to the survival of patients diagnosed by conventional methods. A secondary analysis reveals no difference in 6-month mortality rates between the 2 groups. Which of the following factors most likely explains the study results?

- A. Confounding**
- B. Lead-time bias**
- C. Length-time bias**
- D. Measurement bias**

30. For calculating the life expectancy index in Human Development Index (HDI), what are the minimum and maximum values used?

- A. 0 years and 65 years**
- B. 20 years and 85 years**
- C. 25 years and 75 years**
- D. 0 years and 100 years**

Dimension	Indicator	Minimum	Maximum
Health	Life Expectancy (years)	20	85
Education	Expected years of schooling (years)	0	18
	Mean years of schooling (years)	0	15
Standard of living	Gross National Income Per Capita (2011 PPP \$)	100	75,000

31. Identify the incorrect pair

- A. World TB day-24 April**
- B. World Health day- 7 April**
- C. World population day-11 July**
- D. World AIDS day-1 December**

32. Which health program in India would provide financial aid to BPL families to help manage a child with major life-threatening diseases?

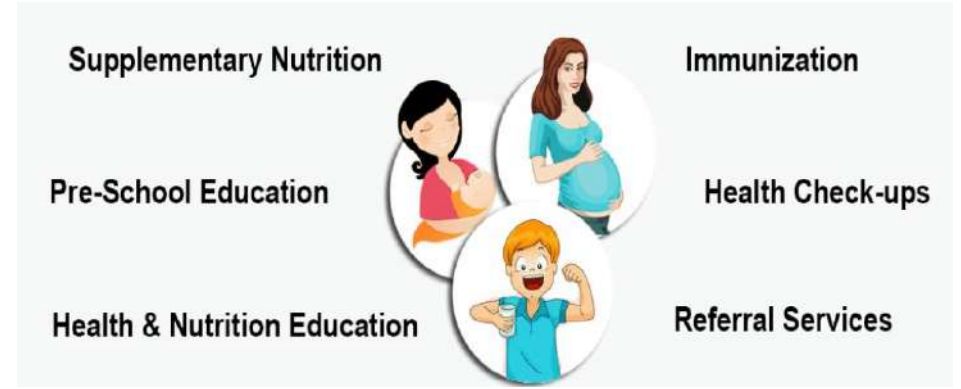
- A. Rashtriya Arogya Nidhi**
- B. Pradhan Mantri Swasthya Suraksha Yojana**
- C. Navjaat Shishu Suraksha Karyakram**
- D. Rashtriya Bal Swasthya Karyakram**

33. Supplementary nutrition for malnourished children under ICDS provides approx:

- A. 400 kcal & 12–15 g protein**
- B. 500 kcal & 15–18 g protein**
- C. 600 kcal & 18–20 g protein**
- D. 800 kcal & 20–25 g protein**



MOWCD
 0-6yrs
 Pregnant, Lactating
 15-49yr female
 10-18 adolescent girls
 AWW: 1/400-800
 AW supervisor 1/25k
 CDPO 1/lakh



	Cal 1/3	Prtn 1/2
6m-6y	500	12
Severely malnourished children	800 kcal	20–25 g protein
Pregn/lactating	600	20

	Cal 1/3	Prtn 1/2
primary	450	12
Upper primary	700	20

34. Identify the correct statements about health indicators:

- 1. Number of years a newborn is expected to live in full health based on current rates of sickness and mortality-Sullivan index**
- 2. Simplest measure of burden of disease-Incidence**
- 3. Optimal utilisation of health services-Negative Bed turnover ratio**
- 4. Best indicator of effectiveness of health care-IMR**
- 5. Cost effectiveness of NHP-DALY**
- 6. Best measure of standard of living-HDI**

A. 1,2,3,4,5,6

B. 3,4,5,6

C. 2,4,5,6

D. 4,6

35. In Home Based Newborn Care (HBNC), number of postnatal visits by ASHA after LSCS is:

A. 5

B. 6

C. 7

D. 8

36. A 62-year-old man with diabetes, hypertension, and hyperlipidemia comes to the emergency department of an academic medical center with chest pain, nausea, vomiting, and diaphoresis. Investigators are designing a randomized control trial to test the hypothesis that drug B will decrease the mortality associated with acute ST-elevation myocardial infarction compared to standard of care. To ensure that investigators will not miss a difference between drug B and standard of care (if a difference truly exists), which of the following would they want to maximize?

- A. α
- B. β
- C. 1-alpha
- D. 1- beta

37. A “Fully immunized child” refers to one who has received:

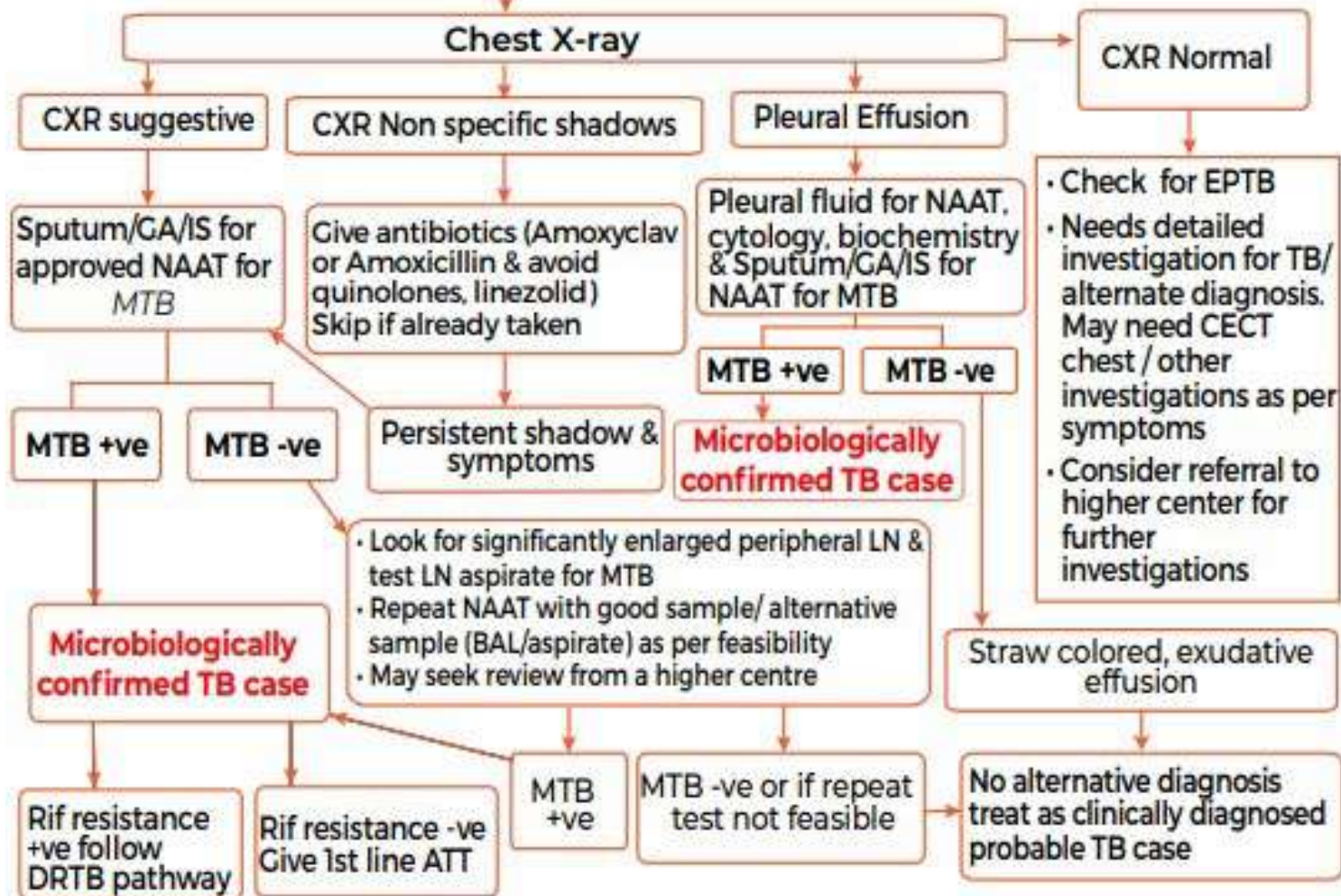
- A. All vaccines up to 2 years of age**
- B. All vaccines by 5 years of age**
- C. All vaccines by 1 year of age**
- D. Only BCG, OPV, DPT**

38. A 4-year-old child is brought with complaints of persistent fever, and cough without sputum for 3 weeks. As per the National Tuberculosis Elimination Programme guidelines, what should be the next step in management?

- A. Sputum CBNAAT**
- B. Chest X ray**
- C. Smear microscopy**
- D. Mantoux test**

ALGORITHM FOR PEDIATRIC INTRATHORACIC TB AMONG CHILDREN WITH NO RISK FACTORS FOR DRUG RESISTANCE

- Persistent Fever ≥ 2 weeks, without a known cause and/or
- Unremitting cough for ≥ 2 weeks and/or
- Weight loss $\geq 5\%$; or no weight gain in past 3 months despite adequate nutrition; or failure of nutritional rehabilitation in babies with SAM
- With or without contact with patient with Pulmonary TB in past 2 years



39. Components evaluated in Sample Registration System (SRS):

- 1. Crude Birth Rate**
- 2. Crude Death Rate**
- 3. Infant Mortality Rate**
- 4. Maternal Mortality Ratio**

- A. 1,2,3,4**
- B. 1,2,3**
- C. 1,2,4**
- D. 3,4**

Survey systems:

Census

Last:

SRS-CBR, CDR, MMR, IMR

VITALS

DUAL LEVEL:

NFHS

Last:

Civil registration survey:

Birth/death:

40. Which scheme was originally launched to address rural housing in India?

- A. Rajiv Gandhi Shramik Kalyan Yojana**
- B. Pradhan Mantri Kaushal Vikas Yojana**
- C. Rashtriya Krishi Vikas Yojana**
- D. Pradhan Mantri Awaas Yojana – Gramin (PMAY-G)**

41. Which of the following correctly describes the hierarchy of NACO ART centres from highest to lowest level according to their organisational structure?

- A. ART Centre → Link ART Centre → ART Plus Centre → Centre of Excellence**
- B. Centre of Excellence → ART Plus Centre → ART Centre → Link ART Centre**
- C. ART Plus Centre → Centre of Excellence → ART Centre → Link ART Centre**
- D. Link ART Centre → ART Centre → ART Plus Centre → Centre of Excellence**

42. Plasma homocysteine levels are measured in patients with acute coronary syndrome who are treated at a large community hospital. The mean plasma homocysteine level in this group is determined to be 11.1 $\mu\text{mol/L}$ with a standard deviation of 1.2 $\mu\text{mol/L}$. In a separate group of patients, the mean plasma level is 9.5 $\mu\text{mol/L}$ and the standard deviation is 1.3 $\mu\text{mol/L}$. Which of the following statistical methods should be used to compare the mean homocysteine levels of these 2 groups of patients?

- A. Two-sample t test**
- B. Linear regression**
- C. Correlation coefficient**
- D. Chi-square test**

43. Which of the following statements regarding the following program is **CORRECT**?

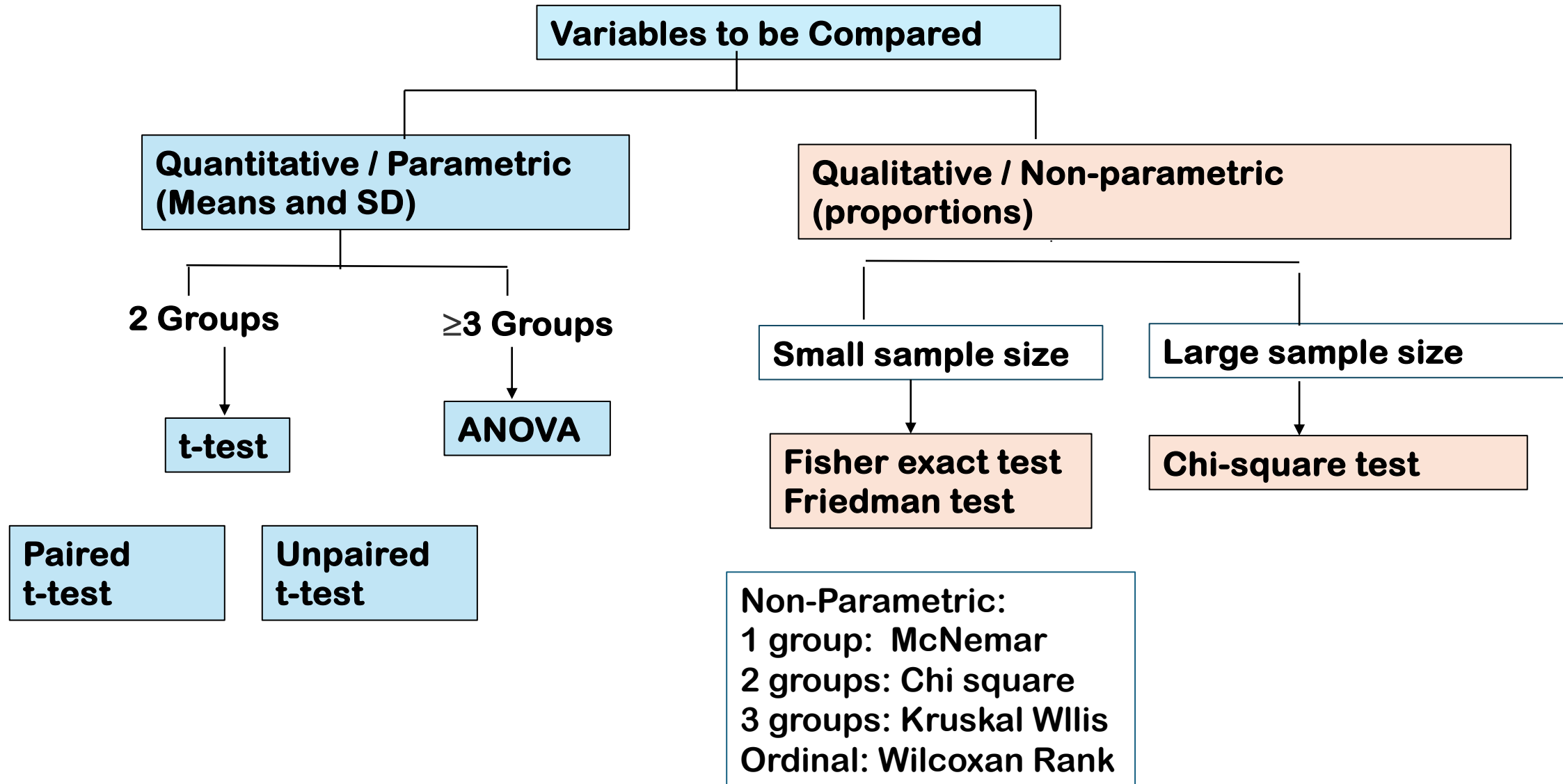
- A. It was started in 2010 for control of non-communicable diseases and monthly data reporting
- B. Syndromic surveillance is conducted by medical officers, diagnosing based on history and examination
- C. Conducts weekly surveillance reporting and focuses on epidemic-prone diseases
- D. Laboratory surveillance is done by health workers using field surveys



44. A researcher is comparing three different groups with non-normally distributed data and small sample sizes. Which of the following tests is best suited for analyzing this non-parametric data? (INICET NOV 2020)

- A. Student t test**
- B. Friedman test**
- C. ANOVA**
- D. Pearson**

Tests of significance



45. Which of the following is an example of cyclopropagative biological transmission in vectors?

- A. Plasmodia in Anopheles**
- B. Yellow fever in Aedes**
- C. Microfilaria in Culex**
- D. Plague in rat flea**

Category	Mode	Example
Direct zoonoses	Direct contact/fomite/mechanical vector	Rabies, Trichinosis, Brucellosis
Cyclozoonoses	More than one vertebrate host is needed to complete the developmental cycle.	Human taeniasis, Echinococcosis
Metazoonoses	Transmitted by invertebrate vectors-develops / multiplies	Arboviral infections, Plague, Schistosomiasis
Saprozoonoses	Has both a vertebrate host and a non-animal (food, soil, plants) developmental reservoir.	Various forms of larva migrans and mycoses

Anthropozoonoses: Rabies, plague, hydatid

Zooanthroponoses: TB to cattle

Amphixenosis: T.cruzi, S.japonicum

Types of Transmission in Vectors

1. Propagative

- only multiplies in the vector and there is no change in form.

- Example:** Plague bacilli in rat fleas, YF in Aedes

2. Cyclo-propagative

- The agent changes in both form and number.

- Example:** Malarial parasites in mosquitoes.

3. Cyclo-developmental

- The agent undergoes only developmental changes and not multiplication.

- Example:** Microfilaria in mosquitoes.

4. Transovarial

- Infectious agent is transmitted vertically in the vector, from parent to progeny.

- Example:** Rickettsia rickettsii in ticks, Mite in scrub typhus

5. Transstadial

- The infectious agent stays with the vector from one stage of its life cycle to the next.

- Example:** Borrelia burgdorferi, Indian tick typhus in ticks.

46. A study calculated the correlation coefficient between smoking and lung cancer incidence as 1.4. What does this result indicate? (PSM)

- A. Weak correlation**
- B. Moderate correlation**
- C. Strong correlation**
- D. Mistake in calculation**

47. A study was conducted on two different samples for comparing variation between DBP and Vitamin D. The mean diastolic blood pressure is 110 with standard deviation 11 and the mean vitamin D level is 18 with standard deviation 3. Which of the following statement is true regarding the coefficient of variation (CV)?

- A. CV of DBP is more than Vitamin D**
- B. CV of Vitamin D is more than DBP**
- C. Both DBP and Vitamin D have equal variability**
- D. It cannot be ascertained from information provided**

48. RDA of calcium for pregnant and breastfeeding mothers are, respectively:

- A. 1000 mg and 1000 mg**
- B. 1000 mg and 1200 mg**
- C. 1200 mg and 1200 mg**
- D. 1200 mg and 1000 mg**

Summary of RDA for Indians – 2020

Age Group	Category of work	Body Wt (kg)	Protein (g/d)	Dietary Fibre* (g/d)	Calcium (mg/d)	Magnesium (mg/d)	Iron (mg/d)	Zinc (mg/d)	Iodine (µg/day)	Thiamine (mg/d)	Riboflavin (mg/d)	Niacin (mg/d)	Vit B6 (mg/d)	Folate (µg/d)	Vit B12 (µg/d)	Vit C (mg/d)	Vit A (µg/d)	Vit D (IU/d)
Men	Sedentary	65	54.0	32	1000	440	19	17	150	1.4	2.0	14	1.9	300	2.2	80	1000	600
	Moderate			41						1.8	2.5	18	2.4					
	Heavy			52						2.3	3.2	23	3.1					
Women	Sedentary	55	46.0	25	1000	370	29	13	150	1.4	1.9	11	1.9	220	2.2	65	840	600
	Moderate			32						1.7	2.4	14	1.9					
	Heavy			41						2.2	3.1	18	2.4					
	Pregnant woman	55 + 10	+9.5 (2nd trimester) +22.0 (3rd trimester)	-	1000	440	27	14.5	250	2.0	2.7	+2.5	2.3	570	+0.25	+15	900	600
	Lactation 0-6m	55 + 10	+17.0	-	1200	400	23	14	280	2.1	3.0	+5	+0.26	330	+1.0	+50	950	600
7-12m	+13.0		-	1200	400	23	14	280	2.1	2.9	+5	+0.17	330					
Infants	0-6 m*	5.8	8.0	-	300	30	-	-	100	0.2	0.4	2	0.1	25	1.2	20	350	400
	6-12m	8.5	10.5	-	300	75	3	2.5	130	0.4	0.6	5	0.6	85	1.2	30	350	400
Children	1-3 y	12.9	12.5	15	500	90	8	3.3	90	0.7	1.1	7	0.9	120	1.2	30	390	
	4-6 y	18.3	16.0	20	550	125	11	4.5	120	0.9	1.3	9	1.2	135	1.2	35	510	600
	7-9 y	25.3	23.0	26	650	175	15	5.9	120	1.1	1.6	11	1.5	170	2.2	45	630	
Boys	10-12 y	34.9	32.0	33	850	240	16	8.5	150	1.5	2.1	15	2.0	220	2.2	55	770	600
Girls	10-12 y	36.4	33.0	31	850	250	28	8.5	150	1.4	1.9	14	1.9	225	2.2	50	790	600
Boys	13-15 y	50.5	45.0	43	1000	345	22	14.3	150	1.9	2.7	19	2.6	285	2.2	70	930	600
Girls	13-15 y	49.6	43.0	36	1000	340	30	12.8	150	1.6	2.2	16	2.2	245	2.2	65	890	600
Boys	16-18 y	64.4	55.0	50	1050	440	26	17.6	150	2.2	3.1	22	3.0	340	2.2	85	1000	600
Girls	16-18 y	55.7	46.0	38	1050	380	32	14.2	150	1.7	2.3	17	2.3	270	2.2	70	860	600

* Adequate Intake (AI)

49. Which of the following is TRUE regarding standard housing criteria in community medicine?

- A. Cattle should be housed within 25 metres of residential areas**
- B. Water source should be located at a distance greater than 500 metres**
- C. Window area should be at least 1/5th of floor area**
- D. More than two persons sharing a room must have less than 40 sq ft per person**

Housing criteria:

Water source: < 50 metres

- Door area: > 1/5th of floor area
- Window area: > 1/5th of floor area

Overcrowding

Gender:

2 persons, age > 9 years, of opposite gender, sharing same room (**except husband & wife**)

Space:

1 person: < 70 ft²

2 persons: < 110 ft²

≥ 3 persons: Add 40 ft² per person

50. Identify the incorrect pair of population norm:

A. Nurse - 1/5000

B. Pharmacist - 1/10000

C. Health assistant - 1/50000

D. Doctor - 1/1000

Suggested norms for health personnel

Category of personnel	Norms suggested
1. Nurses	1 per 5,000 population
2. Health workers female and male	1 per 5,000 population in plain area and 3,000 population in tribal and hilly areas.
3. Trained dai	One for each village
4. Health assistants (male and female)	1 per 30,000 population in plain area and 20,000 population in tribal and hilly areas. Provides supportive super- vision to 6 health workers (male / female).
5. Pharmacists	1 per 10,000 population
6. Lab. technicians	1 per 10,000 population
7. ASHA	1 per 1,000 population

51. Identify the correct statements:

1. Influenza and pneumococcal vaccines are advocated in the elderly.

2. Strict isolation is advised for Measles, Varicella, Influenza, Nipah virus and CJD

3. Applied Nutrition program supplying seeds and manure at village level is funded by UNICEF

4. Dixon's Q test is primarily used to detect outliers.

A. 1,2,3,4

B. 1,3,4

C. 2,3

D. 1,2,3

52. According to NUHM, arrange the following in the correct order as per population covered from highest level to lowest.

- 1. Urban Primary Health Centre**
- 2. Urban Community Health Centre**
- 3. Auxiliary Nurse Midwife**
- 4. Urban Social Health Activist**
- 5. Mahila Arogya Samiti**

- A. 3, 1, 2, 4, 5**
- B. 1, 2, 3, 4, 5**
- C. 5, 4, 3, 1, 2**
- D. 2, 1, 3, 4, 5**

53. Which among the following is considered the best method for removal of permanent hardness of water?

- A. Boiling**
- B. Addition of lime**
- C. Addition of sodium carbonate**
- D. Permutit process**

54. During a study on the effect of smoking on life expectancy, the correlation coefficient was found to be 0.60. What is the coefficient of determination for this study?

- A. 0.6**
- B. 0.36**
- C. 0.4**
- D. 1.2**

55. Which of the following statement is true about Oxidation Pond?

- A. Aerobic during day time and anaerobic during night time**
- B. Anaerobic during day time and aerobic during night time**
- C. Anaerobic during day time and night time**
- D. Aerobic during day time and night time**

56. Identify the correct statements?

1. Rabies is an example of amphixenosis

2. A disease whose pathogenic response is higher in children compared in adults is defined as hyperendemic disease

3. Most efficient to control urban malaria is environmental control of larva

4. $CBR \approx (8 \times TFR) + 1$

A. 1, 2, 3, 4

B. 1, 2

C. 3, 4

D. 1, 3, 4

57. Identify the correct statements

- 1. The best method for a Pap smear fixation is air fixation.**
- 2. The highest risk period for the development of congenital varicella syndrome in a fetus is when the mother is infected between 13 and 20 weeks of gestation.**
- 3. Surveillance is the performance and analysis of routine measurements while monitoring is the continuous analysis of systematically collected data.**
- 4. 0.5-3 microns is the most dangerous size of particles for causing pneumoconiosis.**

A. 1,2,3,4

B. 2,3

C. 1,3

D. 2,4

58. A surveillance study is conducted to assess the long-term efficacy and safety of a drug currently being used to treat patients with heart failure. Researchers enroll 8,300 patients with heart failure. The patients receive the drug once daily for 6 months. The results show significant clinical improvement, but severe hypernatremia is observed in 23 patients. The study publication recommends a lower dose of the drug in patients with baseline normonatremia and hypokalemia to prevent hypernatremia. Which of the following best characterizes this type of study

- A. Phase 1 clinical trial**
- B. Phase 2 clinical trial**
- C. Phase 3 clinical trial**
- D. Phase 4 clinical trial**

59. Which of the following is the most important step in the secondary treatment of sewage in a sewage treatment plant (STP)?

- A. Screening**
- B. Grit chamber**
- C. Aeration**
- D. Sludge digestion**

Sewage Treatment Plant (STP)

Primary Treatment

- Screening
- Grit chamber
- Primary sedimentation

Secondary Treatment

- **Aeration (most important step)-Activated sludge**
- Secondary sedimentation
- Sludge digestion: **Anaerobic digestion**
- Effluent disposal

Biological Oxygen Demand (BOD)

Amount of oxygen required for microbial metabolism of organic compounds at **20°C** for **100 g sewage in 5 days**.

➤ 500 mg/L: Strong

60. . Identify the incorrect statement

- A. Rideal-Walker Coefficient (RWC) is used to represent the germicidal power of a disinfectant.**
- B. For workrooms with exposure to contaminants, the minimum recommended number of air changes per hour is 4-6 to maintain air quality and protect worker health.**
- C. Demographic trap is seen in Stage 2 of demographic cycle.**
- D. Nodal Ministry for Disaster Management is ministry of Health and Family Welfare**

61. Which of the following solid waste disposal methods is characterized by layering municipal garbage with night soil, dung, and earth to undergo anaerobic digestion over time?

- A. Landfill**
- B. Incineration**
- C. Pulverization**
- D. Bangalore method**

62. All of the following apply to health propaganda except

- A. Knowledge and skills instilled in the minds**
- B. Reflective behavior is promoted**
- C. Appeals to emotion**
- D. Process is information centered**

Education	Propaganda
Knowledge and skills actively acquired.	Knowledge instilled in the minds of people.
Makes people think for themselves.	Prevents or discourages thinking by ready-made slogans.
Disciplines primitive desires.	Arouses and stimulates primitive desires.
Develops reflective behaviour. Trains people to use judgement before acting.	Develops reflexive behaviour, aims at impulsive actions.
Appeals to reason.	Appeals to emotion.
Develops individuality, personality and self-expression.	Develops a standard pattern of attitudes and behaviours according to the mould used.
Knowledge acquired through self-reliant activity.	Knowledge is spoon-fed and passively received.
The process is behaviour-centred – aims at developing favourable attitudes, habits and skills.	The process is information-centred – no change of attitude or behaviour designed.

63. Which of the following is NOT used to express the strength of sewage?

- A. E. Coli Count**
- B. Suspended particles**
- C. Chemical oxygen demand**
- D. Biological oxygen demand**

64. Under the National Programme for Control of Blindness & Visual Impairment (NPCBVI), NGO eye hospitals are classified as:

- A. Primary level centres**
- B. Secondary level centres**
- C. Tertiary level centres**
- D. Intermediate level centres**

- Primary level centres include sub-district hospitals, community health centres (CHC).
- Secondary level centres include district hospitals and NGO eye hospitals.
- These centres provide services such as cataract surgery, other common eye surgeries, refraction, and referral services.
- Tertiary level centres are apex and regional institutes, medical colleges, and centres of excellence providing specialized eye care like retinal surgery, glaucoma surgery, and training.

65. You are conducting a survey to investigate the prevalence of hypertension in a community. The data collected from individuals shows an association between obesity, decreased physical activity, and hypertension. Which of the following best describes this type of study?

A. Ecological study

B. Case series

C. Cross-sectional study

D. Cohort study

66. A research laboratory develops a new serologic test for detecting prostate cancer. The new assay is compared to biopsy. It is found that the test result is negative in 95% of patients who do not have the disease. If the new assay is used on 8 blood samples taken from patients without prostate cancer, what is the probability of all 8 test results coming back negative?

A. 0.05×8

B. 0.95×8

C. 0.05 (raised to power 8)

D. 0.95 (raised to power 8)

Rule	Keywords to watch
Addition	OR , mutually exclusive
Multiplication	AND , independent events

Rule	Description	Example
The Addition Rule	(p) of any one of several particular events occurring = the sum of their individual probabilities , provided the events cannot both happen and are mutually exclusive .	Probability of picking a heart card from a deck is 0.25 and that of picking a club is 0.25. Thus the p (hearts or clubs) is $0.25 + 0.25 = 0.50$.
The Multiplication Rule	(p) of two or more statistically independent events all occurring = product of their individual probabilities .	If the lifetime probability of a person developing a lung neoplasm is 0.25 and the lifetime probability of developing dementia is 0.01, then the p (lung neoplasm and dementia) is $0.25 \times 0.01 = 0.0025$.

67. Many children from a particular community coming to a hospital were detected to have acute lymphoblastic leukemia (ALL). It was assumed that it is due to the presence of cytotoxic waste in the water of that community. If a case-control study has to be done to find whether the chemical and ALL are associated, what will be taken as the control?

- A. Children from the area exposed, but unaffected with the disease**
- B. Children from the area not exposed and affected with the disease**
- C. Children coming to your OPD, who do not have the disease**
- D. All children with ALL irrespective of exposure status**

68. Match the following scientists with their discoveries:

1. Walter Reed	a. Prevention of scurvy by citrus fruits
2. Edward Jenner	b. Yellow fever
3. James Lind	c. Smallpox vaccination
4. Ross	d. Malaria caused by Anopheles

- A) 1-a, 2-d, 3-c, 4-b
- B) 1-b, 2-d, 3-c, 4-a
- C) 1-c, 2-b, 3-a, 4-d
- D) 1-b, 2-c, 3-a, 4-d

69. According to a study, pure vegetarians had a lower incidence of colon cancer than non-vegetarians, and this led researchers to the conclusion that beta-carotene is protective against cancer. This may not be the case since vegetarian subjects may be eating a high-fiber diet that lowers their risk of developing cancer. This is an illustration of:

- A. Multifactorial causation**
- B. Causal association**
- C. Confounding factor**
- D. Common association**

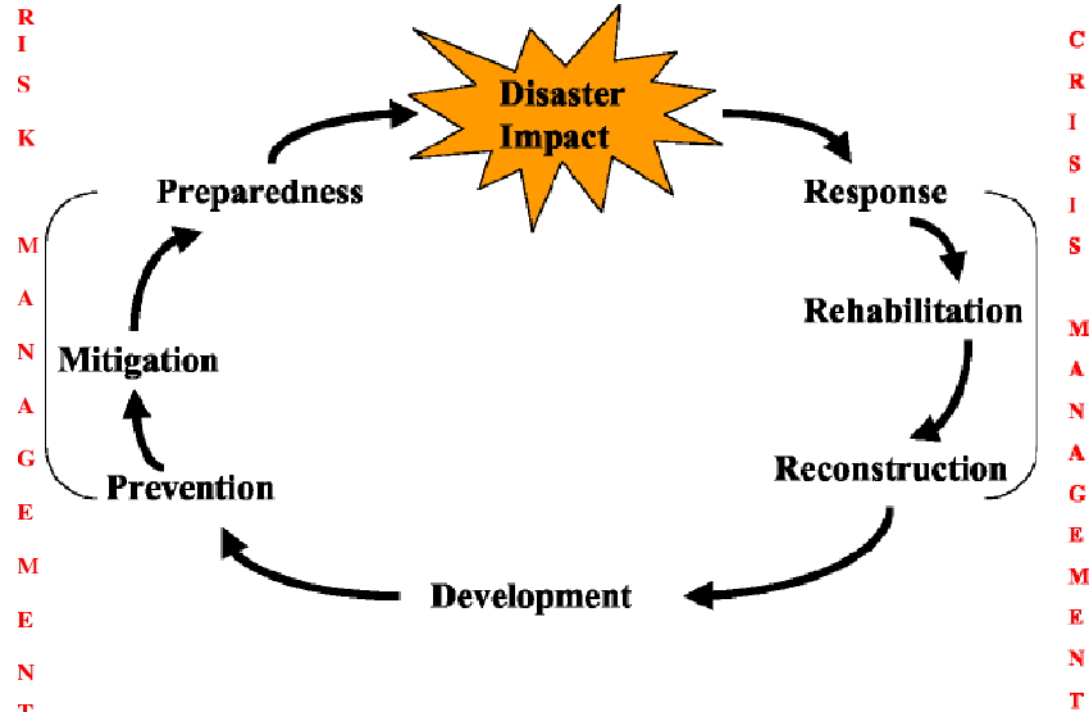
70. 25 year old A patient who is set to travel to a typhoid endemic region in 10 days seeks your advice on vaccination. What should you recommend?

- A. Vi Polysaccharide vaccine**
- B. Ty21a Vaccine**
- C. Any of these can be taken**
- D. Ask the patient to delay the travel plan, as both vaccines need at least 4 weeks for conferring protection**

71. Arrange the following disaster management steps in the correct sequential order:

- A) Response**
- B) Preparedness**
- C) Recovery**
- D) Mitigation**
- E) Prevention**

- A. E, D, B, A, C**
- B. A, B, C, D, E**
- C. C, A, B, D, E**
- D. D, E, B, A, C**



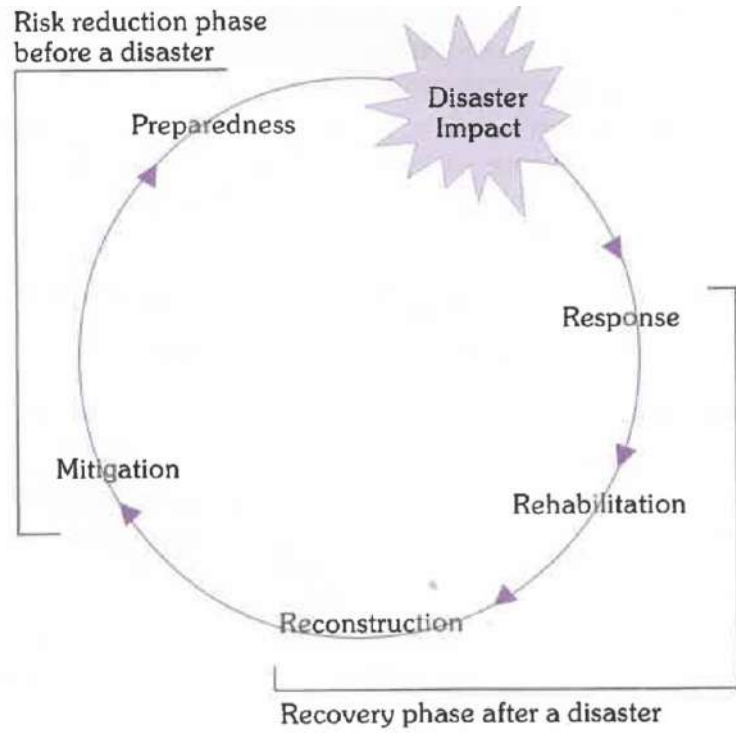


FIG. 1

Management sequence of a sudden-onset disaster

72. An investigator is studying the frequency of polycythemia in a population of a remote, mountainous region. A representative sample of 100 men shows a normal distribution of hemoglobin concentration with a mean concentration of 17g/dl and a standard error of 0.1 g/dl. Which of the following best represents the probability that a subject will have a hemoglobin concentration greater than 18 g/dL?

- A. 30%**
- B. 16%**
- C. 95%**
- D. 99%**

73. Which of the following is the most peripheral centre under the Revised National Tuberculosis Control Programme organization structure?

- A. District TB centre**
- B. Intermediate Reference Laboratory**
- C. Tuberculosis Unit**
- D. Designated Microscopy Centre**

MOHFW

CENTRAL TB DIVISION

STATE TB CELL

DISTRICT TB CENTRE

TB UNIT: 1/1.5-2.5lakh

MO-TC

STS-Senior TB supervisor

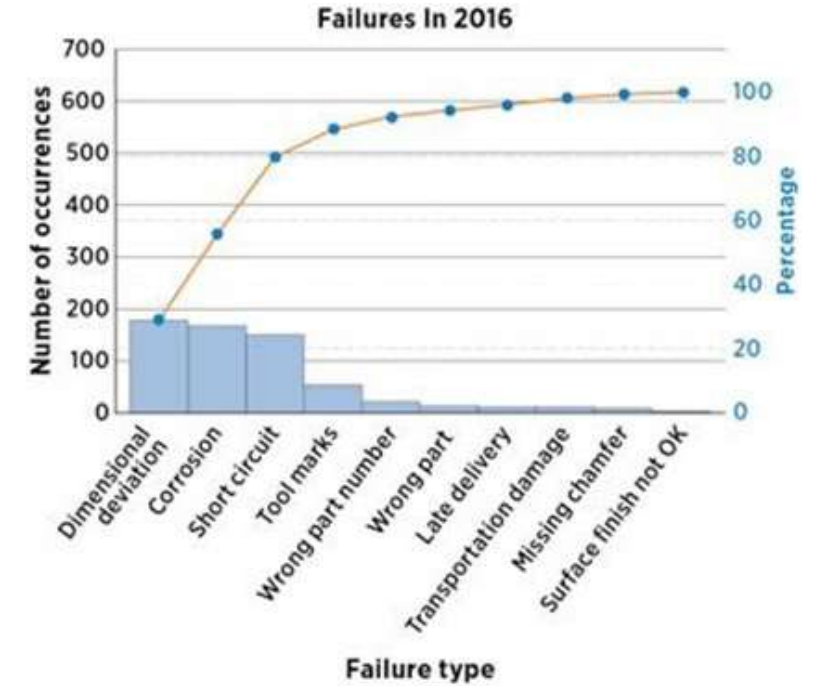
STLS-Senior TB Lab Supervisor

DMC: 1/50K-1LAKH

PHI

74. Identify the image:

- A. Ishikawa chart
- B. Funnel plot
- C. Pareto plot
- D. Delphi plot



75. Which of the following is NOT one of the six key interventions under the Anaemia Mukht Bharat strategy?

- A. Periodic Deworming for children aged 1–19 years**
- B. Intensified year-round Behaviour Change Communication (BCC) Campaign**
- C. To rule out thalassemia in all anemic patients using HPLC**
- D. Testing and Treatment of Anaemia using digital hemoglobinometers**



ANEMIA MUKHT BHARAT

6x6x6 STRATEGY



Children, 6–59 months of age



Adolescent girls and boys (10–19 years of age)



Pregnant women



Children, 5–9 years of age



Women of reproductive age (20–24 years of age)



Lactating mothers (of 0–6 months child)

6

Beneficiaries



6

Interventions

Prophylactic Iron Folic Acid Supplementation



Deworming



Intensified year-round Behaviour Change Communication Campaign (Solid Body, Smart Mind) including ensuring delayed cord clamping



Texting of Anemia using digital methods and point of care treatment



Mandatory Provision of Iron Folic Acid fortified foods in public health programmes



Addressing non-nutritional causes of anemia in endemic pockets, with special focus on malaria, haemoglobinopathies and fluorosis



6

Institutional Mechanisms



National Anemia Mukht Bharat Unit



Intra Ministerial Coordination



Strengthening Supply Chain and Logistics



Convergence with Other Ministries



National Centre of Excellence and Advanced Research on Anemia Control



Anemia Mukht Bharat Dashboard and Digital Portal – One Stop Shop for Anemia

76. What is the correct sequence of steps in a randomized controlled trial?

- A. Blinding**
- B. Randomization**
- C. Defining inclusion and exclusion criteria**
- D. Statistical analysis**

- A. CABD**
- B. CBAD**
- C. ABCD**
- D. DCBA**

77. All of the following are components of IHCI (India Hypertension Control Initiative) except:

- A. Availability of recommended protocol drugs**
- B. 25 X 25 goal includes reducing prevalence of hypertension by 25%**
- C. Provides medication for 60 days to all beneficiaries**
- D. Use of “Simple App” for real-time BP monitoring**

78. A patient with leprosy comes to the primary health centre with multiple cuts and abrasions on his feet. He reports having reduced sensation in his feet. Which of the following is incorrect regarding govt. incentives for him?

- A. The ministry of health and family welfare has sponsored this program**
- B. Dressing materials and ulcer kits are provided**
- C. Amount of 8000 monthly is provided to all leprosy patients from BPL families**
- D. The district unit will supply the microcellular footwear**

Diagnosis of leprosy (12)

A case of leprosy is diagnosed by eliciting cardinal signs of leprosy through systematic clinical (and wherever required bacteriological) examination. At least one of the following cardinal (unique and very important) signs must be present to diagnose leprosy.

- a. Hypo-pigmented or reddish skin lesion(s) with definite sensory deficit;
- b. Involvement of the peripheral nerves, as demonstrated by definite thickening with loss of sensation and weakness /paralysis of the corresponding muscles of the hands, feet or eyes;
- c. Demonstration of *M. leprae* in the lesions.

A. Main or core indicators for monitoring progress (41)

- (1) The number and rate of new cases detected per 100,000 population per year.
- (2) Rate of new cases with grade-2 disabilities per 100,000 population per year.
- (3) Treatment completion/cure rate.
- (4) Prevalence rate

- (3) More emphasis is being given on providing disability prevention and medical rehabilitation (DPMR) services to leprosy affected persons. The aid provided is as follows :
 - (a) Dressing materials, supportive medicines and ulcer kits are provided to leprosy affected persons with ulcers and wounds. These services are also provided to leprosy affected persons residing in self settled colonies.
 - (b) Micro-cellular rubber footwear is provided for protection of insensitive feet. 41 NGOs in the country and 42 Government Medical Colleges have been strengthened for providing reconstructive surgery services to leprosy affected persons for correction of their disability, thus totalling to 83 centres for conducting reconstructive surgeries in the country.
 - (c) An amount of Rs. 8,000/- is provided as incentive to each leprosy affected person from BPL family undergoing reconstructive surgery in these identified institutions to compensate for loss of wages.
 - (d) Support is also provided to government institutions/ PMR centres in the form of Rs 5,000/- per reconstructive surgery conducted.

79. A 34-year-old patient presents with monkeypox and is started on tecovirimat for treatment. Which of the following best describes the mechanism of action of tecovirimat?

- A. Inhibits the formation of intracellular viral forms of orthopoxviruses.**
- B. Targets the viral p37 protein, preventing viral envelopment and systemic spread.**
- C. Suppresses the replication of the variola virus within the host cell.**
- D. Inhibits viral entry into host cells by blocking the viral fusion protein.**

80. Given the constraints and the need to ensure minimal nutritional adequacy, what should the minimum supplementation be in the Mid-Day Meal to support the children's needs?

- A. $\frac{1}{3}$ of the total protein requirement + $\frac{1}{2}$ of total energy requirement for minimum 250 days in a year**
- B. $\frac{2}{3}$ of the total protein requirement + $\frac{1}{2}$ of total energy requirement for minimum 200 days in a year**
- C. $\frac{1}{2}$ of the total protein requirement + $\frac{1}{3}$ of total energy requirement for minimum 200 days in a year**
- D. $\frac{1}{2}$ of the total protein requirement + $\frac{2}{3}$ of total energy requirement for minimum 250 days in a year**

81. Identify the correct statements:

1. Emporiatics is a term used to describe practice of traditional medicine in rural areas, often using herbal remedies and ancient healing techniques.

2. Bland-Altman test is used to compare a test with the gold standard.

According to WHO, the safe limit of radioactivity in drinking water is Beta activity 1Bq /L

3. Congenital glaucoma is not covered under RBSK screening

A. 1, 2, 3, 4

B. 2, 3, 4

C. 1, 3

D. 2, 4

Identified Health Conditions for Child Health Screening and Early Intervention Services

Defects at Birth

- 1. Neural Tube Defect
- 2. Down's Syndrome
- 3. Cleft Lip & Palate / Cleft Palate alone
- 4. Talipes (club foot)
- 5. Developmental Dysplasia of the Hip
- 6. Congenital Cataract
- 7. Congenital Deafness
- 8. Congenital Heart Diseases
- 9. Retinopathy of Prematurity

Deficiencies

- 10. Anaemia especially Severe Anaemia
- 11. Vitamin A Deficiency (Bitot spot)
- 12. Vitamin D Deficiency (Rickets)
- 13. Severe Acute Malnutrition
- 14. Goiter

Childhood Diseases

- 5. Skin conditions (Scabies, Fungal Infection and Eczema)
- 6. Otitis Media
- 7. Rheumatic Heart Disease
- 8. Reactive Airway Disease
- 9. Dental Caries
- 10. Convulsive Disorders

Developmental Delays and Disabilities

- 21. Vision Impairment
- 22. Hearing Impairment
- 23. Neuro-Motor Impairment
- 24. Motor Delay
- 25. Cognitive Delay
- 26. Language Delay
- 27. Behaviour Disorder (Autism)
- 28. Learning Disorder
- 29. Attention Deficit Hyperactivity Disorder

30. Congenital Hypothyroidism, Sickle Cell Anaemia, Beta Thalassemia (Optional)

82. A study assessed the association between a new vaccine and traveler's diarrhea (TD). Researchers selected a random sample of people who intended to travel to regions where they were at increased risk for TD and who had received the new vaccine and another independent random sample of people who intended to travel to the same regions and who had not received the new vaccine. These 2 samples of travelers were assessed for the occurrence of TD during the trip and for 7 days after returning home. What is the study design?

- A. Prospective cohort**
- B. Retrospective cohort**
- C. Case control**
- D. RCT**

83. All of the following are direct modes of transmission except:

- A. Droplet infection**
- B. Vertical transmission**
- C. Fomite-borne transmission**
- D. Contact with soil**

Direct transmission	Indirect transmission
Droplet transmission-saliva, sneeze, cough (>5um)-travels <60cm	Fomite borne
Vertical	Airborne (dust/droplet nuclei)-travels 6ft
Inoculation on skin/mucosa (bite)	Vehicle borne (food/blood/water borne)
Contact with soil: Tetanus, hookworm infection	Vector borne (insects)

84. Match the following research institutes with their corresponding locations:

Column A

- a. National JALMA Institute for Leprosy**
- b. National Institute of Occupational Health (NIOH)**
- c. National Institute of Epidemiology**
- d. National AIDS Research Institute (NARI)**

Column B

- 1. Pune**
- 2. Ahmedabad**
- 3. Agra**
- 4. Chennai**

- A. a-1, b-3, c-2, d-4**
- B. a-3, b-2, c-4, d-1**
- C. a-2, b-4, c-1, d-3**
- D. a-4, b-1, c-3, d-2**

85. Which of the following is a WHO-recommended criterion for drinking water quality?

- A. Lead <0.01mg/dl**
- B. Nitrites less than 20 mg/L**
- C. Turbidity less than 20 NTU**
- D. Arsenic less than 0.2 mg/L**

Parameter	WHO Recommended Limit
Lead	0.01 mg/L (10 µg/L)
Nitrites	3 mg/L
Turbidity	≤5 NTU
Arsenic	0.01 mg/L (10 µg/L)

86. Which of the following methods would be most suitable for removing microbial contaminants by chemical coagulation and sedimentation from a water body?

- A. Rapid sand filter**
- B. Super chlorination**
- C. Slow sand filter**
- D. RO filter**

	Rapid sand filter	Slow sand filter
1. Space	Occupies very little space	Occupies large area
2. Rate of filtration	200 m.g.a.d	2-3 m.g.a.d.
3. Effective size of sand	0.4-0.7 mm	0.2-0.3 mm
4. Preliminary treatment	Chemical coagulation and sedimentation	Plain sedimentation
5. Washing	By back-washing	By scraping the sand bed
6. Operation	Highly skilled	Less skilled
7. Loss of head allowed	6-8 feet (2-2.5 m)	4 feet (1.5 m)
8. Removal of turbidity	Good	Good
9. Removal of colour	Good	Fair
10. Removal of bacteria	98-99 per cent	99.9-99.99 per cent

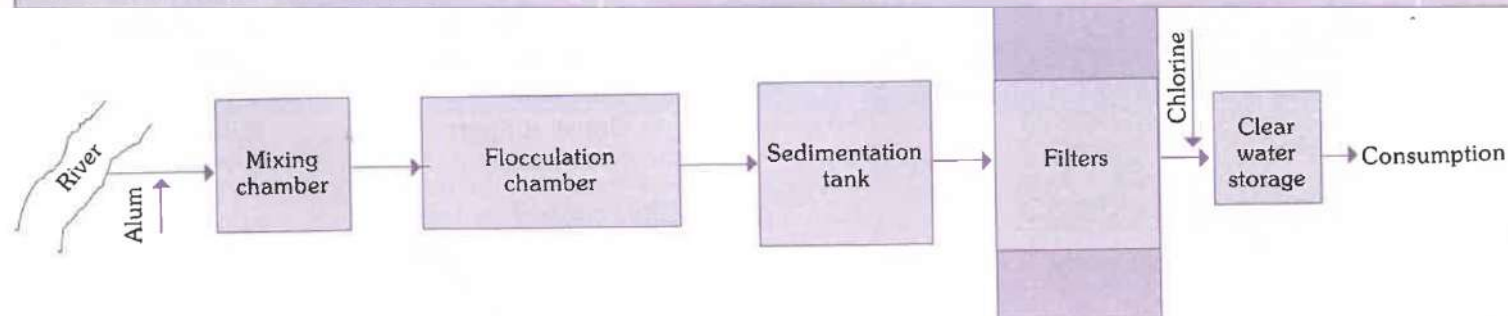


FIG. 6
Flow diagram of a rapid sand filtration plant

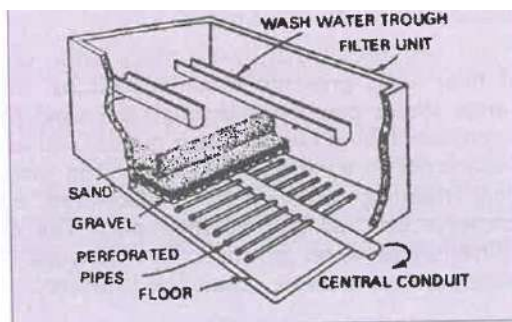
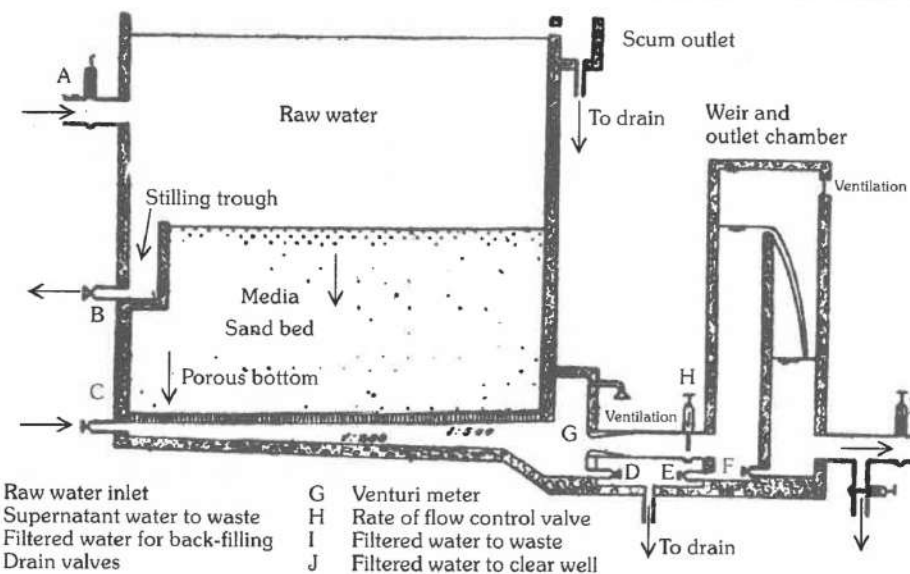


FIG. 7
A view of a rapid sand filter



A Raw water inlet
B Supernatant water to waste
C Filtered water for back-filling
D, E, F Drain valves
G Venturi meter
H Rate of flow control valve
I Filtered water to waste
J Filtered water to clear well

FIG. 4
Slow sand filter

87. A new estrogen receptor agonist is being evaluated for the treatment of postmenopausal symptoms. A prospective study shows that the drug increases the risk of deep vein thrombosis (DVT) in treated women who smoke compared to untreated women who smoke, with a relative risk(RR) of 1.70 and p-value of 0.01. In nonsmokers, no increased risk of DVT is evident with use of the drug (RR = 0.96; p-value = 0.68). Which of the following describes this phenomenon?

- A. Confounding**
- B. Effect modification**
- C. Lead time bias**
- D. Observer bias**

88. In a busy OPD at a District hospital, you are evaluating a 5-year-old boy who presents with fever, generalized malaise, and a distinctive rash. The child's clinical presentation strongly suggests a diagnosis of measles. The mother, anxious about the contagious nature of the disease and the risk it poses to her other kids and family members, inquires about the recommended period of isolation for her infected child. What would be your most appropriate recommendation for the duration of isolation? (AIIMS MAY 2018)

- A. From onset of rash to 3 days after rash**
- B. 2 weeks before rash to 1 week after rash**
- C. From onset of rash to 5 days after rash**
- D. From catarrhal stage to 4 days after rash**

Disease	Duration of Isolation	Communicable periods
Chickenpox / Herpes zoster	6 days after onset of rash / until lesions are crusted	1–2 days before to 4–5 days after appearance of rash
Measles	From onset of catarrhal stage to 5 days after rash onset	4 days before to 5 days after appearance of rash
Diphtheria	Until 48 hours after starting antibiotics	Up to 4 weeks after disease onset
Influenza	3 days after onset	1–2 days before and 1–2 days after onset of symptoms
Mumps	Until swelling subsides	4–6 days before to 7 days after symptoms onset
Pertussis	4 weeks or until paroxysms cease	7 days before to 3 weeks after onset of paroxysms
Meningococcal meningitis	Until 24 hours after starting antibiotics	Till meningococci are absent from nasal/throat swabs
Cholera	3 days after starting tetracyclines	
Shigellosis, Salmonellosis	Until 3 consecutive negative stool cultures	
Hepatitis A	3 weeks	

89. A child with a known allergy to neomycin is brought to a vaccination camp. Which vaccine is contraindicated?

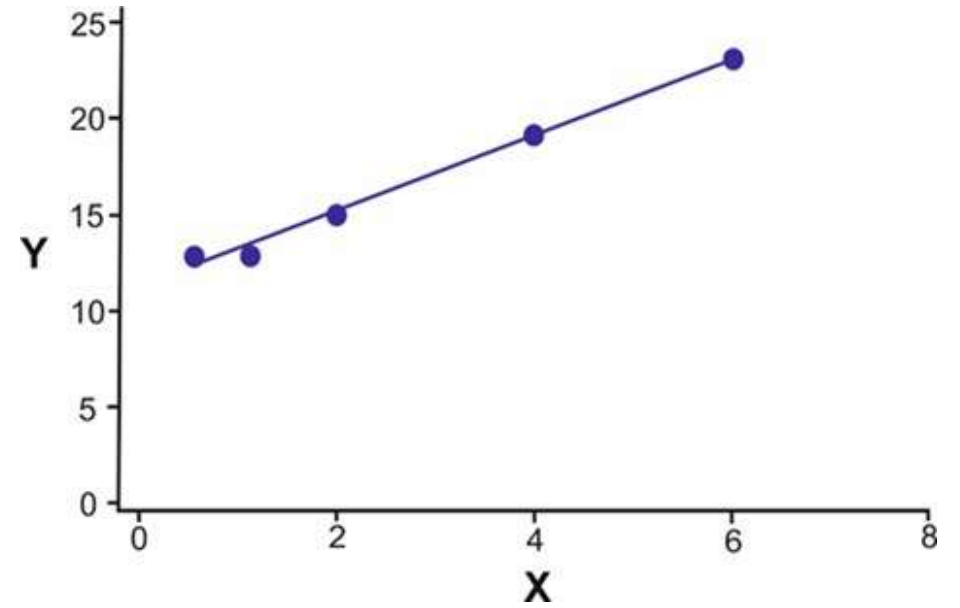
- A. Measles, Mumps, Rubella (MMR)**
- B. Inactivated Polio Vaccine (IPV)**
- C. Japanese Encephalitis (JE)**
- D. Varicella**

Antibiotics

Antibiotics are used during the manufacturing phase to prevent bacterial contamination of the tissue culture cells in which the viruses are grown. For example, MMR vaccine and IPV each contains less than 25 micrograms of neomycin per dose (less than 0.000025g). Persons who are known to be allergic to neomycin should be closely observed after vaccination so that any allergic reaction can be treated at once (115).

90. Based on the graphical representation provided, which of the following equations corresponds to the regression model of the plotted graph?

- A. $y=10-x$**
- B. $x=10+y$**
- C. $y=11+2x$**
- D. $x=11+2y$**



91. Which of the following statements about criteria for an urban area in India is FALSE?

- A. Having 5,000 or more inhabitants**
- B. Having a population density of 390 persons per square km**
- C. At least half of adult males engaged in non-agricultural work**
- D. Having pronounced urban features**

92. You are involved in a study about various types of diseases. Which of the following is an example of a Trans-stadial transmission?

- A. Plague**
- B. Taeniasis**
- C. Rabies**
- D. Indian tick typhus**

93. All of the following are health care delivery indicators, except

- A. Population per trained birth attendant**
- B. Population-bed ratio**
- C. Bed turnover ratio**
- D. Doctor-nurse ratio**

94. A clinical study examines the usefulness of 5 different biomarkers to detect Barrett esophagus, the only known precursor lesion of esophageal adenocarcinoma. Researchers evaluate the performance of each biomarker and report the sensitivity, specificity, and area under the curve (AUC) estimates. Which is the most accurate biomarker?

Biomarker	Sensitivity (%)	Specificity (%)	AUC
1	41.7	83.3	0.603
2	68.0	70.8	0.758
3	70.8	91.7	0.879
4	84.0	62.8	0.763
5	91.7	58.3	0.756

- A. 1
- B. 2
- C. 3
- D. 4

95. The Stanford Three-Community Study, the North Karelia Project, and the Lipid Research Clinics Study are well-known research efforts. What type of study design best describes these efforts?

- A. Cohort studies**
- B. Nested case control studies**
- C. Case series report studies**
- D. Risk factor intervention trials**

96. Identify the correct statements

- 1. FORD foundation is aiding in building toilets in India**
- 2. Normalcy of data can be measured by histogram, box-whisker plot and Shapiro-Wilk test**
- 3. Haddon matrix is a tool for prevention of injuries using epidemiology.**
- 4. The Reston ebolavirus is most pathogenic in humans.**

- A. 1,2,3,4**
- B. 1,2,3**
- C. 1,3,4**
- D. 1,2,4**

97. The instrument shown is used to measure:

- A. Humidity**
- B. Air velocity**
- C. Radiant heat**
- D. Air pollution index**



98. Researchers at an academic trauma center conducted a randomized clinical trial comparing 2 surgical techniques (Technique A and Technique B) for repairing a mandible fracture. They examined rates of infectious complications and rates of malocclusion. A total of 100 patients were enrolled in the study. Results showed that the relative rate of infection with Technique A compared with Technique B was 0.86 with a 95% confidence interval of 0.57-1.28. What is a correct statement?

- A. Neither surgery technique is superior**
- B. Technique A is superior to Technique B**
- C. Technique B is superior to Technique A**
- D. The techniques should not be used in a clinical care setting**

99. Research is being conducted to assess the nutritional status of the children in a particular district. For this purpose, 2 children are randomly selected from every school in the district. What is this type of sampling known as?

- A. Simple random**
- B. Systematic random**
- C. Stratified random**
- D. Cluster**

100. Which of the following conditions would not be managed through mass drug administration?

- A. Worm infestation**
- B. Vitamin A deficiency**
- C. Scabies**
- D. Filariasis**



Cerebellum

Get the balance right

Thank you

Best wishes!



Cerebellum

Get the balance right

BTR PSM - 18-09-2025

Dr. Zainab Vora

1. A diabetic patient's fasting blood glucose level is found to be 160 mg/dL. What will you advise the patient regarding non-pharmacological management?

A. At least ~~80g~~ dietary fibre 10-20g

B. <8 g salt intake everyday (<5g) =

C. < 30% of the calories should come from fat

D. Cholesterol ~~< 100g~~

TABLE 2

Lifestyle modifications to manage hypertension

Modification	Recommendation Reduction, Range	Approximate systolic BP
Weight reduction	Maintain normal body weight (BMI, 18.5–24.9)	5–20 mm Hg/10 kg weight loss
Adopt DASH eating plan	Consume a diet rich in fruits, vegetables and low-fat dairy products with a reduced content of saturated fat and total fat	8–14 mm Hg
Dietary sodium reduction	Reduce dietary sodium intake to no more than 100 mEq/d (2.4 g sodium or 6 g sodium chloride)	2–8 mm Hg
Physical activity	Engage in regular aerobic physical activity such as brisk walking (at least 30 minutes per day, most days of the week)	4–9 mm Hg
Moderation of alcohol consumption	Limit consumption to no more than two drinks per day (1 oz or 30 ml ethanol eg, 24 oz beer, 10 oz wine, or 3 oz 80- proof whisky) in most men, and no more than one drink per day in women and lighter-weight persons	2–4 mm Hg

Prudent diet

1. *Dietary changes* : Dietary modification is the principal preventive strategy in the prevention of CHD. The WHO Expert Committee (1) considered the following dietary changes to be appropriate for high incidence populations :

- reduction of **fat** intake to **20–30 per cent** of total energy intake
- consumption of **saturated fats** must be limited to less than **10 per cent** of total energy intake; some

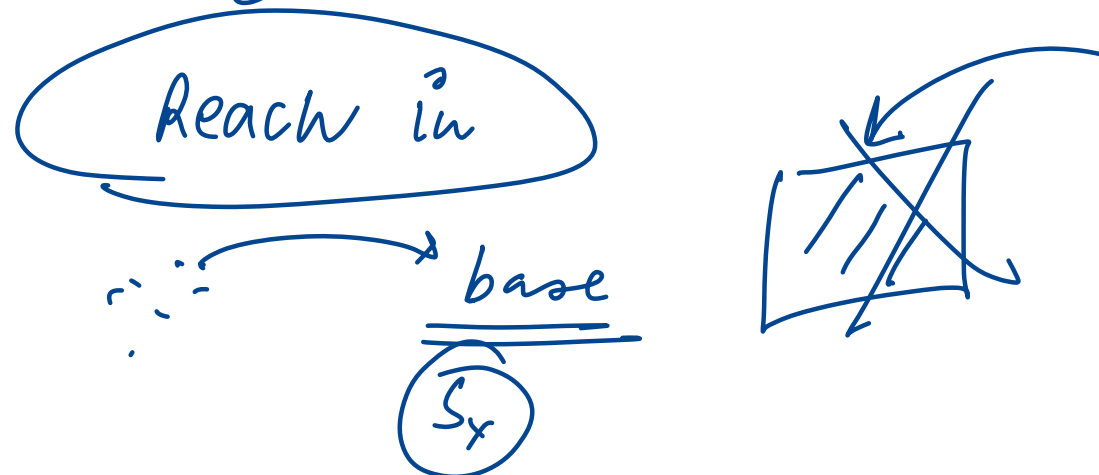
of the reduction in saturated fat may be made up by mono and poly-unsaturated fats

a reduction of **dietary cholesterol** to below **100 mg per 1000 kcal** per day

- an increase in complex carbohydrate consumption (i.e., vegetables, fruits, whole grains and legumes)
- avoidance of alcohol consumption; reduction of **salt intake to 5 g daily or less**.

2. A 70-year-old patient with a history of progressive vision loss is scheduled for cataract surgery under the National Program for Control of Blindness and Visual Impairment. Which of the following is not an accurate guideline or inclusion criterion for cataract surgery within this national program?

- A. Patients requiring cataract surgeries are selected and asked to report to base hospital
- B. Perform more small incision cataract surgery
- C. To do surgery in rural area with make shift hospital/Ots
- D. To perform surgeries in fixed facility surgery by shifting patients from rural area.



3. Identify the correct statement:

~~A.~~ The states with API < 1 and all their districts reporting API < 1 are in the elimination phase QA eliminate - 2030

~~B.~~ NPV is the best for protein quality - $DIAAS > PDCAAS > NPV$

C. Standardisation is done before comparing the mortality rates of two countries due to difference in ~~number of deaths~~ age

~~D.~~ Perflation ventilation is a type of ~~mechanical~~ ventilation

open window/door

$< 1/10000$

TFR
ASFR
ASMR

Mechanical Ventilation:

- Exhaust ventilation → removing stale air
- Plenum ventilation → forcibly in fresh air fans
- Balanced ventilation. exhaust + plenum.
- Air conditioning → recycles / refreshes

Category	Criteria
Category 0	States/UTs with zero indigenous cases
Category 1	Elimination phase – States/UTs with API < 1
Category 2	Pre-elimination phase – States/UTs with API < 1 but some districts reporting API ≥ 1
Category 3	Intensified control phase – States/UTs with API ≥ 1

4. A city experiences a chemical plant leak and toxic fumes are released into the atmosphere. What is your immediate recommendation to the local residents?

NEET 25

- A. Telephone to inform friends
- B. Evacuate immediately
- C. Open windows for ventilation
- ~~D. Seal cracks and close all windows and doors~~



5. The World Health Organization suggests the use of a new rapid diagnostic test for the diagnosis of malaria in resource-limited settings. The new test has a sensitivity of 70% and a specificity of 90% compared to the gold standard test (blood smear). The validity of the new test is evaluated at a satellite health center by testing 200 patients with a positive blood smear and 150 patients with a negative blood smear. How many of the tested individuals are expected to have a false negative result?

- A. 155
- B. 15
- C. 195
- ~~D. 60~~

	D	
	+	-
+	140	15
-	60	135
	200	150

6. A 3-year-old girl presented to the PHC with difficulty in walking and bowing of legs. She was undernourished and had minimal exposure to the sun. Which programme deals with nutritional deficiency in children below 6 years of age?

A. Anaemia Mukh Bharat ~~XX~~

B. Integrated Child Development Services

C. National Nutritional Deficiency and Control Programme ~~XX~~

D. Mid-Day Meal Scheme ~~XX~~

NEED / 25

vit D

//

7. Which of the following is not an organophosphate insecticide?

A. DDT

B. Fenthion

C. Malathion

D. Diazinon

I. CONTACT POISONS

1. Natural:

- Pyrethrum-No residual
- Rotenone
- Derris
- Nicotine
- Mineral oils

2. Synthetic

A. Organo-chlorine Compounds:

- DDT-Least toxic-Residual 18mon
- Methoxychlor
- HCH (BHC)
- Lindane
- Chlordane
- Heptachlor
- Dieldrin
- Aldrin
- Toxaphene
- Kepone
- Mirex

B. Organo-phosphorus Insecticides:

- Chlorthion
- Diazinon
- Dioxathion
- Demethoate
- Malathion (OMS-1)-Least toxic
- Fenthion (OMS-2)
- Methyl parathion
- Parathion
- Ronnel
- Trichlorfon
- Dichlorvos
- Abate (OMS-786)
- Naled
- Gardona
- Chlorpyrifos
- Fenitrothion (OMS-43)
- Dicapthon (OMS-214)

the ins

C. Carbamates:

- Carbaryl
- Dimetilan
- Pyrolan
- Propoxur (OMS-33)

D. Synthetic Pyrethroids:

- Resmethrin
- Bioresmethrin
- Pothrin

Pemethrin

II. STOMACH POISONS

- Paris green
- Sodium fluoride

III. FUMIGANTS

- Hydrogen cyanide
- Methyl bromide
- Sulphur dioxide
- Carbon disulphide

IV. REPELLENTS

- Meta-diethyltoluamide
- Benzyl benzoate
- Indalone
- Dimethyl phthalate
- Ethyl hexanediol

DEET

INTEGRATED VECTOR CONTROL

ANTI-LARVAL MEASURES

↳ Urban

Chemical:

Paris green = Stomach poison

Temephos/Abate = Contact poison

Biological: Gambusia / Guppy

Bacillus thuringiensis

Environmental control

ANTI-ADULT MEASURES

↳ rural

Space spray: LOW API

Malathion

Cyphenothrin

Pyrethrum

↳ Residual spray: HIGH API

DDT (2 rounds)

Malathion (3 rounds)

Deltamethrin (2 rounds)

PERSONAL PROTECTION

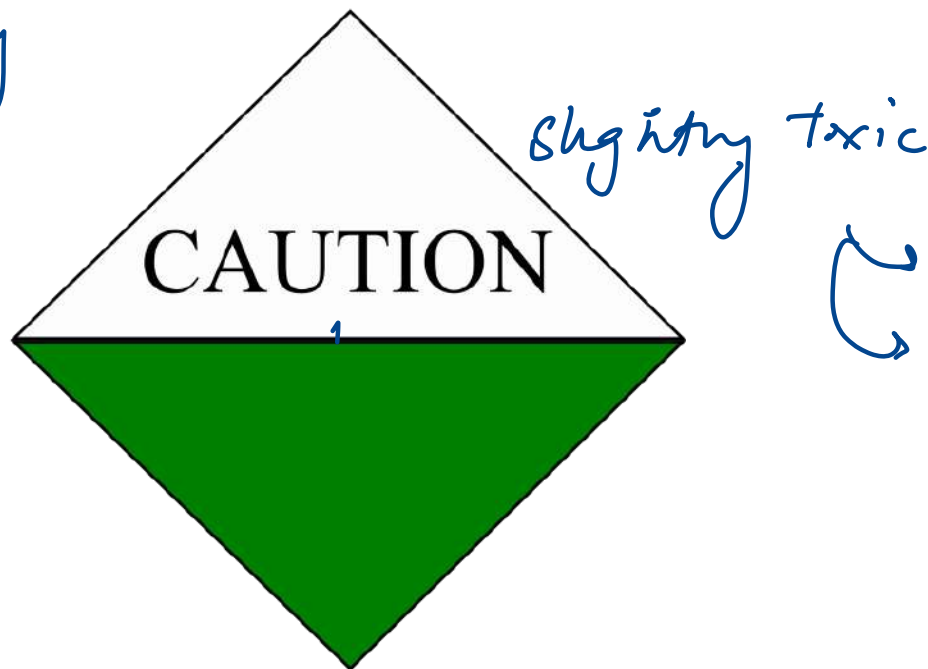
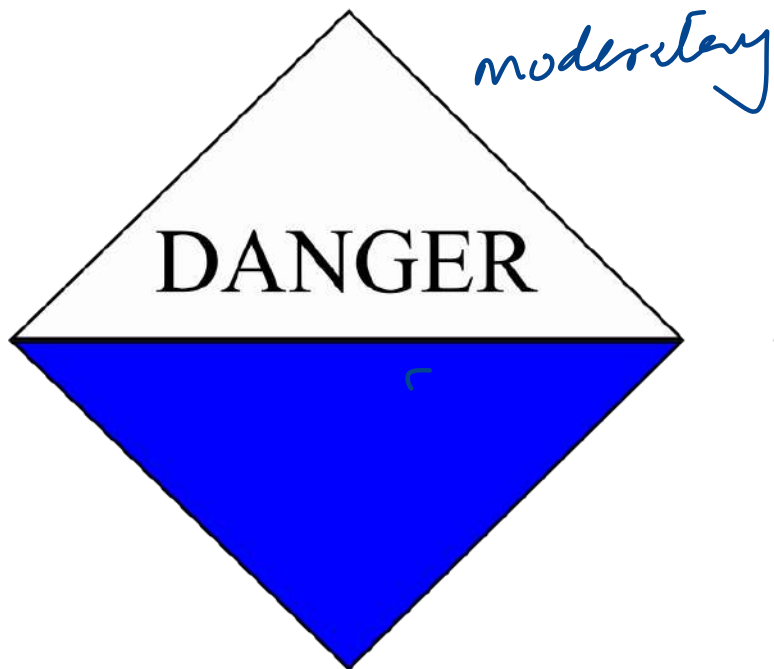
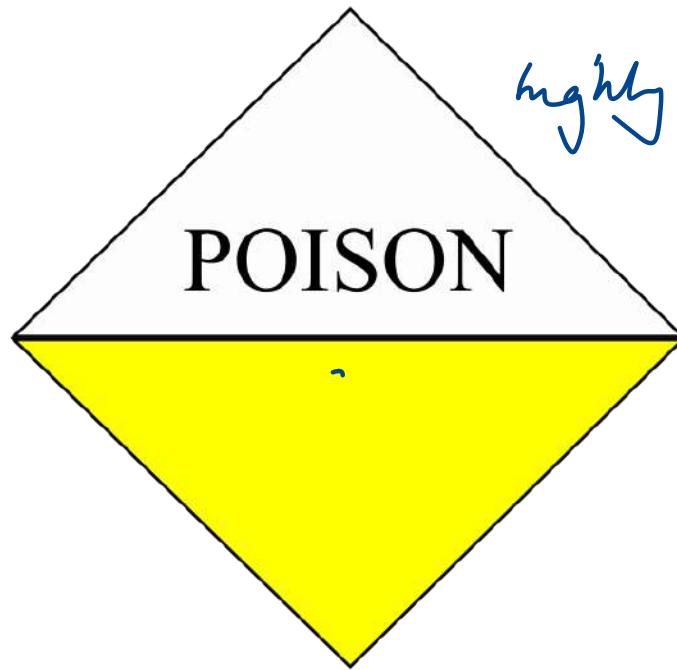
Deltamethrin

-ITBN: 6mon

-LLIN: 3yrs

0.0475inch

>150 holes/ich



malathion
DDT

8. A city has 70,00,000 urban population, 30% of which live in slums. How many UPHCs are required for the slum population according to NUHM norms?

NET 25'

A. 42

B. 52

C. 32

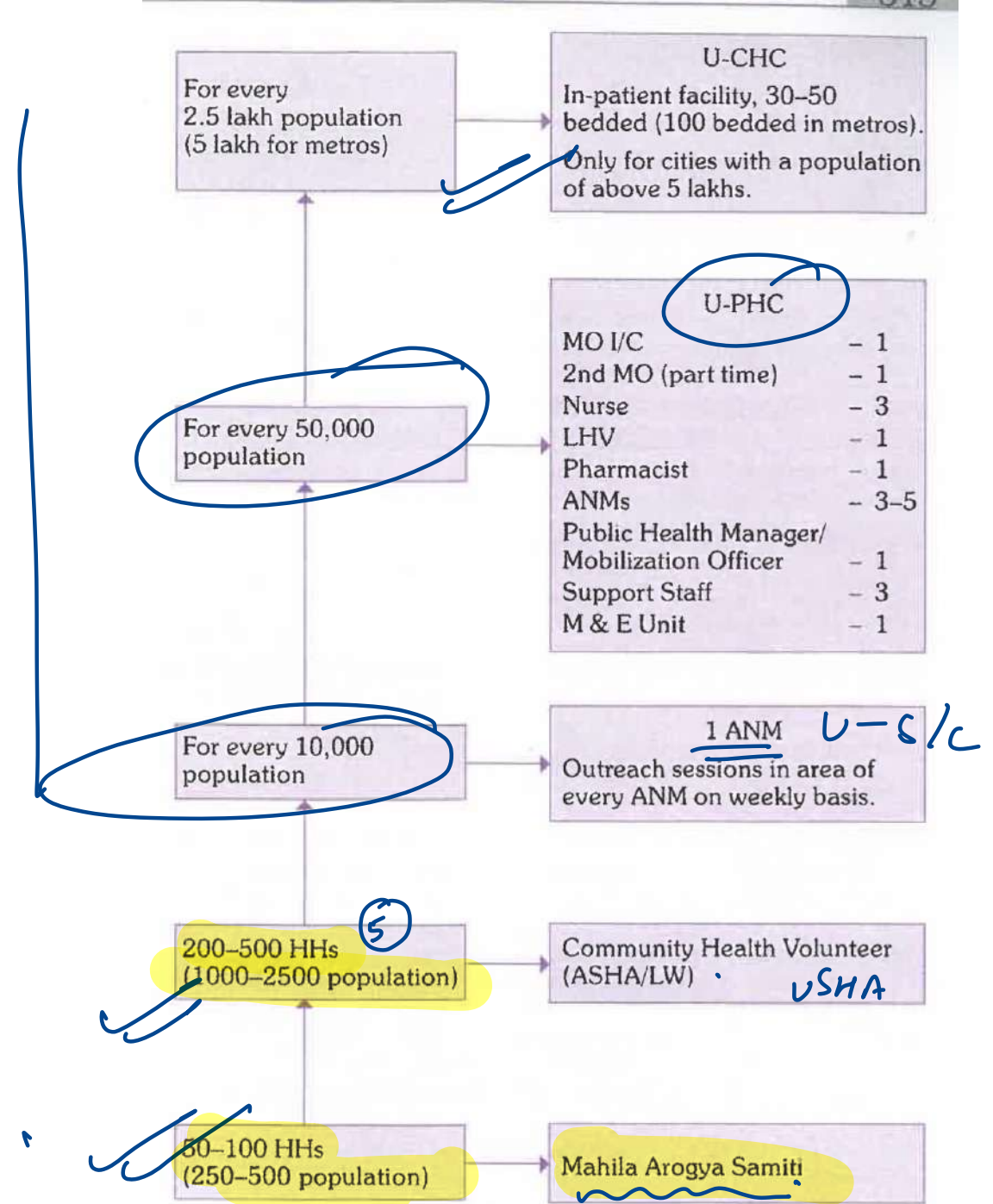
D. 22

$$\frac{30}{100} \times \frac{70,00,000}{100} = 21,00,000$$

$$\frac{21,00,000}{50,000} = 42$$

	Hilly/ tribal	Plains	Beds
Sub-centre (HWC) A- B- Urban: 1/10k	$1/3k$	$1/5k$	
PHC A- B- School health Urban: 1/50k	$1/20k$	$1/30k$	
U-CHC Metro:		$1/2.5k$ $1/5k$	30-50 100
Village level staff:			

Rogi kalyan Samiti: at PHC /CHC



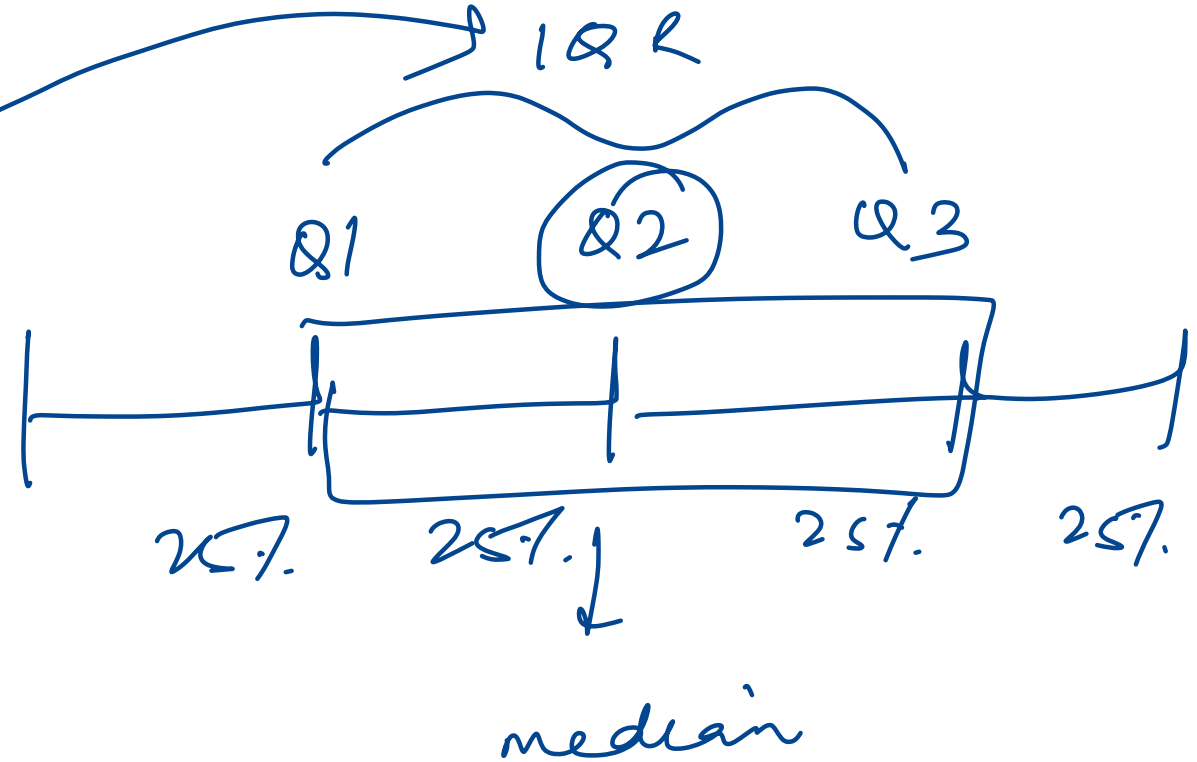
9. The central value of a sample of 200 observations can be obtained by calculating which measure?

A. 90th percentile ~~XX~~ 50th

B. 2nd decile ~~XX~~ 5th

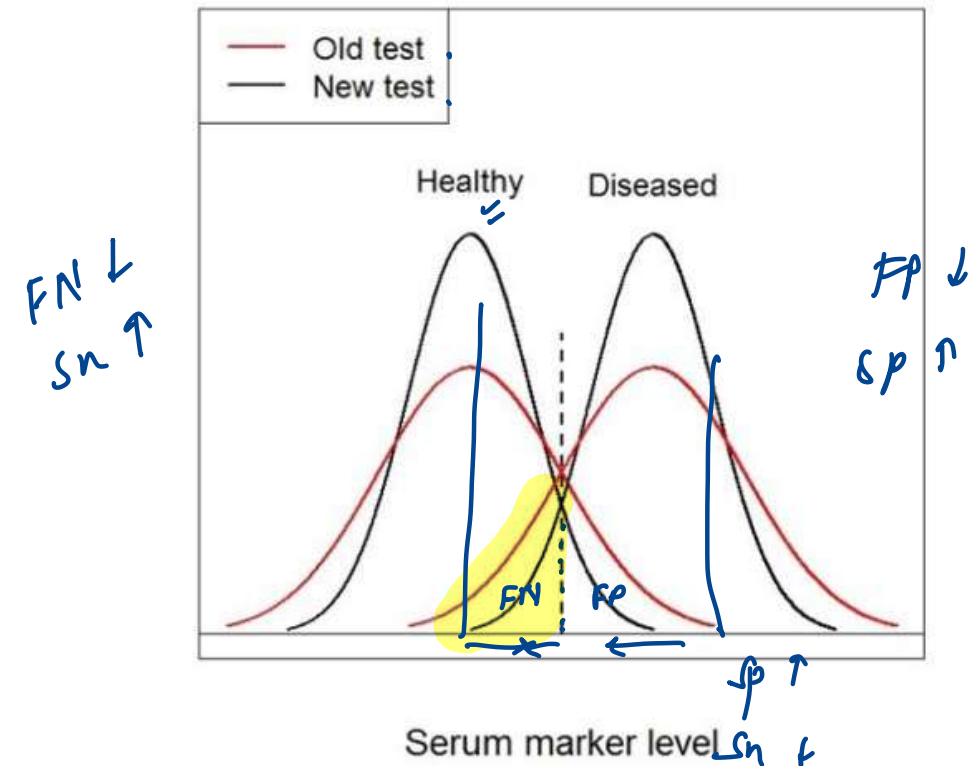
C. Interquartile range

D. 2nd quartile



10. A standard test based on a serum marker is used to diagnose disease X. The distribution of the marker for this standard test in healthy and diseased patients is shown by the red curves in the graph below. A competitive company developed a new test based on the same marker. The distribution of the marker for the new test in healthy and diseased patients is shown by the black curves in the graph below. Compared to the old test, the new test has?

- A. Higher sensitivity and lower specificity
- B. Higher sensitivity and higher specificity**
- C. Higher sensitivity and the same specificity
- D. Lower sensitivity and higher specificity



11. Which of the following statements is true about hospice care?

A. Disease is the centre of concern ~~XX~~

B. The patient is sovereign ✓

C. Death should neither be prolonged nor hastened ✓

D. The aim is to improve the quality of life ✓

E. The intention is to cure ~~XX~~

F. Done when expected survival is <6months ✓

vs
Palliative
Care

A. B, C, D, F

B. C, E, F

C. B, D

D. A, B, E, F

B / C / D / F ✓

12. In the context of Hardy-Weinberg equilibrium, which of the following factors does not affect the genetic equilibrium of a population? (PSM)

A. Small population //

~~B. Random mating~~

C. Mutations /

D. Gene outflow //

Exceptions to Hardy-Weinberg law



Small and dynamic populations

Non-random or assortative mating

Mutations

Gene outflow and genetic drift

Migration

13. A 58-year-old male with T2DM presents with high grade fever and cough. He is diagnosed with COVID-19 and is admitted. He dies on the 7th day of illness. As part of surveillance, his death is recorded. What type of surveillance is this?

A. Active

B. Passive

C. Sentinel

D. Syndromic

TB / malaria / kala azar / Polio

NEET 20

MPW → 0

"hidden"

14. As part of a health development project in rural India, you're asked about the key community group responsible for overseeing local health, sanitation, and nutrition initiatives. Which committee best fits this description?

A. Panchayat Health Committee ~~xx~~

B. Village Health Planning and Management Committee ~~xx~~

C. Rogi Kalyan Samiti ~~xx~~

D. Village Health Sanitation and Nutrition Committee

15. Arrange the following steps of an interview in the correct order in a sequence.

1. Starting an interview ✓
2. Encouragement ✓
3. Establishing contact ✓
4. Securing rapport ✓

A. 1-2-3-4

B. 3-4-1-2

C. 3-1-4-2

D. 2-3-4-1

3 - 1 - 4 - 2

Technique of interview

Conducting an interview is both an art and science. Sociologists have described the following steps for conducting an interview (40).

1. ESTABLISHING CONTACT

The first requisite before conducting an interview is to establish contact with the interviewee. Prior appointment regarding the time and place of interview is always desirable. It gives the interviewee a sense of satisfaction and a feeling of importance that his time has been valued.

2. STARTING AN INTERVIEW

The beginning should always be made from a general discussion of the problem. The researcher should create an atmosphere in which the interviewee freely tells his story in his own way. The researcher should let the interviewee do most of the talking, while he should himself listen to it attentively guiding and directing the interviewee about the subject matter wherever necessary. All controversial matters must be carefully avoided.

3. SECURING RAPPORT

A state of rapport must be established between the interviewee and the researcher. In the beginning every interviewee proceeds very cautiously giving only formal information. He may not like to discuss personal matters with a stranger. It therefore requires tact on the part of the researcher to create a friendly atmosphere and gain the confidence of the interviewee. Once rapport is gained and hesitation and shyness are overcome, the interviewee may feel overzealous to tell everything that he knows, and all that he feels without any attempt at secrecy or formality. The research worker must utilize this situation to the fullest advantage, and use it as best as he can. The state of rapport, sometimes may not last long; once the interviewee has relapsed into his former state, it may be very difficult to bring him back to rapport.

4. RECALL

At times, during the course of an interview, the interviewee may be so full of emotion that he drifts away from the main subject, and may even go into silence at the end of the narration. At such times, the researcher should give enough time to the interviewee to recollect and start again. At times, it may be necessary to refresh his memory by pointing out what he had been saying last.

5. PROBE QUESTIONS

When the interviewee, during an interview knowingly or unknowingly side-tracks some important aspect of the problem, the researcher has to be very cautious in catching these slips. Great care should be taken in putting probe questions. They should appear to the interviewee to be born of mere curiosity. If the interviewee has deliberately side-tracked a particular point, a very shrewd effort is needed to make him discuss a point at length, the same should not be doggedly pursued, lest rapport should be lost.

6. ENCOURAGEMENT

During the course of an interview, it is necessary to encourage the interviewee from time to time, by interpolating such complimentary expressions as "what you have said is really very illuminating; I never had such an

enlightening discussion; you really have a very unique approach to the problem; I myself had never thought of it from that angle, etc." Great care should be taken that complimentary remarks should sound true appreciations, and not flattery otherwise they will lose all their effect.

7. GUIDING THE INTERVIEW

Sometimes, the interviewee digresses in his narration to less important topics, which he is most eager to relate, and if stopped from continuing the conversation he may get offended. It is the duty of the researcher to guide the subject in the right path without offending him.

8. RECORDING

Recording the statements should be reduced to a minimum during the course of an interview. If recording is continued, the flow of the conversation will slow down and the interview may take the form of questions and answers. Further, the interviewee will be conscious that his statements are being recorded. The researcher should jot down only important points.

9. CLOSING THE INTERVIEW

An interview should not be ended abruptly. The interviewee should not feel, at the close of the interview, that he has divulged many of his secrets to a stranger. The researcher should bring the interview to a natural close, followed by the usual forms of greetings.

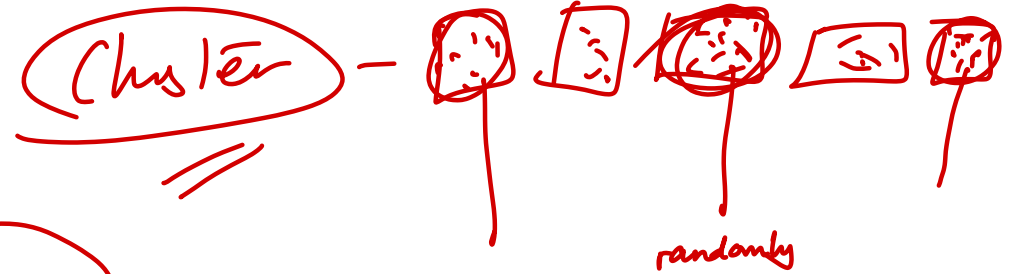
10. REPORT

Soon after the interview, the report should be compiled when the mind is still fresh about the narration.

16. A new community-based initiative is designed to reduce neonatal sepsis. In a community, 20 randomly assigned PHCs follow standard care and 20 are designated to implement the new initiative. What type of study design is this?

- A. Quasi-experimental study
- B. Cluster randomised controlled trial
- C. Case-control study
- D. Cross-sectional study

~~RCT~~
~~randomised~~
~~controlled~~
NEET 25



17. Identify the correct statements about vaccines

- 1. Influenza and yellow fever vaccines are CI in egg allergy T
- 2. Abscess formation post-BCG is treated ~~conservatively~~
- 3. Live vaccines should not be given with Human immunoglobulin except measles
- 4. All of the following are killed vaccines: Pertussis, Salk, SA14-14-2, 17D *live*
- 5. NS is used as diluent for Danish 1331

- A. 1,2,3,4
- B. 1,3,5
- C. 1,2,3,5
- D. 1,5

IDP

post BCG — systemic ATT — disseminated osteomyelitis DB

X scar → real sure

↓
live

BCG ✓
 MMR ✓
 Rotovac ✓
 JE SA 14-14-2 ✓
 Typhoral-Ty21a (>6y, 3-4doses) ✓
 Varicella ✓
 OPV ✓ *Sabin*
 17D ✓
 Influenza ✓

Live

tablet

x1wly

Peak blood levels are reached in 2 days after intramuscular injection. The half-life is 20-35 days. Generally, immunoglobulins should not be given shortly before or after active immunization to avoid inhibiting the immune response; tetanus and hepatitis B immunization are exceptions to this rule (122).

rabies
 ↳ local
 varicella +/-

Rabies
 Cholera-Dukoral (Cholera O1)
 Shanchol, mORCVAX (Cholera O1, O139)
 Pertussis
 JE-Nakayama Beijing/ Indian Kolar
 IPV

Meningococcal
 ACWY
 Typhoid Vi (>2y, 1 dose with booster)
 Pneumococcal
 Hib

Toxoid-DT
 Recombinant DNA-Hep B

18. In 'De facto' method of census data collection, information is collected based on which of the following?

NEET 25

A. ~~Place of birth~~ ← *de jure*

B. Place of employment

C. Usual place of residence ← *de facto*

~~D. Location at the time of enumeration~~

19. What is the correct sequence of steps in investigating an epidemic?

1. Confirm epidemic existence
2. Verify the diagnosis
3. Formulation of hypothesis
4. Define the population at risk
5. Rapid search of cases

A. 1 → 3 → 2 → 5 → 4

B. 2 → 5 → 1 → 4 → 3

C. 1 → 2 → 5 → 3 → 4

D. 2 → 1 → 4 → 5 → 3

② - 1 - 4 - 5 - 3

Guidelines for use of mask (156)

The correct procedure of wearing triple layer surgical mask is as follows:

1. Perform hand hygiene.
2. Unfold the pleats, make sure that they are facing down.
3. Place over nose, mouth and chin.
4. Fit flexible nose piece over nose bridge.
5. Secure with tie strings (upper string to be tied on top of head above the ears – lower string at the back of the neck.)
6. Ensure there are no gaps on either side of the mask, adjust to fit.
7. Do not let the mask hanging from the neck.
8. Change the mask after six hours or as soon as they become wet.
9. Disposable masks are never to be reused and should be disposed off.
10. While removing the mask great care must be taken not to touch the potentially infected outer surface of the mask.
11. To remove mask first untie the string below and then the string above and handle the mask using the upper strings.
12. Disposal of used masks: Used mask should be considered as potentially infected medical waste. Discard the mask in a closed bin immediately after use.

INVESTIGATION OF AN EPIDEMIC

The occurrence of an epidemic always signals some significant shift in the existing balance between the agent, host and environment. It calls for a prompt and thorough investigation of the cases to uncover the factor(s) responsible and to guide in advocating control measures to prevent further spread. Emergencies caused by epidemics remain one of the most important challenges to national health administrations. Epidemiology has an important role to play in the investigation of epidemics. The objectives of an epidemic investigation are (3, 22, 153).

- a. to define the magnitude of the epidemic outbreak or involvement in terms of time, place and person.
- b. to determine the particular conditions and factors responsible for the occurrence of the epidemic.
- c. to identify the cause, source(s) of infection, and modes of transmission to determine measures necessary to control the epidemic; and
- d. to make recommendations to prevent recurrence.

An epidemic investigation calls for inference as well as description. Frequently, epidemic investigations are called for after the peak of the epidemic has occurred; in such cases, the investigation is mainly retrospective. No step by step approach applicable in all situations can be described like a "cook-book" (153). However, in investigating an epidemic, it is desired to have an orderly procedure or practical guidelines as outlined below which are applicable for almost any epidemic study. Some of the steps can be done concurrently.

1. Verification of diagnosis

Verification of diagnosis is the first step in an epidemic investigation, as it may have a bearing on the

may be spurious, and arise from misinterpretation of signs and symptoms by the lay public. It is therefore necessary to have the verification of diagnosis on the spot, as quickly as possible. It is not necessary to examine all the cases to arrive at a diagnosis. A clinical examination of a sample of cases may well suffice. Laboratory investigations, where applicable, are most useful to confirm the diagnosis but the epidemiological investigations should not be delayed until the laboratory results are available.

2. Confirmation of the existence of an epidemic

The next step is to confirm if epidemic exists. This is done by comparing the disease frequencies during the same period of previous years. An epidemic is said to exist when the number of cases (observed frequency) is in excess of the expected frequency for that population, based on past experience. An arbitrary limit of two standard errors from the endemic occurrence is used to define the epidemic threshold for common diseases such as influenza (3). Often the existence of an epidemic is obvious needing no such comparison, as in the case of common-source epidemics of cholera, food poisoning and hepatitis A. These epidemics are easily recognized. In contrast the existence of modern epidemics (e.g., cancer, cardiovascular diseases) is not easily recognized unless comparison is made with previous experience.

3. Defining the population at-risk

(a) Obtaining a map of the area: Before beginning the investigation, it is necessary to have a detailed and current map of the area. If this is not available, it may be necessary to prepare such a map. It should contain information concerning natural landmarks, roads and the location of all dwelling units along each road or in isolated areas. The area may be divided into segments, using natural landmarks as boundaries. This may again be divided into smaller sections. Within each section, the dwelling units (houses) may be designated by numbers.

(b) Counting the population: The denominator may be related to the entire population or sub-groups of a population. It may also be related to total events (see page 45 for more details). For example, if the denominator is the entire population a complete census of the population by age and sex should be carried out in the defined area by house-to-house visits. For this purpose lay health workers in sufficient numbers may be employed. Using this technique it is possible to establish the size of the population. The population census will help in computing the much-needed attack rates in various groups and subgroups of the population later on without an appropriate denominator of "population at risk" attack rates cannot be calculated.

4. Rapid search for all cases and their characteristics

(a) Medical survey: Concurrently, a medical survey should be carried out in the defined area to identify all cases including those who have not sought medical care, and those possibly exposed to risk. Ideally, the complete survey (screening each member of the population for the presence of the disease in question) will pick up all affected

health workers may be trained to administer the epidemiological case sheet or questionnaire to collect relevant data.

(b) Epidemiological case sheet: The epidemiologist should be armed with an "epidemiological case sheet" for collecting data from cases and from persons apparently exposed but unaffected. The epidemiological case sheet (case interview form) should be carefully designed (based on the findings of a rapid preliminary inquiry) to collect relevant information. This includes: name, age, sex, occupation, social class, travel, history of previous exposure, time of onset of disease, signs and symptoms of illness, personal contacts at home, work, school and other places; special events such as parties attended, foods eaten and exposure to common vehicles such as water, food and milk; visits out of the community, history of receiving injections or blood products, attendance at large gathering, etc. The information collected should be relevant to the disease under study. For example, if the disease is food-borne, detailed food histories are necessary. A case review form will ensure completeness and consistency of data collection.

(c) Searching for more cases: The patient may be asked if he knew of other cases in the home, family, neighbourhood, school, work place having an onset within the incubation of the index case. Cases admitted to the local hospitals should also be taken into consideration. This may reveal not only additional cases but also person-to-person spread. The search for new cases (secondary cases) should be carried out everyday, till the area is declared free of epidemic. This period is usually taken as twice the incubation period of the disease since the occurrence of last case.)

5. Data analysis

The data collected should be analyzed on ongoing basis, using the classical epidemiological parameters – time, place and person. If the disease agent is known, the characteristics of time, place and person may be rearranged into Agent-Host-Environment model (3).

a. Time: Prepare a chronological distribution of dates of onset and construct an "epidemic curve". Look for time clustering of cases. An epidemic curve may suggest: (a) a time relationship with exposure to a suspected source (Fig. 4), (b) whether it is a common-source or propagated epidemic, and (c) whether it is a seasonal or cyclic pattern suggestive of a particular infection.)

b. Place: Prepare a "spot map" (geographic distribution) of cases, and if possible, their relation to possible sources of infection, e.g., water supply, air pollution, foods eaten, occupation, etc. Clustering of cases may indicate a common source of infection. Analysis of geographic distribution may provide evidence of the source of disease and its mode of spread. This was demonstrated by John Snow in the cholera outbreak in the Golden Square district, London (Figure 6).

c. Person: Analyze the data by age, sex, occupation and other possible risk factors. Determine the attack rates/case fatality rates, for those exposed and those not exposed and according to host factors. For example, in most food-borne

outbreaks, food-specific attack rates must be calculated for each food eaten to determine the source of infection.

The purpose of data analysis is to identify common event or experience, and to delineate the group involved in the common experience.

6. Formulation of hypothesis

On the basis of time, place and person distribution or the Agent-Host-Environment model, formulate hypothesis to explain the epidemic in terms of (a) possible source (b) causative agent (c) possible modes of spread, and (d) the environmental factors which enabled it to occur. These hypothesis should be placed in order of relative likelihood. Formulation of a tentative hypothesis should guide further investigation.

7. Testing of hypothesis

All reasonable hypotheses need to be considered and weighed by comparing the attack rates in various groups for those exposed and those not exposed to each suspected factor. This will enable the epidemiologist to ascertain which hypothesis is consistent with all the known facts. When divergent theories are presented, it is not easy to distinguish immediately between those which are sound and those which are merely plausible. Therefore it is instructive to turn back to arguments which have been tested by the subsequent course of events (154).

8. Evaluation of ecological factors

An investigation of the circumstances involved should be carried out to undertake appropriate measures to prevent further transmission of the disease. Ecological factors which have made the epidemic possible should be investigated such as sanitary status of eating establishments, water and milk supply; breakdown in the water supply system; movements of the human population, atmospheric changes such as temperature, humidity and air pollution, population dynamics of insects and animal reservoirs. The outbreak can be studied in a case control fashion. One of the primary concerns of the epidemiologist is to relate the disease to environmental factors to know the source(s) of infection, reservoirs and modes of transmission.

9. Further investigation of population at risk

A study of the population at risk or a sample of it may be needed to obtain additional information. This may involve medical examination, screening tests, examination of suspected food, faeces or blood samples, biochemical studies, assessment of immunity status, etc. The approach may be retrospective or prospective. For example, serological study may reveal clinically inapparent cases and throw light on the pathogenesis of the condition. Healthy individuals (those who are not ill) from the same universe may be studied in a case control fashion. This will permit classification of all members as to:

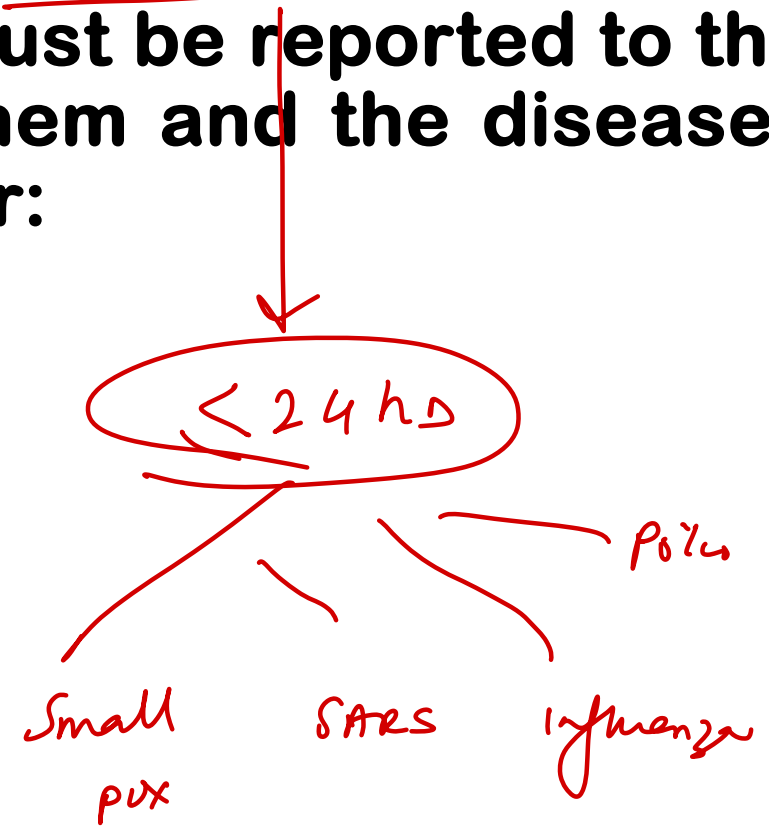
- a. exposure to specific potential vehicles.
- b. whether ill or not.

10. Writing the report

The report should be complete and convincing. Information to be included in the final report on an epidemic is given in Table 47 (155).

20. In the context of the World Health Organization's International Health Regulations (IHR), "immediately notifiable diseases" refer to specific diseases that must be reported to the WHO. What is the time period to report them and the diseases included in the list? Identify the correct pair:

- A. 12hrs, Cholera
- B. 24hrs, SARS**
- C. 48hrs, Polio
- D. 96hrs, Small pox



21. Which of the following is not a vital statistic?

- A. Birth rate ✓
- B. Fertility rate ✓
- C. Dependency ratio
- D. Life expectancy at birth ✓

Vital Statistics include:

- Birth rate ✓
- Death rate ✓
- Natural growth rate ✓
- Life expectancy at birth ✓
- Mortality rate ✓
- Fertility rate ✓

22. A researcher studies the incidence of measles in a population of 100 children, where 10 children have a previous history of measles, and 20 have been affected by the disease for the first time. What is the incidence?

- A. 20%
- B. 30%
- C. 10%
- D. ~~22.22%~~

NEET 25

$$\frac{\text{new cases}}{\text{at risk}} \times 100$$

$$= \frac{20}{99} \times 100 = 22$$

23. Researchers develop a new test to detect the presence of a recently identified biomarker NMP22 for ca UB. The initial evaluation of the test shows the following. Which of the following is the likelihood that a patient with a negative test does not have ca UB?

A. 0.20

B. 0.60

C. 0.80 ~~XX~~

D. 0.96

	CA UB		
	Present	Not present	
Test positive	45	30	75
Test negative	5	120	125
	50	150	200

$LR+ = 13.5$

NPV

$\frac{120}{125} \times 120$

Likelihood ratio

How much the probability shifts up/down if the test result is positive/negative

$$LR^+ = \frac{\text{probability of positive result in patient with disorder}}{\text{probability of positive result in patient without disorder}} = \frac{\text{sensitivity}}{1 - \text{specificity}} = \frac{\text{TP rate}}{\text{FP rate}}$$

$$LR^- = \frac{\text{probability of negative result in patient with disorder}}{\text{probability of negative result in patient without disorder}} = \frac{1 - \text{sensitivity}}{\text{specificity}} = \frac{\text{FN rate}}{\text{TN rate}}$$

- $LR^+ > 10$ indicates a highly specific test,
- $LR^- < 0.1$ indicates a highly sensitive test.

$$\text{Pretest odds} \times LR = \text{Posttest odds}$$

$$\text{Posttest probability} = \frac{\text{Posttest odds}}{\text{Posttest odds} + 1}$$

PPV ✓
NPV ✓

The TP rate of a pregnancy test is 0.81 and the FP rate is 0.06 LR+ = 13.5
Person who is pregnant is 13.5x as likely to have a + test compared to person who is not

The FN rate of a pregnancy test is 0.19 and the TN rate is 0.94 LR- = 0.2
Person who is pregnant is 0.2x as likely to have a - test compared to person who is not

24. The target demographic for latest RMNCAH+N includes which of the following?

a. Maternal and child health ✓

b. Family planning services ✓

c. Geriatric health ✗✗

d. Adolescent health ✓

A. a, b and c only

B. a, b, c and d

C. a, b and d

D. a and b only

NEET 2 ←
→

25. Knowledge, Attitude, and Practice (KAP) studies were first introduced in India for studying:

- A. HIV
- ~~B. Family planning~~
- C. Diabetes mellitus
- D. Malaria



26. During the Mahakumbh mela, the government set up health care camps and mobile medical units for surveillance. A syndromic surveillance is done for fever, diarrhoea and respiratory symptoms. What is the primary reason to do this?

- A. To confirm individual diagnoses with additional tests
- B. To reduce the medical personnel
- C. For immediate quarantine of symptomatic individuals
- D. To detect warning signs of disease outbreak

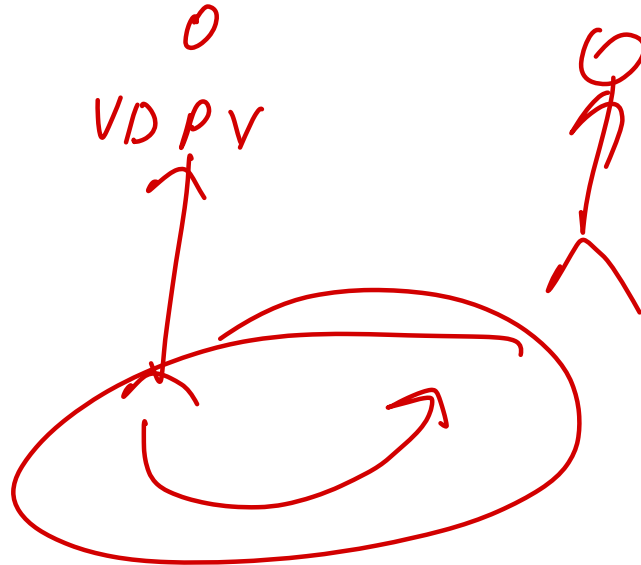
INI MAY

o exposed
o healthy

isolation

27. Any of the following should be considered as evidence of an outbreak of polio except:

- A. ~~Detection of VDPV in a case of Acute Flaccid Paralysis~~ AEFI
- B. Detection of a single case of wild polio in a person with Acute Flaccid Paralysis
- C. Detection of any cVDPV infected individuals
- D. Detection of wild PV infection in a healthy asymptomatic individual



28. Which of the following is true with respect to the prevention of Zika virus?

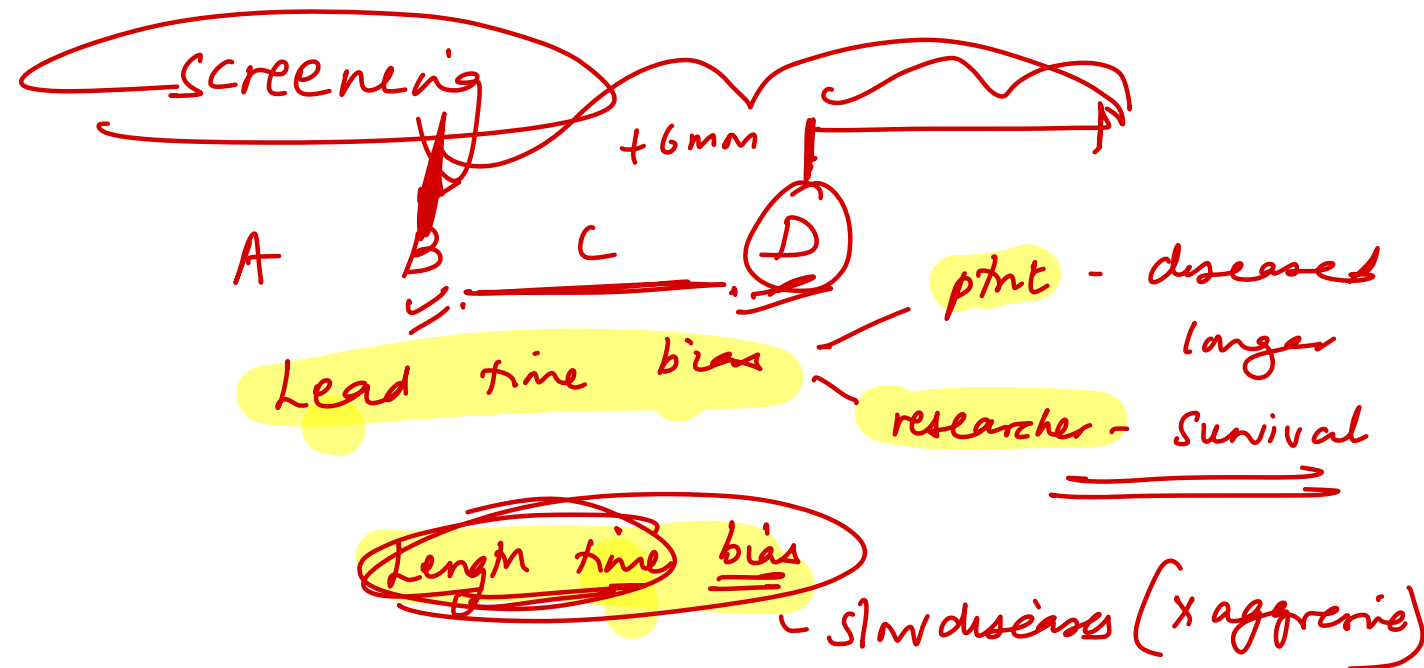
10/1 25

- A. Symptomatic treatment of cases with NSAIDs and isolation ~~XX~~
- B. Purified, inactivated FDA approved ~~vaccine~~ is found to be helpful in prevention
- C. ~~Sexual abstinence~~, using condoms, delaying pregnancy is helpful in controlling the disease
- D. Immunoglobulin and ~~plasmapheresis~~ is used in the treatment of Zika

E. Mosquito

29. A new biomarker has been shown to allow for the early detection of non-small cell lung carcinoma. A preliminary analysis on a cohort study of this new test demonstrates that its use prolongs survival of lung cancer patients by 3 months when compared to the survival of patients diagnosed by conventional methods. A secondary analysis reveals no difference in 6-month mortality rates between the 2 groups. Which of the following factors most likely explains the study results?

- A. Confounding
- B. Lead-time bias**
- C. Length-time bias
- D. Measurement bias



30. For calculating the life expectancy index in Human Development Index (HDI), what are the minimum and maximum values used?

A. 0 years and 65 years

B. 20 years and 85 years

C. 25 years and 75 years

D. 0 years and 100 years



Dimension	Indicator	Minimum	Maximum
Health	Life Expectancy (years)	20	85
Education	Expected years of schooling (years)	0	18
	Mean years of schooling (years)	0	15
Standard of living	Gross National Income Per Capita (2011 PPP \$)	100	75,000

31. Identify the incorrect pair

A. World TB day-24 ~~April~~ 24 March.

28 March

B. World Health day- 7 April

C. World population day-11 July MYP -

1 July.

D. World AIDS day-1 December

Adwita

32. Which health program in India would provide financial aid to BPL families to help manage a child with major life-threatening diseases?

A. Rashtriya Arogya Nidhi — 15 lakhs.

B. Pradhan Mantri Swasthya Suraksha Yojana →

peripheral
AIIMS

C. Navjaat Shishu Suraksha Karyakram

D. Rashtriya Bal Swasthya Karyakram

RBSK

ADs

training doctors / nurses /
grass root

33. Supplementary nutrition for malnourished children under ICDS provides approx:

A. 400 kcal & 12–15 g protein

B. 500 kcal & 15–18 g protein

C. 600 kcal & 18–20 g protein

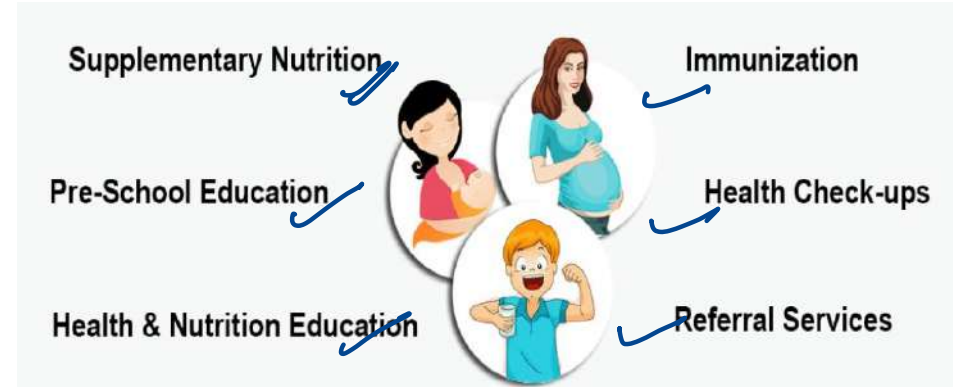
D. 800 kcal & 20–25 g protein



SD
25000
800

MOWCD
0-6yrs
Pregnant, Lactating
15-49yr female
10-18 adolescent girls
 AWW: 1/400-800
 AW supervisor 1/25k
 CDPO 1/lakh

6-10yrs g



	Cal 1/3	Prtn 1/2
6m-6y	500	12
Severely malnourished children	800 kcal	20-25 g protein
Pregn/lactating	600	20

	Cal 1/3	Prtn 1/2
primary	450	12
Upper primary	700	20

34. Identify the correct statements about health indicators:

- 1. Number of years a newborn is expected to live in full health based on current rates of sickness and mortality - ~~Sullivan index~~ HALE
- 2. Simplest measure of burden of disease - Incidence IPMR
- 3. Optimal utilisation of health services - ~~Negative Bed turnover ratio~~ slightly +ve BTR
- 4. Best indicator of effectiveness of health care - IMR
- 5. Cost effectiveness of NHP - ~~DALY~~ QALY
- 6. Best measure of standard of living - HDI

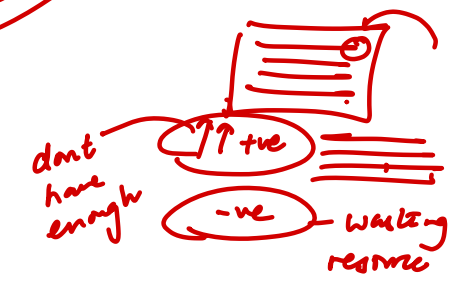
- A. 1, 2, 3, 4, 5, 6
- B. 3, 4, 5, 6
- C. 2, 4, 5, 6
- D. 4, 6

QALY
DALY

YLD + YLL

Sullivan
DFLE

LE : 70 y
DFLE : 65 y
HALE : 60 y



35. In Home Based Newborn Care (HBNC), number of postnatal visits by ASHA after LSCS is:

- A. 5
- B. 6
- C. 7
- D. 8

Home delivery : 7

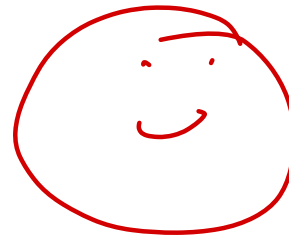
~~0, 3, 7, 14, 21, 28, 42~~
Institutional : 6

LSCS = 5



36. A 62-year-old man with diabetes, hypertension, and hyperlipidemia comes to the emergency department of an academic medical center with chest pain, nausea, vomiting, and diaphoresis. Investigators are designing a randomized control trial to test the hypothesis that drug B will decrease the mortality associated with acute ST-elevation myocardial infarction compared to standard of care. To ensure that investigators will not miss a difference between drug B and standard of care (if a difference truly exists), which of the following would they want to maximize?

- A. α ~~XY~~
- B. β ~~XX~~
- C. $1-\alpha$ ~~XX~~
- D. ~~1-~~ beta



β error

37. A “Fully immunized child” refers to one who has received:

- A. All vaccines up to 2 years of age
- B. All vaccines by 5 years of age
- C. All vaccines by 1 year of age
- D. Only BCG, OPV, DPT

fully - 1yr

Cluster:

12-23 mos

completely - 2yrs

at 5yrs

38. A 4-year-old child is brought with complaints of persistent fever, and cough without sputum for 3 weeks. As per the National Tuberculosis Elimination Programme guidelines, what should be the next step in management?

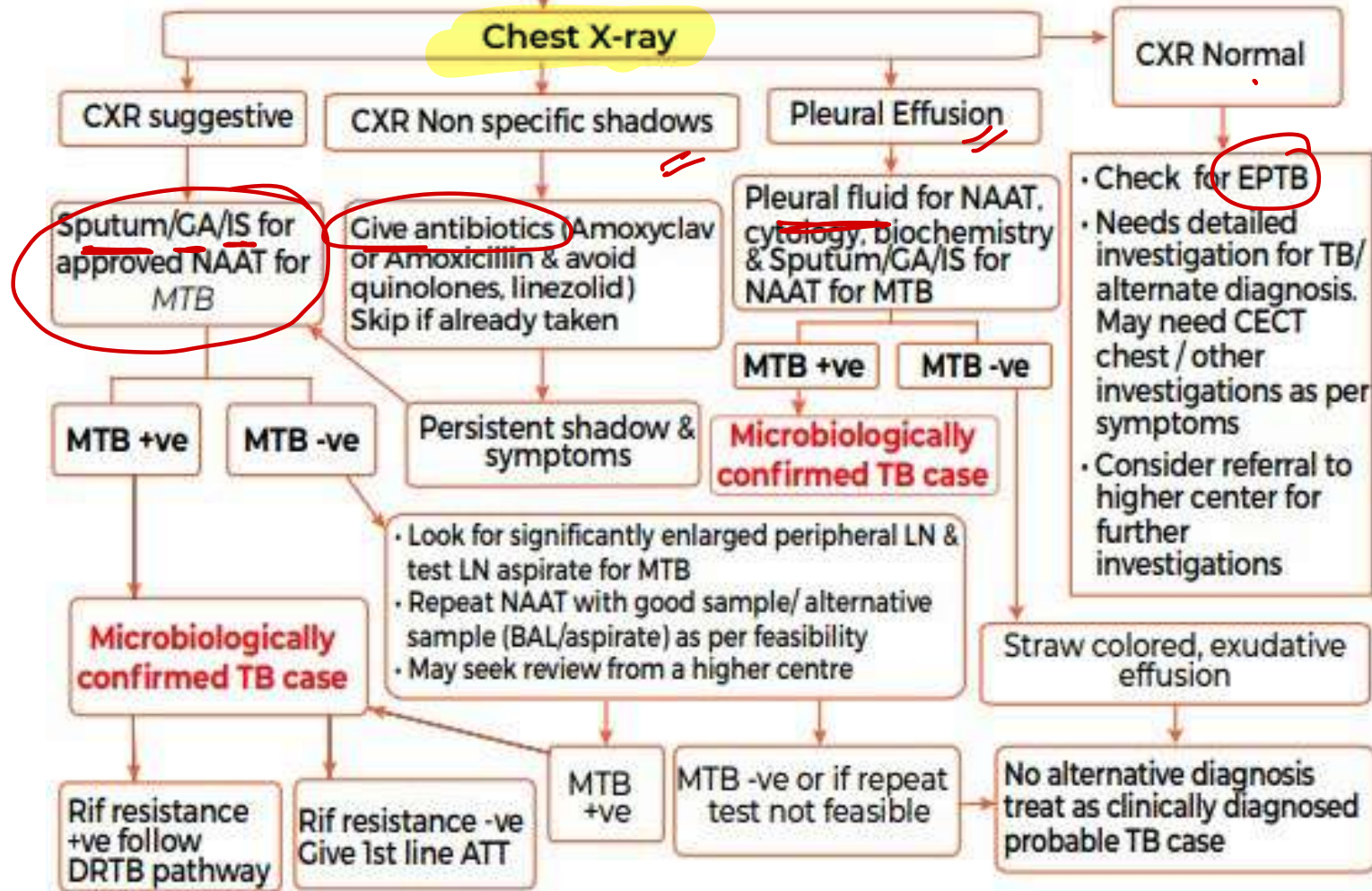
- A. Sputum CBNAAT
- B. Chest X ray**
- C. Smear microscopy
- D. Mantoux test

NTEP

ALGORITHM FOR PEDIATRIC INTRATHORACIC TB AMONG CHILDREN WITH NO RISK FACTORS FOR DRUG RESISTANCE

- Persistent Fever ≥ 2 weeks, without a known cause and/or
- Unremitting cough for ≥ 2 weeks and/or
- Weight loss $\geq 5\%$; or no weight gain in past 3 months despite adequate nutrition; or failure of nutritional rehabilitation in babies with SAM
- With or without contact with patient with Pulmonary TB in past 2 years

NTEP



Sputum/GA/IS for approved NAAT for MTB

Give antibiotics (Amoxyclav or Amoxicillin & avoid quinolones, linezolid) Skip if already taken

Pleural fluid for NAAT, cytology, biochemistry & Sputum/GA/IS for NAAT for MTB

Check for EPTB
Needs detailed investigation for TB/ alternate diagnosis. May need CECT chest / other investigations as per symptoms
Consider referral to higher center for further investigations

Microbiologically confirmed TB case

Microbiologically confirmed TB case

Rif resistance +ve follow DRTB pathway

Rif resistance -ve Give 1st line ATT

MTB +ve

MTB -ve or if repeat test not feasible

No alternative diagnosis treat as clinically diagnosed probable TB case

39. Components evaluated in Sample Registration System (SRS):

- 1. Crude Birth Rate ✓
- 2. Crude Death Rate ✓
- 3. Infant Mortality Rate ✓
- 4. Maternal Mortality Ratio ✓

A. 1,2,3,4

B. 1,2,3

C. 1,2,4

D. 3,4

Survey systems:

Census

Last:

SRS-CBR, CDR, MMR, IMR

VITALS

DUAL LEVEL: *state / govt*

6 mon
~~*-1 yr*~~

NFHS

Last:

Civil registration survey:

Birth/death:

40. Which scheme was originally launched to address rural housing in India?

- A. Rajiv Gandhi Shramik Kalyan Yojana → unemployment ~ 2 yrs - 50%
- B. Pradhan Mantri Kaushal Vikas Yojana → adolescents - vocational
- C. Rashtriya Krishi Vikas Yojana → agriculture.
- ~~D. Pradhan Mantri Awaas Yojana - Gramin (PMAY-G)~~

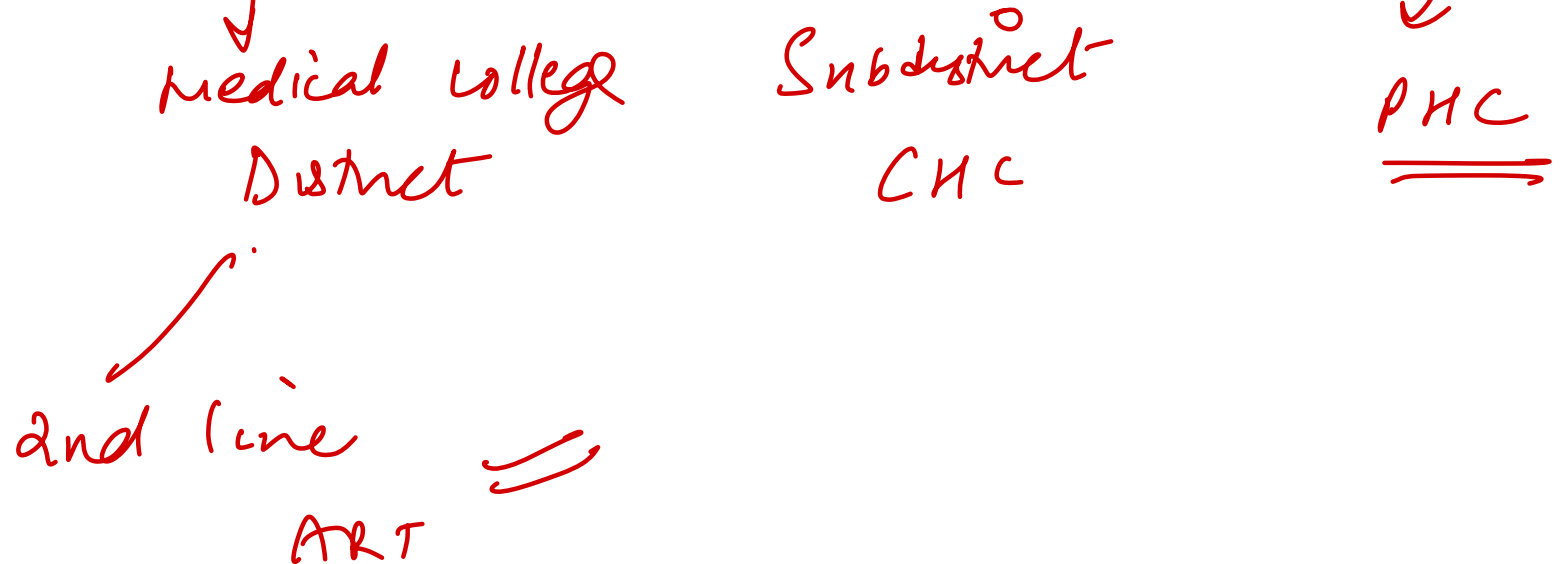
41. Which of the following correctly describes the hierarchy of NACO ART centres from highest to lowest level according to their organisational structure?

A. ART Centre → Link ART Centre → ART Plus Centre → Centre of Excellence

B. Centre of Excellence → ART Plus Centre → ART Centre → Link ART Centre

C. ART Plus Centre → Centre of Excellence → ART Centre → Link ART Centre

D. Link ART Centre → ART Centre → ART Plus Centre → Centre of Excellence



42. Plasma homocysteine levels are measured in patients with acute coronary syndrome who are treated at a large community hospital. The mean plasma homocysteine level in this group is determined to be $11.1 \mu\text{mol/L}$ with a standard deviation of $1.2 \mu\text{mol/L}$. In a separate group of patients, the mean plasma level is $9.5 \mu\text{mol/L}$ and the standard deviation is $1.3 \mu\text{mol/L}$. Which of the following statistical methods should be used to compare the mean homocysteine levels of these 2 groups of patients?

A. Two-sample t test

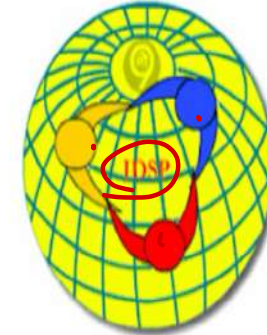
B. Linear regression

C. Correlation coefficient

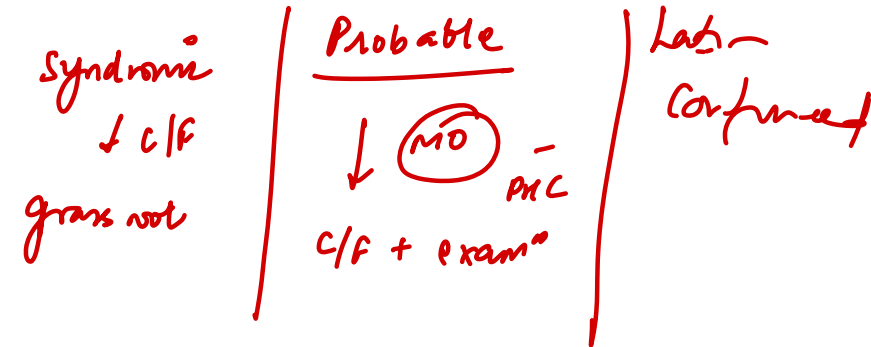
D. Chi-square test

43. Which of the following statements regarding the following program is CORRECT?

- A. It was started in ~~2010~~ ²⁰⁰⁴ for control of non-communicable diseases and monthly data reporting
- B. Syndromic surveillance is conducted by medical officers, diagnosing based on history and examination
- C. Conducts weekly surveillance reporting and focuses on epidemic-prone diseases
- D. Laboratory surveillance is done by health workers using field surveys



QQ



44. A researcher is comparing three different groups with non-normally distributed data and small sample sizes. Which of the following tests is best suited for analyzing this non-parametric data? (INICET NOV 2020)

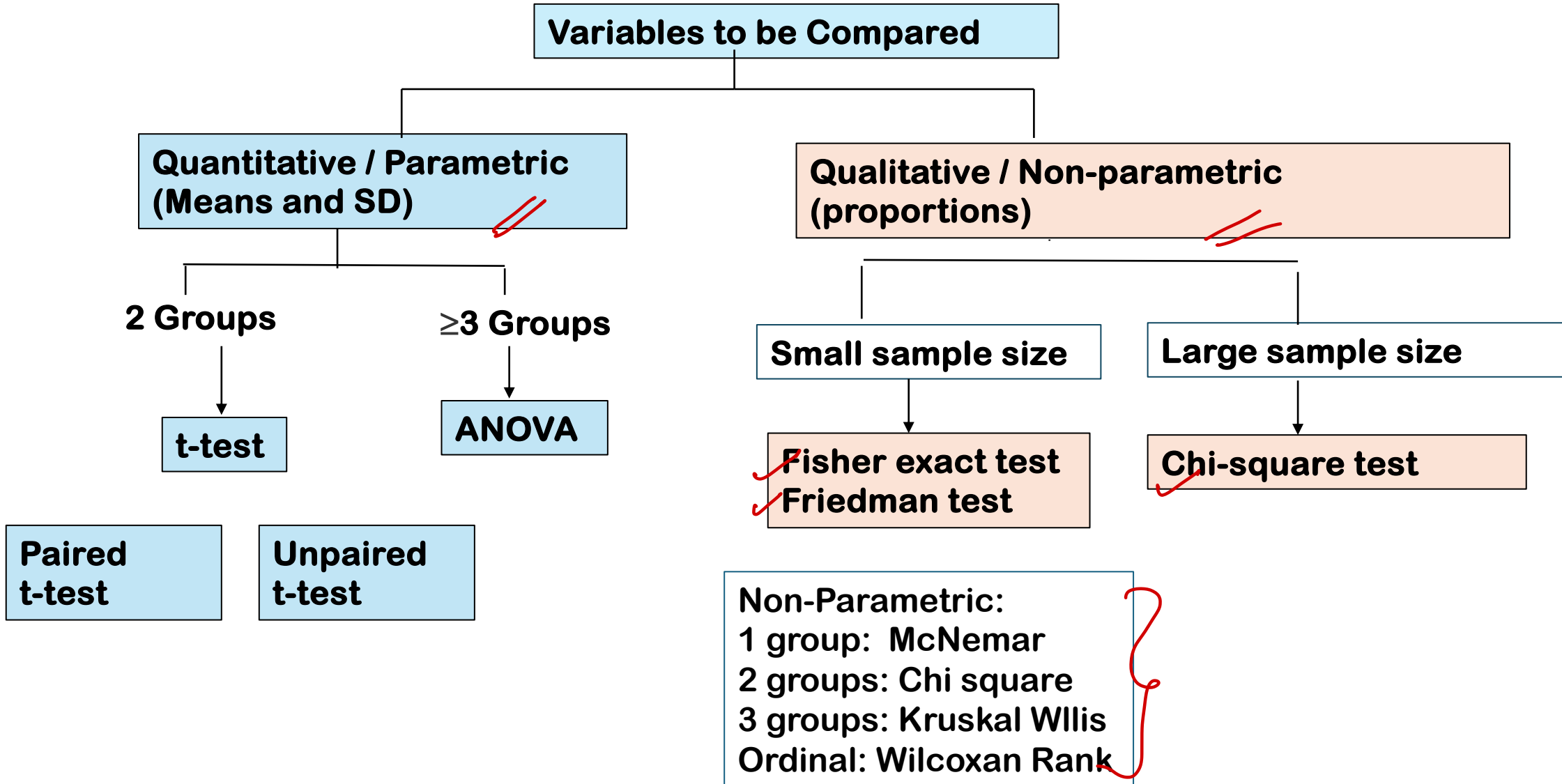
A. Student t test ✗

B. Friedman test

C. ANOVA ✗

D. Pearson

Tests of significance



45. Which of the following is an example of cyclopropagative biological transmission in vectors?

A. Plasmodia in Anopheles

B. Yellow fever in Aedes

C. Microfilaria in Culex

D. Plague in rat flea

Category	Mode	Example
Direct zoonoses	Direct contact/fomite/mechanical vector	Rabies, Trichinosis, Brucellosis
Cyclozoonoses	More than one vertebrate host is needed to complete the developmental cycle.	Human taeniasis, Echinococcosis
Metazoonoses	Transmitted by invertebrate vectors-develops / multiplies	Arboviral infections, Plague, Schistosomiasis
Saprozoonoses	Has both a vertebrate host and a non-animal (food, soil, plants) developmental reservoir.	Various forms of larva migrans and mycoses

Anthropozoonoses: Rabies, plague, hydatid

Zooanthroponoses: TB to cattle

Amphixenosis: T.cruzi, S.japonicum

Types of Transmission in Vectors

1. Propagative

- only multiplies in the vector and there is no change in form.

- **Example:** Plague bacilli in rat fleas, YF in Aedes

2. Cyclo-propagative

- The agent changes in both form and number.

- **Example:** Malarial parasites in mosquitoes.

3. Cyclo-developmental

- The agent undergoes only developmental changes and not multiplication.

- **Example:** Microfilaria in mosquitoes.

4. Transovarial

- Infectious agent is transmitted vertically in the vector, from parent to progeny.

- **Example:** Rickettsia rickettsii in ticks, Mite in scrub typhus

5. Transstadial

- The infectious agent stays with the vector from one stage of its life cycle to the next.

- **Example:** Borrelia burgdorferi, Indian tick typhus in ticks.

46. A study calculated the correlation coefficient between smoking and lung cancer incidence as 1.4. What does this result indicate? (PSM)

- A. Weak correlation
- B. Moderate correlation
- C. Strong correlation
- D. Mistake in calculation

2 / RR

0-1

∴

47. A study was conducted on two different samples for comparing variation between DBP and Vitamin D. The mean diastolic blood pressure is 110 with standard deviation 11 and the mean vitamin D level is 18 with standard deviation 3. Which of the following statement is true regarding the coefficient of variation (CV)?

A. CV of DBP is more than Vitamin D

B. CV of Vitamin D is more than DBP

C. Both DBP and Vitamin D have equal variability

D. It cannot be ascertained from information provided

$$\frac{11}{110} \times 100 = 10\%$$
$$11\%$$

$$\frac{3}{18} \times 100 = 16\%$$

$$\frac{SD}{\text{Mean}} \times 100$$

48. RDA of calcium for pregnant and breastfeeding mothers are, respectively:

A. 1000 mg and 1000 mg

B. 1000 mg and 1200 mg

C. 1200 mg and 1200 mg

D. 1200 mg and 1000 mg

Summary of RDA for Indians – 2020

Age Group	Category of work	Body Wt (kg)	Protein (g/d)	Dietary Fibre* (g/d)	Calcium (mg/d)	Magnesium (mg/d)	Iron (mg/d)	Zinc (mg/d)	Iodine (µg/day)	Thiamine (mg/d)	Riboflavin (mg/d)	Niacin (mg/d)	Vit B6 (mg/d)	Folate (µg/d)	Vit B12 (µg/d)	Vit C (mg/d)	Vit A (µg/d)	Vit D (IU/d)
Men	Sedentary	65	54.0	32	1000	440	19	17	150	1.4	2.0	14	1.9	300	2.2	80	1000	600
	Moderate			41						1.8	2.5	18	2.4					
	Heavy			52						2.3	3.2	23	3.1					
Women	Sedentary	55	46.0	25	1000	370	29	13	150	1.4	1.9	11	1.9	220	2.2	65	840	600
	Moderate			32						1.7	2.4	14	1.9					
	Heavy			41						2.2	3.1	18	2.4					
	Pregnant woman	55 + 10	+9.5 (2nd trimester) +22.0 (3rd trimester)	-	1000	440	27	14.5	250	2.0	2.7	+2.5	2.3	570	+0.25	+15	900	600
	Lactation 0-6m		+17.0	-	1200	400	23	14	280	2.1	3.0	+5	+0.26	330	+1.0	+50	950	600
7-12m		+13.0	-	1200	400	23	14	280	2.1	2.9	+5	+0.17	330	+1.0	+50	950	600	
Infants	0-6 m*	5.8	8.0	-	300	30	-	-	100	0.2	0.4	2	0.1	25	1.2	20	350	400
	6-12m	8.5	10.5	-	300	75	3	2.5	130	0.4	0.6	5	0.6	85	1.2	30	350	400
Children	1-3 y	12.9	12.5	15	500	90	8	3.3	90	0.7	1.1	7	0.9	120	1.2	30	390	
	4-6 y	18.3	16.0	20	550	125	11	4.5	120	0.9	1.3	9	1.2	135	1.2	35	510	600
	7-9 y	25.3	23.0	26	650	175	15	5.9	120	1.1	1.6	11	1.5	170	2.2	45	630	
Boys	10-12 y	34.9	32.0	33	850	240	16	8.5	150	1.5	2.1	15	2.0	220	2.2	55	770	600
Girls	10-12 y	36.4	33.0	31	850	250	28	8.5	150	1.4	1.9	14	1.9	225	2.2	50	790	600
Boys	13-15 y	50.5	45.0	43	1000	345	22	14.3	150	1.9	2.7	19	2.6	285	2.2	70	930	600
Girls	13-15 y	49.6	43.0	36	1000	340	30	12.8	150	1.6	2.2	16	2.2	245	2.2	65	890	600
Boys	16-18 y	64.4	55.0	50	1050	440	26	17.6	150	2.2	3.1	22	3.0	340	2.2	85	1000	600
Girls	16-18 y	55.7	46.0	38	1050	380	32	14.2	150	1.7	2.3	17	2.3	270	2.2	70	860	600

* Adequate Intake (AI)

49. Which of the following is TRUE regarding standard housing criteria in community medicine?

- A. Cattle should be housed within 25 metres of residential areas
- B. Water source should be located at a distance greater than 500 metres
- C. Window area should be at least $\frac{1}{5}$ th of floor area
- D. More than two persons sharing a room must have less than 40 sq ft per person

Housing criteria:

Water source: < 50 metres

•Door area: > $\frac{1}{5}$ th of floor area

•Window area: > $\frac{1}{5}$ th of floor area

Overcrowding

Gender:

2 persons, age > 9 years, of opposite gender, sharing same room (**except husband & wife**)

Space:

1 person: < 70 ft²

2 persons: < 110 ft²

≥ 3 persons: Add 40 ft² per person

50. Identify the incorrect pair of population norm:

A. Nurse - 1/5000 ✓

B. Pharmacist - 1/10000 ✓

C. Health assistant - 1/50000

D. Doctor - 1/1000 ✓

1/30k.

Suggested norms for health personnel

Category of personnel	Norms suggested
1. Nurses	1 per 5,000 population
2. Health workers female and male	1 per 5,000 population in plain area and 3,000 population in tribal and hilly areas.
3. Trained dai	One for each village
4. Health assistants (male and female)	1 per 30,000 population in plain area and 20,000 population in tribal and hilly areas. Provides supportive supervision to 6 health workers (male / female).
5. Pharmacists	1 per 10,000 population
6. Lab. technicians	1 per 10,000 population
7. ASHA	1 per 1,000 population

Doctor 1/1000 2/1000

51. Identify the correct statements:

1. Influenza and pneumococcal vaccines are advocated in the elderly. HPV

2. Strict isolation is advised for Measles, Varicella, Influenza, Nipah virus and ~~CJD~~ *Prion*

3. Applied Nutrition program supplying seeds and manure at village level is funded by UNICEF

4. Dixon's Q test is primarily used to detect outliers. *Q*

A. 1,2,3,4

B. 1,3,4

C. 2,3

D. 1,2,3

52. According to NUHM, arrange the following in the correct order as per population covered from highest level to lowest.

1. Urban Primary Health Centre
2. Urban Community Health Centre
3. Auxiliary Nurse Midwife ✓
4. Urban Social Health Activist
5. Mahila Arogya Samiti

- A. 3, 1, 2, 4, 5
- B. 1, 2, 3, 4, 5
- C. 5, 4, 3, 1, 2
- D. 2, 1, 3, 4, 5

2-1-3-4-5

53. Which among the following is considered the best method for removal of permanent hardness of water?

A. Boiling ✓

B. Addition of lime ✓

C. Addition of sodium carbonate ✓

D. Permutit process ✓

= ion exchange

~~Carbonates~~

54. During a study on the effect of smoking on life expectancy, the correlation coefficient was found to be 0.60. What is the coefficient of determination for this study? 0.60

A. 0.6

B. 0.36

C. 0.4

D. 1.2

$$r^2$$

$$(0.6)^2$$

55. Which of the following statement is true about Oxidation Pond?

- A. Aerobic during day time and anaerobic during night time**
- B. Anaerobic during day time and aerobic during night time**
- C. Anaerobic during day time and night time**
- D. Aerobic during day time and night time**

56. Identify the correct statements?

1. Rabies is an example of amphixenosis ~~xx~~
2. A disease whose pathogenic response is higher in children compared in adults is defined as hyperendemic disease
3. Most efficient to control urban malaria is environmental control of larva
4. $CBR \approx (8 \times TFR) + 1$

A. 1, 2, 3, 4

B. 1, 2

C. 3, 4

D. 1, 3, 4

↑↑ all ages

whole

holo endemic?

57. Identify the correct statements

1. The best method for a Pap smear fixation is air ~~fixation~~. ethyl alcohol
2. The highest risk period for the development of congenital varicella syndrome in a fetus is when the mother is infected between 13 and 20 weeks of gestation. (T)
3. ~~Surveillance~~ is the performance and analysis of routine measurements while monitoring is the continuous analysis of systematically collected data. surveillance
4. 0.5-3 microns is the most dangerous size of particles for causing pneumoconiosis. (T)

A. 1,2,3,4

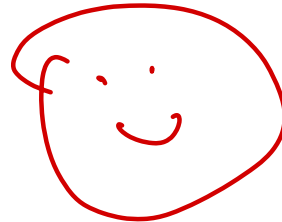
B. 2,3

C. 1,3

D. 2,4

58. A surveillance study is conducted to assess the long-term efficacy and safety of a drug currently being used to treat patients with heart failure. Researchers enroll ~~8,300~~ patients with heart failure. The patients receive the drug once daily for 6 months. The results show significant clinical improvement, but severe hypernatremia is observed in 23 patients. The study publication recommends a lower dose of the drug in patients with baseline normonatremia and hypokalemia to prevent hypernatremia. Which of the following best characterizes this type of study

- A. Phase 1 clinical trial
- B. Phase 2 clinical trial
- C. Phase 3 clinical trial
- ~~D. Phase 4 clinical trial~~



59. Which of the following is the most important step in the secondary treatment of sewage in a sewage treatment plant (STP)?

A. Screening

B. Grit chamber

C. Aeration


D. Sludge digestion

Sewage Treatment Plant (STP)

Primary Treatment

- Screening .
- Grit chamber .
- Primary sedimentation .

Secondary Treatment

- **Aeration (most important step)-Activated sludge** → 
- Secondary sedimentation
- **Sludge digestion: Anaerobic digestion** →
- **Effluent disposal**

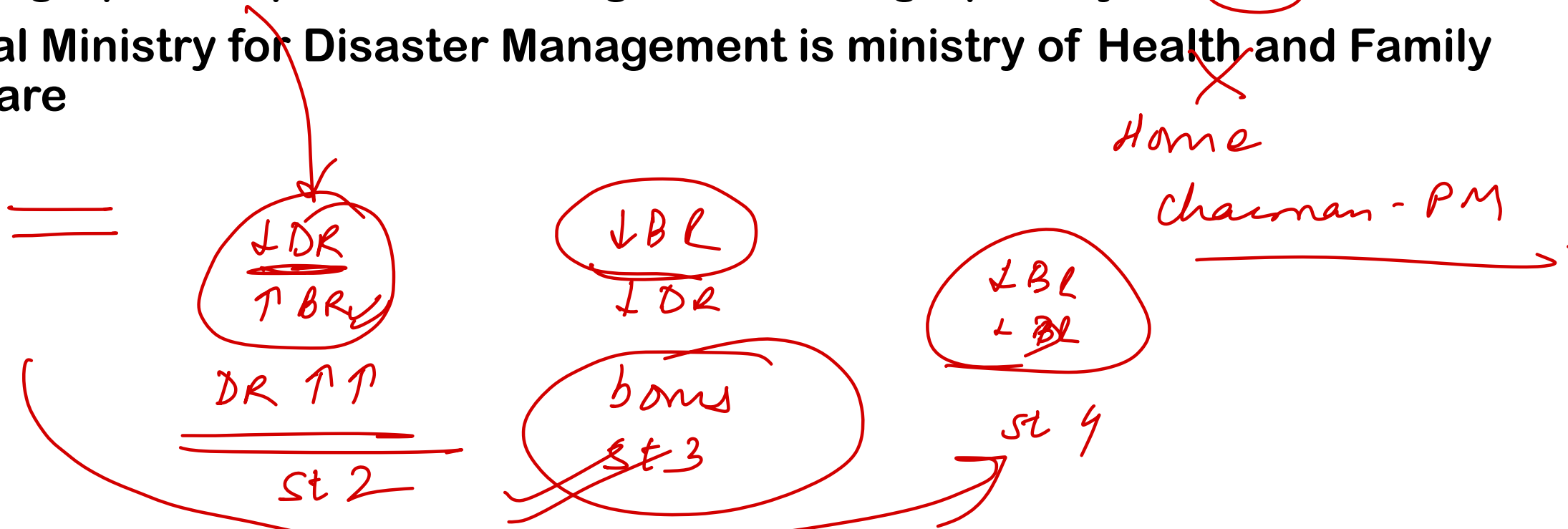
Biological Oxygen Demand (BOD) //

Amount of oxygen required for microbial metabolism of organic compounds at **20°C** for **100 g sewage in 5 days**.

➤ 500 mg/L: Strong

60. . Identify the incorrect statement

- A. Rideal-Walker Coefficient (RWC) is used to represent the germicidal power of a disinfectant. Q T phenol
- B. For workrooms with exposure to contaminants, the minimum recommended number of air changes per hour is 4-6 to maintain air quality and protect worker health. T
- C. Demographic trap is seen in Stage 2 of demographic cycle. T
- D. Nodal Ministry for Disaster Management is ministry of Health and Family Welfare



61. Which of the following solid waste disposal methods is characterized by layering municipal garbage with night soil, dung, and earth to undergo anaerobic digestion over time?

A. Landfill ✓

B. Incineration ✓

C. Pulverization ✓

D. Bangalore method

= Composting

62. All of the following apply to health propaganda except

A. Knowledge and skills instilled in the minds ✓

~~B. Reflective behavior is promoted~~

C. Appeals to emotion

D. Process is information centered

Education	Propaganda
Knowledge and skills actively acquired.	Knowledge instilled in the minds of people.
Makes people think for themselves.	Prevents or discourages thinking by ready-made slogans.
Disciplines primitive desires.	Arouses and stimulates primitive desires.
Develops reflective behaviour. Trains people to use judgement before acting.	Develops reflexive behaviour, aims at impulsive actions.
Appeals to reason.	Appeals to emotion.
Develops individuality, personality and self-expression.	Develops a standard pattern of attitudes and behaviours according to the mould used.
Knowledge acquired through self-reliant activity.	Knowledge is spoon-fed and passively received.
The process is behaviour-centred – aims at developing favourable attitudes, habits and skills.	The process is information-centred – no change of attitude or behaviour designed.

16%

63. Which of the following is NOT used to express the strength of sewage?

- A. E. Coli Count *- fecal contaⁿ*
- B. Suspended particles ✓
- C. Chemical oxygen demand ✓
- D. Biological oxygen demand ✓

64. Under the National Programme for Control of Blindness & Visual Impairment (NPCBVI), NGO eye hospitals are classified as:

A. Primary level centres

B. Secondary level centres

C. Tertiary level centres

D. Intermediate level centres

- Primary level centres include sub-district hospitals, community health centres (CHC).
- Secondary level centres include district hospitals and NGO eye hospitals.
- These centres provide services such as cataract surgery, other common eye surgeries, refraction, and referral services.
- Tertiary level centres are apex and regional institutes, medical colleges, and centres of excellence providing specialized eye care like retinal surgery, glaucoma surgery, and training.

↓
RPC, AIIMS

65. You are conducting a survey to investigate the prevalence of hypertension in a community. The data collected from individuals shows an association between obesity, decreased physical activity, and hypertension. Which of the following best describes this type of study?

rule out-

A. Ecological study

B. Case series

C. Cross-sectional study

D. Cohort study

66. A research laboratory develops a new serologic test for detecting prostate cancer. The new assay is compared to biopsy. It is found that the test result is negative in 95% of patients who do not have the disease. If the new assay is used on 8 blood samples taken from patients without prostate cancer, what is the probability of all 8 test results coming back negative?

A. 0.05×8

B. 0.95×8

C. 0.05 (raised to power 8)

D. 0.95 (raised to power 8)

-ve 0 | | | | | | |

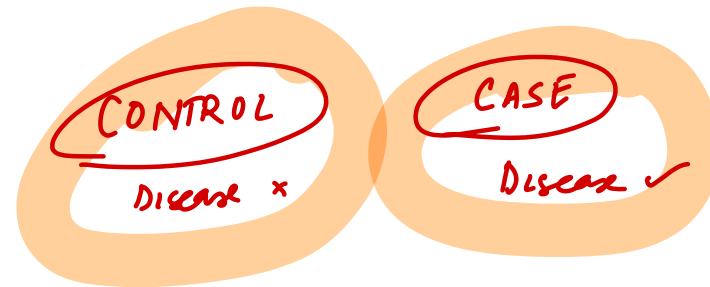
$(0.95)^8$

Rule	Keywords to watch
Addition	OR , mutually exclusive ✓
Multiplication	AND , independent events

Rule	Description	Example
The Addition Rule ✓	(p) of any one of several particular events occurring = the sum of their individual probabilities , provided the events cannot both happen and are mutually exclusive .	Probability of picking a heart card from a deck is 0.25 and that of picking a club is 0.25. Thus the p (hearts or clubs) is $0.25 + 0.25 = 0.50$.
The Multiplication Rule -	(p) of two or more statistically independent events all occurring = product of their individual probabilities .	If the lifetime probability of a person developing a lung neoplasm is 0.25 and the lifetime probability of developing dementia is 0.01, then the p (lung neoplasm and dementia) is $0.25 \times 0.01 = 0.0025$.

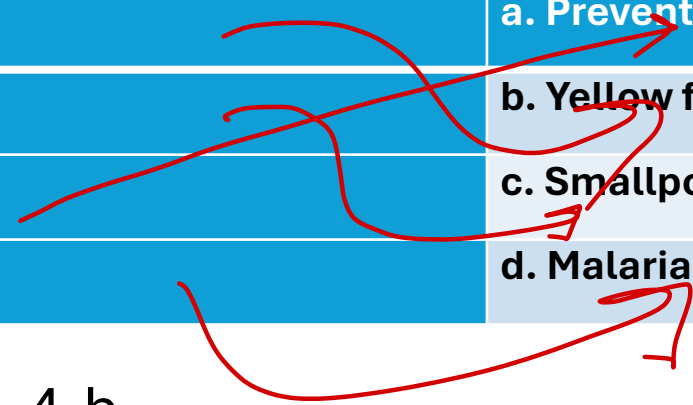
67. Many children from a particular community coming to a hospital were detected to have acute lymphoblastic leukemia (ALL). It was assumed that it is due to the presence of cytotoxic waste in the water of that community. If a case-control study has to be done to find whether the chemical and ALL are associated, what will be taken as the control?

- A. Children from the ~~area exposed~~, but unaffected with the disease
- B. Children from the ~~area not exposed~~ and affected with the ~~disease~~
- C. Children coming to your OPD, who do not have the disease
- D. All children with ~~ALL~~ irrespective of exposure status



68. Match the following scientists with their discoveries:

1. Walter Reed	a. Prevention of scurvy by citrus fruits
2. Edward Jenner	b. Yellow fever
3. James Lind	c. Smallpox vaccination
4. Ross	d. Malaria caused by Anopheles



A) 1-a, 2-d, 3-c, 4-b

B) 1-b, 2-d, 3-c, 4-a

C) 1-c, 2-b, 3-a, 4-d

D) 1-b, 2-c, 3-a, 4-d

69. According to a study, pure vegetarians had a lower incidence of colon cancer than non-vegetarians, and this led researchers to the conclusion that beta-carotene is protective against cancer. This may not be the case since vegetarian subjects may be eating a high-fiber diet that lowers their risk of developing cancer. This is an illustration of:

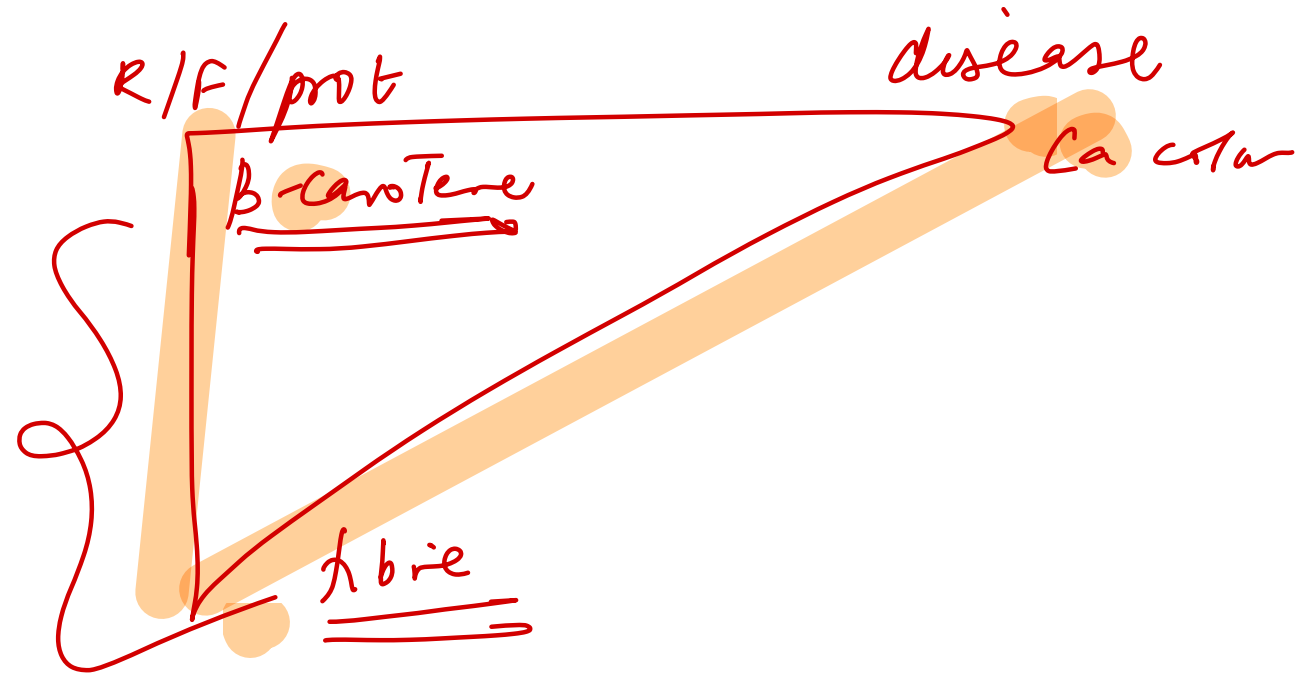
A. Multifactorial causation

B. Causal association *Hill's*

C. Confounding factor

D. Common association

Pyg



70. 25 year old A patient who is set to travel to a typhoid endemic region in 10 days seeks your advice on vaccination. What should you recommend?

~~A. Vi Polysaccharide vaccine~~

B. Ty21a Vaccine 1 wk — 1 wk

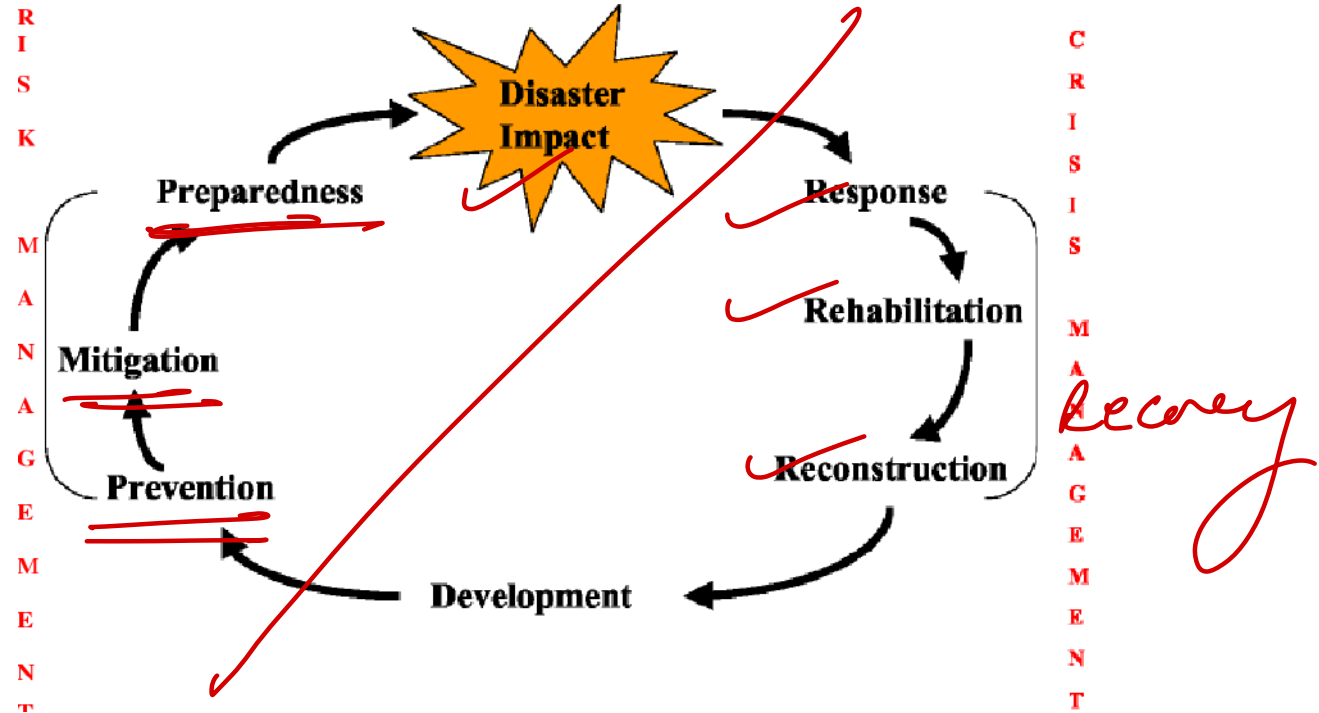
C. Any of these can be taken

D. Ask the patient to delay the travel plan, as both vaccines need at least 4 weeks for conferring protection

71. Arrange the following disaster management steps in the correct sequential order:

- A) Response ✓
- B) Preparedness ✓
- C) Recovery ✓
- D) Mitigation ✓
- E) Prevention ✓

- A. E, D, B, A, C
- B. A, B, C, D, E
- C. C, A, B, D, E
- D. D, E, B, A, C



E, D, B, A, C

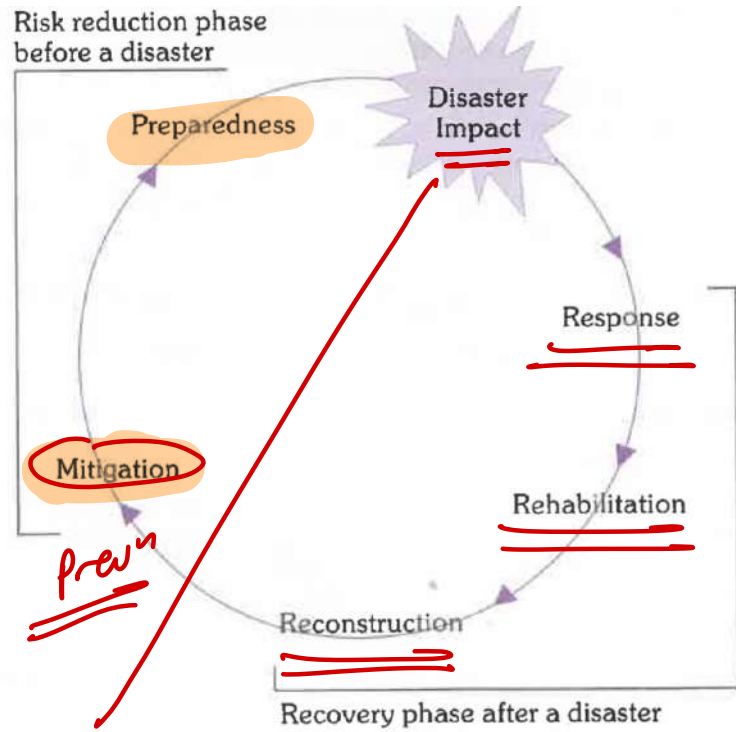


FIG. 1

Management sequence of a sudden-onset disaster

72. An investigator is studying the frequency of polycythemia in a population of a remote, mountainous region. A representative sample of 100 men shows a normal distribution of hemoglobin concentration with a mean concentration of 17g/dl and a standard error of 0.1 g/dl. Which of the following best represents the probability that a subject will have a hemoglobin concentration greater than 18 g/dL?

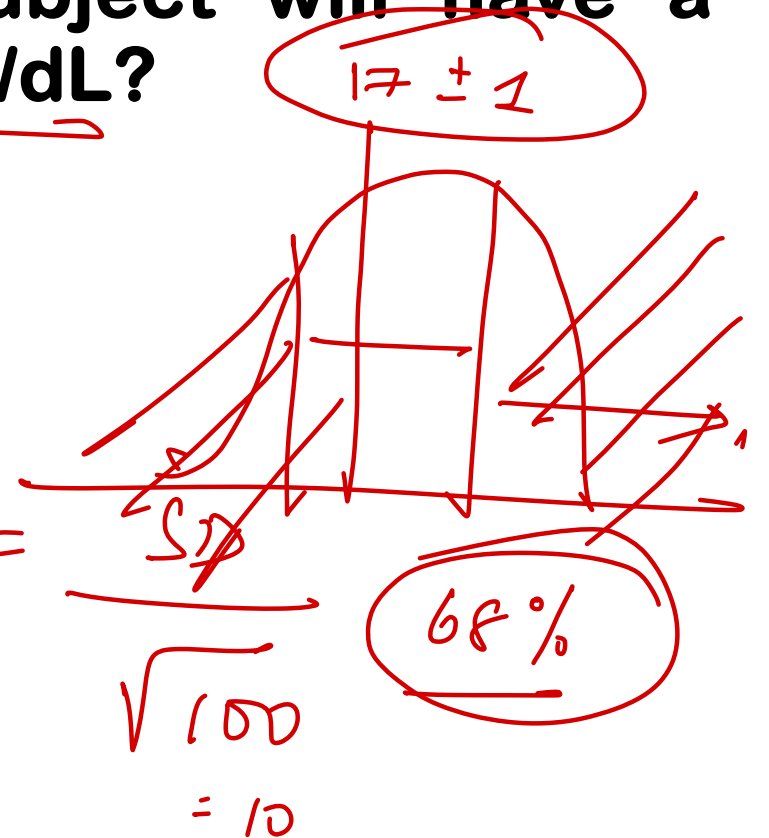
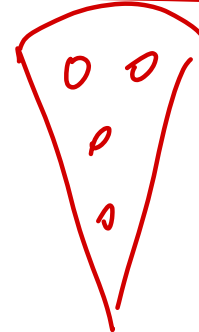
- A. 30%
- ~~B. 16%~~
- C. 95%
- D. 99%

9 100
- 68
32

$$SE = \frac{SD}{\sqrt{n}}$$

0.1 = $\frac{SD}{\sqrt{100}}$

SD = 1



73. Which of the following is the most peripheral centre under the Revised National Tuberculosis Control Programme organization structure?

NTEP

- A. District TB centre *X*
- B. Intermediate Reference Laboratory *X*
- C. Tuberculosis Unit *X*
- X* D. Designated Microscopy Centre

MOHFW .

CENTRAL TB DIVISION ✓

STATE TB CELL ✓

DISTRICT TB CENTRE ✓

TB UNIT: 1/1.5-2.5lakh

MO-TC

STS-Senior TB supervisor

STLS-Senior TB Lab Supervisor

DMC: 1/50K-1LAKH

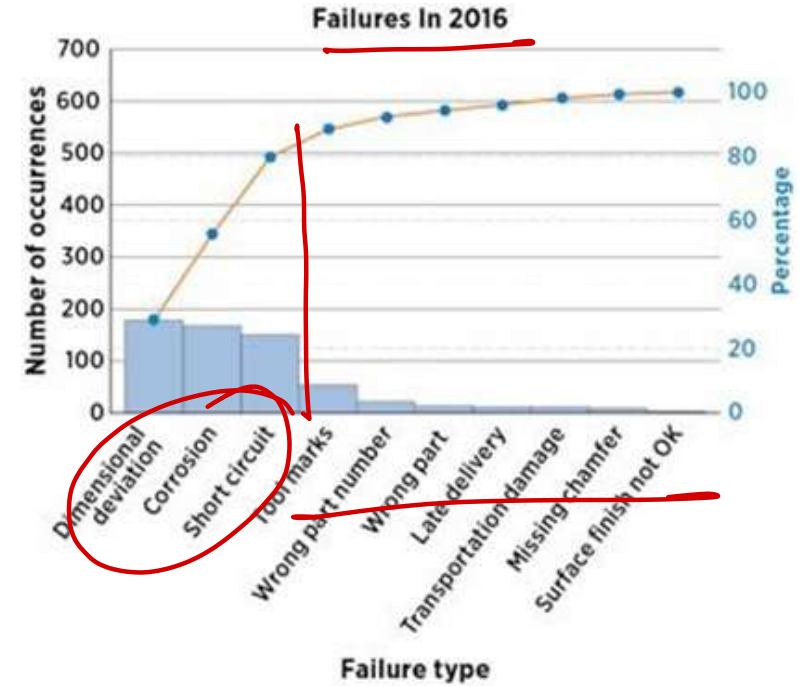
PHI

PHI

74. Identify the image:

- A. Ishikawa chart
- B. Funnel plot
- C. Pareto plot**
- D. Delphi plot

80%
- 20% ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓



75. Which of the following is NOT one of the six key interventions under the Anaemia Mukt Bharat strategy?

- A. Periodic Deworming for children aged 1–19 years ✓
- B. Intensified year-round Behaviour Change Communication (BCC) Campaign ✓
- C. To rule out thalassemia in all anemic patients using HPLC ✗
- D. Testing and Treatment of Anaemia using digital hemoglobinometers ✓



ANEMIA MUKHT BHARAT

6x6x6 STRATEGY



Children, 6–59 months of age



Adolescent girls and boys (10–19 years of age)



Pregnant women



Children, 5–9 years of age



Women of reproductive age (20–24 years of age)



Lactating mothers (of 0–6 months child)

6

Beneficiaries



6 Interventions

Prophylactic Iron Folic Acid Supplementati^on ✓



Deworming ✓



Intensified year-round Behaviour Change Communication Campaign (Solid Body, Smart Mind) including ensuring delayed cord clamping ✓



Texting of Anemia using digital methods and point of care treatment ✓



Mandatory Provision of Iron Folic Acid fortified foods in public health programmes ✓



Addressing non-nutritional causes of anemia in endemic pockets, with special focus on malaria, haemoglobinopathies and fluorosis ✓



6 Institutional Mechanisms



National Anemia Mukht Bharat Unit



Intra Ministerial Coordinaion



Strengthening Supply Chain and Logistics



Convergence with Other Ministries



National Centre of Excellence and Advanced Research on Anemia Control



Anemia Mukht Bharat Dashboard and Digital Portal – One Stop Shop for Anemia

*1076
10 Any
4000
alishu
stc*

76. What is the correct sequence of steps in a randomized controlled trial?

- A. Blinding
- B. Randomization
- C. Defining inclusion and exclusion criteria ✓
- D. Statistical analysis

A. CABD

B. CBAD

C. ABCD

D. DCBA

C - (B) - A - D
=

77. All of the following are components of IHCI (India Hypertension Control Initiative) except:

A. Availability of recommended protocol drugs

B. 25 X 25 goal includes reducing prevalence of hypertension by 25%

~~C. Provides medication for 60 days to all beneficiaries~~

D. Use of "Simple App" for real-time BP monitoring

new Q

↓ premature mortality by 2025

30d

78. A patient with leprosy comes to the primary health centre with multiple cuts and abrasions on his feet. He reports having reduced sensation in his feet. Which of the following is incorrect regarding govt. incentives for him?

A. The ministry of health and family welfare has sponsored this program

B. Dressing materials and ulcer kits are provided

~~C. Amount of 8000 monthly is provided to all leprosy patients from BPL families~~

D. The district unit will supply the microcellular footwear

8000/-
one time
↓
Sx rehab.

Diagnosis of leprosy (12)

A case of leprosy is diagnosed by eliciting cardinal signs of leprosy through systematic clinical (and wherever required bacteriological) examination. At least one of the following cardinal (unique and very important) signs must be present to diagnose leprosy.

- a. Hypo-pigmented or reddish skin lesion(s) with definite sensory deficit;
- b. Involvement of the peripheral nerves, as demonstrated by definite thickening with loss of sensation and weakness /paralysis of the corresponding muscles of the hands, feet or eyes;
- c. Demonstration of *M. leprae* in the lesions.

A. Main or core indicators for monitoring progress (41)

- (1) The number and rate of new cases detected per 100,000 population per year.
- (2) Rate of new cases with grade-2 disabilities per 100,000 population per year.
- (3) Treatment completion/cure rate.
- (4) Prevalence rate

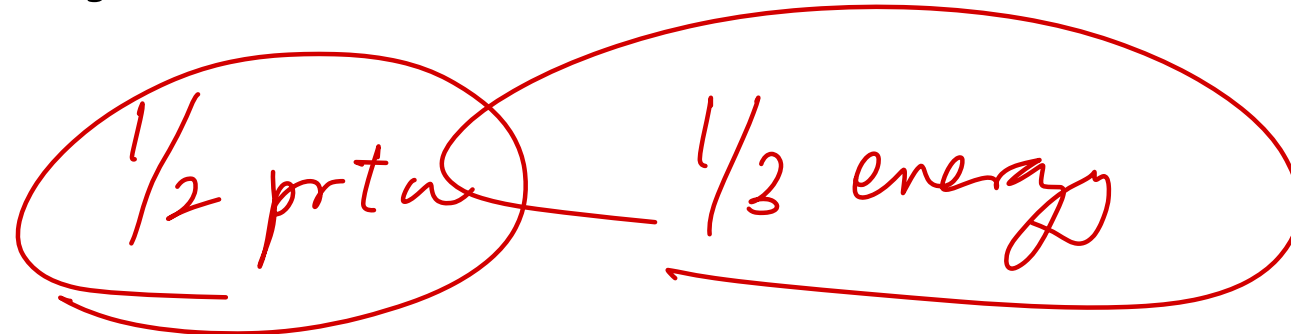
- (3) More emphasis is being given on providing disability prevention and medical rehabilitation (DPMR) services to leprosy affected persons. The aid provided is as follows :
- (a) Dressing materials, supportive medicines and ulcer kits are provided to leprosy affected persons with ulcers and wounds. These services are also provided to leprosy affected persons residing in self settled colonies.
 - (b) Micro-cellular rubber footwear is provided for protection of insensitive feet. 41 NGOs in the country and 42 Government Medical Colleges have been strengthened for providing reconstructive surgery services to leprosy affected persons for correction of their disability, thus totalling to 83 centres for conducting reconstructive surgeries in the country.
 - (c) An amount of Rs. 8,000/- is provided as incentive to each leprosy affected person from BPL family undergoing reconstructive surgery in these identified institutions to compensate for loss of wages.
 - (d) Support is also provided to government institutions/~~PMR~~ centres in the form of Rs 5,000/- per reconstructive surgery conducted.

79. A 34-year-old patient presents with monkeypox and is started on tecovirimat for treatment. Which of the following best describes the mechanism of action of tecovirimat?

- A. Inhibits the formation of intracellular viral forms of orthopoxviruses.**
- ~~B. Targets the viral p37 protein, preventing viral envelopment and systemic spread.~~**
- C. Suppresses the replication of the variola virus within the host cell.**
- D. Inhibits viral entry into host cells by blocking the viral fusion protein.**

80. Given the constraints and the need to ensure minimal nutritional adequacy, what should the minimum supplementation be in the Mid-Day Meal to support the children's needs?

- A. $\frac{1}{3}$ of the total protein requirement + $\frac{1}{2}$ of total energy requirement for minimum 250 days in a year
- B. $\frac{2}{3}$ of the total protein requirement + $\frac{1}{2}$ of total energy requirement for minimum 200 days in a year
- C. $\frac{1}{2}$ of the total protein requirement + $\frac{1}{3}$ of total energy requirement for minimum 200 days in a year (min - 250 days)
- D. $\frac{1}{2}$ of the total protein requirement + $\frac{2}{3}$ of total energy requirement for minimum 250 days in a year



81. Identify the correct statements:

1. Empiriatrics is a term used to describe practice of traditional medicine in rural areas, often using herbal remedies and ancient healing techniques. *travellers.*

2. Bland-Altman test is used to compare a test with the gold standard. *QQ*

According to WHO, the safe limit of radioactivity in drinking water is Beta activity 1Bq /L. *α - 0.5*

3. Congenital glaucoma is not covered under RBSK screening. *T*

A. 1, 2, 3, 4

~~B. 2, 3, 4~~

C. 1, 3

D. 2, 4

α male ~~X~~ 0.5

~~F~~
~~T~~

Identified Health Conditions for Child Health Screening and Early Intervention Services

Defects at Birth

- 1. Neural Tube Defect
- 2. Down's Syndrome
- 3. Cleft Lip & Palate / Cleft Palate alone
- 4. Talipes (club foot)
- 5. Developmental Dysplasia of the Hip
- 6. Congenital Cataract
- 7. Congenital Deafness
- 8. Congenital Heart Diseases
- 9. Retinopathy of Prematurity

Deficiencies

- 10. Anaemia especially Severe Anaemia
- 11. Vitamin A Deficiency (Bitot spot)
- 12. Vitamin D Deficiency (Rickets)
- 13. Severe Acute Malnutrition
- 14. Goiter

Childhood Diseases

- 5. Skin conditions (Scabies, Fungal Infection and Eczema)
- 6. Otitis Media
- 7. Rheumatic Heart Disease
- 8. Reactive Airway Disease
- 9. Dental Caries
- 10. Convulsive Disorders

Developmental Delays and Disabilities

- 21. Vision Impairment
- 22. Hearing Impairment
- 23. Neuro-Motor Impairment
- 24. Motor Delay
- 25. Cognitive Delay
- 26. Language Delay
- 27. Behaviour Disorder (Autism)
- 28. Learning Disorder
- 29. Attention Deficit Hyperactivity Disorder

30. Congenital Hypothyroidism, Sickle Cell Anaemia, Beta Thalassemia (Optional)

Leprosy
TB

32 D

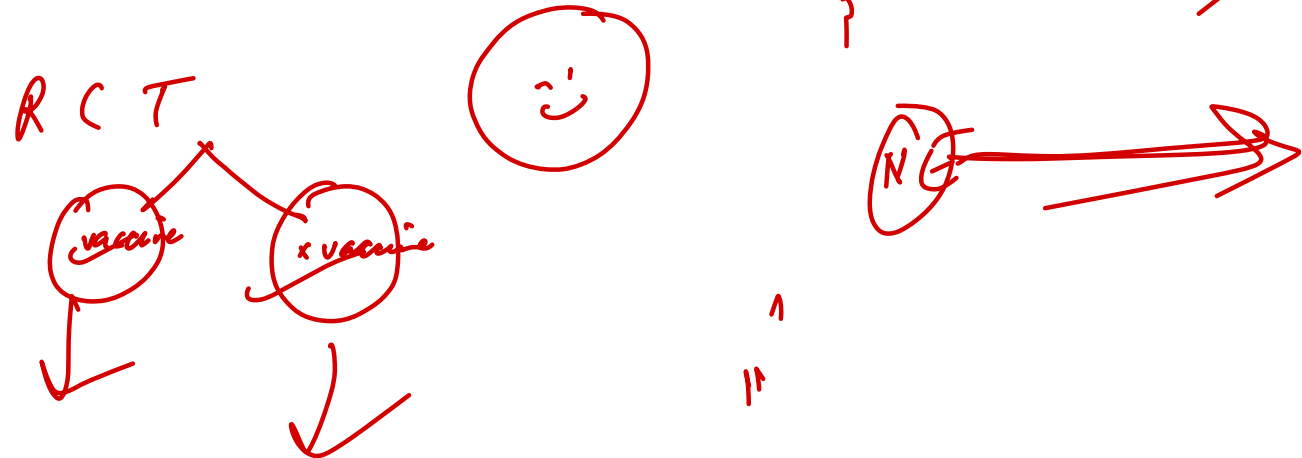
82. A study assessed the association between a new vaccine and traveler's diarrhea (TD). Researchers selected a random sample of people who intended to travel to regions where they were at increased risk for TD and who had received the new vaccine and another independent random sample of people who intended to travel to the same regions and who had not received the new vaccine. These 2 samples of travelers were assessed for the occurrence of TD during the trip and for 7 days after returning home. What is the study design?

A. Prospective cohort

B. Retrospective cohort

C. Case control ~~XX~~

D. RCT ~~XX~~



83. All of the following are direct modes of transmission except:



A. Droplet infection

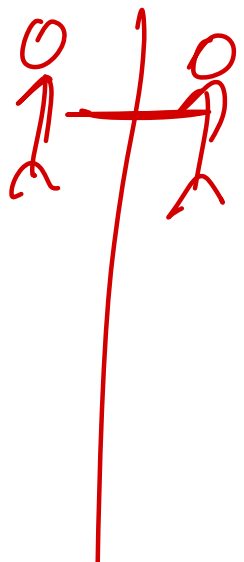
B. Vertical transmission

C. Fomite-borne transmission

D. Contact with soil

QQQ

Direct transmission	Indirect transmission
Droplet transmission-saliva, sneeze, cough (>5um)-travels <60cm	Fomite borne <i>inanimate</i> 
Vertical	Airborne (dust/droplet nuclei)-travels <u>6ft</u> 
Inoculation on skin/mucosa (bite)	Vehicle borne (food/blood/water borne)
Contact with soil: Tetanus, hookworm infection	Vector borne (insects)



84. Match the following research institutes with their corresponding locations:

Column A

a. National JALMA Institute for Leprosy

b. National Institute of Occupational Health (NIOH) *business*

c. National Institute of Epidemiology

d. National AIDS Research Institute (NARI)

Column B

1. Pune

2. Ahmedabad

3. Agra

4. Chennai

A. a-1, b-3, c-2, d-4

~~B. a-3, b-2, c-4, d-1~~

C. a-2, b-4, c-1, d-3

D. a-4, b-1, c-3, d-2

85. Which of the following is a WHO-recommended criterion for drinking water quality?



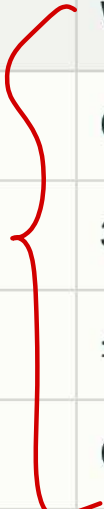
~~A. Lead <0.01mg/dl~~

B. Nitrites less than 20 mg/L

C. Turbidity less than 20 NTU

D. Arsenic less than 0.2 mg/L

Parameter	WHO Recommended Limit
Lead	0.01 mg/L (10 µg/L)
Nitrites	3 mg/L
Turbidity	≤5 NTU
Arsenic	0.01 mg/L (10 µg/L)



86. Which of the following methods would be most suitable for removing microbial contaminants by chemical coagulation and sedimentation from a water body?

- A. Rapid sand filter**
- B. Super chlorination**
- C. Slow sand filter**
- D. RO filter**

Rapid sand filter

Slow sand filter

1. Space	Occupies very little space	Occupies large area
2. Rate of filtration	200 m.g.a.d	2-3 m.g.a.d.
3. Effective size of sand	0.4-0.7 mm	0.2-0.3 mm
4. Preliminary treatment	Chemical coagulation and sedimentation	Plain sedimentation
5. Washing	By back-washing	By scraping the sand bed
6. Operation	Highly skilled	Less skilled
7. Loss of head allowed	6-8 feet (2-2.5 m)	4 feet (1.5 m)
8. Removal of turbidity	Good	Good
9. Removal of colour	Good	Fair
10. Removal of bacteria	98-99 per cent	99.9-99.99 per cent

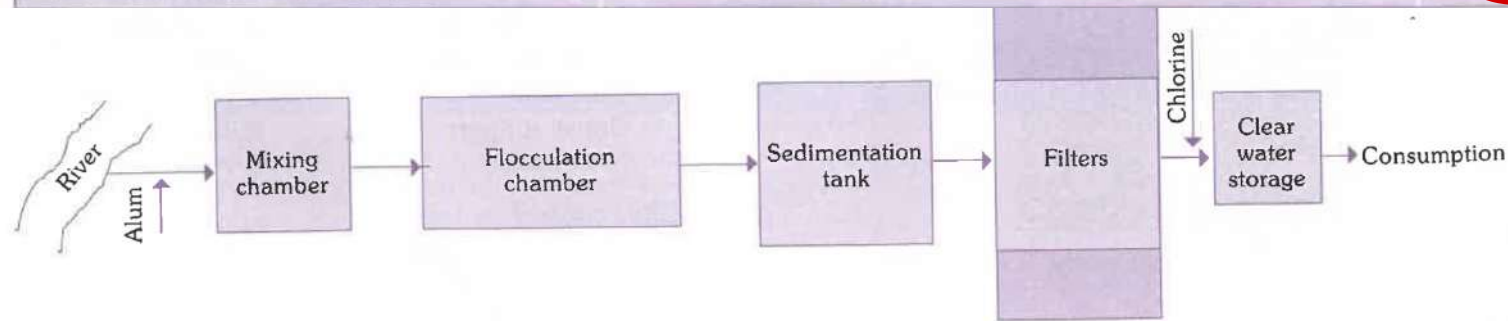


FIG. 6
Flow diagram of a rapid sand filtration plant

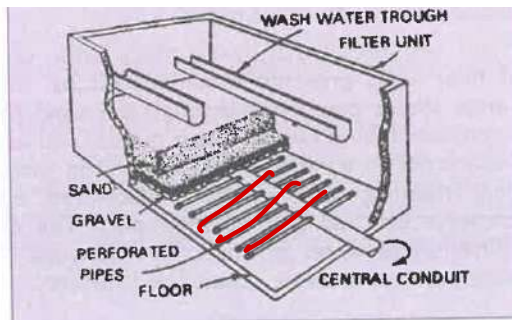
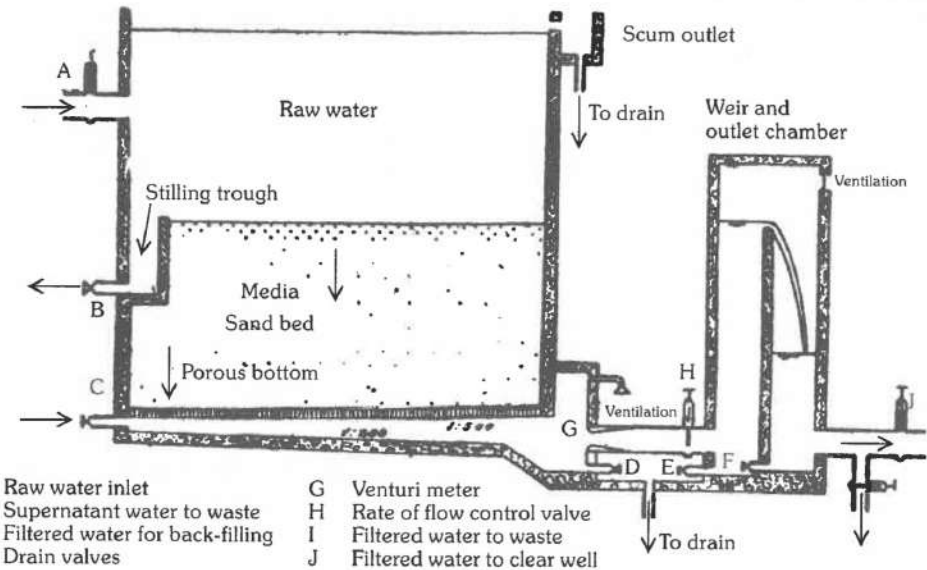


FIG. 7
A view of a rapid sand filter



- | | | | |
|---------|---------------------------------|---|------------------------------|
| A | Raw water inlet | G | Venturi meter |
| B | Supernatant water to waste | H | Rate of flow control valve |
| C | Filtered water for back-filling | I | Filtered water to waste |
| D, E, F | Drain valves | J | Filtered water to clear well |

FIG. 4
Slow sand filter

87. A new estrogen receptor agonist is being evaluated for the treatment of postmenopausal symptoms. A prospective study shows that the drug increases the risk of deep vein thrombosis (DVT) in treated women who smoke compared to untreated women who smoke, with a relative risk (RR) of 1.70 and p-value of 0.01. In nonsmokers, no increased risk of DVT is evident with use of the drug (RR = 0.96; p-value = 0.68). Which of the following describes this phenomenon?

A. Confounding

B. Effect modification

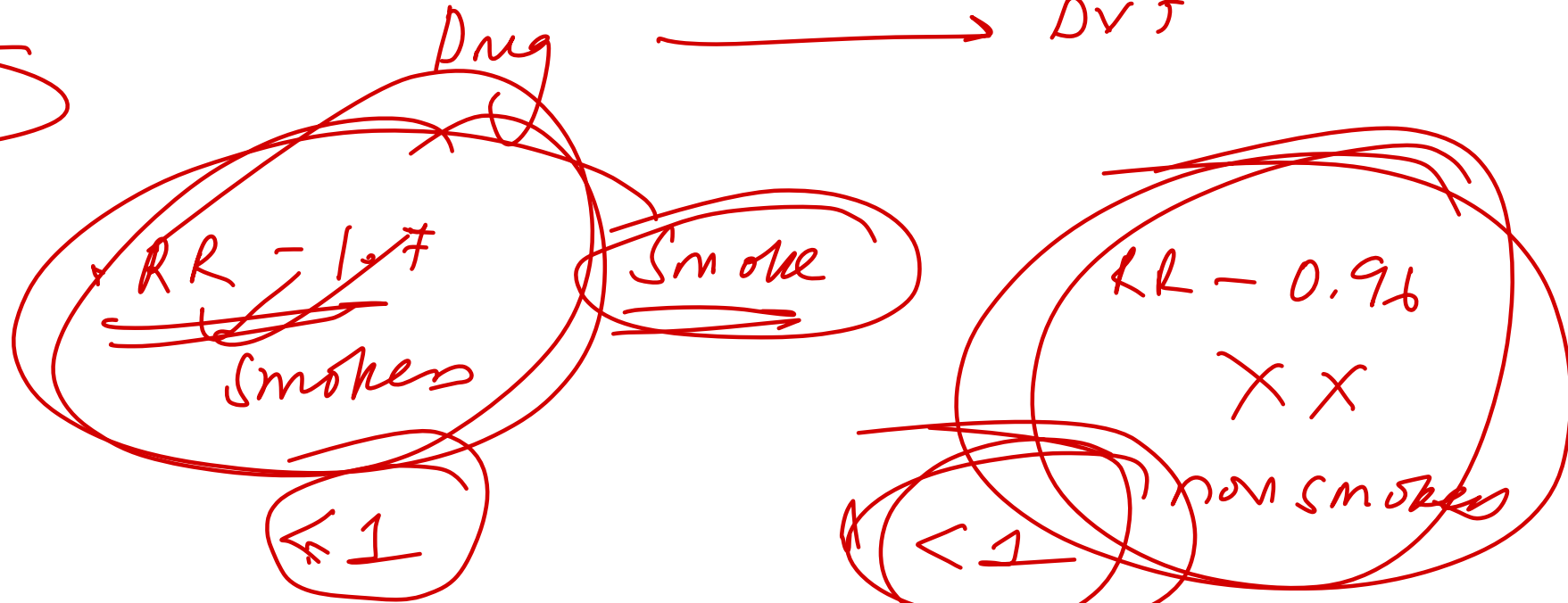
~~C. Lead time bias~~

~~D. Observer bias~~

not significant

VS MLE

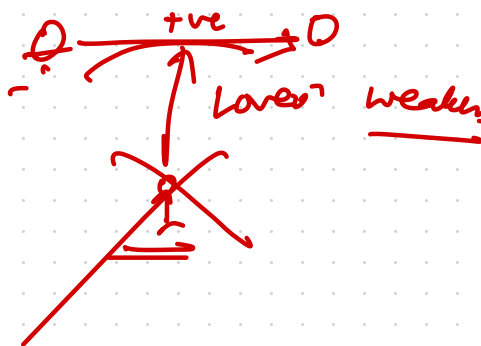
→ DVT



Confounding



effect modifier



88. In a busy OPD at a District hospital, you are evaluating a 5-year-old boy who presents with fever, generalized malaise, and a distinctive rash. The child's clinical presentation strongly suggests a diagnosis of measles. The mother, anxious about the contagious nature of the disease and the risk it poses to her other kids and family members, inquires about the recommended period of isolation for her infected child. What would be your most appropriate recommendation for the duration of isolation? (AIIMS MAY 2018)

- A. From onset of rash to 3 days after rash
- B. 2 weeks before rash to 1 week after rash
- C. From onset of rash to 5 days after rash
- D. From catarrhal stage to 4 days after rash**

Disease	Duration of Isolation	Communicable periods
Chickenpox / Herpes zoster	6 days after onset of rash / until lesions are crusted	1–2 days before to 4–5 days after appearance of rash
Measles	From onset of catarrhal stage to 5 days after rash onset	4 days before to 5 days after appearance of rash
Diphtheria	Until 48 hours after starting antibiotics	Up to 4 weeks after disease onset
Influenza	3 days after onset	1–2 days before and 1–2 days after onset of symptoms
Mumps	Until swelling subsides	4–6 days before to 7 days after symptoms onset
Pertussis	4 weeks or until paroxysms cease	7 days before to 3 weeks after onset of paroxysms
Meningococcal meningitis	Until 24 hours after starting antibiotics	Till meningococci are absent from nasal/throat swabs
Cholera	3 days after starting tetracyclines	
Shigellosis, Salmonellosis	Until 3 consecutive negative stool cultures	
Hepatitis A	3 weeks	

000

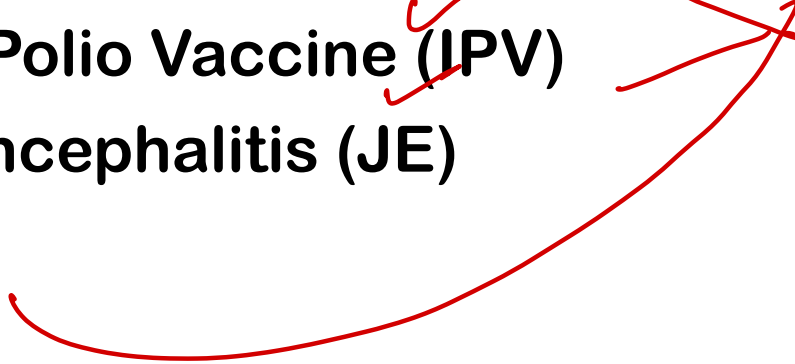
89. A child with a known allergy to **neomycin** is brought to a vaccination camp. Which vaccine is **contraindicated**?

A. Measles, Mumps, Rubella (MMR)

B. Inactivated Polio Vaccine (IPV)

C. Japanese Encephalitis (JE)

~~D. Varicella~~



Antibiotics

Antibiotics are used during the manufacturing phase to prevent bacterial contamination of the tissue culture cells in which the viruses are grown. For example, MMR vaccine and IPV each contains less than 25 micrograms of neomycin per dose (less than 0.000025g). Persons who are known to be allergic to neomycin should be closely observed after vaccination so that any allergic reaction can be treated at once (115).

90. Based on the graphical representation provided, which of the following equations corresponds to the regression model of the plotted graph?

A. $y=10-x$

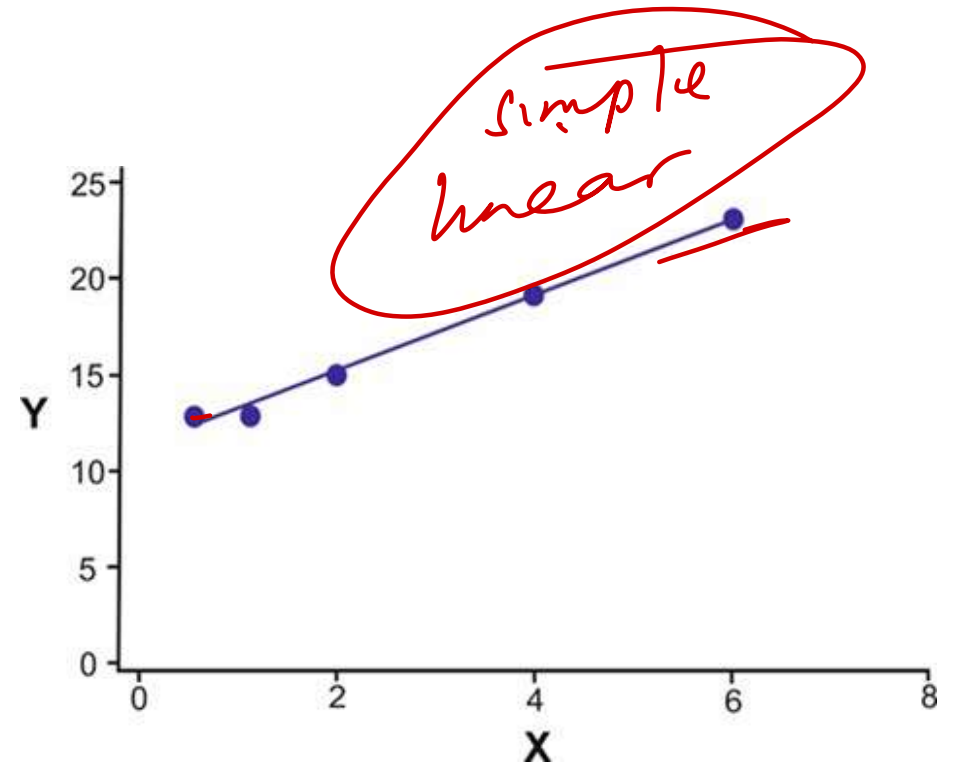
B. $x=10+y$

~~C. $y=11+2x$~~

D. $x=11+2y$

$y = a + b(x) -$

$y = a^2 + b^3 x$ Curvilinear



91. Which of the following statements about criteria for an urban area in India is FALSE?

A. Having 5,000 or more inhabitants

B. Having a population density of 390 persons per square km

~~C. At least half of adult males engaged in non-agricultural work~~

D. Having pronounced urban features

$\frac{3}{4}$ m

92. You are involved in a study about various types of diseases. Which of the following is an example of a Trans-stadial transmission?

A. Plague

B. Taeniasis

C. Rabies

D. Indian tick typhus

93. All of the following are health care delivery indicators, except

A. Population per trained birth attendant

B. Population-bed ratio

C. Bed turnover ratio

D. Doctor-nurse ratio

optimal

utilization

94. A clinical study examines the usefulness of 5 different biomarkers to detect Barrett esophagus, the only known precursor lesion of esophageal adenocarcinoma. Researchers evaluate the performance of each biomarker and report the sensitivity, specificity, and area under the curve (AUC) estimates. Which is the most accurate biomarker?

Biomarker	Sensitivity (%)	Specificity (%)	AUC
1	41.7	83.3	0.603
2	68.0	70.8	0.758
3	70.8	91.7	0.879
4	84.0	62.8	0.763
5	91.7	58.3	0.756

A. 1

B. 2

~~C. 3~~

D. 4

95. The Stanford Three-Community Study, the North Karelia Project, and the Lipid Research Clinics Study are well-known research efforts. What type of study design best describes these efforts?

- A. Cohort studies
- B. Nested case control studies
- C. Case series report studies
- D. Risk factor intervention trials**

96. Identify the correct statements

1. FORD foundation is aiding in building toilets in India (T)

2. Normalcy of data can be measured by histogram, box-whisker plot and Shapiro-Wilk test (T) Hensel-Gratet

3. Haddon matrix is a tool for prevention of injuries using epidemiology. (T)

4. The Reston ebolavirus is most pathogenic in humans.

A. 1,2,3,4

B. 1,2,3

C. 1,3,4

D. 1,2,4

Rest

least

Zaire

accident
prone - Go slow

97. The instrument shown is used to measure:

- A. Humidity
- B. Air velocity
- C. Radiant heat
- D. Air pollution index



Asman
Psychrometer



98. Researchers at an academic trauma center conducted a randomized clinical trial comparing 2 surgical techniques (Technique A and Technique B) for repairing a mandible fracture. They examined rates of infectious complications and rates of malocclusion. A total of 100 patients were enrolled in the study. Results showed that the relative rate of infection with Technique A compared with Technique B was 0.86 with a 95% confidence interval of 0.57-1.28. What is a correct statement?

- A. Neither surgery technique is superior
- B. Technique A is superior to Technique B
- C. Technique B is superior to Technique A
- D. The techniques should not be used in a clinical care setting

X INVALID

0.5-0.8

→ no statistically sign difference
b/w two techniques

99. Research is being conducted to assess the nutritional status of the children in a particular district. For this purpose, 2 children are randomly selected from every school in the district. What is this type of sampling known as?

- A. Simple random
- B. Systematic random
- C. Stratified random
- D. Cluster

every nth



100. Which of the following conditions would not be managed through mass drug administration?

A. Worm infestation ✓

B. Vitamin A deficiency

C. Scabies ✓

D. Filariasis ✓



Cerebellum

Get the balance right

Thank you

Best wishes!